**Komoditas : Buah-buahan**
**Tahun 2004-2008 (1.000 judul)**

Bao Yang, Mouming Zhao, K. Nagendra Prasad, Guoxiang Jiang, Yueming Jiang, Effect of methylation on the structure and radical scavenging activity of polysaccharides from longan (Dimocarpus longan Lour.) fruit pericarp, Food Chemistry, Volume 118, Issue 2, 15 January 2010, Pages 364-368, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.04.128.
(http://www.sciencedirect.com/science/article/B6T6R-4W7RYJ6-G/2/f4a6c80e8a89ce28d30bdb1727af559a)
Abstract:
Polysaccharides of longan fruit pericarp (PLFP) were purified by gel filtration chromatography and methylated by methyl iodide. The structure of methylated PLFP was identified by gas chromatography/mass spectrometry. The results indicated that the percentages of methylated Ara, Glc and Gal increased gradually to a maximal value with increasing volume of methyl iodide. Methylation resulted in a decrease in the DPPH radical scavenging activity of PLFP, while the superoxide anion radical scavenging activity of PLFP decreased with increasing the degree of methylation. When the degree of methylation reached up to 47.4% or a higher value, a promoted effect on the generation of superoxide anion was observed. Furthermore, a high correlation coefficient between degree of methylation and superoxide anion radical scavenging activity of PLFP was determined, which indicated the important role of hydroxyl groups of monosaccharide units in the radical scavenging activity of PLFP.
Keywords: Longan; Polysaccharide; Methylation; Structure; Radical scavenging activity

Lisbeth A. Pacheco-Palencia, Stephen T. Talcott, Chemical stability of acai fruit (Euterpe oleracea Mart.) anthocyanins as influenced by naturally occurring and externally added polyphenolic cofactors in model systems, Food Chemistry, Volume 118, Issue 1, 1 January 2010, Pages 17-25, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.02.032.
(http://www.sciencedirect.com/science/article/B6T6R-4VP4TPY-1/2/49c4b47d50f70ccacb1b7be6064c18b9)
Abstract:
The influence of different classes of naturally occurring and externally added polyphenolic cofactors on the phytochemical and colour stability of anthocyanins in acai fruit (Euterpe oleracea) was investigated. Model systems were based on anthocyanin isolates from acai fruit, rich in cyanidin-3-rutinoside (311 +/- 27 mg/l) and cyanidin-3-glucoside (208 +/- 18 mg/l), and isolated groups of naturally occurring polyphenolic cofactors in acai fruit (phenolic acids, procyanidins, and flavone-C-glycosides, each adjusted to ~50 mg/l). Anthocyanin degradation kinetics were assessed as a function of pH (3.0, 3.5, and 4.0) and storage temperature (5, 20 and 30 [degree sign]C). During storage, anthocyanins experienced pH and temperature-dependent losses, and the half life cyanidin-3-rutinoside (t1/2 = 2.67-210 days) was consistently longer than cyanidin-3-glucoside (t1/2 = 1.13-144 days). The presence of flavone-C-glycosides induced significant hyperchromic shifts and enhanced anthocyanin stability at all pH and temperature combinations, while no significant effects were attributed to the presence of phenolic acids or procyanidins. Additional models using externally added cofactors from rooibos tea, also rich in flavone-C-glycosides, resulted in up to 45.5% higher anthocyanin colour and up to 40.7% increased anthocyanin stability compared to uncopigmented anthocyanin isolates and had similar copigmentation effects to a commercial rosemary-based colour enhancer. Results suggest flavone-C-glycosides offer potential for their use as colour enhancers and stabilizing agents in products rich in cyanidin glycosides, particularly acai fruit-containing foods, juice blends, and beverages.

Keywords: Euterpe oleracea; Acai; Anthocyanin; Cofactor; Colour; Copigmentation; Stability

Chun Yi, Yueming Jiang, John Shi, Hongxia Qu, Sophia Xue, Xuewu Duan, Jingyu Shi, Nagendra K. Prasad, ATP-regulation of antioxidant properties and phenolics in litchi fruit during browning and pathogen infection process, Food Chemistry, Volume 118, Issue 1, 1 January 2010, Pages 42-47, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.04.074.
(http://www.sciencedirect.com/science/article/B6T6R-4W6Y38V-3/2/be45fb1026680534a2b7072a66a720e7)
Abstract:
The impact of energy level on antioxidant properties in relation to pericarp browning and loss of disease resistance of litchi fruit was investigated. Litchi fruits were vacuum-infiltrated with distiled water (control), 1 mM adenosine triphosphate (ATP) and 0.5 mM 2,4-dinitrophenol (DNP) under 75 kPa for 3 min before being inoculated with Peronophythora litchi or not. ATP-treated fruits presented higher activities of antioxidant enzymes, including catalase (CAT), superoxide dismutase (SOD) and ascorbate peroxidase (APX). Higher activities of 1,1-diphenyl-2-picrylhydrazyl (DPPH) scavenging, reducing power and contents of phenolic compounds were also observed in ATP-treated fruit during storage. In contrast, DNP treatment lowered the enzymes activities, scavenging ability and the contents of phenolic compounds. Higher levels of antioxidant enzymatic system and non-enzymatic system were observed in P. litchii-inoculated fruits than those in non-inoculated fruits. Application of ATP and DNP exhibited a similar change patterns and effects in inoculated fruits. When related to previously reported ATP levels, the results suggested that ATP levels could regulate the antioxidant system. Sufficient available energy is crucial for inhibiting browning and preventing the loss of disease resistance in harvested litchi fruit.
Keywords: Litchi; ATP depletion; Energy; DNP; Antioxidant ability; Phenols; Pathogen infection

Nitra Nuengchamnong, Kornkanok Ingkaninan, On-line HPLC-MS-DPPH assay for the analysis of phenolic antioxidant compounds in fruit wine: Antidesma thwaitesianum Muell., Food Chemistry, Volume 118, Issue 1, 1 January 2010, Pages 147-152, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.04.069.
(http://www.sciencedirect.com/science/article/B6T6R-4W6Y11M-1/2/bf21a31d71f73bcda2c4bb90422c5089)
Abstract:
A reversed phase high performance liquid chromatography (RP-HPLC) separation coupled with an electrospray ionisation mass spectrometry detection (ESI-MS) and the 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay was used for the screening of multiple antioxidant compounds in Antidesma thwaitesianum Muell. fruit wine. The active compounds were identified by comparison with authentic standards and published mass spectra. With the help of the multidimensional information of LC-ESI-MS/MS and DPPH assay, the compounds with different chemical structures could be determined in one run successfully. The antioxidant compounds were separated and identified as gallic acid, cyanidin-3-sophoroside, monogalloyl glucoside, delphinidin-3-sambubioside, catechin, caffeic acid, and pelargonidin-3-malonyl glucoside. This result shows that an on-line HPLC-MS-DPPH assay can be a powerful technique for the rapid characterisation of antioxidant compounds in plant extracts.
Keywords: On-line HPLC-MS-antioxidant assay; Fruit wine; Characterisation; Antidesma thwaitesianum

H. Berrada, M. Fernandez, M.J. Ruiz, J.C. Molto, J. Manes, G. Font, Surveillance of pesticide residues in fruits from Valencia during twenty months (2004/05), Food Control, Volume 21, Issue 1, January 2010, Pages 36-44, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2009.03.011.
(http://www.sciencedirect.com/science/article/B6T6S-4VYXMJC-3/2/91d1d9a879255879c5f9e2b50ac29a01)

Abstract:
The aim of this study was to investigate the pesticide residues in market fruits (oranges, tangerines, nectarines, peaches and khakis) from one Valencian Cooperative (Spain) and to conduct a monitoring of 32 organophosphorous, organonitrogen and organohalogenated pesticides and nine dithiocarbamate fungicides (DTCFs) usually applied on cultures of this area.
Extracts were obtained by an official procedure for routine analysis based on ethyl acetate extraction. Residues of pesticides were determined by gas chromatography with nitrogen phosphorous detector (NPD), electron-capture detector (ECD) and mass spectrometry (MS) detectors. Mean recoveries obtained at fortification levels between 0.05 and 5 mg kg-1 were in range of 56-97% with relative standard deviations (RSDs) from 5% to 18%. The limits of quantification (LOQs) were in range of 0.1-140 [mu]g kg-1 and lower than maximum residue limits (MRL) established by the Spanish legislation. 73% of the samples had no detectable residues. Of the contaminated samples, 13.8% exceeded the maximum residue limits (MRLs). Peaches and oranges showed the lowest contamination rates (13.9% and 21.3%, respectively). The contamination and violation rates were similar than the percentages recorded in previous monitoring studies in the same Community. Estimated daily intakes (EDIs) were calculated for these compounds in basis of European maximum residue limits (MRL) and residues found in the analysed samples and were compared with the acceptable daily intakes (ADIs).
Keywords: Monitoring; Multiresidue analysis; Fruits; Pesticides; Dithiocarbamates; Gas chromatography; Mass spectrometry; Acceptable daily intake; Estimated daily intake

F. Bonzanini, R. Bruni, G. Palla, N. Serlataite, A. Caligiani, Identification and distribution of lignans in Punica granatum L. fruit endocarp, pulp, seeds, wood knots and commercial juices by GC-MS, Food Chemistry, Volume 117, Issue 4, 15 December 2009, Pages 745-749, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.04.057.
(http://www.sciencedirect.com/science/article/B6T6R-4W6XW2X-5/2/20841fa6044f8e7c734f48400c756640)
Abstract:
The lignans isolariciresinol, medioresinol, matairesinol, pinoresinol, secoisolariciresinol and syringaresinol were detected and quantified for the first time in pomegranate (Punica granatum L.) and in commercial pomegranate juices by means of GC-MS. The total lignan content in the different plant parts was estimated as follows: 36.1 +/- 0.3 [mu]g/g in seeds, 17.8 +/- 0.2 [mu]g/g in wood knots, 11.2 +/- 0.2 [mu]g/g in fruit pulp, 3.3 +/- 0.1 [mu]g/g in endocarp. Secondary metabolite distribution varied greatly in the evaluated samples, with syringaresinol being the most abundant contributor in seeds (23.5 +/- 0.4 [mu]g/g) and pinoresinol in knots, pulp, endocarp and juice (8.9 +/- 0.3, 7.4 +/- 0.2, 3.3 +/- 0.1 and 2.1 +/- 0.2 [mu]g/g, respectively). A survey on two concentrated juices and three commercial pomegranate beverages evidenced the presence of lignans in all of them, with values ranging from 0.4 +/- 0.1 to 4.4 +/- 0.1 [mu]g/g. Lignans may be relevant contributors to the purported dietary beneficial properties of pomegranate juice and their considerable abundance in agro-industrial waste materials could render P. granatum by-products an inexpensive and renewable natural source of these healthy compounds.
Keywords: Functional foods; Pomegranate juice; Pomegranate seeds; Lignans; Agroindustrial wastes

J.N. Bruhn, J.D. Mihail, Forest farming of shiitake mushrooms: Aspects of forced fruiting, Bioresource Technology, Volume 100, Issue 23, December 2009, Pages 5973-5978, ISSN 0960-8524, DOI: 10.1016/j.biortech.2009.01.079.
(http://www.sciencedirect.com/science/article/B6V24-4WS85S0-1/2/ebab4340c40946c6cb4cfbd556c896cb)
Abstract:

Three outdoor shiitake (Lentinula edodes (Berk.) Pegler) cultivation experiments were established during 2002-2004 at the University of Missouri Horticulture and Agroforestry Research Center, in central Missouri. Over three complete years following a year of spawn run, we examined shiitake mushroom production in response to the temperature of forcing water, inoculum strain, substrate host species and physical orientation of the log during fruiting. Forcing compressed the period of most productive fruiting to the two years following spawn run. Further, chilled forcing water, 10-12 [degree sign]C, significantly enhanced yield, particularly when ambient air temperatures were favorable for the selected mushroom strain. The temperature of water available for force-fruiting shiitake logs depends on geographic location (latitude) and source (i.e., farm pond vs. spring or well water). Prospective growers should be aware of this effect when designing their management and business plans.
Keywords: Forcing water temperature; Log position; Lentinula edodes strain

D.R. Pompeu, E.M. Silva, H. Rogez, Optimisation of the solvent extraction of phenolic antioxidants from fruits of Euterpe oleracea using Response Surface Methodology, Bioresource Technology, Volume 100, Issue 23, December 2009, Pages 6076-6082, ISSN 0960-8524, DOI: 10.1016/j.biortech.2009.03.083.
(http://www.sciencedirect.com/science/article/B6V24-4WP4BFH-1/2/a4695ad11896948d9ba332828b41a4be)
Abstract:
Fruits of Euterpe oleracea (FEO) are currently known as elements that present a very high antioxidant activity (AAO), as measured by the Oxygen Radical Absorbance Capacity. They are particularly rich in total phenolics (TP) and total anthocyanins (TA). Response Surface Methodology was used to optimise the solvent extraction of phenolic antioxidants from FEO, using a second-order polynomial equation to describe the experimental data for TP, TA, and AAO. In order to determine the best solid-to-liquid ratio and time of extraction, some preliminary studies were conducted. A rotatable central composite design with three variables (ethanol proportion, hydrochloric acid concentration and temperature) was then used. The results showed a good fit to the proposed model (R2 > 0.89). TP and TA, as well as TA and AAO, showed significant correlations (P < 0.05). The optimised conditions that maximized the yields of phenolic compounds (TP and TA) and AAO from FEO were: ethanol proportion between 70% and 80%, hydrochloric acid concentration between 0.065 and 0.074 mol/L and a temperature of 58 [degree sign]C.
Keywords: Extraction; Polyphenols; Response Surface Methodology; Antioxidant activity; Euterpe oleracea

Mee Kin Chai, Guan Huat Tan, Validation of a headspace solid-phase microextraction procedure with gas chromatography-electron capture detection of pesticide residues in fruits and vegetables, Food Chemistry, Volume 117, Issue 3, 1 December 2009, Pages 561-567, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.04.034.
(http://www.sciencedirect.com/science/article/B6T6R-4W3PT8H-D/2/cbb4301159cf5d8a7bda30eb5f312723)
Abstract:
Headspace solid-phase microextraction (HS-SPME) was evaluated for the determination of pesticide residues in fruits and vegetables by gas chromatography with an electron capture detector (GC-ECD). The fibre used was coated with polydimethylsiloxane (100 [mu]m thickness) and the analytical conditions employed have been developed and optimised in a previous work [Chai, M. K., Tan, G. H., & Asha, L. (2008). Optimisation of headspace solid-phase microextraction for the determination of pesticide residues in vegetables and fruits. Analytical Sciences, 24 (2), 273-276]. The results show that the HS-SPME procedure gave a better linear range, accuracy, precision, detection and quantification limits and is adequate for analysing pesticide residues in fruits and vegetables. The average recoveries obtained for each pesticide ranged between 71%

and 98% at three fortification levels with the relative standard deviation of less than 5%. Repeatability (0.3-3.7%) and intermediate precision (0.8-2.5%) were shown to be satisfactory. The limits of detection (0.01-1 [mu]g L-1) and the limits of quantification (0.05-5 [mu]g L-1) of these pesticides were much lower than the maximum residue levels (MRL), allowed for fruits and vegetables in Malaysia.
Keywords: HS-SPME; Organochlorine; Organophosphorous; GC-ECD

S. Vermeir, M.L.A.T.M. Hertog, K. Vankerschaver, R. Swennen, B.M. Nicolai, J. Lammertyn, Instrumental based flavour characterisation of banana fruit, LWT - Food Science and Technology, Volume 42, Issue 10, December 2009, Pages 1647-1653, ISSN 0023-6438, DOI: 10.1016/j.lwt.2009.05.024.
(http://www.sciencedirect.com/science/article/B6WMV-4WGK4R6-2/2/b4a20785fe2d4d9fcbeea30d035410c2)
Abstract:
Different instrumental techniques are used to evaluate the integrated flavour profile, including taste and volatile components, of a common export banana cultivar (Gran Enano) during ripening. Besides standard techniques to assess fruit quality (firmness, soluble solids content), gas chromatography-mass spectrometry (GC-MS) with headspace solid-phase micro-extraction (HS SPME) was used for the quantification of the different volatile components. The most important taste components with respect to sweetness (d-glucose, d-fructose, sucrose) and sourness (l-malic acid and citric acid) were determined using an enzymatic high-throughput (EHT) method. The different parameters were monitored during a ripening process starting from a green colour stage until fully ripened bananas. Clear differences were observed between bananas at different ripening stages with respect to the main instrumental attributes (total acid and sugar content, total volatile production, SSC, and firmness) and the individual volatile components. In addition, differences in flavour profile were observed between ethylene and non-ethylene treated bananas at the same colour stage and between bananas from different origins.
Keywords: Banana; Flavour profile; Gas chromatography-mass spectrometry; Enzymatic high-throughput analysis; Multivariate statistical analysis

Jian Sun, Jinyan Yao, Shaoxi Huang, Xing Long, Jubing Wang, Elena Garcia-Garcia, Antioxidant activity of polyphenol and anthocyanin extracts from fruits of Kadsura coccinea (Lem.) A.C. Smith, Food Chemistry, Volume 117, Issue 2, 15 November 2009, Pages 276-281, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.04.001.
(http://www.sciencedirect.com/science/article/B6T6R-4W1BVC3-2/2/866d8b15640bbb1b113c765a4c39bc9d)
Abstract:
Polyphenols and anthocyanins were extracted from Kadsura coccinea fruit. The contents of total phenolics and anthocyanins, influences of pH and temperature on anthocyanins, and antioxidant activities of extracts were further analyzed. The results showed that the total phenolic content of peel extracts was superior to that of pulp extracts. The total anthocyanin content of peel extracts was 180 +/- 2.91 mg/100 g of fresh peel tissues. K. coccinea anthocyanins were stable below pH 4, whilst high temperature and extended heating time induced their degradation. Metal-chelating capacity (MCC) assay indicated that no ortho-dihydroxy aromatic moiety existed in the B-ring of the anthocyanin molecules, but there might be a catechol group in the B-ring of the polyphenol molecules. 1,1-Diphenyl-2-picrylhydrazyl (DPPH) radical-scavenging activity and reducing power of extracts decreased in the following order: peel polyphenol extracts > anthocyanin extracts > pulp polyphenol extracts. It would be worthwhile to introduce this rare fruit into more countries.
Keywords: Kadsura coccinea; Fruits; Polyphenols; Anthocyanins; Antioxidant activity

John S. Maninang, Ma. Concepcion C. Lizada, Hiroshi Gemma, Inhibition of aldehyde dehydrogenase enzyme by Durian (Durio zibethinus Murray) fruit extract, Food Chemistry, Volume 117, Issue 2, 15 November 2009, Pages 352-355, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.106.
(http://www.sciencedirect.com/science/article/B6T6R-4W0WJB9-9/2/fb82115bae6d9e9bb88cdffdaed8485c)
Abstract:
The scientific basis of the adverse, or at times lethal, effect of ingesting durian (Durio zibethinus Murray) while imbibing alcohol has not been established. Symptoms are reminiscent of the disulfiram-ethanol reaction (DER) arising from the inhibition of aldehyde dehydrogenase (ALDH). Cognizant of the inhibitory effect of sulphur compounds like disulfiram on ALDH and the rich sulphur content of durian, the influence of durian fruit extract on the ALDH-mediated oxidative metabolism of acetaldehyde was investigated. We report a dose-dependent inhibition of yeast ALDH (yALDH), at most 70% at 0.33 ppm (mg extract/l assay mix), by dichloromethane:pentane extracts. Sulphur-rich TLC fruit extract fractions that eluted farthest from the origin effected the greatest inhibitory action. yALDH assay using diethyl disulfide as internal standard further supports the role of durian's sulfury constituents in the fruit's ALDH-inhibiting property. Insight into the etiology of DER-like symptoms felt upon simultaneous durian and alcohol consumption is hereby presented.
Keywords: Alcohol; ALDH inhibition; Disulfiram-ethanol reaction; Durian; Durian-alcohol reaction

Jianchun Xie, Baoguo Sun, Shuaibin Wang, Yoichiro Ito, Isolation and purification of nootkatone from the essential oil of fruits of Alpinia oxyphylla Miquel by high-speed counter-current chromatography, Food Chemistry, Volume 117, Issue 2, 15 November 2009, Pages 375-380, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.04.011.
(http://www.sciencedirect.com/science/article/B6T6R-4W26GFM-1/2/c34dd3656580680d1ebc23fe7194bcad)
Abstract:
HSCCC technique in a semi-preparative scale was successfully applied in isolation and purification of nootkatone from the essential oil of fruits of Alpinia oxyphylla Miquel. Twelve kinds of two-phase solvent systems, consisting of seven non-aqueous and five organic-aqueous solvent systems, were selected with not only suitable partition coefficients of nootkatone but also suitable separation factors between nootkatone and valencene, the dominant impurity in the essential oil. Further on HSCCC, n-hexane-chloroform-acetonitrile (10:1:10, v/v) amongst the non-aqueous solvent systems and n-hexane-methanol-water (5:4:1, v/v) amongst the organic-aqueous solvent systems were separately screened out. However, n-hexane-methanol-water (5:4:1, v/v) was thought optimal due to quite shorter elution time and better HSCCC peak form. By eluting the lower phase of this solvent system in head-tail mode, 3.1 mg of nootkatone was obtained at a purity of 92.30% by GC-MS from 80 mg of crude essential oil in one step operation in less than 4 h. The chemical structure of nootkatone fraction was confirmed by EI-MS and 1H NMR.
Keywords: Counter-current chromatography; Alpinia oxyphylla Miquel; Sesquiterpenoid; Nootkatone; Flavor; Bioactive component

Marc Greven, Sue Neal, Steve Green, Bartolomeo Dichio, Brent Clothier, The effects of drought on the water use, fruit development and oil yield from young olive trees, Agricultural Water Management, Volume 96, Issue 11, November 2009, Pages 1525-1531, ISSN 0378-3774, DOI: 10.1016/j.agwat.2009.06.002.
(http://www.sciencedirect.com/science/article/B6T3X-4WP4BGS-2/2/9acd34238a9d80944513d0e4dffab311)
Abstract:

In Marlborough, New Zealand, olives are becoming an important crop alongside grapes. However, despite olives being drought resistant, they are generally planted on the poorer free-draining soils. Also, with the strong increase in cropping area, the demand for irrigation water has increased dramatically. In this research, we investigate the impact of short-term water stress on plant physiological processes, crop yield and oil quality in Marlborough, New Zealand. For that purpose, during the dry summer of 2000-2001, two trees were kept without irrigation for 64 days while two neighbouring trees were irrigated following standard practice. The trees were measured for transpiration (E), leaf and stem water potential ([Psi]L and [Psi]S), every other day, from dawn to dusk for three weeks from just before irrigation was started up again. All four trees were wired up for measuring stem sap flow (T) which was recorded hourly and a basic meteorological station provided weather data. Fruit and shoot development was measured weekly. It was found that under the short period of dry conditions with soil moisture (() dropping to <5%, olive trees kept functioning at a very low level with [Psi]L and [Psi]S reduced from -1 to <-4.0 MPa (T) reduced from 20 to 5 mm/h and (E) reduced from 1.5 to 1.0 mmol m-2 s-1. Within 10 days of restarting irrigation all these parameters were back to pre-drought levels. Both fruit and shoot growth came to a standstill within a week after drought was induced. During the first few days after re-watering, a high variability in [Psi]L was found between leaves from the same trees. This variability disappeared after ~six days. Shoot growth did not recover after re-watering but fruit growth rate, became the same as for continuously irrigated trees within days, but fruit size did not manage to recover before harvest. Yield from the dry trees was low because berry and pit weight were reduced by almost 50% at harvest, had a lower oil and percentage and were lower in phenolics. Stem sap flow was found to give a very good continuous measurement for the hydration status of the olive trees.
Keywords: Olive; Drought; Leaf water potential; Stem sap flow; Stomatal conductance

Gregorio Egea, Maria M. Gonzalez-Real, Alain Baille, Pedro A. Nortes, Paloma Sanchez-Bel, Rafael Domingo, The effects of contrasted deficit irrigation strategies on the fruit growth and kernel quality of mature almond trees, Agricultural Water Management, Volume 96, Issue 11, November 2009, Pages 1605-1614, ISSN 0378-3774, DOI: 10.1016/j.agwat.2009.06.017.
(http://www.sciencedirect.com/science/article/B6T3X-4WSG2SC-2/2/1fb9dd31f12f6e2a35cbeb737f6c901a)
Abstract:
The aim of this study was to quantify and compare the effects of two different deficit irrigation (DI) strategies (regulated deficit irrigation, or RDI, and partial rootzone drying, PRD) on almond (Prunus dulcis (Mill.) D.A. Webb) fruit growth and quality. Five irrigation treatments, ranging from moderate to severe water restriction, were applied: (i) full irrigation (FI), irrigated to satisfy the maximum crop water requirements (ETc); (ii) regulated deficit irrigation (RDI), receiving 50% of ETc during the kernel-filling stage and at 100% ETc throughout the remaining periods; and three PRD treatments - PRD70, PRD50 and PRD30 - irrigated at 70%, 50% and 30% ETc, respectively, during the whole growth season. The DI treatments did not affect the overall fruit growth pattern compared to the FI treatment, but they had a negative impact on the final kernel dry weight for the most stressed treatments. The allocation of water to the different components of the fruit, characterized by the fresh weight ratio of kernel to fruit, appeared to be the process most clearly affected by DI. Attributes of the kernel chemical composition (lipid, protein, sugar and organic acid contents) were not negatively affected by the intensity of water deprivation. Overall, our results indicated that PRD did not present a clear advantage (or disadvantage) over RDI with regard to almond fruit growth and quality.
Keywords: Prunus dulcis; Regulated deficit irrigation; Partial rootzone drying; Fruit quality; Growth; Phenology

Nelson H. Hurtado, Alicia L. Morales, M. Lourdes Gonzalez-Miret, M. Luisa Escudero-Gilete, Francisco J. Heredia, Colour, pH stability and antioxidant activity of anthocyanin rutinosides isolated from tamarillo fruit (Solanum betaceum Cav.), Food Chemistry, Volume 117, Issue 1, 1 November 2009, Pages 88-93, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.081.
(http://www.sciencedirect.com/science/article/B6T6R-4VY2CDX-1/2/8c0df20af4b7f55e0f31cb0f26987707)
Abstract:
Changes in colour and stability of anthocyanins have been evaluated over pH range 2.0-8.7. The study was made on crude extract (XAD-7 Amberlite-retained fraction) as well as on the following pure pigments isolated from tamarillo fruit (Solanum betaceum Cav.): delphinidin 3-O-(6''-O-[alpha]-rhamnopyranosyl-[beta]-glucopyranosyl)-3'-O-[beta]-glucopyranoside, delphinidin 3-O-(6''-O-[alpha]-rhamnopyranosyl)-[beta]-glucopyranoside, cyanidin 3-O-(6''-O-[alpha]-rhamnopyranosyl)-[beta]-glucopyranoside and pelargonidin 3-O-(6''-O-[alpha]-rhamnopyranosyl)-[beta]-glucopyranoside. The relationships between the colour and the hydroxylation degree of the B ring and the pH have been studied for the first time on rutinosides. The peel extract showed much more colour stability than the jelly extract at all the pH values studied. The replacement of the 3'-OH with a glycosyl group increased the stability of the colour to pH changes, although this substitution yields a less colourful (higher L* and lower ) compound (Dp 3-rut-3'-glc), having both hypsochromic and hypochromic shifts relative to the non-glycosylated molecule (Dp 3-rut). Moreover, the influence of the hydroxylation degree of the B ring on the quality and stability of colour, as well as on the antioxidant activity, was determined.
Keywords: Anthocyanins; Solanum betaceum; Tamarillo fruit; Tree tomato; Colour; Stability; Antioxidant

Jungmin Lee, Karen E. Keller, Christopher Rennaker, Robert R. Martin, Influence of grapevine leafroll associated viruses (GLRaV-2 and -3) on the fruit composition of Oregon Vitis vinifera L. cv. Pinot noir: Free amino acids, sugars, and organic acids, Food Chemistry, Volume 117, Issue 1, 1 November 2009, Pages 99-105, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.082.
(http://www.sciencedirect.com/science/article/B6T6R-4VY2CDX-2/2/3d5e1418f624a283c81434ba7a6f3377)
Abstract:
Individual free amino acids, yeast assimilable amino acid (YAN) content, ammonia, organic acids, and simple sugars of berries from vines infected with GLRaV-2 or -3 were compared with paired vines free of these viruses. Samples were taken from two commercial vineyards during two growing seasons (2005 and 2006), with three different rootstock/scion combinations. Vines infected with GLRaV-2 did not differ significantly from their healthy counterparts in individual free amino acids, ammonia, or YAN content. Vines infected with GLRaV-3 were significantly lower in valine and methionine from Vitis riparia rootstock/`Pinot noir' clone 114 (VY2a) samples, and lower in glutamic acid from self-rooted/`Pinot noir' clone Pommard (VY2b) samples, compared to samples from their healthy counterparts. Samples from VY2b (self-rooted/`Pinot noir' clone Pommard) infected vines had significantly lower levels of malic acid and total organic acids compared to samples from their healthy counterparts. There were no significant differences between healthy and infected vines from all three rootstock/scion pairs in ammonia or free amino acids in samples taken during the weeks before ripening and at commercial harvest. This is the first study to report the influence of GLRaV-2 and -3 on `Pinot noir' berries nitrogen (N) compounds significant to fermentation. Individual free amino acids may be inferior to phenolic compounds as indicators of GLRaV infection status.
Keywords: Vitis vinifera; Pinot noir; Viruses; Grape quality; YAN; Biotic stress; Free amino acids; FAN

Ana Carolina B. Rezende, M. Fernanda P.M. de Castro, Ernani Porto, Cristiane. A. Uchima, Eliane Benato, Ana L. Penteado, Occurrence of Salmonella spp. in persimmon fruit (Diospyrus kaki) and growth of Salmonella enteritidis on the peel and in the pulp of this fruit, Food Control, Volume 20, Issue 11, November 2009, Pages 1025-1029, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2008.12.006.
(http://www.sciencedirect.com/science/article/B6T6S-4V7MSFW-2/2/1220bf6de8a1e0e8e5f47ef242da351c)
Abstract:
The occurrence of Salmonella spp. on persimmon (Diospyrus kaki) surface of `Fuyu' and `Rama Forte' was evaluated during a 5-month-period (from April to August) of two season periods (years 2005 and 2006). The fruits were collected in wholesale (CEAGESP) and street markets in Sao Paulo and Campinas City, Brazil. A total of 582 fruits were analyzed using the BAX(R) system, which is based on the Polymerase Chain Reaction (PCR). The ability of this pathogen to grow on the peel and pulp of the two persimmon varieties was also verified at different incubation periods at temperatures of 10, 20 and 30 [degree sign]C. The growth parameters were obtained by modeling the experimental data using the Gompertz function. The presence of Salmonella spp. was evidenced in 5 of the 582 analyzed fruits (0.9% incidence). The growth studies showed that Salmonella enteritidis can grow on the peel as well as in the pulp of the two persimmon varieties studied incubated at 10, 20 and 30 [degree sign]C and that low temperatures can reduce the generation rate but do not inhibit its growth.
Keywords: Persimmon fruit; Salmonella enteritidis; Growth

S. Hadi, D. Ahmad, F.B. Akande, Determination of the bruise indexes of oil palm fruits, Journal of Food Engineering, Volume 95, Issue 2, November 2009, Pages 322-326, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2009.05.010.
(http://www.sciencedirect.com/science/article/B6T8J-4W85M9X-6/2/134296096a6cc4e452b854c2b5db0faa)
Abstract:
This study determines the bruise indexes of oil palm fruits as criteria for use in the design of the oil palm fruits stripper. Bruise has been classified into four according to the bruise area and the effect of each category on the free fatty acid (FFA) has been investigated. The FFA developed by each category of the bruise was determined at different delay period of 4 and 12 h between stripping and oil extraction. Statistical analysis showed that there was no significant relationship at 1% significant level between delay period and the FFA. Regression analysis was also carried out on the FFA of different ripeness levels and the bruise index and a regression model was developed relating the amount of FFA at different levels of ripeness and bruise index. At all levels of ripeness, the percentage of free fatty acid developed by bruised fruits increased with increasing bruise index.
Keywords: Bruise index; Free fatty acid; Ripeness level; Bruise category; Lipolytic acid and stripper

Jaime Gonzalez-Buesa, Ana Ferrer-Mairal, Rosa Oria, Maria L. Salvador, A mathematical model for packaging with microperforated films of fresh-cut fruits and vegetables, Journal of Food Engineering, Volume 95, Issue 1, November 2009, Pages 158-165, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2009.04.025.
(http://www.sciencedirect.com/science/article/B6T8J-4W741T5-1/2/2cfa679ef67d5c9b7c8fa7ecdc88ed4b)
Abstract:
For the design of modified atmosphere packaging with microperforated films it is necessary to know the respiratory kinetics of the product and the gas interchange through the packaging. The aim of this work was to describe an empirical equation that relates the microperforation area with

the transmission rate in order to present a mathematical model, valid for packages of constant volume. The model should take into account the dependency of the respiration rate with the gas composition and the existence of a hydrodynamic flow through the microperforations. The evolution of the gas composition inside the package predicted by the model has been compared with the results of experiments conducted at 4 [degree sign]C with minimally processed peach (`Andross' and `Calante' cultivars), fresh-cut cauliflower and whole black truffle, by using seven packages of different number (0-14) and size (from 90 x 50 [mu]m to 300 x 100 [mu]m) of microperforations. The respiratory kinetics of these products was previously determined in a closed system. It has been established that the rate of O2 consumption is a potential function of the O2 concentration, while the production of CO2 is linear, except in the case of the truffle which showed a linear dependency for O2 and CO2. The experimental data and those predicted by the model showed a satisfactory agreement for the O2, while the CO2 is underestimated for products with RQ < 1 but in agreement when RQ > 1. The reason for this behaviour could be the CO2 concentration gradient within the package owing to the air flow that moves to compensate pressure differences.
Keywords: MAP; Gas exchange; Respiration rate; Peach; Cauliflower; Truffle

Abel Ortiz, Gemma Echeverria, Jordi Graell, Isabel Lara, Overall quality of `Rich Lady' peach fruit after air- or CA storage. The importance of volatile emission, LWT - Food Science and Technology, Volume 42, Issue 9, November 2009, Pages 1520-1529, ISSN 0023-6438, DOI: 10.1016/j.lwt.2009.04.010.
(http://www.sciencedirect.com/science/article/B6WMV-4W9XBM3-2/2/4d77ecfd4a000b73e06d196059974b87)
Abstract:
In this work, `Rich Lady' peach fruit picked at three different dates were stored at 2 [degree sign]C under air or controlled atmosphere (CA) conditions for 3 or 15 days with the purpose of assessing the effects of the different factors considered on some variables (standard quality parameters and emission of volatile compounds) potentially having an impact on sensory acceptance after storage. Extending cold storage under air resulted in lowered acceptance scores, which were improved by CA storage. Multivariate analysis of results revealed that acceptance of `Rich Lady' peach fruit was related closely to the perception of the characteristic flavour, which in turn was related to soluble solids content and to the emission of specific volatile compounds. Observed differences in alcohol o-acyltransferase (AAT) activity as affected by factors considered in this work did not appear to be large enough to explain differences in ester production after storage. Data suggest that observed differences in the emission of volatile esters arose mainly from modifications in the activity of enzymes located upstream of AAT, causing changes in the supply of precursors for ester biosynthesis in `Rich Lady' peach fruit.
Keywords: Aroma; Alcohol o-acyltransferase; Air storage; Controlled atmosphere; Peach; Volatile esters

Norman B. Barr, Brian M. Wiegmann, Phylogenetic relationships of Ceratitis fruit flies inferred from nuclear CAD and tango/ARNT gene fragments: Testing monophyly of the subgenera Ceratitis (Ceratitis) and C. (Pterandrus), Molecular Phylogenetics and Evolution, Volume 53, Issue 2, November 2009, Pages 412-424, ISSN 1055-7903, DOI: 10.1016/j.ympev.2009.07.008.
(http://www.sciencedirect.com/science/article/B6WNH-4WS2HWB-1/2/69c4cf6b8843a5fccb1b2980f279c13c)
Abstract:
Systematic studies of Ceratitis (Tephritidae) fruit flies using molecular (i.e., COI, ND6, and period genes) and morphological (plus host-use characters) data have recently challenged the monophyly of the subgenera Ceratitis (Ceratitis) and Ceratitis (Pterandrus). In this paper, we report on the phylogenetic utility of three single-copy nuclear gene regions (two non-overlapping

fragments of the carbamoylphosphate synthetase, CPS, locus of CAD, and a fragment of tango) within these taxa and investigate evolutionary relationships based on a concatenated ca. 3.4 kb data set that includes the six protein encoding gene regions. Results indicate that the CAD and tango genes provide useful phylogenetic signal within the taxa and are compatible with the previously studied genes. The two subgenera, as currently classified, are not monophyletic. Our molecular phylogenetic analyses support a revised classification in which (1) the subgenus C. (Pterandrus) comprises two lineages called A and B, (2) the C. (Pterandrus) B species should be included in C. (Ceratitis), and (3) the newly defined subgenera C. (Pterandrus) (=Pterandrus section A) and C. (Ceratitis) [=C. (Ceratitis) + C. (Pterandrus) section B] are reciprocally monophyletic.
Keywords: tango; ARNT; CAD; Systematics; Ceratitis; PAS

Fernando Diaz de Leon-Sanchez, Clara Pelayo-Zaldivar, Fernando Rivera-Cabrera, Monica Ponce-Valadez, Xochil Avila-Alejandre, Francisco J. Fernandez, Hector B. Escalona-Buendia, Laura J. Perez-Flores, Effect of refrigerated storage on aroma and alcohol dehydrogenase activity in tomato fruit, Postharvest Biology and Technology, Volume 54, Issue 2, November 2009, Pages 93-100, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.07.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4X1R2TG-1/2/60ea44a4adb69b264eaeffb55c558a5a)
Abstract:
Recommended temperatures for refrigerated storage of tomato (Solanum lycopersicum) have been established based on maintenance of physical and visual characteristics without considering their effect in tomato flavor. In this study, the effect of refrigerated storage (10 [degree sign]C) was compared to storage at 20 [degree sign]C on the volatile chemical profile of the aroma of light red tomato `7705' using GC-MS. Changes in the aroma volatile profile were correlated with a sensory analysis, using the quantitative descriptive analysis (QDA) method, and with alcohol dehydrogenase (ADH) enzyme activity. Refrigeration induced changes in levels of 3-methylbutanal, linalool, guiacol, hexanol, trans-2-hexenal and trans-3-hexenol. Some of these alterations may be explained by a decrease in ADH enzyme activity observed in refrigerated tomato. They were reflected in aroma perception as an increase in the descriptors solvent-humidity and medicinal and a decrease in the descriptor lemon tea.
Keywords: Volatiles; Sensory evaluation; Flavor; Postharvest quality; Refrigeration; Alcohol dehydrogenase; Tomato

Limei Yu, Mouming Zhao, Bao Yang, Weidong Bai, Immunomodulatory and anticancer activities of phenolics from Garcinia mangostana fruit pericarp, Food Chemistry, Volume 116, Issue 4, 15 October 2009, Pages 969-973, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.064.
(http://www.sciencedirect.com/science/article/B6T6R-4VWHW73-5/2/4aaa0fd76400465e1658367d293ecaf2)
Abstract:
The methanolic extract of Garcinia mangostana fruit pericarp was partitioned into butanol and water fractions in this work. Three major phenolics were purified and identified as P1 [1,3,6,7-tetrahydroxy-2,8-(3-methyl-2-butenyl) xanthone], P2 [1,3,6-trihydroxy-7-methoxy-2,8-(3-methyl-2-butenyl) xanthone] and P3 (epicatechin). Strong antioxidant activities were detected for P1-P3. In vitro cell proliferation trials indicated that P1 and P3 exhibited good immunomodulatory activities when 7.5 [mu]g/ml was used. Furthermore, P1 and P3 showed good cytotoxicities against human breast cancer cells (MCF-7) and human colon cancer cells (LOVO). P1 exhibited the maximal cytotoxicity of 73.06% against MCF-7 cells and of 46.27% against LOVO cells when 62.5 [mu]g/ml was used. The cytotoxicities of P1, P2, P3 and paclitaxel against normal embryonic lung fibroblast cells (HELF) were in a decreasing order: paclitaxel > P3 > P1 > P2. These results suggested that P1 and P3 could be used as a potential anticancer agent.

Keywords: Garcinia mangostana; Epicatechin; Antioxidant activity; Immunomodulatory activity; Anticancer activity

Neungnapa Ruenroengklin, Bao Yang, Hetong Lin, Feng Chen, Yueming Jiang, Degradation of anthocyanin from litchi fruit pericarp by H2O2 and hydroxyl radical, Food Chemistry, Volume 116, Issue 4, 15 October 2009, Pages 995-998, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.063.
(http://www.sciencedirect.com/science/article/B6T6R-4VWHW73-2/2/027747a9911f5f2a6f826ae2c315fb9a)
Abstract:
Litchi (Litchi chinensis Sonn.) is one of the most desirable subtropical fruits with high commercial values, which is significantly affected by its skin colour due to the embedded anthocyanin pigments. This work was conducted with a view to explaining the unexpected observation that litchi polyphenol oxidase (PPO) did not oxidise directly anthocyanins. Litchi fruit were stored for 4 days at 25 [degree sign]C and 80-90% relative humidity. Browning index and H2O2 and OH contents of pericarp tissues of litchi fruit during storage were determined. The browning index of litchi fruit rapidly increased while H2O2 and OH contents decreased and then increased markedly, as storage time progressed. The obvious pericarp browning was associated with the rapid increases in H2O2 and OH contents of litchi fruit after 4 days of storage. Furthermore, litchi anthocyanins were purified by column chromatography and then H2O2 and hydroxyl radical were used to examine their degradation roles in the purified anthocyanin. It was found that the purified litchi anthocyanin was degraded markedly in the presence of H2O2 or hydroxyl radical. Increasing concentration of H2O2 or hydroxyl radical enhanced the anthocyanin degradation, of which the latter exhibited a greater effect on the anthocyanin degradation although no peak of litchi anthocyanin appeared after the treatment with 0.1% H2O2 for 10 min. This study can account for the pericarp browning of postharvest litchi fruit during storage based on the oxidative degradation of anthocyanin caused by PPO.
Keywords: Litchi; Anthocyanin; Degradation; Hydrogen peroxide; Hydroxyl radical; Browning; Fruit

Gustavo S. Garbellini, Giancarlo R. Salazar-Banda, Luis A. Avaca, Sonovoltammetric determination of toxic compounds in vegetables and fruits using diamond electrodes, Food Chemistry, Volume 116, Issue 4, 15 October 2009, Pages 1029-1035, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.068.
(http://www.sciencedirect.com/science/article/B6T6R-4VXB74H-2/2/cea2d16659eb06f0a555a5ec3e747452)
Abstract:
The direct determination of methylparathion in potato and corn extracts and its degradation product 4-nitrophenol in lemon and orange juices by ultrasound-assisted square wave voltammetry using diamond electrodes is reported here. The sonovoltammetric results for both analytes in pure water and in complex food samples showed greater sensitivity and precision and much lower limits of detection and quantification than the silent measurements. The limits of detection for methylparathion in water and corn extract were 4.86 and 10.1 [mu]g L-1, respectively, values 55% and 72% lower than those obtained by silent voltammetry. The recovery values were also very satisfactory and varied between 83.5% and 96.2% for all systems. These improvements for the sonovoltammetric methods are due to electrode surface cleaning and mass transport enhancement towards the electrode surface and proved to be a powerful tool for the detection of toxic residues in complex samples without any pre-treatment or clean-up of the matrices.
Keywords: Toxic residues; Pesticides; Food; Sonoelectroanalysis; Diamond electrode; Square wave voltammetry

Camille S. Bowen-Forbes, Vanisree Mulabagal, Yunbao Liu, Muraleedharan G. Nair, Ursolic acid analogues: non-phenolic functional food components in Jamaican raspberry fruits, Food Chemistry, Volume 116, Issue 3, 1 October 2009, Pages 633-637, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.02.075.
(http://www.sciencedirect.com/science/article/B6T6R-4VS40CM-3/2/1e2ad154df8e6ee1d9e53f4d91026d3a)
Abstract:
The Rubus genus produces numerous species that are known for their medicinal properties. Rubus rosifolius, called the red raspberry, grows wild in elevated regions in Jamaica. Phytochemical examination of the ethyl acetate extract of the fruit yielded eight compounds of the 19-[alpha]-hydroxyursane type: euscaphic acid (1), 1-[beta]-hydroxyeuscaphic acid (2), hyptatic acid B (3), 19[alpha]-hydroxyasiatic acid (4), trachelosperogenin (5), 4-epi-nigaichigoside F1 (6), nigaichigoside F1 (7), and trachelosperoside B-1 (8), as confirmed by NMR spectroscopy. Inhibition of cell proliferation by these compounds were determined by using MCF-7 (breast), SF-268 (CNS), NCI H460 (lung), HCT-116 (colon) and AGS (gastric) human tumour cells. Among the human tumour cell lines assayed, only compounds 3 and 6 displayed significant growth inhibition and was specific to colon tumour cells by 56% and 40%, respectively. These ursolic acid analogues were also tested for anti-inflammatory activity using in vitro cycloxegenase-1 (COX-1) and cycloxegenase-2 (COX-2) enzyme inhibitory assays. Compounds 1, 2 and 3 showed selective COX-1 enzyme inhibitory activity (13%, 25% and 35%) at 25 [mu]g/ml. In the lipid peroxidation (LPO) inhibitory assays, compounds 2, 4, 7 and 6 inhibited LPO by 62%, 60%, 53% and 68%, respectively, at 25 [mu]g/ml.
Keywords: Rubus rosifolius; Antioxidant; Anti-inflammatory; Tumour cell proliferation inhibition; Terpenoids

Stefania Vichi, Agusti Romero, Joan Gallardo-Chacon, Joan Tous, Elvira Lopez-Tamames, Susana Buxaderas, Volatile phenols in virgin olive oils: Influence of olive variety on their formation during fruits storage, Food Chemistry, Volume 116, Issue 3, 1 October 2009, Pages 651-656, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.02.086.
(http://www.sciencedirect.com/science/article/B6T6R-4VSB1F8-4/2/095fe1584776332f02c504e67941da30)
Abstract:
The potential significance as odorants and markers of olive fruits degradation has been recently pointed out for volatile phenols in virgin olive oil (VOO) and related to the appearance of VOO sensory defects. The few studies carried out in order to elucidate the factors affecting their formation in olive fruits or VOOs, indicated that they could be considered as analytical indices of olive fruits degradation during storage, likely reflecting the microbiological activity. In the present study, the effect of the olive variety (`Arbequina', `Arbosana' and `Leccino') on the production of volatile phenols during twelve days of storage in closed plastic bags was evaluated. The different resistance of each variety to the microbiological attach was observed during olive fruit storage, and it was reflected by the evolution of guaiacol, 4-ethylphenol and 4-ethylguaiacol, and related to free acidity values. On the contrary, a scarce dependence on the microbial growth or varietal factors was observed for 4-vinyl derivatives, which appeared more directly related to the time of olives storage. The evolution of volatile phenols found certain correspondence in the sensory characteristics of the resulting VOOs, while the rest of VOO chemical quality indices did not show major variations during fruits storage.
Keywords: Virgin olive oil; Volatile phenols; Solid phase microextraction; Off-flavor; Storage; Microbiological degradation

Sara Bastida, Francisco J. Sanchez-Muniz, Raul Olivero, Lourdes Perez-Olleros, Baltasar Ruiz-Roso, Francisco Jimenez-Colmenero, Antioxidant activity of Carob fruit extracts in cooked pork

meat systems during chilled and frozen storage, Food Chemistry, Volume 116, Issue 3, 1 October 2009, Pages 748-754, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.034.
(http://www.sciencedirect.com/science/article/B6T6R-4VV2NPX-4/2/d17ce88bb90bcc1ea49af6d5b382b1ed)
Abstract:
The purpose of this study was to evaluate the effect of adding condensed tannins in the form of non-purified (Liposterine(R)) or purified (Exxenterol(R)) extracts obtained from Carob fruit to prevent lipid cooked pork meat systems from oxidising during chilling and frozen storage. The antioxidant activity of these extracts was compared with that of [alpha]-tocopherol. Meat lipid alteration was evaluated as thiobarbituric acid reactive substances content (TBARS) and polar material-related triglyceride compounds followed by high-performance size-exclusion chromatography (HPSEC). TBARS levels were lower ($P < 0.05$) in samples containing Liposterine (LM), Exxenterol (EM), and [alpha]-tocopherol (TM) than in control sample (CM) under chilled storage. TBARS formation was similar ($P > 0.05$) for LM and EM but lower ($P < 0.05$) than for TM. Polar material increased several times in all samples, but significantly less in TM and EM than in LM. Thermal oxidation compounds determined by HPSEC were lower ($P < 0.05$) in EM than in LM or TM. The changes in polar material were proportionally smaller after six months frozen storage than after chilled storage, with Exxenterol displaying the highest antioxidant protection. Therefore Carob fruit extracts can be successfully used to reduce fat alteration in cooked pork meat at chilled and frozen temperatures.
Keywords: Meat; Pork; Carob fruit extracts; Exxenterol; Lipid oxidation; Liposterine; TBARS; Polar material

Marcus Mergenthaler, Katinka Weinberger, Matin Qaim, The food system transformation in developing countries: A disaggregate demand analysis for fruits and vegetables in Vietnam, Food Policy, Volume 34, Issue 5, October 2009, Pages 426-436, ISSN 0306-9192, DOI: 10.1016/j.foodpol.2009.03.009.
(http://www.sciencedirect.com/science/article/B6VCB-4W2M6V2-3/2/08612895132cdb3a7a162ccd1f16237c)
Abstract:
Food systems in developing countries are currently undergoing a rapid transformation towards high-value products and modern supply chains. While supply side aspects of this transformation have been analyzed previously, issues of consumer demand have received much less attention. This article analyses demand patterns for fresh fruits and vegetables in Vietnam, using household survey data and a demand systems approach. Demand for products from modern supply chains - particularly supermarkets and non-traditional imports - is highly income elastic, and the income effect is stronger than the impact of prices and supermarket penetration. This highlights the importance of considering demand side aspects when projecting future trends. Our results imply a continued restructuring of the food sector in the further process of economic development.
Keywords: Transformation of food systems; Supermarkets; Food safety; Non-traditional imports; Southeast Asia; Vietnam

Aurora Gomez-Rico, M. Desamparados Salvador, Giuseppe Fregapane, Virgin olive oil and olive fruit minor constituents as affected by irrigation management based on SWP and TDF as compared to ETc in medium-density young olive orchards (Olea europaea L. cv. Cornicabra and Morisca), Food Research International, Volume 42, Issue 8, October 2009, Pages 1067-1076, ISSN 0963-9969, DOI: 10.1016/j.foodres.2009.05.003.
(http://www.sciencedirect.com/science/article/B6T6V-4WBC1N7-5/2/bc0055df1bcb194954eb1310e353e4d1)
Abstract:

This study investigated the effect of different irrigation managements, based on the measurement of the stem water potential (SWP) and the trunk diameter fluctuations (TDF) of the olive tree, as compared to the ET-FAO methodology, with regard to the minor constituents composition of virgin olive oil (VOO) and olive fruit in two different experimental olive orchards (Olea europaea L. Cornicabra cv. and Morisca cv.). No clear relationships between the water stress integral, both seasonal and from DOY 229-277, and the oleuropein content in the drupes were found. Nevertheless, a good agreement between the content of this biophenol and the minimum SWP of the olive trees, measured from the beginning of August to the end of the irrigation season, were found (r2 = 0.88-0.95 and r2 = 0.90-0.95 in Cornicabra and Morisca cultivars, respectively). A lower minimum water potential corresponded therefore with a higher biophenol content in the drupe and consequently with a superior phenolic content in VOO. In both cultivars, the volatile compounds most affected by the water status of olive trees were hexanal, E-2-hexenal and hexan-1-ol, showing an inverse relationship with the water stress integral observed. Furthermore, it was observed that the irrigation scheduling based on the SWP measurement, with a threshold of -1.2 MPa provided VOO in both cultivars with a similar phenolic and volatile composition with regard to those obtained with the FAO treatment.
Keywords: Virgin olive oil; Olive fruit; Phenols; Volatiles; Irrigation; Water status; Stem water potential; Trunk diameter fluctuations

Hui Liu, Fusheng Chen, Hongshun Yang, Yongzhi Yao, Xiangzhe Gong, Ying Xin, Changhe Ding, Effect of calcium treatment on nanostructure of chelate-soluble pectin and physicochemical and textural properties of apricot fruits, Food Research International, Volume 42, Issue 8, October 2009, Pages 1131-1140, ISSN 0963-9969, DOI: 10.1016/j.foodres.2009.05.014.
(http://www.sciencedirect.com/science/article/B6T6V-4WD7B46-4/2/2cd5f0a4cbbe90b13601cb0410d257e3)
Abstract:
The effects of calcium and storage time on physicochemical properties and nanostructure of chelate-soluble pectin (CSP) of apricots (Prunus armeniaca L.) at 0 [degree sign]C were investigated. During the storage, the firmness did not change with the contents but consistent with the morphology changes of CSP, which were characterized by atomic force microscopy (AFM). The branching structures of CSP decreased, meanwhile, the frequencies of chains with small width (<35 nm) and lengths (<500 nm) of CSP chains increased, which showed more in the control group than in the 1% calcium treated group. Compared to the control and 3% calcium treated groups, treatment with 1% calcium delayed the changes of physicochemical properties and degradation of the depolymerization of CSP during the fruit softening. The results provided us with a way to investigate the quality indexes from structural studies of nanoscale.
Keywords: Firmness; Nanostructure; Atomic force microscopy (AFM); Apricot; Calcium

K. Nagendra Prasad, Jing Hao, John Shi, Ting Liu, Jiang Li, Xiaoyi Wei, Shengxiang Qiu, Sophia Xue, Yueming Jiang, Antioxidant and anticancer activities of high pressure-assisted extract of longan (Dimocarpus longan Lour.) fruit pericarp, Innovative Food Science & Emerging Technologies, Volume 10, Issue 4, October 2009, Pages 413-419, ISSN 1466-8564, DOI: 10.1016/j.ifset.2009.04.003.
(http://www.sciencedirect.com/science/article/B6W6D-4W2NDS3-1/2/08bb580f3ed53b8fd711b6b6ae9f83d5)
Abstract:
Longan fruit pericarp was extracted with 50% ethanol employing high pressure (500 MPa) and conventional extraction methods. Total phenolic contents of high pressure-assisted extract of longan (HPEL) and conventional extract of longan (CEL) were 20.8 and 14.6 mg gallic acid equivalents/g dry weight, respectively. Subsequently, the antioxidant activities of these extracts were analyzed employing various antioxidant model systems including 1,1-diphenyl-2-

picrylhydrazyl (DPPH) radical scavenging activity, superoxide anion radical scavenging activity, total antioxidant capacity, and lipid peroxidation inhibitory activity. In addition, anticancer activity was also tested using HepG2, A549, and SGC 7901 cancer cell lines. HPEL showed excellent antioxidant and anticancer activities and were higher than CEL. Three phenolic compounds, namely gallic acid, corilagin, and ellagic acid, were identified and quantified by external standard methods. Compared with CEL, HPEL exhibited higher extraction effectiveness in terms of higher extraction yield, higher phenolic content, and higher antioxidant and anticancer activity with shorter extraction time.Industrial relevance
This study was focused to evaluate the antioxidant and anticancer activity of longan fruit pericarp by high-pressure treatment. The high-pressure treatment provided a better way of utilizing longan fruit pericarp as a readily accessible source of the natural anticancer and antioxidant in food and pharmaceutical industry.
Keywords: Anticancer; Antioxidant activity; High-pressure extraction; Longan fruit

Mohammad Alothman, Rajeev Bhat, A.A. Karim, UV radiation-induced changes of antioxidant capacity of fresh-cut tropical fruits, Innovative Food Science & Emerging Technologies, Volume 10, Issue 4, October 2009, Pages 512-516, ISSN 1466-8564, DOI: 10.1016/j.ifset.2009.03.004.
(http://www.sciencedirect.com/science/article/B6W6D-4VWHW32-1/2/995ec8e7bdc9faabe0954a3fb49ea711)
Abstract:
The effect of ultraviolet (UV-C) treatment on total phenol, flavonoid, and vitamin C content of fresh-cut honey pineapple, banana 'pisang mas', and guava was investigated. The antioxidant capacity of the fruit also was evaluated by measuring its ferric reducing/antioxidant power (FRAP) and DPPH free radical-scavenging activity. The fresh-cut fruits were exposed to UV-C for 0, 10, 20, and 30 min. Total phenol and flavonoid contents of guava and banana increased significantly with the increase in treatment time. In pineapple, the increase in total phenol content was insignificant, but the flavonoid content increased significantly after 10 min of treatment. UV-C treatment decreased the vitamin C content of all three fruits. In fresh-cut banana, longer treatment time resulted in higher FRAP and DPPH values; these values remained stable throughout the experiment for fresh-cut pineapple. For fresh-cut guava, FRAP and DPPH values were stable until 30 min, after which a significant increase in FRAP values occurred.Industrial relevance
UV irradiation processing of fresh-cut fruits leads to increase in antioxidants, polyphenols, and flavonoids. Hence, apart from the application of UV for microbial safety at industrial levels, this novel technology can also be exploited for enhancement of health promoting compounds for benefit of consumers.
Keywords: Antioxidant; Phenols; Flavonoids; Vitamin C; Ultraviolet radiation; Fresh-cut fruit

Ruben P. Jolie, Thomas Duvetter, Ken Houben, Elke Clynen, Daniel N. Sila, Ann M. Van Loey, Marc E. Hendrickx, Carrot pectin methylesterase and its inhibitor from kiwi fruit: Study of activity, stability and inhibition, Innovative Food Science & Emerging Technologies, Volume 10, Issue 4, October 2009, Pages 601-609, ISSN 1466-8564, DOI: 10.1016/j.ifset.2009.02.003.
(http://www.sciencedirect.com/science/article/B6W6D-4VP4TMH-1/2/ec95a867eb0eb47361f941c6b88764a5)
Abstract:
Carrot pectin methylesterase (PME) and its inhibitor (PMEI) from kiwi fruit were successfully purified by affinity chromatography. Enzyme and inhibitor activity and stability and PME-PMEI complex formation, as influenced by intrinsic product factors (pH and NaCl) and extrinsic process factors (temperature and pressure), were studied. The effect of temperature- or pressure-induced denaturation of PME and PMEI on their respective activities was assessed by estimating inactivation kinetic parameters. PME inactivation obeyed first-order kinetics. The enzyme was rather heat-labile but pressure-stable. PMEI inactivation was best described by a model taking into

account a processing-stable PMEI intermediate. The behavior of PME and the PME-PMEI complex at elevated temperature or pressure in the presence of pectin was explored by following methanol formation as a function of treatment time. PME catalytic activity was stimulated up to a certain temperature or pressure level before declining. No conclusive evidence was obtained for a temperature-induced dissociation of the PME-PMEI complex, whereas high pressure exposure caused the complex to separate.Industrial relevance
PME activity control is a major point of interest in the quest of obtaining high quality plant-derived food products. The current study demonstrates that both traditional thermal processing and novel high hydrostatic pressure processing allow stimulation as well as inactivation of PME and, hence, directing the PME-catalyzed pectin hydrolysis. An alternative or additional approach to control endogenous PME activity (e.g. to obtain cloud-stable juices) is through enzyme inhibition using kiwi PMEI. In this context, pH and NaCl boundaries for application were established, the existence of a temperature- and pressure-stable PMEI intermediate was shown and the PME-PMEI complex was proven not to be dissociated at mild temperature and pressure levels. These observations endorse the possibility of inhibiting undesirable PME activity remaining after mild processing.
Keywords: Pectin methylesterase (PME); Pectin methylesterase inhibitor (PMEI); Catalytic activity; Enzyme stability; Inhibition; Thermal and high pressure processing

Bin Yang, Xuan Liu, Yanxiang Gao, Extraction optimization of bioactive compounds (crocin, geniposide and total phenolic compounds) from Gardenia (Gardenia jasminoides Ellis) fruits with response surface methodology, Innovative Food Science & Emerging Technologies, Volume 10, Issue 4, October 2009, Pages 610-615, ISSN 1466-8564, DOI: 10.1016/j.ifset.2009.03.003.
(http://www.sciencedirect.com/science/article/B6W6D-4VV2NM1-1/2/f8bd2c5a78cf85e4fe66eb175f4c9024)
Abstract:
Response surface methodology (RSM) was employed to optimize the extraction parameters of crocin, geniposide and total phenolic compounds from gardenia fruits. The effects of three independent variables, namely ethanol concentration (EtOH, %), extraction temperature ([degree sign]C) and time (min) on the yield of crocin, geniposide and total phenolic compounds were investigated. Results indicated that the data were adequately fitted into three second-order polynomial models. The independent variables, the linearity of extraction temperature and time, the quadratics of ethanol concentration and extraction time, the interactions between ethanol concentration and temperature, ethanol concentration and extraction time, as well as extraction temperature and time had a significant effect on the yield of crocin, geniposide or total phenolic compounds. The optimal extraction parameters were the EtOH of 51.3%, extraction temperature of 70.4 [degree sign]C and time of 28.6 min according to the response surface analysis. Under this condition, the yield of crocin, geniposide and total phenolic compounds was 8.41 mg/g, 109.0 mg/g and 24.97 mg CAE/g dry powder of gardenia fruits, respectively.Industrial relevance
There is a strong interest in the food industry in studying the extraction optimization of natural plants to produce higher quality products. Response surface methodology (RSM) is an effective technique for analyzing interactions among factors and optimizing the processes or products where multiple variables may influence the outputs. This work explores the extraction conditions for a natural pigment-gardenia yellow pigment by the RSM method and optimizes the extraction parameters to improve extraction yields of same main components of the natural pigment at the same time. The mathematical methods and models which can describe and predicate experimental data of the extraction would be extremely helpful in the extraction process of the natural products.
Keywords: Extraction optimization; Bioactive compounds; Gardenia fruits; Response surface methodology

Nadia Sabatini, Enzo Perri, Vincenzo Marsilio, An investigation on molecular partition of aroma compounds in fruit matrix and brine medium of fermented table olives, Innovative Food Science & Emerging Technologies, Volume 10, Issue 4, October 2009, Pages 621-626, ISSN 1466-8564, DOI: 10.1016/j.ifset.2009.05.001.
(http://www.sciencedirect.com/science/article/B6W6D-4W7RYDW-1/2/d59d93aaa3efa56ec6ab6b7ce73f35a1)
Abstract:
Aroma is considered as a quality index of olive products. Fermented olives aroma compounds are present both in the fruit matrix and in brine medium. The partition of aroma compounds between fruit matrix and brine medium is deeply different for the two and depends on several factors such as carbon chain length and/or branching, number of polar groups, sodium salt concentration, temperature, etc. In this work, an investigation on volatile compounds quali-quantitative partition in fruit matrix and in brine medium of Greek-style Carolea and Nocellara del Belice table olives has been assessed. Volatile compounds have been extracted by using headspace method for olive fruit and by solvent extraction and distillation for brine medium. Twenty-three volatile compounds in fruit matrix and fifteen aroma molecules in brine medium have been identified by Gas Chromatography and GC/Mass Spectrometry. Results showed that most volatile organic compounds had a major affinity for the fruit matrix depending both on the chemical characteristics of the molecules (chain length and branching, polar or no polar groups, etc.) and on the 'salting out' effect due to high NaCl concentration of the brine, which brought aroma compounds to hydrophobic phase of the olive fruit.Industrial relevance
The study could be potentially helpful to develop analytical methods in order to estimate the quail-quantitative composition during the fermentation process. So that it would be possible to implement automatic analytical procedures in the currently used plants for the industrial production for table olives. Furthermore, this study allow us to identify off-flavours formed by anomalous fermentation process, in order to reveal them (both in the fruit and in the brine) in premature times (just in small traces), so to obtain the fermentation process recovery.
Keywords: Olea europaea L.; Table olives; Volatile compounds; Headspace analysis; Brine; Fermentation

Li-hua Zhang, Huai-de Xu, Shun-feng Li, Effects of micronization on properties of Chaenomeles sinensis (Thouin) Koehne fruit powder, Innovative Food Science & Emerging Technologies, Volume 10, Issue 4, October 2009, Pages 633-637, ISSN 1466-8564, DOI: 10.1016/j.ifset.2009.05.010.
(http://www.sciencedirect.com/science/article/B6W6D-4WGK6PJ-1/2/552b35364e842d962212ad47ada58008)
Abstract:
Chaenomeles sinensis (Thouin) Koehne fruits were traditionally used for food and medicinal materials. With the aim of providing necessary reference about the micro-powder as ingredients in food and medicine, this study investigated the physicochemical properties and antioxidation of three C. sinensis (Thouin) Koehne fruit micro-powders, prepared by pulverizing its coarse fruit powder with planetary ball mill for different periods of time. The results demonstrated that planetary ball mill could effectively pulverize coarse powder to different micro-sizes. As milling time increased, the median diameter was significantly decreased and particle size distribution width narrowed, the angle of repose and swelling capacity improved to a different extent, oil holding capacity of micro-powder was not affected, the water holding capacity, total flavonoid content, DPPH and $NO_2^-$ radical-scavenging capacity and reducing power were decreased. The results suggested that micronize processing could improve some properties of C. sinensis (Thouin) Koehne fruit powder.Industrial relevance
The plant Chaenomeles sinensis (Thouin) Koehne is known locally as 'Guang Pi Mu Gua', one of the Chinese traditional food and drug fruits, has a golden color and with full-bodied fragrance, and

is enriched in dietary fibre, organic acid and some biologically active pentacyclic triterpene acids such as oleanolic acid and ursolic acid. Moreover, its yield was very large, e.g. the total yield has over 100,000 tons in 2006 just in Baihe County, Shaanxi, China. So it is very significant to study its processing. Recently, there has also been a rapid development in micron technology applications along with nanotechnology to develop products that explore novel properties in food and drug industries. Physical and functional properties of some Chinese traditional medicines were found to change with particle size during superfine grinding. So, we begin this research.
Keywords: Chaenomeles sinensis (Thouin) Koehne; Micronization; Particle size; Physicochemical properties; Antioxidation

Guoxiang Jiang, K. Nagendra Prasad, Yueming Jiang, Bao Yang, Yongxia Jia, Jian Sun, Extraction and structural identification of alkali-soluble polysaccharides of longan (Dimocarpus longan Lour.) fruit pericarp, Innovative Food Science & Emerging Technologies, Volume 10, Issue 4, October 2009, Pages 638-642, ISSN 1466-8564, DOI: 10.1016/j.ifset.2009.06.006.
(http://www.sciencedirect.com/science/article/B6W6D-4WNXV0D-1/2/f257808aa6f2bb380135a9ae5c280c64)
Abstract:
Two alkali-soluble polysaccharide fractions (ASPs I and II) were extracted from longan fruit pericarp in this work. The results of chemical composition indicated that ASP I and II fractions comprised mainly of polysaccharides, proteins and lignins. Four monosaccharides, namely Xyl, Ara, Glc and Gal, were identified for both ASPs I and II. Xyl was the dominant monosaccharide in the two alkali-soluble polysaccharides with relative molar percentages of >60%. It constructed the backbone in combination with Ara for both ASPs I and II. The analysis of glycosidic linkage indicated that Xyl had two linkages,-->3)-Xyl-(1--> and -->3, 4)-Xyl-(1-->. The substitution at C-4 position indicated that Xyl was of pyranose structure. The infrared spectra of ASPs I and II showed the characteristic bands at approximate 897 cm- 1 which indicated the [beta]-linkage configuration of Xyl.Industrial relevance
Hemicellulose has been suggested as an important polysaccharide with good pharmaceutical properties, including immune modulation and anti-cardiovascular diseases. In this work, alkali-soluble polysaccharides were extracted from longan fruit pericarp and fractionated. The structural characteristics were identified by gas chromatography/mass spectrometry and infrared spectrophotometry. The results will be helpful for application of hemicellulose in functional food industry.
Keywords: GC/MS; Infrared spectrum; Longan; Alkali-soluble polysaccharide

R. Moreira, F. Chenlo, M.D. Torres, Simplified algorithm for the prediction of water sorption isotherms of fruits, vegetables and legumes based upon chemical composition, Journal of Food Engineering, Volume 94, Issues 3-4, October 2009, Pages 334-343, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2009.03.026.
(http://www.sciencedirect.com/science/article/B6T8J-4W0R0G2-2/2/a22fc8b36358fcae3ca28ecc2db05cf1)
Abstract:
A simplified algorithm of prediction of water sorption isotherms for some foods was developed. This model is based on the composition of the main compounds of foods (glucose, fructose, sucrose, salt, protein, fibre and starch) and the influence of temperature was included (it was tested at 25 and 40 [degree sign]C). Reported experimental data were employed as reference to validate the developed prediction model. Sorption isotherms for apple, apricot, banana, chestnut, loquat, quince, raisin, carrot, garlic, pepper, pumpkin, turnip, potato, bean, chickpea and lupine were predicted and compared to those reported in literature. The proposed model was able to predict the presence or absence of crossing between sorption isotherms at different temperatures for the same food. Using the prediction model could be calculated equilibrium moisture content

with a determination coefficient (R2) of (>0.982), a mean relative error (E) of (<9.43%) and a standard error (ERMS) of (<0.042 kg (kg d.b.)-1).
Keywords: Water activity; Equilibrium moisture content; Food composition; Temperature

Miguel A. Cerqueira, Alvaro M. Lima, Jose A. Teixeira, Renato A. Moreira, Antonio A. Vicente, Suitability of novel galactomannans as edible coatings for tropical fruits, Journal of Food Engineering, Volume 94, Issues 3-4, October 2009, Pages 372-378, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2009.04.003.
(http://www.sciencedirect.com/science/article/B6T8J-4W32KG7-1/2/5e344422aff288885df03d73d7437ae1)
Abstract:
The main objective of this work was to determine the optimal composition of edible coatings in view of their application to extend the shelf life of several tropical fruits. Coatings constituted by galactomannans from different sources (Caesalpinia pulcherrima and Adenanthera pavonina) and glycerol were characterized as coatings for five tropical fruits: acerola (Malpighia emarginata), caja (Spondias lutea), mango (Mangifera indica), pitanga (Eugenia uniflora) and seriguela (Spondias purpurea). The surface properties of the five fruits were determined and different aqueous galactomannan solutions (0.5%, 1.0% and 1.5%) with glycerol (1.0%, 1.5% and 2.0%) were tested for their wettability on fruits. For the solutions having a better wettability, films were casted and water vapour permeability, oxygen permeability, carbon dioxide permeability, tensile strength and elongation at break were determined. Taking into account the surface and permeability properties of the obtained films, four compositions were selected as the best coatings to the studied fruits: acerola - 0.5% of A. pavonina galactomannan and 1.0% of glycerol; caja - 1.0% of A. pavonina galactomannan and 1.0% of glycerol; mango and pitanga - 1.5% of A. pavonina galactomannan and 1.0% of glycerol; and seriguela - 0.5% of C. pulcherrima galactomannan and 1.5% of glycerol. For the coating, the values of the measured properties were as follows: wettability ranged from -36.33 +/- 3.39 to -26.45 +/- 4.58 mN [middle dot] m-1; water vapour permeability ranged from 4.89 +/- 0.11 to 6.25 +/- 0.20 x 10-11 g m-1 s-1 Pa-1; oxygen permeability ranged from 0.31 +/- 0.01 to 0.99 +/- 0.13 x 10-15 g m (Pa s m2)-1; carbon dioxide permeability ranged from 28.81 +/- 3.08 to 61.19 +/- 1.44 x 10-15 g m (Pa s m2)-1; tensile strength ranged from 2.56 +/- 0.15 to 3.96 +/- 0.43 MPa; and elongation at break ranged from 28.26 +/- 4.53% to 46.36 +/- 2.29%.
Keywords: Edible coatings; Edible films; Galactomannans; Wettability; Tropical fruits

Tamar Zur, Esther Nemny-Lavy, Nikos T. Papadopoulos, David Nestel, Social interactions regulate resource utilization in a Tephritidae fruit fly, Journal of Insect Physiology, Volume 55, Issue 10, October 2009, Pages 890-897, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2009.05.013.
(http://www.sciencedirect.com/science/article/B6T3F-4WJ8D06-2/2/2d97aa3a5b5ee7509bb11c2c9918f6d2)
Abstract:
Previous studies have suggested that social interactions (e.g., the actions and reactions elicited by the interaction of co-specific individuals) induce individual fruit flies (Tephritidae) to ingest more food, especially protein-rich food. Changes in feeding behavior related to social interactions have been associated with reproduction (e.g., when different sexes are present), reproductive facilitation (e.g., when two females interact) and stress and aggression (e.g., flies of the same sex, or crowdedness). The present study investigated the effect of social interaction on the feeding, longevity and resource management of the Ethiopian fruit fly, Dacus ciliatus. Single flies and pairs of flies (of the same or different sexes) were confined to a small arena (the PUB system), in which we measured the amount of liquid food ingested daily by each fly. In addition, we sampled flies of different ages, extracted and quantified their lipid and protein contents, and related individual metabolic contents to the ingestion of a fructose and protein hydrolysate solution. Results showed that individual ingestion was significantly higher in flies maintained in pairs than in flies kept as

solitary individuals. The highest intake rates were observed for the female-female pairs. In general, females ingested significantly greater volumes than males. Lipid contents tended to decrease progressively with age in flies kept as solitary individuals, especially in female flies, while lipid levels decreased and then increased in flies maintained in pairs. Protein trends were similar, although less pronounced than the patterns observed for the lipids. The flies kept as solitary individuals lived significantly longer than those kept in pairs. A resource-management analysis points to a decreased metabolic rate in flies kept as solitary individuals, as compared to paired flies. Results are discussed in view of theories of resource management and survival strategies.
Keywords: Dacus ciliatus; Food ingestion; Lipids; Protein; Resource management

Zhengke Zhang, Donald J. Huber, Brandon M. Hurr, Jingping Rao, Delay of tomato fruit ripening in response to 1-methylcyclopropene is influenced by internal ethylene levels, Postharvest Biology and Technology, Volume 54, Issue 1, October 2009, Pages 1-8, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.06.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4WSG2RC-3/2/1d68db8d7b78a883e016ba8818f9f016)
Abstract:
Using tomato fruit as a model system, this study tested the idea that internal ethylene levels can modulate the efficacy of 1-MCP at suppressing ripening in climacteric fruits. In the first experiment, breaker-turning stage tomato (cv. Sebring) fruit were treated with gaseous 1-MCP (SmartFreshSM Quality System) under conditions (21.7 [mu]mol m-3, 516 nL L-1) affording maximum inhibition of ripening, followed by subsequent exposure to 4.07 mmol m-3 (100 [mu]L L-1) ethylene for 3 or 6 h. Fruit softening and hue angle decline in 1-MCP-treated fruit were minimally affected in response to ethylene, consistent with strong binding of 1-MCP for ethylene receptors. In contrast to sequential 1-MCP and ethylene treatments, simultaneous treatment of breaker-turning `Sebring' tomato fruit with 100 [mu]L L-1 ethylene and gaseous 1-MCP completely negated the capacity of 1-MCP to inhibit fruit softening and hue angle decline. When breaker-turning fruit were treated with 100 [mu]L L-1 ethylene for 6 h followed by exposure to aqueous 1-MCP (3.70 mmol m-3, 200 [mu]g L-1) at levels eliciting maximum inhibition of tomato ripening, sensitivity to 1-MCP was significantly reduced in the short-term (0-1 h) and recovered within 6 h to patterns characteristic of fruit receiving 3.70 mmol m-3 aqueous 1-MCP without prior exposure to ethylene. Re-sensitization was reflected in patterns of softening, climacteric ethylene and respiratory responses, hue angle decline, lycopene content and titratable acidity changes. The time required for re-sensitization to 1-MCP paralleled the time required for return of internal ethylene levels to concentrations present prior to ethylene treatment. We propose that internal ethylene levels may contribute to the divergent sensitivities of some climacteric fruits to 1-MCP applied after initiation of ripening.
Keywords: Aqueous; Internal ethylene; Lycopene; 1-Methylcyclopropene; Ripening; Softening; Tomato

Weiwei Jin, Changjie Xu, Xian Li, Bo Zhang, Ping Wang, Andrew C. Allan, Kunsong Chen, Expression of ROP/RAC GTPase genes in postharvest loquat fruit in association with senescence and cold regulated lignification, Postharvest Biology and Technology, Volume 54, Issue 1, October 2009, Pages 9-14, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.05.009.
(http://www.sciencedirect.com/science/article/B6TBJ-4WSG2RC-2/2/6646f74fe5004593c8d0bbd2c3b309a7)
Abstract:
ROP/RAC GTPases regulate various development processes and play important roles in plant defense responses. Recently, lignification or secondary cell wall formation related ROP members were reported in rice, zinnia, cotton and Eucalyptus. The present study aimed to investigate the possible association of loquat ROPs with flesh lignification under different temperatures. Four ROP cDNA fragments, EjROP1.1, EjROP1.2, EjROP2 and EjROP3, were isolated from `Luoyangqing'

(LYQ) loquat fruit, and all of them shared over 80% nucleotide identity with known ROPs from other plants. Sequence analysis revealed that EjROP1.1, EjROP2 and EjROP3 might be functional while EjROP1.2, with mutated C-terminal resulted from a 65 bp deletion in the corresponding nucleotide sequence as compared with EjROP1.1, might be dominant-negative and consequently act as a negative regulator of ROP signal transduction. Increase in expression of EjROP1.1, EjROP2 and EjROP3 was observed during first 4 or 6 d of storage at 20 [degree sign]C and was positively correlated with the increase in flesh firmness. Expression of EjROP1.2 was constantly low under 20 [degree sign]C but was quickly, within 6 h, induced under 0 [degree sign]C, and it increased by about 20 times within 24 h. The expression was induced under 5 [degree sign]C as well but not so strong as that under 0 [degree sign]C, and transfer of fruit from 5 [degree sign]C to 0 [degree sign]C re-stimulated the expression. The possible roles of EjROPs played during senescence and cold regulated lignification was discussed, and the simultaneous increase in the expression of three functional EjROPs and the negative regulator EjROP1.2 was suggested to be important for maintaining a ROP rheostat to protect cells from excessive lignification. To our knowledge, this is the first study on a dominant-negative ROP resulted from a deletion mutation, and a ROP responded to low temperature.
Keywords: Chilling injury; Flesh lignification; Loquat; Low temperature conditioning (LTC); ROP/RAC GTPases

Swarup Roy Choudhury, Sujit Roy, Dibyendu N. Sengupta, A comparative study of cultivar differences in sucrose phosphate synthase gene expression and sucrose formation during banana fruit ripening, Postharvest Biology and Technology, Volume 54, Issue 1, October 2009, Pages 15-24, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.05.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4WS222R-1/2/d08f4e3b0d6a80ee55e09ff2681200e3)
Abstract:
Sucrose phosphate synthase (SPS) (E.C.2.4.1.14) is the key enzyme for sucrose formation in banana. A comparative analysis of expression profiles of SPS was carried out in association with sucrose metabolism patterns during fruit ripening in three banana cultivars, Cavendish (AAA), Kanthali (AB) and Monthan (AAB). Analysis of the transcript and protein accumulation patterns of the SPS gene during ripening revealed differential timing in expression of the gene which correlated well with variation in sucrose metabolism patterns in the three cultivars. The expression levels of SPS increased considerably during early ripening in Cavendish after exogenous application of ethylene, while in Kanthali ethylene treatment only moderately increased SPS expression during postharvest ripening. In Monthan, expression of SPS was very low throughout ripening and ethylene treatment did not stimulate the expression of the gene in this cultivar. Analysis of a promoter fragment of SPS in the three cultivars revealed a putative reverse GCC-box ERE motif. DNA-protein interaction studies demonstrated the role of this regulatory element in differential transcriptional regulation of SPS. Overall our results provide information about sucrose metabolism patterns at the physiological and molecular levels during fruit ripening in three natural banana cultivars.
Keywords: Ethylene; Ethylene responsive element; Promoter; Sucrose; Sucrose phosphate synthase

Corrado Costa, Paolo Menesatti, Graziella Paglia, Federico Pallottino, Jacopo Aguzzi, Valentina Rimatori, Giuseppe Russo, Santo Recupero, Giuseppe Reforgiato Recupero, Quantitative evaluation of Tarocco sweet orange fruit shape using optoelectronic elliptic Fourier based analysis, Postharvest Biology and Technology, Volume 54, Issue 1, October 2009, Pages 38-47, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.05.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4WS85T5-1/2/b48eea85e17c34bf01cf5cb028e198f6)

Abstract:
Blood orange cultivars of the sweet orange [Citrus sinensis (L.) Osbeck] differ from the common sweet orange group (Valencia Late, Washington navel, Navelina) by the presence in the flesh and sometimes in the rind, of red anthocyanin pigments. Among blood orange varieties, Tarocco is the most variable due to its particular characteristics. The presence of several Tarocco varieties, often characterized by similar maturation periods, necessitates accurate postharvest fruit evaluation, particularly appearance, since this is a primary criterion of consumer preference. In this work a total of 929 fruit belonging to 17 different Tarocco genotypes were analyzed. Optoelectronic techniques were used to discriminate among fruit shapes using elliptic Fourier analysis (EFA) to analyse fruit lateral shapes. Fruit shape for different genotypes was classified according to the IPGRI e Citrus Industry classification. The efficiency of these methods was tested by reclassifying fruit shape typologies by k-means analysis. We also computed the best number of k (4) by implementing a suited script in MatLab. Results were screened by multivariate classification techniques (i.e., PSLDA) in order to evaluate the efficiency of the group classifications. The combined EFA and k-means analysis increased the efficiency of genotype classification based on fruit shape in comparison with reported descriptive methods. For example, comparing the two models with 5 groups (Citrus Industry and k-means-5), the percentage of correct classification in the independent test dataset was higher in the k-means-5 model (respectively, 46.6% vs. 26.0% compared to a random probability of classification of 20%). EFA could measure single fruit shape allowing the comparison of their conformity within a standard of reference. The results set the basis for a shape description of different Tarocco varieties based on quantitative morphological statistics, a practice that, until now, has been carried out exclusively in a descriptive fashion. Consequently, our work represents the first discrimination of genetically different cultivars of the same species based on fruit shape.
Keywords: Citrus sinensis; Image analysis; Morphometric shape analysis; Multivariate discriminant analysis; Elliptic Fourier analysis (EFA)

Kazufumi Zushi, Naotaka Matsuzoe, Masaharu Kitano, Developmental and tissue-specific changes in oxidative parameters and antioxidant systems in tomato fruits grown under salt stress, Scientia Horticulturae, Volume 122, Issue 3, 1 October 2009, Pages 362-368, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.06.001.
(http://www.sciencedirect.com/science/article/B6TC3-4WMD2NR-1/2/801cf8c7d1169e86faea42146b09d75f)
Abstract:
In tomato plants, salt stress has been induced to improve the quality of fruit. In general, plants under salt stress produce reactive oxygen species (ROS). Plants have their own ROS scavenging systems (antioxidant systems). In tomato plants, salt-induced changes in antioxidant systems have been examined extensively in leaves and roots; however, detailed information about salt-stressed fruits is not available. We examined the salt-induced changes in the antioxidant systems of the pericarp (containing epidermis) and pulp (containing seeds, placenta, and locule) during fruit ripening. Salt treatments were applied by adding 100 mM NaCl to the nutrient solution. In the pericarp and pulp, lipid peroxidation and hydrogen peroxide content were not increased by salt stress during ripening, indicating the absence of salt-induced oxidative stress. In the pericarp, the activities of superoxide dismutase (EC 1.15.1.1) and ascorbate (ASA)-glutathione (GSH) cycle-related enzymes increased with salt stress at the turning stage. Thus, at the turning stage, the antioxidant system may contribute to the enzymatic reaction involved ASA-GSH cycle. However, during the red and over-ripe fruit stages, salt stress produces little effect on antioxidant enzymes. In addition, the concentrations of antioxidants, such as the reduced form of ASA and GSH, increased during ripening in the control fruit, but those in the salt-stressed fruit remained unchanged. Therefore, the antioxidant system may contribute to the nonenzymatic reactions such as ASA and GSH taking place during the red and over-ripe fruit stages. In contrast, in the pulp, salt

stress produces little effect on antioxidants and antioxidant enzymes. These results indicate that the salt-stressed fruit has protection mechanisms against salt-induced oxidative stress during ripening in both the pericarp and pulp. Salt-induced changes in antioxidant systems differed between the pericarp and pulp.
Keywords: Antioxidant enzyme; Ascorbic acid; Glutathione; Ripening; Salt stress; Tomato

Doron Schneider, Martin Goldway, Nitzan Rotman, Itzhak Adato, Raphael A. Stern, Cross-pollination improves `Orri' mandarin fruit yield, Scientia Horticulturae, Volume 122, Issue 3, 1 October 2009, Pages 380-384, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.06.009.
(http://www.sciencedirect.com/science/article/B6TC3-4WN1YJK-3/2/1430074e58f40eab001f103cb526f5e9)
Abstract:
`Orri', a selection of `Orha' mandarin [Temple (Citrus temple hort. ex Y. Tanaka) x Dancy (Citrus tangerina hort. ex Tanaka)], is a new high-quality Israeli mandarin which, in the last decade, has become one of the leading varieties in Israel. `Orri' has an excellent taste, the rind is deep orange in color and easily removed, and it contains few or no seeds. However, `Orri' grown in Israel suffers from inadequate yield and no published studies have yet addressed this problem. In the present study we determined that `Orri' productivity depended on conditions being favorable to cross-pollination. Under cross-pollination conditions a positive correlation (R2 = 0.97) was found between yield per tree and number of fruits per tree, and more than 90% of the fruits exceeded 60 mm: the most profitable size range. These data suggest that the number of fruits per tree, and not fruit size, is the limiting factor for yield improvement in `Orri' orchards. Studying seed set showed that `Michal' mandarin (Citrus reticulata Blanco) is a compatible pollenizer for `Orri' flowers: the number of seeds per `Orri' fruit increased as the distance from `Michal' trees decreased. The present study demonstrated that cross-pollination of `Orri' resulted in yield improvement, yet at the price of increased seed set.
Keywords: Citrus; Cross-pollination; Mandarin; Seediness; Yield

Adolfo Rosati, Marija Zipancic, Silvia Caporali, Giuseppe Padula, Fruit weight is related to ovary weight in olive (Olea europaea L.), Scientia Horticulturae, Volume 122, Issue 3, 1 October 2009, Pages 399-403, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.05.034.
(http://www.sciencedirect.com/science/article/B6TC3-4WP4BKD-3/2/1166a85e2d446dd83c49fa0bdd0b01dd)
Abstract:
Fruit size is an important parameter both for scientific understanding and for commercial purposes. In many species, mature fruit size is often related to floral ovary size, but no literature exists in olive that demonstrates such a relationship. Previous work suggests that olive cultivars with different fruit sizes have similar cell number and size in the ovary transectional area, but ovary and fruit dry weight was not measured. In the present study, ovary dry weight and fruit dry weight during the whole fruit development season until harvest were measured in olive cultivars with different fruit size, over three years. Flower dry weight was also measured. Fruit weight at harvest was strongly correlated to ovary weight at bloom, both in single-year data and when data from three years were pooled. Flower dry weight, excluding the ovary, was also correlated to ovary dry weight. Ovary dry weight was strongly correlated not only to the fruit dry weight at maturity, but also at any date during fruit development. The mature fruit/ovary dry weight ratio ranged between 1000 and 4000 among cultivars, but was not correlated to the fruit dry weight at maturity. These results suggest that, in olive, fruit weight is genetically controlled through the ovary weight at bloom. This knowledge may have implications in the understanding of fruit set and source-sink relationships in olive.
Keywords: Ovary; Fruit; Flower; Size; Weight; Olea europaea; Genetic control

Yu-Xin Yao, Ming Li, Zhi Liu, Chun-Xiang You, Dong-Mei Wang, Heng Zhai, Yu-Jin Hao, Molecular cloning of three malic acid related genes MdPEPC, MdVHA-A, MdcyME and their expression analysis in apple fruits, Scientia Horticulturae, Volume 122, Issue 3, 1 October 2009, Pages 404-408, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.05.033.
(http://www.sciencedirect.com/science/article/B6TC3-4WN8HCP-1/2/26e50c1d25ce5c6686530566e7a79898)
Abstract:
Malic acid (MA) in apple fruit is the predominant organic acid associated with taste, flavour and juice quality. In this study, three full-length cDNAs of MdPEPC, MdVHA-A and MdcyME were cloned from apple fruit. They encoded cytosolic phosphoenolpyruvate carboxylase (MdPEPC, EC 4.1.1.31), subunit A of vacuolar H+-ATPase (MdVHA, EC 3.6.1.3) and cytosolic NADP-dependent malic enzyme (MdcyME, EC 1.1.1.40), respectively, for MA synthesis, transportation and degradation. Real-time quantitative PCR discovered that the expression levels of three genes varied with development stages, and that their expression patterns differed between low acid (LA) and high acid (HA) genotypes. In addition, enzyme activity assay showed that PEPC and VHA contributed positively to MA accumulation during fruit development both in LA and HA, while cyME did negatively.
Keywords: Apple; Malic acid; Enzyme; Gene cloning; Expression analysis

M. Juan, C. Mesejo, A. Martinez-Fuentes, C. Reig, M. Agusti, Branch scoring encourages fruit development and climacteric in persimmon, Scientia Horticulturae, Volume 122, Issue 3, 1 October 2009, Pages 497-500, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.06.003.
(http://www.sciencedirect.com/science/article/B6TC3-4WKS6K8-4/2/edf9e0545fd1d61ff18372254d4b02ee)
Abstract:
Branch scoring of `Rojo Brillante' persimmon (Diospyros kaki) increased fruit size at harvest and caused a significant shift in the distribution of fruit diameters to the larger sizes, the response magnitude depending on the date of scoring. Scoring at the 75-77 growth stage of the BBCH-scale encouraged the development of fruit which grew faster, reached commercial colour, ripening and flesh softness earlier, and therefore was harvested earlier. Although fruit weight was significantly increased by scoring, the number of fruit was not modified and there was not a significant increase in yield. Fruit from trees scored at the onset of cell enlargement stage initiate ethylene production before fruit from unscored trees. Scoring did not modify following yield.
Keywords: Ethylene; Fruit size; Fruit ripening; Girdling

K.F. Bangerth, Floral induction in mature, perennial angiosperm fruit trees: Similarities and discrepancies with annual/biennial plants and the involvement of plant hormones, Scientia Horticulturae, Volume 122, Issue 2, 17 September 2009, Pages 153-163, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.06.014.
(http://www.sciencedirect.com/science/article/B6TC3-4WPHRJV-2/2/5b036c022d600a174407557ec535806b)
Abstract:
Floral induction (FI) in perennial fruit trees is distinct from that of annual/biennial (a/b) plants because it is a quantitative process with a significant proportion of the above-ground meristems remaining vegetative, while in a/b-plants all the meristems are induced at once, which terminates the life of the plant. Currently, regulatory mechanisms of floral induction in perennial angiosperm trees are inadequately described, particularly with respect to physiological/molecular mechanisms that prevent the partial or total inaccessibility of genes or meristems for reacting to particular floral promoters, one of the most important prerequisites of perenniality. Epigenetic modifications, which have been studied almost exclusively in a/b-plants and not in perennial trees, are a likely possibility for achieving this 'perenniality' of trees and are therefore described in some detail in the

following review. Due to the lack of research on this phenomenon, the description of this paragraph is largely speculative.
In trees, these epigenetic modifications as well as other regulatory events require endogenous long-distance signals (LDS) due to their physical size and the much larger distances that often separate receptive buds from the origin of the LDS participating in FI. Plant hormones are the most likely candidates as LDS, and due to their general significance in plant physiology, they are given particular attention in this review. Gibberellins and the polar transport of indoleacetic acid are presented as possible inhibitors, and cytokinins are examined as being possible promoters of floral induction in angiosperm trees, whereas hormones that are less likely to be involved in FI are only mentioned briefly.
Finally, a method to induce out-of-season flowering for mango and longan is presented. This 'out-of-season' technology provides an exceptional possibility to study hormonal changes that occur after, e.g., natural low temperature vs. artificial, e.g., paclobutrazol- or potassium chlorate-induced FI.
Keywords: Qualitative vs. quantitative floral induction; Histone and chromatin modification; Long-distance hormonal signals; Out-of-season floral induction

Johannes F.J. Max, Walter J. Horst, Urbanus N. Mutwiwa, Hans-Jurgen Tantau, Effects of greenhouse cooling method on growth, fruit yield and quality of tomato (Solanum lycopersicum L.) in a tropical climate, Scientia Horticulturae, Volume 122, Issue 2, 17 September 2009, Pages 179-186, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.05.007.
(http://www.sciencedirect.com/science/article/B6TC3-4WHDHY9-1/2/22c68a1949c746019b1107d0e21d83e2)
Abstract:
A tomato (Solanum lycopersicum L.) crop was grown in four greenhouses during the dry season 2005/06 in Central Thailand. Sidewalls and roof vents of two greenhouses were covered with nets and these greenhouses were mechanically ventilated when air temperature exceeded 30 [degree sign]C (NET). The other two greenhouses were covered with polyethylene film and equipped with a fan and pad cooling system (EVAP). Overall mean air temperature was significantly reduced by 2.6 and 3.2 [degree sign]C (day) and 1.2 and 2.3 [degree sign]C (night) in EVAP as compared to NET and outside air, respectively. Temperature maxima in EVAP averaged about 4 [degree sign]C lower than in NET and outside. The relative humidity was around 20 and 30% (day) and 10 and 15% (night) higher in EVAP than in NET or outside, respectively. Vapour pressure deficit averaged 0.25 kPa in EVAP, 1.03 kPa in NET and 1.48 kPa outside. The crop water-consumption was significantly lower in EVAP (1.2) than in NET (1.8 L plant-1 day-1), which is ascribed to reduced transpiration in EVAP. Total fruit yield was similar in NET (6.4 kg plant-1) and EVAP (6.3 kg plant-1). The quantity of undersized (mostly parthenocarpic) and blossom-end rot (BER)-affected fruits was reduced in EVAP. However, the proportion of marketable yield was significantly higher in NET (4.5 kg plant-1) than in EVAP (3.8 kg plant-1), owing largely to an increased incidence of fruit cracking (FC) in EVAP. Higher FC but lower BER incidence coincided with higher fresh weight and Ca concentration in the fruits in EVAP. It is concluded that in regions with high atmospheric relative humidity evaporative cooling without technical modifications allowing dehumidification will not improve protected tomato production.
Keywords: Fan and pad cooling; Natural ventilation; Heat stress; Blossom-end rot; Fruit cracking; Water balance; Nutrient uptake; Calcium deficiency

Cevdet Nergiz, Pelin Gunc Ergonul, Organic acid content and composition of the olive fruits during ripening and its relationship with oil and sugar, Scientia Horticulturae, Volume 122, Issue 2, 17 September 2009, Pages 216-220, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.05.011.
(http://www.sciencedirect.com/science/article/B6TC3-4WGJKSJ-1/2/3dfa3dd7e1073c60a883fe9d85f224f3)

Abstract:
In this work, the contents of oil, sugar and organic acids of olive fruit samples (Domat, Memecik and Uslu) were determined by using HPLC at different maturation stages. Olive fruit samples presented a common organic acid profile, composed of four constituents: oxalic, citric, malic and succunic acids. Total organic acid content of Domat variety was found to be 4787.1 +/- 4.53 mg/100 g in January. Memecik variety had the highest value at the beginning of the ripening period (6385.08 +/- 4.90 mg/100 g). The amount of organic acid in Uslu variety reached up to the value of 10942.5 +/- 30.41 mg/100 g. The results were evaluated statistically to determine relationship between the oil, sugar and organic acid content in three olive varieties during maturation. A positive correlation was found between the total sugar and organic acid ($r = 0.54$, $p < 0.01$) whereas a low positive correlation was observed between the contents of oil and total organic acids ($r = 0.46$, $p < 0.05$) in olive varieties.
Keywords: HPLC; Olive fruit; Organic acids; Oil; Sugar; Ripening

R. Sesmero, J.R. Mitchell, J.A. Mercado, M.A. Quesada, Rheological characterisation of juices obtained from transgenic pectate lyase-silenced strawberry fruits, Food Chemistry, Volume 116, Issue 2, 15 September 2009, Pages 426-432, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.02.058.
(http://www.sciencedirect.com/science/article/B6T6R-4VPD6TR-9/2/50912ed8d012b412bbad894f96bad382)
Abstract:
The present study is focused on the characteristics of juice made from transgenic strawberry fruits with a 90% reduction on pectate lyase mRNA expression. No differences of soluble solids, pH or solid volume fraction were found between control and transgenic juices. Total sugar content of the serum fraction was also similar but a slightly higher content of large molecular mass polyuronides was observed in transgenic juice. The solid fraction of transgenic juice contained larger particles than did the control. The dynamic shear analysis of the juices showed higher values of the storage (G') and loss (G") moduli versus strain for the transgenic samples, with G' over G" within the linear viscoelastic range (LVR). For both samples, G' and G" increased with frequency, showing a weak-gel response, whereas complex viscosity ([eta]*) decreased with frequency, denoting a shear-thinning behaviour. Overall, the transgenic juices showed higher values of G', G" and complex viscosity than did the control within the frequency range assayed and a more solid-like character. These results suggest that effects of pectate lyase-silencing in tissue integrity increased the content of large particles in juice, its viscoelastic properties being modified and its viscosity increased.
Keywords: Fragaria x ananassa; Fruit softening; Fruit processing; Pectin; Transgenic plants

Shixin Deng, Brett J. West, C. Jarakae Jensen, Simla Basar, Johannes Westendorf, Development and validation of an RP-HPLC method for the analysis of anthraquinones in noni fruits and leaves, Food Chemistry, Volume 116, Issue 2, 15 September 2009, Pages 505-508, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.02.070.
(http://www.sciencedirect.com/science/article/B6T6R-4VR9FHR-2/2/d8f106f5c085b1eed7358f5b01ecd028)
Abstract:
Noni fruits and leaves, which have been used traditionally for thousands of years to improve health, are increasingly attracting the interests of consumers and researchers. A selective and validated HPLC method for the analysis of anthraquinones in noni fruits and leaves has been developed and is reported for the first time. Four anthraquinones, 5,15-dimethylmorindol (5,15-DMM, 1), lucidin (2), and alizarin (3), and rubiadin (4) are examined. The limits of detection of 1-4 were in the range of 1.0 and 20.0 ng. Intra- and inter-day precisions of 1 were determined to be less than 5.3%. The accuracy, expressed as the percent recovery of 1 after spiking at three

concentrations ranged from 83.0% to 93.3%. Further, the linear correlation coefficient was >0.999, within the range of concentration investigated. The 5,15-DMM content of noni fruit puree and noni leaf infusion are between 0.186 to 0.202 [mu]g/mL (ppm), and 5.82 to 20.93 ng/mL (ppb), respectively. Lucidin, rubiadin and alizarin were not detected in any of the noni samples. The presence of only trace amounts in the noni fruits and leaves may help to eliminate safety concerns regarding anthraquinone contents.
Keywords: Noni; Morinda citrifolia L.; Anthraquinones; HPLC-UV; Quantitation

A. Rodriguez-Bernaldo de Quiros, M. Fernandez-Arias, J. Lopez-Hernandez, A screening method for the determination of ascorbic acid in fruit juices and soft drinks, Food Chemistry, Volume 116, Issue 2, 15 September 2009, Pages 509-512, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.013.
(http://www.sciencedirect.com/science/article/B6T6R-4VT14M6-9/2/b8d7b65c13c04cb1f0aab0755640fa5b)
Abstract:
A simple and rapid liquid chromatographic method based on a new stationary phase Teknokroma, Tr-010065 Mediterranea sea18 (15 cm x 0.4 cm, id 3 [mu]m), to determine ascorbic acid in beverages is reported. With the proposed method the samples were analysed by direct injection without a previous treatment. The total analysis time does not exceed 6 min. The method showed a good repeatability (RSD < 2%: n = 6) and an excellent sensitivity (LOD = 0.01 mg/l). Seventeen samples were analysed, including fruit juices, soft drinks and isotonic beverages. Ascorbic acid contents ranged from 6.6 to 840 mg/l. The ascorbic acid stability in some beverages during their shelf-life was also evaluated. Degradation of about 54% was observed in a tea drink.
Keywords: Ascorbic acid; HPLC; Fruit juices and soft drinks; Ascorbic acid degradation

Gunter G.C. Kuhnle, Caterina Dell'Aquila, Sue M. Aspinall, Shirley A. Runswick, Annemiek M.C.P. Joosen, Angela A. Mulligan, Sheila A. Bingham, Phytoestrogen content of fruits and vegetables commonly consumed in the UK based on LC-MS and 13C-labelled standards, Food Chemistry, Volume 116, Issue 2, 15 September 2009, Pages 542-554, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.002.
(http://www.sciencedirect.com/science/article/B6T6R-4VT0X8V-5/2/010c974871dd28313bd9b0223e9f511d)
Abstract:
Phytoestrogens are a group of non-steroidal secondary plant metabolites with structural and functional similarity to 17[beta]-oestradiol. Urinary and plasma phytoestrogens have been used as biomarkers for dietary intake, however, this is often not possible in large epidemiological studies or to assess general exposure in free-living individuals. Accurate information about dietary phytoestrogens is therefore important but there is very limited data concerning food contents. In this study, we analysed the phytoestrogen (isoflavone, lignan and coumestrol) content in more than 240 different foods based on fresh and processed fruits and vegetables using a newly developed sensitive method based on LC-MS incorporating 13C3-labelled standards. Phytoestrogens were detected in all foods analysed with a median content of 20 [mu]g/100 g wet weight (isoflavones: 2 [mu]g/100 g; lignans 12 [mu]g/100 g). Most foods contained less than 100 [mu]g/100 g, however, 5% of foods analysed contained more than 400 [mu]g/100 g, in particular soya-based foods and other legumes. The results published here will contribute to databases of dietary phytoestrogen content and allow the more accurate determination of phytoestrogen exposure in free-living individuals.
Keywords: Phytoestrogens; Fruits; Vegetables; Lignans; Isoflavones; Coumestrol; LC/MS

N.S. Al-Zoreky, Antimicrobial activity of pomegranate (Punica granatum L.) fruit peels, International Journal of Food Microbiology, Volume 134, Issue 3, 15 September 2009, Pages 244-248, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2009.07.002.
(http://www.sciencedirect.com/science/article/B6T7K-4WRM6H5-1/2/9615ea11a1816fede9ee1feb4272ad22)
Abstract:
Food-borne diseases such as listeriosis and diseases caused by the emergence of multi-drug resistant pathogens (e.g. Staphylococcus aureus) are globally recognized as environmental hazards to the food supply and human health. Natural inhibitors for pathogenic microorganisms have been explored in many plants. The antimicrobial activity against some food-borne pathogens by various extracts from pomegranate fruit peels was evaluated using both in vitro (agar diffusion) and in situ (food) methods. The 80% methanolic extract of peels (WME) was a potent inhibitor for Listeria monocytogenes, S. aureus, Escherichia coli and Yersinia enterocolitica. The minimum inhibitory concentration (MIC) of WME against Salmonella enteritidis was the highest (4 mg/ml). WME afforded > 1 log10 reduction of L. monocytogenes in food (fish) during storage at 4 [degree sign]C. Phytochemical analyses revealed the presence of active inhibitors in peels, including phenolics and flavonoids. The activity of WME was related to its higher content (262.5 mg/g) of total phenolics.
Keywords: Antimicrobial activity; Pomegranate; Food-borne pathogens; L. monocytogenes; Phenolics; fish

Eike Luedeling, Minghua Zhang, Volker Luedeling, Evan H. Girvetz, Sensitivity of winter chill models for fruit and nut trees to climatic changes expected in California's Central Valley, Agriculture, Ecosystems & Environment, Volume 133, Issues 1-2, September 2009, Pages 23-31, ISSN 0167-8809, DOI: 10.1016/j.agee.2009.04.016.
(http://www.sciencedirect.com/science/article/B6T3Y-4WD10SY-1/2/91140ad6a74ac40c009272a9b61cf1f7)
Abstract:
Many fruit and nut crops require cold temperatures in winter to break dormancy. Quantifying this chilling requirement and selecting appropriate cultivars for the climate of a growing region is crucial for successful cultivation of such crops. Several models exist to quantify winter chill, and each growing region uses a model that has been shown to perform well under local climatic conditions. We tested the sensitivity of four commonly used chilling models to projected climatic change likely to affect fruit and nut production in the near future.
For six sites in California's Central Valley, we generated 100 years of synthetic hourly weather records, representing climatic conditions in 1950, 2000 and projected temperatures in 2041-2060 derived from three IPCC-AR4 General Circulation Models (GCMs; CSIRO, HadCM3 and MIROC; A2 greenhouse gas emissions scenario). Mean winter chill for each site and year was calculated using the Chilling Hours, Utah, Positive Utah and Dynamic models.
All chilling models predicted substantial decreases in winter chill at all sites, but the extent of these decreases varied depending on the model used. Across all sites between 1950 and 2050, mean chilling was predicted to decrease by 33% (Chilling Hours), 26% (Utah Model), 16% (Dynamic Model) and 14% (Positive Utah Model).
Research efforts are needed to identify the most appropriate chilling model for preparing fruit and nut growers for the imminent effects of climate change.
Keywords: California; Chilling Hours; Chilling requirement; Dynamic Model; Fruit Tree; Utah Model; Winter chill

Heather L. Auld, David Punzalan, Jean-Guy J. Godin, Howard D. Rundle, Do female fruit flies (Drosophila serrata) copy the mate choice of others?, Behavioural Processes, Volume 82, Issue 1, September 2009, Pages 78-80, ISSN 0376-6357, DOI: 10.1016/j.beproc.2009.03.004.

(http://www.sciencedirect.com/science/article/B6T2J-4VWHW1G-1/2/41d5ad7326517b26047894aeb27155ea)
Abstract:
Female mate-choice copying is a social learning phenomenon whereby a female's observation of a successful sexual interaction between a male and another female increases her likelihood of subsequently preferring that male. Although mate-choice copying has been documented in several vertebrate species, to our knowledge it has not yet been investigated in insects. Here, we investigated whether female mate-choice copying occurs in the fruit fly Drosophila serrata, a model system for the study of mate preferences and the sexual selection they generate. We used two complementary experiments in which focal females were given a choice between two males that differed in either their apparent (as determined visually by the focal female) or actual recent mating success. Mate-choice copying was evaluated by testing whether focal females mated more frequently with the `preferred' male as opposed to the other male. In both experiments, however, we found no evidence for mate-choice copying. We discuss possible reasons for the apparent absence of mate-choice copying in this species.
Keywords: Drosophila serrata; Mate-choice copying; Mate preferences; Sexual selection; Social learning

R.R. Sharma, Dinesh Singh, Rajbir Singh, Biological control of postharvest diseases of fruits and vegetables by microbial antagonists: A review, Biological Control, Volume 50, Issue 3, September 2009, Pages 205-221, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2009.05.001.
(http://www.sciencedirect.com/science/article/B6WBP-4W85MCC-1/2/5c4dbef611a8af575bde26cda4147dec)
Abstract:
Postharvest diseases cause considerable losses to harvested fruits and vegetables during transportation and storage. Synthetic fungicides are primarily used to control postharvest decay loss. However, the recent trend is shifting toward safer and more eco-friendly alternatives for the control of postharvest decays. Of various biological approaches, the use of antagonistic microorganisms is becoming popular throughout the world. Several postharvest diseases can now be controlled by microbial antagonists. Although the mechanism(s) by which microbial antagonists suppress the postharvest diseases is still unknown, competition for nutrients and space is most widely accepted mechanism of their action. In addition, production of antibiotics, direct parasitism, and possibly induced resistance in the harvested commodity are other modes of their actions by which they suppress the activity of postharvest pathogens in fruits and vegetables. Microbial antagonists are applied either before or after harvest, but postharvest applications are more effective than preharvest applications. Mixed cultures of the microbial antagonists appear to provide better control of postharvest diseases over individual cultures or strains. Similarly, the efficacy of the microbial antagonist(s) can be enhanced if they are used with low doses of fungicides, salt additives, and physical treatments like hot water dips, irradiation with ultraviolet light etc. At the international level, different microbial antagonists like Debaryomyces hansenii Lodder & Krejer-van Rij, Cryptococcus laurentii Kufferath & Skinner, Bacillus subtilis (Ehrenberg) Cohn, and Trichoderma harzianum Rifai, are being used. Biocontrol products like Aspire, BioSave, and Shemer etc., have also been developed and registered. Although the results of this technology are encouraging, we need to continue to explore potential uses on the commercial scale in different corners of the world.
Keywords: Bioagents; Biocontrol; Physical treatments; Postharvest decay; Salt additives

Hilde H. Wijngaard, Christian Ro[ss]le, Nigel Brunton, A survey of Irish fruit and vegetable waste and by-products as a source of polyphenolic antioxidants, Food Chemistry, Volume 116, Issue 1, 1 September 2009, Pages 202-207, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.02.033.

(http://www.sciencedirect.com/science/article/B6T6R-4VP4TPY-2/2/1b963c35100425236f77c2ace4f65929)
Abstract:
In this study, fruit and vegetable by-product and waste sources in Ireland were tested for their antioxidant activity and polyphenol content. The highest levels of antioxidants measured by both ferric reducing antioxidant power (FRAP) and diphenyl-picrylhydrazyl (DPPH) assays, were detected in whole kiwifruit. Of the vegetable by-products, broccoli stems showed the best antioxidant potential. The level of polyphenols as assessed by the Folin-Ciocalteu Reagent (FCR) was significantly correlated with the level of polyphenols by HPLC-DAD (r = 0.93). The level of polyphenols assessed by HPLC-DAD was not significantly correlated with the antioxidant assays. Apple pomace and vegetable by-products were found to be good sources of both polyphenols and antioxidants and due to their abundance may be exploitable resources to use as food ingredients.
Keywords: Fruits waste; Vegetable by-products; Antioxidant activity; Polyphenols; HPLC-DAD; FRAP; DPPH; Folin-Ciocalteu

Faouzi Sakouhi, Christelle Absalon, Khaled Sebei, Eric Fouquet, Sadok Boukhchina, Habib Kallel, Gas chromatographic-mass spectrometric characterisation of triterpene alcohols and monomethylsterols in developing Olea europaea L. fruits, Food Chemistry, Volume 116, Issue 1, 1 September 2009, Pages 345-350, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.01.094.
(http://www.sciencedirect.com/science/article/B6T6R-4VJBTVT-5/2/e2c3faa086a6d943703fdfd7bceaa446)
Abstract:
Five triterpene alcohols and four 4-monomethylsterols were identified by GC-MS during the ripening of Picholine olive. The quantitative characterisation of these compounds was performed using GC-FID. The results showed that the maximum level of total triterpene alcohols (263.68 mg/100 g oil) was reached at 26th week after the flowering date (WAF) of olive; whilst the highest level of total 4-monomethylsterols (234 mg/100 g oil) was attained at 24th WAF of fruit. The percentage of these two classes represented 20-33% of total phytosterols during olive maturity. 24-Methylene cycloartenol (12-207 mg/100 g oil) and cycloartenol (27-198 mg/100 g oil) were the predominant triterpene alcohols during the ripening of Picholine olive; whereas citrostadienol (30-161 mg/100 g oil) and cycloeucalenol (11-74 mg/100 g oil) were the main 4-monomethylsterol compounds followed by obtusifoliol and gramisterol. [beta]-Amyrin, [delta]-amyrin and traroxerol were less present in Picholine olive and they accounted for 14% of total triterpene alcohols at complete maturity of fruit. The level of these methylsterols was overwhelmed by the amount of 4-desmethylsterols at each stage of Picholine olive maturity.
Keywords: Triterpene alcohols; 4-Monomethylsterols; Picholine olives; Characterisation; Ripening

Aikaterini Termentzi, Maria Zervou, Eugene Kokkalou, Isolation and structure elucidation of novel phenolic constituents from Sorbus domestica fruits, Food Chemistry, Volume 116, Issue 1, 1 September 2009, Pages 371-381, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.02.019.
(http://www.sciencedirect.com/science/article/B6T6R-4VM9KB6-2/2/b21af790e48e0e33b7a0ca73867462ce)
Abstract:
In the framework of the detailed phytochemical analysis of Sorbus domestica fruits at several maturity stages and additively to the phenolic compounds elucidated by LC-DAD-MS (ESI+), ten more, novel phenolic compounds were isolated after preparative work and their structure elucidation was achieved with UV-vis, NMR (1H, 13C, COSY, HSQC, HMBC, NOESY, TOCSY, ROESY), LC-DAD-MS (ESI+) and HR-NanoESI-QqTOF-MS/MS. The novel compounds belong to the categories of hydroxybenzoic acid derivatives (Compounds 1, 2, 3), polyphenolic phenylpropanoid derivative (Compound 4), quercetin glycosides (Compounds 5, 6), flavanol glycoside (Compound 7), quercetin dimmer (Compound 8) and biphenyls (Compounds 9, 10).

Their structures were established as: Vannilic acid 4-O-[alpha]-L-rhamnoside (1), protocatechuic acid anhydrite (2), trivanilloyl-(1,3,4-trihydroxybenzol) ester (3), 3-{4-(bis[4-hydroxy-3-(5-hydroxypentanoyloxy) phenyl) methoxy]-3,5-dihydroxy phenyl} propanoic acid (4), quercetin 3-O-[beta]-D-glucopyranosyl(1'''-->2'')-[alpha]-L-rhamnosyl(1''''-->3''')-[alpha]-L-rhamnosyl(1'''''-->3'''')-[alpha]-L-arabinofuranoside, quercetin 3-O-[alpha]-L-rhamnosyl(1'''-->3'')-[beta]-D-glucopyranoside (6), 5,7,3',6'-tetrahydroxyflavanol 7-O-[beta]-D-glucopyranoside (7), (7-O-4''', 4'O-7'') quercetin dimmer (8), [2,2'-dihydroxy, 4-(propionic acid hexyl ester), 4'-(propionic acid heptyl ester)] biphenyl (9) and [2,6,2',6'-tetrahydroxy, 4,4'-bis-(propionic acid hexyl ester)] biphenyl (10).
Keywords: Sorbus domestica; Rosaceae; Five fruit categories; Isolation; Structure elucidation; Novel phenolic compounds

Sunghoon Baek, Kijong Cho, Yoo Han Song, Joon-Ho Lee, Sampling plans for estimating pepper fruit damage levels by Oriental tobacco budworm, Helicoverpa assulta (Guenee), in hot pepper fields, Journal of Asia-Pacific Entomology, Volume 12, Issue 3, September 2009, Pages 175-178, ISSN 1226-8615, DOI: 10.1016/j.aspen.2009.03.003.
(http://www.sciencedirect.com/science/article/B8JJN-4VYP9FR-1/2/2693ecc33ec00051b86795a88e519127)
Abstract:
Sequential sampling programs for the management of Oriental tobacco budworm, Helicoverpa assulta (Guenee), on red hot peppers were developed using the data of damaged pepper fruits by H. assulta. Taylor's power law indicated that the damaged pepper fruits were distributed randomly in hot pepper fields. A fixed-precision-level sequential sampling plan for classifying fruit damage density levels at a critical density of 2 damaged fruits per plant was developed to assist in decision making. The sequential classification sampling plan was evaluated using the operating characteristic (OC) and the average sample size (ASN) curves. The OC and ASN curves indicated that this sampling plan was robust and properly classified the population density. A resampling simulation demonstrated that average actual sampling precision value at D = 0.25 was <= 0.25. With sequential sampling for classifying the damaged fruit levels in terms of a critical density, sample size was fixed to 18 plants. The fixed-precision-level sequential sampling plan developed in this study should greatly enhance the monitoring efficacy and provide practical solutions suitable for reliable decision-making process in the management of H. assulta.
Keywords: Taylor power law; Spatial distribution pattern; Fixed-precision-level sampling; Hot pepper

G.I. Katsaros, P. Katapodis, P.S. Taoukis, Modeling the effect of temperature and high hydrostatic pressure on the proteolytic activity of kiwi fruit juice, Journal of Food Engineering, Volume 94, Issue 1, September 2009, Pages 40-45, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2009.02.026.
(http://www.sciencedirect.com/science/article/B6T8J-4VT5TFJ-3/2/f3373135616d53acab69ee16757d929b)
Abstract:
Actinidin is the sulfhydryl protease of kiwi fruit. It can have applications in the food industry replacing other plant sulfhydryl proteases like papain and ficin, as milk clotting enzyme for traditional and novel dairy products, as meat tenderizer and beer clarifier. High hydrostatic pressure (HHP) will allow the controlled inactivation of actinidin after it has been applied and caused the desirable extent of clotting or tenderization, respectively. Thermal inactivation and inactivation by HHP (200-800 MPa) combined with moderate temperature (25-50 [degree sign]C) of the endogenous actinidin in kiwi fruit juice was studied. The enzyme activity was measured spectrophotometrically based on the hydrolysis of a chromophore-peptide compound. Actinidin inactivation followed first order kinetics at the studied processing conditions. The activation energy Ea, and the activation volume Va were expressed as a function of pressure and temperature, respectively. The enzyme inactivation was modeled by a single multi-parameter equation in the

studied temperature and pressure domain. The developed kinetics allow the selection of optimal HHP process conditions for achieving the desirable enzyme activity control after the targeted proteolysis has been achieved in products where the kiwi fruit actinidin has been applied.
Keywords: Actinidin; Proteolytic activity; High pressure; Enzyme kinetics; Thermal inactivation

D.R. Keast, J.M. Jones, Dried Fruit Consumption Associated with Improved Diet Quality and Reduced Overweight or Obesity in Adults: Nhanes, 1999-2004, Journal of the American Dietetic Association, Volume 109, Issue 9, Supplement 1, ADA Food & Nutrition Conference & Expo, September 2009, Page A14, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.06.024.
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(http://www.sciencedirect.com/science/article/B758G-4X25VK2-54/2/dfa674f28a68ac55fb1ae83d2d32f81a)

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(http://www.sciencedirect.com/science/article/B758G-4X25VK2-64/2/3cc6d5007150e8e231949ba48fd02cd6)

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(http://www.sciencedirect.com/science/article/B758G-4X25VK2-7Y/2/ec484da2efbe352f78649e1ea57bf21a)

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C.S. Oliveri, M. Mattey, L. Miller, K. Jelley, M. Brown, S. Maggard, T. Williams, Promoting Locally Grown Fruit and Vegetable Consumption by Elementary School Aged Children and Their Parents, Journal of the American Dietetic Association, Volume 109, Issue 9, Supplement 1, ADA Food & Nutrition Conference & Expo, September 2009, Page A90, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.06.302.
(http://www.sciencedirect.com/science/article/B758G-4X25VK2-BJ/2/ebf8b02aa42d8458633b7ce9583408ca)

A. Perez-Lizaur, M. Vazquez, M. Perez-Lizaur, M. Kaufer-Horwitz, Determinants of Vegetable and Fruit Consumption among Mexican Children and Their Parents, Journal of the American Dietetic Association, Volume 109, Issue 9, Supplement 1, ADA Food & Nutrition Conference & Expo, September 2009, Page A91, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.06.309.
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(http://www.sciencedirect.com/science/article/B758G-4X25VK2-C8/2/ea5f488bbcb5f57ab31bf458cb8274cb)

K.M. Sloan, M.E. Borja, K. McKee, M. Gannon, K. Arscott, The High Cost of Healthy Eating: The Cost of the Thrifty Food Plan Market Basket for Fruits and Vegetables in Northeastern Pennsylvania Compared to National Data, Journal of the American Dietetic Association, Volume 109, Issue 9, Supplement 1, ADA Food & Nutrition Conference & Expo, September 2009, Page A96, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.06.327.
(http://www.sciencedirect.com/science/article/B758G-4X25VK2-CF/2/fe586c440f729f6387cc295ff4f817aa)

J.A. Avasthi, M. Ndirangu, B. Hopkins, M.M. Cody, A Low-Income Region Pays More for Lowest-Cost Fruits and Vegetables Compared to a Middle-Income Region of the City of Atlanta, Georgia, Journal of the American Dietetic Association, Volume 109, Issue 9, Supplement 1, ADA Food & Nutrition Conference & Expo, September 2009, Page A104, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.06.361.
(http://www.sciencedirect.com/science/article/B758G-4X25VK2-DN/2/01c067e3d33e9e866679ef1c2258479c)

Luanda G. Marques, Manoel M. Prado, Jose T. Freire, Rehydration characteristics of freeze-dried tropical fruits, LWT - Food Science and Technology, Volume 42, Issue 7, September 2009, Pages 1232-1237, ISSN 0023-6438, DOI: 10.1016/j.lwt.2009.02.012.
(http://www.sciencedirect.com/science/article/B6WMV-4VNK6CW-1/2/a5bd9b2e29351e1e5348a5cd5b145740)
Abstract:
Rehydration behaviours of five freeze-dried fruits, namely, pineapple, mango, guava, acerola and papaya were investigated and related to the structural changes during drying and glass transition temperature. After freeze-drying performed under vacuum conditions (13 kPa) and initial sample temperature near to -30 [degree sign]C, fruits were allowed to rehydrate at 25 [degree sign]C in distilled water for 6 h. The Exponential, Peleg and Weibull equations were applied to fit the experimental data using non-linear regression analysis. The statistical criteria used to evaluate the goodness of fit of each equation were the coefficient of determination (R2), the standard error of

estimate (SEE) and the mean relative percentage deviation modulus (MRD). The Weibull equation was found to be the most adequate for describing the rehydration kinetics, since it gave the higher R2 values and lower SEE and MRD values for all fruits examined in this study. From indices that take into account the quantity of water absorbed and the losses of solutes, it was possible to fully characterize the rehydration process of the freeze-dried fruits. Their water uptake capacity was affected not only by injuries during moisture removal but also by structural collapse induced by the rehydration process itself, which was explained using the glass transition concept.
Keywords: Lyophilization; Water uptake; Loss of solutes; Quality attributes

S.P. Singh, Zora Singh, E.E. Swinny, Postharvest nitric oxide fumigation delays fruit ripening and alleviates chilling injury during cold storage of Japanese plums (Prunus salicina Lindell), Postharvest Biology and Technology, Volume 53, Issue 3, September 2009, Pages 101-108, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.04.007.
(http://www.sciencedirect.com/science/article/B6TBJ-4WNWW53-1/2/6d20894124bb369310843f98f4d7c43d)
Abstract:
We investigated the effects of nitric oxide (NO) fumigation on fruit ripening, chilling injury, and quality of Japanese plums cv. `Amber Jewel'. Commercially mature fruit were fumigated with 0, 5, 10, and 20 [mu]L L-1 NO gas at 20 [degree sign]C for 2 h. Post-fumigation, fruit were either allowed to ripen at 21 +/- 1 [degree sign]C or were stored at 0 [degree sign]C for 5, 6, and 7 weeks followed by ripening for 5 d at 21 +/- 1 [degree sign]C. NO-fumigation, irrespective of concentration applied, significantly (P <= 0.5) suppressed respiration and ethylene production rates during ripening at 21 +/- 1 [degree sign]C. At 21 +/- 1 [degree sign]C, the delay in ripening caused by NO-fumigation was evident from the restricted skin colour changes and retarded softening in fumigated fruit. NO treatments (10 and 20 [mu]L L-1) delayed the decrease in titratable acidity (TA) without a significant (P <= 0.5) effect on soluble solids concentration (SSC) during ripening. During 5, 6, and 7 weeks of storage at 0 [degree sign]C, NO-fumigation was effective towards restricting changes in the ripening related parameters, skin colour, firmness, and TA. The individual sugar (fructose, glucose, sucrose, and sorbitol) profiles of NO-fumigated fruit were significantly different from those of non-fumigated fruit after cold storage and ripening at 21 +/- 1 [degree sign]C. CI symptoms, manifest in the form of flesh browning and translucency, were significantly lower in NO-fumigated fruit than in non-fumigated fruit after 5, 6, and 7 weeks storage followed by ripening for 5 d at 21 +/- 1 [degree sign]C. NO-fumigation was effective in reducing decay incidence in plums during ripening without storage and after cold storage at 0 [degree sign]C for 5, 6, and 7 weeks. In conclusion, the postharvest exposure of `Amber Jewel' plums to NO gas (10 [mu]L L-1) delayed ripening by 3-4 d at 21 +/- 1 [degree sign]C, and also alleviated chilling injury symptoms during cold storage at 0 [degree sign]C for 6 weeks.
Keywords: Chilling injury; Ethylene; Nitric oxide; Plum; Respiration; Ripening; Storage

Feng Jiang, Jishuang Chen, Ying Miao, Karin Krupinska, Xiaodong Zheng, Identification of differentially expressed genes from cherry tomato fruit (Lycopersicon esculentum) after application of the biological control yeast Cryptococcus laurentii, Postharvest Biology and Technology, Volume 53, Issue 3, September 2009, Pages 131-137, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.03.008.
(http://www.sciencedirect.com/science/article/B6TBJ-4WDNBSB-2/2/905238b1ad4485d9988ab218e8317572)
Abstract:
Postharvest decay of fruit may be controlled by the use of a variety of diverse microorganisms acting as biocontrol agents, but the mechanisms associated with control are not fully understood. In order to gain insight into the action of antagonistic microorganisms on fruit, a forward subtractive suppression hybridization (SSH) cDNA library was constructed. SSH was performed with cDNA

from cherry tomato fruit (Lycopersicon esculentum) inoculated with water as the 'driver' and cDNA from tomato fruit inoculated by Cryptococcus laurentii as the 'tester'. A total of 150 clones in the SSH library were sequenced and found to represent 50 unigenes. BLASTX results reveal that 35 cDNAs had significant sequence homologies with known sequences in the NCBI database. The identified cDNAs encode proteins involved in cellular processes such as primary metabolism, signal transduction, defense and responses to pathogens, stress-related, cell wall assembly, and photosynthesis and transcription related sequences. Six cDNA clones were selected for temporal expression analysis using RT-PCR. The results show that a number of transcripts encoding proteins/enzymes which are known to be up-regulated under some biotic and abiotic stresses are also up-regulated after the application of biological control yeast to cherry tomato fruit. The expression of these proteins may play a role in increasing fruit resistance to postharvest pathogen infection.
Keywords: Postharvest biocontrol; Cryptococcus laurentii; Tomato fruit; Induced resistance; Subtractive suppression hybridization (SSH)

Yuan Huang, Rui Tang, Qiuliang Cao, Zhilong Bie, Improving the fruit yield and quality of cucumber by grafting onto the salt tolerant rootstock under NaCl stress, Scientia Horticulturae, Volume 122, Issue 1, 1 September 2009, Pages 26-31, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.04.004.
(http://www.sciencedirect.com/science/article/B6TC3-4W8KHST-1/2/61388d25779c1bfe0626928b4c9b05bb)
Abstract:
To investigate the feasibility of using salt tolerant rootstock to increase fruit yield and quality of cucumber under NaCl stress, a greenhouse experiment was carried out to determine fruit yield, leaf relative water content, fruit quality, and mineral composition of cucumber plants (Cucumis sativus L. cv. Jinchun No. 2), either self-grafted or grafted onto the commercial salt tolerant rootstock Figleaf Gourd (Cucurbita ficifolia Bouche) and Chaofeng Kangshengwang (Lagenaria siceraria Standl). Plants were grown in a substrate culture (peat:vermiculite:perlite = 1:1:1, v/v) and irrigated with half-strength Hoagland solutions containing 0, 30, or 60 mM NaCl. The results showed that salinity significantly reduced fruit yield of cucumber owing to a decrease both in mean fruit weight and fruit number. Rootstock had no significant effect on leaf relative water content. Plants grafted onto Figleaf Gourd and Chaofeng Kangshengwang had higher fruit number, marketable and total fruit yield than those of self-grafted plants under 0, 30, and 60 mM NaCl, which could be attributed to, at least in part, the higher K+ but lower Na+ and/or Cl- contents in the leaves. Salinity improved fruit quality by increasing fruit dry matter, soluble sugar, and titratable acidity contents of all the plants, but had no significant effect on vitamin C content. In comparison to the self-grafted plants, plants grafted onto Figleaf Gourd and Chaofeng Kangshengwang had an overall improved fruit quality under NaCl stress owing to an increase in contents of soluble sugar, titratable acidity, and vitamin C, and a decrease in the percentage of non-marketable fruit and Na+ and/or Cl- contents of fruits in comparison to the self-grafted plants, mainly under 60 mM NaCl. Overall, it is suggested that the use of salt tolerant rootstock could provide a useful tool to improve fruit yield and quality of cucumber under NaCl stress.
Keywords: Cucumber; Rootstock; Salinity; Yield; Fruit quality; Mineral composition

Juan Li, Panpan Zhang, Jiezhong Chen, Qing Yao, Yueming Jiang, Cellular wall metabolism in citrus fruit pericarp and its relation to creasing fruit rate, Scientia Horticulturae, Volume 122, Issue 1, 1 September 2009, Pages 45-50, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.03.022.
(http://www.sciencedirect.com/science/article/B6TC3-4W2V4NS-3/2/a025280cd5cfb9584cda10a7aae5e279)
Abstract:

Citrus creasing results in serious economic loss in many citrus orchards. Based on the different incidence of creasing, two sweet orange cultivars `Hong Jiang' (grafting chimaera of which flesh is mostly from Citrus reticulata Blanco and peel is from Citrus sinensis Osbeck in) and `An Liu' (Citrus sinensis Osbeck) were used to investigate the creasing rate. The ultrastructure in cellular wall, cellular wall component, cellular wall degradation-related enzymes and expansin (Ct-Exp1) of sweet orange during fruit ripening in field were comparatively analyzed. `Hong Jiang' sweet orange had a higher creasing rate than `An Liu' during ripening. The activities of polygalacturonase, cellulase and pectinesterase in cellular wall of `Hong Jiang' increased more markedly compared with `An Liu'. The increases in the content of soluble pectin, ionically associated pectin, covalently bound pectin, hemicellulose and cellulose of `Hong Jiang' were higher than those of `An Liu'. Furthermore, the enhanced degradation of the ultrastructure in the albedo cellular walls was observed in `Hong Jiang'. Moreover, the northern blot analysis indicated that the Ct-Exp1 gene expressed more strongly in peel of `Hong Jiang' than `An Liu' during fruit ripening. These data suggest that enhanced loss of pectin and cellulose in the cellular walls of peel tissue of sweet orange could result in fruit creasing.
Keywords: Citrus; Creasing fruit; Mesocarp; Cellular wall metabolism

Gustavo Habermann, Joao Domingos Rodrigues, Leaf gas exchange and fruit yield in sweet orange trees as affected by citrus variegated chlorosis and environmental conditions, Scientia Horticulturae, Volume 122, Issue 1, 1 September 2009, Pages 69-76, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.04.003.
(http://www.sciencedirect.com/science/article/B6TC3-4W91CRF-1/2/b11ef741e046a98ddd1e1763b20e6f1d)
Abstract:
Citrus variegated chlorosis (CVC) is a disease caused by the bacterium Xylella fastidiosa. The most productive areas for citrus in Brazil are the northwestern and the northern regions of the Sao Paulo state, where CVC incidence is more severe. Additionally, these areas have the highest temperatures as well as significant vapor pressure deficits (VPD) and seasonal droughts. Environmental stresses are known to affect CVC-infected plants under semi-controlled conditions, but it is unclear whether similar effects occur in the field. The objective of this work was to evaluate the CVC leaf symptoms and environmental influences on fruit yield and size, and physiological parameters of healthy and CVC-affected plants (including both non-symptomatic and symptomatic leaves) in the morning and afternoon during the wet and dry seasons of 2003 in the southern, central and northern regions of the Sao Paulo state, Brazil. Increased VPD caused the stomatal conductance (gs) and CO2 assimilation rates (A) to drop in healthy plants, but diseased plants had low VPD influences on gs, especially closer to the northern region and in leaves that were more symptomatic, confirming that diseased plants do not respond to changes in environmental VPD, corroborating several results reported in the literature. Although symptomatic northern leaves exhibited low stomatal apertures, the northern region had the highest air temperatures and VPDs, increasing the water loss in these plants, suggesting that towards the northern region plants face greater atmospheric and soil water stress. The fruit size of diseased plants diminished towards the north, while the fruit size of healthy plants must have been influenced by the tree fruit load. We suggest that CVC-affected plants suffer greater physiological damage if grown under environmental constraint, such as that found in the northern region of the Sao Paulo state.
Keywords: Citrus sinensis; Photosynthesis; Seasonal effects; Xylella fastidiosa

Kamel Msaada, Mouna Ben Taarit, Karim Hosni, Mohamed Hammami, Brahim Marzouk, Regional and maturational effects on essential oils yields and composition of coriander (Coriandrum sativum L.) fruits, Scientia Horticulturae, Volume 122, Issue 1, 1 September 2009, Pages 116-124, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.04.008.

(http://www.sciencedirect.com/science/article/B6TC3-4WBR6MG-1/2/7efbc9ae92c31fc4988ceb23fb7fada5)
Abstract:
The composition of volatile components of the essential oils extracted from fruits of coriander (Coriandrum sativum L.) growing in two different Tunisian regions in both Menzel Temime and Borj El Ifaa was studied by GC and GC-MS. The highest oil yields were observed at final stages of maturity: 0.324 +/- 0.09% and 0.327 +/- 0.08%, in Menzel Temime and Borj El Ifaa, respectively. Essential oil yields were highly ($P < 0.001$) affected by the growing region, stages of maturity and their interaction. Essential oil composition changed significantly ($P < 0.05$) among the different stages of maturity and growing region. Linalool and geranyl acetate were the main compounds at full fruit maturity in the two studied regions. Growing region, stages of maturity and their interaction had a strong effect ($P < 0.001$) on 35 compounds. [alpha]-Pinene, sabinene, limonene, [gamma]-terpinene, cis-dihydrocarvone and geranial were insensible to the regional factor.
Keywords: Coriander (Coriandrum sativum L.); Umbelliferae; Fruits; Essential oil composition; Linalool; Regional and maturational effects

Preethi Radhakrishnan, Diana Perez-Staples, Christopher W. Weldon, Phillip W. Taylor, Multiple mating and sperm depletion in male Queensland fruit flies: effects on female remating behaviour, Animal Behaviour, In Press, Corrected Proof, Available online 27 August 2009, ISSN 0003-3472, DOI: 10.1016/j.anbehav.2009.07.002.
(http://www.sciencedirect.com/science/article/B6W9W-4X3DS2B-3/2/379164230beecc9c492b06fd6f5f3dcb)
Abstract:
Male insects that are unable to replenish sperm supplies between matings can suffer fitness costs either because their mates are more likely to accept subsequent suitors, or because their sperm are outnumbered when females do remate. We assessed the ability of fertile and sterile (irradiated) male Queensland fruit flies, Bactrocera tryoni (`Q-flies'), to have sperm stored by five sequential mates as well as the association between sperm depletion and female remating tendency. Sequential mates of fertile males stored similar numbers of sperm, indicating ample ability to replenish and maintain constant supplies between their once-daily mating opportunities. In contrast, sequential mates of sterile males stored progressively fewer sperm, with only trivial numbers of sperm stored by females mated by sterile males that had mated with two or more females previously. Despite the massive reduction in sperm storage by sequential mates of sterile males, fertile and sterile males were similar in their ability to induce sexual inhibition in their mates (to at least 30 days) and neither showed any decline in this ability across sequential matings. The ability of multiple-mated sterile males to induce sexual inhibition in their mates despite near or complete absence of sperm provides compelling evidence that sperm abundance plays no role in the induction of sexual inhibition in this species.
Keywords: accessory gland; Bactrocera tryoni; multiple mating; Queensland fruit fly; sperm competition; sperm depletion

A. Zeinanloo, A. Shahsavari, A. Mohammadi, M.R. Naghavi, Variance component and heritability of some fruit characters in olive (Olea europaea L.), Scientia Horticulturae, In Press, Corrected Proof, Available online 27 August 2009, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.07.024.
(http://www.sciencedirect.com/science/article/B6TC3-4X3DS4F-1/2/7b3f059842f3142394505ac4e481c640)
Abstract:
The combining abilities for nine quantity characters in olive were examined to understand the type of gene action governing these characters, and to identify olive genotypes suitable for use as parents in breeding for quality improvement. The F1 hybrids created from a one-way diallel crosses among six olive genotypes at 1996. They were evaluated in field condition and data were

recorded in 4 years (2004-2007) on 9 fruits. The general and specific combining ability effects (GCA and SCA) differed significantly for most of the characters, indicating that both additive and non-additive genetic effects played a role in the heritability of these characters. The estimated broad sense heritability () for all characters resulted varying from 0.31 to 0.86. While, the narrow-sense heritability () varied from 0.17 to 0.28. Genotypes Zard and Roghani were good combiners mainly for the improvement of fruit weight, percentage of dry matter, fruit width, fruit length and oil percentage. Variance component and heritability of fruit characters can be useful for olive breeding programs.
Keywords: Olea europaea L.; Combining ability; Diallel analysis; Fruit characters

Talita Pereira, Paulo Sergio Gomes de Almeida, Inga Goncalves de Azevedo, Maura da Cunha, Jurandi Goncalves de Oliveira, Marcelo Gomes da Silva, Helion Vargas, Gas diffusion in `Golden' papaya fruit at different maturity stages, Postharvest Biology and Technology, In Press, Corrected Proof, Available online 26 August 2009, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.07.010.
(http://www.sciencedirect.com/science/article/B6TBJ-4X36TNY-1/2/bb0794c26b024724408a1320b95a5118)
Abstract:
In this work the gas diffusion of `Golden' papaya fruit (Carica papaya L.) was evaluated as a function of different maturity stages, by using a photoacoustic spectrometer. The maturity stages were characterized by the anatomical changes, membrane integrity, pulp firmness, and skin color. Microstructural analysis was performed by means of light and scanning electron microscopy. A significant decrease in the diffusion rate with ripening was observed. Under the experimental conditions it was found that fruit in maturity stage 0 (less mature) had turgid, regular shape parenchyma cells, and relatively little intercellular spaces. However, fruit in maturation stage 5 (more mature) showed separation of cell walls and pectic substance accumulation into the intercellular spaces. The skin color showed a reduction in hue angle values and an increase in chromaticity parameters a* and b*, characterizing the loss of green color during ripening. A loss of firmness of the pulp was also observed during fruit ripening.
Keywords: Carica papaya L.; Intercellular space; Microscopy; Ripening

Gert-Jan de Bruijn, Understanding college students' fruit consumption: integrating habit strength in the Theory of Planned Behaviour, Appetite, In Press, Accepted Manuscript, Available online 25 August 2009, ISSN 0195-6663, DOI: 10.1016/j.appet.2009.08.007.
(http://www.sciencedirect.com/science/article/B6WB2-4X315C2-4/2/4ff0f4c8a2fcb9b40725c05c9ff20425)
Abstract:
The additive and interactive effect of habit strength in the explanation of young adults' fruit consumption was studied within the context of the Theory of Planned Behaviour (TPB). Additionally, behavioural and control beliefs were modelled as predictors of profile membership based on current fruit consumption, motivation and habit strength towards fruit consumption. Cross-sectional data were available from undergraduate students (n = 538; mean age = 21.19; SD = 2.57) who completed measures of fruit consumption, habit strength, TPB-concepts, and behavioural and control beliefs. Data were analyzed using stepwise regression analysis, simple slope analysis, and discriminant function analysis. Results showed that, based on a significant intention x habit interaction ([beta]=.13), the intention-fruit consumption relationship was more than twice as strong at low levels of habit strength ([beta] = .39) than at high levels of habit strength ([beta]=.16). Furthermore, beliefs regarding health and weight management were relatively unable to distinguish profiles created from motivation, habit strength and current fruit consumption. Rather, beliefs about controllability of fruit consumption were amongst the most consistent discriminating beliefs. Findings suggest that stronger fruit consumption habits make fruit

consumption less intentional and that interventions aiming to increase fruit consumption may need to develop persuasive messages focusing on situational beliefs, rather than emphasizing health outcomes.
Keywords: Habit strength; fruit consumption; Theory of Planned Behaviour; Interaction; Discriminant Function Analysis

Mohamed Mahmoud Sidina, Mohammed El Hansali, Nadia Wahid, Aziz Ouatmane, Abdelali Boulli, Abdelmajid Haddioui, Fruit and seed diversity of domesticated carob (Ceratonia siliqua L.) in Morocco, Scientia Horticulturae, In Press, Corrected Proof, Available online 21 August 2009, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.07.009.
(http://www.sciencedirect.com/science/article/B6TC3-4X24C5R-1/2/05e29e8e9cd3c72059e89c8167260205)
Abstract:
The carob tree (Ceratonia siliqua L.) is an important economic resource for Morocco's rural populations. This species is used in reforestation actions and its cultivation in modern orchards is being undertaken to valorize marginal lands and substitute for drought sensitive species. However, little data is available on its intra-specific variability and its adaptability. Morphological characters of pods and seeds from 13 ecoregions of private-domesticated carob were used to assess phenotypic variation of this species. These stands extend from south-west to north-east and cover a wide range of Morocco's ecoregions. Pods length, width, thickness, seeds number, pulp weight, seeds yield and seeds length, width, thickness and weight were measured for 390 trees (30 trees per ecoregion). Statistically significant differences were found between ecoregions for all characters which were examined, what indicates a high phenotypic diversity. Principal component analysis (PCA) and hierarchical cluster of all ecoregions lead to identify two major and opposite groups (the northern ecoregions; and the central and south-western ecoregions). Ecoregions of the north of Morocco exhibited the largest and the thickest pods with the highest pulp weight while other ecoregions have relatively short pods but largest proportion of seed yield. Similarly, the northern ecoregions are characterized by the heaviest seeds. A correlation matrix between morphological characters, geographic parameters and precipitation exhibits a positive and a negative correlation of pods thickness and pulp weight with the latitude and the altitude, respectively. Seed yield and weight are negatively and positively correlated to pod width, pod thickness and pulp weight, respectively. In addition, seed weight is positively correlated with the latitude. The geographic pattern of the carob tree and its variability are discussed in this paper.
Keywords: Ceratonia siliqua; Domesticated carob; Morocco's ecoregions; Fruit diversity; Seed diversity

C.I. Peter, S.D. Johnson, Autonomous self-pollination and pseudo-fruit set in South African species of Eulophia (Orchidaceae), South African Journal of Botany, In Press, Corrected Proof, Available online 21 August 2009, ISSN 0254-6299, DOI: 10.1016/j.sajb.2009.07.007.
(http://www.sciencedirect.com/science/article/B7XN9-4X24C82-1/2/3158b86e699200ccc1997d602438e8bb)
Abstract:
Autonomous self-pollination is surprisingly common among orchids and is thought to provide reproductive assurance when pollinators are scarce. During investigations of the reproductive biology of the orchid genus Eulophia, consistently high rates of capsule set were observed in Eulophia clavicornis var. clavicornis, E. c. var. inaequalis, E. c. var. nutans and E. tenella. A breeding system experiment showed that E. c. var. nutans is capable of autonomous self-pollination. Emasculated flowers of this taxon did not set fruit, suggesting that agamospermy is unlikely. The likely mechanism of autonomous self-pollination in these taxa was identified as the partial or complete absence of rostellum tissue, allowing contact between pollinia and stigmatic fluid, and thus for pollen tubes to grow from in situ pollinia to the ovules. In some individuals, basal

flowers on an inflorescence possess intact rostellae and functional pollinaria, whereas distal flowers lack pollinia. Neither of these two flower classes set capsules. A few individuals of the otherwise outcrossing E. zeyheriana, which normally have well-developed rostellae, show evidence of autonomous self-pollination resulting from interrupted rostellae in these plants. Other outcrossing Eulophia species (E. speciosa and E. streptopetala) sometimes show high levels of fruit set, seemingly without insect visitation. However, investigations showed that these are pseudo-fruits lacking seeds and are a result of insect parasitism. Therefore, high levels of fruit set alone should not be used to infer autonomous self-pollination in orchids.
Keywords: Autogamy; Auto-pollination; Eulophia; Insect parasitism; Orchidaceae; Pseudo-fruit; Rostellum; Self-pollination; South Africa

M. Aluja, J. Rull, J. Sivinski, G. Trujillo, D. Perez-Staples, Male and female condition influence mating performance and sexual receptivity in two tropical fruit flies (Diptera: Tephritidae) with contrasting life histories, Journal of Insect Physiology, In Press, Uncorrected Proof, Available online 20 August 2009, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2009.07.012.
(http://www.sciencedirect.com/science/article/B6T3F-4X1XD80-1/2/5c8ccbbc387b9c617afd04554123df39)
Abstract:
Recent recognition of widespread polyandry in insects has generated considerable interest in understanding why females mate multiple times and in identifying factors that affect mating rate and inhibit female remating. However, little attention has been paid to understanding the question from both a female and male perspective, particularly with respect to factors that may simultaneously influence female remating rates. Here, we report on a study aimed at ascertaining the possible interactive effects that male and female size and diet, and female access to a host could have on mating latency, probability, and duration and female refractory period using two tropical fruit fly species with contrasting life histories. Of all factors tested, adult diet played the most significant role. Both Anastrepha ludens and Anastrepha obliqua males which had constant access to protein and sucrose mated more often, had shorter copulations and induced longer refractory periods in females than males fed a low quality diet (sucrose offered every third day). Female size and the interaction with male diet determined how quickly female A. ludens mated for the first time. Smaller females mated sooner with low quality fed males than with high quality fed males while there was no difference for large females, suggesting that male choice may be at play if high quality fed males discriminate against smaller females. Copulation duration also depended on both male and female nutritional condition, and the interaction between male diet and female size and diet. Large and high quality fed females had shorter copulations regardless of male condition. Importantly, for A. ludens, female refractory period depended on male size and the nutritional condition of both males and females, which could indicate that for this species, female receptivity does not depend only on the condition of the male ejaculate. For A. obliqua refractory period was associated with the interaction between male size and diet and male diet and host presence. We discuss our results in terms of male ability to inhibit female remating and the relative contribution of female condition to this behavior. We also address the importance of studying effects simultaneously on species with contrasting life histories.
Keywords: Mating behavior; Refractory period; Sexual behavior; Female remating inhibition; Receptivity; Anastrepha; Tephritidae

Shifeng Cao, Yonghua Zheng, Kaituo Wang, Peng Jin, Huaijing Rui, Methyl jasmonate reduces chilling injury and enhances antioxidant enzyme activity in postharvest loquat fruit, Food Chemistry, Volume 115, Issue 4, 15 August 2009, Pages 1458-1463, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.01.082.
(http://www.sciencedirect.com/science/article/B6T6R-4VJ0DSD-2/2/331a819f8c1d6307294a775da35edcf8)

Abstract:
Loquat fruit were pre-treated with 10 [mu]mol/l methyl jasmonate (MeJA) for 24 h at 20 [degree sign]C, and then stored at 1 [degree sign]C for 35 days to investigate the effect of MeJA treatment on chilling injury and changes in the antioxidant system. Loquat fruit developed chilling injury, manifested as increased fruit firmness, decreased extractable juice rate and internal browning during storage. These chilling injury symptoms were significantly reduced by MeJA treatment. MeJA also markedly delayed the increases in O2- production rate and H2O2 content. Meanwhile, the MeJA-treated fruit exhibited significantly higher activities of superoxide dismutase, catalase and ascorbate peroxidase, and lower activity in lipoxygenase than control fruit during the storage. The ratio of unsaturated/saturated fatty acid in MeJA-treated fruit was also significantly higher than that in control fruit. These results suggest that the reduction in chilling injury by MeJA may be due to enhanced antioxidant enzyme activity and higher unsaturated/saturated fatty acid ratio.
Keywords: Loquat fruit; Methyl jasmonate; Chilling injury; Antioxidant enzyme; Lipoxygenase; Fatty acids

Mei Zhang, Ping Leng, Guanglian Zhang, Xiangxin Li, Cloning and functional analysis of 9-cis-epoxycarotenoid dioxygenase (NCED) genes encoding a key enzyme during abscisic acid biosynthesis from peach and grape fruits, Journal of Plant Physiology, Volume 166, Issue 12, 15 August 2009, Pages 1241-1252, ISSN 0176-1617, DOI: 10.1016/j.jplph.2009.01.013.
(http://www.sciencedirect.com/science/article/B7GJ7-4VX0BD2-1/2/1498ac79ee8b93772fddfef1359b4a6b)
Abstract: Summary
Ripening and senescence are generally controlled by ethylene in climacteric fruits like peaches, and the ripening process of grape, a non-climacteric fruit, may have some relationship to abscisic acid (ABA) function. In order to better understand the role of ABA in ripening and senescence of these two types of fruits, we cloned the 9-cis-epoxycarotenoid dioxygenase (NCED) gene that encodes a key enzyme in ABA biosynthesis from peaches and grapes using an RT-PCR approach. The NCED gene fragments were cloned from peaches (PpNCED1and PpNCED2, each 740 bp) and grapes (VVNCED1, 741 bp) using degenerate primers designed based on the conserved amino acids sequence of NCEDs in other plants. PpNCED1 showed 78.54% homology with PpNCED2, 74.90% homology with VVNCED1, and both showed high homology to NCEDs from other plants. The expression patterns of PpNCED1 and VVNCED1 were very similar. Both were highly expressed at the beginning of ripening when ABA content becomes high. The maximum ABA preceded ethylene production in peach fruit. ABA in the grape gradually increased from the beginning of ripening and reached the highest level at 20 d before the harvest stage. However, ethylene remained at low levels during the entire process of fruit development, including ripening and senescence. ABA content, and ripening and softening of both types of fruits, were promoted or delayed by exogenous ABA or Fluridone (or NDGA) treatment. The roles of ABA and ethylene in the later ripening of fruit are complex. Based on results obtained in this study, we concluded that PpNCED1 and VVNCED1 initiate ABA biosynthesis at the beginning of fruit ripening, and that ABA accumulation might play a key role in the regulation of ripeness and senescence of both peach and grape fruits.
Keywords: ABA; Ethylene; Grape; NCED gene; Peach

Lisbeth A. Pacheco-Palencia, Susanne U. Mertens-Talcott, Stephen T. Talcott, In vitro Absorption and Antiproliferative Activities of Monomeric and Polymeric Anthocyanin Fractions from Acai Fruit (Euterpe oleracea Mart.), Food Chemistry, In Press, Accepted Manuscript, Available online 14 August 2009, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.08.017.
(http://www.sciencedirect.com/science/article/B6T6R-4X0PC51-2/2/a287b14b7e0d142e98ff7fa203efbc96)
Abstract:

Anthocyanins are among the most important and widely consumed natural pigments in foods, and have attracted increased attention as natural food colourants and potent bioactive agents. However, anthocyanins are generally unstable and may undergo chemical changes that include oxidative and polymerization reactions during processing and storage. The role of anthocyanin polymerization reactions on in vitro intestinal absorption and anti-cancer properties has not been assessed. This study investigated the chemical composition, antioxidant properties, antiproliferative activity, and in-vitro absorption of monomeric and polymeric anthocyanin fractions from acai fruit (Euterpe oleracea Mart.). Cyanidin-3-rutinoside (58.5 +/- 4.6%) and cyanidin-3-glucoside (41.5 +/- 1.1%) were the predominant compounds found in monomeric fractions, while a mixture of anthocyanin adducts were found in polymeric fractions and characterized using HPLC-ESI-MSn analyses. Monomeric fractions (0.5-100 [mu]g cyanidin-3-glucoside equivalents/ml) inhibited HT-29 colon cancer cell proliferation by up to 95.2% while polymeric anthocyanin fractions (0.5-100 [mu]g cyanidin-3-glucoside equivalents/ml) induced up to 92.3% inhibition. In vitro absorption trials using Caco-2 intestinal cell monolayers demonstrated that cyanidin-3-glucoside and cyanidin-3-rutinoside were similarly transported from the apical to the basolateral side of the cell monolayers (0.5-4.9% efficiency), while no polymeric anthocyanins were transported following incubation for up to 2 hours. The addition of polymeric anthocyanin fractions also decreased monomeric anthocyanin transport by up to 40.3 +/- 2.8%. Results from this study provide novel information regarding the relative size, absorption, and bioactive properties of anthocyanin monomers and polymer adducts.
Keywords: Anthocyanin, polymerization, in-vitro absorption, cancer proliferation, acai

Shifeng Cao, Zhichao Hu, Bin Pang, Haiou Wang, Huanxiong Xie, Feng Wu, Effect of ultrasound treatment on fruit decay and quality maintenance in strawberry after harvest, Food Control, In Press, Accepted Manuscript, Available online 14 August 2009, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2009.08.002.
(http://www.sciencedirect.com/science/article/B6T6S-4X0PBY9-1/2/bf140ac91dda0202d194d60549ece75c)
Abstract:
The effects of ultrasound treatment on fruit decay and physiological quality of strawberry fruit were investigated. Freshly harvested strawberries were treated with 0, 25, 28, 40 or 59 kHz ultrasound at 20[degree sign]C for 10 min and then stored at 5 [degree sign]C for 8 days. The results showed that 40 kHz ultrasonic treatment significantly reduced decay incidence and numbers of microorganism. Ultrasound treatment also inhibited the decrease of firmness and maintained significant higher levels of total soluble solids (TSS), total titratable acidity (TA) and vitamin C. Treatments with 25 and 28 kHz ultrasound had no significant effects on fruit decay and quality deterioration of strawberry fruit. Thus, ultrasound treatment has potential to extend shelf-life and maintain quality in strawberry fruit.
Keywords: Strawberry; Ultrasound; Decay; Quality

Maria Jose Garcia-Nebot, Amparo Alegria, Reyes Barbera, Gonzalo Clemente, Fernando Romero, Does the addition of caseinophosphopeptides or milk improve zinc in vitro bioavailability in fruit beverages?, Food Research International, In Press, Accepted Manuscript, Available online 14 August 2009, ISSN 0963-9969, DOI: 10.1016/j.foodres.2009.08.005.
(http://www.sciencedirect.com/science/article/B6T6V-4X0PBY4-4/2/60ffab48fe67af0a2eb080a3997e6328)
Abstract:
The influence of caseinophosphopeptides (CPPs) added to fruit beverage versus milk based fruit beverage upon zinc retention, transport and uptake, as well as the influence of Fe supplementation, were studied using a combined simulated gastrointestinal digestion / Caco-2 cell system.

Zinc retention, transport and uptake of milk based fruit beverage was 4- to 5-fold greater than that of fruit beverages with or without CPPs - no statistically significant differences being observed in relation to the presence or absence of CPPs. Possibly, a slow release of CPPs throughout the digestive tract, as can be expected to take place during the digestion of casein, has a more beneficial effect than the addition of preformed CPPs upon Zn availability.
A significantly negative FexZn interaction in relation to Zn retention and uptake was observed in fruit beverages. This should be taken into account in the formulation of such beverages, where the supplementing of both of these mineral elements is common practice.
Keywords: Milk; fruit beverages; iron; zinc; simulated gastrointestinal digestion; caseinophosphopeptides; in vitro bioavailability; Caco-2 cells

Joao Paulo Fabi, Beatriz Rosana Cordenunsi, Graham B. Seymour, Franco M. Lajolo, Joao Roberto Oliveira do Nascimento, Molecular cloning and characterization of a ripening-induced polygalacturonase related to papaya fruit softening, Plant Physiology and Biochemistry, In Press, Corrected Proof, Available online 14 August 2009, ISSN 0981-9428, DOI: 10.1016/j.plaphy.2009.08.002.
(http://www.sciencedirect.com/science/article/B6VRD-4X0PBXY-2/2/ef2ba95edcaf103a9109b70126cf11bd)
Abstract:
Pulp softening is one of the most remarkable changes during ripening of papaya (Carica papaya) fruit and it is a major cause for post-harvest losses. Although cell wall catabolism has a major influence on papaya fruit, quality information on the gene products involved in this process is limited. A full-length polygalacturonase cDNA (cpPG) was isolated from papaya pulp and used to study gene expression and enzyme activity during normal and ethylene-induced ripening and after exposure of the fruit to 1-MCP. Northern-blot analysis demonstrated that cpPG transcription was strongly induced during ripening and was highly ethylene-dependent. The accumulation of cpPG transcript was paralleled by enzyme activity, and inversely correlated to the pulp firmness. Preliminary in silico analysis of the cpPG genomic sequence revealed the occurrence of putative regulatory motifs in the promoter region that may help to explain the effects of plant hormones and non-abiotic stresses on papaya fruit firmness. This newly isolated cpPG is an important candidate for functional characterization and manipulation to control the process of pulp softening during papaya ripening.
Keywords: 1-MCP; Plant cell wall; Polygalacturonase; Ethylene; Fruit softening; Carica papaya; Fruit ripening

Ana Morton, Fernando Garcia-del-Pino, Ecological characterization of entomopathogenic nematodes isolated in stone fruit orchard soils of Mediterranean areas, Journal of Invertebrate Pathology, In Press, Uncorrected Proof, Available online 11 August 2009, ISSN 0022-2011, DOI: 10.1016/j.jip.2009.08.002.
(http://www.sciencedirect.com/science/article/B6WJV-4X01PJ1-2/2/2a630084286e9cf51aa8672ad1e437bc)
Abstract:
Entomopathogenic nematodes in the families Steinernematidae and Heterorhabditidae were isolated from stone-fruit orchards in two Mediterranean regions of Spain. A total of 630 soil samples (210 sites) from Catalonia and 90 soil samples (30 sites) from Murcia were evaluated resulting in 5.2% and 20% of the soils testing positive for nematodes, respectively. Ten steinernematid isolates and three heterorhabditid isolates were recovered using the Galleria mellonella baiting method. Based on morphometric data, molecular data, and cross-breeding experiments the nematode species were identified as Steinernema feltiae and Heterorhabditis bacteriophora. Environmental tolerance to heat, desiccation and hypoxia, the effect of temperature on infectivity and reproduction and nematode migration in sand columns were compared among

isolates and one Steinernema carpocapsae strain. Results showed differences among species and a great variability within species. Beneficial traits for each strain were added up to identify a superior candidate to control Mediterranean flat-headed rootborer, Capnodis tenebrionis. When all analyzed factors were considered, three S. feltiae isolates (Bpa, Sor and M116) obtained the best scores, and when hypoxia was removed, two of the strains (Bpa and Sor) continued ranking superior to other strains.
Keywords: Steinernema feltiae; Steinernema carpocapsae; Heterorhabditis bacteriophora; Heat tolerance; Desiccation; Hypoxia; Vertical migration

Clara Grosso, Generosa Teixeira, Isildo Gomes, Eurico S. Martins, Jose G. Barroso, Luis G. Pedro, A. Cristina Figueiredo, Assessment of the essential oil composition of Tornabenea annua, Tornabenea insularis and Tornabenea tenuissima fruits from Cape Verde Islands, Biochemical Systematics and Ecology, In Press, Corrected Proof, Available online 8 August 2009, ISSN 0305-1978, DOI: 10.1016/j.bse.2009.07.002.
(http://www.sciencedirect.com/science/article/B6T4R-4WYCT8H-1/2/a2545b55140bb3368c9a69db54c2ff68)
Abstract:
The essential oils of Tornabenea annua, Tornabenea insularis and Tornabenea tenuissima herbarium or in vivo fruits, collected in Fogo, Santiago, Santo Antao, Sao Nicolau and Sao Vicente Islands, from Cape Verde archipelago, or from plants grown in Lisbon, Portugal, were isolated by hydrodistillation and analysed by GC and GC-MS. The yellowish oils were obtained in variable average yields, lower in herbarium samples [0.05% (v/w)] and higher from in vivo samples [1.3% (v/w)]. Whereas T. annua fruits' oils were all dominated by myristicin (92-100%), most of the T. insularis fruit samples' oils were elemicin rich (82-90%). No clear information could be obtained for T. tenuissima fruits' oils as each of the samples gave different chemical composition. Cluster analysis of the essential oil composition from the fruits' samples studied, confirmed these chemical differences.
Keywords: Tornabenea annua; Tornabenea insularis; Tornabenea tenuissima; Apiaceae; Umbelliferae; Fruits; Essential oil; GC; GC-MS

Costas M. Pontikakos, Theodore A. Tsiligiridis, Maria E. Drougka, Location-aware system for olive fruit fly spray control, Computers and Electronics in Agriculture, In Press, Corrected Proof, Available online 7 August 2009, ISSN 0168-1699, DOI: 10.1016/j.compag.2009.07.013.
(http://www.sciencedirect.com/science/article/B6T5M-4WY5BC1-3/2/a48de5883ba8fde49ecbec43bf27fbaf)
Abstract:
Location awareness is essential for many Precision Farming (PF) tasks with strong spatiotemporal, environmental, public health and food safety characteristics. Nevertheless, its role is much more crucial in PF tasks with efficacy depending mainly on local climate conditions and the collaboration of users. A PF task with the aforementioned characteristics is the insecticide-bait ground spraying against olive fruit fly, the most serious pest on olive cultivations. It requires location awareness, so as to be more efficient, friendly for the environment and the domestic areas, and ensure olive products with low insecticide residues. This research proposes an innovative, integrated, Location-Aware System (LAS) suitable for the ground control of the olive fruit fly. The developed system enables rapid prototyping of Location-Aware (LA) services in an intelligent PF environment combining location sensing technologies with wireless Internet, Geographical Information Systems (GIS), and Expert Systems (ES). We focus on the functional and operational capabilities of the middleware architecture, on the design issues of the developed GIS, ES, and LA modules, as well as, on the factors and infrastructure that must be considered during the spraying process. Based on this framework we developed specific LA services, such as finding the area to be sprayed, estimating the amount of the spraying solution required, canceling

the spraying process, etc. These services aim in a more efficient and environmental friendly treatment. To validate the LAS a moderate-scale experiment is performed showing that the proposed system is functional and operational. LAS consult effectively the tractor attendants on how to spray, by means of reducing spraying failures and minimizing the decisions that must be taken during spraying process. Preliminary results report that with LAS no over sprayings occur, sprayings are based on infestation risk, cultivation characteristics, and meteorological conditions. Finally, a safe distance from biological cultivations, environmental protected and domestic areas is kept, avoiding pollution of these areas with insecticide residues.
Keywords: Location-aware system; Expert system; Geographical Information System; Precision Farming; Olive fruit fly

Miguel A. Rosales, Luis M. Cervilla, Juan J. Rios, Begona Blasco, Eva Sanchez-Rodriguez, Luis Romero, Juan M. Ruiz, Environmental conditions affect pectin solubilization in cherry tomato fruits grown in two experimental Mediterranean greenhouses, Environmental and Experimental Botany, In Press, Corrected Proof, Available online 7 August 2009, ISSN 0098-8472, DOI: 10.1016/j.envexpbot.2009.07.011.
(http://www.sciencedirect.com/science/article/B6T66-4WY6JY1-1/2/cdd52d7f590d87292887830bb347e6ee)
Abstract:
Considering the economic importance of the tomato and its nutritional benefits for human health, we studied how different environmental factors [temperature, solar radiation and vapour-pressure deficit (VPD)] influenced the pectin solubilization and the calcium concentration in cherry tomato fruits (Solanum lycopersicum cv. Naomi) grown in two experimental greenhouses: improved parral type (low-technology) and multispan type (high-technology). For three years (2004, 2005 and 2006), three fruit samples were taken over the entire production period: at the beginning of harvest [16 weeks after transplanting (WAT)], at mid-harvest (26 WAT), and at the end of harvest (35 WAT). Values for temperature, solar radiation, and VPD peaked in the third sampling in both greenhouses during the three years, being higher in the parral greenhouse during the production cycle. No-market production and peroxidation indicators [measured as H2O2 and malondialdehyde (MDA) concentrations] significantly increased at the end of the productive period in both greenhouses, indicating the presence of oxidative stress caused by the rise in temperature, solar radiation, and VPD, which was more pronounced in the parral greenhouse. Water-soluble pectins, pectate, and protopectin contents were measured, revealing an increase in the former two and a reduction in the latter under environmental stress. This indicates a clear pectin solubilization in cherry tomato fruit. The enzymes pectolytic polyglacturonase (PG), pectin methylesterase (PME), and pectate lyase (PEL), altered their activities during the third sampling, while the calcium concentration fell drastically. Therefore, both the increase in pectin solubilization as well as the reduction in the Ca concentration during harshest environmental stress in the third sampling, especially in the parral greenhouse, could degenerate the textural properties of the cherry tomato, reducing its quality and consumer acceptance.
Keywords: Calcium; Environmental stress; Greenhouses; Pectins; Pectolytic enzymes; Solanum lycopersicum

Lince Mukkun, Zora Singh, Methyl jasmonate plays a role in fruit ripening of `Pajaro' strawberry through stimulation of ethylene biosynthesis, Scientia Horticulturae, In Press, Corrected Proof, Available online 7 August 2009, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.07.006.
(http://www.sciencedirect.com/science/article/B6TC3-4WY5BNN-1/2/45c9511894732b276ff1ce5f26f8a33b)
Abstract:
The role of methyl jasmonate (MJ) in strawberry (Fragaria x ananassa Duch. cv Pajaro) fruit ripening was investigated by monitoring its endogenous concentrations in fruit at various stages of

development and the effects of exogenously applied MJ at these stages on ethylene biosynthesis. The concentration of endogenous trans-MJ was significantly higher in the white fruit (31.7-162.2 ng g-1) and decreased sharply in half and fully ripe fruit. Higher concentrations of endogenous trans-MJ at the white stage of strawberry fruit development followed by a decline during fruit ripening indicate that MJ may play an important role in modulating fruit ripening. Significantly increased ethylene production was measured in the fruit when MJ was applied at white, half ripe and at fully ripe stage. The application of MJ (50 [mu]M) resulted in significantly highest ethylene production and increased activities of 1-aminocyclopropane-1-carboxylic acid (ACC) synthase and ACC oxidase as compared to all other treatments. The effect of exogenously applied MJ on ethylene production, ACC synthase and ACC oxidase activities was dependent on concentration of MJ applied and on fruit developmental stage. In conclusion, MJ in strawberry modulates fruit ripening, as its concentration is higher in white fruit and is declined with the progression of ripening and exogenous application of MJ increases ethylene production, activities of ACC oxidase and ACC synthase depending upon the concentration of MJ applied and fruit developmental stage.
Keywords: Fragaria x ananassa Duch.; MJ; Ethylene; ACC synthase; ACC oxidase

Agata Maria Pawlowska, Fabiano Camangi, Alessandra Braca, Quali-quantitative analysis of flavonoids of Cornus mas L. (Cornaceae) fruits, Food Chemistry, In Press, Corrected Proof, Available online 5 August 2009, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.07.063.
(http://www.sciencedirect.com/science/article/B6T6R-4WXSK54-2/2/54632444b3d886e1c46131bacb4936c0)
Abstract:
The methanol extract obtained from the ripe fruits of Cornus mas L. (Cornaceae) have been phytochemically studied. On the basis of HPLC-PDA-MS/MSn analysis eight compounds have been identified as quercetin, kaempferol, and aromadendrin glycosilated derivatives. Three major compounds have been also isolated by Sephadex LH-20 column chromatography followed by HPLC and characterised by NMR spectroscopy. Moreover, LC-PDA-MS analysis of the red pigment revealed the presence of three anthocyanins. The quantitative analysis of all compounds was reported.
Keywords: Cornus mas; Flavonoids; Anthocyanins; HPLC; ESI-MS/MS

Saikat Dewanjee, Anup K. Das, Ranabir Sahu, Moumita Gangopadhyay, Antidiabetic activity of Diospyros peregrina fruit: Effect on hyperglycemia, hyperlipidemia and augmented oxidative stress in experimental type 2 diabetes, Food and Chemical Toxicology, In Press, Corrected Proof, Available online 4 August 2009, ISSN 0278-6915, DOI: 10.1016/j.fct.2009.07.038.
(http://www.sciencedirect.com/science/article/B6T6P-4WXHBY5-1/2/141be44b1375368395c28d169ae5d335)
Abstract:
Diospyros peregrina is an edible fruit of costal West-Bengal. The present investigation was undertaken to evaluate the role of aqueous extract of D. peregrina fruit in streptozotocin-nicotinamide induced type 2 diabetic rats. Oral administration of extract at the doses of 50 and 100 mg/kg body weight per day for 28 days to diabetic rats was found to possess significant dose dependant hypoglycemic and hypolipidemic activity. An increased reactive oxygen species and insufficient antioxidant activity is associated with diabetes mellitus, which is mainly responsible for diabetic pathogenesis. The role of extract on antioxidant markers of liver and kidney were estimated. The diabetic rats exhibited lower activities of superoxide dismutase (SOD), catalase (CAT), and reduced glutathione (GSH) content in hepatic and renal tissues as compared with normal rats. The activities of SOD, CAT, and GSH were found to be increased in extract treated diabetic rats in selected tissues. The increased level of lipid peroxidation (thiobarbituric acid reactive substances and hydroperoxide) in diabetic rats was also found to be reverted back to near normal status in extract treated groups.

Keywords: Diospyros peregrina; Antidiabetic; Antioxidant activity; Streptozotocin-nicotinamide; Type 2 diabetes

Francisca C. Almeida, Norberto P. Giannini, Rob DeSalle, Nancy B. Simmons, The phylogenetic relationships of cynopterine fruit bats (Chiroptera: Pteropodidae: Cynopterinae), Molecular Phylogenetics and Evolution, In Press, Uncorrected Proof, Available online 4 August 2009, ISSN 1055-7903, DOI: 10.1016/j.ympev.2009.07.035.
(http://www.sciencedirect.com/science/article/B6WNH-4WXHBV3-2/2/a0ad965eb961ef0b07c8590d6fa87bb1)
Abstract:
The subfamily Cynopterinae comprises ca. 24 species of pteropodid bats (Family Pteropodidae) distributed exclusively in South and Southeast Asia. Although some studies have supported monophyly of the subfamily, molecular analyses have produced contradictory results and there has been little agreement on relationships of cynopterines to other megabat groups. However, no previous studies have included a complete sampling of cynopterine genera. Here we describe a phylogenetic analysis of Cynopterinae based on more than 6000 bp from six different genes sampled in representatives of all 14 recognized genera. Our results support the monophyly of Cynopterinae but refute a close relationship of cynopterines with Nyctimeninae. Within Cynopterinae, our analyses consistently recovered two monophyletic clades, which we recommend be recognized formally as tribes: Cynopterini and Balionycterini. Biogeographic analyses indicate a Sundaland origin of the Cynopterinae and divergence date estimates suggest different timing of diversification of the two major cynopterine clades.
Keywords: Pteropodidae; Cynopterinae; Molecular phylogeny; Biogeography; Southeast Asia; Megaerops

Jian-ye Chen, Ruo Xiao, He-tong Lin, Min Ou, Jian-fei Kuang, Wang-jin Lu, Characterization and regulation of multiple forms of endo-1,4-[beta]-glucanase genes during longan fruit growth and development, Scientia Horticulturae, In Press, Corrected Proof, Available online 4 August 2009, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.06.034.
(http://www.sciencedirect.com/science/article/B6TC3-4WXGW3G-1/2/41c70edd9267da43a09d0b2572bd9c77)
Abstract:
Endo-1,4-[beta]-glucanase (EGase, EC 3.2.1.4) is proposed to be involved in the control of cell wall modification. However, the relationship between EGase and longan fruit growth remains obscure. In the present work, the expression profiles of three Dl-EGase genes in pericarp and aril tissues of longan fruit during growth and development were characterized; moreover, the effects of plant growth substances, naphthalene acetic acid (NAA) and thidiazuron (TDZ) on their expressions of fruits at two different developmental stages were also investigated. The results showed that high levels of EGase activities in aril were in accordance with rapid aril growth, and three Dl-EGase genes exhibited different expression patterns in pericarp and aril during fruit growth and development. Dl-EGase1 and Dl-EGase3 seemed to be associated with the growth of both pericarp and aril, while Dl-EGase2 was closely related to pericarp growth. In addition, treatment of NAA and TDZ at the stage of pericarp growth increased the EGase activities and induced the expressions of all the three Dl-EGases. However, when NAA or TDZ was applied at the rapid aril growth stage, the accumulations of Dl-EGase1 and Dl-EGase2 in the pericarp, and the accumulations of Dl-EGase1 and Dl-EGase3 in the aril were induced. Furthermore, the expression patterns of the three Dl-EGases showed different tissue specificity. It is thus speculated that Dl-EGase genes played a different role in longan fruit growth and were developmentally regulated, and more importantly, the responses of Dl-EGases to plant growth substances were different and dependent on fruit development stage and fruit tissue.
Keywords: Longan fruit; EGase; Expression; Growth and development; Regulation

M. Guerra, P.A. Casquero, Site and fruit maturity influence on the quality of European plum in organic production, Scientia Horticulturae, In Press, Corrected Proof, Available online 4 August 2009, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.07.003.
(http://www.sciencedirect.com/science/article/B6TC3-4WXGW3G-2/2/4bc842e97c698a1d467db2ee4ea4022a)
Abstract:
Information available on the role of site and fruit maturity in the quality of European plums in organic production has not been studied to date. European plum cv. `Green Gage' grown in organic production was harvested in order to study the effect of site and fruit maturity on fruit quality. At harvest, significant differences were found in fruit weight, colour, firmness and TSS between harvest dates, whereas significant differences were found in fruit weight, colour, firmness and fruit Ca content between sites. Differences remained during storage. Fruit weight loss during storage was affected by site. Fruit with high Ca content showed higher firmness both at harvest and during storage. Harvest moment should not be chosen according to date, since differences between sites at the same date have been found. Firmness and colour parameters a* and h[degree sign] would be useful to distinguish maturity at harvest between different sites and harvest dates. Linear regression between h[degree sign] and firmness at harvest would allow the use of the h[degree sign] colour parameter as a non-destructive measurement to distinguish maturity. Organic orchards should keep a minimum level of Ca in order to assure a slower fruit softening during storage.
Keywords: `Green Gage'; Environment; Harvest date; Fruit quality; Maturity index; Calcium

Ilkay Koca, Bulent Karadeniz, Antioxidant properties of blackberry and blueberry fruits grown in the Black Sea Region of Turkey, Scientia Horticulturae, Volume 121, Issue 4, 4 August 2009, Pages 447-450, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.03.015.
(http://www.sciencedirect.com/science/article/B6TC3-4W207K1-2/2/d3c6a6765f54da688bdd83476e69a19a)
Abstract:
Seven wild and ten cultivated blackberries (Arapaho, Bartin, Black Satin, Bursa 1, Bursa 2, Cherokee, Chester, Jumbo, Navaho, and Ness), and six lowbush (Vaccinium arctostaphylos) and four highbush (Vaccinium corymbosum) blueberries fruits (Ivanhoe, Jersey, Northland, and Rekord) were analyzed for total anthocyanins, total phenolics, and antioxidant activity as ferric reducing antioxidant power (FRAP) in this study. The respective ranges of total anthocyanin and total phenolic contents of the tested samples were: blackberries, 0.95-1.97 and 1.73-3.79 mg g-1 and blueberries, 0.18-2.94 and 0.77-5.42 mg g-1. FRAP values varied from 35.05 to 70.41 [mu]mol g-1 for blackberries, 7.41 to 57.92 [mu]mol g-1 for blueberries. Wild blackberries had the highest FRAP values while wild blueberries had the highest total phenolic and total anthocyanin contents. A linear relationship was observed between FRAP values and total phenolics for blueberries (r = 0.981). The anthocyanin pigments in samples were isolated and characterized by high-performance liquid chromatography (HPLC) with UV-visible detection. Cyn-3-glu was the predominant anthocyanin in all blackberry fruits.
Keywords: Anthocyanin; Blackberry; Blueberry; FRAP; HPLC; Phenols

Ningbo Cui, Taisheng Du, Fusheng Li, Ling Tong, Shaozhong Kang, Mixia Wang, Xiaozhi Liu, Zhijun Li, Response of vegetative growth and fruit development to regulated deficit irrigation at different growth stages of pear-jujube tree, Agricultural Water Management, Volume 96, Issue 8, August 2009, Pages 1237-1246, ISSN 0378-3774, DOI: 10.1016/j.agwat.2009.03.015.
(http://www.sciencedirect.com/science/article/B6T3X-4W3870P-1/2/1ef62414679a820742980e9f655e2219)
Abstract:

In order to investigate the response of vegetative growth, fruit development and water use efficiency to regulated deficit irrigation at different growth stages of pear-jujube tree (Zizyphus jujube Mill.), different water deficit at single-stage were treated on field grown 7-year old pear-jujube trees in 2005 and 2006. Treatments included severe (SD), moderate (MD) and low (LD) water deficit treatments at bud-burst to leafing (I), flowering to fruit set (II), fruit growth (III) and fruit maturation (IV) stages. Compared to the full irrigation (control), different water deficit treatments at different growth stages reduced photosynthesis rate (Pn) slightly and transpiration rate (Tr) significantly, thus it improved leaf water use efficiency (WUEL, defined as the ratio of Pn to Tr) by 2.7-26.1%. After the re-watering, Pn had significant compensatory effect, but Tr was not enhanced significantly, thus WUEL was improved by 31.4-42.2%. I-SD, I-MD, II-SD and II-MD decreased new shoot length, new shoot diameter and panicle length by 8-28%, 13-23% and 10-31%, respectively. Simultaneously, they reduced leaf area index (LAI) and pruning amount significantly. Flowering of pear-jujube tree advanced by 3-8 days in the water deficit treatments at stage I, Furthermore, SD and MD at stage I increased flowers per panicle and final fruit set by 18.9-40.5% and 15.5-36.6%, respectively. After a period of re-watering, different water deficit treatments at different growth stages improved the fruit growth rate by 15-30% without reduction of the final fruit volume. Compared to the control, I-MD, I-SD, I-LD, I-MD and I-SD treatments increased fruit yield by 13.2-31.9%, but reduced water consumption by 9.7-17.5%, therefore, they enhanced water use efficiency at yield level (WUEY, defined as ratio of fruit yield to total water use) by 17.3-41.4%. Therefore, suitable period and degree of water deficit can reduce irrigation water and restrain growth redundancy significantly, and it optimize the relationship between vegetative growth and reproductive growth of pear-jujube trees, which maintained or slightly increased the fruit yield, thus water use efficiency was significantly increased.
Keywords: Fruit development; Pear-jujube tree (Zizyphus jujube Mill.); Regulated deficit irrigation; Vegetative growth; Water use efficiency

Sara Sabbe, Wim Verbeke, Rosires Deliza, Virginia Matta, Patrick Van Damme, Effect of a health claim and personal characteristics on consumer acceptance of fruit juices with different concentrations of acai (Euterpe oleracea Mart.), Appetite, Volume 53, Issue 1, August 2009, Pages 84-92, ISSN 0195-6663, DOI: 10.1016/j.appet.2009.05.014.
(http://www.sciencedirect.com/science/article/B6WB2-4WC1103-1/2/7769876c4dacd1ce71a69aa72ca2fefd)
Abstract:
This study evaluates the effect of a health claim and personal characteristics on the acceptance of two unfamiliar acai fruit juices that have a low (40% acai) versus a high (4% acai) a priori overall liking. Hedonic and sensory measures as well as health- and nutrition-related attribute perceptions and purchase intention were rated before and after health information was presented. Differences in information effects due to interactions with juice type, consumer background attitudes and socio-demographics were investigated. Providing health information yielded a positive, though rather small increase, in overall liking, perceived healthiness and perceived nutritional value of both juices, as well as in their purchase intention. Sensory experiences remained predominant in the acceptance of the fruit juices, although the health claim had a stronger effect on the perceived healthiness and nutritional value of the least-liked juice. Background attitudes and socio-demographic characteristics influenced consumers' acceptance of both unfamiliar fruit juices. Health-oriented consumers were more likely to compromise on taste for an eventual health benefit, though they still preferred the best tasting juice. Consumers with a high food neophobia reported a lower liking for both unfamiliar fruit juices. Older respondents and women were more likely to accept fruit juices that claim a particular health benefit.
Keywords: Information; Acai; Euterpe oleracea Mart.; Health; Attitude; Consumer

Susan Dimbi, Nguya K. Maniania, Sunday Ekesi, Effect of Metarhizium anisopliae inoculation on the mating behavior of three species of African Tephritid fruit flies, Ceratitis capitata, Ceratitis cosyra and Ceratitis fasciventris, Biological Control, Volume 50, Issue 2, August 2009, Pages 111-116, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2009.04.006.
(http://www.sciencedirect.com/science/article/B6WBP-4W3PT64-1/2/140b57ff35b68ba407900c0590f77052)
Abstract:
Bioassays were carried out in the laboratory to investigate the effect of inoculation by Metarhizium anisopliae on mating behavior of three species of fruit flies, Ceratitis cosyra, C. fasciventris and C. capitata. In all three species, inoculation by the fungus resulted in significant delay in the commencement of calling and mating of treated males as they spent substantial amount of time in grooming activity. In fungus-treated male flies, calling and mating started at 70.0-80.0 min after exposing them to untreated females. However, when females were treated, calling and mating started from 15.0 to 16.0 min. Fungus-treated males competed equally with untreated males for virgin female flies from day 0 to day 2 post-inoculation. There were, however, significant differences on day 3, with untreated males of the three fruit fly species having higher percentage of paring than fungus-treated males. There was no significant difference in the duration of pairing of fungus-treated males and untreated male of the three fruit fly species at day 0, 1 and 2 post-inoculation. However, on day 3 post-inoculation, there was a significant difference in the duration of mating with fungus-treated males having the lowest duration of mating. No significant differences in the percentage of mating between fungus-treated male and female flies; and the untreated flies at day 0, 1 and 2 days post-inoculation, except on day 3. The results are discussed with regard to application in autodissemination, baiting and the sterile insect techniques.
Keywords: Entomopathogenic fungus; Metarhizium anisopliae; Fruit flies; Ceratitis cosyra; C. fasciventris; C. capitata; Fungal inoculation; Mating behavior; Competitiveness

Xiaodong Wang, Guoqing Li, Daohong Jiang, Hung-Chang Huang, Screening of plant epiphytic yeasts for biocontrol of bacterial fruit blotch (Acidovorax avenae subsp. citrulli) of hami melon, Biological Control, Volume 50, Issue 2, August 2009, Pages 164-171, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2009.03.009.
(http://www.sciencedirect.com/science/article/B6WBP-4VYP94Y-1/2/5331f4c29be9ae11adeee9a2fe5cc7f1)
Abstract:
Bacterial fruit blotch (BFB) caused by Acidovorax avenae subsp. citrulli (Aac) is a serious disease of hami melon (Cucumis melo var. saccharinus) in Northern China. A study was conducted to screen plant epiphytic yeasts for use as biocontrol agents of BFB. Results showed that 24 out of 463 yeast strains isolated from leaves or flowers of plants collected from three provinces in China were antibiotic against Aac on agar medium and eight antagonistic yeast strains including strain 0732-1 formed inhibition zones larger than 18 mm in diameter. Spray application of strain 0732-1 isolated from watermelon grown in Xinjiang was effective in reducing incidence and severity of disease caused by Aac on leaves of hami melon. Treatment of hami melon seeds with cell-free cultural filtrates of the yeast strain 0732-1 resulted in a significant reduction in severity of seedling blight caused by seedborne Aac, and the efficacy was not significantly different ($P > 0.05$) from that of chemical seed treatments including streptomycin sulfate (0.1%, w/v) and hydrochloric acid (2%, v/v). Based on morphological and physiological characteristics and analysis of the DNA sequence of the internal transcribed spacer of ribosomal DNA, the yeast strain 0732-1 was identified as Pichia anomala Kurtzman. This study suggests that the yeast strain 0732-1 is an agent with potential for biocontrol of BFB of hami melon caused by Aac.
Keywords: Hami melon; Cucumis melo var. saccharinus; Bacterial fruit blotch; Acidovorax avenae subsp. citrulli; Pichia anomala; 0732-1; Biocontrol

M. Alothman, Rajeev Bhat, A.A. Karim, Antioxidant capacity and phenolic content of selected tropical fruits from Malaysia, extracted with different solvents, Food Chemistry, Volume 115, Issue 3, 1 August 2009, Pages 785-788, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.005.
(http://www.sciencedirect.com/science/article/B6T6R-4V3SY90-G/2/f776e92c941fbb776db0cc3e267b3d50)
Abstract:
The antioxidant capacity and phenol content of three tropical fruits pulps, namely, honey pineapple, banana and Thai seedless guava, were studied. Three solvent systems were used (methanol, ethanol and acetone) at three different concentrations (50%, 70% and 90%) and with 100% distilled water. The antioxidant capacity of the fruit extracts was evaluated using a ferric reducing/antioxidant power assay and the free radical-scavenging capacity was evaluated using 2,2-diphenyl-1-picrylhydrazyl radical-scavenging assays. The efficiency of the solvents used to extract phenols from the three fruits varied considerably. The polyphenol content of Thai seedless guava was 123 to 191 gallic acid equivalents/100 g (GAE/100 g), that of pisang mas was 24.4 to 72.2 GAE/100 g, and that of honey pineapple was 34.7 to 54.7 GAE/100 g. High phenol content was significantly correlated with high antioxidant capacity.
Keywords: Antioxidant; Solvent extraction; Tropical fruits; Phenolic compounds; Flavonoids

Mark W. Davey, Inge Van den Bergh, Richard Markham, Rony Swennen, Johan Keulemans, Genetic variability in Musa fruit provitamin A carotenoids, lutein and mineral micronutrient contents, Food Chemistry, Volume 115, Issue 3, 1 August 2009, Pages 806-813, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.088.
(http://www.sciencedirect.com/science/article/B6T6R-4VBT27F-2/2/4889b5c7b6c4e5c4fc098abd0cb5e9e3)
Abstract:
Bananas and plantains (Musa spp.) are a staple food for millions of impoverished people and as such are an important source of vitamins and micronutrients. To evaluate the potential of Musa spp. to meet dietary micronutrients requirements, we have screened 171 different genotypes for fruit provitamin A carotenoids (pVACs) contents, and a subset of 47 genotypes for macro- and micro-mineral (iron and zinc) contents using standardised sampling and analytical protocols. The results indicate that there is substantial variability in mean fruit pulp pVACs contents between cultivars, and that cultivars with a high fruit pVACs content are widely distributed across the different genome groups but only at a low frequency. The introduction of such high pVACs cultivars has much potential for improving the vitamin A nutritional status of Musa-dependent populations at modest and realistic fruit-consumption levels. In contrast, fruit pulp mineral micronutrient contents (iron and zinc), were low and showed limited inter-cultivar variability, even for genotypes grown under widely-differing environments and soil types. Results are discussed within the framework of the development of strategies to improve the nutritional health and alleviation of micronutrient deficiencies within Musa-consuming population groups.
Keywords: Banana; Biofortification; Fe; HarvestPlus; Micronutrients; Musa; Nutrition; Plantain; Provitamin A carotenoids; Vitamin A; Zn

Thomas Froehlicher, Thierry Hennebelle, Francoise Martin-Nizard, Patricia Cleenewerck, Jean-Louis Hilbert, Francis Trotin, Sebastien Grec, Phenolic profiles and antioxidative effects of hawthorn cell suspensions, fresh fruits, and medicinal dried parts, Food Chemistry, Volume 115, Issue 3, 1 August 2009, Pages 897-903, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.01.004.
(http://www.sciencedirect.com/science/article/B6T6R-4VC0YFY-1/2/68c33ec84256d2203b20614c3e212ded)
Abstract:
The polyphenolic content of two cell suspension lines (red and yellow) initiated from the ovarian wall of Crataegus monogyna flower and their antioxidative potencies against ABTS+, DPPH, and

human LDL oxidation were compared to those of red fresh and dry fruits, flower buds and flowering tops. Maximal phenolics and proanthocyanidins contents were found in red suspension extracts displaying high antioxidative effects. In contrast, yellow cell extracts were always the poorest in both phenolics and activity. Flower buds and flowering tops have significant phenolic yields and effects. Both fresh and dried fruits are less active. The amounts in some major phenolic compounds were determined in all tested samples: again, the most antioxidant samples were richer, the red cell line showing particularly high amounts in epicatechin and chlorogenic acid, whilst dried flower buds contained mainly hyperoside and chlorogenic acid. (-)-Epicatechin was confirmed to be more efficient as an antioxidant compound than hyperoside and chlorogenic acid in all assays and more generally, proanthocyanidins were found to be more clearly related to antioxidant activity than other classes of phenolics. The major anthocyanin characterising the red cells of C. monogyna was isolated and identified as cyanidin-3-O-galactoside.
Keywords: Crataegus monogyna; Hawthorn; Cell culture suspension; Phenolic content; Antioxidant; Anthocyanin; Idaein

Sylvie Bureau, David Ruiz, Maryse Reich, Barbara Gouble, Dominique Bertrand, Jean-Marc Audergon, Catherine M.G.C. Renard, Application of ATR-FTIR for a rapid and simultaneous determination of sugars and organic acids in apricot fruit, Food Chemistry, Volume 115, Issue 3, 1 August 2009, Pages 1133-1140, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.100.
(http://www.sciencedirect.com/science/article/B6T6R-4VC7F1C-B/2/6bf79223c351399163579b43c13eff21)
Abstract:
A simple, fast and accurate Fourier transform mid-infrared spectroscopy method was developed for simultaneously determining sugar and organic acid contents in apricot fruit slurries using the attenuated total reflectance. The potential of this method coupled with chemometric techniques based on partial least squares was assessed by comparison with currently used enzymatic determination of sucrose, glucose, fructose, malic acid and citric acid. Fruits of eight contrasted cultivars harvested at different ripening stages were used in this study and randomly divided in a calibration set (505 apricots) and in a validation set (252 apricots). The most suitable region was found in the range between 1500 and 900 cm-1. Good prediction performances were obtained (R2 [greater-or-equal, slanted] 0.74 and RMSEP [less-than-or-equals, slant] 18%). Results concerning the prediction of other quality traits such as firmness, skin colour, ethylene production, soluble solids content and titratable acidity were discussed.
Keywords: Mid-infrared; PLS; Prunus armeniaca L.; Cultivars; Fruit quality; Maturation; PCA

Shela Gorinstein, Ratiporn Haruenkit, Sumitra Poovarodom, Yong-Seo Park, Suchada Vearasilp, Milan Suhaj, Kyung-Sik Ham, Buk-Gu Heo, Ja-Yong Cho, Hong Gi Jang, The comparative characteristics of snake and kiwi fruits, Food and Chemical Toxicology, Volume 47, Issue 8, August 2009, Pages 1884-1891, ISSN 0278-6915, DOI: 10.1016/j.fct.2009.04.047.
(http://www.sciencedirect.com/science/article/B6T6P-4W8TW86-1/2/c12ae2df89a6fb2c7d740cb5b28d1981)
Abstract:
In the time of globalization many of the tropical fruits can be find at the markets of Europe and North America. Most customers are not familiar with the nutritional and proliferative values of these fruits. Therefore, a less known snake fruit was compared with better known kiwi fruit, using fluorometry, FT-IR spectroscopy, several radical scavenging and proliferative assays and statistical evaluation.
It was found similarity between snake fruit (cultivar Sumalee) and kiwi fruit (cultivar Hayward) in the contents of polyphenols (8.15-7.91, mg GAE g-1 DW), antioxidant values by DPPH (11.28-10.24, [mu]MTE g-1 DW), and antiproliferative activities on both human cancer cell lines (Calu-6

for human pulmonary carcinoma, and SMU-601 for human gastric carcinoma, 90.5-87.6 and 89.3-87.1%, cell survival, respectively).
In conclusion, snake fruit cultivar Sumalee is comparable with kiwi fruit cultivar Hayward. Two fruits can be used as supplements to the normal diet. Consumption of a combination of both fruits could be recommended in order to receive the best results.
Keywords: Snake and kiwi fruits; Bioactive compounds; Antioxidant potential; Antiproliferative activities

Cavit Bircan, Incidence of ochratoxin A in dried fruits and co-occurrence with aflatoxins in dried figs, Food and Chemical Toxicology, Volume 47, Issue 8, August 2009, Pages 1996-2001, ISSN 0278-6915, DOI: 10.1016/j.fct.2009.05.008.
(http://www.sciencedirect.com/science/article/B6T6P-4W9XBH5-1/2/2cc6a30dfa4b6adbde00f315fa9b51ee)
Abstract:
Ninety eight dried figs, 53 sultanas and 20 dried apricots destined for export from Turkey to the European Union were tested for ochratoxin A (OTA) contamination utilizing immunoaffinity column clean-up and high-performance liquid chromatography (HPLC). While only 2 (4%) of the sultanas exceeded the 10 ng g-1 maximum limit set by the EU, 28 (53%) of 53 sultana samples contained detectable levels of OTA, in the range of 0.51-58.04 ng g-1. Eighteen of 98 (18%) dried figs contained detectable levels of OTA, in the range of 0.87-24.37 ng g-1. Only one of the 20 dried apricots was contaminated, with 0.97 ng g-1 OTA. Dried figs analyzed for OTA were also tested for aflatoxin contamination to determine the co-occurrence of both toxins. Seven samples were confirmed aflatoxin positive, in the range of 0.23-4.28 ng g-1, and only 2 samples contained both toxins, with a maximum concentration of 24.37 ng g-1for OTA and 1.02 ng g-1 for aflatoxin B1. The average recovery and relative standard deviation (RSD) obtained from dried fruits spiked with OTA ranged from 80.5% to 91.5% and 0.99-5%, respectively. The average recovery and relative standard deviation (RSD) obtained from dried figs spiked with aflatoxin ranged from 88.78% to 93.53% and 2.54-7.25%, respectively.
Keywords: Ochratoxin A; Aflatoxin; Dried fruits; Rasff

Grazyna J. Zimowska, Xavier Nirmala, Alfred M. Handler, The [beta]2-tubulin gene from three tephritid fruit fly species and use of its promoter for sperm marking, Insect Biochemistry and Molecular Biology, Volume 39, Issue 8, August 2009, Pages 508-515, ISSN 0965-1748, DOI: 10.1016/j.ibmb.2009.05.004.
(http://www.sciencedirect.com/science/article/B6T79-4WGMB4N-1/2/e0d2993918b68b4644d3fa61306d7133)
Abstract:
To isolate testis-specific regulatory DNA that could be used in genetically transformed insect pest species to improve their biological control, [beta]2-tubulin genes and their proximal genomic DNA were isolated from three economically important tephritid pest species, Anastrepha suspensa, Anastrepha ludens, and Bactrocera dorsalis. Gene isolation was first attempted by degenerate PCR on an A. suspensa adult male testes cDNA library, which fortuitously isolated the 2.85 kb [beta]1-tubulin gene that encodes a 447 amino acid polypeptide. Subsequent PCR using 5' and 3' RACE generated the 1.4 kb As[beta]2-tubulin gene that encodes a 446 amino acid polypeptide. Using primers to conserved sequences, the highly similar A. ludens and B. dorsalis [beta]2-tubulin genes, encoding identical amino acid sequences, were then isolated. To verify As[beta]2-tubulin gene identification based on gene expression, qRT-PCR showed that As[beta]2-tubulin transcript was most abundant in pupal and adult males, and specific to the testes. This was further tested in transformants having the DsRed.T3 reporter gene regulated by the As[beta]2-tubulin 1.3 kb promoter region. Fluorescent protein was specifically expressed in testes from third instar larvae to adults, and fluorescent sperm could be detected in the spermathecae of non-transgenic females

mated to transgenic males.To confirm these matings, a PCR protocol was developed specific to the transgenic sperm DNA.
Keywords: beta2-Tubulin; Tephritid fruit fly; Insect transgenesis; Spermatogenesis; Sperm marker

Eleni Tani, Alexios N. Polidoros, Emmanouil Flemetakis, Catalina Stedel, Chrissanthi Kalloniati, Kyproula Demetriou, Panagiotis Katinakis, Athanasios S. Tsaftaris, Characterization and expression analysis of AGAMOUS-like, SEEDSTICK-like, and SEPALLATA-like MADS-box genes in peach (Prunus persica) fruit, Plant Physiology and Biochemistry, Volume 47, Issue 8, August 2009, Pages 690-700, ISSN 0981-9428, DOI: 10.1016/j.plaphy.2009.03.013.
(http://www.sciencedirect.com/science/article/B6VRD-4W1JVYB-4/2/86a18f495f70d877548f63afb82ca66b)
Abstract:
MADS-box genes encode transcriptional regulators that are critical for flowering, flower organogenesis and plant development. Although there are extensive reports on genes involved in flower organogenesis in model and economically important plant species, there are few reports on MADS-box genes in woody plants. In this study, we have cloned and characterized AGAMOUS (AG), SEEDSTICK (STK) and SEPALLATA (SEP) homologs from peach tree (Prunus persica L. Batsch) and studied their expression patterns in different tissues as well as in fruit pericarp during pit hardening. AG- STK- and SEP-like homologs, representative of the C-, D-, E-like MADS-box gene lineages, respectively, play key roles in stamen, carpel, ovule and fruit development in Arabidopsis thaliana. Sequence similarities, phylogenetic analysis and structural characteristics were used to provide classification of the isolated genes in type C (PPERAG), type D (PPERSTK) and type E (PPERSEP1, PPERSEP3, PPERFB9) organ identity genes. Expression patterns were determined and in combination with phylogenetic data provided useful indications on the function of these genes. These data suggest the involvement of MADS-box genes in peach flower and fruit development and provide further evidence for the role of these genes in woody perennial trees that is compatible with their function in model plant species.
Keywords: MADS-box genes; Peach; Fruit; Flower; Development; Split pit

Justin E. Dalton, Matthew S. Lebo, Laura E. Sanders, Fengzhu Sun, Michelle N. Arbeitman, Ecdysone Receptor Acts in fruitless- Expressing Neurons to Mediate Drosophila Courtship Behaviors, Current Biology, In Press, Corrected Proof, Available online 30 July 2009, ISSN 0960-9822, DOI: 10.1016/j.cub.2009.06.063.
(http://www.sciencedirect.com/science/article/B6VRT-4WWG20B-5/2/c369761dfd7cba40c6743cab0a258116)
Abstract: Summary
In Drosophila melanogaster, fruitless (fru) encodes male-specific transcription factors (FRUM; encoded by fru P1) required for courtship behaviors (reviewed in [1]). However, downstream effectors of FRUM throughout development are largely unknown [2], [3], [4] and [5]. During metamorphosis the nervous system is remodeled for adult function, the timing of which is coordinated by the steroid hormone 20-hydroxyecdysone (ecdysone) through the ecdysone receptor, a heterodimer of the nuclear receptors EcR (isoforms are EcR-A, EcR-B1, or EcR-B2) and Ultraspiracle (USP) (reviewed in [6]). Here, we show that genes identified as regulated downstream of FRUM during metamorphosis are significantly overrepresented with genes known to be regulated in response to ecdysone or EcR. FRUM and EcR isoforms are coexpressed in neurons in the CNS during metamorphosis in an isoform-specific manner. Reduction of EcR-A levels in fru P1-expressing neurons of males caused a significant increase in male-male courtship activity and significant reduction in size of two antennal lobe glomeruli. Additional genes were identified that are regulated downstream of EcR-A in fru P1-expressing neurons. Thus, EcR-A is required in fru P1-expressing neurons for wild-type male courtship behaviors and the establishment of male-specific neuronal architecture.

Keywords: CELLBIO

Carlos L. Cespedes, Maribel Valdez-Morales, Jose G. Avila, Mohammed El-Hafidi, Julio Alarcon, Octavio Paredes-Lopez, Phytochemical profile and the antioxidant activity of Chilean wild black-berry fruits, Aristotelia chilensis (Mol) Stuntz (Elaeocarpaceae), Food Chemistry, In Press, Corrected Proof, Available online 30 July 2009, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.07.045.
(http://www.sciencedirect.com/science/article/B6T6R-4WWG395-1/2/6971bfc42dab53c2b8067854f7cdc812)
Abstract:
From ethanolic, water extracts and their fractions of mature fruits of wild black-berry Aristotelia chilensis (Mol) Stuntz (Elaeocarpaceae), different phenolic compounds were identified by chromatographic (HPLC) and unequivocally assignments by spectroscopic (UV, NMR) data analysis. Anthocyanidins, flavonoids and phenolic acids fractions were obtained using flash and open column chromatography. The main compounds gentisic acid, ferulic acid, gallic acid, p-coumaric acid, sinapic acid, 4-hydroxybenzoic acid, delphinidin, cyanidin, vanillic acid, delphinidin gallate, gallocatechin gallate, quercetin, rutin, myricetin, catechin and epi-catechin as mixture 1:1, and several glycosides of anthocyanidins (delphinidin-3-sambubioside-5-glucoside, delphinidin-3,5-diglucoside, cyanidin-3-sambubioside-5-glucoside, cyanidin-3,5-diglucoside, delphinidin-3-sambubioside, delphinidin-3-glucoside, cyanidin-3-sambubioside, and cyanidin-3-glucoside), and proanthocyanidin B were detected. In addition to phytochemical analysis the antioxidant activities of extracts, partitions and fractions were strongly correlated with the highest polyphenol contents. The most active samples were the ethanolic and acetone extracts in all bioassays used and all samples were compared for activity against butylated hydroxy toluene (BHT), quercetin and tocopherol used as pattern samples. The juice (E), EtOH extract (A) and acetone partition (B) were found to have IC50 values of 4.7, 1.7 and 7.4 ppm, respectively against DPPH and 5.9, 2.1 and 3.9 ppm, respectively against TBARS formation. Additionally, the fraction F-4 showed a strong activity with IC50 of 4.9 and 6.5 ppm, against DPPH and TBARS respectively. Consistent with this finding, EtOH extract had the greatest ORAC and FRAP values as percentage of activity. On the other hand the IC50 values for the inhibitory activity against of extract B, F-3 and F-4 were 9.7, 13.2 and 10.7 ppm, respectively and against OH- were 29.1, 7.0 and 6.3 ppm, respectively. The EtOH extract protects against stress oxidative reducing the concentration of the MDA a lipid peroxidation index. These results shows that this fruit could be useful as antioxidant and nutraceutical sources.
Keywords: Flavonoids; Phenolic acids; Anthocyanins; Antioxidant activity; Aristotelia chilensis; Elaeocarpaceae

S. Janjai, B. Mahayothee, N. Lamlert, B.K. Bala, M. Precoppe, M. Nagle, J. Muller, Diffusivity, shrinkage and simulated drying of litchi fruit (Litchi Chinensis Sonn.), Journal of Food Engineering, In Press, Corrected Proof, Available online 26 July 2009, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2009.07.015.
(http://www.sciencedirect.com/science/article/B6T8J-4WVK4T0-2/2/7d96d886f3d6111352b073d3dd37f184)
Abstract:
Litchi (Litchi Chinensis Sonn.) is an important commercial fruit in Thailand and Vietnam. Litchi fruit is consumed both as fresh and dried products. Also most of the export of litchi is in the form of dried whole litchi fruit. Thermo-physical properties and drying model of litchi fruit is important for optimum design of litchi dryer. This paper presents moisture diffusivity, shrinkage and finite element simulated drying of litchi fruit. The moisture diffusivities of litchi were determined by minimizing the sum of square of deviations between the predicted and experimental values of moisture content of thin layer drying under controlled conditions of air temperature and relative

humidity. The components in the form of cylinder for seed and seed stalk and slab for seed coat, shell and flesh were dried in thin layers at the air temperatures of 50, 60, 70 and 80 [degree sign]C and relative humidity in the range of 10-25%. The mean diffusivity of flesh, seed and shell of litchi fruit increased with temperature and was expressed by the Arrhenius-type equation, but the diffusivities of seed coat and seed stalk were independent of temperature. The moisture diffusivities of seed coat and seed stalk were much lower than those of the other parts of the litchi. The shrinkage of litchi fruit has also been determined experimentally and it was expressed as a function of moisture reduction. A two-dimensional finite element model has been developed to simulate moisture diffusion in litchi fruit during drying. Shrinkage of the flesh and different component diffusivities of litchi during drying were also taken into account. The finite element model was programmed in Compaq Visual FORTRAN version 6.5. This finite element model satisfactorily predicts the moisture diffusion during drying. Moisture contents in the different components in the litchi fruit during drying were also simulated. This study provides an understanding of the transport processes in the different components of the litchi fruit.
Keywords: Litchi; Moisture diffusivity; Shrinkage; Finite element; Simulation

Mark Swanson, Adam Branscum, Peace Julie Nakayima, Promoting consumption of fruit in elementary school cafeterias. The effects of slicing apples and oranges, Appetite, In Press, Corrected Proof, Available online 25 July 2009, ISSN 0195-6663, DOI: 10.1016/j.appet.2009.07.015.
(http://www.sciencedirect.com/science/article/B6WB2-4WVF6HC-1/2/aea335c928b3c147bf05ded077538470)
Abstract:
We examined how slicing apples and oranges affected elementary students' selection and consumption of fruit. Slicing increased the percentage of children selecting and consuming oranges, while a similar effect was not found for apples. The impact of slicing fruit was greatest among younger students. These findings suggest that school cafeterias can increase accessibility and consumption of foods through simple, inexpensive food preparation techniques, with the impact of such measures varying by foods and student characteristics.
Keywords: Fruit; Children; School lunch; Accessibility

S. Inigo-Nunez, M.A. Herreros, T. Encinas, A. Gonzalez-Bulnes, Estimated daily intake of pesticides and xenoestrogenic exposure by fruit consumption in the female population from a Mediterranean country (Spain), Food Control, In Press, Corrected Proof, Available online 25 July 2009, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2009.07.009.
(http://www.sciencedirect.com/science/article/B6T6S-4WVF6MM-1/2/d7fb25f98573180363285bc9255e6040)
Abstract:
The presence and concentrations of a total of 100 pesticides in apple samples (n = 30) and 65 in orange juice samples (n = 19) were determined in markets in Madrid (Spain). The presence of at least one pesticide residue was detected in 87% (26 of 30) of samples of apples and 16% (3 of 19) of orange juice samples; orange juices contained only residues from a single pesticide (organophosphates), whilst nearly 75% (19 of 26) of apples showing residues contained more than one compound (organochlorines, organophosphates, carbamates, pyrethroids and others). However, overall, the estimated daily intakes (EDIs) of the different pesticides, from fruit consumption, in Spanish female population were negligible; although is concerning that prepubertal girls accounted for the highest percentages. The analysis of the estimated estrogenic intake also showed minor exposure to pesticides; in this case, the highest intake occurring in perimenopausal women, while the lowest intake happened at childbearing age.
Keywords: Pesticides; Fruit consumption; Dietary intake; Xenoestrogens; Spain

Paula Baptista, Anabela Martins, Rui Manuel Tavares, Teresa Lino-Neto, Diversity and fruiting pattern of macrofungi associated with chestnut (Castanea sativa) in the Tras-os-Montes region (Northeast Portugal), Fungal Ecology, In Press, Corrected Proof, Available online 21 July 2009, ISSN 1754-5048, DOI: 10.1016/j.funeco.2009.06.002.
(http://www.sciencedirect.com/science/article/B8JGS-4WTHB89-1/2/9829f2d7259e6566fdeb93235adbf677)
Abstract:
The chestnut (Castanea sativa) agro-ecosystem is of great social, economic and landscape importance in NE Portugal. There are multiple resources associated with this crop, among them fruit and wood production and mushroom harvesting. However, information about the diversity and ecology of macrofungi is very scarce. In this context, the aim of this study was to assess the macrofungal diversity associated with chestnut trees over 4 y. Carpophore surveys were conducted in a non-tilled C. sativa orchard located in Braganca, Portugal, from Sep. 2002 to Dec. 2005. A total of 2677 carpophores belonging to 73 species across 16 families and 23 genera were recorded. Of the total number of macrofungal species listed, 82 % were ectomycorrhizal (EM) species. The genera with the greatest species richness were Russula, Inocybe and Lactarius, which accounted for 38.4 % of all species collected. The most abundant species were Laccaria laccata, Hebeloma crustuliniforme and Inocybe geophylla, which produced around 35 % of all carpophores. The cumulative number of species over the four successive years revealed that 80.5 % of macrofungal species that potentially exist in the study area were surveyed. Species richness and carpophore abundance fluctuated across years, which could have been related to weather conditions, especially to rainfall. Fructification occurred in two distinct seasons a year, autumn and spring, the first one being the most important in terms of number of species and carpophores. These data could be an important contribution toward the development of sustainable management practices for chestnut agro-ecosystem conservation.
Keywords: Castanea sativa Mill.; Fruiting phenology; Macrofungal occurrence; Macrofungal species diversity

Mouna Ben Taarit, Kamel Msaada, Karim Hosni, Mohamed Hammami, Mohamed Elyes Kchouk, Brahim Marzouk, Plant growth, essential oil yield and composition of sage (Salvia officinalis L.) fruits cultivated under salt stress conditions, Industrial Crops and Products, In Press, Corrected Proof, Available online 18 July 2009, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2009.06.001.
(http://www.sciencedirect.com/science/article/B6T77-4WSWYG8-1/2/3ff1c0698ce838b61f91eb5afe7d88d3)
Abstract:
A glasshouse experiment was conducted to assess the effect of different NaCl concentrations (25, 50, 75 and 100 mM) on plant growth, essential oil production and composition of Salvia officinalis fruits. The first results showed that increasing NaCl levels to 100 mM reduced significantly the plant growth by 65%. While, the essential oil yield increased significantly from control to 75 mM and decreased only at 100 mM NaCl. Salt stress affect also the essential oil compounds mainly the major ones. Hence, viridiflorol was the main essential oil compound at control and 25 mM NaCl, 1,8-cineole became the predominant compound at 50 and 75 mM and manool prevailed at 100 mM. The oxygenated monoterpenes were the main class at all the treatments except at severe one when the diterpenes were the main ones.
Keywords: Salvia officinalis; Fruits; Salinity; Essential oil composition; Manool

A. Uzun, O. Gulsen, G. Kafa, U. Seday, O. Tuzcu, T. Yesiloglu, Characterization for yield, fruit quality, and molecular profiles of lemon genotypes tolerant to `mal secco' disease, Scientia Horticulturae, In Press, Corrected Proof, Available online 18 July 2009, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.06.031.

(http://www.sciencedirect.com/science/article/B6TC3-4WSWYMJ-1/2/ec38c349ce6f186a8aab7160f6848d5a)
Abstract:
`Mal secco' is a serious disease of lemon and other citrus species, reduces lemon production, and limits the use of susceptible cultivars especially in the Mediterranean countries, against which there is no effective management system to control the disease. The objective of this study was to determine yield efficiency, tree and fruit characters, and molecular profiles of the selected promising genotypes in lemon breeding program to develop `mal secco' tolerant lemon cultivars. After 4 years of evaluation, `Tuzcu 894', a progeny of `Finike Yerli Yuvarlak' and `Kutdiken', was designated as promising genotype with high yield, fruit weight, juice content and low seed number contrary to `Kutdiken' as control. `Tuzcu 8911' was suitable for dense planting having the highest yield in CV. In addition, these two promising genotypes survived after many years being subjected to artificial and natural P. tracheiphila infections and harsh winter temperatures, which were attractive to the citrus industry. Molecular analysis, as assessed with 11 inter-simple sequence repeats (ISSR) primers, indicated that `Tuzcu 09 Aklimon' and its selections, `Tuzcu 896', `Tuzcu 897' and `Tuzcu 898', were distinct from the other genotypes with similarity value of 0.82. Genetic variation among the other lemon genotypes was low and some of the genotypes were identical. It was concluded that variations in the agronomical characters are mainly due to mutations.
Keywords: Citrus limon; Lemon; Mal secco; ISSR

Jian Sun, Yueming Jiang, John Shi, Xiaoyi Wei, Sophia Jun Xue, Jinyu Shi, Chun Yi, Antioxidant activities and contents of polyphenol oxidase substrates from pericarp tissues of litchi fruit, Food Chemistry, In Press, Corrected Proof, Available online 17 July 2009, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.07.025.
(http://www.sciencedirect.com/science/article/B6T6R-4WSRF7H-5/2/54589d69831a4132baf798f66390ad0d)
Abstract:
The experiments were performed to extract and purify substrates for polyphenol oxidase (PPO) from pericarp tissue of postharvest litchi fruit. Two purified PPO substrates were identified as (-)-epicatechin and procyanidin A2. The antioxidant properties of two PPO substrates were further evaluated in the present study. Variation in the content of the major substrate (-)-epicatechin of litchi fruit during storage at 25 [degree sign]C was analysed using the HPLC-UV method. The results showed that (-)-epicatechin exhibited stronger antioxidant capability than procyanidin A2, in terms of reducing power and scavenging activities of DPPH radical, hydroxyl radical and superoxide radical. Furthermore, (-)-epicatechin content in pericarp tissue tended to decrease with increasing skin browning index of litchi fruit during storage at 25 [degree sign]C. Thus, these two compounds can be used as potential antioxidants in litchi waste and the fresh pericarp tissue of litchi fruit exhibited a better utilisation value.
Keywords: Polyphenol oxidase; Litchi; Fruits; Substrates; Content; Antioxidant activity

Christina Kurz, Martin Leitenberger, Reinhold Carle, Andreas Schieber, Evaluation of fruit authenticity and determination of the fruit content of fruit products using FT-NIR spectroscopy of cell wall components, Food Chemistry, In Press, Corrected Proof, Available online 17 July 2009, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.07.028.
(http://www.sciencedirect.com/science/article/B6T6R-4WSRF7H-1/2/5694cfde6af88b3753b0b20ad588df01)
Abstract:
An analytical procedure using Fourier transform near infrared (FT-NIR) spectroscopy and chemometrics with multivariate techniques for the rapid determination of the fruit authenticity and for the quantification of the fruit content was developed, based on the cell wall constituents (alcohol-insoluble residue, AIR, and hemicellulose, HC). The contents of rhamnose, fucose,

arabinose, xylose, mannose, galactose, and glucose in the hemicellulose fraction of apricots, peaches, and pumpkins determined by gas chromatography were used as references. Furthermore, spectral information was correlated with the fruit content and the gravimetric data obtained from sequential fractionation of the alcohol-insoluble residue. Samples of self-made and commercial apricot and peach fruit preparations, jams, and spreads were included in the investigations. Hemicellulose from 109 samples and AIR from 92 samples was recorded, and principal component regression was used to create calibration models relating chemical and gravimetrical reference values to spectral data. The calibration models provided a good predictability in comparison with the results obtained by reference methods. Good agreement was also obtained for the prediction of the neutral sugar composition of the HC and the fruit content from the AIR. FT-NIR spectroscopy allowed a rapid, accurate and non-destructive assignment of specified fruit from spectral data of the HC fraction and the AIR. Thus, FT-NIR could be applied for investigations on quality control complementing, or even replacing, gas chromatography as the most widespread method for the determination of neutral sugars. Furthermore, preliminary investigation on classification of fruit blends was performed. The probability of belonging to a specific fruit was significantly lowered or precluded for samples with fraudulent admixture like peach or pumpkin to apricot, or pumpkin to peach.
Keywords: Apricot; Peach; Pumpkin; Authenticity; Alcohol-insoluble residue; Fractional isolation; Hemicellulose; Saccharide composition; FT-NIR

Abel Ortiz, Gemma Echeverria, Jordi Graell, Isabel Lara, Corrigendum to: 'Overall quality of `Rich Lady' peach fruit after air- or CA storage. The importance of volatile emission' [LWT - Food Science and Technology 42 (2009) 1520-1529], LWT - Food Science and Technology, In Press, Corrected Proof, Available online 16 July 2009, ISSN 0023-6438, DOI: 10.1016/j.lwt.2009.06.021.
(http://www.sciencedirect.com/science/article/B6WMV-4WSG308-1/2/6a8c1118ed92ccf1c85b05b0baaa2b06)

Changfeng Zhang, Shiping Tian, Crucial contribution of membrane lipids' unsaturation to acquisition of chilling-tolerance in peach fruit stored at 0 [degree sign]S, Food Chemistry, Volume 115, Issue 2, 15 July 2009, Pages 405-411, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.021.
(http://www.sciencedirect.com/science/article/B6T6R-4V4KR04-4/2/1ec5543f80bd36bcf74d0e2e66ca3261)
Abstract:
Peach fruits (Prunus persica L.) were less prone to chilling injury (CI) when stored at 0 [degree sign]S than at 5 [degree sign]S for 30 days. In order to make known the mechanism involved, the relationship between CI and membrane lipid unsaturation was investigated in this study. The results demonstrated that peach fruit stored at 0 [degree sign]S manifested higher membrane lipid fluidity and higher membrane lipid unsaturation than at 5 [degree sign]S. In addition, a higher omega-3 fatty acid desaturase gene (FAD) mRNA level and a higher level of linolenic acid (C18:3) were found when peach fruits were stored at 0 [degree sign]S. The findings indicated that the higher membrane lipid unsaturation in peach fruit stored at 0 [degree sign]S was beneficial in maintaining membrane lipid fluidity and enhancing tolerance of peach fruit to low temperature stress, and the C18:3 level could be regulated by omega-3 FAD.
Keywords: Chilling injury; Membrane lipids unsaturation; Membrane fluidity; Omega-3 fatty acid desaturase; Peach fruit

Youssef Habibi, Mostafa Mahrouz, Michel R. Vignon, Microfibrillated cellulose from the peel of prickly pear fruits, Food Chemistry, Volume 115, Issue 2, 15 July 2009, Pages 423-429, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.034.

(http://www.sciencedirect.com/science/article/B6T6R-4V70NK6-3/2/05e6e8032d2d8de374dca36a8937bf24)
Abstract:
Cellulose microfibrils were isolated from the skin of Opuntia ficus indica (prickly pear fruits). Defatted skin powder was processed through consecutive extraction steps in order to remove mucilage, pectin and hemicelluloses. The cellulosic residue was made up of disencrusted cell-ghosts, having ovoid or elongated shapes, as revealed by optical microscopy. Transmission electron microscopy showed that, at the ultrastructural level, the cell walls of these cell-ghosts consisted of a loose network of cellulose microfibrils. This residue was subjected to mechanical homogenisation, leading to a stable and non-flocculating suspension by cellulose microfibril individualisation. This cellulosic material was characterised in terms of chemical composition, morphology and crystallinity, using sugar analyses, transmission electron microscopy and X-ray diffraction, as well as solid state NMR 13C spectroscopy.
Keywords: Cellulose nanofibrils; Opuntia ficus indica; Skin; Prickly pear; Microfibrils

Alane Cabral de Oliveira, Iara Barros Valentim, Cicero Alexandre Silva, Etelvino Jose Henriques Bechara, Marcelo Paes de Barros, Camila Marinho Mano, Marilia Oliveira Fonseca Goulart, Total phenolic content and free radical scavenging activities of methanolic extract powders of tropical fruit residues, Food Chemistry, Volume 115, Issue 2, 15 July 2009, Pages 469-475, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.045.
(http://www.sciencedirect.com/science/article/B6T6R-4V74VMK-4/2/1118dfb3435c7e206e3cc3fa6814fe47)
Abstract:
Methanolic extract powders of acerola, passion fruit and pineapple industrial residues, including pulp, seeds and peel, altogether (except for acerola) devoid of seeds, were screened for antioxidant capacity. The total phenolic contents (TPCs) of the extract powders were compared with their radical-scavenging activities (RSA) against both DPPH- and superoxide anion () radicals, and their protective effect against liposome peroxidation, triggered by peroxyl radical. Lipid peroxidation was followed by the fluorescence decay of the probe, 4,4-difluoro-5-(4-phenyl-1,3-butadienyl)-4-bora-3a,4a-diaza-s-indacene-3-undecanoic acid (C11-BODIPY581/591). The TPCs of acerola, passion fruit and pineapple extract powders were (94.6 +/- 7.4); (41.2 +/- 4.2) and (9.1 +/- 1.3) mg of gallic acid equivalents g-1 of dry extract, respectively. Acerola showed the best RSA-DPPH- scores, whereas passion fruit was more protective on the RSA- system. Together with the protective effects against lipid peroxidation (rate of BODIPY decay), which were similar for acerola and passion fruit extracts, these data suggest that the methanolic extracts of acerola and passion fruit residues may be useful as antioxidant supplements, particularly the acerola extract, due to its high phenolic content.
Keywords: Total phenolic content; Free radical scavenging activity; Antioxidant; BODIPY; Acerola; Passion fruit; Pineapple

Bao Yang, Yueming Jiang, Mouming Zhao, Feng Chen, Rui Wang, Yulong Chen, Dandan Zhang, Structural characterisation of polysaccharides purified from longan (Dimocarpus longan Lour.) fruit pericarp, Food Chemistry, Volume 115, Issue 2, 15 July 2009, Pages 609-614, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.082.
(http://www.sciencedirect.com/science/article/B6T6R-4V88FTP-2/2/0b773f63b6f7670cede9846579ccc0b6)
Abstract:
In this work, crude polysaccharides were extracted from longan fruit pericarp by hot water. After removal of proteins and purification by Sephadex G-100 gel filtration column, polysaccharides of longan fruit pericarp (PLFP) were subjected to structural identification. Gas chromatography analysis indicated PLFP comprised of l-arabinofuranose (32.8%), d-glucopyranose (17.6%), d-

galactopyranose (33.7%) and d-galacturonic acid (15.9%). The glycosidic linkages were determined by methylation analysis and gas chromatography/mass spectrometry (GC/MS). The results showed that the backbone consisted of -->5)-l-Araf-(1-->, -->6)-d-Glcp-(1-->, -->3)-d-Galp-(1-->, -->3)-d-GalpA-(1--> and -->6)-d-Galp-(1--> with a molar proportion of 2:1:1:1:1. The infrared spectra and nuclear magnetic resonance (NMR) spectra further confirmed that the configuration of l-arabinofuranose was of [alpha]-form, while d-glucopyranose, d-galactopyranose and d-galacturonic acid were of [beta]-form. The molecular weight of PLFP was measured to be 420 kDa by gel permeation chromatography. By determination of the anti-glycated activity, PLFP showed a good potential in inhibiting the glycation reaction in vitro.
Keywords: Longan; Polysaccharide; GC/MS; NMR; Methylation analysis

Karl Girard-Lalancette, Andre Pichette, Jean Legault, Sensitive cell-based assay using DCFH oxidation for the determination of pro- and antioxidant properties of compounds and mixtures: Analysis of fruit and vegetable juices, Food Chemistry, Volume 115, Issue 2, 15 July 2009, Pages 720-726, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.002.
(http://www.sciencedirect.com/science/article/B6T6R-4V42JD8-3/2/1c432a5509f3e80d6d976d61f6ae1d47)
Abstract:
Reactive oxygen species play a critical role in cardiovascular diseases, inflammatory diseases, neurodegenerative disorders, cancer and aging. Diets rich in foods containing antioxidants, such as fruits and vegetables, could help prevent these pathologies. It is therefore important to properly assay the antioxidant potentials of these antioxidant foods in order to have a guideline for their proper use. Actual in vitro methodologies are often very specific for one mode of action and do not necessarily reflect the normal biological context in which they are used. In this work, we have developed a cell-based assay using 2',7'-dichlorofluorescin-diacetate (DCFH-DA), a useful indicator of reactive oxygen species (ROS), in order to determine the antioxidant properties of foods, extracts and molecules. Results show a dose-dependent antioxidant activity for pure compounds (in decreasing order of activity: quercetin > caffeic acid > gallic acid > [alpha]-tocopherol) and fruit juices (in decreasing order of activity: strawberries > highbush blueberries > kiwis > peaches). These results are in good agreement with results obtained using the ORACFL assay. However, the cell-based assay detected a pro-oxidant effect with broccoli and carrot juices which was not observed using the ORACFL assay. Mixed isomers of [beta],[alpha]-carotene isolated from carrots were also found to oxidize DCFH about 212% above control-level. Interestingly, the boiling of broccoli and carrot juices inhibits this pro-oxidant effect and restores the antioxidant properties of the juices. Moreover, the boiling of the [beta],[alpha]-carotene mixed isomers causes their partial degradation and significantly inhibits DCFH oxidation about 68%, suggesting that carotenoids present in broccoli and carrot juices are, in part, responsible for their pro-oxidant effects.
Keywords: Vegetables; Fruits; Antioxidant; Pro-oxidant; ORAC assay; Cell-based assay; DCFH-DA; Carrot; Broccoli; [alpha],[beta]-Carotene

Hai Zhang, Guoqing Zhang, Zhenyu Zhu, Liang Zhao, Yang Fei, Jing Jing, Yifeng Chai, Determination of six lignans in Schisandra chinensis (Turcz.) Baill. Fruits and related Chinese multiherb remedies by HPLC, Food Chemistry, Volume 115, Issue 2, 15 July 2009, Pages 735-739, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.010.
(http://www.sciencedirect.com/science/article/B6T6R-4V42JD8-B/2/85964aed41b59b9d10203ef8bccad5be)
Abstract:
A simple, rapid and specific HPLC method was established for simultaneous determination of six major lignans in Schisandra chinensis and related Chinese multiherb remedies (CMRs) containing this herb. The six lignans were successfully separated on a C18 column by gradient elution using

acetonitrile and water as the mobile phase, and detection wavelength was set at 225 nm. The method was validated through the following performance criteria: linearity, precision, repeatability, stability, accuracy, limit of detection (LOD) and quantification (LOQ). This assay was successfully used for determination of six lignans in 10 raw herbs collected from different regions in China and five Chinese multiherb remedies. Significant variations were demonstrated in the contents of six compounds in these samples. This HPLC method established is suitable for routine quantitative analysis of S. chinensis and multiherb remedies containing this herb.
Keywords: Schisandra chinensis; Lignans; High-performance liquid chromatography

Mario J. Simirgiotis, Peter D.S. Caligari, Guillermo Schmeda-Hirschmann, Identification of phenolic compounds from the fruits of the mountain papaya Vasconcellea pubescens A. DC. grown in Chile by liquid chromatography-UV detection-mass spectrometry, Food Chemistry, Volume 115, Issue 2, 15 July 2009, Pages 775-784, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.071.
(http://www.sciencedirect.com/science/article/B6T6R-4V88FTP-F/2/2405239d199439852c67b661670298e7)
Abstract:
The quercetin glycosides rutin and manghaslin were isolated from the fruits of the mountain papaya Vasconcellea pubescens A. DC. grown in Chile by selective fractionation using the bleaching of the free radical scavenger 1,1-diphenyl-2-picrylhydrazyl (DPPH) as the guiding assay. The structures were characterized by spectroscopic methods. Furthermore, 19 phenolic compounds were identified for the first time in the edible fruits by HPLC with UV and ESI-MS-MS detection. Ten of the compounds detected in the fruits and active fractions were tentatively characterized as hydroxycinnamic acid glycosides and nine as quercetin glycoside derivatives. The results provide relevant information on the low molecular weight constituents of this important fruit crop.
Keywords: Mountain papaya; Vasconcellea pubescens A. DC.; Chilean crop; HPLC-DAD; HPLC-ESI-MS; Antioxidant phenolic compounds

Sadrollah Ramezani, Akhtar Shekafandeh, Mohammad Reza Taslimpour, Effect of GA3 and zinc sulfate on yield and fruit quality of Shengeh olive trees, Scientia Horticulturae, In Press, Corrected Proof, Available online 15 July 2009, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.06.024.
(http://www.sciencedirect.com/science/article/B6TC3-4WS85YT-1/2/cc4ce2892d95b9f440f3e7e3fca6a99a)
Abstract:
This study was conducted on 10-year-old olive trees (Olea europaea L.) cv. Shengeh at the Kazerun Olive Research Station in west of Shiraz, to investigate the effect of spraying gibberellic acid (GA3) and zinc sulfate (ZnSO4) on the characteristics of the fruit and the rate of oil production. A factorial experiment (4 x 4 x 4) was arranged in a randomized complete block design. The plants were sprayed with 0, 15, 30 and 45 ppm GA3 and 0, 0.25, 0.50 and 0.75% ZnSO4 at August about halfway through the fruit growth period. Maximum fruit retention (90%) was obtained in spraying with 0.5% ZnSO4 and 45 ppm GA3 which was significantly higher than control (52%). GA3 alone or in combination with ZnSO4 increased fruit weight. The greatest fruit weight (3.25 g/fruit) was achieved with 30 ppm GA3 and 0.75% ZnSO4, in comparison with the control (2.2 g/fruit). The highest and lowest oil percent on the basis of dry weight (34.75 and 27.87) was made with 0.50% ZnSO4 + 30 ppm GA3 and 0.25% ZnSO4 + 15 ppm GA3, respectively. The results of this research showed that appropriate spraying with GA3 in combination with ZnSO4 increase oil production by increasing both fruit oil production and the percentage of fruit retention.
Keywords: Fruit retention; Gibberellic acid (GA3); Oil%; Olive (Olea europaea L.); Zinc sulfate (ZnSO4)

Zhongwei Sun, Yunlong He, Zhihong Liang, Wenwen Zhou, Tiangui Niu, Sulfation of (1-->3)-[beta]-d-glucan from the fruiting bodies of Russula virescens and antitumor activities of the modifiers, Carbohydrate Polymers, Volume 77, Issue 3, 11 July 2009, Pages 628-633, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2009.02.001.
(http://www.sciencedirect.com/science/article/B6TFD-4VKDMVT-2/2/3a15f57a2f0c77f11b1dee30e6f2211f)
Abstract:
A water-insoluble (1-->3)-[beta]-d-glucan isolated from the fresh fruiting bodies of Russula virescens was sulfated using sulfur trioxide-pyridine complex as reagent in dimethyl sulfoxide. Depending on the reaction conditions, the products showed different degrees of sulfation (DS) ranging from 0.17 to 1.17 and different weight average molecular weights (Mws) ranging from 2.5 x 104 to 1.2 x 105 Da. Moreover, the antitumor activities of the five sulfated derivatives against Sarcoma 180 tumor cell were tested both in vitro and in vivo. The results indicated that the native (1-->3)-[beta]-d-glucan did not show antitumor activity, while the sulfated derivatives exhibited enhanced antitumor activities. This study demonstrated that DS and Mw could influence the antitumor activities of the sulfated derivatives.
Keywords: (1-->3)-[beta]-d-glucan; Antitumor activity; Russula virescens; Sulfation

Cengiz Sarikurkcu, Kadir Arisoy, Bektas Tepe, Ahmet Cakir, Gulsah Abali, Ebru Mete, Studies on the antioxidant activity of essential oil and different solvent extracts of Vitex agnus castus L. fruits from Turkey, Food and Chemical Toxicology, In Press, Corrected Proof, Available online 10 July 2009, ISSN 0278-6915, DOI: 10.1016/j.fct.2009.07.005.
(http://www.sciencedirect.com/science/article/B6T6P-4WR66KD-1/2/6dfec0f99764e1ce6b1269fa9773e278)
Abstract:
This study is designed to examine the chemical composition and antioxidant activity of the essential oil and different solvent extracts of Vitex agnus castus. GC and GC-MS analysis was resulted in the detection of 27 components, representing 94.5% of the oil. Major components of the oil were 1,8-cineole (24.98%), sabinene (13.45%), [alpha]-pinene (10.60%), [alpha]-terpinyl acetate (6.66%), and (Z)-[beta]-farnesene (5.40%). Antioxidant activities of the samples were determined by three different test systems, DPPH, [beta]-carotene/linoleic acid and reducing power assays. In all systems, water extract exhibited excellent activity potential than those of other extracts (hexane, dichloromethane, ethyl acetate and methanol) and the oil. As expected, amount of total phenolics was very high in this extract (112.46 +/- 1.22 [mu]g GAEs/mg extract). Dichloromethane extract has been found to be rich in flavonoids. A positive correlation was observed between the antioxidant activity potential and total phenolic and flavonoid levels of the extracts.
Keywords: Vitex agnus castus; Antioxidant activity; DPPH; [beta]-Carotene; Essential oil

Vera Hershkovitz, Haya Friedman, Eliezer E. Goldschmidt, Oleg Feygenberg, Edna Pesis, Induction of ethylene in avocado fruit in response to chilling stress on tree, Journal of Plant Physiology, In Press, Corrected Proof, Available online 9 July 2009, ISSN 0176-1617, DOI: 10.1016/j.jplph.2009.05.012.
(http://www.sciencedirect.com/science/article/B7GJ7-4WR0CR5-1/2/40d2e7a3736f4cae56864b2bde3ebff6)
Abstract: Summary
Chilling of avocado fruit (Persea americana cv. Arad) in the orchard caused a dramatic induction of fruit ripening and a parallel increase in ethylene biosynthesis and receptor genes' expression during shelf life. In-orchard chilling stress stimulated ethylene and CO2 production already in fruit attached to the tree, and these reduced thereafter during 20 [degree sign]C storage. In non-chilled control fruit, ethylene and CO2 production started after 3 d at 20 [degree sign]C and exhibited a

climacteric peak. In-orchard chilling stress also led to membrane destruction expressed as higher electrical conductivity (EC) in chilling stressed (CS) fruit and accelerated softening compared with control fruit. The increase in ethylene production on the day of harvest in CS fruit was accompanied by high expression of two 1-aminocyclopropane-1-carboxylic aCSd (ACC) synthase genes: PaACS1 and PaACS2, and ACC oxidase PaACO. The initial gene expressions of PaACS1, PaACS2, and PaACO in the CS fruit at the day of harvest was similar to the levels reached by the control fruit after 4 d at 20 [degree sign]C. The expression levels of both PaETR and PaERS1 in CS fruit on tree were 25 times higher than the control. In control fruit, expression of ethylene receptor genes was very low at harvest and increased in parallel to the onset of the climacteric ethylene peak. PaCTR1 transcript levels were less affected by chilling stress, and small changes (less than 3-fold) were observed in CS fruit on the day of harvest. Together, our results suggest that ethylene biosynthesis and ethylene response-pathway genes are involved in regulation of ethylene responsiveness in response to in-orchard chilling stress and during ripening.
Keywords: Ethylene production; Ethylene receptors; Fruit ripening; Gene expression; Persea americana

C. Mertz, P. Brat, C. Caris-Veyrat, Z. Gunata, Characterization and thermal lability of carotenoids and vitamin C of tamarillo fruit (Solanum betaceumCav.), Food Chemistry, In Press, Accepted Manuscript, Available online 8 July 2009, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.07.009.
(http://www.sciencedirect.com/science/article/B6T6R-4WPTXVG-1/2/66798b00c6050e8a97d4fc9effe4ef5b)
Abstract:
The carotenoids from yellow tamarillo were determined by high-performance liquid chromatography-photodiode array detection/mass spectrometry (HPLC-PDA/MS). Xanthophylls were found as esterified with palmitic and myristic acids. All-trans-[beta]-cryptoxanthin esters and all-trans-[beta]-carotene were the major carotenoids of tamarillo. Changes in carotenoid and vitamin C contents after thermal pasteurization of degassed and not degassed tomato tree nectars were studied. Zeaxanthin esters appeared to be the less thermo-labile carotenoids. Carotenoids degradation was not significantly influenced by dissolved oxygen level. However, thermal treatment induced 5,8-epoxidation and cis- isomerization. Retention of ascorbic acid was total under degassed conditions while losses of dehydroascorbic acid were not affected by the initial level of dissolved oxygen.
Keywords: Tomato tree; Tamarillo; Solanum betaceum Cav.; Carotenoids; Ascorbic acid; Thermal treatment

Tao Dong, Renxue Xia, Zhiyan Xiao, Peng Wang, Wenhua Song, Effect of pre-harvest application of calcium and boron on dietary fibre, hydrolases and ultrastructure in `Cara Cara' navel orange (Citrus sinensis L. Osbeck) fruit, Scientia Horticulturae, Volume 121, Issue 3, 2 July 2009, Pages 272-277, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.02.003.
(http://www.sciencedirect.com/science/article/B6TC3-4VRNNTC-1/2/7097947061c9f0951b8c724caf71325d)
Abstract:
High dietary fibre diets are associated with the prevention, reduction and treatment of some diseases, such as diverticular and coronary heart diseases. However, pre-harvest calcium and boron sprays associated with the dietary fibre compounds in fruits remain unknown. In the present study, specific activities and gene expression levels of hydrolases were determined in order to identify the effect of pre-harvest application of Ca and B alone or in combination on dietary fibre and the ultrastructure of navel orange fruit (Citrus sinenisis L. Osbeck). The results showed that pre-harvest application of Ca, B had significant effect on the cross-linked polymer network of fruit segment membrane. In accordance with the enzyme activities, expression levels of polygalacturonase, pectinesterase and [beta]-galactosidase were significantly reduced by pre-

harvest application of Ca, B alone or in combination. Such treatments increased contents of total dietary fibre, insoluble dietary fibre, protopectin and cellulose, decreased soluble dietary fibre and water soluble pectin. Our study indicated that pre-harvest foliar application of Ca, B is useful for improving the tissue structure of segment membrane, reducing transcript levels and activities of polygalacturonase, pectinesterase and [beta]-galactosidase and regulating the content of dietary fibre on Cara Cara navel orange.
Keywords: Cara Cara navel orange; Calcium and boron; Dietary fibre; Real-time PCR; Ultrastructure

Ali Sarkhosh, Zabihollah Zamani, Reza Fatahi, Hamid Ranjbar, Evaluation of genetic diversity among Iranian soft-seed pomegranate accessions by fruit characteristics and RAPD markers, Scientia Horticulturae, Volume 121, Issue 3, 2 July 2009, Pages 313-319, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.02.024.
(http://www.sciencedirect.com/science/article/B6TC3-4W0R3JJ-1/2/36a2049a9268358fa757e257d70469b6)
Abstract:
Soft-seedness in pomegranate is a desirable trait for fresh consumption of this valuable fruit. At the main Iran pomegranate collection, 21 pomegranate accessions gathered from different parts of Iran are registered as soft-seed genotypes. The aim of this research was to study these soft-seed pomegranate accessions using fruit morphopomological traits and DNA markers to reveal their relatedness. Thirty-six fruit characteristics were measured in these accessions together with applying 29 random decamer primers already reported to be polymorphic on pomegranate. Factor analysis on mean values of fruit characteristics determined 10 main factors and applied for grouping of the accessions using Ward's method. Also 14 of the random primers showed good amplification and polymorphism on these samples, and a total of 43 RAPD markers were produced. Estimates of genetic similarity, using Jaccard's similarity coefficient, ranged from 0.13 to 1.0 using the RAPD data. Grouping based on the fruit traits compared with that based on RAPD data did not produce a significant correlation (r = -0.36). Morphometric measurements and sensory evaluation confirmed that some accessions are hard or semi-hard seeded. This study showed that information based on fruit characteristics and RAPD markers are complementary for genetic discrimination in soft-seed pomegranate accessions. This might be due to the high level of similarity between soft-seed pomegranate accessions.
Keywords: Pomegranate soft-seed accessions; Fruit characteristics; Factor analysis; RAPD markers

Shifeng Cao, Yonghua Zheng, Kaituo Wang, Shuangshuang Tang, Huijin Rui, Effect of yeast antagonist in combination with methyl jasmonate treatment on postharvest anthracnose rot of loquat fruit, Biological Control, Volume 50, Issue 1, July 2009, Pages 73-77, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2009.02.003.
(http://www.sciencedirect.com/science/article/B6WBP-4VKP3Y4-3/2/a30340c876274295e76816eb3b1a0485)
Abstract:
The beneficial effect of methyl jasmonate (MeJA) on the antagonistic yeast Pichia membranefaciens for control of anthracnose rot caused by Colletotrichum acutatum in postharvest loquat fruit and the possible mechanisms were investigated. The results indicated that the biocontrol activity of P. membranefaciens at 1 x 108 colony-forming units ml-1 on anthracnose rot was enhanced by 10 [mu]mol MeJA treatment. The combined treatment of P. membranefaciens with MeJA resulted in a remarkably improved control of the disease in comparison with the treatment of P. membranefaciens or MeJA alone. P. membranefaciens in combination with MeJA induced higher activities of two defense-related enzymes chitinase and [beta]-1,3-glucanase in loquat fruit than applying the yeast or MeJA alone. The in vitro experiment showed that the

addition of 10 [mu]mol l-1 MeJA to the suspensions of P. membranefaciens significantly inhibited spore germination and germ tube elongation of C. acutatum than the yeast or MeJA alone. In addition, MeJA enhanced the population of P. membranefaciens both in vitro and in the wounds of the loquat fruit. These results suggested that MeJA could improve the biocontrol activity of P. membranefaciens on anthracnose rot in loquat fruit and the improved control of the disease by MeJA is directly because of the higher inhibitory effect on pathogen growth and the increased population size of antagonist, and indirectly because of the enhanced disease resistance in loquat fruit by the combination treatment.
Keywords: Biological control; Pichia membranefaciens; Loquat fruit; Methyl jasmonate; Anthracnose rot

M.E. Sosa-Morales, G. Tiwari, S. Wang, J. Tang, H.S. Garcia, A. Lopez-Malo, Dielectric heating as a potential post-harvest treatment of disinfesting mangoes, Part II: Development of RF-based protocols and quality evaluation of treated fruits, Biosystems Engineering, Volume 103, Issue 3, July 2009, Pages 287-296, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2009.02.014.
(http://www.sciencedirect.com/science/article/B6WXV-4WBY551-1/2/21f6e5a5bb0da9ea2137b0837181ae27)
Abstract:
With knowledge of frequency and storage dependent dielectric properties of mangoes, we studied a possible treatment that used radio frequency (RF) heating to reduce thermal treatment times in post-harvest pest control of immature mangoes. In this study, surface heating by hot water (HW) was combined with RF core heating of fruit against Mexican fruit fly (Anastrepha ludens) in mangoes (Mangifera indica cv. Tommy Atkins). Mangoes were first heated in water at 45 [degree sign]C for 50 min followed by RF heating in a 27.12 MHz, 12 kW RF system for 1 min to reach 48 [degree sign]C over the whole volume of the fruit. Fruit was then held in water at 48 [degree sign]C for 4, 6 or 8 min, which corresponded to one level at, one above and another below the time needed to achieve 100% killing of third-instar larvae of Anastrepha ludens at this temperature. The controls were treated in HW at 46.1 [degree sign]C for 90 min, which is a commercial disinfestation treatment approved by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA-APHIS) for mangoes before shipping to the USA. After 12 days of storage at 21 [degree sign]C and 90% relative humidity, RF-treated mangoes were firmer than those treated at 46.1 [degree sign]C in HW ($p < 0.05$). Thus, the RF treatment improved the texture of the fruits compared with the currently used commercial HW treatment. RF treatments that brought fruit temperature to 48 [degree sign]C followed by 6 or 8 min holding at this temperature should achieve the required disinfestation of mangoes without causing quality losses.

Guiping Cheng, Xuewu Duan, Yueming Jiang, Jian Sun, Shaoyu Yang, Bao Yang, Shenggen He, Hong Liang, Yunbo Luo, Modification of hemicellulose polysaccharides during ripening of postharvest banana fruit, Food Chemistry, Volume 115, Issue 1, 1 July 2009, Pages 43-47, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.11.065.
(http://www.sciencedirect.com/science/article/B6T6R-4V17CWJ-C/2/b92f878e1d8095bfabff82a143538280)
Abstract:
Alcohol-insoluble residues (AIRs) from postharvest banana fruits at five ripening stages were extracted and isolated. The AIR was fractionated with 1 M KOH or 4 M KOH to obtain hemicellulose polysaccharides 1 (HC1) and 2 (HC2), respectively, and their content, molecular-mass, monosaccharide composition and glycosidic linkages were evaluated. HC1 yield decreased significantly from 126.95 to 21.14 mg/g on fresh weight basis during fruit ripening, but HC2 yield increased and then decreased. Concomitantly, the molecular-mass of HC1 and HC2 decreased obviously, indicating that depolymerization occurred. Moreover, the major monosaccharide compositions were identified as glucose and xylose. The GC-MS analysis further revealed that

HC1 and HC2 had a 1,4-linked glucose backbone. During fruit ripening, the molar percentage of 1,4-linked Glcp residues increased in HC1, but decreased slightly in HC2. Overall, this study indicated that the modification and depolymerization of hemicellulose polysaccharides were responsible for banana fruit softening.
Keywords: Banana; Fruit; Softening; Hemicellulose polysaccharide; Glycosyl linkage; Molecular-mass distribution

Wendy R. Russell, Aurelie Labat, Lorraine Scobbie, Gary J. Duncan, Garry G. Duthie, Phenolic acid content of fruits commonly consumed and locally produced in Scotland, Food Chemistry, Volume 115, Issue 1, 1 July 2009, Pages 100-104, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.11.086.
(http://www.sciencedirect.com/science/article/B6T6R-4V3HFGT-2/2/309375d763ad15519fed32f5776a8938)
Abstract:
Despite fruit, vegetables and many processed products counting towards achieving the recommended five-a-day strategy, it is inevitable that produce choice will affect the benefits delivered. Fruits locally produced and commonly consumed in Scotland were compared for their phenolic acid content and form. The phenolic acid composition was highly variable, but the locally produced fruits were significantly ($p < 0.001$) higher in total concentration (1.61-4.89 g/kg compared to 0.06-0.22 g/kg). The majority of the phenolic acids were conjugated to other plant components, suggesting that any health benefits derived from these compounds are likely to be after they are released/metabolised by the colonic microbiota. Although the potential protective effects of the individual compounds will not be ascertained until the exact role of these compounds in disease prevention has been clarified, it is clear that the total amount of phenolic acids in the diet will vary enormously depending on the types of fruits consumed.
Keywords: Nutrition; Phytochemicals; Strawberries; Raspberries; Gooseberries; Blackcurrants; Bananas; Apples; Oranges; Pears; Grapes

Antonio Fiorentino, Claudio Mastellone, Brigida D'Abrosca, Severina Pacifico, Monica Scognamiglio, Giuseppe Cefarelli, Romualdo Caputo, Pietro Monaco, [delta]-Tocomonoenol: A new vitamin E from kiwi (Actinidia chinensis) fruits, Food Chemistry, Volume 115, Issue 1, 1 July 2009, Pages 187-192, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.11.094.
(http://www.sciencedirect.com/science/article/B6T6R-4V3SY90-5/2/37258f8947467802b84c14e4537d9f33)
Abstract:
A new vitamin E, [delta]-tocomonoenol, has been isolated from Actinidia chinensis (kiwi) fruits. The new structure, 2,8-dimethyl-2-(4,8,12-trimethyltridec-11-enyl)chroman-6-ol, has been elucidated on the basis of EIMS, 1D, and 2D NMR spectral data. GC-MS analysis of peels and pulps of kiwi showed that the new compound, together with [delta]-tocopherol, is mainly present in the fruit peel, whilst [alpha]-tocopherol is present in a similar amount in both matrices. The compound was tested for its radical-scavenging and antioxidant capabilities, by measuring its ability to scavenge DPPH (2,2'-diphenyl-1-picrylhydrazyl radical) and anion superoxide radical, and inhibit the formation of methyl linoleate conjugated diene hydroperoxides and TBARS (thiobarbituric acid reactive species).
Keywords: Actinidia chinensis (kiwi); [delta]-Tocomonoenol; Vitamin E; NMR analysis; GC-MS; Antioxidant activity

Marcia G. Ventura, Vekoslava Stibilj, Maria do Carmo Freitas, Adriano M.G. Pacheco, Determination of ultratrace levels of selenium in fruit and vegetable samples grown and consumed in Portugal, Food Chemistry, Volume 115, Issue 1, 1 July 2009, Pages 200-206, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.10.089.

(http://www.sciencedirect.com/science/article/B6T6R-4V3SY90-6/2/6e9942fee93511686f2897686c0e9576)
Abstract:
The selenium content in fruit and vegetable samples from two regions in Portugal were analysed using hydride generation atomic fluorescence spectrometry (HG-AFS) and radiochemical nuclear activation analysis (RNAA) - two analytical methods with very low limits of detection. The lower detection limits of HG-AFS, 3 [mu]g kg-1 and 8 [mu]g kg-1 (according to conditions used for digestion), and for RNAA, 10 [mu]g kg-1, meant that it was possible to determine selenium in samples previously analysed using the replicate sample instrumental nuclear activation analysis (RSINAA) with a higher detection limit associated.
The results obtained with the HG-AFS method were similar to those obtained using either RNAA or RSINAA, although in the case of RSINAA significant differences were found in three samples. The good accuracy and increased sample throughput, together with the relatively lower equipment and operating costs make HG-AFS the optimum of the three methods for determining trace amounts of selenium. Values obtained by HG-AFS were from 0.03 [mu]g in tomato to 3.1 [mu]g in cabbage (100 g fresh weight). Based on our results, the contribution of the analysed vegetables and fruits to the daily selenium intake was 1.80 [mu]g per person per day for the Portuguese population.
Keywords: Selenium; HG-AFS; RNAA; Vegetables; Fruits; Portugal

Ans De Roeck, Thomas Duvetter, Ilse Fraeye, Iesel Van der Plancken, Daniel Ndaka Sila, Ann Van Loey, Marc Hendrickx, Effect of high-pressure/high-temperature processing on chemical pectin conversions in relation to fruit and vegetable texture, Food Chemistry, Volume 115, Issue 1, 1 July 2009, Pages 207-213, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.016.
(http://www.sciencedirect.com/science/article/B6T6R-4V42JD8-1/2/dca6d167ad2b96ff6020a09659355de3)
Abstract:
Heat sterilization of plant derived food products entails considerable organoleptic and nutritional quality losses. For instance, texture loss of fruits and vegetables occurs, next to turgor pressure losses, mainly due to chemical changes in the cell-wall pectic polysaccharides. High-pressure sterilization, i.e. the combination of high temperature ([greater-or-equal, slanted]90 [degree sign]C) with high pressure ([greater-or-equal, slanted]500 MPa), could present a positive alternative assuring safety while minimizing quality losses. In this study, the potential of high-pressure sterilization in preserving fruit and vegetable texture was evaluated by investigating the effect of combined high-pressure/high-temperature (HP/HT) treatments on two texture related chemical pectin conversions in model sytems. First, a protocol was developed to perform reproducible kinetic studies at HP/HT under constant processing conditions. Subsequently, apple pectin solutions at pH 6.5 were subjected to different HP/HT combinations (500, 600 and 700 MPa/90, 110 and 115 [degree sign]C) and the extent of chemical demethoxylation and [beta]-eliminative depolymerization was determined. At atmospheric pressure, both zero-order reaction rate constants increased with increasing temperature. At all temperatures, demethoxylation showed a higher rate constant than [beta]-elimination. However, a temperature rise resulted in a stronger acceleration of [beta]-elimination than of demethoxylation. When combining high temperature with high pressure, [beta]-elimination was retarded or even stopped, whereas demethoxylation was stimulated. These results are very promising in the context of the texture preservation of high-pressure sterilized fruits and vegetables, as [beta]-elimination is accepted to be one of the main causes of thermal softening and low methoxylated pectin can enhance tissue strength by forming cross-links with calcium ions present.
Keywords: Pectin; Texture; Demethoxylation; [beta]-elimination; High-pressure sterilization

Ebru Emekli-Alturfan, Aysen Yarat, Serap Akyuz, Fluoride levels in various black tea, herbal and fruit infusions consumed in Turkey, Food and Chemical Toxicology, Volume 47, Issue 7, July 2009, Pages 1495-1498, ISSN 0278-6915, DOI: 10.1016/j.fct.2009.03.036.
(http://www.sciencedirect.com/science/article/B6T6P-4W0SK55-3/2/f412e08bb527d23d7974e962333218d5)
Abstract:
The fluoride contents were determined by ion-selective electrode in 26 black tea samples originally produced in Turkey, Sri Lanka, India and Kenya, and in 14 herbal and seven fruit infusions originated from Turkey. Fluoride content in black tea infusions ranged from 0.57 to 3.72 mg/L after 5 min of brewing. Higher fluoride levels were found in black teas originated from Turkey when compared with teas originated from Sri Lanka. Moreover higher fluoride levels were determined in black tea bags compared with granular and stick-shaped black teas. However, herbal and fruit infusions were characterized by low values of fluoride (0.02-0.04 mg/L) after 5 min of brewing and increasing brewing time to 10 min caused only slight increases in some infusions. As a result, consuming tea infusions prepared from some black tea available in Turkish market, especially black tea bags, in large quantities may lead to exposion to a high amount of fluoride which may cause dental fluorosis. Although fruit and herbal infusions are safer to consume their fluoride contents are too low for caries prevention. In countries such as Turkey where tea is traditionally consumed, the fluoride concentration and daily safety precautions should be indicated on tea products.
Keywords: Black tea; Herbal infusion; Fruit infusion; Fluoride

Ali Ahmadzadeh, Sarani Zakaria, Rozaidi Rashid, Liquefaction of oil palm empty fruit bunch (EFB) into phenol and characterization of phenolated EFB resin, Industrial Crops and Products, Volume 30, Issue 1, July 2009, Pages 54-58, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2009.01.005.
(http://www.sciencedirect.com/science/article/B6T77-4VY169P-2/2/d9d59cf1f6c27c4ed4aef19c5ce90ee1)
Abstract:
Novolak-type resin was prepared by liquefaction of oil palm empty fruit bunch (EFB) in phenol using sulfuric acid as a catalyst. The effects of liquefaction time, input initial phenol, and the nature of EFB on the liquefaction reaction was investigated by measuring the reaction yield and EFB residue. The viscosity and melt flow index of phenolated EFB (PEFB) was measured using capillary viscometer. The mechanical properties of PEFB-base molding materials were investigated using flexural and Izod impact tests. The results showed that, although reaction yield and combined phenol have been used by previous researchers to correlate with physical and mechanical properties of materials, they are unreliable as parameters for predicting the physical and mechanical properties of PEFB. Flexural properties were found to increase as the liquefaction time increased. The ratio of phenol to EFB was found to be the most effective parameter in the variation of apparent melt viscosity and melt flow index of PEFB.
Keywords: Liquefaction; EFB; Melt viscosity; Flexural; Izod impact; Novolak resin

Isa Telci, Ibrahim Demirtas, Ayse Sahin, Variation in plant properties and essential oil composition of sweet fennel (Foeniculum vulgare Mill.) fruits during stages of maturity, Industrial Crops and Products, Volume 30, Issue 1, July 2009, Pages 126-130, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2009.02.010.
(http://www.sciencedirect.com/science/article/B6T77-4VYMP1F-1/2/c4a492c9a11b0801b2ea304f4235b3e5)
Abstract:
Sweet fennel (Foeniculum vulgare Mill. var. dulce Mil) is a major aromatic plant belonging to the Apiaceae. The study was conducted to determine variations of plant properties (fruit yield per plant, 1000-fruit weight), essential oil content and composition during four different maturation

stages (immature, premature, mature and full mature) in sweet fennel fruit. Essential oil obtained by hydro-distillation was characterized by gas chromatography (GC) and gas chromatography/mass spectrometry (GC-MS). Fruit yield per plant and 1000-fruit weight regularly increased from immature to mature periods, while essential oil content declined with fruit maturity. The content of trans-anethole, the main component, varied between 81.63% and 87.85%, and the variation was statistically insignificant during maturation stages. Some components, particularly monoterpenes, [alpha]-pinene, [beta]-myrcene, limonene, and [alpha]-terpinene, varied significantly ($p < 0.05$) during maturation stages.
Keywords: Foeniculum vulgare; Apiaceae; Fruit; Maturation; Essential oil; trans-Anethole

H.K. Mebatsion, P. Verboven, A. Melese Endalew, J. Billen, Q.T. Ho, B.M. Nicolai, A novel method for 3-D microstructure modeling of pome fruit tissue using synchrotron radiation tomography images, Journal of Food Engineering, Volume 93, Issue 2, July 2009, Pages 141-148, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2009.01.008.
(http://www.sciencedirect.com/science/article/B6T8J-4VGPDV2-2/2/e2a8f267a59f6f20b49e617d2969ae0d)
Abstract:
Fruit microstructure determines mechanical and transport properties of tissues. This calls for geometric characterization and representation of fruit tissue components. In this paper, three important components of fruit cortex tissue, cell wall, pore network and cells were modeled in 3-D. These components were explicitly defined based on the information gathered from synchrotron X-ray computed tomography and transmission electron microscopy. The cells were modeled based on a novel ellipsoid tessellation algorithm, producing also 3-D void structures in small fruit cortex sample volumes. The cell wall thickness was determined from TEM images using digitization procedures. The resulting geometry models compared well to the tomographic images. The method has the significant advantages of, one, producing models that are easy to use in computer aided design software for multiscale mechanics and mass transfer, and two, providing a framework for virtual tissue generation, including cell growth modeling. Furthermore, the solid modeling approach avoids many problems of finite element meshing existing today.
Keywords: Transmission electron microscopy; Synchrotron radiation, computed tomography; Multiscale modelling; Finite element method; Cell, image processing, computational biology

Sagi Gavriel, Yoav Gazit, Boaz Yuval, Remating by female Mediterranean fruit flies (Ceratitis capitata, Diptera: Tephritidae): Temporal patterns and modulation by male condition, Journal of Insect Physiology, Volume 55, Issue 7, July 2009, Pages 637-642, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2009.04.002.
(http://www.sciencedirect.com/science/article/B6T3F-4W4HYS7-1/2/8943f0a58084f27bc28d8749c6c86db0)
Abstract:
We determined the temporal pattern of female remating in the Mediterranean fruit fly, Ceratitis capitata, and how mating with sterile males affects remating. In addition, we examined the hypotheses that sterile male nutrition and age affect the subsequent receptivity of their mates. Temporally, female receptivity varied significantly throughout the experimental period. Relatively high levels of remating (14%) on the days following the first copulation were followed by a decline, with a significantly low point (4.1%) 2 weeks after mating. Subsequently, receptivity is gradually restored (18%) 3 and 4 weeks after the initial copulation. When females were first mated to sterile males, significantly higher remating percentages were recorded. The ability of sterile males to inhibit receptivity of both wild and laboratory reared females on the day of first mating was significantly improved when they were fed a nutrient rich diet. Male age at first mating also affected female receptivity: sterile males of intermediate age (11 days old) inhibited female remating significantly more than younger or older flies. Although further studies are needed to determine the

relative roles of natural and sexual selection in modulating patterns of female sexual receptivity, the Sterile Insect Technique may be improved by releasing well nourished, older sterile males.
Keywords: Sexual behavior; Polyandry; Mediterranean fruit fly; Ceratitis; Sterile Insect Technique (SIT)

Stephanie Heim, Jamie Stang, Marjorie Ireland, A Garden Pilot Project Enhances Fruit and Vegetable Consumption among Children, Journal of the American Dietetic Association, Volume 109, Issue 7, July 2009, Pages 1220-1226, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.04.009.
(http://www.sciencedirect.com/science/article/B758G-4WKTMYR-N/2/0b8d5003c3ad256f255719c908cb191d)
Abstract:
Fruit and vegetable intake among children is inadequate. Garden-based nutrition education programs may offer a strategy for increasing fruit and vegetable intake in children. A 12-week pilot intervention was designed to promote fruit and vegetable intake among 4th to 6th grade children (n=93) attending a YMCA summer camp. Children participated in garden-based activities twice per week. Weekly educational activities included fruit and vegetable taste tests, preparation of fruit and vegetable snacks, and family newsletters sent home to parents. The pilot intervention was evaluated using a pre and post survey to determine participant satisfaction and the short-term impacts of the program. The process evaluation focused on program satisfaction, whereas the short-term impact evaluation assessed fruit and vegetable exposure, preference, self-efficacy, asking behavior, and availability of fruits and vegetables in the home. Data from the impact evaluation were compared from baseline to follow-up using McNemar's test (dichotomous variables) and Wilcoxon signed rank test (scales/continuous variables). Children reported high levels of enjoyment in the intervention activities. Most children (97.8%) enjoyed taste-testing fruits and vegetables. Children also liked preparing fruit and vegetable snacks (93.4%), working in their garden (95.6%), and learning about fruits and vegetables (91.3%). Impact data suggest that the intervention led to an increase in the number of fruits and vegetables ever eaten ($P<0.001$), vegetable preferences ($P<0.001$), and fruit and vegetable asking behavior at home ($P<0.002$). Garden-based nutrition education programs can increase fruit and vegetable exposure and improve predictors of fruit and vegetable intake through experiential learning activities. Participation in the 'seed to table' experience of eating may help promote healthful eating behaviors among youth. Food and nutrition professionals should consider garden-based nutrition education programs that connect children with healthful foods through fun, hands-on activities.

Elaine M. Davis, Karen Weber Cullen, Kathleen B. Watson, Melanie Konarik, John Radcliffe, A Fresh Fruit and Vegetable Program Improves High School Students' Consumption of Fresh Produce, Journal of the American Dietetic Association, Volume 109, Issue 7, July 2009, Pages 1227-1231, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.04.017.
(http://www.sciencedirect.com/science/article/B758G-4WKTMYR-P/2/86e01f0273346331428663fdc4265af6)
Abstract:
Low fruit and vegetable intake may be associated with overweight. The United States Department of Agriculture implemented the Fresh Fruit and Vegetable Program in 2006-2007. One Houston-area high school was selected and received funding to provide baskets of fresh fruits and vegetables daily for each classroom during this period. This study assessed the impact of the program on students' fruit and vegetable intake. At program end (May 2007), fruit and vegetable intake surveys were distributed to students at the intervention school as well as at a comparison high school that did not receive the program. Surveys, which were completed anonymously, were received from 34% of intervention and 42% of comparison school students. The students were classified as to whether they met the recommended daily intake of fruit, 100% fruit juice, and vegetables. The probability of meeting the recommendations was assessed with logistic

regression analyses, controlling for sex, age, and ethnicity. Compared with the comparison control school students, intervention school students were more likely to report eating fruit and drinking 100% fruit juice at least two times per day (39.3% vs 27.3%; P<0.05) and consuming total fruit, juice, and vegetables (22% vs 18.4%; P<0.05) five or more times per day in the preceding 7 days. More intervention school students (59.1%) than comparison school students (40.9%) reported eating fruit at least one time per day (P<0.05). There were no group differences in vegetable intake. Fresh fruit and vegetable distribution programs provide the opportunity for students to taste a variety of fruits and vegetables, and may improve consumption of these foods by adolescents.

C. Camps, D. Christen, Non-destructive assessment of apricot fruit quality by portable visible-near infrared spectroscopy, LWT - Food Science and Technology, Volume 42, Issue 6, July 2009, Pages 1125-1131, ISSN 0023-6438, DOI: 10.1016/j.lwt.2009.01.015.
(http://www.sciencedirect.com/science/article/B6WMV-4VJM324-1/2/82832cb1fa8efd9ed79b1c13c3f009dd)
Abstract:
The ability of portable Near Infrared Spectroscopy to determine apricot fruit quality has been studied. Calibration models allowing the determination of soluble solids content (SSC), total acidity (TA) and firmness (Fi) of apricots were carried out with variable precisions. Models were built for each variety and global models combining different varieties were attempted. SSC was determined with a root mean square error of cross-validation (RMSECV) comprised between 0.67 and 1.1 [degree sign]Brix and R-values between 0.88 and 0.96. Concerning Fi, the accuracy of the prediction was variety dependant. These predictions were correct for the varieties Kioto and Harostar with RMSECV-values between 6.2% and 13% (R-values between 0.85 and 0.92) and unsatisfactory for Bergarouge (RMSECV = 24%). TA was predicted with RMSECV-values between 0.79 and 2.61 g 100 ml-1 and R-values between 0.73 and 0.97. In a second application, near infrared spectra were used to classify apricot fruits according to their variety and colour intensity with correct efficiency. The results obtained in the present study showed that NIRS technology could be applicable to apricot quality and that such portable devices could help to obtain a complete follow-up of the fruits in orchards and during post-harvest.
Keywords: NIR; Apricot; Quality; Non-destructive; PLS-regression; FDA

Imke Schmitt, Ruth del Prado, Martin Grube, H. Thorsten Lumbsch, Repeated evolution of closed fruiting bodies is linked to ascoma development in the largest group of lichenized fungi (Lecanoromycetes, Ascomycota), Molecular Phylogenetics and Evolution, Volume 52, Issue 1, July 2009, Pages 34-44, ISSN 1055-7903, DOI: 10.1016/j.ympev.2009.03.017.
(http://www.sciencedirect.com/science/article/B6WNH-4VXTSKT-1/2/43c0f87097c094d821d8b4afe887b3f2)
Abstract:
Fruiting bodies are responsible for the effective dispersal of meiospores in ascomycetes. Different fruiting body types include open (apothecia) or closed (perithecia, cleistothecia) forms, which have traditionally been used as key paradigms for ascomycete classification. Molecular phylogenies show that most fruiting body types have multiple phylogenetic origins within the phylum, and are not suitable for the circumscription of classes. One exception are perithecia that are restricted in non-lichenized fungi to the monophyletic class Sordariomycetes. However, lichenized fungi with perithecioid fruiting bodies were found to belong to three other classes unrelated to Sordariomycetes. One of these is Lecanoromycetes, which includes the bulk of lichenized fungi. To understand the evolution of perithecioid fruiting bodies in the mostly apotheciate Lecanoromycetes, we assembled a combined data set of nuclear and mitochondrial ribosomal, and RPB1 DNA sequences, and traced the evolution of two morphological characters (fruiting body type and fruiting body development). We reconstructed ancestral character states using maximum likelihood and Bayesian methods. Additionally, we tested for correlation of character

changes in a combined Bayesian/maximum likelihood framework. The results suggest that perithecia have evolved in unrelated groups of lichen-forming fungi. Within Lecanoromycetes they have evolved independently several times from apotheciate ancestors. Further, our analyses support a correlation between the type of fruiting body and the type of ascoma ontogeny. The evolution of angiocarpous ascoma development in Lecanoromycetes is a pre-adaptation for the repeated gain of perithecia. This finding is consistent with the hypothesis of a neotenic origin of perithecioid fruiting bodies in Lecanoromycetes.
Keywords: Ascoma-types; Character evolution; Comparative morphology; Comparative biology; Ancestral character state reconstruction; Character correlation; Maximum likelihood; Molecular phylogeny; BayesTraits; BayesMultistate; Discrete; SIMMAP

Claudia A. Bustamante, Pedro M. Civello, Gustavo A. Martinez, Cloning of the promoter region of [beta]-xylosidase (FaXyl1) gene and effect of plant growth regulators on the expression of FaXyl1 in strawberry fruit, Plant Science, Volume 177, Issue 1, July 2009, Pages 49-56, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2009.03.015.
(http://www.sciencedirect.com/science/article/B6TBH-4W04KCD-1/2/857eb2fb4478331515230feb0b71f8e3)
Abstract:
Expression and activity of cell wall modifying enzymes involved in fruit softening may be regulated by hormones and/or other signal molecules. In strawberry, FaXyl1 encodes for a fruit-specific [beta]-xylosidase probably associated to hemicellulose degradation. In this work, we have isolated and analysed the promoter region of FaXyl1 gene. Analysis of the sequence revealed the presence of cis-acting elements associated with hormone, light and stress-related responses. Several treatments were done on fruit in order to prove the responsiveness of FaXyl1 to plant growth regulators related to the regulatory elements identified in the promoter region (abscisic acid, auxins and gibberellins) and others associated with the ripening process (ethylene and nitric oxide). The effect of each treatment on FaXyl1 expression, the corresponding protein levels and the [beta]-xylosidase activity was evaluated. ABA (abscisic acid) stimulated FaXyl1 expression and protein levels. In contrast, expression levels of FaXyl1 gene decreased after treatments with NAA (naphthalene acetic acid), GA3 (gibberellic acid) and ethephon, an ethylene-generating compound. SNP (sodium nitroprusside), a NO donor, did not affect FaXyl1 mRNA and protein levels. The effect of 1-MCP (1-methylcyclopropene), an ethylene perception inhibitor, on FaXyl1 expression was consistent with the effect observed with ethephon. [beta]-xylosidase activity was down regulated by NAA, whereas GA3, ABA, ethephon, 1-MCP and SNP had no effect on it.
Keywords: [beta]-xylosidase; Cell wall; Plant growth regulators; Ripening; Softening; Strawberry

Sun Tay Choi, Donald J. Huber, Ji Gang Kim, Yoon Pyo Hong, Influence of chlorine and mode of application on efficacy of aqueous solutions of 1-methylcyclopropene in delaying tomato (Solanum lycopersicum L.) fruit ripening, Postharvest Biology and Technology, Volume 53, Issues 1-2, July-August 2009, Pages 16-21, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.04.010.
(http://www.sciencedirect.com/science/article/B6TBJ-4WD10X7-2/2/3edcc45f668dcd50eb0a5f789e608499)
Abstract:
This study was designed to determine the influence of sodium hypochlorite solutions, widely used as a postharvest disinfectant, on the efficacy of aqueous 1-MCP at delaying ripening of early ripening-stage tomato. Tomato fruit at breaker-turning stage were subjected to successive, alternate treatments in solutions of chlorinated water (1.34 mol m-3 sodium hypochlorite) and 1-MCP (3.70 mmol m-3, 200 [mu]g L-1) and then stored at 20 [degree sign]C. Surface color and firmness were measured as ripening parameters. Concentrations of dissolved 1-MCP were monitored by analysis of headspace atmosphere over aqueous 1-MCP solutions in sealed jars. Surface color development and fruit softening were suppressed in single-use treatment regimens

with the following solutions: aqueous 1-MCP only, 1-MCP followed by chlorine, and chlorine followed by 1-MCP, with or without an intervening rinse in water. Chlorine solutions applied within 1 min following a 1 min immersion of fruit in aqueous 1-MCP were without effect on 1-MCP efficacy, indicating that 1-MCP is delivered rapidly to internal tissues and inaccessible to surface-applied chlorine. In multiple-use cycles of successive chlorine and 1-MCP solutions, the efficacy of 1-MCP declined rapidly, indicating oxidative destruction due to sodium hypochlorite carryover. An intervening water rinse between chlorine and 1-MCP treatment did not influence the effect of chlorine at reducing 1-MCP levels or capacity to inhibit ripening. Analysis confirmed that 1-MCP levels in solutions used for fruit immersed first in solutions of sodium hypochlorite declined rapidly. The data confirm that aqueous 1-MCP solutions are adversely influenced by low levels of chlorine carried over from preceding chlorine dips. Attempts to circumvent problems with chlorine carryover using 3.70 mmol m-3 1-MCP solutions applied as a post-chlorine spray demonstrated a significant decline in 1-MCP-mediated ripening inhibition and a decline of 75-90% in dissolved 1-MCP compared with immersion application. Inhibition of ripening comparable to that obtained with 3.70 mmol m-3 1-MCP applied as a dip required spray concentrations of 111.1 mmol m-3. Differences in effective 1-MCP concentrations in aqueous (dip and spray) and vapor applications are discussed.
Keywords: Aqueous 1-methylcyclopropene; Firmness; Hue angle; Ripening; Sodium hypochlorite; Spray; Dip; Vapor

Maja Musse, Stephane Quellec, Mireille Cambert, Marie-Francoise Devaux, Marc Lahaye, Francois Mariette, Monitoring the postharvest ripening of tomato fruit using quantitative MRI and NMR relaxometry, Postharvest Biology and Technology, Volume 53, Issues 1-2, July-August 2009, Pages 22-35, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.02.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4W50JYM-1/2/d9b78d7d7dcbca9ebfff87c2cd50d31e)
Abstract:
Magnetic Resonance Imaging (MRI) was performed on tomato fruit during two 3-week periods of postharvest ripening. Different image types were acquired to study macroscopic and microscopic structural changes. Air spaces were identified close to seeds and their shrinkage during the ripening period was estimated from the spin echo images. The development of the bubbles in the outer pericarp during ripening was estimated from the ratio of the long- and short-echo time gradient echo MRI images and supported by the macrovision imaging. Variations in the transverse (T2) and longitudinal (T1) relaxation times were determined from quantitative MRI images. They depended on the tissue type and matched fairly well between fruit. In the core, placenta, radial and outer pericarp, T2 decreased by about 25% from the initial values and T1 by about 25-30% from the initial values during postharvest ripening. In the locular tissue the relaxation times had less marked trends than in other tissues: both T2 and T1 increased slightly until the eighth or ninth measurement day and after that it returned to its approximate initial value. Multi-component characteristics of T2 and T1 decay were investigated by Nuclear Magnetic Resonance (NMR) relaxometry. They provided information about all major sub-cellular compartments and showed there was water redistribution among compartments during ripening. In addition to the relaxometry measurements, water content, weight loss and concentration of neutral sugars and acids were measured on some of the tomato fruit. Cell size and organization were investigated by macrovision experiments. Although the overall dependence of the relaxation time on tissue type was to some extent explained by chemical composition and cell dimension, no relationships between trends in MR data and tissue properties were established.
Keywords: Tomato; Postharvest ripening; MRI; NMR; Relaxation

Carlos R. Figueroa, Paula Pimentel, Marcela C. Dotto, Pedro M. Civello, Gustavo A. Martinez, Raul Herrera, Maria Alejandra Moya-Leon, Expression of five expansin genes during softening of

Fragaria chiloensis fruit: Effect of auxin treatment, Postharvest Biology and Technology, Volume 53, Issues 1-2, July-August 2009, Pages 51-57, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.02.005.
(http://www.sciencedirect.com/science/article/B6TBJ-4W4BMH2-1/2/41ad304ff252b68422c2f8e4185993ad)
Abstract:
The Chilean strawberry fruit (Fragaria chiloensis) has potential as a new exotic berry. The rate of softening differs between F. chiloensis and its related species Fragaria x ananassa. The expression profiles of five expansin genes isolated from F. x ananassa were analyzed during softening of F. chiloensis fruit and the regulatory effect of auxins on them observed. The rapid decrease in fruit firmness observed between the large green and the turning stages of F. chiloensis correlated with the large increase in transcript accumulation of FaEXP2 and FaEXP5. FaEXP4 and FaEXP6 had lower expression levels in F. chiloensis than in F. x ananassa, and expression profiles were not related to fruit softening. Auxins strongly repressed the expression of FaEXP1 and FaEXP2, and had a minor repressive effect on FaEXP4 and FaEXP5. In addition, tissue-specific expression was probed in different F. chiloensis tissues: FaEXP2 and FaEXP5 transcripts were found only in fruit tissues, while FaEXP4 and FaEXP6 transcripts were also found in runners, roots, leaves and flowers. In conclusion, most of the strawberry-expansin genes are expressed in F. chiloensis and some family members are closely related to fruit softening, especially FaEXP2 and FaEXP5. This study reveals the repressive effect of auxins on the expression of those expansin genes related to softening in F. chiloensis fruit.
Keywords: Chilean strawberry; Fruit softening; Expansin; Auxin

Carlos Gaete-Eastman, Carlos R. Figueroa, Cristian Balbontin, Mario Moya, Ross G. Atkinson, Raul Herrera, Maria Alejandra Moya-Leon, Expression of an ethylene-related expansin gene during softening of mountain papaya fruit (Vasconcellea pubescens), Postharvest Biology and Technology, Volume 53, Issues 1-2, July-August 2009, Pages 58-65, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.03.007.
(http://www.sciencedirect.com/science/article/B6TBJ-4W386YS-1/2/7e3271d61325dc85bb677ae0af41272a)
Abstract:
Fruit softening is associated with cell wall modifications produced by a set of hydrolytic enzymes and proteins. Expansins are proteins with no catalytic activity which have been associated with several processes during plant growth and development. A role for expansins has been proposed during fruit softening, and many fruit-specific expansins have been identified in a variety of species. A fruit-specific expansin gene from mountain papaya (Vasconcellea pubescens) was isolated and characterised: VpEXPA2, a 851 bp cDNA encoding a polypeptide of 258 amino acids, which contained all the characteristics of [alpha]-expansins. DNA gel blot analysis showed that VpEXPA2 is member of a small multigene family in the mountain papaya's genome. Real-time polymerase chain reaction (qPCR) analyses revealed transcript accumulation during the softening of control fruit, with maximum level after 5 d of storage at 20 [degree sign]C. A reduction in transcript expression level was observed in fruit treated with an ethylene perception blocker (1-methylcyclopropene), while an earlier and higher transcript level was observed in ethylene-treated fruit, suggesting that VpEXPA2 expression is regulated by this plant hormone.
Keywords: Vasconcellea pubescens; Ethylene perception; Expansin; Fruit softening; 1-Methylcyclopropene

A.R. East, X.I. Trejo Araya, M.L.A.T.M. Hertog, S.E. Nicholson, A.J. Mawson, The effect of controlled atmospheres on respiration and rate of quality change in `Unique' feijoa fruit, Postharvest Biology and Technology, Volume 53, Issues 1-2, July-August 2009, Pages 66-71, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.02.002.

(http://www.sciencedirect.com/science/article/B6TBJ-4W4S32X-1/2/2b4050c9c693a1a2e78e60b9ad501332)
Abstract:
Gas exchange rates and quality changes of feijoa fruit (Acca sellowiana, cv. Unique) stored at 5 [degree sign]C under 16 different controlled atmosphere (CA) conditions were monitored to identify the commercial potential of CA to extend the storage life. A combination of low O2 and low CO2 provided the largest benefit in reducing weight loss (from 1.7 to 1.2%), reducing the change in hue values (from 4[degree sign] to 2[degree sign]) and reducing the incidence of blemished fruit (from 30 to 20%) as compared to regular air storage.
Keywords: Acca sellowiana; Pineapple guava; Oxygen; Carbon dioxide; Modified atmosphere

Robert J. Blakey, John P. Bower, Isa Bertling, Influence of water and ABA supply on the ripening pattern of avocado (Persea americana Mill.) fruit and the prediction of water content using Near Infrared Spectroscopy, Postharvest Biology and Technology, Volume 53, Issues 1-2, July-August 2009, Pages 72-76, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.03.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4WD10X7-1/2/d79e52bece1d89517857ed755e707a47)
Abstract:
Avocado fruit are highly variable, and even those graded for similar size and appearance do not behave in the same manner after harvest. This is particularly problematical for those involved in sales to the 'ready-ripe' market. These operations are faced with a high variation in the rate of ripening within a consignment, causing logistical difficulties. Fruit water content (or its complement dry matter) has a major impact on-line ripening and has hence been used as the maturity marker in the South African avocado industry. Presently, fruit water content is destructively measured using a representative sample as an indicator of when to post-harvest. In order to investigate if fruit water content and/or abscisic acid triggers fruit ripening, water or ABA was infused into commercially mature, but non-ripe avocado fruit. The fruit ripening, mass, CO2 and ethylene production patterns were determined over the ripening period. By infusing water through the pedicle, the variation in days to ripening was decreased without any effect on the number of days to ripening. ABA infusion hastened ripening but did not affect the variation in days to ripening. It is therefore suggested that the fruit water content at harvest forms the baseline condition from which the trigger for ripening is determined, while post-harvest water loss and ABA modulate and stimulate ripening, respectively. Furthermore, an equation was developed using Near Infrared Spectroscopy (NIRS) to measure mesocarp water content (R2 = 0.92, SE = 1.8% MC). It is postulated that on line sorting of fruit using NIRS, based on time to ripen, would result in consignments of fruit with less ripening variation, thereby solving the industry's logistical problem of fruit which have a wide spread of ripening being packed into one carton.
Keywords: Avocado; ABA; Water; Infusion; NIR; Non-destructive measurement

Andreana Marino, Antonia Nostro, Caterina Fiorentino, Ochratoxin A production by Aspergillus westerdijkiae in orange fruit and juice, International Journal of Food Microbiology, Volume 132, Issues 2-3, 30 June 2009, Pages 185-189, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2009.03.026.
(http://www.sciencedirect.com/science/article/B6T7K-4W1BV2X-1/2/5746d4d8d139dbe2b0212512dbf19f29)
Abstract:
To evaluate the incidence of fungi producing ochratoxin A in orange fruit and juice a survey was carried out by challenge test with ochratoxin A producing strains of Aspergillus westerdijkiae used as the model system. A. westerdijkiae grew into experimental lesions caused on orange surfaces, in orange natural medium and in orange juice and produced OTA in all environments. The higher temperature of 26 [degree sign]C had a greater influence than temperatures of 20 [degree sign]C

and 4 [degree sign]C on the growth of the mould, and OTA production. The environmental temperature of 20 [degree sign]C, slows down but does not prevent toxin production. At the lowest temperature of 4 [degree sign]C no growth was observed.
Keywords: Aspergillus westerdijkiae; Ochratoxin A; Orange (Citrus sinensis) fruit; Orange juice; Temperature

Robert Veberic, Jana Jurhar, Maja Mikulic-Petkovsek, Franci Stampar, Valentina Schmitzer, Comparative study of primary and secondary metabolites in 11 cultivars of persimmon fruit (Diospyros kaki L.), Food Chemistry, In Press, Corrected Proof, Available online 26 June 2009, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.06.044.
(http://www.sciencedirect.com/science/article/B6T6R-4WM756P-2/2/c24f7c69b77c59cd8a05672ce930512c)
Abstract:
Primary metabolites (sugars, organic acids) and secondary metabolites (phenolics and carotenoids) were quantified by HPLC in fully ripe fruit of 11 kaki cultivars: `Amankaki', `Cal Fuyu', `Fuji', `Hana Fuyu', `Jiro', `O'Gosho', `Tenjin O'Gosho', `Thiene', `Tipo', `Tone Wase' and `Triumph'. Amongst the analysed cultivars, `Tone Wase' stands out as the richest in sugars, particularly glucose, and cultivars `Tipo' and `Triumph' contained the highest amounts of organic acids. Cultivars `O'Gosho', `Cal Fuyu' and `Hana Fuyu' contained the least sugars and cultivar `Jiro' the least organic acids. Amongst the individual phenolic compounds catechin and gallic acid were present in highest concentrations. The predominant carotenoid in both skin and pulp of ripe persimmon fruit was [beta]-carotene, the highest content was measured in skin of cultivar `Hana Fuyu', which also contained the highest level of total carotenoids. In persimmon pulp, much lower values for carotenoids were obtained, particularly in fruit of cultivar `Cal Fuyu'.
Keywords: Diospyros kaki L.; Sugars; Organic acids; Phenolic compounds; Carotenoids

Elizabeth Brown, Sandrine Dury, Michelle Holdsworth, Motivations of consumers that use local, organic fruit and vegetable box schemes in Central England and Southern France, Appetite, In Press, Corrected Proof, Available online 18 June 2009, ISSN 0195-6663, DOI: 10.1016/j.appet.2009.06.006.
(http://www.sciencedirect.com/science/article/B6WB2-4WJH9Y5-3/2/d197684f32cc4c13532d3524debf1cb8)
Abstract:
Commercial fruit and vegetable box schemes are rapidly growing initiatives that allow customers to make local, organic food choices. This study investigated the socio-demographic profile of consumers using local commercial box schemes, and investigated the barriers and motivations of customers. Cross-sectional surveys using identical questionnaires were conducted in Montpellier, France and Nottingham, England. Box scheme users in both countries were primarily rather affluent professionals. The English reported access to local produce that has travelled less food miles (a more altruistic reason) to be the most important motive to purchasing from the box scheme, whereas the French stated quality of produce (a more hedonistic reason) to be key. Both countries ranked ecological commitment and access to organic food as the next most important influences on their participation. The findings reinforce the importance of food quality and pleasure for the French generally, although once this fundamental criterion has been fulfilled, French box scheme users appear equally motivated by contributing positively to the ecosystem. In England, the desire to eat out of season food was cited as the main barrier to making more sustainable food choices. Cost was an important obstacle to increasing consumption of food from sustainable sources in both countries.
Keywords: Box scheme; Sustainable food choice; England; France; Organic; Local food; Attitudes; Motivation; Barriers

Li-Ping Hu, Fan-Zhen Meng, Shao-Hui Wang, Xiao-Lei Sui, Wei Li, Yu-Xia Wei, Jian-Lei Sun, Zhen-Xian Zhang, Changes in carbohydrate levels and their metabolic enzymes in leaves, phloem sap and mesocarp during cucumber (Cucumis sativus L.) fruit development, Scientia Horticulturae, Volume 121, Issue 2, 17 June 2009, Pages 131-137, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.01.023.
(http://www.sciencedirect.com/science/article/B6TC3-4VKMWBX-2/2/7fdefe073eb117bf33c7cfe7987b0da3)
Abstract:
Levels of carbohydrates and activities of metabolic enzymes were examined in leaves (source), phloem sap (flow) and mesocarp tissues (sink) in the course of cucumber (Cucumis sativus L.) fruit development, from 2 days before anthesis to 20 days after anthesis. While total sugar levels increased in all the three sampling organs, starch levels declined in leaves and mesocarp tissues as fruit development progressed. Glucose and fructose were the primary contributors to the soluble sugar pools in mature leaves. Stachyose was found as the most important component of the phloem sap extracts, followed by sucrose and raffinose. However, the primary sugars accumulated in mesocarp tissues were glucose and fructose, not stachyose or sucrose. Activities of sucrose synthesizing enzymes (sucrose phosphate synthase plus sucrose synthase in the synthesizing direction) exceeded that of sucrose degrading enzymes (acid invertase, neutral invertase plus sucrose synthase in the degrading direction) in leaves, which might cause a sucrose pool utilized in raffinose and stachyose biosynthesis. While alkaline a-galactosidase form I activity declined, stachyose synthase activity showed a rapid increase until 12 days after anthesis and only subsequently decreased in leaves. Activities of sucrose degrading enzymes were always much higher than that of sucrose synthesizing enzymes in mesocarp tissues. Thus, sucrose accumulation could not occur in mesocarp tissues. While stachyose synthase activity steadily decreased, alkaline a-galactosidase form I activity showed a moderate increase before decrease in mesocarp tissues. The relationship between levels of soluble sugars and activities of relative enzymes was also discussed.
Keywords: Carbohydrate metabolism; Cucumber; Enzyme activity; Fruit development; Stachyose

Chunhui Huang, Bo Yu, Yuanwen Teng, Jun Su, Qun Shu, Zaiquan Cheng, Liqiong Zeng, Effects of fruit bagging on coloring and related physiology, and qualities of red Chinese sand pears during fruit maturation, Scientia Horticulturae, Volume 121, Issue 2, 17 June 2009, Pages 149-158, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.01.031.
(http://www.sciencedirect.com/science/article/B6TC3-4VP1CS8-2/2/b385e4e649653d5d5791cf1a336f6bc3)
Abstract:
Red Chinese sand pears (Pyrus pyrifolia Nakai) are particular to China. In order to determine the effects of fruit bagging treatments (including bag types, bag removal patterns and dates) on fruit qualities and to understand the mechanism of coloring of red Chinese sand pears, two experiments were carried out. In the first experiment, fruit of `Meirensu' were firstly covered by light-impermeable paper bags with different levels of light permeable liners during their early development stage, then, the whole bag were/not removed or only the outer layer of bags were removed 3, 2 or 1 weeks before harvest. Thus, the fruit were/not totally re-exposed or were under different levels of sunlight transmission (80.31% or 34.71%). Non-bagged fruit were used as the control. Bagging treatments significantly affected the concentration of anthocyanin and the visual qualities of pear fruit. Compared to control, fruit re-exposed totally for 2 or 3 weeks accumulated the largest amount of anthocyanin and fruit receiving 80.31% and 34.71% of sunlight for 1-3 weeks could synthesize a little anthocyanin, indicating that high light intensity is imperative for coloring in red Chinese sand pears. Bagging treatments did not affect contents of total soluble sugars, but decreased organic acids contents in fruit. In the second experiment, fruit of `Meirensu' and `Yunhongli No. 1' were covered with only one type of light-impermeable bag during the early

development stage and totally re-exposed after the bag removal 15 days before harvest. Fruit were then collected at different intervals to trace the time-course of coloring, and related physiology and inner qualities. With increasing time after the bag removal, the concentration of chlorophyll, carotenoid, flavonoid and total phenols changed little, but the concentration of anthocyanin accumulated extremely fast within 10 days after the bag removal in both cultivars and thereafter kept constant. `Yunhongli No. 1' had higher anthocyanin contents and lower hue angle than `Meirensu', indicating a higher potential of anthocyanin synthesis. After the bag removal, the sucrose contents and PAL activities increased gradually and correlation analysis revealed that they were highly correlated with anthocyanin accumulation in two cultivars. This study suggests that anthocyanin biosynthesis in red Chinese sand pears is a highly light dependent process and modified by genotypes. Based on the current results, in order to obtain red Chinese sand pear fruit with attractive appearance and good inner qualities, fruit must be covered with light-impermeable bags at the early stage of fruit development and the bag should be removed totally at least 10 days before harvest.
Keywords: Pyrus pyrifolia; Soluble sugars; Organic acids; Anthocyanin; Chlorophyll; Flavonoid; PAL; PPO; Color parameters

Asghar Ramezanian, Majid Rahemi, Mohammad Reza Vazifehshenas, Effects of foliar application of calcium chloride and urea on quantitative and qualitative characteristics of pomegranate fruits, Scientia Horticulturae, Volume 121, Issue 2, 17 June 2009, Pages 171-175, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.01.039.
(http://www.sciencedirect.com/science/article/B6TC3-4VPV8WR-1/2/4c56ebadb130d7145c0bf38b516cc07e)
Abstract:
The effects of urea and calcium chloride and their combinations on qualitative and quantitative characteristics of pomegranate fruits were studied over 2 years. Aqueous solutions of urea at 0%, 0.5%, 1% and 2% and calcium chloride at 0%, 2% and 4% were applied on two branches of pomegranate (Punica granatum L. cv Malase-Yazdi) at full bloom (FB) and 1 month after full bloom (1MAFB) stages. Urea at concentrations of 1% and 2% significantly increased aril size, fruit length and diameter. Calcium chloride at concentrations of 2% and 4% significantly increased average fruit weight and ascorbic acid (AA) content. Both urea and calcium chloride increased soluble solid content (SSC) at all of the used concentrations. In the first time of spraying, higher level of treatments reduced titratable acidity (TA), but the second time of spraying did not significantly affect the TA.
Keywords: Pomegranate; Aril; Nitrogen; Calcium; Soluble solid content; Titratable acidity; Ascorbic acid

Barbara Lata, Aleksandra Trampczynska, Justyna Paczesna, Cultivar variation in apple peel and whole fruit phenolic composition, Scientia Horticulturae, Volume 121, Issue 2, 17 June 2009, Pages 176-181, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.01.038.
(http://www.sciencedirect.com/science/article/B6TC3-4VP1CS8-4/2/4f7cdc91197544b126a0e19c748b4901)
Abstract:
The quali-quantitative distribution of phenolic compounds varies considerably between apple flesh and peel, but the concentration of phenolics is substantially higher in the peel than flesh. Because the peel comprises only a small percentage of the entire fruit weight, its significance as a donor of phenolics is disputable. We assessed the contribution of the peel to the total phenolic yield of 19 apple cultivars. Calculations were based on the weight of the whole fruit and the peel (which is frequently discarded) and the concentration of individual phenolic compounds. On average, 8, 24, 32, 50 and 66% of chlorogenic acid, (+)-catechin, (-)-epicatechin, phloridzin, and rutin, respectively, were present in the peel, which constitutes about 6-8% of the whole apple weight.

With the exception of chlorogenic acid, 50% or more, on average, of the above phenolics were present in the peel of `Granny Smith', `Idared', `Red Rome', `Jonamac' and `Gloster' apples; the highest percentage was found in `Starking Delicious' apple peel (82%). The lowest peel contribution to total phenolic content per whole apple ranged between 26 and 29% and was observed in `Pilot', `McIntosh' and `Prima' apples. Presented results may be useful for further investigations of the relationship between phenolics and agronomical parameters or future selection of apple genotypes having improved nutritional quality when consumed as fresh or as processed apple products.
Keywords: Malus domestica Borkh; Antioxidant; Flavan-3-ols; Hydroxycinnamic acids; Flavonols; HPLC

Hee-Kyung Lim, Jeong Yong Moon, Hana Kim, Moonjae Cho, Somi Kim Cho, Induction of apoptosis in U937 human leukaemia cells by the hexane fraction of an extract of immature Citrus grandis Osbeck fruits, Food Chemistry, Volume 114, Issue 4, 15 June 2009, Pages 1245-1250, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.10.088.
(http://www.sciencedirect.com/science/article/B6T6R-4TYR092-1/2/efb643ab106f207e30d7c5d2d69535bb)
Abstract:
The antiproliferative effect of an immature Citrus grandis Osbeck fruit extract was investigated using U937 human leukaemia cells. Maximum cytotoxicity was observed using the hexane fraction (HF) of the extract. Cell death was dose-dependent (IC50 = ca. 60 [mu]g/ml) and was characterised by chromatin condensation, apoptotic body formation, and DNA fragmentation. The induction of apoptosis was confirmed by caspase-3 activity assays and by immunoblotting using antibodies against Bcl-2, Bax, poly(ADP-ribose) polymerase (PARP), caspase-9, and caspase-3. The molecular mechanism underlying HF-induced apoptosis in U937 cells may involve a mitochondria-mediated signalling pathway, as demonstrated by an increase in the Bax/Bcl-2 expression ratio. Analyses of the HF by gas chromatography (GC) and GC-mass spectrometry (MS) tentatively identified 19 compounds, including [gamma]-sitosterol (17.5%), 7-methoxy-8-(2-oxo-3-methylbutyl) coumarin (6.8%), stigmasterol (3.8%), and campesterol (3.4%). Together, our results provide the first evidence that the HF of an immature C. grandis Osbeck fruit extract induces apoptosis in U937 cells.
Keywords: Apoptosis; U937 human leukemia cells; Citrus grandis Osbeck; Bcl-2 family; Caspase-3 activity

Maria Jose Garcia-Nebot, Amparo Alegria, Reyes Barbera, Gonzalo Clemente, Fernando Romero, Addition of milk or caseinophosphopeptides to fruit beverages to improve iron bioavailability?, Food Chemistry, In Press, Corrected Proof, Available online 12 June 2009, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.06.005.
(http://www.sciencedirect.com/science/article/B6T6R-4WH8CD4-6/2/4375e0166e113e1210dc010e660f6be9)
Abstract:
A study has been made of the influence of caseinophosphopeptides (CPPs) added to a fruit beverage versus milk based fruit beverages upon iron retention, transport and uptake, using a combined simulated gastrointestinal digestion/Caco-2 cell system. Grape concentrate, orange concentrate, and apricot puree were used for sample formulation. Eight samples were assayed with/without added Fe sulphate (3 mg/100 ml fruit beverage) and/or added Zn sulphate (1.6 mg/100 ml fruit beverage), with/without skimmed milk (11% v/v). The addition of milk to fruit beverages exerted a positive effect on iron retention, transport and uptake versus fruit beverages, and this effect was greater than that of CPPs added to soluble fractions of fruit beverages. The addition of CPPs to soluble fractions of fruit beverages improved iron transport. Iron

supplementation increased Fe retention, transport and uptake - the effect being more notable in samples with milk. Zinc supplementation did not affect Fe retention, transport or uptake.
Keywords: Caseinophosphopeptides; Simulated gastrointestinal digestion; Fruit beverages; Iron bioavailability; Caco-2 cells; Milk

Yu Ge, Yufeng Duan, Guozhen Fang, Yan Zhang, Shuo Wang, Polysaccharides from fruit calyx of Physalis alkekengi var. francheti: Isolation, purification, structural features and antioxidant activities, Carbohydrate Polymers, Volume 77, Issue 2, 10 June 2009, Pages 188-193, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2008.12.020.
(http://www.sciencedirect.com/science/article/B6TFD-4V7624B-3/2/1f93629a12fb4e689fa7d24012b8650e)
Abstract:
The conditions for extracting and purifying polysaccharides from fruit calyx of Physalis alkekengi var. francheti were investigated, including hot water extraction, ultrasonic wave-assistant extraction and enzyme extraction methods. Four polysaccharide fractions (PAVF I, II-a and III) were separated from the extracts of fruit calyx of P. alkekengi var. francheti using a DEAE anion-exchange column and Sephadex G-200 column. Their chemical compositions were determined in this study. On the basis of hydroxyl radical assay (OH), superoxide radical assay, 1,1-dipheny-l-2-picrylhydrazyl (DPPH) assay, the antioxidant activities of crude polysaccharide from fruit calyx of P. alkekengi var. francheti (FCP), PAVF I, II-a, -b and III were investigated. Among these contents, PAVF I has higher scavenging effects on DPPH, OH and superoxide anion-scavenging activities.
Keywords: Physalis alkekengi var. francheti; Structure; Polysaccharides; Antioxidant activities

Nigel Williams, Fruit heartland threatened, Current Biology, Volume 19, Issue 11, 9 June 2009, Pages R431-R432, ISSN 0960-9822, DOI: 10.1016/j.cub.2009.05.039.
(http://www.sciencedirect.com/science/article/B6VRT-4WGCS5J-4/2/4e523d3ec968526986562c0e7fea23ee)
Abstract: Summary
Many fruit tree species in a recently discovered Asian garden of Eden are increasingly endangered. Nigel Williams reports.

Jicheng Liu, Shu Miao, Xianchun Wen, Yongxu Sun, Optimization of polysaccharides (ABP) extraction from the fruiting bodies of Agaricus blazei Murill using response surface methodology (RSM), Carbohydrate Polymers, In Press, Corrected Proof, Available online 8 June 2009, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2009.06.003.
(http://www.sciencedirect.com/science/article/B6TFD-4WGF12V-C/2/04d7c7649cc2e21f4b8244e5ab5369d3)
Abstract:
Response surface methodoloty (RSM) was used to optimize the extraction conditions of polysaccharides (ABP) from the fruiting body of Agaricus blazei. A central composite design (CCD) was used for experimental design and analysis of the results to obtain the optimal processing parameters. Four independent variables such as extraction temperature ([degree sign]C), ratio of water to raw material, number of extraction, and extraction time (h) were investigated. The experimental data obtained were fitted to a second-order polynomial equation using multiple regression analysis and also analyzed by appropriate statistical methods. The 3-D response surface plot and the contour plot derived from the mathematical models were applied to determine the optimal conditions. The optimum extraction conditions were as follows: extraction temperature 91 [degree sign]C, ratio of water to raw material 14, number of extraction 6, and extraction time 2.1 h. Under these conditions, the experimental value was 65.8 +/- 1.42, which is well in close agreement with value predicted by the model.

Keywords: Agaricus blazei; Polysaccharides; Extraction; Optimization; Response surface methodology

Cengiz Kaya, Muhammed Ashraf, Osman Sonmez, Salih Aydemir, Atilla Levent Tuna, Mehmet Ali Cullu, The influence of arbuscular mycorrhizal colonisation on key growth parameters and fruit yield of pepper plants grown at high salinity, Scientia Horticulturae, Volume 121, Issue 1, 2 June 2009, Pages 1-6, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.01.001.
(http://www.sciencedirect.com/science/article/B6TC3-4VHS7T8-1/2/e0cce5da04049dc875e0b0a5fcd8a4db)
Abstract:
This study investigated the effects of arbuscular mycorrhizal (AM) colonisation by Glomus clarum on growth and fruit yield of pepper (Capsicum annum cv. 11B 14) grown at high salinity. The experiment was conducted in pots containing a mixture of perlite and sand (1:1, v/v) under glasshouse conditions. Treatments were: (1) no added NaCl without arbuscular mycorrhizae (NS-AM), (2) no added NaCl with arbuscular mycorrhizae (NS + AM), (3) added 50 mM NaCl without arbuscular mycorrhizae (S1-AM) and (4) added 100 mM NaCl without arbuscular mycorrhizae (S2-AM), (5) added 50 mM NaCl with arbuscular mycorrhizae (S1 + AM) and (4) added 100 mM NaCl with arbuscular mycorrhizae (S2 + AM). The NaCl treatments reduced pepper shoot and root dry matter, and fruit yield compared with the non-saline treatments. The concentrations of N, P and K, in the leaves were significantly reduced by salinity stress, however, mycorrhizal colonisation of the salt-stressed plants restored leaf nutrient concentrations to the levels in non-stressed plants in most cases. AM inoculation improved pepper growth under salt or saltless conditions and reduced cell membrane leakage.
Keywords: Salinity; Mycorrhizae; Inorganic nutrients; Membrane permeability

Ioannis E. Papadakis, Eftichios E. Protopapadakis, Ioannis N. Therios, Yield and fruit quality of `Nova' hybrid [Citrus clementina hort. ex Tanaka x (C. reticulata Blanco x C. paradisi Macfad)] and two Clementine varieties (C. clementina hort. ex Tanaka) as affected by self- and cross-pollination, Scientia Horticulturae, Volume 121, Issue 1, 2 June 2009, Pages 38-41, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.01.011.
(http://www.sciencedirect.com/science/article/B6TC3-4VHC429-1/2/aefc913a8126c012967ee80b562ddeda)
Abstract:
Low yields of `Nova' citrus hybrid are common in single variety plantings (plantings consisting of one variety) due to its sexual self-incompatibility. Self-incompatibility may be overcome by cross-pollination with other compatible varieties. Fruit quality and yield of `Nova' citrus hybrid as well as of the `SRA63' and `Marisol' Clementines, when either they were self-pollinated in single variety plantings or each one of the two Clementine varieties was used as a pollenizer for `Nova' in mixed plantings (plantings consisting of more than one variety), were investigated. The study was carried out for two successive years under the same environmental and cultural conditions using three single variety plantings (`Nova' x `Nova', `SRA63' x `SRA63', `Marisol' x `Marisol') and two mixed plantings (`Nova' x `SRA63', `Nova' x `Marisol').
Cross-pollination of `Nova' with either `SRA63' or `Marisol' significantly increased fruit yield of `Nova' trees and mean fresh weight of `Nova' fruits without affecting the other fruit quality parameters [rind thickness, percentage of juice, concentration of total soluble solids (TSS) and total acids (TA) in the juice, and TSS/TA ratio). Although the number of seeds per each `Nova' fruit significantly increased due to cross-pollination (from 0.7 in `Nova' x `Nova' planting to 1.8 and 2.1 in `Nova' x `Marisol' and `Nova' x `SRA63' plantings, respectively), it remained in a range (<=2.1) which is by far acceptable in the fresh fruit market. On the other hand, each fruit produced by cross-pollinated `Marisol' and `SRA63' trees with `Nova' contained an average of 2.4 and 18.6 seeds, respectively. The effects of `Nova' pollen on the other fruit quality parameters (weight, TSS,

TA, TSS/TA, juice content, rind thickness) of `Marisol' and `SRA63' were not significant. Therefore, `Marisol' was proved to be a good pollenizer for `Nova' and vice versa. Furthermore, `SRA63' can be used as pollenizer in `Nova' orchards. Instead, the use of `Nova' trees as pollenizers in `SRA63' orchards should be avoided since the seediness of `SRA63' fruits was increased very much.
Keywords: Total soluble solids; Seedless; Seediness; Titratable acidity; Pollination; Pollenizer

Elif Erturk Candir, Ahmet Erhan Ozdemir, Mustafa Kaplankiran, Celil Toplu, Physico-chemical changes during growth of persimmon fruits in the East Mediterranean climate region, Scientia Horticulturae, Volume 121, Issue 1, 2 June 2009, Pages 42-48, ISSN 0304-4238, DOI: 10.1016/j.scienta.2009.01.009.
(http://www.sciencedirect.com/science/article/B6TC3-4VH8Y76-3/2/eb0ef896c3821f4e17a4abf87d4a015c)
Abstract:
Physico-chemical changes were monitored during growth of pollination variant non-astringent `Harbiye' persimmon fruits (Diospyros kaki L.) grown at low or high altitude of the East Mediterranean Region of Turkey for two growing seasons (2001-2002 and 2002-2003). Fruit growth in diameter followed a typical double sigmoid curve, consisting of two rapid growth stages, stage I and stage III, separated by a period of slow growth (stage II) at both altitudes. The durations of stages I, II and III were 105-119, 21-35 and 21-42 days, respectively, at low and high altitude. `Harbiye' persimmons showed significant decreases in soluble tannin concentration and total carotenoid content during stage I. At the end of stage I, `Harbiye' persimmons became non-astringent. Stage II was characterized with slow growth, the beginning of acid degradation and a significant increase in total sugars, especially in the sucrose component. At end of stage II, the fruit began to turn yellow-orange, indicating the occurrence of colour break. The greatest increase in total soluble solids (TSS) content occurred in the final month before harvest during stage III when pronounced changes in skin colour and softening of fruits were observed. The 175 and 168 days after full bloom (DAFB) at low and high altitudes, respectively, are appropriate timing for harvest of the `Harbiye' persimmon fruits in the East Mediterranean region. At these stages, `Harbiye' persimmon fruits reached the best quality for consumers.
Keywords: Non-astringent persimmon; Fruit growth; Double sigmoid; Quality; Maturity

J.G. Perez-Perez, J.M. Robles, P. Botia, Influence of deficit irrigation in phase III of fruit growth on fruit quality in `lane late' sweet orange, Agricultural Water Management, Volume 96, Issue 6, June 2009, Pages 969-974, ISSN 0378-3774, DOI: 10.1016/j.agwat.2009.01.008.
(http://www.sciencedirect.com/science/article/B6T3X-4VJS6TG-1/2/fe0cf12103c698d22ca36d15c8424934)
Abstract:
The aim of this work was to apply one strategy of deficit irrigation (DI) to improve the final fruit quality in 10-year-old `Lane late' sweet orange grafted on Carrizo citrange (Citrus sinensis L. Osb. x Poncirus trifoliata L.). The experiment was carried out over 2 years in an experimental orchard located in Torre Pacheco (Murcia, south-east Spain). The deficit irrigation treatment consisted of the stopping of irrigation in phase III of fruit growth (1st October-28th February). The irrigation cut-off in phase III reduced the midday stem water potential ([Psi]md), the plant water status being heavily influenced by rainfall. In both years, the DI treatment did not alter fruit yield although mean fruit weight was slightly reduced. The main effects of DI on the final fruit quality were increases of total soluble solids (TSS) and titratable acidity (TA) and a decrease of juice percentage without altering the final maturity index. Plant water-stress integral (S[Psi]) was correlated positively with TSS and TA and negatively with juice percentage. In conclusion, a DI strategy could be useful for improving the final content of TSS and the TA, therefore allowing the harvest to be delayed.
Keywords: Water relations; Yield; Fruit quality; Total soluble solids; Titratable acidity

Chihiro Hiramatsu, Amanda D. Melin, Filippo Aureli, Colleen M. Schaffner, Misha Vorobyev, Shoji Kawamura, Interplay of olfaction and vision in fruit foraging of spider monkeys, Animal Behaviour, Volume 77, Issue 6, June 2009, Pages 1421-1426, ISSN 0003-3472, DOI: 10.1016/j.anbehav.2009.02.012.
(http://www.sciencedirect.com/science/article/B6W9W-4VYMP48-1/2/1c8e2a074bfd483450ed65a7a0416570)
Abstract:
It is not well understood how primates combine olfactory and visual cues in their natural behaviour, especially during feeding. In this study we conducted field observations of a group of wild, frugivorous black-handed spider monkeys, Ateles geoffroyi (Platyrrhini), consisting of both dichromats (N = 11) and trichromats (N = 9) in Santa Rosa National Park, Costa Rica. We focused on the fruit foraging behaviour, for which involvement of vision has been well studied. We examined how often the monkeys inspected fruits by sniffing them during their fruit feeding attempts (i.e. sniffing index). We found that both dichromats and trichromats sniffed the visually cryptic fruit species more often than the conspicuous species, with the sniffing index being negatively correlated with the luminance and blue-yellow contrasts of fruits to background leaves. Furthermore, the sniffing index was negatively correlated with the proportion of fruits eaten (versus rejected) following a foraging attempt in both dichromats and trichromats. These results suggest that monkeys use olfaction for discrimination between edible and inedible fruits when vision alone is insufficient to evaluate the quality of fruits, showing the first documentation of interplay between vision and olfaction in primate feeding behaviour under natural conditions.
Keywords: Ateles geoffroyi black-handed spider monkey; colour vision polymorphism; fruit foraging; New World monkey; olfaction; opsin; primates

Karen Weber Cullen, Kathleen B. Watson, Melanie Konarik, Differences in fruit and vegetable exposure and preferences among adolescents receiving free fruit and vegetable snacks at school, Appetite, Volume 52, Issue 3, June 2009, Pages 740-744, ISSN 0195-6663, DOI: 10.1016/j.appet.2009.04.001.
(http://www.sciencedirect.com/science/article/B6WB2-4W211XG-1/2/661974e647d9c43883e606f6a15c813b)
Abstract:
Low fruit and vegetable (FV) intakes are associated with excess body weight. The United States Department of Agriculture sponsors a Free Fruit and Vegetable Program in schools whereby students receive free FV snacks daily. This study assessed whether the program improved student exposure to and preferences for FV in a Houston high school in 2006-2007. Anonymous, post-intervention only FV exposure and preference surveys were completed by 2000 intervention school students and 1600 students in a comparison school during May, 2007. Differences in FV exposure and preferences were assessed, as well as differences in preferences between those students who tasted the item for the first time at school compared to those who had tasted the item before. The comparison school average scores for prior FV exposure and vegetable preferences were significantly higher than the intervention school scores. Intervention school students who had tasted the item previously reported significantly higher preferences than students who had tasted it for the first time at school. Access to the Free Fruit and Vegetable Program did not appear to improve high school student reported FV exposure and preferences. Future research should investigate the connection between food exposure, preferences and consumption in adolescents.
Keywords: Free Fruit and Vegetable Program; USDA; Adolescents; High school; Diet; Preferences; Exposure

Marc T. Kiviniemi, Kate M. Duangdao, Affective associations mediate the influence of cost-benefit beliefs on fruit and vegetable consumption, Appetite, Volume 52, Issue 3, June 2009, Pages 771-775, ISSN 0195-6663, DOI: 10.1016/j.appet.2009.02.006.
(http://www.sciencedirect.com/science/article/B6WB2-4VPD6H0-3/2/894ef4cb7eeb106372faabd3f680c7d7)
Abstract:
Consumption of fruits and vegetables is far lower than recommended. The behavioral affective associations model posits that affective associations influence behavior and mediate the influence of perceived benefits and barriers on behavioral choices. The purpose of this study was to test the model's predictions about the influence of affective associations and benefits/barriers on fruit and vegetable consumption. Community adults (N = 446) reported perceived benefits and barriers to fruit and vegetable consumption, affective associations with fruits and vegetables, and current fruit and vegetable intake. Affective associations predicted behavior and mediated the influence of benefits and barriers on behavior, supporting predictions made by the behavioral affective associations model. This highlights the need to incorporate affective factors in decision-making models and intervention strategies.
Keywords: Decision making; Health knowledge; Health behavior; Affect; Fruits and vegetables

T.V.E. Kral, A.C. Kabay, L.S. Roe, B.J. Rolls, Effects of increasing the portion size of fruit and vegetable side dishes at a meal on children's intake regulation, Appetite, Volume 52, Issue 3, June 2009, Page 842, ISSN 0195-6663, DOI: 10.1016/j.appet.2009.04.115.
(http://www.sciencedirect.com/science/article/B6WB2-4WFTBY5-3W/2/5194b569e6ee8c559ff94e57c48ac2c6)

Mailin Misson, Roslindawati Haron, Mohd Fadhzir Ahmad Kamaroddin, Nor Aishah Saidina Amin, Pretreatment of empty palm fruit bunch for production of chemicals via catalytic pyrolysis, Bioresource Technology, Volume 100, Issue 11, June 2009, Pages 2867-2873, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.12.060.
(http://www.sciencedirect.com/science/article/B6V24-4VM7YDY-1/2/bb168178c21c8bd092756ecf1de41b30)
Abstract:
The effect of chemical pretreatments using NaOH, H2O2, and Ca(OH)2 on Empty Palm Fruit Bunches (EPFB) to degrade EPFB lignin before pyrolyis was investigated. Spectrophotometer analysis proved consecutive addition of NaOH and H2O2 decomposed almost 100% of EPFB lignin compared to 44% for the Ca(OH)2, H2O2 system while NaOH and Ca(OH)2 used exclusively could not alter lignin much. Next, the pretreated EPFB was catalytically pyrolyzed. Experimental results indicated the phenolic yields over Al-MCM-41 and HZSM-5 catalysts were 90 wt% and 80 wt%, respectively compared to 67 wt% yield for the untreated sample under the same set of conditions. Meanwhile, the experiments with HY zeolite yielded 70 wt% phenols.
Keywords: Lignin degradation; Catalytic pyrolysis; Empty palm fruit bunch; Chemical pretreatment

Md. Niamul Bari, Md. Zahangir Alam, Suleyman A. Muyibi, Parveen Jamal, Abdullah-Al-Mamun, Improvement of production of citric acid from oil palm empty fruit bunches: Optimization of media by statistical experimental designs, Bioresource Technology, Volume 100, Issue 12, June 2009, Pages 3113-3120, ISSN 0960-8524, DOI: 10.1016/j.biortech.2009.01.005.
(http://www.sciencedirect.com/science/article/B6V24-4VP12F2-5/2/cc73ef82f5c0e84065ec63623740f1f5)
Abstract:
A sequential optimization based on statistical design and one-factor-at-a-time (OFAT) method was employed to optimize the media constituents for the improvement of citric acid production from oil palm empty fruit bunches (EFB) through solid state bioconversion using Aspergillus niger IBO-

103MNB. The results obtained from the Plackett-Burman design indicated that the co-substrate (sucrose), stimulator (methanol) and minerals (Zn, Cu, Mn and Mg) were found to be the major factors for further optimization. Based on the OFAT method, the selected medium constituents and inoculum concentration were optimized by the central composite design (CCD) under the response surface methodology (RSM). The statistical analysis showed that the optimum media containing 6.4% (w/w) of sucrose, 9% (v/w) of minerals and 15.5% (v/w) of inoculum gave the maximum production of citric acid (337.94 g/kg of dry EFB). The analysis showed that sucrose ($p < 0.0011$) and mineral solution ($p < 0.0061$) were more significant compared to inoculum concentration ($p < 0.0127$) for the citric acid production.
Keywords: Citric acid; Oil palm empty fruit bunches (EFB); Optimization; Solid state bioconversion; Aspergillus niger

Beda M. Yapo, Lemon juice improves the extractability and quality characteristics of pectin from yellow passion fruit by-product as compared with commercial citric acid extractant, Bioresource Technology, Volume 100, Issue 12, June 2009, Pages 3147-3151, ISSN 0960-8524, DOI: 10.1016/j.biortech.2009.01.039.
(http://www.sciencedirect.com/science/article/B6V24-4VR6K7H-4/2/feb0aead110281a4edf758108e684a48)
Abstract:
An environment-friendly procedure, allowing the extraction of safe pectin products with good functional properties from yellow passion fruit by-product, was developed using two natural acid extractants, namely, pure lemon juice and citric acid solvent. The results show that both of them solubilise, from cell wall material, pectins characterised by high galacturonic acid content (64-78% w/w), degree of esterification (52-73), viscosity-average molecular weight (70-95 kDa) and capable of forming gels in the presence of high soluble solids (sucrose) content and acid. However, compared to pure citric acid solvents, lemon natural juice and its concentrate isolate, under similar extraction conditions, pectins of superior quality characteristics, i.e., higher galacturonic acid content, degree of esterification, viscosity-average molecular weight and gelling power.
Keywords: Agro-residues; Natural extractant; Gelling biopolymers; Esterification; Physicochemical properties

J. Blasco, N. Aleixos, J. Gomez-Sanchis, E. Molto, Recognition and classification of external skin damage in citrus fruits using multispectral data and morphological features, Biosystems Engineering, Volume 103, Issue 2, June 2009, Pages 137-145, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2009.03.009.
(http://www.sciencedirect.com/science/article/B6WXV-4W441F2-2/2/fed59aeb468d3458225dc7e9c52181ad)
Abstract:
The computer vision systems currently used for the automatic inspection of citrus fruits are normally based on supervised methods that are capable of detecting defects on the surface of the fruit but are unable to discriminate between different types of defects. Identifying the type of the defect affecting each fruit is very important in order to optimise the marketing profit and to be able to take measures to prevent such defects from occurring in the future. In this paper, we present a computer vision system that was developed for the recognition and classification of the most common external defects in citrus. In order to discriminate between 11 types of defects, images of the defects were acquired in five spectral areas, including the study of near infrared reflectance and ultraviolet induced fluorescence. The system combines spectral information about the defects with morphological estimations of them in order to classify the fruits in categories. The fruit-sorting algorithm proposed here was tested by using it to identify the defects in more than 2000 citrus fruits, including mandarins and oranges. The overall success rate reached 86%.

Bundit Jarimopas, Nuttapong Ruttanadat, Anupun Terdwongworakul, An automatic trimming machine for young coconut fruit, Biosystems Engineering, Volume 103, Issue 2, June 2009, Pages 167-175, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2008.10.004.
(http://www.sciencedirect.com/science/article/B6WXV-4VY16D4-1/2/035429f925f5a9062f5f04a430fe81e4)
Abstract:
A prototype automatic young coconut fruit trimming machine was designed, constructed, tested and evaluated. The mechanism used features a sharp inclined knife which operates in translation motion in a vertical plane to trim the fruit, which is clamped tightly and rotates about a vertical axis. Machine components include a main frame, a body-trimming station, a shoulder-trimming station, a base-cutting station, a rotary base, three fruit holders, an electrical connection slip ring, a power drive and programmable electronic control. In experiments, the untrimmed fruit was continuously fed into three separate fruit holders. These in turn conveyed the coconut through the body-trimming, shoulder-trimming and base-cutting stations. The fruit holders continuously travelled in a circle encompassing every station in sequence. Optimal settings included (a) feeding rate of 86 fruit h-1, (b) 300 rpm rotation of the trimmed fruit, and (c) a shoulder knife height of 180 mm. Average loss rates were 0.35%, for the fibrous area, 2.5% for fruit damage and 14.5% for the untrimmed green area. The optimally trimmed fruit was accepted by growers and traders.

Jean-Francois Vayssieres, Sam Korie, David Ayegnon, Correlation of fruit fly (Diptera Tephritidae) infestation of major mango cultivars in Borgou (Benin) with abiotic and biotic factors and assessment of damage, Crop Protection, Volume 28, Issue 6, June 2009, Pages 477-488, ISSN 0261-2194, DOI: 10.1016/j.cropro.2009.01.010.
(http://www.sciencedirect.com/science/article/B6T5T-4VP1CH4-1/2/a567bf6b68cdc7a3bfe6427c40b4e8cd)
Abstract:
Fruit flies associated with mango trees were monitored in two orchards in Benin using traps baited with methyl eugenol, terpinyl acetate and Torula during 2005-2006. Population fluctuations were analysed with respect to environmental factors including air temperature, relative humidity and rainfall in relation to different mango cultivars. Mangoes were sampled every two weeks during the two crop years, to assess the damage caused by these quarantine pests on ten main cultivars. Three native species of Ceratitis and a recently described new exotic species, Bactrocera invadens made up the complex of economically significant fruit flies associated with the mango tree in Borgou. Ceratitis species occurred during the dry season and the main species, Ceratitis cosyra, reached a peak at the end of the dry season. B. invadens populations were scarce during the dry season, but increased steadily from the end of April to reach a peak at the end of June during the rainy season. Regression analyses indicated that minimum-maximum temperature, relative humidity and rainfall were the major climatic factors influencing fly populations. Daily rainfall was the factor showing the strongest positive correlation with B. invadens populations. Host plant was another essential factor influencing the population fluctuations. Trapping and rearing data indicated that Ceratitis quinaria and Ceratitis silvestrii, were abundant only in the dry season, causing damage only to early cultivars. C. cosyra, also common during the dry season, attacked both early cultivars or mid season cultivars. A consistent population increase of B. invadens in the early rainy season caused considerable damage to mid season and late cultivars. The seasonal increase of the B. invadens population coincided with the fruiting period of the main mango cultivars in this Northern Guinean savannah, but mango availability influenced the population of this new invasive species only when the rains had arrived. Mean damage on mangoes for the two seasons and two studied orchards increased from 17% in early April to 73% at mid June.
Keywords: Bactrocera invadens; Ceratitis cosyra; Climatic factors; Population dynamics; Mangifera indica; Loss assessment

T. Gottwald, J. Graham, C. Bock, G. Bonn, E. Civerolo, M. Irey, R. Leite, G. McCollum, P. Parker, J. Ramallo, T. Riley, T. Schubert, B. Stein, E. Taylor, The epidemiological significance of post-packinghouse survival of Xanthomonas citri subsp. citri for dissemination of Asiatic citrus canker via infected fruit, Crop Protection, Volume 28, Issue 6, June 2009, Pages 508-524, ISSN 0261-2194, DOI: 10.1016/j.cropro.2009.02.003.
(http://www.sciencedirect.com/science/article/B6T5T-4VVRCGR-1/2/bd0a022185b3cece467e999997039f68)
Abstract:
The risk of introduction of Xanthomonas citri subsp. citri (Xcc) to new, unaffected citrus producing areas is a major concern for those citrus industries attempting to remain free of citrus canker. Citrus fruit, as a potential pathway for Xcc to enter and become established in these areas, are assumed to be a risk. However, there is little information relative to the potential of harvested fruit to act as an inoculum source. A multi-national research team was established to investigate the potential of bacterial survival in infected citrus fruit lesions and as surface contaminants on symptom-free fruit, and to examine the potential of infected fruit as a viable inoculum source. Experiments were conducted in various locations in Florida and Argentina. Bacterial recovery and culture plating were problematic due to the presence of non-pathogenic bacteria with cultural characteristics that were difficult to distinguish from Xcc. Therefore, in all experiments, although culturing on semi-selective agar media was used as an indication of overall bacterial populations, bioassays were conducted via needleless injection and infiltration of suspect bacterial suspensions into susceptible cv. Duncan grapefruit leaves. Inoculation sites were subsequently assessed for symptoms of citrus canker and lesions were individually enumerated to confirm the presence of Xcc. In commercial packing lines in Florida and northwest Argentina, prewashing the fruit to remove dirt and debris reduced surface bacterial populations. As anticipated, recovery of Xcc from fruit surfaces increased when active citrus canker lesions were present but total bacterial recovery decreased after processing, and bioassays demonstrated that the quantity of viable Xcc declined as fruit remained in cold storage, or as they aged on the trees. Bioassays demonstrated that the highest incidence of Xcc from fruit after the packing line antimicrobial treatment occurred with symptomatic fruit (2.5-50.6 lesions leaf-1), and zero to very low levels with fruit from apparently healthy trees (0-1.74 lesions leaf-1). Furthermore, the proportion of injection-infiltration bioassay sites that developed lesions consistently decreased with time after processing in each of the three packinghouse studies, also showing that as fruit senesce and lesions age the ability of fruit to generate or sustain Xcc bacteria was increasingly compromised. The packing line process reduced canker lesion activity by as much as 50% compared to unprocessed fruit. Xcc survived in wounds on mature fruit attached to the tree, but Xcc populations declined in wounds of processed or non-processed harvested fruit. Discarded canker-infected fruit in cull piles was ineffective as a source of inoculum for dispersal. Transmission from cull piles of packing line-processed fruit to surrounding trap plants, even less than 1 m away, did not occur under natural conditions. However, with severely infected piles of culled fruit subject to extreme simulated wind (25 m s-1) and rain conditions, only a single lesion, associated with leaf injury, developed on a trap plant immediately downwind of the cull pile, suggesting an exceedingly low risk of spread. Taken as a group, this series of experiments demonstrate that harvested and packinghouse-disinfested citrus fruit are extremely unlikely to be a pathway for Xcc to reach and infect susceptible citrus and become established in canker-free areas.
Keywords: Fruit disease incidence; Disease spread; Bacterial survival; Disease dissemination; Market quality; Packing line disinfection; Cull pile; Lesion; Disease management

P. Nallathambi, C. Umamaheswari, B.B.L. Thakore, T.A. More, Post-harvest management of ber (Ziziphus mauritiana Lamk) fruit rot (Alternaria alternata Fr. Keissler) using Trichoderma species, fungicides and their combinations, Crop Protection, Volume 28, Issue 6, June 2009, Pages 525-532, ISSN 0261-2194, DOI: 10.1016/j.cropro.2009.02.002.

(http://www.sciencedirect.com/science/article/B6T5T-4VT17JD-1/2/f8aca7841beb250b0d30cfa28f0ff2ad)
Abstract:
Isolates of Trichoderma species from hot arid regions, fungicides and their combinations were evaluated for the management of ber fruit rot at post-harvest stage. Out of 16 isolates of Trichoderma species, six isolates checked growth of mycelia of Alternaria alternata by more than 55%. A distinct variation in the inherent level of resistance in these six isolates was recorded against 13 common fungicides. None of the Trichoderma species grew in PDA amended with carbendazim even at a very low concentration. In contrast, 100 per cent radial growth was observed in Trichoderma citrinoviride isolate T.c-CIAH224 in the presence of copper oxychloride (250 [mu]g g-1) and mancozeb (100 [mu]g g-1) in PDA medium. Isolate T.v-CIAH240 was antagonistic against A. alternata and tolerant to most of the fungicides tested. This isolate was highly compatible with chlorothalonil, dinocap and wettable sulphur even at 1000 [mu]g g-1 and produced yellowish instead of normal green coloured conidia. Isolate of Trichoderma koningii - T.k-CIAH176, T. citrinoviride - T.c-CIAH224 and those of Trichoderma viride - T.v-CIAH181 and T.v-CIAH240 with inherent tolerance to some of the fungicides have shown better efficacy to suppress the fruit rot pathogen in dual cultures. However isolate T.v-CIAH240 was significantly superior in vitro in the suppression (71%) of the A. alternata through mycoparasitism and apparent secretion of secondary metabolites in the growth medium. Mycoparasitism and competition with the fruit rot pathogen were the mode of action in the majority of the isolates. The growth of A. alternata was completely inhibited in PDA amended with dinocap, propiconazole and tridemorph irrespective of the concentrations. In experiments in vivo, isolate T.v-CIAH240 was significantly effective (75% PEDC- Per cent Efficiency of Disease Control) against post-harvest infection by A. alternata followed by T.v-SBI48 (62 PEDC) and T.v-CIAH149 (44 PEDC). Among the individual fungicide treatments, dinocap and copper oxychloride (50 [mu]g g-1) resulted in 52 PEDC. However, dinocap caused a scorching effect and a foul smell in fruits. Fruit rot control efficacy was enhanced to >70% by T.v-CIAH240 with tridemefon, thiophanate methyl, mancozeb or alcidine at 50 [mu]g g-1 and to >80% with 100 [mu]g g-1 of thiophanate methyl, chlorothalonil, mancozeb and alcidine in ber fruits (cv. Gola). There was a non-significant latent infection caused by isolates T.k-CIAH176, T.c-CIAH224 (T. citrinoviride) and T.v-CIAH240. Such a latent infection was completely suppressed by low concentrations of fungicides when used in combination with T.v-CIAH240. The possible hypothesis involved in management of A. alternata in ber fruits at post-harvest stages using fungicides, Trichoderma species and their combinations is discussed.
Keywords: Ber; Ziziphus mauritiana; Alternaria alternata; Fungicides; Trichoderma spp.; Management

Antonio Cilla, Antonio Gonzalez-Sarrias, Francisco A. Tomas-Barberan, Juan Carlos Espin, Reyes Barbera, Availability of polyphenols in fruit beverages subjected to in vitro gastrointestinal digestion and their effects on proliferation, cell-cycle and apoptosis in human colon cancer Caco-2 cells, Food Chemistry, Volume 114, Issue 3, 1 June 2009, Pages 813-820, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.10.019.
(http://www.sciencedirect.com/science/article/B6T6R-4TPPF6H-2/2/f0046f2c080a1dc432131f72ee01c813)
Abstract:
Three fruit beverages: Fb (grape-orange-apricot), FbFe (Fb + iron sulphate) and FbFeM (FbFe + skimmed milk) were subjected to in vitro gastrointestinal digestion. Addition of Fe and milk decreased the phenolic content of Fb by 13% and 55%, respectively. The digestion process decreased the phenolic content by 47%, 60%, and 70% in Fb, FbFe and FbFeM with respect to the initial, non-digested, Fb. Caco-2 cells were incubated for 4 h daily for four days or continuously for 24 h with bioaccessible fractions obtained after the digestion (digests). Polyphenols were not metabolised by Caco-2 cells. Fb digest (~50 [mu]M total phenolics) was the sample that led to the

highest inhibition of cell proliferation under the two experimental conditions. Fb digest did not induce apoptosis but ceased cell-cycle in the S-phase which is associated to a decrease in B1 and D1 cyclin levels upon incubation for 24 h.
Keywords: Antiproliferative; Cell-cycle; Cyclins; Fruit beverages; Polyphenols

Xianghong Meng, Jin Han, Qing Wang, Shiping Tian, Changes in physiology and quality of peach fruits treated by methyl jasmonate under low temperature stress, Food Chemistry, Volume 114, Issue 3, 1 June 2009, Pages 1028-1035, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.09.109.
(http://www.sciencedirect.com/science/article/B6T6R-4TVHSV5-B/2/7e148efe0077d758783fa7d879b55c4e)
Abstract:
The quality and physiological changes were determined in peach (Prunus persica L. cv. Jiubao) fruits in low temperature storage with or without methyl jasmonate (MeJA) treatment. Peach fruits stored for 3 weeks at 5 [degree sign]C and following 3 d shelf life intervals at 20 [degree sign]C appeared chilling injury (CI) symptom, expressed as flesh browning. MeJA treatment decreased the CI index, which was possibly attributed to higher activity of peroxidase and lower content of phenolic compounds than that without MeJA treatment. Moreover, MeJA treatment not only enhanced the rate of SSC/TA in peach fruits by mainly restraining the decrease of the SSC in peach, but also affected the degradation of cell wall, perhaps by regulation of cell wall modifying enzymes and the calcium content in cell wall of flesh. The results suggested that MeJA treatment was beneficial for maintaining quality owing to reducing chilling injury of peach fruits under low temperature stress.
Keywords: Methyl jasmonate; Peach; Chilling injury; Phenols; Cell wall

Ana S. Magalhaes, Branca M. Silva, Jose A. Pereira, Paula B. Andrade, Patricia Valentao, Marcia Carvalho, Protective effect of quince (Cydonia oblonga Miller) fruit against oxidative hemolysis of human erythrocytes, Food and Chemical Toxicology, Volume 47, Issue 6, June 2009, Pages 1372-1377, ISSN 0278-6915, DOI: 10.1016/j.fct.2009.03.017.
(http://www.sciencedirect.com/science/article/B6T6P-4VWHW67-2/2/bfcee18e12d5489ae3be5c49c8105ea5)
Abstract:
The aim of this study was to determine the phenolic content and evaluate the antioxidant activity of quince (Cydonia oblonga) fruit. For this purpose, fruits were separated into pulps, peels and seeds and methanolic extracts were prepared. The phenolic profiles were determined by HPLC/UV and antioxidant properties were studied for their ability to quench the stable free radical 2,2'-diphenyl-1-picrylhydrazyl (DPPH) and to inhibit the 2,2'-azobis(2-amidinopropane) dihydrochloride (AAPH)-induced oxidative hemolysis of human erythrocytes.
The main phenolic compounds were 5-O-caffeoylquinic acid for pulp and peel (57% and 29%, respectively) and stellarin-2 for seed (18%). Total phenolics content was 2.5, 6.3 and 0.4 g/kg of methanolic extract for pulp, peel and seed, respectively. Pulp and peel extracts showed similar DPPH free radical scavenging activities (EC50 of 0.6 and 0.8 mg/ml, respectively), while seed extract presented much lower antioxidant potential (EC50 of 12.2 mg/ml). Under the oxidative action of AAPH, pulp and peel extracts showed significant protection of the erythrocyte membrane from hemolysis, in a time- and concentration-dependent manner. Seed extracts by themselves induced extensive hemolysis. These results indicate higher antioxidant activity for certain parts of quince fruit, namely pulp and peel, that may therefore represent accessible sources of natural antioxidants with potential application in nutritional/pharmaceutical fields, as preventive or therapeutic agents in diseases in which free radicals are implicated.
Keywords: Cydonia oblonga; Quince; Phenolic compounds; Erythrocyte; Antioxidant activity; Hemolysis

Rosemary Hoffmann-Ribani, Lisia S. Huber, Delia B. Rodriguez-Amaya, Flavonols in fresh and processed Brazilian fruits, Journal of Food Composition and Analysis, Volume 22, Issue 4, June 2009, Pages 263-268, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.12.004.
(http://www.sciencedirect.com/science/article/B6WJH-4VS405D-3/2/367b5aa172a0f583b8037956a87bc828)
Abstract:
Flavonols (myricetin, quercetin and kaempferol) and flavones (luteolin and apigenin) were determined in Brazilian fruits, using a previously optimized and validated HPLC method. The flavonoids investigated were not detected in three cultivars each of mango and papaya. Quercetin was found in all the other fruits, the mean values varying from 0.3 mg/100 g in orange cultivar Pera to 7.5 mg/100 g in apple cultivar Fuji. Kaempferol was encountered in strawberry (0.7-0.9 mg/100 g), acerola (0.9-1.2 mg/100 g), pitanga (0.4 mg/100 g) and cashew-apple (<LQ-0.3 mg/100 g). Myricetin was detected only in pitanga (3.1-3.7 mg/100 g) and cashew-apple (2.0 mg/100 g). The best sources of flavonols among the fruits investigated were pitanga, cashew-apple, acerola and apple, the first three being analyzed for the first time. Luteolin and apigenin were not detected in any of the fruits. The processed products (ready-to-drink juice, concentrated juice, frozen pulp) of acerola, cashew-apple and pitanga had appreciably lower flavonol levels than the unprocessed fruit, indicating losses during processing. Comparison with published data on apple, orange, strawberry and fig shows the need for interlaboratory evaluation of the analytical methodology and more analyses to obtain cultivar-specific data.
Keywords: Food analysis; Food composition; Flavonols; Flavones; Fruits; Cultivar differences; Processed fruits; Brazilian fruits

Francisco J. Cuesta, Manuel Lamua, Errata in 'Fourier series solution to the heat conduction equation with an internal heat source linearly dependent on temperature: Application to chilling of fruit and vegetables' [J. Food Eng. 90 (2009) 291-299], Journal of Food Engineering, Volume 92, Issue 3, June 2009, Page 359, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.12.006.
(http://www.sciencedirect.com/science/article/B6T8J-4V75YK4-1/2/dd34da7ffb90c0a1ed22ab927e68a9f6)

Katerina Kalosaka, Elisavet Soumaka, Nikos Politis, Anastassios C. Mintzas, Thermotolerance and HSP70 expression in the Mediterranean fruit fly Ceratitis capitata, Journal of Insect Physiology, Volume 55, Issue 6, June 2009, Pages 568-573, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2009.02.002.
(http://www.sciencedirect.com/science/article/B6T3F-4VT168B-1/2/dd18021aeda41cb267567cdf6961b76b)
Abstract:
The relationship between Hsp70 expression and thermotolerance has been well documented in Drosophila melanogaster. However, there is limited information on this relationship in other insect species. In this report we describe the Hsp70-thermotolerance relationship in one of the major fruit fly pests, Ceratitis capitata (medfly). Hsp70 expression and thermotolerance were assayed at a range of temperatures in several stages of medfly development. The most thermotolerant stage was found to be the late larval stage (100% survival at 41 [degree sign]C) followed by adult flies and late embryos (100% survival at 39 [degree sign]C). These three stages showed a positive relationship between Hsp70 expression and thermotolerance. Mid-larval and mid-embryonic stages were found less thermotolerant and the Hsp70-thermotolerance relationship was not evident. Early embryos did not express Hsp70 at any temperature and exhibited the lowest thermotolerance. The relationship between Hsp70 and inducible thermotolerance was also studied in late larvae. A pretreatment at 37-39 [degree sign]C increased thermotolerance at higher temperatures by approximately 1 [degree sign]C. In parallel, the pretreatment increased Hsp70 expression suggesting a close link between Hsp70 expression and inducible thermotolerance. The

increased Hsp70 levels after pretreatment were found to be due to the increased levels of the hsp70 RNA.
Keywords: Medfly; Hsp70 expression; Thermotolerance

Vanina Ziosi, Anna Maria Bregoli, Fabio Fregola, Guglielmo Costa, Patrizia Torrigiani, Jasmonate-induced ripening delay is associated with up-regulation of polyamine levels in peach fruit, Journal of Plant Physiology, Volume 166, Issue 9, 1 June 2009, Pages 938-946, ISSN 0176-1617, DOI: 10.1016/j.jplph.2008.11.014.
(http://www.sciencedirect.com/science/article/B7GJ7-4VGVPYD-1/2/7eecdae76a2da1f4c4e8a41f450b0905)
Abstract: Summary
Methyl jasmonate (MJ, 0.20 mM) and its synthetic analog n-propyl dihydrojasmonate (PDJ, 0.22 mM) were applied to peach fruit (Prunus persica L. Batsch) at a late developmental stage under field conditions (in planta). On the basis of a previously demonstrated jasmonate (JA)-induced ripening delay in peach, the effects of JAs on the time course of the endogenous polyamine (PA) accumulation and expression of their biosynthetic genes arginine decarboxylase (ADC), ornithine decarboxylase (ODC), spermidine synthase (SPDS) and S-adenosylmethionine decarboxylase (SAMDC) were evaluated in control and JA-treated fruit during the 21-d trial period. In parallel, the main ripening-related parameters (ethylene production, flesh firmness and soluble solids contents) were measured, and transcription profiles of aminocyclopropane-1-carboxylic acid oxidase (PpACO1) and of two ethylene perception genes were evaluated. PDJ, but not MJ, reduced ethylene production and fruit softening, impaired PpACO1 transcription and altered the expression of PpERS1 (ethylene sensor 1), but not the expression of PpETR1 (ethylene receptor 1). In the epicarp and mesocarp, the pattern of PA accumulation was altered in a biphasic manner leading to a higher overall PA level in PDJ-treated fruit. Short and long term increases in putrescine, spermidine and/or spermine, the latter only in the epicarp, were observed in PDJ-treated fruit. MJ induced this behavior only with putrescine in the mesocarp. PpADC transcription was also enhanced soon after the PDJ treatment. Since PDJ-treated fruit were less ripe, their higher PA concentrations in treated fruit are discussed in light of the dual role of these molecules as stress/defense protective compounds and rejuvenating effectors.
Keywords: Arginine decarboxylase; ERS1; Fruit ripening; n-Propyl dihydrojasmonate; Polyamines

Shuhua Zhu, Lina Sun, Jie Zhou, Effects of nitric oxide fumigation on phenolic metabolism of postharvest Chinese winter jujube (Zizyphus jujuba Mill. cv. Dongzao) in relation to fruit quality, LWT - Food Science and Technology, Volume 42, Issue 5, June 2009, Pages 1009-1014, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.12.012.
(http://www.sciencedirect.com/science/article/B6WMV-4V94X3F-3/2/e52a49e6ffbe050b301adb120aa8cd75)
Abstract:
The effect of nitric oxide fumigation on phenolic metabolism of harvested Chinese winter jujube in relation to the fruit quality was investigated. The fruits were fumigated for 3 h with NO (0, 10, 20 and 30 [mu]l/l) then stored at 22 [degree sign]C and RH 95%. Changes in color, phenol and anthocyanin levels in pericarp, activities of the related enzymes, and total soluble solids and vitamin C from mesocarp were measured. The results showed that treatment with 20 [mu]l/l NO significantly slowed the increase in red index, inhibited changes of polyphenol oxidase (PPO) and phenylalanine ammonia lyase (PAL) activities, maintained a low total anthocyanin content and a high total phenol content, and delayed the increase of soluble solids and decrease of vitamin C. Treatment with NO solution at less than 1 [mu]mol/l exhibited inhibitory effects on in vitro PPO and PAL activities in a dose-dependent manner.
Keywords: Chinese winter jujube (Zizyphus jujuba Mill. cv. Dongzao); Nitric oxide; Phenolic metabolism; Quality

B. Renuka, S.G. Kulkarni, P. Vijayanand, S.G. Prapulla, Fructooligosaccharide fortification of selected fruit juice beverages: Effect on the quality characteristics, LWT - Food Science and Technology, Volume 42, Issue 5, June 2009, Pages 1031-1033, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.11.004.
(http://www.sciencedirect.com/science/article/B6WMV-4V166J7-1/2/1dbb271dd90e3a65edc2835fd07b6bc7)
Abstract:
Fortification of selected fruit juice beverages (Pineapple, Mango and Orange juice) with fructooligosaccharides (FOSs), a low calorie prebiotic has been discussed. Results indicated that sucrose which is usually used as a sweetener in fruit juice beverages can be partially substituted with FOS without significantly affecting the overall quality. The fruit juice beverages were evaluated for physicochemical and sensory changes during 6 months storage period at ambient (25 +/- 2 [degree sign]C) and refrigeration temperature (4 [degree sign]C). The pH, total soluble solids, titratable acidity, and colour did not change significantly (P >= 0.05) during storage. The initial FOS content of pineapple, mango and orange juice beverages was 3.79, 3.45, and 3.62 g/100 mL. The FOS content of the fruit juice beverages stored at refrigeration temperature was 2.00-2.39 g/100 mL after 6 months of storage and 2.69-3.32, 1.65-2.08 and 0.38-0.58 g/100 mL at the second, fourth and sixth months of storage at ambient temperature respectively. The sensory analysis showed that the beverages were acceptable up to 4 and 6 months storage at ambient and refrigeration temperature respectively.
Keywords: Fructooligosaccharides; Fruit juice; Fortification; Prebiotics; Sensory quality

Natalia Marina Villarreal, Gustavo Adolfo Martinez, Pedro Marcos Civello, Influence of plant growth regulators on polygalacturonase expression in strawberry fruit, Plant Science, Volume 176, Issue 6, June 2009, Pages 749-757, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2009.02.019.
(http://www.sciencedirect.com/science/article/B6TBH-4VT0X07-2/2/5c79f63ddbe30d6befe3ed783a2899a2)
Abstract:
Strawberry (Fragaria x ananassa Duch.) fruit undergoes extensive softening during ripening due to cell wall disassembly, caused by a coordinated action of cell wall proteins and enzymes including polygalacturonases (PGs). The influence of plant growth regulators on PG activity and expression of the corresponding genes has been scarcely analyzed. In this work, the immuno-detection of PG protein (FaPG1) during ripening of strawberry cultivars with contrasting firmness is reported. Two proteins were recognized with molecular mass of 45-50 kDa, which accumulate from 25% red stage in the firmer cultivar (Camarosa) and from white stage in the softer (Toyonoka). The presence of two immunoreactive bands is apparently the product of the differential glycosylation of the same polypeptide. In addition, the effect of different plant growth regulators on the expression of polygalacturonase gene, accumulation of FaPG1, and PG activity was analyzed. The treatment with naphthalene acetic acid (NAA) delayed ripening and anthocyanin accumulation, reduced the expression of FaPG1 and T-PG, the accumulation of FaPG1 protein, and decreased PG activity. The application of ABA increased slightly the expression of PG transcripts, but did not modify significantly the enzyme activity. The treatment with GA3 reduced anthocyanin accumulation and PG activity, though did not produce remarkable effects on the expression of FaPG1 and T-PG. Anthocyanins increased after treatment with ethephon (ethylene releasing reagent) or sodium nitroprusside (NO providing reagent). The expression of FaPG1 and T-PG increased considerably in response to ethylene and NO. Western-blot data confirmed the trends observed in the expression analysis in response to ethephon and NO, but PG activity was not modified by any of these treatments. However, the application of 1-MCP reduced PG activity, suggesting that ethylene could play a role in the regulation of polygalacturonase expression during strawberry fruit ripening.

Keywords: Strawberry; Softening; Polygalacturonase; Ethylene; Auxin; NO

Cai-rong Li, Wei-bing Shen, Wang-jin Lu, Yue-ming Jiang, Jiang-hui Xie, Jian-ye Chen, 1-MCP delayed softening and affected expression of XET and EXP genes in harvested cherimoya fruit, Postharvest Biology and Technology, Volume 52, Issue 3, June 2009, Pages 254-259, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.12.009.
(http://www.sciencedirect.com/science/article/B6TBJ-4VW4V78-1/2/a0960766e3da4a2bc0b0e26f347a4da5)
Abstract:
Cherimoya, a typical climacteric fruit, is very susceptible to postharvest losses, due to rapid softening. It has been reported that xyloglucan endotransglycosylases (XET) and expansins (EXP) contribute to fruit softening while 1-methylcyclopropene (1-MCP) is used to delay softening in many fruit. However, the effects of 1-MCP on cherimoya fruit softening and in relation to the expression of XET and EXP genes remain unclear. In this study, three different full length XET cDNAs, termed AcXET1, AcXET2 and AcXET3, were isolated and characterized. Delay in cherimoya fruit softening by 1-MCP in relation to the expression of XET and EXP genes was investigated. Cherimoya fruit stored at 20 [degree sign]C softened rapidly within 5 d and displayed a typical climacteric pattern of ethylene production. Application of 1-MCP greatly delayed and inhibited ethylene production and softening of fruit during storage at 20 [degree sign]C. Northern blot analysis showed that three AcXETs or AcEXPs exhibited different expression patterns during fruit softening while mRNAs of AcXET2, AcEXP1 and AcEXP3 significantly accumulated on day 3 and mRNAs of AcXET1 or AcEXP2 accumulated on day 5 or day 6. 1-MCP treatment not only delayed the accumulation of AcXET1, AcEXP1 and AcEXP3 for 1, 3 and 2 d, respectively, but also reduced the mRNA levels of AcXET1, AcXET2, AcXET3, AcEXP1, AcEXP2 and AcEXP3. These data suggest that differential expression of AcXETs and AcEXPs is associated with fruit softening of cherimoya and application of 1-MCP retarded or suppressed the expression of AcXETs or AcEXPs, which may be attributed at least or partially to 1-MCP delayed fruit softening.
Keywords: Cherimoya fruit; 1-MCP; Softening; XET; EXP; Expression

Nnadozie Oraguzie, Peter Alspach, Richard Volz, Claire Whitworth, Chandra Ranatunga, Rosemary Weskett, Roger Harker, Postharvest assessment of fruit quality parameters in apple using both instruments and an expert panel, Postharvest Biology and Technology, Volume 52, Issue 3, June 2009, Pages 279-287, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.01.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4VW91FW-2/2/e96be3afd6742c121b119eef4783f8c1)
Abstract:
Most apple breeding programs use a small number of well-experienced assessors, or experts, to organoleptically score the quality of fruit from a large number of genotypes. Although instrumental readings are available for some traits, only those for weight, firmness, soluble solids and acidity are generally considered practical for most breeding purposes, at least in the early stages. However, heritabilities for instrumentally measured traits are typically higher than those for scored traits. This is likely to be partly because the use of scores introduces a new source of variation, viz. that attributable to differences in perception, which inflates the environmental variance component. We report on a trial, undertaken in the 2003 fruiting season, which was designed to measure the various sources of expert perception error in order to help devise an optimal strategy for postharvest fruit quality assessment. Four experts each independently assessed two fruit from each of 126 genotypes taken from 15 crosses which were part of a half diallel originally made to study powdery mildew genetics. Traits assessed were: firmness, acidity, sweetness, juiciness and crispness. Each fruit was assessed by two experts who did not know the identity of fruit they were assessing, although they were aware of the purpose of the trial. Fruit were presented to the experts in a random order and this order was recorded. We found no evidence of fatigue despite

the experts assessing up to 34 fruit in a session. However, there were differences between the experts, and a weak evidence of contrast effect for sweetness and acidity. The instrumental-sensory relationships obtained with the expert panel were similar to those reported for trained panelists. The use of expert panels for routine postharvest fruit quality assessment particularly for programs with limited budget is recommended.
Keywords: Apple fruit quality phenotyping; Expert panel; Sensory scores; Machine measurements; Inter-expert differences

I. Lichanporn, V. Srilaong, C. Wongs-Aree, S. Kanlayanarat, Postharvest physiology and browning of longkong (Aglaia dookkoo Griff.) fruit under ambient conditions, Postharvest Biology and Technology, Volume 52, Issue 3, June 2009, Pages 294-299, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.01.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4VWJ1R7-2/2/bf7f14c42ae1772b4f6041ae3b68a9fb)
Abstract:
Longkong (Aglaia dookkoo Griff.) fruit rapidly loses its yellow skin color and turns brown after harvest. We aimed to elucidate the postharvest physiology and browning mechanism of longkong fruit stored at a 70-85% RH and at room temperature (25 [degree sign]C). The respiration rate slightly decreased with progressive fruit browning, while ethylene production was dramatically increased. Preliminary experiments showed that ethylene treatment markedly increased peel browning, suggesting that this is induced by ethylene. The peel L-value continuously decreased during storage, in relation to the severity of peel browning. The peel surface morphological data indicated that the ultrastructure of longkong peel collapsed after harvest, especially around brown areas. The total phenolic content of peel tissue rapidly increased, concomitant with rapid increases in phenylalanine ammonia lyase (PAL) activity and browning score on day 2. Tissue from the lower part of the fruit had higher total phenolic contents, as well as polyphenol oxidase (PPO) and PAL activities, compared to the top and middle parts of the fruit; however, peroxidase (POD) activity slightly changed during storage, possibly independent of phenol oxidation. The browning of longkong peel was not associated with changes in soluble solids contents, titratable acidity or ascorbic acid levels.
Keywords: Longkong; Browning; Phenolic content; PAL; PPO; POD

Helen Rawsthorne, Trevor G. Phister, Detection of viable Zygosaccharomyces bailii in fruit juices using ethidium monoazide bromide and real-time PCR, International Journal of Food Microbiology, Volume 131, Issues 2-3, 31 May 2009, Pages 246-250, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2009.01.031.
(http://www.sciencedirect.com/science/article/B6T7K-4VJ01PX-2/2/27fae6f3d5bda736c86064cd5d5b8f3e)
Abstract:
In this study, we use ethidium monoazide (EMA) a dye commonly used to differentiate viable and nonviable populations of bacteria in real-time PCR (QPCR) assays to eliminate the nonviable cells from the Z. bailii population. Thus we are able to determine the viable Z. bailii population using QPCR plus EMA. To do this we first, optimized the EMA exposure conditions; EMA concentration of 50 [micro sign]g/ml with an incubation at 30 [degree sign]C in the dark for 5 min. Followed by light exposure on ice, for 5 min using a 500 W halogen lamp at a distance of 12 cm. Using these optimized conditions, we determined that the assay could detect as few as 12.5 viable Z. bailii cells in the presence of 105 CFU/ml of heat killed-cells. The EMA assay was also more consistent at determining viable cell counts when compared to plating than fluorescent microscopy viable cell counts. Finally, we used the assay to determine the viable population in heat-treated (72 [degree sign]C, 2 min), ethanol-treated and raspberry cranberry juice Z. bailii cultures. When examining Z. bailii cells treated with 70% ethanol the QPCR assay with EMA (1.22 x 102) showed a better

correlation with plating (4.5 x 101 CFU/ml) compared to the QPCR assay without EMA (5.31 x 106 CFU/ml) and this was also seen in the other two injured populations. Thus we feel that we have designed an assay which will be useful for the detection of viable spoilage yeasts in various fruit juices.
Keywords: Zygosaccharomyces bailii; Fruit juice; Real-time PCR; Viable-nonculturable; Ethidium monoazide

Albert Hurtado, Cristina Reguant, Albert Bordons, Nicolas Rozes, Influence of fruit ripeness and salt concentration on the microbial processing of Arbequina table olives, Food Microbiology, In Press, Corrected Proof, Available online 29 May 2009, ISSN 0740-0020, DOI: 10.1016/j.fm.2009.05.010.
(http://www.sciencedirect.com/science/article/B6WFP-4WD7B59-4/2/8bc9180a9c5d6577db8435c0a70b5a29)
Abstract:
Arbequina table olives are processed as 'naturally green olives', they are directly placed in brine and fermentation starts spontaneously. Olives are harvested just before they change to `turning colour'. Different salt concentrations are used depending on the producer. The aim of the study was to evaluate how (i) the ripeness of the olive when it is harvested and (ii) the salt concentration of the brine influence the different microorganism populations in brine during the fermentation of Arbequina table olives.
The results showed that the Enterobacteriaceae population lasted longer in black and turning colour olives than in green olives, whereas the growth of lactic acid bacteria was delayed in green olives. A higher salt concentration favoured the elimination of Enterobacteriaceae and hindered yeast growth. The main yeast species identified were Pichia anomala, Candida sorbosa and Candida boidinii, while Lactobacillus plantarum was the only lactic acid bacteria species involved in the process. In a sensory test, panellists preferred green olives and were not able to tell the laboratory-scale processed olives from a commercial sample, nor could they distinguish green olives from different brines.
Keywords: Table olives; Sensory test; Brine; Ripeness; Lactobacillus plantarum; Pichia anomala; Candida sorbosa

Maria Alejandra Rojas-Grau, Robert Soliva-Fortuny, Olga Martin-Belloso, Edible coatings to incorporate active ingredients to fresh-cut fruits: a review, Trends in Food Science & Technology, In Press, Corrected Proof, Available online 22 May 2009, ISSN 0924-2244, DOI: 10.1016/j.tifs.2009.05.002.
(http://www.sciencedirect.com/science/article/B6VHY-4WBT449-1/2/ac9013e1d80708aef8b9d7ea88c203b3)
Abstract:
Edible films and coatings are applied on many products to control moisture transfer, gas exchange or oxidation processes. One major advantage of using edible films and coatings is that several active ingredients can be incorporated into the polymer matrix and consumed with the food, thus enhancing safety or even nutritional and sensory attributes. This review discusses the use of edible coatings as carriers of functional ingredients on fresh-cut fruits, including the recent advances in the incorporation of antimicrobials, antibrownings, texture enhancers and nutraceuticals to improve quality and functionality of fresh-cut fruits. Sensory implications, regulatory status and future trends are also reviewed.

Shifeng Cao, Yonghua Zheng, Kaituo Wang, Huaijin Rui, Shuangshuang Tang, Effect of methyl jasmonate on cell wall modification of loquat fruit in relation to chilling injury after harvest, Food Chemistry, In Press, Corrected Proof, Available online 21 May 2009, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.05.047.

(http://www.sciencedirect.com/science/article/B6T6R-4WBK7HF-1/2/810c5b80df28dfaaec2203db7bdd6e63)
Abstract:
Loquat fruit were pretreated with 10 [mu]M methyl jasmonate (MeJA) for 24 h at 20 [degree sign]C, and then stored at 1 [degree sign]C for 35 days to investigate the effect of MeJA treatment on cell wall modification in relation to chilling injury. Loquat fruit developed chilling injury, manifested as increased fruit firmness and internal browning, decreased extractable juice during storage. These chilling injury symptoms were significantly reduced by MeJA treatment. MeJA also markedly delayed the increases in lignin, alcohol insoluble residues, hemicellulose and cellulose. Meanwhile, the MeJA-treated fruit exhibited significantly lower activities of phenylalanine ammonia lyase, peroxidase, polyphenol oxidase and higher polygalacturonase activity than the control during storage. The levels of water- and CDTA-soluble pectins in MeJA-treated fruit were also significantly higher than that in the control. These results suggest that the reduction in chilling injury by MeJA may be due to inhibited lignin accumulation and enhanced cell wall polysaccharides solubilisation.
Keywords: Loquat fruit; Chilling injury; Methyl jasmonate; Lignin; Cell wall polysaccharides

A. Neuhaus, D.W. Turner, T.D. Colmer, A. Blight, Drying half of the root-zone from mid fruit growth to maturity in `Hass' avocado (Persea americana Mill.) trees for one season reduced fruit production in two years, Scientia Horticulturae, Volume 120, Issue 4, 19 May 2009, Pages 437-442, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.12.010.
(http://www.sciencedirect.com/science/article/B6TC3-4VFBYF0-2/2/0efee52db560bdd621c76e0d3f55d715)
Abstract:
We tested the effect of extended drying of half the root system on fruit yield and fruit Ca concentration, an indirect measure of fruit quality, in avocado (Persea americana Mill. cv Hass). In a field experiment on a sandy soil, withholding irrigation and plastic sheeting was used to dry the root-zone beneath the whole canopy (DD) or half the canopy (WD), compared with well-watered trees (WW). The irrigation water contained added nutrients and was slightly saline. Yield, shoot growth, leaf conductance, leaf and fruit water status and mineral concentrations of leaves and fruit were studied. The responses of treated trees were assessed in the following season during which normal irrigation practices were restored. With respect to yield, the WD treatment behaved the same as the DD treatment. It reduced yield by more than half and proportionately more than the reduction in water supply thus reducing irrigation efficiency. Re-watering did not restore yield of WD or DD-trees in the next season. The WD and DD treatments had no effect on the concentration of Ca in the fruit mesocarp and so are unlikely to affect fruit quality. The main impact of reduced water supply on the trees was fruit abscission and this was linked to dry soil around the roots rather than the water status of the leaves or fruits. We conclude that extended drying of half of the root-zone in one season reduced irrigation efficiency for two seasons by promoting the abscission of developing fruit to the same extent as occurred when the whole root system was exposed to extended drying.
Keywords: Fruit trees; Irrigation management; Split-root design; Mineral distribution; Fruit quality; Water deficit

Kamel Msaada, Karim Hosni, Mouna Ben Taarit, Mohamed Hammami, Brahim Marzouk, Effects of growing region and maturity stages on oil yield and fatty acid composition of coriander (Coriandrum sativum L.) fruit, Scientia Horticulturae, Volume 120, Issue 4, 19 May 2009, Pages 525-531, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.11.033.
(http://www.sciencedirect.com/science/article/B6TC3-4V9RHVX-1/2/fd0e960ca7a7203ed1aa3118c8d4dd81)
Abstract:

Changes on oil yield and fatty acid profiles were studied during maturation of coriander (Coriandrum sativum L.) fruits cultivated in Menzel Temime and Oued Beja, Tunisia. Oil and petroselinic acid biosynthesis proceeded at a steady rate up to 16 DAF in Oued Beja and in 33 DAF in Menzel Temime. The first results show that a rapid oil accumulation started at newly formed fruits and continued until their full maturity. During fruit maturation, fatty acid profiles varied significantly among the growing regions and stages of maturity. Petroselinic acid had the highest amount at the 16th and the 33th DAF, in Oued Beja and Menzel Temime, respectively. In Oued Beja, at full maturity, the main fatty acids were petroselinic acid (80.90 +/- 9.45%), followed by oleic (14.79 +/- 2.25%), palmitic (3.50 +/- 0.65%) and stearic (0.49 +/- 0.09%) acids. Fatty acid profile of fruits cultivated in Menzel Temime showed that in fully ripe fruit, petroselinic acid is the main compound (80.86 +/- 7.23%) followed by oleic (14.83 +/- 2.05%), palmitic (3.27 +/- 3.12%) and stearic (0.31 +/- 0.05%) acids. In both growing region, fruit development resulted mainly in an increase of petroselinic acid and a decrease of palmitic acid. Saturated and polyunsaturated fatty acids decreased significantly and monounsaturated fatty acids increased during maturation of fruit. Oil composition at the first four stages of maturity has a healthy and nutritionally value and the last stages were with important economic and industrial applications. Coriander fruit is potentially an important source of petroselinic which have numerous industrial applications.
Keywords: Coriander (Coriandrum sativum L.); Umbelliferae; Fruit; Fatty acids composition; Maturation; Growing region

Jian Sun, Xu Xiang, Chunyan Yu, Jinyu Shi, Hongxiang Peng, Bao Yang, Shaoyu Yang, En Yang, Yueming Jiang, Variations in contents of browning substrates and activities of some related enzymes during litchi fruit development, Scientia Horticulturae, Volume 120, Issue 4, 19 May 2009, Pages 555-559, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.12.006.
(http://www.sciencedirect.com/science/article/B6TC3-4VBM4GX-1/2/b98bcde12e37f15222db833ec35ad2a5)
Abstract:
Pericarp browning is a major factor to limit storage and transportation of postharvest litchi fruit. Experiments were conducted firstly to determine variations in contents of browning substrate (-)-epicatechin in pericarp tissues of litchi fruit during development. Changes in the activities of polyphenoloxidase (PPO), peroxidase (POD) and phenylalanine ammonialyase (PAL) in association with the synthesis or oxidation of (-)-epicatechin were also examined. (-)-Epicatechin content tended to decrease during fruit development. PAL activity had a high level at the initial stage of fruit development, then decreased rapidly, and finally increased slightly, which was in agreement with the variation in (-)-epicatechin content. The higher contents of total phenolics and (-)-epicatechin of fruit of `Nuomici' than `Feizixiao' were also related to the higher PAL activity. PPO had a similar change to PAL in activity, but POD activity slowly decreased at the early fruit development and then increased markedly. It is suggested that (-)-epicatechin content might be largely regulated by PAL activity. This study could help to understand the variations in the content of the browning substrate and the activities of some substrate-related enzymes of litchi fruit during development and then control better pericarp browning of harvested litchi fruit by the application of appropriate preharvest treatments.
Keywords: Pericarp; (-)-Epicatechin; Polyphenoloxidase; Peroxidase; Phenylalanine ammonialyase

Zhong-wei Sun, Li-xiang Zhang, Bin Zhang, Tian-gui Niu, Structural characterisation and antioxidant properties of polysaccharides from the fruiting bodies of Russula virescens, Food Chemistry, In Press, Corrected Proof, Available online 18 May 2009, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.05.036.
(http://www.sciencedirect.com/science/article/B6T6R-4W9XG9G-4/2/24db90376ff5e05cf5cf1516e21ae662)

Abstract:
Water-soluble crude polysaccharide named as RVP was obtained from the fresh fruiting bodies of Russula virescens by boiling-water extraction. DEAE-Sepharose CL-6B column chromatography was used for the fractionation of polysaccharide RVP. Two fractions were obtained, namely RVP-1 and RVP-2. RVP-1 and RVP-2 were composed mainly of glucose, with the estimated equivalent dextran molecular weights of 3.1 x 105 and 4.2 x 105 Da, respectively. Analysis by Periodate oxidation-Smith degradation indicated that RVP-1 was composed of 68.3% (1 -->)- or ((1 --> 6)-glycosidic linkages and 31.7% (1 --> 3)-glycosidic linkages, and RVP-2 7.9% (1 -->)- or (1 --> 6)-glycosidic linkages, 9.6% (1 --> 2)-glycosidic linkages, 35.7% (1 --> 4)-glycosidic linkages, and 46.8% (1 --> 3)-glycosidic linkages. RVP-1 exhibited equivalent inhibiting power for self-oxidation of 1,2,3-phentriol to vitamin C (Vc), a little higher scavenging activity of superoxide radical and hydroxyl radical than Vc. The reducing power of RVP-1 at 20.0 mg/ml was 0.77, and RVP-1 was a good chelating agent for ferrous ions. Overall, RVP-1 possessed good antioxidant properties and should be developed as a novel potential antioxidant.
Keywords: Antioxidant property; Polysaccharide; Russula virescens; Scavenging ability

Aoxue Wang, Jingfu Li, Bingxiu Zhang, Xiangyang Xu, J. Derek Bewley, Expression and location of endo-[beta]-mannanase during the ripening of tomato fruit, and the relationship between its activity and softening, Journal of Plant Physiology, In Press, Corrected Proof, Available online 17 May 2009, ISSN 0176-1617, DOI: 10.1016/j.jplph.2009.04.008.
(http://www.sciencedirect.com/science/article/B7GJ7-4W9V7C7-4/2/2ff8c87e59f590457a35834e76dd8b40)
Abstract: Summary
Endo-[beta]-mannanase is thought to play a role in tomato fruit ripening by participating in the degradation of cell walls. Its spatial and temporal expression during ripening was examined, as was the relationship between its activity and softening of the fruit using a large number of tomato lines, and by suppression of transcription of the endo-[beta]-mannanase (LeMan4a) gene. Immunolocalization studies showed that the enzyme is expressed in the fruit cell wall at all ripening stages, but it is not active during the initial green stage; this is not due to the presence of inhibitors of its activity, nor due to changes in its mRNA sequence. Transient expression in onion epidermal cells of endo-[beta]-mannanase transcripts fused to green fluorescent protein resulted in the expressed enzyme being localized to the cell walls. Transgenic tomato plants expressing a GUS gene attached to the LeMan4a promoter showed that this occurs initially during ripening in the skin and outer pericarp of the fruit, and later in the skin and throughout the pericarp. Fruit firmness and activity of endo-[beta]-mannanase were not strongly correlated during ripening of many lines of tomato. Several plants of cv. Micro-Tom were transformed using RNA interference (mRNAi) and antisense RNA strategies to suppress transcription of the LeMan4a gene. When endo-[beta]-mannanase activity was much reduced in the transgenic fruits, their firmness was higher compared to those of control fruits at the turning and orange-color stages, but at the red-ripe stage firmness was similar between the two fruit types. We suggest that while the enzyme does participate in fruit ripening it alone is not sufficient to cause hydrolysis of the cell walls which results in their weakening; it likely plays a cooperative role with other known wall-modifying enzymes, and/or is involved in cell wall rearrangement.
Keywords: Cell walls; Endo-[beta]-mannanase; Tomato fruit ripening

Ana Paula G. Duarte, Sonia A. Talamoni, Reproduction of the large fruit-eating bat Artibeus lituratus (Chiroptera: Phyllostomidae) in a Brazilian Atlantic forest area, Mammalian Biology - Zeitschrift fur Saugetierkunde, In Press, Corrected Proof, Available online 17 May 2009, ISSN 1616-5047, DOI: 10.1016/j.mambio.2009.04.004.
(http://www.sciencedirect.com/science/article/B7GX2-4W9S2TX-1/2/4caa2db9ac1572b7d7e14f7b578cd20f)

Abstract:
In this study we investigated the male testicular activity and the reproductive condition of females in relation to their external reproductive characteristics (pregnant, lactating, post-lactating) in the phyllostomid bat Artibeus lituratus (Olfers, 1818). Five hundred and twenty six individuals were examined (197 males and 329 females) in the period December 2001 to May 2003. Throughout the study most males displayed large scrotal testes. Thirty-three males were randomly selected for histological examination at various times throughout the year and were found to have spermatogenic testes. The reproductive characteristics of the females indicated that they were reproductively active mainly during the wet season. Pregnancy occurs at the end of the dry season and parturition in the wet season. Most individuals captured after this season, mainly the females, were sexually immature. Our results suggest a seasonal monoestrous reproductive pattern for the species; however, adult males being fertile throughout the year could suggest polyoestry. Seasonal polyoestry is a possibility. There was, however, no evidence that females had more than one pregnancy per year.
Keywords: Artibeus lituratus; Monoestry; Polyoestry; Spermatogenesis

Andriy Synytsya, Katerina Mickova, Alla Synytsya, Ivan Jablonsky, Jiri Spevacek, Vladimir Erban, Eliska Kovarikova, Jana Copikova, Glucans from fruit bodies of cultivated mushrooms Pleurotus ostreatus and Pleurotus eryngii: Structure and potential prebiotic activity, Carbohydrate Polymers, Volume 76, Issue 4, 16 May 2009, Pages 548-556, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2008.11.021.
(http://www.sciencedirect.com/science/article/B6TFD-4V0MPPS-1/2/c5631057810c02c1e95756b6bdef1a6c)
Abstract:
Cultivated oyster mushrooms (genus Pleurotus) are interesting as a source of biologically active glucans. Partially, [beta]-glucan from Pleurotus sp. (pleuran) has been used as food supplements due to its immunosuppressive activity. Like other dietary fibre components, oyster mushroom polysaccharides can stimulate the growth of colon microorganisms (probiotics), i.e. act as prebiotics. Specific glucans were isolated from stems of Pleurotus ostreatus and Pleurotus eryngii by subsequent boiling water and alkali extraction. Obtained water soluble (L1), alkali soluble (L2) and insoluble (S) fractions were characterised by various analytical methods. Spectroscopic analysis detected glucans in all the fractions: branched 1,3-1,6-[beta]-d-glucan predominated in L1 and S, while linear 1,3-[alpha]-d-glucan in L2. Fractions L1 also contained marked amount of proteins partially in complex with glucans; protein content in L2 was insignificant. Effective deproteinisation of L1 and separation of [alpha]- and [beta]-glucans in L2 was achieved by the treatment with phenolic reagent. Small amount of chitin was found in S as a component of cell wall chitin-glucan complex. Potential prebiotic activity of extracts L1 and L2 was testing using nine probiotic strains of Lactobacillus, Bifidobacterium and Enterococcus. These probiotics showed different growth characteristics dependently on used extract and strain specificity due to the presence of structurally diverse compounds. The extracts L1 and L2 can be applied to synbiotic construction only for carefully selected probiotic strains. This exploitation of fruit body extracts extends the use of mushrooms P. ostreatus and P. eryngii for human health.
Keywords: Glucans; Oyster mushroom Pleurotus; Isolation; Prebiotic activity

Qing Ge, An-qiang Zhang, Pei-long Sun, Structural investigation of a novel water-soluble heteropolysaccharide from the fruiting bodies of Phellinus baumii Pilat, Food Chemistry, Volume 114, Issue 2, 15 May 2009, Pages 391-395, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.09.010.
(http://www.sciencedirect.com/science/article/B6T6R-4TD4J0W-4/2/cfa28f4225e8d3bbce94d69efcfbb789)
Abstract:

A novel water-soluble heteropolysaccharide termed PBF2 was isolated from the fruiting bodies of Phellinus baumii Pilat using hot water extraction and purified on Sephacryl S-1000. PBF2 was shown to be composed of l-fucose, d-mannose and d-glucose. Its structural characteristics were further investigated by FT-IR spectroscopy, sugar analysis, methylation analysis and NMR spectroscopy. Based on the data obtained, PBF2 was found to be a heteropolysaccharide containing a [beta]-(1 --> 6)-d-glucopyranose backbone with a fucosyl unit on O-3 of the 3,6-di-O-substituted-d-glucosyl units and it also contained a minor (1 --> 3, 6)-[beta]-d-mannose residue and terminal glucose residues.
Keywords: Phellinus baumii Pilat; Polysaccharide; Structural analysis

Wei Luo, Mouming Zhao, Bao Yang, Guanglin Shen, Guohua Rao, Identification of bioactive compounds in Phyllenthus emblica L. fruit and their free radical scavenging activities, Food Chemistry, Volume 114, Issue 2, 15 May 2009, Pages 499-504, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.09.077.
(http://www.sciencedirect.com/science/article/B6T6R-4TJX1W5-9/2/81f4d834666f19391c91aac304df91ab)
Abstract:
Emblica has been used as an important traditional herbal medicine in southeast Asia since ancient times. In this study, the air-dried hulls of emblica fruit were extracted with 95% ethanol, and then the extract was partitioned by diethyl ether and ethyl acetate (EA). The EA fraction was purified by silica gel column and thin layer chromatography (TLC) to obtain six compounds. They were identified as cinnamic acid (C1), quercetin (C2), 5-hydroxymethylfurfural (C3), gallic acid (C4), [beta]-daucosterol (C5) and ellagic acid (C6) using mass spectrometry and nuclear magnetic resonance (NMR) spectroscopy. Cinnamic acid and 5-hydroxymethylfurfural were identified as components of emblica fruit for the first time. The DPPH and ABTS+ radical scavenging activities of components were evaluated. All the compounds showed significant DPPH and ABTS+ radical scavenging activity except for cinnamic acid. Gallic acid showed the highest DPPH radical scavenging activity while ellagic acid showed the highest ABTS+ scavenging activity amongst all the compounds tested.
Keywords: Phyllenthus emblica L.; DPPH radical scavenging activity; ABTS+ scavenging activity; NMR

Valentina Usenik, Franci Stampar, Robert Veberic, Anthocyanins and fruit colour in plums (Prunus domestica L.) during ripening, Food Chemistry, Volume 114, Issue 2, 15 May 2009, Pages 529-534, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.09.083.
(http://www.sciencedirect.com/science/article/B6T6R-4TK92KM-7/2/320a7a30a84e31153115a26de96119e2)
Abstract:
The accumulation of anthocyanins and the evolution of fruit colour were investigated during ripening of Prunus domestica L. Using HPLC, the fruit of the `Jojo', `Valor', `Cacanska rodna' and `Cacanska najbolja' cultivars were quantified for anthocyanins during a 25-day period of ripening (a 33-day period in the case of `Jojo'). The major anthocyanin was cyanidin 3-rutinoside which, in ripe fruits, ranged from 4.1 to 23.4 mg/100 g FW (from 52.6% to 73.0%). It was followed by peonidin 3-rutinoside (from 6.5% to 37.9%), cyanidin 3-glucoside (from 1.8% to 18.4%), cyanidin 3-xyloside (from 4.7% to 7.8%) and peonidin 3-glucoside (from 0.0% to 0.4%). The ripening process resulted in a concentration increase of total anthocyanins and changed the ratios amongst the anthocyanins. The colour parameters, L*, a*, b*, chroma and hue angle, of partially ripe plums were higher than those in the ripe fruit, but the CIRG index of partially ripe fruit was always lower than that of ripe fruit. The total anthocyanins were weakly correlated with each of the colour parameters; their relationships varied between cultivars and ripening stage. Correlation

coefficients between individual anthocyanins and colour parameters in ripe plums were cultivar-dependent.
Keywords: Ripeness; HPLC; Anthocyanins; Fruit colour; CIRG

Federica Menichini, Rosa Tundis, Marco Bonesi, Monica R. Loizzo, Filomena Conforti, Giancarlo Statti, Bruno De Cindio, Peter J. Houghton, Francesco Menichini, The influence of fruit ripening on the phytochemical content and biological activity of Capsicum chinense Jacq. cv Habanero, Food Chemistry, Volume 114, Issue 2, 15 May 2009, Pages 553-560, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.09.086.
(http://www.sciencedirect.com/science/article/B6T6R-4TK92KM-4/2/bd8a22c5fa6ecdd3e4d9b9e800a46584)
Abstract:
During the past decade, it has been reported that the consumption of certain foods and spices such as pepper may have a positive effect on health. The present study evaluates the influence of fruit ripening on total phenols, flavonoids, carotenoids and capsaicinoids content and antioxidant, hypoglycaemic and anticholinesterase activities of Capsicum chinense Jacq. cv Habanero. The chemical investigation showed a different composition between the two stages of ripening (immature and mature). Generally, the concentration of carotenoids and capsaicinoids increased as the peppers reached maturity, whereas the concentration of phenols declined. The immature fruits showed the highest radical scavenging activity (IC50 of 97.14 [mu]g/ml). On the contrary, the antioxidant activity evaluated by the [beta]-carotene bleaching test showed a significant activity for mature peppers (IC50 value of 4.57 [mu]g/ml after 30 min of incubation). Mature peppers inhibited [alpha]-amylase with an IC50 of 130.67 [mu]g/ml. The lipophilic fractions of both mature and immature peppers exhibited an interesting and selective inhibitory activity against [alpha]-amylase with IC50 values of 29.58 and 9.88 [mu]g/ml, respectively. Both total extracts of mature and immature peppers inhibited butyrylcholinesterase selectively. The obtained results underline the potential health benefits as a result of consuming C. chinense Habanero and suggest that it could be used as new valuable flavour with functional properties for food or nutriceutical products on the basis of the high content of phytochemicals and found biological properties.
Keywords: Capsicum chinense Jacq. cv Habanero; Phenolics; Carotenoids; Capsaicinoids; Antioxidant; Amylase inhibition; Glucosidase inhibition; Cholinesterase inhibition

Abdul Azis Ariffin, Jamilah Bakar, Chin Ping Tan, Russly Abdul Rahman, Roselina Karim, Chia Chun Loi, Essential fatty acids of pitaya (dragon fruit) seed oil, Food Chemistry, Volume 114, Issue 2, 15 May 2009, Pages 561-564, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.09.108.
(http://www.sciencedirect.com/science/article/B6T6R-4TPF4NG-1/2/1609d8a98cb9d4bc25773d39ff1a0c2a)
Abstract:
Hylocereus undatus and Hylocereus polyrhizus are two varieties of the commonly called pitaya fruits. The seeds were separated and the oil was extracted and analysed. Essential fatty acids, namely, linoleic acid and linolenic acid form a significant percentage of the unsaturated fatty acids of the seed oil extract. Both pitaya varieties exhibit two oleic acid isomers. Essential fatty acids are important acids that are necessary substrates in animal metabolism and cannot be synthesised in vivo. Both pitaya varieties contain about 50% essential fatty acids (C18:2 (48%) and C18:3 (1.5%)). This paper details the process of recovering the pitaya seeds and determining the composition of the oil extracted from the seeds.
Keywords: Pitaya; Seed oil; Essential fatty acids; Linoleic; Linolenic

Bao Yang, Mouming Zhao, Yueming Jiang, Anti-glycated activity of polysaccharides of longan (Dimocarpus longan Lour.) fruit pericarp treated by ultrasonic wave, Food Chemistry, Volume 114, Issue 2, 15 May 2009, Pages 629-633, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.09.099.

(http://www.sciencedirect.com/science/article/B6T6R-4TMBPY1-B/2/f3e4627ce9b0b5a3e8ffc76efd44cd9f)
Abstract:
Ultrasonic wave was used to extract the polysaccharides of longan fruit pericarp (PLFP) in this work. The anti-glycated activity of PLFP was evaluated. Through artificial neural network toolbox of MATLAB software, a mathematical model between ultrasonic conditions and anti-glycated activity was constructed. The R2 and MSE (mean square error) values of the model were calculated to be 0.98 and 0.13, respectively, which suggested a good fitness of the neural network. Response surface plots showed that ultrasonic power, time and temperature had complicated and significant effects on the anti-glycated activity of PLFP. The optimal ultrasonic conditions for obtaining the highest anti-glycated activity were predicted to be 276 W, 24 min and 69 [degree sign]C. The predicted anti-glycated activity was 60.4%. The experimental determinations under these conditions were not significantly different ($P > 0.05$) to the predicted value. It indicated the good prediction and optimisation capability of the artificial neural network.
Keywords: Longan; Polysaccharide; Anti-glycated activity; Ultrasonic treatment; Artificial neural network

Fa-Xing Chen, Xing-Hui Liu, Li-Song Chen, Developmental changes in pulp organic acid concentration and activities of acid-metabolising enzymes during the fruit development of two loquat (Eriobotrya japonica Lindl.) cultivars differing in fruit acidity, Food Chemistry, Volume 114, Issue 2, 15 May 2009, Pages 657-664, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.10.003.
(http://www.sciencedirect.com/science/article/B6T6R-4TMBPY1-H/2/936753c411155b3dfc51f04eac2aac19)
Abstract:
Changes in organic acid concentration and related enzyme activities in loquat (Eriobotrya japonica Lindl.) pulp were studied, using low-acid `Changhong 3' and high-acid `Jiefangzhong' cultivars. Both titratable acidity (TA) and malic acid concentration increased during the early stages of fruit development and decreased at the later stages. The difference in TA between the two cultivars could be explained by the difference in malic acid concentration, which could result from a difference in NAD-malate dehydrogenase (NAD-MDH) and NADP-malic enzyme (NADP-ME) activities. Although the difference in malic acid concentration between the two cultivars could not result from a difference in phosphoenolpyruvate carboxylase (PEPC) activity, malic acid concentration in both `Changhong 3' throughout fruit development and `Jiefangzhong' at the early stages increased linearly and curvilinearly with increasing PEPC activity, respectively. Therefore, NAD-MDH, NADP-ME and PEPC activities may play significant roles in malic acid biosynthesis and degradation.
Keywords: Eriobotrya japonica Lindl.; Loquat; Malic acid; NAD-malate dehydrogenase; NADP-malic enzyme; Organic acids; Phosphoenolpyruvate carboxylase

Maria S.M. Rufino, Fabiano A.N. Fernandes, Ricardo E. Alves, Edy S. de Brito, Free radical-scavenging behaviour of some north-east Brazilian fruits in a DPPH system, Food Chemistry, Volume 114, Issue 2, 15 May 2009, Pages 693-695, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.09.098.
(http://www.sciencedirect.com/science/article/B6T6R-4TMBPY1-9/2/97e0a34836c9033f9b7013c549a0eb22)
Abstract:
The antiradical capacity (radical-scavenging capacity, RSC) of seven tropical fruit from the Brazilian north-east (acai, acerola, cashew apple, mangaba, murici, umbu and uvaia) were studied using the 2,2-diphenyl-1-picrylhydrazyl radical (DPPH) assay. To determine their RSC, the second-order rate constants (k2) for the oxidation of these extracts by DPPH were calculated. The values of k2 were compared to natural and synthetic antioxidants. The k2 values (l/mol g s), in

methanol at 25 [degree sign]C, were 38.0, 29.7, 21.3, 20.1, 10.1, 9.54 and 5.47 for acerola, cashew apple, mangaba, umbu, acai, uvaia and murici, respectively.
Keywords: Tropical fruits; Radical scavenger; DPPH; Kinetics

Neuza Mariko Aymoto Hassimotto, Maria Ines Genovese, Franco Maria Lajolo, Antioxidant capacity of Brazilian fruit, vegetables and commercially-frozen fruit pulps, Journal of Food Composition and Analysis, In Press, Corrected Proof, Available online 4 May 2009, ISSN 0889-1575, DOI: 10.1016/j.jfca.2009.04.002.
(http://www.sciencedirect.com/science/article/B6WJH-4W6XVWY-1/2/c3210c781868c1e5d10003b97afba08b)
Abstract:
Several epidemiological and research studies suggest that a high intake of foods rich in natural antioxidants increases the antioxidant capacity of the plasma and reduces the risk of some kinds of cancers, heart diseases, and stroke. These health benefits are attributed to a variety of constituents, including vitamins, minerals, fiber, and numerous phytochemicals, such as flavonoids. Thus, in addition to measuring the composition of the usual macronutrients and micronutrients, it seems important to also measure the antioxidant capacity of foods. For this purpose, 28 foods including fruits, vegetables and commercially-frozen fruit pulps were analyzed for antioxidant capacity. The antioxidant capacity of the foods varied from 0.73 to 19.8 [mu]mol BHT equiv/g. The highest values were observed for wild mulberries (19.8 [mu]mol BHT equiv/g), acai fruit pulp (18.2 [mu]mol BHT equiv/g) and watercress (9.6 [mu]mol BHT equiv/g). The antioxidant capacities are only indicative of the potential of the bioactive compounds; however, these data are important to explore and understand the role of fruit, vegetables and other foods in health promotion.
Keywords: Flavonoids; Anthocyanin; Phenolic compound; Antioxidant capacity; Food analysis; Food composition; Brazilian foods; 7 IFDC

Yu CHEN, Li-hua JIN, Ming-guo ZHOU, Effect of Azoxystrobin on Oxygen Consumption and cyt b Gene Expression of Colletotrichum capsici from Chilli Fruits, Agricultural Sciences in China, Volume 8, Issue 5, May 2009, Pages 628-631, ISSN 1671-2927, DOI: 10.1016/S1671-2927(08)60255-2.
(http://www.sciencedirect.com/science/article/B82XG-4WCSPB7-J/2/2cce906d909a5e23da1a268ca65fd675)
Abstract:
Azoxystrobin acts as an inhibitor of electron transport by binding to the Qo center of cytochrome b (cyt b). Resistance to azoxystrobin was usually caused by the point mutation of cyt b gene or by the induction of alternative respiration. Oxygen consumption test for mycelia of Colletotrichum capsici showed that azoxystrobin inhibited mycelial respiration within 12 h; however, as time went on, the respiration of the mycelia recovered when the mycelia were treated with azoxystrobin and salicylhydroxamic acid (SHAM, a known inhibitor of alternative respiration), and the oxygen consumption of the mycelia could not be inhibited. Meanwhile, cytochrome b (cyt b) gene expression increased with the recovery of mycelial respiration. The increased cyt b gene expression might play a role in the development of resistance to azoxystrobin in C. capsici.
Keywords: QoI fungicides; gene expression; chili; fungal respiration; azoxystrobin resistance

Preethi Radhakrishnan, Daniela Marchini, Phillip W. Taylor, Ultrastructure of male reproductive accessory glands and ejaculatory duct in the Queensland fruit fly, Bactrocera tryoni (Diptera: Tephritidae), Arthropod Structure & Development, Volume 38, Issue 3, May 2009, Pages 216-226, ISSN 1467-8039, DOI: 10.1016/j.asd.2008.09.004.
(http://www.sciencedirect.com/science/article/B6W66-4VH8Y55-1/2/c9ea5b312c4818fc438d98b8d2d1a5b2)

Abstract:
Ultrastructure of male reproductive accessory glands and ejaculatory duct in the Queensland fruit fly (Q-fly), Bactrocera tryoni, were investigated and compared with those of other tephritid flies. Male accessory glands were found to comprise one pair of mesodermic glands and three pairs of ectodermic glands. The mesodermic accessory glands consist of muscle-lined, binucleate epithelial cells, which are highly microvillated and extrude electron-dense secretions by means of macroapocrine transport into a central lumen. The ectodermic accessory glands consist of muscle-lined epithelial cells which have wide subcuticular cavities, lined with microvilli. The electron-transparent secretions from these glands are first extruded into the cavities and then forced out through small pores of the cuticle into the gland lumen. Secretions from the two types of accessory glands then flow into the ejaculatory duct, which is highly muscular, with epithelial cells rich in rough endoplasmic reticulum and lined with a thick, deeply invaginated cuticle. While there are some notable differences, reproductive accessory glands of male Q-flies generally resemble those of the olive fruitfly, Bactrocera oleae, and to a lesser extent the Mediterranean fruit fly, Ceratitis capitata.
Keywords: Tephritidae; Ultrastructure; Accessory glands; Insect reproduction

D.M. Bulanon, T.F. Burks, V. Alchanatis, Image fusion of visible and thermal images for fruit detection, Biosystems Engineering, Volume 103, Issue 1, May 2009, Pages 12-22, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2009.02.009.
(http://www.sciencedirect.com/science/article/B6WXV-4VW91JY-1/2/480f9596181d152cb31569b45994961b)
Abstract:
Image fusion is the combination of two or more images of a scene to improve visual perception or feature extraction. A thermal image and a visible image of an orange canopy scene were fused to improve fruit detection. Visible images are formed by reflection in the visible spectrum while thermal images are created from thermal radiation. A digital colour camera captured the visible source image and a thermal infrared camera acquired the thermal source image. Because the scene was acquired by two different cameras with different fields of view and spatial resolutions, image registration was performed prior to image fusion. Two image fusion approaches were applied, Laplacian pyramid transform (LPT) and fuzzy logic. Results showed that both image fusion methods improved fruit detection when compared to using the thermal image alone. Based on image fusion evaluation indices, the fuzzy logic approach performed better than the LPT.

G.G. Romero, C.C. Martinez, E.E. Alanis, G.A. Salazar, V.G. Broglia, L. Alvarez, Bio-speckle activity applied to the assessment of tomato fruit ripening, Biosystems Engineering, Volume 103, Issue 1, May 2009, Pages 116-119, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2009.02.001.
(http://www.sciencedirect.com/science/article/B6WXV-4VVN4VC-2/2/5d8b60bd657c6fb57b6c8ca0d5864be8)
Abstract:
Dynamic speckle activity is a useful non-destructive tool for the study of certain processes that occur in biological samples. In this study, bio-speckle usefulness in the determination of the ripening degree of different lines of tomatoes was explored. The study was carried out recording the temporal history of the speckle pattern obtained by illuminating the surface of the fruit with a laser beam. The bio-speckle activity was determined by means of the autocorrelation functions of the intensity fluctuations. The intensity of the backscattered light, measured by the average grey level of the speckle diagrams, was also recorded. Both parameters were related to the fruit ripening of each tomato line so that the differences could be observed.

Y.G. Ampatzidis, S.G. Vougioukas, Field experiments for evaluating the incorporation of RFID and barcode registration and digital weighing technologies in manual fruit harvesting, Computers and

Electronics in Agriculture, Volume 66, Issue 2, May 2009, Pages 166-172, ISSN 0168-1699, DOI: 10.1016/j.compag.2009.01.008.
(http://www.sciencedirect.com/science/article/B6T5M-4VRNNG6-1/2/509d0ed7cd05d2ecc1795ac508a98118)
Abstract:
In this paper two methods are proposed for automatically matching bins containing harvested fruits with corresponding trees, during harvesting in orchards, where GPS data may be unavailable due to foliage. Both methods use a long-range radio frequency identification (RFID) antenna located on the harvesting platform for tree identification. Bin registration is accomplished in the first method by passive RFID tags attached to the bins, whereas the second method uses a barcode reader located on the platform, and low-cost barcode tags on the bins. Additionally, a digital scale is used with both methods to measure the yield distribution in the field, during the loading of the bins.
An experimental evaluation of these methods was performed during peach and kiwi harvesting in two different fields in Northern Greece. The aim was to estimate the tree and bin detection accuracies of both methods and their effect on the bin loading time. Statistical analysis of the data showed that when compared to the current standard harvesting procedure, RFID bin registration did not affect the amount of time to stack a bin on the platform (loading time), whereas barcode bin registration increased this time by 14%. It was also found that the use of the particular scale increased the loading time by almost 33% in both bin registration methods. Finally, the detection accuracy for the trees was 100% in all experiments and for the bins it was almost 100% for the RFID and 100% for the barcode reader. The results suggest that barcode technology can be used reliably for bin registration, without delaying the harvesting. Tree detection with long-range RFID technology was reliable; however tree growth combined with other factors such as wind, sunlight, etc., might decrease the tree detection accuracy over long periods of time. Finally, the bins had better be weighed at the packinghouse in order to generate the yield map, unless a much faster scale can be used in the field.
Keywords: Traceability; Yield mapping; RFID technology; Barcodes; Hand harvested fruits; Precision agriculture

Xiangming Xu, Joyce D. Robinson, Angela M. Berrie, Infection of blackcurrant flowers and fruits by Botrytis cinerea in relation to weather conditions and fruit age, Crop Protection, Volume 28, Issue 5, May 2009, Pages 407-413, ISSN 0261-2194, DOI: 10.1016/j.cropro.2008.12.010.
(http://www.sciencedirect.com/science/article/B6T5T-4VJJW5B-1/2/f2841704bc46587ca7ef1dcbb63c9e00)
Abstract:
Experiments were conducted to investigate infection of blackcurrant flowers and fruits in relation to environmental conditions and fruit age on cvs. Baldwin and Ben Hope. The two cultivars did not differ significantly in the susceptibility of flowers to Botrytis infection. Nearly 75% of flowers were infected or abscised 1 week after inoculation and nearly all remaining flowers failed to develop into mature fruit. Fruits were inoculated at different growth stages and then incubated under different initial conditions: 10, 15, 20 and 25 [degree sign]C each with four wet periods (4, 8, 12 and 24 h). Infection of fruit was not significantly affected by the temperature and duration of wetness. The two cultivars differed significantly in their responses to Botrytis infection depending on the fruiting stage at the time of inoculation. Inoculation of young fruitlets resulted in nearly 50% of fruits aborted on cv. Baldwin, compared to ca. 10% on cv. Ben Hope. Inoculation of fruit near harvest resulted in significantly fewer fruit aborted. The incidence of latent infection decreased with increasing fruit age at the time of inoculation. Sampling of blackcurrant fruit and spraying timing trials in planting of these two cultivars in open-field and under-protected conditions supported the main conclusions drawn from the controlled inoculation studies. Thus irrespective of weather conditions, strategies must be adopted to reduce inoculum and the extent of flower infections.
Keywords: Latent infection; Fruit maturity; Resistance

Robert A. Spotts, Maryna Serdani, Kelly M. Wallis, Monika Walter, Trish Harris-Virgin, Kim Spotts, David Sugar, Chang Lin Xiao, Annie Qu, At-harvest prediction of grey mould risk in pear fruit in long-term cold storage, Crop Protection, Volume 28, Issue 5, May 2009, Pages 414-420, ISSN 0261-2194, DOI: 10.1016/j.cropro.2009.01.001.
(http://www.sciencedirect.com/science/article/B6T5T-4VFJS10-1/2/1ebc7858bb4479504d7b22cb6dc1f7ca)
Abstract:
The objective of this research was to develop a model to predict, at-harvest, the risk of grey mould in pear fruit (Pyrus communis) in long-term cold storage based on multiple variables including: i) density of Botrytis cinerea DNA on fruit surfaces at harvest; ii) fungicide application within 4 weeks before harvest; iii) rainfall within 2 weeks before harvest; and iv) a relative orchard tree-growth and management rating. The model classified grey mould risk as low, moderate, high, or extreme. Data were collected for 2 years in six pear orchards in New Zealand and for 3 years in eight pear orchards in the Mid-Columbia district of Oregon and Washington, USA. Risk predictions varied from low to extreme, and the corresponding grey mould incidence varied from 0.1 to 14.0%. The multiple R-square was 0.973 when all predictors were included. The Spearman rank correlation coefficient (rs) relating the predicted grey mould risk level to the actual incidence of grey mould in pear fruit was 0.882 (P = 0.000). The decay risk prediction model presented herein appears robust and gave reliable predictions of grey mould risk in d'Anjou and Bosc pear fruit from Oregon-Washington and New Zealand in all three years.
Keywords: Botrytis cinerea; Postharvest decay; Pyrus communis

Maria M. Gonzalez-Real, He-Qin Liu, Alain Baille, Influence of fruit sink strength on the distribution of leaf photosynthetic traits in fruit-bearing shoots of pepper plants (Capsicum annuum L.), Environmental and Experimental Botany, Volume 66, Issue 2, May 2009, Pages 195-202, ISSN 0098-8472, DOI: 10.1016/j.envexpbot.2009.01.005.
(http://www.sciencedirect.com/science/article/B6T66-4VK6NBJ-1/2/3b5ebdc116ffc146c55bbfc61873d55b)
Abstract:
The influence of individual fruit sink strength and the acclimation to light on leaf photosynthetic attributes of greenhouse-grown sweet pepper (Capsicum annuum L., cv. Cornado) plants was investigated under Mediterranean glasshouse conditions during a winter-spring crop cycle. The photosynthetic parameters (net CO2 assimilation, A, and stomatal conductance, gs) of source leaves close to fruits at different stages of growth were measured under controlled levels of photosynthetic photon flux density, air CO2 concentration and leaf temperature. The light profile within the canopy was determined under the prevailing climate glasshouse conditions. Data were analysed and interpreted by distinguishing five classes of source leaves, each class corresponding to a given growth stage (i.e. sink strength) of the proximal fruit. Whatever the amount of light reaching the leaves (e.g. leaf area index of 0.8 and ), those inserted near a fruit at near maximum growth rate exhibited the highest light-saturated values of A (Am) and gs (gsm) followed by leaves inserted near an open flower. Leaves inserted near a red ripe fruit or near a recently harvested fruit presented the lowest values. A similar hierarchy was observed for organic N-leaf content, expressed either on a leaf area basis or dry weight basis, while the residual (non-photosynthetic) N-leaf content was found to be rather conservative. Differences in Am and gsm among the leaf classes, and the lower attribution of photosynthetic N to leaves subjected to a low sink demand, suggest that leaf photosynthetic capacity along a fruit-bearing shoot is mainly driven by the sink demand of the most proximal fruit, and not by light acclimation.
Keywords: Leaf nitrogen content; Photosynthetic characteristics; Fruit sink strength; Light acclimation

Mehmet Musa Ozcan, Olga Tzakou, Maria Couladis, Essential oil composition of the turpentine tree (Pistacia terebinthus L.) fruits growing wild in Turkey, Food Chemistry, Volume 114, Issue 1, 1 May 2009, Pages 282-285, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.08.094.
(http://www.sciencedirect.com/science/article/B6T6R-4TD4J0W-2/2/cd6ced6dd7fad2bc683077807bc0a432)
Abstract:
Constituents of essential oils from fruit samples of the turpentine tree (Pistacia terebinthus L.) collected from fifteen different localities of Turkey on August 2001 were identified by GC-MS. Twenty-eight compounds representing 92.3-100.0% of turpentine fruit oils were identified. The oil yields varied between 0.06% and 0.16%. The highest yield of oil was obtained from fruits of Antalya origin (Akbas-Serik) (0.16%). [alpha]-Pinene (51.3%), limonene (39.0%), p-cymen-8-ol (40.0%) and caryophyllene oxide (51.0%) were found as major components for different localities in Turkey. The predominant constituents in most samples were [alpha]-pinene (9.5-51.3%), limonene (tr-39.0%) and caryophyllene oxide (tr-51.5). Except for one collection (Manavgat-Antalya), which contained spathulenol (20.7%) and p-cymen-8-ol (40.0%), all the other samples yielded oils rich in [alpha]-pinene and limonene. [beta]-Caryophyllene oxide is the most abundant compound in Hisaronu (Izmir), Alanya (Antalya) and Yayladag (Hatay) oils. Results confirm the effect of locality on the oil content and composition.
Keywords: Turpentine; Pistacia terebinthus; Essential oils; Locations; [alpha]-Pinene; limonene

Sagar S. Pandit, Hemangi G. Chidley, Ram S. Kulkarni, Keshav H. Pujari, Ashok P. Giri, Vidya S. Gupta, Cultivar relationships in mango based on fruit volatile profiles, Food Chemistry, Volume 114, Issue 1, 1 May 2009, Pages 363-372, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.09.107.
(http://www.sciencedirect.com/science/article/B6T6R-4TNWH3K-1/2/9667380354950e85c777697e93eb2b68)
Abstract:
Aroma volatiles of mango (Mangifera indica L.) determine consumer acceptability and influence selection, whilst breeding. To assess their variety, composition and possible impact on cultivar relationships, volatile blends of 22 Indian and five non-Indian cultivars were investigated using solvent extraction and gas chromatography. Totally 84 volatiles belonging to various chemical classes were detected. Based on the cumulative occurrence of members of these classes, cultivars were grouped as monoterpene or sesquiterpene dominant. [alpha]-Pinene, [beta]-myrcene and [beta]-caryophyllene were found in all 27 cultivars. For ordination, common compounds with high (relative) concentration provided quantitative characters, whereas the rare and lesser ones provided qualitative (binary) characters; non-Indian cultivars separated from Indian ones but displayed close relations within their groups. In conclusion, mango flavour is dominated qualitatively as well as quantitatively by terpene hydrocarbons; ancient selection of mango cultivars is hinted to be driven by different aroma characters in different parts of the world.
Keywords: Flavour; GC-MS; Mangifera indica; Multivariate analysis; Ordination

S.C. Rossi, L.P.S. Vandenberghe, B.M.P. Pereira, F.D. Gago, J.A. Rizzolo, A. Pandey, C.R. Soccol, A.B.P. Medeiros, Improving fruity aroma production by fungi in SSF using citric pulp, Food Research International, Volume 42, Issue 4, Bioprocesses in Food Industries, May 2009, Pages 484-486, ISSN 0963-9969, DOI: 10.1016/j.foodres.2009.01.016.
(http://www.sciencedirect.com/science/article/B6T6V-4VDY7XV-5/2/48460561ac3344203e157b91527078cb)
Abstract:
Aromas produced by microorganisms can be recognized as natural and therefore have great economic potential. Ceratocystis fimbriata has the potential to produce a variety of aromas. The aim of the present work is to increase the fruity aroma production in citric pulp (CP), a waste from

the citric juice production industry, using C. fimbriata in solid-state fermentation (SSF), testing other residues as carbon (sugarcane molasses, soya molasses) and nitrogen (soya bran or urea) sources. The studies were carried out in 250 mL Erlenmeyer flasks, pH 6.0, 75% initial moisture, 30 [degree sign]C, inoculum rate 1 x 107 spores/g of CP, during 120 h. Total volatile compounds were quantified by headspace analysis in a gas chromatograph. The best production of volatile compounds was detected when the citric pulp was supplemented with 50% of soya bran, 25% of sugarcane molasses, and mineral saline solution. The production of total volatile reached 99.60 [mu]mol/L g.
Keywords: Solid-state fermentation; Ceratocystis fimbriata; Aroma; Citric pulp

Hamutal Borochov-Neori, Sylvie Judeinstein, Effi Tripler, Moti Harari, Amnon Greenberg, Ilan Shomer, Doron Holland, Seasonal and cultivar variations in antioxidant and sensory quality of pomegranate (Punica granatum L.) fruit, Journal of Food Composition and Analysis, Volume 22, Issue 3, May 2009, Pages 189-195, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.10.011.
(http://www.sciencedirect.com/science/article/B6WJH-4VB5K19-2/2/5eae212f06c3593b83e70f5cbebdf103)
Abstract:
Fruits of diverse pomegranate (Punica granatum L.) cultivars were analyzed for soluble phenolics content, antioxidant activity, soluble solid concentration, acidity and internal red color intensity. Analysis was carried out at various dates throughout the harvest season, corresponding to different climatic conditions during fruit ripening. Values obtained varied with cultivar and ripening date. In three cultivars of different sensory properties and harvest season, comparison between late- and early-ripening fruit revealed that arils of fruit ripening later in the season contained more soluble phenolics (1.21-1.71 compared to 0.22-0.88 pyrogallol equivalents, g L-1) and exhibited a higher antioxidant activity, as measured by the ferric reducing ability (FRAP) assay (1.22-2.37 compared to 0.86-1.95 vitamin C equivalents, g L-1). The red color intensity of the arils inversely related (R2 = 0.89-0.94) to the sum of heat units accumulated during fruit ripening. Multiple linear regression analysis on fruit characteristics in 11 diverse cultivars indicated that juice antioxidative capacity linearly correlated with soluble phenolics content (R2 = 0.98), but not with the red color intensity of the arils (R2 = 0.38). Also, no significant correlation was established between aril color and either juice pH or total soluble phenolics content. The results imply that pomegranate fruit antioxidant and sensory quality traits can be enhanced by the choice of cultivar and controlled-climate cultivation management.
Keywords: Pomegranate; Punica granatum L.; Anthocyanins; Antioxidants; Antioxidative capacity; Cultivar; Climatic conditions; Fruit quality; Phenolics; Biodiversity and nutrition; Food analysis; Food composition

G.P. Moreda, J. Ortiz-Canavate, F.J. Garcia-Ramos, M. Ruiz-Altisent, Non-destructive technologies for fruit and vegetable size determination - A review, Journal of Food Engineering, Volume 92, Issue 2, May 2009, Pages 119-136, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.11.004.
(http://www.sciencedirect.com/science/article/B6T8J-4V0MJ17-1/2/acda936e33cd2e0a3827132d386e7dc9)
Abstract:
Here, we review different methods for non-destructive horticultural produce size determination, focusing on electronic technologies capable of measuring fruit volume. The usefulness of produce size estimation is justified and a comprehensive classification system of the existing electronic techniques to determine dimensional size is proposed. The different systems identified are compared in terms of their versatility, precision and throughput. There is general agreement in considering that online measurement of axes, perimeter and projected area has now been achieved. Nevertheless, rapid and accurate volume determination of irregular-shaped produce, as

needed for density sorting, has only become available in the past few years. An important application of density measurement is soluble solids content (SSC) sorting. If the range of SSC in the batch is narrow and a large number of classes are desired, accurate volume determination becomes important. A good alternative for fruit three-dimensional surface reconstruction, from which volume and surface area can be computed, is the combination of height profiles from a range sensor with a two-dimensional object image boundary from a solid-state camera (brightness image) or from the range sensor itself (intensity image). However, one of the most promising technologies in this field is 3-D multispectral scanning, which combines multispectral data with 3-D surface reconstruction.
Keywords: Dimensional measurement; Fruit; Grading; Machine vision; Postharvest; Size; Sorter; Volume

M.S. Hernandez, J. Barrera, O. Martinez, J.P. Fernandez-Trujillo, Postharvest quality of araza fruit during low temperature storage, LWT - Food Science and Technology, Volume 42, Issue 4, May 2009, Pages 879-884, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.11.009.
(http://www.sciencedirect.com/science/article/B6WMV-4V34DG6-1/2/7d17d9154b3a9496deeff8ba27c07d40)
Abstract:
Araza (Eugenia stipitata Mc Vaugh) fruits at breaker stage of maturity were stored at 7, 10, 12, or 20 [degree sign]C and 85-90% RH for 2 weeks, with or without an additional simulated shelf-life period (3 days at 20 [degree sign]C and 70% RH). Some half-yellow (turning) araza fruit were also stored at 7 or 12 [degree sign]C. Respiration rate, ethylene production, quality traits and physiological disorders and decay were monitored. Araza fruit of both stages of maturity showed a climacteric pattern of ripening, with the maximum levels of respiration being reached after 5 days at 20 [degree sign]C for breaker fruit, while half-yellow fruit ripened totally after one day. Weight loss was the most limiting quality trait for araza fruit. Chilling injury symptoms included skin scald (only at 7 [degree sign]C), uneven ripening (at 7 or 10 [degree sign]C, including uneven softening during storage, particularly in breaker fruit), and slight acidification at 7 [degree sign]C. Decay in the post-storage shelf-life periods (mainly Gloesporium sp.) was particularly high after storage at 7 [degree sign]C in breaker fruit. The storage of breaker araza fruit at 12 [degree sign]C is recommended because this prevents chilling injury and flesh acidification, and allows normal fruit ripening during a post-storage shelf-life at 20 [degree sign]C, as revealed by the lower organic acids (mainly malic) content and increased sugar (glucose, fructose and sucrose) content.
Keywords: Eugenia stipitata; Fruit ripening; Chilling injury; Anthracnose; Respiration rate; Ethylene production

John O'Brien, Carol Mariani, Link Olson, Amy L. Russell, Ludovic Say, Anne D. Yoder, Tom J. Hayden, Multiple colonisations of the western Indian Ocean by Pteropus fruit bats (Megachiroptera: Pteropodidae): The furthest islands were colonised first, Molecular Phylogenetics and Evolution, Volume 51, Issue 2, May 2009, Pages 294-303, ISSN 1055-7903, DOI: 10.1016/j.ympev.2009.02.010.
(http://www.sciencedirect.com/science/article/B6WNH-4VPM5DS-3/2/82f408fbab84301352e083f2adc6a46e)
Abstract:
We investigate the genetic relationships between purported island species of Pteropus fruit bat (Megachiroptera) from the western Indian Ocean islands using mitochondrial DNA sequencing in order to infer the pattern of colonisation of this biogeographic region. Most significantly, our genetic data questions the current taxonomic assignment based on morphology of many of the island species and subspecies, suggesting instead that many of the western Indian Ocean islands harbour `races' of P. giganteus from mainland India. Our results strongly argue against a single colonisation event from mainland Asia. Evidence is presented for three colonisation events; the

first to the western-most extremity of their range (Comoros and Pemba Island), the second to Rodrigues Island; and a third giving rise to the remaining extant island taxa, the latter two events occurring relatively recently and rapidly.
Keywords: Phylogeography; Indian Ocean; Megachiroptera; Pteropus; Fruit bats

Davinia Arjona, Carlos Aragon, Jose Antonio Aguilera, Lucia Ramirez, Antonio G. Pisabarro, Reproducible and controllable light induction of in vitro fruiting of the white-rot basidiomycete Pleurotus ostreatus, Mycological Research, Volume 113, Issue 5, May 2009, Pages 552-558, ISSN 0953-7562, DOI: 10.1016/j.mycres.2008.12.006.
(http://www.sciencedirect.com/science/article/B7XMR-4VG7MWH-1/2/e7ae97d167ebe0bf1f511c5292b76fdc)
Abstract:
Fruiting is a crucial developmental process in basidiomycetes yet the genetic and molecular factors that control it are not yet fully understood. The search for fruiting inducers is of major relevance for both basic research and for their use in industrial applications. In this paper, an efficient and reproducible protocol for controlled fruiting induction of Pleurotus ostreatus growing on synthetic medium is described. The protocol is based on the control of light intensity and photoperiod and permits the life cycle for this fungus to be completed in less than two weeks. The fruiting bodies produced by this method release fertile spores after 4-5 d of culture. Our results indicate that fruiting induction is solely dependent on the illumination regime and that it occurs long before the available nutrients are depleted in the culture. This protocol will greatly facilitate molecular and developmental biology research in this fungus as it avoids the need for complex culture media based on lignocellulosic materials or the use of chemical inducers.
Keywords: Growth rate; In vitro fruiting; Light induction; Morphogenesis; Pleurotus ostreatus

Yoshihito Shiono, Sadayoshi Motoki, Takuya Koseki, Tetsuya Murayama, Masato Tojima, Ken-ichi Kimura, Isopimarane diterpene glycosides, apoptosis inducers, obtained from fruiting bodies of the ascomycete Xylaria polymorpha, Phytochemistry, Volume 70, Issue 7, May 2009, Pages 935-939, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2009.03.023.
(http://www.sciencedirect.com/science/article/B6TH7-4WB60S7-1/2/417ade7fab1de002441c8f6e2fa9be81)
Abstract:
The methanol extract of fruiting bodies of the ascomycete Xylaria polymorpha afforded three isopimarane diterpene glycosides, namely, 16-[alpha]-d-mannopyranosyloxyisopimar-7-en-19-oic acid (1), 15-hydroxy-16-[alpha]-d-mannopyranosyloxyisopimar-7-en-19-oic acid (2), and 16-[alpha]-d-glucopyranosyloxyisopimar-7-en-19-oic acid (3). Their structures were determined by spectroscopic methods and by single-crystal X-ray analysis. They showed cytotoxicity against human cancer cell lines and exhibited IC50 values ranging from 71 to 607 [mu]M. Further studies on the cytotoxicity of these compounds against HL60 cells demonstrated that they induced apoptosis along with typical DNA fragmentation. It was observed that 2 was less active than 1 and 3.
Keywords: Isopimarane diterpenoids; Xylaria polymorpha; Ascomycete; Cytotoxicity

Javier M. Obando-Ulloa, Bart Nicolai, Jeroen Lammertyn, Maria C. Bueso, Antonio J. Monforte, J. Pablo Fernandez-Trujillo, Aroma volatiles associated with the senescence of climacteric or non-climacteric melon fruit, Postharvest Biology and Technology, Volume 52, Issue 2, May 2009, Pages 146-155, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.11.007.
(http://www.sciencedirect.com/science/article/B6TBJ-4VJJW8V-2/2/357ced5c7581dcd06657bff8c39f9d77)
Abstract:

This paper characterizes the changes in aroma volatiles associated with fruit senescence based on the climacteric or non-climacteric behavior found in a collection of near-isogenic lines (NILs) of melon (Cucumis melo L.). Data were analyzed by univariate and multivariate methodologies. In general, senescence led to a decrease in complexity of the aroma profile, but total area counts increased compared with harvest levels. The quantitative trait loci (QTLs) that induced climacteric behavior in the NILs strongly affected the aroma profile during senescence. In senescent climacteric fruit, the relative contributions of acetate and non-acetate esters to the overall aroma profile increased in relation to harvest levels, particularly propyl acetate, isobutyl acetate, methyl 2-methylbutanoate, ethyl butanoate, hexyl acetate and benzyl acetate. In the senescent non-climacteric NILs, 15-17 volatiles of the profile were undetectable, particularly some aldehydes, while other aldehydes were reduced, esters did not change from harvest to senescence and sulfur-derived compounds increased. Methyl propanoate decreased with senescence irrespective of the climacteric behavior. The climacteric senescent fruit of the NILs could be discriminated from the non-climacteric fruit by 11 compounds of the profile, mainly benzyl acetate, hexanal and pentanal among others (ethyl acetate, propan-2-yl acetate, nonanal, 2-ethylhexan-1-ol, methyldisulfanylmethane, acetone and 2-ethylfuran). The grouping of senescent climacteric NILs was mainly attributable to high relative values of ethyl acetate, methyl butyrate and propyl acetate. Finally, the physiological behavior of NILs also allowed to classify methyl propanoate, ethyl 2-methylpropanoate, pentanal, acetone and 2-ethylfuran as ethylene-independent aroma compounds while isobutyl acetate was classified as ethylene-dependent.
Keywords: Cucumis melo L.; Near-isogenic lines; Aroma profile; Fruit quality; Fruit over-ripening; Postharvest behavior; Multivariate statistics

Purnima Gunness, Olena Kravchuk, Stephen M. Nottingham, Bruce R. D'Arcy, Michael J. Gidley, Sensory analysis of individual strawberry fruit and comparison with instrumental analysis, Postharvest Biology and Technology, Volume 52, Issue 2, May 2009, Pages 164-172, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.11.006.
(http://www.sciencedirect.com/science/article/B6TBJ-4VJJW8V-1/2/23ba8694652df3670385631535ac4a07)
Abstract:
A new method for measuring fruit-to-fruit variation in strawberries by both sensory and instrumental analyses was developed and applied. The method allowed quantification of fruit-to-fruit variation in sensory attributes and instrumental properties. Two commercial colour gradings (3/4 and 4/4 red) of strawberry commonly used at harvest were investigated. In the main experiment, one-half of a strawberry fruit was assessed for sensory characteristics by a trained panel while the other half was concurrently individually evaluated for soluble solids content (SSC), pH, titratable acidity (TA), firmness, and headspace volatile composition. The sensory evaluation was additionally performed on a bulk puree of fruit from the same harvest and the results were compared with the sensory evaluation on individual fruit. This study suggests that fruit-to-fruit variation is substantial in SSC, TA and fruit firmness and sensory characteristics such as `fruity odour', `sweet flavour' and `flavour aftertaste', whereas other characteristics show similar variation among panellists for both individual fruit and bulk puree analyses. Further, individual fruit flavour characteristics were correlated with fruit biophysical properties. The results obtained are specific to this study and further investigations need to be undertaken to validate this method as a model for fruit-to-fruit variation in small fruit.
Keywords: Fruit-to-fruit variation; Flavour volatiles; Biophysical analysis; Fragaria ananassa Duch.; Variance components analysis; Sensory analysis

Brandon M. Hurr, Donald J. Huber, C. Eduardo Vallejos, Stephen T. Talcott, Developmentally dependent responses of detached cucumber (Cucumis sativus L.) fruit to exogenous ethylene,

Postharvest Biology and Technology, Volume 52, Issue 2, May 2009, Pages 207-215, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.12.006.
(http://www.sciencedirect.com/science/article/B6TBJ-4VGMP3V-1/2/e8e9b1cf36089fc2ae1d0d77866876f0)
Abstract:
Previous studies of the postharvest physiological and developmental behavior of cucumber (Cucumis sativus L.) fruit have examined fruit at a single developmental stage corresponding to commercial harvest maturity. The present study investigated the postharvest storage and ethylene responses of cucumber fruit at defined developmental stages based on growth and surface color parameters. Plants of a greenhouse cucumber (cv. Manar) were grown using current commercial practices. Fruit size and surface color were monitored during fruit development. Fruit were harvested at four stages of development: Immature (4-8 d after anthesis (DAA), commercial harvest maturity), Mature (10-14 DAA), Breaker (16-20 DAA) and Yellow (35-40 DAA). Fruit were stored in air or in either 10 [mu]L L-1 ethylene or 1300 [mu]L L-1 propylene for 12 d at 15 [degree sign]C. The data indicate that cucumber fruit undergo marked changes in ethylene responses during development. Ethylene-treated Immature fruit exhibited mesocarp watersoaking and epidermal sloughing, slight degreening, and declines in mesocarp pH and firmness compared with air-stored fruit after 6 d of storage. Mature fruit behaved similarly to Immature fruit, but exhibited a lower incidence of watersoaking and greater fruit degreening. In sharp contrast, Breaker and Yellow fruit rapidly degreened and became orange due to chlorophyll degradation and [beta]-carotene accumulation, softened, and produced `fruity' aromatic compounds after 9 d of ethylene exposure. Ethylene increased respiration in fruit of all stages of development; however, ethylene production was detectable only in decaying fruit. The data indicate that the postharvest response of mini-cucumber fruit to ethylene is highly developmentally dependent, with older fruit exhibiting climacteric-like responses and younger fruit exhibiting tissue watersoaking and general fruit deterioration.
Keywords: Senescence; Ripening; Color; Chlorophyll; Carotenoid; Watersoaking

Adrian D. Berry, Steven A. Sargent, Real-time microsensor measurement of internal oxygen partial pressure in tomato fruit under hypoxic conditions, Postharvest Biology and Technology, Volume 52, Issue 2, May 2009, Pages 240-242, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2009.01.007.
(http://www.sciencedirect.com/science/article/B6TBJ-4VPCVGN-4/2/df603a380ab11897d97c51f3e3486efd)
Abstract:
Internal oxygen partial pressure of tomato (Solanum lycopersicum L.) fruit was measured using a pc-controlled, fiber-optic O2 meter. Tomato fruit were subjected to hypoxic conditions via blockage of gas exchange at the stem end or by controlled atmosphere storage (4 kPa O2 plus 5 kPa CO2). Internal O2 partial pressure was evaluated in distal (i.e., blossom-end) tissue (10-mm depth). In both tests tomato fruit exposed to ambient atmosphere conditions had internal O2 partial pressure of 18 kPa. Hypoxia was induced following lanolin application to the stem scar, and O2 partial pressure decreased to 0.3 kPa after 1.5 h. During short-term CA application, the O2 content of tomato was 1.0 and 0.2 kPa, after 1 and 2 h, respectively. This measurement apparatus shows promise for determining internal O2 partial pressure in soft fruits as affected by such external conditions as coatings, and modified or controlled atmosphere storage.
Keywords: Solanum lycopersicum; Postharvest; Oxygen; Internal atmosphere; Controlled atmosphere; Modified atmosphere

F. Iacuzzo, L. Dalla Costa, Yield performance, quality characteristics and fruit storability of winter squash cultivars in sub-humid areas, Scientia Horticulturae, Volume 120, Issue 3, 1 May 2009, Pages 330-335, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.11.026.

(http://www.sciencedirect.com/science/article/B6TC3-4V936RJ-3/2/bd23c92d95c7fb132e57e66e10fdbae8)
Abstract:
This research investigated the quality traits of eight winter squash cultivars (Cucurbita maxima, C. moschata, C. pepo and interspecific hybrids of C. moschata x C. pepo) during three years, but only `Tetsukabuto' and `Violina' were tested each year. In 2005 these two varieties were compared to `Butternut'; in 2006 to `Red Kury', `Tan Cheese' and `Kabosha'; in 2007 to `Red Kury', `Mooregold', and `Winter Luxury'. The characteristics recorded were: fruit yield, storage ability, chemical composition and sensory quality. Following harvest and sorting of marketable winter squash, 50 fruits for each cultivar were stored at 12 [degree sign]C for 12 weeks the 1st year, and for over 20 weeks in 2nd and 3rd years, during which rotten fruits were counted. Compositional analyses regarding sugar concentration, starch, carotenoids and dry matter content at harvest and after storage were carried out; a panel test was organised to assess sensory traits. The most interesting cultivars were `Tetsukabuto' for yield, `Tetsukabuto' and `Mooregold' for storability, `Red Kury' and the same `Tetsukabuto' particularly for soluble sugars and carotenoids and sensory appreciation.
Keywords: Pumpkin; Starch; Carotenoids; Panel test; Conservation

Shengmin Lu, Jun Song, Leslie Campbell-Palmer, A modified chemiluminescence method for hydrogen peroxide determination in apple fruit tissues, Scientia Horticulturae, Volume 120, Issue 3, 1 May 2009, Pages 336-341, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.11.003.
(http://www.sciencedirect.com/science/article/B6TC3-4V87DS1-1/2/73802c4f24b6065d0e2b0c8cd961c654)
Abstract:
Hydrogen peroxide (H2O2) is one of the important by-products produced by plant and fruit tissues during normal metabolism as well as under stress conditions. Evidence suggests that it is actively involved in many physiological activities in plants, including ripening, senescence and the development of disorders. Quantitative measurement of H2O2 in fruit has been a challenge due to variations in methodologies, and their sensitivities and interferences present in plant samples. Among the currently used methodologies, chemiluminescence (CL) is one of the most promising, due to its high specificity and sensitivity. However, direct application of CL methods developed for leaf analysis is not suitable for fruit, especially fruit peel tissues, possibly due to interfering compounds in fruit tissues. In this study, evaluation of the efficiency of removal of interfering compounds by PVP, PVPP and activated charcoal revealed that the PVPP is the most effective compound to remove the interference. This modified protocol can measure H2O2 content in apple peel and flesh tissues. `Red Delicious' apple peel and flesh tissues were measured with amount of 1.48 and 1.03 [mu]mol/g FW, respectively. The established protocol can also be used for a wide variety of tissues in addition to apple fruit, including strawberry tissues (fruit, calyx and leaves) and spinach leaves. This protocol was applied to determine the H2O2 concentration in 1-MCP and DPA treated apples after 5 months of storage, but no significant difference in H2O2 in those samples was found. Direct comparison of CL with a commercial hydrogen peroxide measurement OXIS kit was also made. The challenges to accurately assay H2O2 in fruit/plant tissue were discussed.
Keywords: Hydrogen peroxide; fruit; apple; strawberry; PVPP

O. Piquer, L. Rodenas, C. Casado, E. Blas, J.J. Pascual, Whole citrus fruits as an alternative to wheat grain or citrus pulp in sheep diet: Effect on the evolution of ruminal parameters, Small Ruminant Research, Volume 83, Issues 1-3, May 2009, Pages 14-21, ISSN 0921-4488, DOI: 10.1016/j.smallrumres.2008.11.009.
(http://www.sciencedirect.com/science/article/B6TC5-4W5VDBV-1/2/80902629ee3089e3ade7df77b86be929)

Abstract:
Five ruminally fistulated Manchega ewes were fed twice daily (0900 and 1500 h) with five experimental diets in a 5 x 5 Latin square design to determine the effect of the diets on ruminal parameters. The diets were control based on wheat grain (0WCF), three diets in which whole citrus fruits (WCF) replaced wheat grain at 13% (13WCF), 26% (26WCF) and 39% (39WCF), and one diet with 26% of citrus pulp (26CP) replacing wheat grain. After 10 days of adaptation, the rumen pH, volatile fatty acids (VFA) and NH3-N of the experimental animal were measured at 0, 2, 4, 6, 8, 10 and 12 h after the first feeding.
The 39WCF diet ingestion was significantly lower than that of the other four diets. Ruminal pH increased linearly with the inclusion of WCF (+0.05 per 10%), although it was similar 2 h after meals, while VFA concentration decreased (-2.31 mmol/l per 10%), especially 4 h after the meals. Ruminal NH3-N concentration decreased with the inclusion of WCF (-0.61 mmol/l per 10%), especially during the first 5 h as of the first meal.
The acetate proportion increased from 0.61 to 0.66 mmol/mmol, while propionate proportion reduced from 0.20 to 0.18 mmol/mol when dietary WCF was increased from 0% to 39%. Also acetate:propionate ratio increased linearly from 3.2 to 4.1, while butyrate proportion decreased linearly from 0.15 to 0.11 mmol/mmol. The concentration of i-butyrate and i-valerate also decreased while that of valerate and caproate increased.
Main ruminal parameters for 26WCF and 26CP diets were similar. However, ruminal concentrations of NH3-N and molar proportion of butyrate and caproate were significantly lower when the animals received the 26CP diet (-1.1, -0.021 and -0.003 mmol/l, respectively).
Highly degradable citrus carbohydrates could be used as an alternative to cereal starch to cover the energy requirements of ewes, and did not seem to suppose a risk, as even a higher ruminal pH was maintained throughout the day. The fermentative behaviour of WCF was similar to that of CP, although higher butyrate and NH3-N production was observed.
Keywords: Ammonia; Carbohydrate; Citrus fruit; pH; Ruminant; Sheep; VFA; Wheat

J. Mena-Correa, J. Sivinski, A. Anzures-Dadda, R. Ramirez-Romero, M. Gates, M. Aluja, Consideration of Eurytoma sivinskii Gates and Grissell, a eurytomid (Hymenoptera) with unusual foraging behaviours, as a biological control agent of tephritid (Diptera) fruit flies, Biological Control, In Press, Accepted Manuscript, Available online 24 April 2009, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2009.03.019.
(http://www.sciencedirect.com/science/article/B6WBP-4W4TXYY-1/2/8b343044cd33d886f4ba8a7d42ae0255)
Abstract:
A recently discovered Mexican parasitoid species of Eurytomidae (Hymenoptera), Eurytoma sivinskii Gates and Grissell, has the unique behaviour, for its family, of attacking tephritid fruit fly pupae (Anastrepha spp.) on or in the soil. Adults burrowed but did so rarely, thus pupae on the soil surface were significantly more vulnerable than those underground. Females facultatively hyperparasitized other larval-prepupal and pupal parasitoids such as Opius hirtus (Braconidae), Coptera haywardi (Diapriidae) and Pachycrepoideus vindemiae (Pteromalidae). While E. sivinskii developed in the pupae of various other Anastrepha, including, A. serpentina and A. striata, it also attacked cyclorraphous Diptera such as Musca domestica and a tachinid species. The number of expected female offspring (Ro) was 44.3 when measured as eclosed eggs (i.e., that became larvae) and 34.3 when measured as the number of emerged adults, and the intrinsic rate of natural increase (rm) was 0.34. This is high relative to other fruit fly parasitoids and suggests that E. sivinskii could rapidly exploit a clumped resource. We conclude that the marginal ability of E. sivinskii to attack buried pupae and the environmental risks it poses through its broad host range and capacity for hyperparasitism make it a poor candidate for tephritid biological control.
Keywords: Demography; Eurytomidae; Fruit fly; Parasitoid; Tephritidae; Hyperparasitism

M.S. Lima, E.P. Paiva, S.A.C. Andrade, J.A. Paixao, Fruit pectins - A suitable tool for screening gelling properties using infrared spectroscopy, Food Hydrocolloids, In Press, Corrected Proof, Available online 17 April 2009, ISSN 0268-005X, DOI: 10.1016/j.foodhyd.2009.04.002.
(http://www.sciencedirect.com/science/article/B6VP9-4W38RM8-1/2/bb6c468dd00a26ffc2ffecd499edaf29)
Abstract:
Found in higher plants, pectins are natural hydrocolloids whose extraction is controversial as it is condition-dependent. To optimize the methodology for extracting and isolating pectins and verifying the effect on their structural characterization, a factorial 23 assay was planned, using the following independent variables: pH, duration of heating and nature of alcohol in fruits with different kinds of morphologies. The fruits were grouped into those that produce good jams and jellies (group I), those that have a variable chemical composition and contain fiber (group II), and those that contain starch (group III). The results were compared using variance analysis and Duncan test. The degree of methoxylation (DM) of the pectin isolated from the mesocarp of citrus and guava fruits (whole) was associated linearly with all independent variables. However, the pectin yield was influenced only by pH and duration of heating. The interaction between the nature of alcohol and the duration of heating were shown to be significant, a longer heating time and ethanol being better for the two kinds of fruit. In group I, the pectins isolated showed best DM associated with high yield, whilst group II yield was below the limit for producing jams and jellies, despite high DM. Group I fruits displayed characteristics that favor gel formation, whilst group II and group III proved to be deficient in at least one of the dependent variables. This study has validated as analytical tool for isolating and characterizing the structure of pectins, mainly those naturally occurring in tropical fruits.
Keywords: Pectins; Extraction; Degree of methoxylation; Infrared; Gel formation

Naoki Yoshioka, Yumi Akiyama, Tomofumi Matsuoka, Takao Mitsuhashi, Rapid determination of five post-harvest fungicides and metabolite in citrus fruits by liquid chromatography/time-of-flight mass spectrometry with atmospheric pressure photoionization, Food Control, In Press, Corrected Proof, Available online 16 April 2009, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2009.04.001.
(http://www.sciencedirect.com/science/article/B6T6S-4W32KKT-1/2/3b46892457049a32175f3f370bd2e219)
Abstract:
Liquid chromatography/time-of-flight mass spectrometry (LC/TOF-MS) with atmospheric pressure photoionization (APPI) has been used for the determination of five post-harvest fungicides and metabolite, o-phenylphenol (OPP), diphenyl (DP), thiabendazole (TBZ), imazalil (IMZ), and its major metabolite R14821 (IMZ-M) in citrus fruits. Samples were extracted with diethyl ether and the extracts with minimal sample preparation were analyzed by LC/TOF-MS with APPI by measuring accurate mass. DP, IMZ, and IMZ-M were ionized in positive ion mode, and OPP and TBZ were in negative ion mode. The recoveries fortified to citrus fruits at 1 [mu]g/g ranged from 70.5% to 101.4%. The detection limits (S/N = 3) were 0.002 [mu]g/g (OPP, TBZ, and IMZ-M), 0.001 [mu]g/g (IMZ), and 0.03 [mu]g/g (DP).
Keywords: LC/MS; TOF; APPI; Post-harvest; Fungicides; Citrus fruits

Carolle Avocevou-Ayisso, Brice Sinsin, Anselme Adegbidi, Gatien Dossou, Patrick Van Damme, Sustainable use of non-timber forest products: Impact of fruit harvesting on Pentadesma butyracea regeneration and financial analysis of its products trade in Benin, Forest Ecology and Management, Volume 257, Issue 9, Disturbances in Mountain Forests: Implications for Management, 16 April 2009, Pages 1930-1938, ISSN 0378-1127, DOI: 10.1016/j.foreco.2009.01.043.
(http://www.sciencedirect.com/science/article/B6T6X-4VS9KWP-1/2/dedb591291e8c59648a6eaf822dffd74)

Abstract:
Pentadesma butyracea Sabine (Clusiaceae) is a multi-purpose tree that provides non-timber forest products (NTFPs). In particular, fruit almonds can be transformed into butter for cooking and cosmetics. During the present study, the following hypotheses were tested: (i) diameter structure of P. butyracea populations is independent of its fruit gathering intensity; (ii) P. butyracea seedling and sapling density and origin are independent of its fruit gathering intensity; (iii) P. butyracea fruit gathering and processing of its almonds are profitable activities and (iv) P. butyracea fruit collectors and almond transformers are receiving the lowest marketing margins in the commercial channel. The class distribution in the low-intensity harvesting sites showed a typical inverse J-shaped curve whereas the high-intensity harvesting ones showed an almost bell curve (G2 = 23.93, p = 0.0008). After data analysis, all hypotheses turned out to be wrong except the hypothesis (iii). In order to assess the effects of fruit harvesting on natural regeneration of P. butyracea, we compared seedling and sapling density of regeneration originating from seeds and roots suckers in plots that had been differentiated according to fruit harvesting intensity. These plots were laid out in riparian forests, which are the natural habitats for the species in Benin. Observed seedling and sapling density was high (13,872 +/- 7886 seedlings and saplings/ha) in low-intensity harvesting sites but very low (4200 +/- 3810 seedlings and saplings/ha) in high-intensity harvesting sites (F = 17.16; p = 0.0006). However, there was no significant difference between root sucker density in either type of harvesting site (F = 0.79; p = 0.3861). Collection of P. butyracea fruits and subsequent processing of its almonds into butter is an important source of income for women involved in these activities. Commercial margin analysis showed that these women involved in almonds and butter trade, far from being exploited by traders, recuperate between 49% and 80% of the price paid by the consumer, depending on the quality of the product and the length of commercial channel used.
Keywords: Natural regeneration density; Size class; Pentadesma butyracea; Net present value; Marketing margin analysis; Value chain

Sylvie Bureau, David Ruiz, Maryse Reich, Barbara Gouble, Dominique Bertrand, Jean-Marc Audergon, Catherine M.G.C. Renard, Rapid and non-destructive analysis of apricot fruit quality using FT-near-infrared spectroscopy, Food Chemistry, Volume 113, Issue 4, 15 April 2009, Pages 1323-1328, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.08.066.
(http://www.sciencedirect.com/science/article/B6T6R-4TBGF0S-7/2/9ba1972dd316cd54c976e7f80816d547)
Abstract:
A non-destructive optical method based on near-infrared spectroscopy has been used for the evaluation of apricot fruit quality. Diffuse reflectance measurements (800-2500 nm), physical, physiological and biochemical measurements were performed individually on 877 apricot fruits from eight contrasted cultivars harvested at different ripening stages. Relationships between spectral wavelengths and quality attributes were evaluated by application of chemometric techniques based on partial least squares (PLS) on fruit set divided randomly into two groups: 598 fruits for calibration and 279 for validation. Good prediction performance was obtained for soluble solids and titratable acidity with correlation coefficients of 0.92 and 0.89 respectively and root mean square errors of prediction of 0.98% Brix and 3.62 meq 100 g-1 FW respectively. For the other quality traits such as firmness, ethylene, individual sugars and organic acids, the prediction models were not satisfactorily accurate due to the high error of calibration and prediction.
Keywords: NIR; PLS; Prunus armeniaca L.; Soluble solids content; Titratable acidity

Emmy Hainida Khairul Ikram, Khoo Hock Eng, Abbe Maleyki Mhd Jalil, Amin Ismail, Salma Idris, Azrina Azlan, Halimatul Saadiah Mohd Nazri, Norzatol Akmar Mat Diton, Ruzaidi Azli Mohd Mokhtar, Antioxidant capacity and total phenolic content of Malaysian underutilized fruits, Journal

of Food Composition and Analysis, In Press, Corrected Proof, Available online 14 April 2009, ISSN 0889-1575, DOI: 10.1016/j.jfca.2009.04.001.
(http://www.sciencedirect.com/science/article/B6WJH-4W2NDPC-1/2/78c414f9c4b916db98341d3fa29abf22)
Abstract:
The purpose of this study was to evaluate the antioxidant capacity (AC) and total phenolic content (TPC) of selected Malaysian underutilized fruits. The 58 underutilized fruits of 32 different species from 21 genera were analyzed for AC and TPC. AC was measured using [beta]-carotene bleaching, ferric reducing antioxidant potential (FRAP) and 2,2-diphenyl-1-picryl hydrazyl (DPPH) assays, and TPC was determined using the Folin-Ciocalteu reagent assay. Our findings showed that the fruits from genera of Pometia, Averrhoa, Syzygium, Sallacca, Phyllanthus, Garcinia, Sandoricum and Maipighia had higher AC compared to other studied genera. Among the underutilized fruits, Sandoricum and Phyllanthus fruits contained the highest TPC (>2000 mg/100 g edible portion). The correlation between AC and TPC varied. The study indicated that some of these underutilized fruits have the potential to be sources of antioxidant components.
Keywords: Underutilized fruit; Inhibition of oxidation activity; Antioxidant activity; Scavenging activity; Total phenolic content; Food analysis; Food composition

Wei-Hai Yang, Xiao-Chuan Zhu, Jian-Hua Bu, Gui-Bing Hu, Hui-Cong Wang, Xu-Ming Huang, Effects of bagging on fruit development and quality in cross-winter off-season longan, Scientia Horticulturae, Volume 120, Issue 2, 2 April 2009, Pages 194-200, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.10.009.
(http://www.sciencedirect.com/science/article/B6TC3-4V6RNSM-1/2/a67f3e54d49642fc4b379aaf8768bb9a)
Abstract:
Clusters of cross-winter off-season longan (Dimocarpus longan Lour) cv. Chuliang were bagged with three types of bags: perforated translucent plastic bag (TPB), white adhesive-bonded fabric bag (WAFB) with about 70% light transmittance, and black adhesive-bonded fabric bag (BAFB) with <10% light transmittance. Bagging treatments began at 34 days after anthesis and continued until harvest. The results showed that bagging modified the microenvironment for fruit development. Bagging with TPB was most effective in increasing humidity, and air moisture within TPB maintained above 90% from 2 weeks after bagging. Bagging with BAFB or WAFB increased humidity most of the time, and the effect was more prominent when the weather was very dry (RH < 60%). All bag types tended to increase temperature and promoted fruit development, resulting in larger sized fruit. Bagging tended to promote early fruit drop but reduced late fruit drop, and the final fruit retention rate was not significantly affected by bagging. Bagging with different materials showed differential effects on incidence of fruit cracking. WAFB and BAFB reduced cracking incidence significantly as compared to the control (5.1% and 11.6% vs 32.8%). Sugar content was not significantly affected by bagging but organic acids including vitamin C (Vc) were considerably affected. Concentration of malic acid, the dominant organic acid in longan aril, was 605.6, 830.0, 1161.0 and 1428 [mu]g/g FW in TPB, BAFB, WAFB and the control. Vc in the aril was significantly reduced by BAFB (108.4 [mu]g/g FW), slightly increased by WAFB (183.9 [mu]g/g FW) and significantly increased by TPB (264.5 [mu]g/g FW) as compared with the control (174.7 [mu]g/g FW). Pericarp of fruit bagged with TPB had a slightly higher content of Vc (1337 [mu]g/g FW), while those bagged with BAFB (873.6 [mu]g/g FW) and WAFB (787.4 [mu]g/g FW) had significantly lower Vc contents than the control (1243 [mu]g/g FW). The responses of oxalate and Vc contents in the aril and the pericarp to bagging treatments showed an opposite trend. The results suggested that WAFB increased fruit size and fruit retention rate while significantly reduced fruit cracking incidence and could be a promising practice for cross-winter longan production.
Keywords: Longan; Bagging; Fruit development; Fruit quality

Jai Prakash, S. Bhattacharyya, Krishnendu Chattopadhyay, S. Roy, S.P. Das, N.P. Singh, PQM-1: A newly developed superior clone of pineapple for northeastern India as evident through phenotype, fruit quality and DNA polymorphism, Scientia Horticulturae, Volume 120, Issue 2, 2 April 2009, Pages 288-291, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.11.016.
(http://www.sciencedirect.com/science/article/B6TC3-4VDGTNT-1/2/daf2ef0db726ce8001369de3c2a2a48d)
Abstract:
Queen is the most preferred table purpose variety in India. However, small fruit size, deep set eyes in large numbers and weak fruit stalk make this less preferred in processing industries. A completely different plant type with distinct fruit character was identified from a clonal population of Queen which seems to be a natural mutant. The identified mutant was maintained and multiplied through vegetative propagation at Lembucherra farm of ICAR Research Complex, Tripura centre. The present study clearly established the fact that this new clone (PQM-1) is distinct from `queen' and other cultivars of Tripura. Distinctness of this new clone was confirmed on the basis of standard morphological and biochemical descriptors as well as through DNA polymorphism. It was observed that PQM-1 diverged from Queen in respect of pattern of vegetative growth, leaf shape, size and colour, flowering time, fruit shape, size and colour, eye shape, fruit weight, juice content, total soluble solid (TSS) and acidity. PQM-1 was found uniform at DNA level and complement the information of phenotypic and quality parameters by showing stable differences with Queen in ISSR banding pattern. Natural mutation in DNA level might be the probable cause of its origin. It could be empathetically stated that PQM-1 would have certain competitive advantage over all existing cultivars in this region due to its late maturity, fruit quality and usefulness in both canning and fresh consumption. This certainly would emerge as new alternative to pineapple growers of this region.
Keywords: Pineapple; Clone; Fruit quality; Plant characters; ISSR; RAPD

Franco Castillo-Llanque, Hava F. Rapoport, Identifying the location of olive fruit abscission, Scientia Horticulturae, Volume 120, Issue 2, 2 April 2009, Pages 292-295, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.11.006.
(http://www.sciencedirect.com/science/article/B6TC3-4V75HP0-1/2/0ebf1d28529fa8a80b2fa240dda294f6)
Abstract:
For high quality oil, table olive characteristics, and reduction of alternate bearing tendencies, it is often desirable to harvest olive fruits prior to full physiological maturity, that is, before the natural separation zone has differentiated. Olive fruit abscission can occur at different positions, mainly fruit-pedicel, pedicel rachis and peduncle-branch, apparently varying according to cultivar, fruit weight, and fruit maturation. Precisely identifying the location of separation is critical for studying the differentiation of the abscission zone or zones and testing the effectiveness of harvest procedures, including the mode of action of different fruit-loosening chemicals. We determined the olive fruit abscission zone position under natural conditions, throughout the complete fruit maturation period, for two cultivars differing in fruit size. The major separation zone for the cultivars studied was between the fruit and pedicel. For cv. Picual, abscission in zones other that fruit-pedicel occurred in less than 15% of the fruit at all dates throughout the maturation period, whereas in cv. Hojiblanca, the percentages of fruits detached at peduncle-shoot (27%) and pedicel-rachis (19%) were initially substantial, and then decreased progressively during fruit maturation. Our data clearly indicate both varietal and temporal differences which should be taken into account not only when testing fruit-loosening compounds but in extrapolating test results to different varieties or dates. Fruit weight did not appear affect the abscission location. The method we used, of counting the different detached units, is simple and effective for determining the position of fruit abscission.
Keywords: Olea europaea; Harvest; Pedicel; Peduncle; Rachis

Wolfram Spreer, Somchai Ongprasert, Martin Hegele, Jens N. Wunsche, Joachim Muller, Yield and fruit development in mango (Mangifera indica L. cv. Chok Anan) under different irrigation regimes, Agricultural Water Management, Volume 96, Issue 4, April 2009, Pages 574-584, ISSN 0378-3774, DOI: 10.1016/j.agwat.2008.09.020.
(http://www.sciencedirect.com/science/article/B6T3X-4TWSWM9-1/2/e58082edae430eaa8201304fd138d75d)
Abstract:
`Chok Anan' mangoes are mainly produced in the northern part of Thailand for the domestic fresh market and small scale processing. It is appreciated for its light to bright yellow color and its sweet taste. Most of the fruit development of on-season mango fruits takes place during the dry season and farmers have to irrigate mango trees to ensure high yields and good quality. Meanwhile, climate changes and expanding land use in horticulture have increased the pressure on water resources. Therefore research aims on the development of crop specific and water-saving irrigation techniques without detrimentally affecting crop productivity.
The aim of this study was to assess the response of mango trees to varying amounts of available water. Influence of irrigation, rainfall, fruit set, retention rate and alternate bearing were considered as the fruit yield varies considerably during the growing seasons. Yield response and fruit size distribution were measured and WUE was determined for partial rootzone drying (PRD), regulated deficit irrigation (RDI) and irrigated control trees.
One hundred ninety-six mango trees were organized in a randomized block design consisting of four repetitive blocks, subdivided into eight fields. Four irrigation treatments have been evaluated with respect to mango yield and fruit quality: (a) control (CO = 100% of ETc), (b) (RDI = 50% of ETc), (c) (PRD = 50% of ETc, applied to alternating sides of the root system) and (d) no irrigation (NI).
Over four years, the average yield in the different irrigation treatments was 83.35 kg/tree (CO), 80.16 kg/tree (RDI), 80.85 kg/tree (PRD) and 66.1 kg/tree (NI). Water use efficiency (WUE) calculated as yield per volume of irrigation water was always significantly higher in the deficit irrigation treatments as compared to the control. It turned out that in normal years the yields of the two deficit irrigation treatments (RDI and PRD) do not differ significantly, while in a dry year yield under PRD is higher than under RDI and in a year with early rainfall, RDI yields more than PRD. In all years PRD irrigated mangoes had a bigger average fruit size and a more favorable fruit size distribution.
It was concluded that deficit irrigation strategies can save considerable amounts of water without affecting the yield to a large extend, possibly increasing the average fruit weight, apparently without negative long term effects.
Keywords: Deficit irrigation; RDI; PRD; Alternate bearing; Fruit set; Fruit drop; Thailand

Helen Coulthard, Jackie Blissett, Fruit and vegetable consumption in children and their mothers. Moderating effects of child sensory sensitivity, Appetite, Volume 52, Issue 2, April 2009, Pages 410-415, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.11.015.
(http://www.sciencedirect.com/science/article/B6WB2-4V34D2B-1/2/35a0550727689bb96b0e054e3331ebb1)
Abstract:
A cross-sectional study was carried out to ascertain the relative contribution of food neophobia and taste sensitivity to the amount of fruit and vegetables consumed in a typical day by 73, 2-5-year-old children attending nurseries in the South Birmingham area, UK. Sensory processing, parental control, child food neophobia and fruit and vegetable (FV) consumption of both mothers and children were measured. Parental and child FV consumption in the sample were positively associated ($p < 0.001$). Moderated regression analyses showed that taste/smell sensitivity, but not food neophobia or tactile sensitivity, moderated the relationship between maternal and child FV

consumption. In particular, children who were sensitive to taste/smell stimuli ate fewer fruit and vegetables, regardless of their mothers FV consumption. This finding implies that those children, who are sensitive to taste/smell stimuli, may be less likely to model maternal FV consumption. For these children, a more gradual route to encouraging acceptance, with attention to small sensory changes in foods, may be necessary to increase FV consumption.
Keywords: Fruit and vegetable consumption; Food neophobia; Sensory sensitivity; Parental control

Julie E. Flood-Obbagy, Barbara J. Rolls, The effect of fruit in different forms on energy intake and satiety at a meal, Appetite, Volume 52, Issue 2, April 2009, Pages 416-422, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.12.001.
(http://www.sciencedirect.com/science/article/B6WB2-4V34D2B-2/2/47494468753c2dbdf2b8cf84d805d153)
Abstract:
Consuming whole fruit reduces ratings of satiety more than fruit juice, but little is known about the effects of different forms of fruit on subsequent energy intake. This study tested how consuming preloads of apples in different forms prior to a meal (apple, applesauce, and apple juice with and without added fiber) influences satiety and energy intake at meal. Preloads were matched for weight, energy content, energy density, and ingestion rate. Once a week for 5 weeks, 58 adults consumed one of four preloads (266 g; 125 kcal [523 kJ]), or no preload (control), followed by a test meal consumed ad libitum 15 min later. Results showed that eating apple reduced lunch energy intake (preload + test meal) by 15% (187 +/- 36 kcal [782 +/- 151 kJ]) compared to control ($p < 0.0001$) and decreased energy intake compared to applesauce and both juices. Fullness ratings differed significantly after preload consumption (apple > applesauce > both juices > control). Overall, whole apple increased satiety more than applesauce or apple juice. Adding naturally occurring levels of fiber to juice did not enhance satiety. These results suggest that solid fruit affects satiety more than pureed fruit or juice, and that eating fruit at the start of a meal can reduce energy intake.
Keywords: Fruit; Juice; Energy intake; Satiety; Form of food; Energy density

Georgianna Tuuri, Michael Zanovec, Linda Silverman, James Geaghan, Melinda Solmon, Denise Holston, Annrose Guarino, Heli Roy, Ellen Murphy, 'Smart Bodies' school wellness program increased children's knowledge of healthy nutrition practices and self-efficacy to consume fruit and vegetables, Appetite, Volume 52, Issue 2, April 2009, Pages 445-451, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.12.007.
(http://www.sciencedirect.com/science/article/B6WB2-4V70R5P-5/2/9e2d4989145857335335240bc4f7f8c6)
Abstract:
Diets rich in fruit and vegetables are important for long-term health yet children frequently do not like these foods. The 'Smart Bodies' school wellness program sought to increase children's knowledge of healthy nutritional practices, improve psychosocial variables associated with eating fruit and vegetables, and develop preferences for these foods. A randomized controlled intervention trial was conducted in 14 low-income, urban, public elementary schools (seven pairs). Data from 278 fourth and 282 fifth graders (234 boys, 326 girls; 82% Black, 10% White, 1% Hispanic, 5% Asian, 2% Other) were examined using multi-level modeling. The 12-week intervention program included participation in an interactive wellness exhibit and a classroom curriculum that emphasized consumption of fruit and vegetables. After the intervention, children that participated in the 'Smart Bodies' program had greater nutrition knowledge and expressed more confidence that they could eat fruit instead of a favorite dessert, drink fruit juice and consume the recommended number of fruits and vegetables servings each day. Preferences for fruit and vegetables did not change as a result of participating in the program. These findings demonstrate

that the 'Smart Bodies' school-based wellness intervention positively impacted children's nutrition knowledge and psychosocial variables associated with consuming fruit and vegetables.
Keywords: Children; School wellness; Nutrition knowledge; Self-efficacy; Fruit; Vegetables; Multi-level modeling; Factor analysis; Randomized controlled trial

Xin-Geng Wang, Marshall W. Johnson, Kent M. Daane, Victoria Y. Yokoyama, Larger olive fruit size reduces the efficiency of Psyttalia concolor, as a parasitoid of the olive fruit fly, Biological Control, Volume 49, Issue 1, April 2009, Pages 45-51, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2009.01.004.
(http://www.sciencedirect.com/science/article/B6WBP-4VDS8F6-3/2/98dbdfef41797e9cb3c293e1658e4339)
Abstract:
The larval parasitoid, Psyttalia concolor (Szepligeti), has been released for biological control of the olive fruit fly, Bactrocera oleae (Rossi), in California. The effect of olive (Olea europaea L.) fruit size on parasitism efficiency was quantified within one cultivar (Sevillano) and across four different sized cultivars (in order of decreasing size: Sevillano, Ascolano, Manzanillo, and Mission). Parasitism was examined under two different host distributions: (a) variable distribution in which host density increased with fruit size; and (b) uniform distribution in which host density was similar across all fruit sizes. Regardless of host distribution and cultivar, parasitism by P. concolor was consistently higher on smaller fruit. Field cage studies also showed that olive fruit fly parasitism by P. concolor was lower within fruit of the largest olive cultivar (Sevillano) compared to fruit of the smallest cultivar (Mission). Results suggest larval B. oleae were protected in large fruit due to the relatively short ovipositor of P. concolor. By rearing P. concolor on the Mediterranean fruit fly, Ceratitis capitata (Wiedemann), adult females had a larger body size and ovipositor length than when female wasps were reared on B. oleae. In turn, P. concolor females with longer ovipositors had higher levels of parasitism in similar sized olive fruit. We discuss the potential implications of these findings for biological control of B. oleae.
Keywords: Biological control; Body size; Crop domestication; Enemy-free space; Structural refuge

Michal Mazor, Competitiveness of fertilizers with proteinaceous baits applied in Mediterranean fruit fly, Ceratitis capitata Wied. (Diptera: Tephritidae) control, Crop Protection, Volume 28, Issue 4, April 2009, Pages 314-318, ISSN 0261-2194, DOI: 10.1016/j.cropro.2008.11.010.
(http://www.sciencedirect.com/science/article/B6T5T-4V57XTP-1/2/37db725eb10946c3b5c4386ee4164474)
Abstract:
The use of protein-based baits applied with insecticide or within several varieties of traps is still a widespread tool in fruit flies control. Fruit flies' proteinaceous baits, agricultural supplements and animal waste just as any decomposing biological matter share a common feature of production and emitting gaseous ammonia. This process is highly influenced by biotic and abiotic factors affecting the instability of ammonia release rate. Several common fertilizers were as attractive as several common commercial fruit fly baits to Mediterranean fruit fly females. Chicken litter served also as nutritional source of protein decreasing females' eagerness to baits. The potential of ammonia-emitting sources to interfere with fruit fly baits during control is discussed. The implications of using fertilizers during control procedure should be taken into account.
Keywords: Mediterranean fruit fly; Ceratitis capitata; Ammonia-emitting substances; Fertilizers; Protein-based baits; Control

Jian-ye Chen, Li-hong He, Yue-ming Jiang, Jian-fei Kuang, Chun-bin Lu, Daryl C. Joyce, Andrew Macnish, Ya-Xuan He, Wang-jin Lu, Expression of PAL and HSPs in fresh-cut banana fruit, Environmental and Experimental Botany, Volume 66, Issue 1, April 2009, Pages 31-37, ISSN 0098-8472, DOI: 10.1016/j.envexpbot.2008.12.019.

(http://www.sciencedirect.com/science/article/B6T66-4VB5K2G-2/2/247e4c436e9f30454e8f25a3e14bccdb)
Abstract:
Wounding of plants is a widespread stress in nature. Physical damage frequently occurs during harvesting, handling and marketing of fresh produce. Phenylalanine ammonia-lyase (PAL) is a key enzyme involved in plant wound related phenylpropanoid metabolism while heat shock proteins (HSPs) are involved in abiotic, including wounding, and biotic stress responses in plants. However, little is known about postharvest expression at gene and protein levels of PAL and HSPs in wounding (fresh-cut) fruits. In the present study, expression patterns of PAL and HSPs in fresh-cut and intact banana fruit pulp were characterized by Northern and Western blot analyses. Cuting enhanced Ma-PAL2 mRNA accumulation, new PAL protein synthesis, and PAL activity; thereby resulting in accumulation of total phenolics. HSP70 protein and Ma-HSP70-2 transcript were constitutively expressed and were not affected by cutting. However, Ma-HSP70-1 transcript levels increased in fresh-cut pulp tissue at 2-18 h after cutting. Ma-sHSP-1-CI, Ma-sHSP-3-CII, Ma-HSP90, and Ma-HSP101 transcripts also accumulated in fresh-cut tissues at 2-18 h after cuting, but Ma-sHSP-2-CI did not accumulate. Accumulation of sHSP (HSP17.6), HSP90 and HSP101 proteins exhibited the same pattern of expression as their mRNA. There was no evidence of a possible suppressive effect of HSPs synthesis on PAL protein accumulation. Thus, PAL, sHSP, HSP90 and HSP101 were regulated by cutting both at translational and transcriptional levels while HSP70 (Ma-HSP70-1) was regulated by cutting only at transcription level.
Keywords: Banana; Fruit; Phenylalanine ammonia-lyase; Heat shock proteins; Fresh-cut

M. Graca Dias, M. Filomena G.F.C. Camoes, Luisa Oliveira, Carotenoids in traditional Portuguese fruits and vegetables, Food Chemistry, Volume 113, Issue 3, EuroFIR Special Issue: The role of food composition data in improving quality, healthiness and safety of European diets, 1 April 2009, Pages 808-815, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.08.002.
(http://www.sciencedirect.com/science/article/B6T6R-4T5TPSB-C/2/cad2eab4c89d15c04590aede9de4b013)
Abstract:
Carotenoids, [alpha]-carotene, [beta]-carotene, [beta]-cryptoxanthin, lycopene, lutein and zeaxanthin, were determined in 10 varieties of five fruit species (orange, pear, peach, apple and cherry) and five varieties of four species of vegetables (Portuguese coles, turnip greens, purslane, leaf beet and beetroot leaves) cultivated in Portugal and country traditional, the fruits being of protected designation of origin or of protected geographical indication. The determination was done by high performance liquid chromatography, using two metal free reverse phase columns, an organic mobile phase based on acetonitrile, methanol and dichloromethane and a UV-vis photodiode array detector. Identification was done by retention time and spectral analysis and quantification was based on peak area at 450 nm by external calibration. The analysed leafy vegetables are a very good source of lutein (0.52-7.2 mg/100 g) and [beta]-carotene (0.46-6.4 mg/100 g) while the analysed fruits have a considerably lower content of carotenoids (lutein, 0.0032-0.16 mg/100 g and [beta]-carotene, 0.010-0.17 mg/100 g) and a complex and variable qualitative and quantitative carotenoid composition. Most estimated relative measurement expanded uncertainties were between 0.10 and 0.31. Results indicate that the carotenoid content of the analysed items could vary with species, varieties, geographical place of production (region, site) and time of harvest, and should be addressed in the eventual production of data for food composition data bases.
Keywords: Carotenoids; Fruits; Vegetables; Natural variability; HPLC; PDO/PGI; Traditional

Zorka Knezevic, Maja Serdar, Screening of fresh fruit and vegetables for pesticide residues on Croatian market, Food Control, Volume 20, Issue 4, April 2009, Pages 419-422, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2008.07.014.

(http://www.sciencedirect.com/science/article/B6T6S-4T3M66G-1/2/3d4c6e8f88033c2784602f6fe5793db7)
Abstract:
The aim of this study was to investigate pesticide residues in market foods in Croatia. A total of 240 samples of fresh fruit and vegetables from import and domestic production were analyzed. Pesticide resides were determined by gas chromatography with mass selective detector (GC-MSD). Sample extract was cleaned up using gel permeation chromatography (GPC). In 66.7% of the samples no residues were found, 25.8% of samples contained pesticide residues at or below MRL, and 7.5% of samples contained pesticide residues above MRL. Most frequently found pesticides were imazalil (found in 35 samples) and chlorpyrifos (found in 24 samples). The findings of this study pointed to the following recommendations: the need for a monitoring program for pesticide residues in food crops, especially imported food crops.
Keywords: Pesticides; Fruit; Vegetables

K. Nagendra Prasad, En Yang, Chun Yi, Mouming Zhao, Yueming Jiang, Effects of high pressure extraction on the extraction yield, total phenolic content and antioxidant activity of longan fruit pericarp, Innovative Food Science & Emerging Technologies, Volume 10, Issue 2, April 2009, Pages 155-159, ISSN 1466-8564, DOI: 10.1016/j.ifset.2008.11.007.
(http://www.sciencedirect.com/science/article/B6W6D-4V17CRW-2/2/2c56ba4b1ff3188a8c2b8cda6ea0e847)
Abstract:
High pressure extraction (HPE) was carried out to extract phenolic compounds from longan fruit pericarp. The influence of different solvents, solvent concentration (25-100%, v/v), solid to liquid ratio (1:25-1:100, w/v) were individually determined using these optimum extraction conditions. HPE was carried out at various pressures (200-500 MPa), durations (2.5-30 min) and temperatures (30-70 [degree sign]C). The extraction yield, total phenolic contents and scavenging activities of superoxide anion radical and 1,1-dipheny l-2-picrylhydrazyl (DPPH) radical of HPE extract were examined and then compared with those of the conventional extraction (CE). The application of HPE obtained a higher extraction yield and required a less extraction time when compared to CE. Furthermore, the total phenolic contents and the antioxidant activities of HPE extract were higher than CE extract. This study indicated that this new technology can benefit the food and pharmaceutical industries.Industrial relevance
This study focused on the evaluations of the extraction yield, total phenolic content and antioxidant activity of longan fruit pericarp by high pressure treatment. The high pressure extraction technology provided a better way of utilizing longan fruit pericarp as a readily accessible source of natural antioxidants in food and pharmaceutical industries.
Keywords: Antioxidant; Extraction yield; High pressure; Longan fruit; Phenolics

Freerk Molleman, Jimin Ding, James R. Carey, Jane-Ling Wang, Nutrients in fruit increase fertility in wild-caught females of large and long-lived Euphaedra species (Lepidoptera, Nymphalidae), Journal of Insect Physiology, Volume 55, Issue 4, April 2009, Pages 375-383, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2009.01.004.
(http://www.sciencedirect.com/science/article/B6T3F-4VGVH47-3/2/92723e65890e2a08f516d7b9976e441c)
Abstract:
Fruit-feeding butterflies can experience a more nutrient rich adult diet than nectar-feeding species, and can be expected to use these nutrients for egg production. Here we compare life span, and reproduction parameters of wild-caught females of large and long-lived species on either a sucrose or a mashed banana diet. With small sample sizes per species, but rich longitudinal data for each individual, we examined the longitudinal reproduction pattern, egg size and hatchability of these butterflies in captivity. Diet significantly affected mortality in captivity in a time-dependent

manner. On average, we found that butterflies fed mashed banana laid 1.855 times more eggs than those fed sugar. They laid significantly more eggs when they laid and conserved egg size with age while butterflies fed sucrose showed significantly declining egg sizes. Egg hatchability was not significantly affected by diet. Long pre-oviposition periods, significantly smaller first eggs, and absence of age at capture effects on intensity of reproduction indicate low reproduction rates in the field that are due to low food availability. With our small sample sizes, we did not detect significant differences between the species in their response to the diet treatments.
Keywords: Aging; Egg size; Egg hatchability; Reproduction; Wing-wear

Keiko Ozaki, Akio Uchida, Tomoko Takabe, Fumi Shinagawa, Yoshito Tanaka, Teruhiro Takabe, Takahisa Hayashi, Tasuku Hattori, Ashwani K. Rai, Tetsuko Takabe, Enrichment of sugar content in melon fruits by hydrogen peroxide treatment, Journal of Plant Physiology, Volume 166, Issue 6, 1 April 2009, Pages 569-578, ISSN 0176-1617, DOI: 10.1016/j.jplph.2008.08.007.
(http://www.sciencedirect.com/science/article/B7GJ7-4TMHKPD-3/2/5b6c7dcdc02f0af13170ba2ea6a4d8b4)
Abstract: Summary
Since sweetness is one of the most important qualities of many fruits, and since sugars are translocated from leaves to fruits, the present study investigates photosynthetic activity, activity of sugar metabolizing enzymes, sugar content in leaves and fruits and endogenous levels of hydrogen peroxide in leaves of melon plants treated with various dilutions of hydrogen peroxide, a nonspecific signaling molecule in abiotic stress. For this purpose, 4-month-old melon plants were treated with various concentrations (<50 mM) of hydrogen peroxide by applying 300 mL per day to the soil of potted plants. The treatments resulted in increased fructose, glucose, sucrose and starch in the leaves and fruits. The most effective concentration of hydrogen peroxide was 20 mM. During the day, soluble sugars in leaves were highest at 12:00 h and starch at 15:00 h. Furthermore, the peroxide treatment increased the photosynthetic activity and the activities of chloroplastic and cytosolic fructose-1,6-bisphosphatase, sucrose phosphate synthase and invertases. Thus, our data show that exogenous hydrogen peroxide, applied to the soil, can increase the soluble sugar content of melon fruits.
Keywords: Fructose-1, 6-bisphosphatase; Hydrogen peroxide; Soluble sugar content; Starch content; Sucrose phosphate synthase

Jayna M. Dave, Alexandra E. Evans, Ruth P. Saunders, Ken W. Watkins, Karin A. Pfeiffer, Associations among Food Insecurity, Acculturation, Demographic Factors, and Fruit and Vegetable Intake at Home in Hispanic Children, Journal of the American Dietetic Association, Volume 109, Issue 4, April 2009, Pages 697-701, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.12.017.
(http://www.sciencedirect.com/science/article/B758G-4VXMFT2-P/2/b916deee6d9fcf64824309c93be2bc25)
Abstract:
The purpose of this cross-sectional pilot study was to examine associations between food insecurity, acculturation, demographic factors, and children's fruit and vegetable intake among a sample of Hispanic children ages 5 to 12 years. A convenience sample of 184 parents of low socioeconomic status completed one-time, self-administered questionnaires assessing demographic information, acculturation, and food insecurity in the spring of 2006. In addition, children's fruit and vegetable intake at home was measured using a validated seven-item index. Parents were recruited through local elementary schools in San Antonio, TX. Pearson and Spearman correlations were used to examine the associations between the variables. t tests were used to explore the differences in means of children's fruit and vegetable intake at home for acculturation and food insecurity levels. Statistical significance was set at $P<0.05$. Significant correlations were found between demographic variables, acculturation, food insecurity, and

children's fruit and vegetable intake at home. The overall mean fruit and vegetable intake at home was 1.04+/-0.63 (mean+/-standard deviation) servings per day. Higher rates of acculturation and higher rates of food insecurity were associated with lower fruit and vegetable intake at home. The findings reported in this study suggest a need for culturally tailored interventions targeting Hispanic children because fruit and vegetable intake at home among Hispanic children was low, regardless of the level of acculturation or food insecurity.

Geoffrey C. Kite, Nigel C. Veitch, Martha E. Boalch, Gwilym P. Lewis, Christine J. Leon, Monique S.J. Simmonds, Flavonol tetraglycosides from fruits of Styphnolobium japonicum (Leguminosae) and the authentication of Fructus Sophorae and Flos Sophorae, Phytochemistry, Volume 70, Issue 6, April 2009, Pages 785-794, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2009.04.003.
(http://www.sciencedirect.com/science/article/B6TH7-4W9DNDN-1/2/8ec2c1cbdad9bd32d26e0cf62393593e)
Abstract:
The dried fruits and seeds of Styphnolobium japonicum (L.) Schott (syn. Sophora japonica L.) are used in traditional Chinese medicine and known as Fructus Sophorae or Huai Jiao. The major flavonoids in these fruits and seeds were studied by LC-MS and other spectroscopic techniques to aid the chemical authentication of Fructus Sophorae. Among the flavonoids were two previously unreported kaempferol glycosides: kaempferol 3-O-[beta]-glucopyranosyl(1 --> 2)-[beta]-galactopyranoside-7-O-[alpha]-rhamnopyranoside and kaempferol 3-O-[beta]-xylopyranosyl(1 --> 3)-[alpha]-rhamnopyranosyl(1 --> 6)[[beta]-glucopyranosyl(1 --> 2)]-[beta]-glucopyranoside, the structures of which were determined by NMR. Two further tetraglycosides were identified for the first time in S. japonicum as kaempferol 3-O-[beta]-glucopyranosyl(1 --> 2)[[alpha]-rhamnopyranosyl(1 --> 6)]-[beta]-glucopyranoside-7-O-[alpha]-rhamnopyranoside and kaempferol 3-O-[beta]-glucopyranosyl(1 --> 2)[[alpha]-rhamnopyranosyl(1 --> 6)]-[beta]-galactopyranoside-7-O-[alpha]-rhamnopyranoside; the latter was the main flavonoid in mature seeds. The chromatographic profiles of 27 recorded flavonoids were relatively consistent among fruits of similar ages collected from five trees of S. japonicum, and those of maturing unripe and ripe fruits were similar to a market sample of Fructus Sophorae, and thus provide useful markers for authentication of this herbal ingredient. The flower buds (Huai Mi) and flowers (Huai Hua) of S. japonicum (collectively Flos Sophorae) contained rutin as the main flavonoid and lacked the flavone glycosides that were present in flower buds and flowers of Sophora flavescens Ait., reported to be occasional substitutes for Flos Sophorae. The single major flavonoid in fruits of S. flavescens was determined as 3'-hydroxydaidzein.
Keywords: Styphnolobium japonicum; Sophora japonica; Sophora flavescens; Leguminosae; Fabaceae; Fructus Sophorae; Flos Sophorae; Flavonoids; Flavonol tetraglycosides; MS/MS analysis

Hernan G. Rosli, Pedro M. Civello, Gustavo A. Martinez, [alpha]-l-Arabinofuranosidase from strawberry fruit: Cloning of three cDNAs, characterization of their expression and analysis of enzymatic activity in cultivars with contrasting firmness, Plant Physiology and Biochemistry, Volume 47, Issue 4, April 2009, Pages 272-281, ISSN 0981-9428, DOI: 10.1016/j.plaphy.2008.12.009.
(http://www.sciencedirect.com/science/article/B6VRD-4V74XK5-1/2/7c78e35faae0275672b0bff1d9328e15)
Abstract:
Softening of fleshy fruits during ripening is associated to catabolism of cell wall components. In strawberry, pectin degradation, as well as loss of neutral sugars (mainly arabinose), increases during ripening, and probably contributes to fruit softening. In this work, we report the activity of [alpha]-l-arabinofuranosidase ([alpha]-l-arafase) and the expression of related genes in strawberry. Activity of [alpha]-l-arafase was measured during ripening of cultivars with contrasting firmness. An

important increment in the specific activity of [alpha]-l-arafase was detected during ripening in both cultivars. However, in the softest one (Toyonoka) the specific activities were higher than in the firmest (Camarosa). A combination of semi quantitative reverse transcriptase-PCR (RT-PCR) with degenerate primers and a screening of a cDNA library allowed the isolation and cloning of three cDNAs encoding putative [alpha]-l-arafases (FaAra1, FaAra2 and FaAra3). The deduced proteins revealed that FaAras belong to the glycoside hydrolase family 51 and not to glycoside hydrolase family 3. Expression studies, carried out by means of Northern-blot and semi quantitative RT-PCR, revealed that FaAras were predominantly expressed in fruit tissue and detected over the entire ripening process. Due to similarity of FaAras sequences, Northern-blot analysis probably grouped the expression of the three genes. The expression was high at small green stage, decreased at white stage and increased thereafter. The increment of the expression from white to 50% red stage was more evident in the softest cultivar (Toyonoka). Semi quantitative RT-PCR analysis allowed determining the expression of individual FaAras. The expression of the three genes was detected in all developmental and ripening stages. However, differences in expression levels could be detected between cultivars. In the softest cultivar, the expression of the three FaAras was higher at 50% and 75% red stages, and in the case of FaAra3 a higher expression was found also at 100% red stage. Overall, specific activity of [alpha]-l-arafase was higher in the softest cultivar; such activity reflects the expression of at least three putative FaAra genes.
Keywords: Fragaria x ananassa; Ripening; Softening; Cell wall; Pectin; Hemicelluloses; Arabinofuranosidase

Hironori Katoh, Shunji Suzuki, Toshiyuki Saitoh, Tsutomu Takayanagi, Cloning and characterization of VIGG, a novel virus-induced grapevine protein, correlated with fruit quality, Plant Physiology and Biochemistry, Volume 47, Issue 4, April 2009, Pages 291-299, ISSN 0981-9428, DOI: 10.1016/j.plaphy.2008.12.003.
(http://www.sciencedirect.com/science/article/B6VRD-4V59VVP-3/2/c7d3cc0b4a2a671cd12eefba8587c715)
Abstract:
We report here the identification and characterization of VIGG, a novel virus-induced grapevine protein. Analysis of VIGG expression in grapevine demonstrated that VIGG was constitutively expressed in leaves and stems in virus-infected grapevine, and that VIGG expression was induced by grapevine virus A (GVA) infection, but not by infection with other viruses. The virus-induced expression profile of VIGG was supported by the finding that virus-free meristem cultures prepared from virus-infected grapevines did not express VIGG. An experiment using GFP-VIGG fusion protein demonstrated that VIGG might be localized in or around the endoplasmic reticulum (ER). Treatment of grapevine cells with ER stress inducers resulted in the induction of VIGG expression. Berries from VIGG-expressing grapevines had higher organic acid and phenolic contents than those from control grapevines that did not express VIGG. Interestingly, fruit composition of a grapevine that was simultaneously infected by GVA and grapevine virus B (GVB), which did not express VIGG, was significantly different from that of GVA-infected grapevines expressing VIGG, suggesting that the effector of fruit composition alteration might be VIGG expression, but not GVA infection. Taken together, VIGG expression might suppress the decrease in organic acid content and increase phenol content in berries. Further investigation of the biological function of VIGG is expected to provide new information on the fruit quality of grapevines.
Keywords: VIGG; Grapevine virus A; Endoplasmic reticulum stress; Differential display; Fruit quality

Ahmad S. Khan, Zora Singh, 1-MCP application suppresses ethylene biosynthesis and retards fruit softening during cold storage of `Tegan Blue' Japanese plum, Plant Science, Volume 176, Issue 4, April 2009, Pages 539-544, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2009.01.012.

(http://www.sciencedirect.com/science/article/B6TBH-4VGWMFS-1/2/0192bcfd22374dfc3fb5b0f5a181087f)
Abstract:
Plum is a highly perishable fruit and postharvest fruit softening limits its cold storage life. To investigate the role of 1-methylcyclopropene (1-MCP) in ethylene biosynthesis and fruit softening during cold storage, Japanese plum (Prunus salicina Lindl. cv. Tegan Blue) as harvested at commercial fruit maturity and exposed to 1-MCP (0.0, 0.5, 1.0 and 2.0 [mu]L L-1) at 20 +/- 1 [degree sign]C for 24 h. Following 1-MCP treatments, fruit were stored at 0 +/- 1 [degree sign]C and 90 +/- 5% RH for 0, 3 and 6 weeks. 1-MCP treatments significantly reduced endogenous ethylene production in plum fruit after 3 and 6 weeks of cold storage when compared to untreated fruit. Fruit treated with 1-MCP (1.0 and 2.0 [mu]L L-1) were more firm (31% and 33.5% respectively) when compared untreated fruit. Activities of 1-aminocyclopropane-1-carboxylic acid synthase (ACS) and 1-aminocyclopropane-1-carboxylic acid oxidase (ACO) enzymes during cold storage also decreased in 1-MCP-treated fruit skin and pulp tissues and 1-aminocyclopropane-1-carboxylic acid (ACC) content was not detected in the skin and pulp tissues of fruit treated with 1.0 and 2.0 [mu]L L-1 1-MCP. Activities of exo-polygalacturonase (exo-PG) and endo-polygalacturonase (endo-PG) enzymes in the fruit skin tissues were not affected by 1-MCP whereas activities of exo-PG and endo-PG enzymes in fruit pulp tissues, and activities of pectin esterase (PE) and endo-1,4-[beta]-d-glucanase (EGase) enzymes in both fruit skin and pulp tissues were significantly reduced during cold storage. Activities of ethylene biosynthesis and fruit softening enzymes were concentration dependent, and both were reduced with increased concentrations of 1-MCP. In conclusion, 1-MCP application extends cold storage life of `Tegan Blue' plum by suppressing ethylene biosynthesis and reducing fruit softening.
Keywords: ACO; ACS; EGase; PG; PE; Prunus salicina Lindl

Stefano Gualanduzzi, Elena Baraldi, Ilaria Braschi, Francesco Carnevali, Carlo Emanuele Gessa, Aurelio De Santis, Respiration, hydrogen peroxide levels and antioxidant enzyme activities during cold storage of zucchini squash fruit, Postharvest Biology and Technology, Volume 52, Issue 1, April 2009, Pages 16-23, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.09.010.
(http://www.sciencedirect.com/science/article/B6TBJ-4VF0XTH-2/2/975412870fd8058a16bddbe1467ebd7b)
Abstract:
Steady-state levels of hydrogen peroxide and activities of catalase and peroxidase were measured in the peel and pulp of zucchini squash (Cucurbita pepo L., cv., Giambo) during storage at 10 [degree sign]C or 0 [degree sign]C for two weeks. No visible damage occurred during this storage time; epidermal brown pits become visible later, at day 20 in fruit stored at 10 [degree sign]C and at day 15 in those stored at 0 [degree sign]C. In order to analyze the early effects of the chilling-induced oxidative stress during zucchini storage, rates of succinate oxidation, alternative oxidase activity, membrane fluidity and phospholipid composition were also measured in mitochondria isolated from the zucchini pulp. A decrease in hydrogen peroxide levels, an increase in the activity of detoxifying enzymes, a recovery of chilling-induced mitochondrial membrane fluidity and an increase in alternative oxidase (AOX) activity were detected in the early stages of zucchini storage at 10 [degree sign]C. The peroxidase and the AOX activities of the pulp of zucchini stored at 0 [degree sign]C were also found to increase but to a lesser extent and later during storage, suggesting that these fruit can also activate these ROS regulatory systems, possibly preventing the occurrence of early visible damage in the peel but not the occurrence of cold stress.
Keywords: Zucchini squash; Cold storage; Membrane fluidity; Reactive oxygen species; Scavenging enzymes; Alternative oxidase

Peng Jin, Yonghua Zheng, Shuangshuang Tang, Huaijin Rui, Chien Y. Wang, A combination of hot air and methyl jasmonate vapor treatment alleviates chilling injury of peach fruit, Postharvest

Biology and Technology, Volume 52, Issue 1, April 2009, Pages 24-29, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.09.011.
(http://www.sciencedirect.com/science/article/B6TBJ-4VF0XTH-1/2/6897a18bbefb5fc9226d61c43af7792f)
Abstract:
Peaches (Prunus persica Batsch cv Baifeng) were harvested at the firm-mature stage and treated with various combinations of methyl jasmonate (MJ) and hot air (HA). Severity of internal browning and flesh mealiness, firmness, extractable juice, total soluble solids (TSS), total acid, vitamin C and total phenolic contents were measured after 3 and 5 weeks of storage at 0 [degree sign]C plus 3 d at 20 [degree sign]C for shelf-life. The activities of phenylalanine ammonia-lyase (PAL, EC 4.3.1.5), superoxide dismutase (SOD, EC 1.15.1.1), polyphenol oxidase (PPO, EC 1.10.3.1), peroxidase (POD, EC 1.11.1.7), pectin-methylesterase (PME, EC 3.1.1.11) and polygalacturonase (PG, EC 3.2.1.15) were analyzed during the cold storage period. The results showed that fruit treated with 1 [mu]mol L-1 MJ vapor at 38 [degree sign]C for 12 h (HMJ), and heat treatment at 38 [degree sign]C for 12 h and then treated with 1 [mu]mol L-1 MJ vapor at 20 [degree sign]C for 24 h (HA + MJ) had the highest quality and lowest percent of chilling injury symptoms. HA treatment alone significantly inhibited internal browning, but caused more severe flesh mealiness than other treatments. This side effect was counteracted by MJ. The percent of extractable juice in combined treatments was higher than that in the control, however, no significant effect was found on firmness. TSS was 23% and 25.3% higher and total acid was 59.4% and 62.5% higher in treatments of HMJ and HA + MJ, respectively, than those in control fruit after storage for 5 weeks. Vitamin C and total phenolic contents were also maintained at higher levels in combined treatments. In addition, the combined treatments resulted in higher activities of PAL, SOD and PG, and lower activities of PPO, and POD than the control. The combination of HA and MJ vapor treatment might be a useful technique to alleviate chilling injury and maintain peach fruit quality during cold storage.
Keywords: Peach fruit; Methyl jasmonate; Hot air; Chilling injury

Aide Wang, Dongmei Tan, Miho Tatsuki, Atsushi Kasai, Tianzhong Li, Hiroshi Saito, Takeo Harada, Molecular mechanism of distinct ripening profiles in `Fuji' apple fruit and its early maturing sports, Postharvest Biology and Technology, Volume 52, Issue 1, April 2009, Pages 38-43, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.09.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4V936KP-1/2/9d471c0ec883708ed4db37b01d622da0)
Abstract:
Apple fruit (Malus x domestica Borkh.) `Hirosaki Fuji', a sport of `Fuji' that matures about 40 d earlier, produced almost the same amount of ethylene as `Fuji' during ripening, but rapidly lost flesh firmness, unlike `Fuji', which has a long shelf-life. Expression profiling of genes encoding ethylene biosynthesis enzymes (MdACS1, MdACO1), ethylene receptor proteins (MdETR1, MdERS1, MdERS2) and a cell wall degradation enzyme (MdPG1) in `Hirosaki Fuji' fruit gave significantly different results from those of `Fuji'. MdERS1 was more abundant during ripening in `Fuji'. Profiles of `Fuji' fruit from two other localities with different ambient temperatures revealed that the more southerly the trees were grown, the more strongly they expressed the ripening-related genes. The gene for a small heat shock protein (MdHSP17.5) homologous to a strawberry fruit ripening-related HSP was expressed in `Hirosaki Fuji' from before harvest on the tree, but was expressed in `Fuji' only after harvest. The molecular mechanisms explaining these distinct ripening responses are discussed.
Keywords: Apple; Ripening; Sport cultivar; Ethylene receptor; Ambient temperature; Small heat shock protein

Sun Tay Choi, Donald J. Huber, Differential sorption of 1-methylcyclopropene to fruit and vegetable tissues, storage and cell wall polysaccharides, oils, and lignins, Postharvest Biology and Technology, Volume 52, Issue 1, April 2009, Pages 62-70, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.11.002.
(http://www.sciencedirect.com/science/article/B6TBJ-4V87DKR-1/2/3fd6d6569707a53a89891909ca506e34)
Abstract:
This study was designed to determine the nature and multiplicity of non-specific 1-methylcyclopropene (1-MCP) sorption sites in fruit and vegetable tissues. 1-MCP sorption rates and capacities were measured for plant tissues, cell wall polysaccharides, starch, oils, and lignins sealed in 130 mL jars and provided with 18.6 [mu]L L-1 gaseous 1-MCP (SmartFresh(TM) Technology). Significant variation was noted in the sorption properties of the different plant tissues, with both sorption rates and capacities being notably higher for external/exocarp tissues compared with internal tissues. Among the tissues examined, avocado exocarp, mesocarp and seed coat, plantain exocarp, and asparagus stem tissues exhibited the highest sorption rates and capacities. Sorption was markedly reduced in response to tissue drying but recovered to different extents in response to rehydration. Avocado mesocarp treated to deplete oil content showed reduced 1-MCP sorption rate and capacity whereas the exocarp was negligibly affected, indicating that multiple cellular components contribute to non-specific sorption. Starch and the cell wall polysaccharides cellulose, polygalacturonic acid and xyloglucan showed low sorption properties and were unaffected by polymer hydration. In contrast, high methoxy pectic polymers and lignins were strong molecular sinks for 1-MCP sorption. Sorption to pectin was dependent on the esterified methyl moiety, as de-esterification reduced sorption rate and capacity to levels comparable with polygalacturonic acid. Plantain-exocarp and spruce lignins, and avocado and safflower oils exhibited the highest initial sorption rates. For oils, rapid initial sorption was followed by establishment of stable equilibrium between gaseous and partitioned 1-MCP. Compared with oils, the binding capacity of lignins was markedly higher and irreversible. The data collectively demonstrate that 1-MCP sorbs to several cellular targets and that hydrophobic components are preferred sorption sinks. The highly disparate 1-MCP sorption rates and capacities of the different fruit and vegetable tissues examined are consistent with compositional differences in lignin, methylated pectin, and oil levels.
Keywords: 1-Methylcyclopropene; Sorption; Binding; Avocado; Plantain; Asparagus; Lignin; Pectin; Esterification; Oil

Fengde Wang, Guihua Feng, Kaoshan Chen, Defense responses of harvested tomato fruit to burdock fructooligosaccharide, a novel potential elicitor, Postharvest Biology and Technology, Volume 52, Issue 1, April 2009, Pages 110-116, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.09.002.
(http://www.sciencedirect.com/science/article/B6TBJ-4V5GCSY-2/2/61ccf40a9642cec440b191f9baed61d0)
Abstract:
Burdock fructooligosaccharide (BFO) can induce resistance against a number of plant diseases. However, its controlling effects on postharvest diseases still remain unclear. The effects of BFO on the control of postharvest diseases in tomato fruit and the underlying mechanisms were investigated with chitosan oligosaccharide (CO) as a positive control. Both BFO and CO could effectively inhibit natural postharvest diseases and reduce incidence of disease from inoculation with Botrytis cinerea in tomato fruit. BFO increased the mRNA level of genes encoding pathogenesis-related proteins (PRs), such as PR-1a, PR-2a (extracellular [beta]-1,3-glucanase), PR-2b (intracellular [beta]-1,3-glucanase), PR-3a (extracellular chitinase) and PR-3b (intracellular chitinase), and induced the mRNA accumulation of the phenylalanine ammonia lyase (PAL) gene in tomato fruit. Furthermore, it evoked the activity of peroxidases (POD) and enhanced the

biosynthesis of phenolic compounds, but did not affect the activity of polyphenol oxidase (PPO). These results suggest that controlling effects of BFO on both natural diseases and gray mould in tomato fruit might be attributed to systemic acquired resistance (SAR).
Keywords: Burdock fructooligosaccharide; Tomato fruit; Elicitor; Postharvest diseases control; Defense responses

H.A. Abdelgadir, S.D. Johnson, J. Van Staden, Effect of foliar application of plant growth regulators on flowering and fruit set in Jatropha curcas -- A potential oil seed crop for biodiesel, South African Journal of Botany, Volume 75, Issue 2, April 2009, Page 391, ISSN 0254-6299, DOI: 10.1016/j.sajb.2009.02.022.
(http://www.sciencedirect.com/science/article/B7XN9-4W0WFVR-G/2/4f4741eeb370fbd8306b11386ded6680)

S. Combrinck, T. Regnier, W.G. du Plooy, Use of Lippia scaberrima essential oil in postharvest management of subtropical fruits, South African Journal of Botany, Volume 75, Issue 2, April 2009, Page 396, ISSN 0254-6299, DOI: 10.1016/j.sajb.2009.02.036.
(http://www.sciencedirect.com/science/article/B7XN9-4W0WFVR-10/2/aca79c64b46f9ef25b0718cf9cc94028)

B.K. Tiwari, C.P. O'Donnell, P.J. Cullen, Effect of non thermal processing technologies on the anthocyanin content of fruit juices, Trends in Food Science & Technology, Volume 20, Issues 3-4, April 2009, Pages 137-145, ISSN 0924-2244, DOI: 10.1016/j.tifs.2009.01.058.
(http://www.sciencedirect.com/science/article/B6VHY-4VJBTNG-1/2/233262f33fcd0af1d39d27a7b95e6148)
Abstract:
Consumer demand for safe and nutritious fruit juices has led to the development of a number of non thermal food preservation techniques. Recent research has highlighted the importance of anthocyanins in human health and nutrition. In this paper the effects of non thermal preservation technologies including high hydrostatic pressure, pulsed electric field, ultrasound, irradiation and ozone on the stability of anthocyanins are reviewed. The proposed mechanisms for degradation of anthocyanins during non thermal processing are also discussed along with potential factors to enhance their stability during processing and storage.

Akihiro Kurosumi, Chizuru Sasaki, Yuya Yamashita, Yoshitoshi Nakamura, Utilization of various fruit juices as carbon source for production of bacterial cellulose by Acetobacter xylinum NBRC 13693, Carbohydrate Polymers, Volume 76, Issue 2, 17 March 2009, Pages 333-335, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2008.11.009.
(http://www.sciencedirect.com/science/article/B6TFD-4TYR06K-3/2/35420aadfbbc75003a7eb09f36110885)
Abstract:
The effective culture method to produce bacterial cellulose from fruit juices by Acetobacter xylinum NBRC 13693 was examined. Bacterial cellulose production from various fruit juices including orange, pineapple, apple, Japanese pear and grape were investigated, and the possibility of producing bacterial cellulose from those juices was suggested. The yields of the bacterial cellulose were increased by addition of the nitrogen source to the fruit juices. In addition, it was confirmed that the orange and Japanese pear juices were suitable medium for a bacterial cellulose production. The bacterial cellulose was produced from the various component of orange such as a peel and squeeze residue, and the bacterial cellulose of 0.65 g (dry weight) was produced from the orange of 100 g, and the solid residue from the orange was about 17.2 g.
Keywords: Bacterial cellulose; Acetobacter xylinum; Agricultural waste; Fruit juice; Carbon source; Food waste

Jasenka Piljac-Zegarac, Lidija Valek, Sanja Martinez, Ana Belscak, Fluctuations in the phenolic content and antioxidant capacity of dark fruit juices in refrigerated storage, Food Chemistry, Volume 113, Issue 2, 15 March 2009, Pages 394-400, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.07.048.
(http://www.sciencedirect.com/science/article/B6T6R-4T2S8WH-F/2/34f0fc0f9fcd4983914bed0066383b0b)
Abstract:
The changes in total phenol content and antioxidant capacity were monitored in six industrial dark fruit juices during 29-day refrigerated storage. The initial total phenol values ranged from 1302.1 mg/L GAE (strawberry) to 1919.8 mg/L GAE (black currant) with a mean of 1573.3 mg/L GAE. All juices exhibited fluctuations in TP values with a marked increase after 48 hours in refrigerated storage, and a greater overall TP content in 5/6 studied juices after 29 days. Antioxidant capacity was evaluated using the DPPH radical scavenging assay and cyclic voltammetry (CV) and expressed as Trolox equivalent antioxidant capacity (TEAC). Black currant juice exhibited the highest TEAC values according to both CV (2.42 mM Trolox) and the DPPH assay (5.68 mM Trolox), while cranberry juice antioxidants exhibited the greatest storage stability and the smallest antioxidant capacity decrease on day 29, 20% (CV) and 15% (DPPH assay). At the end of 29-day storage 5/6 juices exhibited a significant loss in antiradical activity and all 6 juices exhibited a significant loss in TEAC derived from CV measurements. Significant linear correlation was observed between the results of CV measurements and the DPPH antiradical activity ($r2 = 0.62$).
Keywords: Fruit juices; Refrigerated storage; Antioxidant capacity; Total Phenol content; DPPH; Cyclic voltammetry

Guorong Du, Mingjun Li, Fengwang Ma, Dong Liang, Antioxidant capacity and the relationship with polyphenol and Vitamin C in Actinidia fruits, Food Chemistry, Volume 113, Issue 2, 15 March 2009, Pages 557-562, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.08.025.
(http://www.sciencedirect.com/science/article/B6T6R-4T708F1-2/2/1ce0bbeee57df4a292fda41b031e76e7)
Abstract:
Fruit of eight Actinidia genotypes were evaluated for antioxidant potential by several assays (DPPH, ABTS, ORAC, FRAP, SASR and MCC) and tested for their polyphenol composition and vitamin C contents. The significance analysis demonstrated that the antioxidant capacity of Actinidia eriantha and Actinidia latifolia fruits were significantly higher than that of other genotypes, which was about 3.3-8.7-fold higher than the Actinidia deliciosa cv. Hayward assayed in ABTS, DPPH, ORAC and FRAP methods. The total polyphenols and vitamin C contents showed a great variety amongst Actinidia genotypes and highly correlation with the total antioxidant capacity. It is concluded that significant genotypic difference exists in the total antioxidant capacity of Actinidia fruits. The wild A. eriantha and A. latifolia species have significantly higher antioxidant capacity than the cultivars of A. chinensis and A. deliciosa. Both total polyphenols and vitamin C are major contributors to the total antioxidant capacity in Actinidia fruit.
Keywords: Kiwifruit; Polyphenol compounds; Vitamin C; Antioxidant capacity

Marina Radisic, Svetlana Grujic, Tatjana Vasiljevic, Mila Lausevic, Determination of selected pesticides in fruit juices by matrix solid-phase dispersion and liquid chromatography-tandem mass spectrometry, Food Chemistry, Volume 113, Issue 2, 15 March 2009, Pages 712-719, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.07.103.
(http://www.sciencedirect.com/science/article/B6T6R-4T5JJ25-3/2/35c953d5218ce29eece66d152d07857e)
Abstract:

A rapid and sensitive liquid chromatography-tandem mass spectrometry method has been developed for the analysis of acephate, monocrotophos, carbendazim, acetamiprid, dimethoate, simazine, carbofuran, atrazine, diuron, DNOC (4,6-dinitro-o-cresol), malathion and tebufenozide in fruit juices. Extracts were obtained by matrix solid-phase dispersion using diatomaceous earth as dispersant and dichloromethane as eluent. Significant matrix effects observed for most of the pesticides tested were eliminated using matrix-matched standards. The quantification of the analytes was carried out using the most sensitive transition. The confirmation of residues detected in real samples was performed by repeated injection and acquiring additional transitions to that used for quantification. Recoveries were in the range 71-118%. Repeatability of the method, expressed as the relative standard deviation, was in general between 5-15%. Low limits of detection (0.01-0.94 ng ml-1) and quantification (0.03-3.12 ng ml-1) were readily achieved with this method for all tested pesticides.
Keywords: Pesticide residues; Fruit juices; MSPD; LC-MS; LC-MS2

Eva Miedes, Ester P. Lorences, Xyloglucan endotransglucosylase/hydrolases (XTHs) during tomato fruit growth and ripening, Journal of Plant Physiology, Volume 166, Issue 5, 15 March 2009, Pages 489-498, ISSN 0176-1617, DOI: 10.1016/j.jplph.2008.07.003.
(http://www.sciencedirect.com/science/article/B7GJ7-4TDYNPK-2/2/46059145e13509d7db286fd2595b4e70)
Abstract: Summary
Depolymerization of cell wall xyloglucan has been proposed to be involved in tomato fruit softening, along with the xyloglucan modifying enzymes. Xyloglucan endotransglucosylase/hydrolases (XTHs: EC 2.4.1.207 and/or EC 3.2.1.151) have been proposed to have a dual role integrating newly secreted xyloglucan chains into an existing wall-bound xyloglucan, or restructuring the existing cell wall material by catalyzing transglucosylation between previously wall-bound xyloglucan molecules. Here, 10 tomato (Solanum lycopersicum) SlXTHs were studied and grouped into three phylogenetic groups to determine which members of each family were expressed during fruit growth and fruit ripening, and the ways in which the expression of different SlXTHs contributed to the total XET and XEH activities. Our results showed that all of the SlXTHs studied were expressed during fruit growth and ripening, and that the expression of all the SlXTHs in Group 1 was clearly related to fruit growth, as were SlXTH12 in Group 2 and SlXTH6 in Group 3-B. Only the expression of SlXTH5 and SlXTH8 from Group 3-A was clearly associated with fruit ripening, although all 10 of the different SlXTHs were expressed at the red ripe stage. Both total XET and XEH activities were higher during fruit growth, and decreased during fruit ripening. Ethylene production during tomato fruit growth was low and experienced a significant increase during fruit ripening, which was not correlated either with SlXTH expression or with XET and XEH activities. We suggest that the role of XTH during fruit development could be related to the maintenance of the structural integrity of the cell wall, and the decrease in XTHs expression, and the subsequent decrease in activity during ripening may contribute to fruit softening, with this process being regulated through different XTH genes.
Keywords: Depolymerization; Hemicelluloses; Structural integrity of cell wall; Transglucosylation and xyloglucan

Karukayil J. Meenakumari, Arnab Banerjee, Amitabh Krishna, Luteal cell steroidogenesis in relation to delayed embryonic development in the Indian short-nosed fruit bat, Cynopterus sphinx, Zoology, Volume 112, Issue 2, 15 March 2009, Pages 151-159, ISSN 0944-2006, DOI: 10.1016/j.zool.2008.04.007.
(http://www.sciencedirect.com/science/article/B7GJ0-4VGVWTK-1/2/eca3114d498430477e53c487cbba02ed)
Abstract:

The primary aim of this study was to determine the possible cause of slow or delayed embryonic development in Cynopterus sphinx by investigating morphological and steroidogenic changes in the corpus luteum (CL) and circulating hormone concentrations during two pregnancies of a year. This species showed delayed post-implantational embryonic development during gastrulation of the first pregnancy. Morphological features of the CL showed normal luteinization during both pregnancies. The CL did not change significantly in luteal cell size during the delay period of the first pregnancy as compared with the second pregnancy. The circulating progesterone and 17[beta]-estradiol concentrations were significantly lower during the period of delayed embryonic development as compared with the same stage of embryonic development during the second pregnancy. We also showed a marked decline in the activity of 3[beta]-hydroxysteroid dehydrogenase, P450 side chain cleavage enzyme, and steroidogenic acute regulatory peptide in the CL during the delay period. This may cause low circulating progesterone and estradiol synthesis and consequently delay embryonic development. What causes the decrease in steroidogenic factors in the CL during the period of delayed development in C. sphinx is under investigation.
Keywords: Chiroptera; Corpus luteum; Embryonic development; Reproductive delay; Steroidogenic factors

Jing YANG, Mao-run FU, Yu-ying ZHAO, Lin-chun MAO, Reduction of Chilling Injury and Ultrastructural Damage in Cherry Tomato Fruits After Hot Water Treatment, Agricultural Sciences in China, Volume 8, Issue 3, March 2009, Pages 304-310, ISSN 1671-2927, DOI: 10.1016/S1671-2927(08)60213-8.
(http://www.sciencedirect.com/science/article/B82XG-4VXDRCH-7/2/19466d78a3d8a30d67f793babc543712)
Abstract:
The effects of hot water treatment in alleviating chilling injury and reducing ultrastructural damage of mature-green cherry tomatoes (Lycopersicun esculentum cv. cerasiform Alef) were investigated. Mature-green cherry tomato fruits were treated in water at 40[degree sign]C or 45[degree sign]C for 5 min or 15 min, and then stored at 5[degree sign]C for 19 days followed by ripening at 20[degree sign]C. Water treatment at 40[degree sign]C for 15 min increased tolerance of cherry tomato fruits to chilling stress, indicating as low outbreak of skin lesion, high color a* value, and low electrolyte leakage. Treated fruits showed typical climacteric respiration and developed normal red color with chlorophyll degradation and lycopene accumulation during ripening, while fruits without treatment failed to develop red color and suffered skin lesion. After 19 days of chilling, heated fruits showed the conversion of chloroplast to chromoplast with the disappearance of thylakoids. Mitochondria and other cell organelles were not adversely affected in treated fruits. However, ultrastructures in pericarp cells in control fruits severely damaged with extensive disorganization of cytoplasm, swelled chloroplasts, distorted and unstacked thylakoids. Chloroplast was the first and most severely impacted organelle by chilling stress. Hot water treatment (40[degree sign]C for 15 min) before storage alleviated chilling injury in cherry tomato fruits. The results suggest that chilling injury is related with the damage of cell structure under chilling stress.
Keywords: cherry tomato; chilling injury; heat treatment; ultrastructure

Farshid O. Sirjani, Edwin E. Lewis, Harry K. Kaya, Evaluation of entomopathogenic nematodes against the olive fruit fly, Bactrocera oleae (Diptera: Tephritidae), Biological Control, Volume 48, Issue 3, March 2009, Pages 274-280, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2008.11.002.
(http://www.sciencedirect.com/science/article/B6WBP-4TYYSJ5-1/2/f37d2ad7c435735b26f59b9497f888c2)
Abstract:
Infectivity of six entomopathogenic nematode (EPNs) species against Bactrocera oleae was compared. Similar infection levels were observed when third-instar larvae were exposed to

infective juveniles (IJs) on a sand-potting soil substrate. When IJs were sprayed over naturally infested fallen olives, many larvae died within treated olives as well as in the soil; Steinernema feltiae caused the highest overall mortality of 67.9%. In addition, three laboratory experiments were conducted to optimize a time period for S. feltiae field application. (1) Abundance of fly larvae inside fallen olives was estimated over the 2006-2007 season with the highest number of susceptible larvae (3 mm and larger) per 100 olives being observed during December, 2006. (2) S. feltiae efficacy against fly larvae dropped to the soil post-IJ-application was determined. B. oleae added to the substrate before and after nematode application were infected at similar levels. (3) Effect of three temperature regimes (min-max: 10-27, 6-18, and 3-12 [degree sign]C) corresponding to October through December in Davis, California on S. feltiae survival and infectivity was determined. After 8 weeks, the IJs at the 3-12 [degree sign]C treatment showed the highest survival rate. However, the cold temperature significantly limited S. feltiae infectivity. Our results demonstrate that B. oleae mature larvae are susceptible to EPN infection both in the soil and within infested olives. Being the most effective species, S. feltiae may have the potential to suppress overwintering populations of B. oleae. We suggest that November is the optimal time for S. feltiae field application in Northern California.
Keywords: Bactrocera oleae; Tephritidae; Steinernema; Heterorhabditis; Insect-parasitic nematode; Olive

Yongxu Sun, Haitao Liang, Xiantao Zhang, Haibin Tong, Jicheng Liu, Structural elucidation and immunological activity of a polysaccharide from the fruiting body of Armillaria mellea, Bioresource Technology, Volume 100, Issue 5, March 2009, Pages 1860-1863, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.09.036.
(http://www.sciencedirect.com/science/article/B6V24-4TY3XV4-2/2/7cee31ad7f68f588cbc69c4c92d62117)
Abstract:
The water-soluble polysaccharide (AMP), with a molecular mass of 7.8 x 103 Da as determined by high-performance size-exclusion chromatography (HPSEC), was obtained from the fruiting body of Armillaria mellea. Methylation, Smith degradation, acetolysis, 1H and 13C NMR spectroscopy and acid hydrolysis studies were conducted to elucidate its structure. The results indicated that AMP consisted of a backbone composed of (1-->6)-linked-[alpha]-d-glucopyranosyl, (1-->2,6)-linked-[alpha]-d-glucopyranosyl and (1-->6)-linked-[alpha]-d-galactopyranosyl residues in the ratio of 3:1:1, and terminated with one single terminal (1-->)-[beta]-d-glucopyranosyl at the O-2 position of (1-->2,6)-linked-[alpha]-d-glucopyranosyl, on average, along the main chain. Preliminary tests in vitro showed that AMP has stimulating effects on murine lymphocyte proliferation induced by concanavalin A or lipopolysaccharide in a dose-dependent manner. It is a possible potential immunopotentiating agent for use in health-care food or medicine.
Keywords: Armillaria mellea; Polysaccharide; Structural analysis; NMR spectroscopy; Lymphocyte proliferation

Jorge I. Aranda-Sanchez, Arturo Baltazar, Gustavo Gonzalez-Aguilar, Implementation of a Bayesian classifier using repeated measurements for discrimination of tomato fruit ripening stages, Biosystems Engineering, Volume 102, Issue 3, March 2009, Pages 274-284, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2008.12.005.
(http://www.sciencedirect.com/science/article/B6WXV-4VGW407-2/2/fb3a59fc83d3c155c9acb0dddf0d8ba2)
Abstract:
Quality control of postharvest fruits is moving towards substituting traditional sensory testing methods by more reliable quantitative methods. Ripening in fruits, such as tomatoes, is a complex phenomenon which affects chemical and physiological properties as a function of time. Attempts to solve the problem of ripening classification focus mostly on single sensors; however, there is not

yet a complete solution. In this work, the use of repeated measurements obtained from two different non-destructive sensors incorporated into a Bayesian classifier for data fusion is proposed. Two independent measurements, from a novel non-destructive acoustic impact technique and from colorimeter sensors, were used. The problem of using repeated measurements to describe the probability density function for each class was addressed. The effect of correlated data and number of sensor characteristics on the artificial classifier was explained by an analysis of classification error. The results showed that the error classification rate is affected by the correlation between repeated measurements. The proposed Bayesian data fusion scheme reaches a classification error of as low as 5%, compared with 25-50% when single sensors are used.

P. Eccher Zerbini, M. Vanoli, A. Rizzolo, S. Jacob, A. Torricelli, L. Spinelli, R.E. Schouten, Time-resolved Reflectance Spectroscopy as a management tool in the fruit supply chain: an export trial with nectarines, Biosystems Engineering, Volume 102, Issue 3, March 2009, Pages 360-363, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2008.11.002.
(http://www.sciencedirect.com/science/article/B6WXV-4V4M2Y0-1/2/678973b224372ffa35f856ded75dec0a)
Abstract:
At harvest, fruit shows variation in maturity stage. With Time-resolved Reflectance Spectroscopy (TRS), the maturity of nectarines at harvest can be assessed by measuring the absorption coefficient at 670 nm ([mu]a), near the chlorophyll peak, in the fruit flesh. A kinetic model has been developed linking the absorption coefficient, expressed as the biological shift factor ([Delta]t*), to firmness decrease during ripening. As the decrease in [mu]a in nectarines is linked with softening, shelf life for individual fruit can be predicted. In order to verify the applicability of this methodology in the supply chain, about 1000 nectarines were measured at harvest by TRS, graded into six classes of usability based on the prediction of their individual softening (`will never ripe', `dangerously hard', `transportable', `ready to eat-firm', `ready to eat-ripe', `overripe') and transported from Italy to the Netherlands by a regular temperature-controlled truck. On arrival, fruit was kept at 20 [degree sign]C and tested for sensory softness (finger feeling) after 5 and 13 days of shelf life. The classes `will never ripe', `dangerously hard' and `overripe' were correctly predicted, as the first two did not soften and the last one was too soft and subject to rot. The intermediate classes showed sufficient firmness to be transported and sufficient ripening potential to satisfy consumers.

M.R. Ehsani, T.E. Grift, J.M. Maja, D. Zhong, Two fruit counting techniques for citrus mechanical harvesting machinery, Computers and Electronics in Agriculture, Volume 65, Issue 2, March 2009, Pages 186-191, ISSN 0168-1699, DOI: 10.1016/j.compag.2008.09.002.
(http://www.sciencedirect.com/science/article/B6T5M-4TY8W22-1/2/14638af743a3d81df03f6a90de41f023)
Abstract:
Two fruit counting methods were developed for citrus mechanical harvesting machineries. The first method relied on the flow of fruits forming a random arrival process (Poisson process), whereas the second method relied on counting singulated fruits. The first approach was based on a method developed earlier targeted at measuring the flow rate and mean particle diameter of granular fertilizer particles. A similar approach was used in this research, where a large time of flight device was developed that measured the lengths of clumps of fruits falling through the time of flight device. The clump lengths were subsequently used to estimate the number of fruits passing the sensor per time unit. This method can only work accurately if the flow of fruits constitutes an independent arrival process (Poisson process). The advantage of this method is that it is non-intrusive, founded on theory and does not require calibration. However, during experiments it

became evident that the flow of fruits directly after being transported from a conveyor belt was not Poisson driven, and therefore the method failed.
As an alternative, a second method was developed which did not rely on any assumptions about the flow regime and is also virtually non-intrusive. This method uses a flow separation section which funnels and singulates the flow of fruits into five channels. The fruits in these channels were counted individually using laser-based photo-interruption sensors. This method, although more rudimentary than the Poisson-based approach, yielded good accuracy: during laboratory tests, where a total of 2000 fruits passed the sensor, 1996 were counted, yielding an error of 0.2%. This result was obtained with an unrefined sensor, and further increase in accuracy may be possible. Testing is planned on a full size canopy shaker fruit harvester under field conditions to assess the robustness and to develop methods to resolve potential errors introduced by debris.
Keywords: Time of flight; Poisson process

Dionisio G. Alvindia, Keiko T. Natsuaki, Biocontrol activities of Bacillus amyloliquefaciens DGA14 isolated from banana fruit surface against banana crown rot-causing pathogens, Crop Protection, Volume 28, Issue 3, March 2009, Pages 236-242, ISSN 0261-2194, DOI: 10.1016/j.cropro.2008.10.011.
(http://www.sciencedirect.com/science/article/B6T5T-4V2X6FV-1/2/92240f351c0404f989ae13684cc310e2)
Abstract:
Two bacteria, isolated from the surface of banana fruits, one forming a creamy white colony and the other, dry yeast like colony were screened for in vitro antagonism toward Lasiodiplodia theobromae. Both isolates, identified as Bacillus amyloliquefaciens, were further tested for antibiosis against other crown rot-causing pathogens (Thielaviopsis paradoxa, Colletotrichum musae, and Fusarium verticillioides). The creamy white colony strain, coded as B. amyloliquefaciens DGA14, was subjected to laboratory and field studies. B. amyloliquefaciens DGA14 produced a diffusible metabolite that inhibited all test pathogens in culture. In addition, bacteria moved and attached to pathogens significantly affecting mycelial growth and conidial germination in liquid medium. Following inoculation, B. amyloliquefaciens DGA14 survived and colonized banana fruits after 2 d. Interparasitic relationships were observed between the antagonist and pathogens on artificial media and the natural substrate. Postharvest application of B. amyloliquefaciens DGA14 in the packing house reduced the incidence of crown rot to a level significantly lower than in fungicide treated or control fruits.
Keywords: Epiphytic bacteria; Antibiosis; Biocontrol agent; Postharvest pathogens

Torunn Stangeland, Siv F. Remberg, Kare A. Lye, Total antioxidant activity in 35 Ugandan fruits and vegetables, Food Chemistry, Volume 113, Issue 1, 1 March 2009, Pages 85-91, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.07.026.
(http://www.sciencedirect.com/science/article/B6T6R-4T0WK0W-9/2/18893361be4152354eb5c516264d8809)
Abstract:
The objective of this study was to analyse antioxidant activity (AA) in fruits and vegetables from Uganda and to investigate whether AA in traditional food is sufficiently high to prevent oxidative stress and thus combat disease. We used the FRAP (ferric reducing ability of plasma) procedure. The results showed great variation in AA, ranging from 72.3 +/- 13.5 (Syzygium cuminii seed) to 0.09 +/- 0.05 (Cucurbita maxima fruit) mmol/100 g fresh weight (FW). We estimated serving sizes and determined the total antioxidant capacity (TDAC) per day of three traditional Ugandan diets. The dietary plants with highest AA per serving size were pomegranate (Punica granatum), Canarium schweinfurthii, guava (Psidium guajava), mango (Mangifera indica) and tree tomato (Cyphomandra betacea) with values ranging from 8.91 to 3.00 mmol/serving. Of the traditional

diets, the central/eastern (C/E) and the western (W) diets had almost the same AA (9.31-9.78 and 9.75 mmol/day), while the northern (N) diet had an AA of 7.50-8.02 mmol/day.
Keywords: Antioxidant activity; FRAP; Fruits; Vegetables; Ugandan diet; Total dietary antioxidant capacity

M. Amzad Hossain, S.M. Salehuddin, M.J. Kabir, S.M.M. Rahman, H.P. Vasantha Rupasinghe, Sinensetin, rutin, 3'-hydroxy-5, 6, 7, 4'-tetramethoxyflavone and rosmarinic acid contents and antioxidative effect of the skin of apple fruit, Food Chemistry, Volume 113, Issue 1, 1 March 2009, Pages 185-190, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.07.085.
(http://www.sciencedirect.com/science/article/B6T6R-4T4Y615-1/2/8c14bebbb723b11529070be93ef5a852)
Abstract:
A GC-MS method was developed for the separation and quantifiation of three flavones: sinensetin (SEN), rutin (RU) and 3'-hydroxy-5, 6, 7, 4'-tetramethoxyflavone (TMF) and rosmarinic acid (RA), a caffeic acid derivative, in the skin of apple fruit collected from different local markets of Bangladesh. The results showed significant variation in the amount of these markers in methanolic extracts of skin samples from different markets of Bangladesh, even though the values were almost identical for most of the cases. A variation in antioxidant activities, ranging from 62.82 to 92.34%, and variations in total phenolics, ranging from 6.69 to 10.20 mg caffeic acid/g dry weight of the methanol extracts, were observed. Antioxidative potency of the methanolic extracts was comparable to that of pure quercetin and the synthetic antioxidant butylated hydroxylanisole (BHA).
Keywords: Malus sylvestris; Rosaceae; Apple fruit; Flavonoids; Antioxidant activity; Total phenol; GC-MS

R. Charoensiri, R. Kongkachuichai, S. Suknicom, P. Sungpuag, Beta-carotene, lycopene, and alpha-tocopherol contents of selected Thai fruits, Food Chemistry, Volume 113, Issue 1, 1 March 2009, Pages 202-207, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.07.074.
(http://www.sciencedirect.com/science/article/B6T6R-4T3DD19-H/2/8cc522f404fc7ec96b53388d7953523f)
Abstract:
A total of 37 varieties of fresh fruits obtained from six representative markets in Bangkok, Thailand, were determined for their beta-carotene, lycopene, and alpha-tocopherol contents using high performance liquid chromatography. Beta-carotene content ranged from undetectable up to 616 [mu]g/100 g of edible portion, lycopene content from undetectable up to 6693 [mu]g/100 g and vitamin E content from not undetectable up to 1.43 mg/100 g. Red watermelon, Citruluss vulgalis ('jin-trarah' variety) was the richest source of dietary beta-carotene (1040 [mu]g/serving) and lycopene (11,378 [mu]g/serving), whilst the highest alpha-tocopherol content was found in unripe mango, Mangifera indica ('keosawoei' variety) with approximately 0.90 mg/75 g of edible portion, providing 9% of the Thai recommended daily intake of vitamin E.
Keywords: Fruit; Beta-carotene; Lycopene; Vitamin E; Alpha-tocopherol

P.C. Abhilash, Vandana Singh, Nandita Singh, Simplified determination of combined residues of lindane and other HCH isomers in vegetables, fruits, wheat, pulses and medicinal plants by matrix solid-phase dispersion (MSPD) followed by GC-ECD, Food Chemistry, Volume 113, Issue 1, 1 March 2009, Pages 267-271, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.07.004.
(http://www.sciencedirect.com/science/article/B6T6R-4SYCR00-3/2/b614baaf8a70ee6d2474964e2f561a1f)
Abstract:
A fast, simple and inexpensive sample preparation method based on matrix solid-phase dispersion (MSPD) technique is proposed for the isolation of combined residues of hexachlorocyclohexane

isomers from fruits, vegetables, grains, pulses and medicinal plants. Both extraction and clean-up were carried out in a single step and target compounds were determined by gas chromatography coupled with electron capture detection (GC-Ni63 ECD). The major factors affecting extraction yield and sensitivity, such as type of dispersant material and extraction solvent, were evaluated and optimised. Under optimised conditions, 5 g of sample matrix was dispersed with 500 mg of Florisil and blended with 1 g of anhydrous magnesium sulphate and 500 mg of sodium chloride, and transferred into a glass column containing neutral alumina (2 g) and anhydrous sodium sulphate (500 mg). The dispersed sample matrix was then eluted with 10 ml of n-hexane-ethyl acetate mixture (70:30, v/v) and repeated with another 10 ml of same solvent mixture. Recoveries of the proposed method for the spiked samples ranged from 93% to 103% and the day-to-day variability remained between 5% and 10%. The limit of detection (LOD) of [alpha]-, [beta]-, [gamma]- and [delta]- HCH was 3, 6, 4 and 5 ng g-1, respectively. Satisfactory results were obtained in the routine analysis of real samples, confirming the reliability and efficacy of this method for the analysis of HCH residues in food matrices and medicinal plants.
Keywords: Hexachlorocyclohexane; Matrix solid-phase dispersion; Food matrices; Gas chromatography

Kamel Msaada, Karim Hosni, Mouna Ben Taarit, Thouraya Chahed, Mohamed Hammami, Brahim Marzouk, Changes in fatty acid composition of coriander (Coriandrum sativum L.) fruit during maturation, Industrial Crops and Products, Volume 29, Issues 2-3, March 2009, Pages 269-274, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2008.05.011.
(http://www.sciencedirect.com/science/article/B6T77-4SXRTMV-2/2/dac96eaf706cfffd302cc9774227237f)
Abstract:
Changes in fatty acids were studied during maturation of coriander (Coriandrum sativum L.) fruits cultivated in the North-East of Tunisia (Charfine). The fruits matured in 55 days after flowering (DAF). Oil and petroselinic acid synthesis proceeded at a steady rate up to 32 DAF. The first results showed a rapid oil accumulation started at newly formed fruits (9.6 +/- 0.2%) and continued until their full maturity (26.4 +/- 0.5%). During fruit maturation, fatty acid profiles varied significantly among the nine stages of maturity. At the 32th DAF, palmitoleic, gadoleic, erucic and docosahexenoic acids were not detected and petroselinic acid had a highest amount (84.8 +/- 4.5%). Fruits development resulted mainly in an increase of petroselinic acid and a decrease of palmitic acid (C16:0). At full maturity, the main fatty acids were petroselinic acid (80.9 +/- 5.7%), followed by linoleic (13.6 +/- 2.9%), palmitic (3.6 +/- 0.1%) and stearic (0.7 +/- 0.1%) acids. Saturated and polyunsaturated fatty acids decreased significantly and monounsaturated fatty acids increased during maturation of coriander fruit. Coriander fruits at the first four stages of maturity have a healthy nutritional value and the last five stages were with important economic and industrial applications. Results of this study indicate that the variation in the fatty acid composition of coriander fruit during maturation may be useful in understanding the source of nutritionally and industrially important fatty acids in this fruit. Coriander fruit is potentially an important source of petroselinic acid which has numerous industrial applications.
Keywords: Coriander (Coriandrum sativum L.); Umbelliferae; Fruit; Fatty acids composition; Petroselinic acid; Maturation

R.C. Pradhan, S.N. Naik, N. Bhatnagar, V.K. Vijay, Moisture-dependent physical properties of jatropha fruit, Industrial Crops and Products, Volume 29, Issues 2-3, March 2009, Pages 341-347, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2008.07.002.
(http://www.sciencedirect.com/science/article/B6T77-4T893BY-1/2/58573a39d9e0eddae40c144f3efca566)
Abstract:

The physical properties of fruit are important in designing and fabricating equipment and structures for handling, transporting, processing and storage, and also for assessing quality. The study was conducted to investigate some physical properties of jatropha fruit at various moisture levels. The average length, width, thickness and 1000 mass were 29.31 mm, 22.18 mm, 21.36 mm and 1522.10 g, respectively, at moisture content of 7.97% d.b. The geometric mean diameter increased from 24.03 to 24.70 mm and the sphericity varied between 0.82 and 0.83 as moisture content increased from 7.97% to 23.33% d.b., respectively. In the same moisture range, the bulk and true densities decreased from 278 to 253 and 546 to 435 kg m-3, respectively, whereas the corresponding porosity also decreased from 49.08% to 41.84%. As the moisture content increased from 7.97% to 23.33% d.b., crushing strength was decreased from 275 to 79 N, whereas the angle of repose and surface areas were found to increase from 36.41[degree sign] to 41.72[degree sign] and 1815.73 to 1917.59 mm2, respectively. The static coefficient of friction of jatropha fruit increased linearly against the surfaces of three structural materials, namely plywood (47.81%), mild steel (62.88%) and aluminium (34.82%) as the moisture content increased from 7.97% to 23.33% d.b.
Keywords: Jatropha fruit; Physical properties; Moisture content

Fang-Xia Yang, Yin-Quan Su, Xiu-Hong Li, Qiang Zhang, Run-Cang Sun, Preparation of biodiesel from Idesia polycarpa var. vestita fruit oil, Industrial Crops and Products, Volume 29, Issues 2-3, March 2009, Pages 622-628, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2008.12.004.
(http://www.sciencedirect.com/science/article/B6T77-4VGMP43-1/2/3cbc20cebebf32bbf413dd350d3c5116)
Abstract:
The feasibility of producing biodiesel from Idesia polycarpa var. vestita fruit oil was studied. A methyl ester biodiesel was prepared from refined I. polycarpa fruit oil using methanol and potassium hydroxide (KOH) in an alkali-catalyzed transesterification process. The experimental variables investigated in this study were catalyst concentration (0.5-2.0 wt.% of oil), methanol/oil molar ratio (4.5:1 to 6.5:1), temperature (20-60 [degree sign]C) and reaction time (20-60 min). A maximum yield of over 99% of methyl esters in I. polycarpa fruit oil biodiesel was achieved using a 6:1 molar ratio of methanol to oil, 1.0% KOH (% oil) and reaction time for 40 min at 30 [degree sign]C. The properties of I. polycarpa fruit oil methyl esters produced under optimum conditions were also analyzed for specifications for biodiesel as fuel in diesel engines according to China Biofuel Systems Standards. The fuel properties of the I. polycarpa fruit oil biodiesel obtained are similar to the No. 0 light diesel fuel and most of the parameters comply with the limits established by specifications for biodiesel.
Keywords: Biodiesel; Idesia polycarpa var.; Methanolysis; Fruit oil; Transesterification

Zhenfeng Li, Ning Wang, G.S. Vijaya Raghavan, Clement Vigneault, Ripeness and rot evaluation of `Tommy Atkins' mango fruit through volatiles detection, Journal of Food Engineering, Volume 91, Issue 2, March 2009, Pages 319-324, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.09.009.
(http://www.sciencedirect.com/science/article/B6T8J-4TGXP95-1/2/226ae2241cf12e6edb52ae788d1015e6)
Abstract:
An ultra fast GC (zNoseTM), based on an uncoated surface acoustic wave sensor, was employed to detect the volatiles of `Tommy Atkins' mango fruits. The detected volatile signals were used to identify rot occurrence and evaluate mango ripeness during shelf life. Respiration rate, color, and total soluble solids (TSS) were measured accordingly to indicate mango quality status. Two peaks detected with the zNoseTM predicted rot occurrence with 90% and 87% accuracy, respectively, while another peak was 80% accurate in predicting ripeness with respect to a reference color index. Partial least squares (PLS) regression combined with variable importance for projection

(VIP) was used to select the peaks important in prediction. The rot prediction methods could have potential applications in the mango industry for the diagnosis of the occurrence of mango rots.
Keywords: zNoseTM; Mango; Volatiles; Rot; Ripeness; PLS; VIP

Erica M. Holt, Lyn M. Steffen, Antoinette Moran, Samar Basu, Julia Steinberger, Julie A. Ross, Ching-Ping Hong, Alan R. Sinaiko, Fruit and Vegetable Consumption and Its Relation to Markers of Inflammation and Oxidative Stress in Adolescents, Journal of the American Dietetic Association, Volume 109, Issue 3, March 2009, Pages 414-421, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.11.036.
(http://www.sciencedirect.com/science/article/B758G-4VPG68V-H/2/e956cae62f98cf16edbd97dffccdabb7)
Abstract: Background
Fruits and vegetables, foods rich in flavonoids and antioxidants, have been associated with lower risk of stroke, coronary heart disease, and markers of inflammation and oxidative stress in adults. Markers of inflammation and oxidative stress are predictors of coronary heart disease risk; however, it is unknown whether these markers are related to dietary flavonoid and antioxidant intake in youth.Objective
To determine whether greater intakes of fruit and vegetables, antioxidants, folate, and total flavonoids were inversely associated with markers of inflammation and oxidative stress in 285 adolescent boys and girls aged 13 to 17 years.Design
In this cross-sectional study conducted between February 1996 and January 2000, diet was assessed by a 127-item food frequency questionnaire. Height and weight measurements were obtained and a fasting blood sample drawn. Spearman partial correlation analyses evaluated the relation of intakes of fruit and vegetables, antioxidants, folate, and flavonoids with markers of inflammation (C-reactive protein, interleukin-6, tumor necrosis factor-[alpha], and 15-keto-dihydro-PGF2[alpha] metabolite and oxidative stress (urinary 8-iso prostaglandin F2[alpha], an F2-isoprostane), adjusting for age, sex, race, Tanner stage, energy intake, and body mass index.Results
Urinary F2-isoprostane was inversely correlated with intakes of total fruit and vegetables, vitamin C, beta carotene, and flavonoids. Serum C-reactive protein was significantly inversely associated with intakes of fruit (r=-0.19; P=0.004), vitamin C (r=-0.13, P=0.03), and folate (r=-0.18; P=0.004). Serum interleukin-6 was inversely associated with intakes of legumes, vegetables, beta carotene, and vitamin C. Serum tumor necrosis factor-[alpha] was inversely associated with beta carotene (r=-0.14, P=0.02) and luteolin (r=-0.15, P=0.02).Conclusion
Study results show that the beneficial effects of fruit and vegetable intake on markers of inflammation and oxidative stress are already present by early adolescence and provide support for the Dietary Guidelines for Americans 'to consume five or more servings per day' of fruits and vegetables to promote beneficial cardiovascular health.

Barbara A. Lorson, Hugo R. Melgar-Quinonez, Christopher A. Taylor, Correlates of Fruit and Vegetable Intakes in US Children, Journal of the American Dietetic Association, Volume 109, Issue 3, March 2009, Pages 474-478, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.11.022.
(http://www.sciencedirect.com/science/article/B758G-4VPG68V-V/2/962285249646fc96b73ec45326a18a56)
Abstract:
The objective of this study was to assess the quality of the current intakes of fruits and vegetables compared to the Dietary Guidelines for Americans in US children and adolescents and identify factors related to low fruit and vegetable intake. This descriptive study examined differences in fruit and vegetable intakes by age, sex, ethnicity, poverty level, body mass index, and food security status utilizing data from the 1999-2002 National Health and Nutrition Examination Survey. Six thousand five hundred thirteen children and adolescents ages 2 to 18 years, who were

respondents to the 1999-2002 National Health and Nutrition Examination Survey. Mean fruit and vegetable intakes were computed using 24-hour recalls for individuals and compared using analysis of variance. Leading contributors to fruit and vegetable intake were identified using frequency analysis. Children aged 2 to 5 years had significantly higher total fruit and juice intakes than 6- to 11- and 12- to 18-year-olds. Total vegetable and french fry intake was significantly higher among 12- to 18-year-old adolescents. Regarding sex differences, boys consumed significantly more fruit juice and french fries than girls. In addition, non-Hispanic African-American children and adolescents consumed significantly more dark-green vegetables and fewer mean deep-yellow vegetables than Mexican-American and non-Hispanic white children and adolescents. Total fruit consumption also differed significantly among race/ethnicities and household income. Children and adolescents most at risk for higher intakes of energy-dense fruits and vegetables (fruit juice and french fries) were generally boys, and adolescents, at risk for overweight or overweight and living in households below 350% of the poverty level.

Guillermo Rodriguez, Antonio Lama, Mariana Trujillo, Jose L. Espartero, Juan Fernandez-Bolanos, Isolation of a powerful antioxidant from Olea europaea fruit-mill waste: 3,4-Dihydroxyphenylglycol, LWT - Food Science and Technology, Volume 42, Issue 2, March 2009, Pages 483-490, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.08.015.
(http://www.sciencedirect.com/science/article/B6WMV-4THSXB7-1/2/48f1523b41b09939d01574d80daaa435)
Abstract:
Nutritional and antioxidant properties of phenolic compounds are important in relation to human health and palatability of products. 3,4-Dihydroxyphenylglycol (DHPG) is a strong antioxidant found in small amounts in virgin olive oil and table olives, with an antioxidant activity even higher than that of the powerful hydroxytyrosol. The origin of this antioxidant is completely unclear since has never been reported as a free plant metabolite. In this respect possible precursors of DHPG have also been discussed in this study. The presence of soluble compounds that either contain DHPG in their molecular structure or act as substrates for its synthesis has been showed for the first time. The quantities of DHPG recovered in olive drupe tissue by thermal treatment exceed widely the values indicated in the literature, showing the release or formation of additional DHPG from precursors after heating. In addition, DHPG obtained under certain extraction conditions from fresh solid waste of two-phase olive oil extraction systems (alperujo) is its most important phenolic compound. Therefore, the solid olive waste is a good source of this simple monomer phenol. The chemical structure, purity and racemic nature of isolated DHPG were also analysed for the first time by NMR experiments.
Keywords: Liquid-solid two-phase olive waste (Alperujo); Hydrothermal treatments; Hydroxytyrosol; 3,4-Dihydroxyphenylglycol; HPLC analysis; Antioxidant; Chromatography; NMR spectroscopy

P.P. Subedi, K.B. Walsh, Non-invasive techniques for measurement of fresh fruit firmness, Postharvest Biology and Technology, Volume 51, Issue 3, March 2009, Pages 297-304, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.03.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4V3S50V-1/2/b706e0ff29382a10b7e5c6899f67455f)
Abstract:
A sound velocity technique and visible-short wave near infrared (400-1100 nm) interactance spectroscopy were considered in the context of the assessment of fruit firmness in intact banana, mango and peach fruit. The velocity of a vibration (`sound') wave moving through the fruit decreased during ripening of mango (from 84 to 39 m s-1), banana (29 to 14) and peach (28 to 15) fruit. Fruit firmness assessed using a penetrometer (Fpen) was linearly correlated (R2 > 0.8) with sound velocity in mango, but not peach or banana. Spectra were related to the penetrometer and

sound velocity readings using partial least squares regression. A cross-validation result of R2 = 0.92, 0.86 and 0.79 for the penetrometer reading and R2 = 0.88, 0.77 and 0.58 for the sound velocity reading was achieved for banana, mango and peach fruit, respectively. However, these results are likely to be a peel-related attribute for banana, potentially a skin pigment, as the optical geometry used would primarily optically sample the peel, rather than pulp tissue. Prediction results, involving independent data sets, were very poor (R2 < 0.75) for both the penetrometer and sound velocity readings in all three commodities, with the marginal exception of that for the penetrometer reading for banana (R2 = 0.76). The visible-short wave near infrared interactance spectroscopy technique is therefore not recommended for assessment of fruit firmness. The sound velocity technique is recommended for measurement of an index descriptive of the stage of ripening of mango, banana and peach fruit, although it does not assess the same character as a penetrometer reading.
Keywords: SWNIR; Sound velocity; Non-destructive; Firmness; Banana; Mango; Peach

Robert A. Saftner, Gene E. Lester, Sensory and analytical characteristics of a novel hybrid muskmelon fruit intended for the fresh-cut industry, Postharvest Biology and Technology, Volume 51, Issue 3, March 2009, Pages 327-333, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.09.008.
(http://www.sciencedirect.com/science/article/B6TBJ-4TRHC3D-2/2/610109016b23f9a1a8068cf7273cf720)
Abstract:
A novel hybrid muskmelon has been bred specifically for use by the fresh-cut industry in winter. Quality characteristics of fresh-cut pieces from the hybrid were compared to those of its inbred parental lines and to those of a commercial netted muskmelon (cantaloupe) and a non-netted muskmelon (honeydew) fruit available in winter. Pieces from hybrid and female line fruit had higher soluble solids content (SSC) and firmness, and lower aromatic volatile concentrations compared to those from the male line fruit. Pieces from hybrid fruit also had higher SSC (>3%) and were firmer (>5 N) than commercial fruit available during the winter, and had twice the aromatic volatile concentration of commercial honeydew and a more intense orange hue than commercial muskmelon. Consumers rated the flavor, texture, sweetness and overall eating quality of the hybrid higher than its inbred parents and winter-available honeydew and as well as or better than winter-available muskmelon. Hybrid fruit stored 5 weeks at 1 [degree sign]C under modified atmospheric conditions, then fresh-cut and stored 14 d in air at 5 [degree sign]C maintained good quality (firmness = 51 N, SSC > 12%, [beta]-carotene and ascorbic acid concentrations = 18 and 182 mg kg-1, respectively), and showed no signs of tissue translucency or surface pitting despite microbial populations >11 log10 kg-1. The results indicate that the novel hybrid muskmelon is a promising new melon type for fresh-cut processing and marketing, at least during the winter season.
Keywords: Cucumis melo; Aromatic volatiles; Ascorbic acid; [beta]-Carotene; Firmness; Quality; Surface color; Soluble solids content

Y. Palapol, S. Ketsa, D. Stevenson, J.M. Cooney, A.C. Allan, I.B. Ferguson, Colour development and quality of mangosteen (Garcinia mangostana L.) fruit during ripening and after harvest, Postharvest Biology and Technology, Volume 51, Issue 3, March 2009, Pages 349-353, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.08.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4TRHC3D-1/2/204cadcc345a3df9d6c7177fff9e795b)
Abstract:
The colour of mangosteen (Garcinia mangostana L.) fruit changes from green to purple black after harvest as the fruit ripens, and is used as a quality guide for growers and consumers. We determined the relationship between anthocyanin composition and content during fruit colour

development in relation to fruit maturity and postharvest quality. Fruit at different stages of maturity (light greenish yellow with 5% scattered pink spots to purple black) were harvested and kept at 25 [degree sign]C (85-90% RH). Fruit from each maturity stage all developed to the final purple black stage. During the postharvest period, hue angle values and pericarp firmness decreased significantly, while soluble solids contents increased. Anthocyanin contents in the outer pericarp were higher than in the inner pericarp and increased to a maximum at the final colour stage. Sensory evaluation and fruit quality (hue angle values, soluble solids and titratable acidity) of fruit harvested at the different stages did not differ once the fruit had finally developed to the purple black stage. The anthocyanins in the outer pericarp mainly consisted of five compounds, identified by HPLC/MS as cyanidin-sophoroside, cyanidin-glucoside, cyanidin-glucoside-pentoside, cyanidin-glucoside-X, cyanidin-X2 and cyanidin-X, where X denotes an unidentified residue of m/z 190, a mass which does not correspond to any common sugar residue. Cyanidin-3-sophoroside and cyanidin-3-glucoside were the major compounds and the only ones that increased with fruit colour development.
Keywords: Mangosteen fruit; Garcinia mangostana; Anthocyanins; Ethylene; Colour; Fruit ripening

Marie Therese Charles, Kablan Tano, Alain Asselin, Joseph Arul, Physiological basis of UV-C induced resistance to Botrytis cinerea in tomato fruit. V. Constitutive defence enzymes and inducible pathogenesis-related proteins, Postharvest Biology and Technology, Volume 51, Issue 3, March 2009, Pages 414-424, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.08.016.
(http://www.sciencedirect.com/science/article/B6TBJ-4TTNCCC-1/2/6e80efc2181786839d6da379a3ff818c)
Abstract:
Changes in the protein content and profile of postharvest tomato fruit treated with the hormetic dose (3.7 kJ m-2) of ultraviolet light C (UV-C) at the mature green stage was investigated. In UV-C treated fruits, the total protein content increased until 10 d after treatment and decreased thereafter during a 30 d storage period; whereas in control fruit, protein content decreased constantly throughout the storage period. Using polyacrylamide gel electrophoresis (PAGE) it was shown that UV-C treatment affected the protein profile of tomato fruit in several manners: (1) UV-C repressed the expression of some proteins presumably associated with ripening; (2) it enhanced the expression of several constitutive proteins, of which one was an acidic [beta]-1,3-glucanase, three acidic chitinases and three basic chitinases; and (3) it induced the synthesis of at least 5 new proteins of which four were basic proteins. Among the proteins induced by UV-C, three (a basic [beta]-1,3-glucanase and two acidic chitinases) were apparently pathogenesis-related proteins as they were also induced by inoculation with Botrytis cinerea. The molecular mass (MM) of five of the UV-C induced proteins was determined using SDS-PAGE. Their molecular masses were 45, 39.4, 34.6, 10 and 8.9 kDa. The UV-C induced [beta]-1,3-glucanase had a MM of 33.1 kDa. The MM of two constitutive chitinases were 48.3 and 30.5 kDa, and those of the two UV-C and pathogenesis-induced chitinases were 37.1 and 20.6 kDa. Furthermore, the glucanohydrolase activities induced by UV-C were maintained until the end of the storage period. It is likely that the PR-proteins with glucanohydrolase activities induced by UV-C are an integral part of the long-term resistance observed in UV-C treated tomato fruit.
Keywords: Chitinase; Disease control; Gray mold; Glucanase; Host resistance; Hormetic; Hormic dose; Host defense mechanisms; Lycopersicon esculentum; Pathogenesis-related proteins (PR); Polyacrylamide gel electrophoresis; Postharvest pre-storage treatment; UV-light

M. Miao, Z. Zhang, X. Xu, K. Wang, H. Cheng, B. Cao, Different mechanisms to obtain higher fruit growth rate in two cold-tolerant cucumber (Cucumis sativus L.) lines under low night temperature, Scientia Horticulturae, Volume 119, Issue 4, 17 February 2009, Pages 357-361, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.08.028.

(http://www.sciencedirect.com/science/article/B6TC3-4TXDXNW-1/2/26653421b0468590fbe488a09607866c)

Abstract:
One cold-sensitive cultivar (Jinyan 4) and two cold-tolerant inbred lines (NY-1 and XC-1) of cucumber (Cucumis sativus L.) were subjected to temperatures of 28 [degree sign]C/22 [degree sign]C (day/night, control) or 28 [degree sign]C/12 [degree sign]C (day/night, cold treatment) in a 10 h photoperiod (7:00-17:00). Under control conditions, cucumber fruits grew fast during afternoon and early night, and slow during late night and morning. Under 28 [degree sign]C/12 [degree sign]C conditions, the two cold-tolerant inbred lines maintained relatively higher fruit growth rates than the cold-sensitive cultivar by different mechanisms. Compared to Jinyan 4, NY-1 fruits had higher growth rates during cold nights while XC-1 fruits grew faster during the next day. Under the 28 [degree sign]C/12 [degree sign]C temperature regime, the assimilate accumulation in the fruits of all tested genotypes followed a similar trend with the corresponding fruit growth rates. After a cold night treatment, the net CO2 assimilation rates of one- and two-fruit plants, which had increased sink demand, were higher than that of plants without fruits in all tested genotypes. This response indicates that feedback inhibition might be an important reason for the reduction of photosynthesis on the next day. In addition, after a cold night treatment, the levels of exportable sugars (sucrose and stachyose) in mature leaves of XC-1 were higher than those measured in Jinyan 4 and NY-1, which might explain why XC-1 fruits had faster assimilate accumulation rates in the next morning. Higher activity of sucrose-phosphate synthase, a key enzyme of sucrose and stachyose biosynthesis, constituted an additional evidence that faster sucrose and stachyose biosynthesis in mature leaves may occur in XC-1 than in Jinyan 4 and NY-1 at that time. In conclusion, our results showed that cucumber genotypes may use different mechanisms to enhance their cold tolerance.
Keywords: Cucumber; Low night temperature; Fruit growth rate; Assimilate accumulation; Photosynthesis; Sucrose-phosphate synthase

R.R. Sharma, Room Singh, The fruit pitting disorder--A physiological anomaly in mango (Mangifera indica L.) due to deficiency of calcium and boron, Scientia Horticulturae, Volume 119, Issue 4, 17 February 2009, Pages 388-391, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.08.023.
(http://www.sciencedirect.com/science/article/B6TC3-4TM9NHK-1/2/acc71836dd2bf4a640bec5f06656d38c)

Abstract:
A new disorder known as fruit pitting has been observed in some Indian mango orchards during the recent years. In this disorder, there is a development of some sunken pits on fruit peel, which distract consumers. Based on preliminary observations, it was observed that deficiency of nutrients could be the cause, and hence systematic studies were conducted in five indigenous cultivars such as `Alphonso', `Amrapali', `Dashehari', `Mallika' and `Neelum', and five exotic mango cultivars such as `Edward', `Irwin', `Rosari', `Sensation' and `Tommy Atkins' with the aim to observe the fruit pitting incidence and degree, and to investigate its probable causes. Our studies indicated that nearly 13% of the mango fruit was affected by fruit pitting with variable degree and magnitude. All indigenous cultivars had higher incidence of fruit pitting than exotic cultivars. `Dashehari' had the maximum incidence of fruit pitting (30.3%), followed by `Amrapali' (28.6%), and `Rosari' the least (3.4%). Our studies indicated that the incidence of fruit pitting in mangoes was nearly 13% with a significant variability among the cultivars (Table 1). Although the concentrations of most of the major nutrients such as N, P, K, Mg, and minor nutrients such as Cu, Mn, Fe, Zn, did not differ significantly. However, the pitted fruit had lower Ca (1.53%) and B (22 mg kg-1) concentrations than normal fruit (2.47% and 38 mg kg-1, respectively), indicating that deficiency of Ca and B probably is the cause for fruit pitting in mangoes.
Keywords: Disorder; Exotic cultivars; India; Indigenous cultivars; Macronutrients; Micronutrients

R.R. Sharma, R. Singh, Gibberellic acid influences the production of malformed and button berries, and fruit yield and quality in strawberry (Fragaria x ananassa Duch.), Scientia Horticulturae, Volume 119, Issue 4, 17 February 2009, Pages 430-433, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.11.002.
(http://www.sciencedirect.com/science/article/B6TC3-4V6YT3K-2/2/40d509934986ad8662005a625c85741b)
Abstract:
Experiments were conducted to observe the effects of foliar application of gibberellic acid on vegetative growth, flowering, fruiting and various disorders in `Chandler' strawberry. GA3 (75 ppm) was applied to the strawberry plants either during mid-November (at fruit bud differentiation stage), or mid-February (pre-flowering stage) or at both times. Fruit under control were sprayed with tap water only. Observations were recorded on vegetative attributes like crown height, crown spread, petiole length, leaf number, leaf area; flowering and fruit set, fruit size; production of albino, malformed and button berries, total yield and marketable fruit yield and quality parameters, like juice content, TSS, ascorbic acid contents, acidity etc. Results indicated that GA3 (75 ppm) spray either during mid-November or mid-February or at both times has favourably influenced all vegetative attributes of `Chandler' strawberry over control. Similarly, fruit set was increased, and production of malformed and button berries was reduced, but albinism remained unaffected. Although individual berry weight was reduced slightly, but fruit number, total as well as marketable yield was increased tremendously over control with no adverse effect on fruit quality parameters. In all, spraying GA3 both during mid-November and mid-February was much more effective in achieving the desirable results than single application of GA3 either during mid-November or mid-February.
Keywords: Albinism; Button berries; Fruit malformation; Fruit yield; Gibberellins; Quality parameters

A. Hedhly, J.I. Hormaza, M. Herrero, Flower emasculation accelerates ovule degeneration and reduces fruit set in sweet cherry, Scientia Horticulturae, Volume 119, Issue 4, 17 February 2009, Pages 455-457, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.08.020.
(http://www.sciencedirect.com/science/article/B6TC3-4TJTTPP-4/2/43260e190a348df412c6d0bde9ead696)
Abstract:
Flower emasculation is commonly used to make flowers unattractive to pollinating insects and to carry out controlled pollinations. In sweet cherry, we have observed recurrent low fruit set after flower emasculation and compatible pollination without apparent causes. This led us to evaluate its effect on the progress of the reproductive phase and on fruit set in this species. Flower emasculation reduced by more than a half the fruit set obtained in crosses made during two consecutive years. This effect could be traced back to the first week after anthesis where weight increase of pistils from emasculated flowers was smaller and ovule degeneration was accelerated compared to pistils from non-emasculated flowers. Pollen tubes, which behaved similarly at the stigma-style level in emasculated and non-emasculated flowers, lost their directionality in the area close to the degenerated ovule in the ovary. While flower emasculation is valid to evaluate pollen tube performance in the style and to determine incompatibility relationships, the lower fruit set registered after emasculation alerts on its use in fruit set experiments and breeding programs.
Keywords: Sweet cherry; Prunus avium; Emasculation; Ovule viability; Pollen tube growth; Fruit set

T. Thanaraj, L.A. Terry, C. Bessant, Chemometric profiling of pre-climacteric Sri Lankan mango fruit (Mangifera indica L.), Food Chemistry, Volume 112, Issue 4, 15 February 2009, Pages 786-794, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.06.040.

(http://www.sciencedirect.com/science/article/B6T6R-4SVKSVW-1/2/ff9f6f8a0ea8f1e0c179a284de30d972)
Abstract:
There is no published information on the genotypic variation of major biochemical constituents in mango fruit endemic to Sri Lanka. Accordingly, non-structural carbohydrates, non-volatile organic acids and total phenolics were determined from the peel and pulp of pre-climacteric Sri Lankan mango cultivars (viz. Willard, Karutha Colomban, Vellai Colomban, Ampalavi, and Malgova) at three different maturity stages. Principal components analysis revealed distinct clustering of samples according to their biochemical profiles of peel and pulp at three maturity stages. Sugar concentrations generally declined with maturity in both peel and pulp except for cv. Willard. Fructose was the predominant sugar in both peel (56.2-106 mg/g dry weight (DW)) and pulp (67.4-141 mg/g DW), followed by glucose and sucrose. Starch concentration increased with maturity and was higher in pulp (26.0-55.0% DW) than peel (18.2-38.9% DW) at full mature stage. Dry matter as a proportion of fresh weight (FW) increased with maturity.
Keywords: Principal component analysis; Hierarchical component analysis; Sugars; Starch; Organic acids; Total phenolics

Agata Maria Pawlowska, Fabiano Camangi, Ammar Bader, Alessandra Braca, Flavonoids of Zizyphus jujuba L. and Zizyphus spina-christi (L.) Willd (Rhamnaceae) fruits, Food Chemistry, Volume 112, Issue 4, 15 February 2009, Pages 858-862, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.06.053.
(http://www.sciencedirect.com/science/article/B6T6R-4SWN0VH-2/2/312ede06f3fc65adb22500db7a69836e)
Abstract:
The ripe edible fruits of jujube, Zizyphus jujuba Miller (syn. Z. sativa Gaertner, Z. vulgaris Lam.) and Christ's thorn jujube Zizyphus spina-christi (L.) Willd (Rhamnaceae family) were phytochemically investigated, comparing their quali-quantitative flavonoids profile. Twelve compounds from both methanol extracts have been recognized as quercetin, kaempferol, and phloretin derivatives by means of HPLC/ESI-MS analyses. Six major compounds have been purified by Sephadex LH-20 column chromatography followed by HPLC and were characterized using NMR spectroscopy. One C-glycoside, 3',5'-di-C-[beta]-d-glucosylphloretin, was detected in Z. spina-christi. The quantitative analysis of all compounds was also reported showing a higher content of flavonoids in Z. jujuba.
Keywords: Zizyphus jujuba; Zizyphus spina-christi; flavonoids; HPLC; ESI-MS

Jungmin Lee, Robert R. Martin, Influence of grapevine leafroll associated viruses (GLRaV-2 and -3) on the fruit composition of Oregon Vitis vinifera L. cv. Pinot noir: Phenolics, Food Chemistry, Volume 112, Issue 4, 15 February 2009, Pages 889-896, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.06.065.
(http://www.sciencedirect.com/science/article/B6T6R-4SX3P3G-9/2/377b19fc3b6d86f255c1e07561d57578)
Abstract:
Some of the 10 known grapevine leafroll associated viruses (GLRaVs) have negative impacts upon vine productivity and grape quality, though these negative influences are dependent on factors such as GLRaV strain, cultivar, clone, rootstock, and vine age. This is the first study to report on GLRaV-2 and GLRaV-3 infected vines, with regard to phenolic compounds, and other fruit maturity indices, of `Pinot noir' grapes, compared to berries from adjacent vines free of GLRaVs (same vineyards). Three different rootstock/scion combinations were included in this study. Clusters were collected for two growing seasons from commercial vineyards in the Willamette Valley of Oregon, and each vine sampled was tested for GLRaV-1, -2, -3 and Rupestris stem pitting-associated virus (RSPaV). All sampled vines were infected with RSPaV. Grapevine

leafroll associated virus-infected vines tested positive for GLRaV-2 or GLRaV-3. Overall, fruit infected with GLRaV-2 and -3 had reduced percent soluble solids, decreased individual and total anthocyanins, and increased skin and pulp weight for all three `Pinot noir' rootstock/scion combinations examined. Vitis riparia rootstock/`Pinot noir' clone 114 scion combination appeared to be the most sensitive to GLRaV-3 infection, having significant reduction of all five anthocyanins, total phenolics, and total tannins, with an increased cluster weight and 100-berry weight. No clear trends were observed in the polyphenolics analysed.
Keywords: Grape quality; Phenolics; Biotic stress

Zhi-hong Wang, Cheng-chin Hsu, Mei-chin Yin, Antioxidative characteristics of aqueous and ethanol extracts of glossy privet fruit, Food Chemistry, Volume 112, Issue 4, 15 February 2009, Pages 914-918, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.06.078.
(http://www.sciencedirect.com/science/article/B6T6R-4SX9G22-F/2/842290f7a16fa92ea6ed850dafa730ee)
Abstract:
Non-enzymatic antioxidant activities of aqueous extract, 50% ethanol extract and 75% ethanol extract of glossy privet fruit were examined. Aqueous and ethanol extracts contained various concentrations of phenolic acids, flavonoids, oleanolic acid and ursolic acid. Each extract scavenged superoxide anion, hydroxyl radical and nitric oxide ($P < 0.05$) in a concentration-dependent manner and the effect of 75% ethanol extract was significantly greater than other extracts ($P < 0.05$). Each extract showed a concentration-dependent effect on chelating effect, xanthine oxidase inhibition activity and reducing power ($P < 0.05$). Compared with controls, each extract significantly decreased malondialdehyde formation in low density lipoprotein (LDL) and 8-epi-PGF2[alpha] formation in plasma ($P < 0.05$). Aqueous extract exerted a greater effect than ethanol extract on increasing catalase and glutathione peroxidase activities in plasma ($P < 0.05$). These data suggest that using glossy privet fruit extracts may enhance lipid stability in food systems, and provide antioxidative protection for LDL and plasma.
Keywords: Glossy privet fruit; Antioxidative; Ethanol extract; Radicals; Low density lipoprotein

Oscar Goni, Maria T. Sanchez-Ballesta, Carmen Merodio, Maria I. Escribano, Regulation of defense and cryoprotective proteins by high levels of CO2 in Annona fruit stored at chilling temperature, Journal of Plant Physiology, Volume 166, Issue 3, 15 February 2009, Pages 246-258, ISSN 0176-1617, DOI: 10.1016/j.jplph.2008.04.005.
(http://www.sciencedirect.com/science/article/B7GJ7-4SP49R5-1/2/ea01d8b4a4c0e7f571149760f6fbfeee)
Abstract: Summary
This study focuses on how the length of exposure to chilling temperature and atmosphere storage conditions regulate the hydrolytic activity and expression of chitinase (PR-Q) and 1,3-[beta]-glucanase (PR-2) isoenzymes in cherimoyas (Annona cherimola Mill.). Storage at 6 [degree sign]C modified the expression of constitutive isoenzymes and induced the appearance of novel acidic chitinases, AChi26 and AChi24, at the onset of the storage period, and of a basic chitinase, BChi33, after prolonged storage. The induction of this basic isoenzyme was concomitant with the accumulation of basic constitutive 1,3-[beta]-glucanases. These low-temperature-induced chitinases modified the growth inhibition in vitro of Botrytis cinerea. Short-term high CO2 treatment activated a coordinated response of acidic chitinases and 1,3-[beta]-glucanases after prolonged storage at chilling temperature. Moreover, the high in vitro cryoprotective activity of CO2-treated protein extracts was associated with the induction of two low molecular mass isoenzymes, AGlu19 and BChi14. Thus, exposure to high concentrations of CO2 modified the response of fruit to low temperature, inducing the synthesis of cryoprotectant proteins such as specific pathogenesis-related isoenzymes that could be functionally associated with an increase in chilling tolerance in vivo.

Keywords: Acidic and basic isoenzymes; Antifungal and cryoprotective activity; Cherimoya fruit; Chitinase and 1, 3-[beta]-glucanase; Low temperature-response

Luis A. Gurovich, Paulo Hermosilla, Electric signalling in fruit trees in response to water applications and light-darkness conditions, Journal of Plant Physiology, Volume 166, Issue 3, 15 February 2009, Pages 290-300, ISSN 0176-1617, DOI: 10.1016/j.jplph.2008.06.004.
(http://www.sciencedirect.com/science/article/B7GJ7-4T9TBYC-2/2/43c8e3f737779927454c4c0355052ca1)
Abstract: Summary
A fundamental property of all living organisms is the generation and conduction of electrochemical impulses throughout their different tissues and organs, resulting from abiotic and biotic changes in environmental conditions. In plants and animals, signal transmission can occur over long and short distances, and it can correspond to intra- and inter-cellular communication mechanisms that determine the physiological behaviour of the organism. Rapid plant and animal responses to environmental changes are associated with electrical excitability and signalling. The same molecules and pathways are used to drive physiological responses, which are characterized by movement (physical displacement) in animals and by continuous growth in plants. In the field of environmental plant electrophysiology, automatic and continuous measurements of electrical potential differences ([Delta]EP) between plant tissues can be effectively used to study information transport mechanisms and physiological responses that result from external stimuli on plants. A critical mass of data on electrical behaviour in higher plants has accumulated in the last 5 years, establishing plant neurobiology as the most recent discipline of plant science. In this work, electrical potential differences were monitored continuously using Ag/AgCl microelectrodes, which were inserted 15 mm deep into sapwood at various positions in the trunks of several fruit-bearing trees. Electrodes were referenced to an unpolarisable Ag/AgCl microelectrode, which was installed 5 cm deep in the soil. Systematic patterns of [Delta]EP during day-night cycles and at different conditions of soil water availability are discussed as alternative tools to assess early plant stress conditions. This research relates to the adaptive response of trees to soil water availability and light-darkness cycles.
Keywords: Electric potential; Light intensity; Soil water availability; Tree signalling

Tomoko Shimakawa, David W. Weingaertner, Diane M. Schmit, Mary M. Brandt, Development of downloadable and printable posters for nutrition information of raw fruits, vegetables, and fish, Journal of Food Composition and Analysis, In Press, Corrected Proof, Available online 13 February 2009, ISSN 0889-1575, DOI: 10.1016/j.jfca.2009.02.002.
(http://www.sciencedirect.com/science/article/B6WJH-4VKXC1K-2/2/2b836c21aef63fdf15083f0e83b5c0e2)
Abstract:
In the United States, nutrition labeling for raw fruits, vegetables, and fish is currently voluntary. In order to encourage retail stores that sell these foods to participate in the voluntary nutrition labeling program and to be compliant with the guidelines, the United States Food and Drug Administration (FDA) has developed downloadable and printable posters containing nutrition information for the 20 most frequently consumed raw fruits, vegetables, and fish in the United States. The FDA has made the posters available on its website (http://www.cfsan.fda.gov/nutinfo.html), and has urged retail stores to download and print the posters and to display them in their stores for consumers to use in making purchase decisions. In developing these posters, FDA followed the agency's guidelines for voluntary nutrition labeling. The names and nutrition labeling values for the raw fruits, vegetables and fish are based on the updated nutrition labeling regulation published in the Federal Register on August 17, 2006, which corrected the July 25, 2006 final rule. FDA issued a Constituent Update (electronic newsletter) and contacted trade associations representing retail food stores to inform them about the posters.

Keywords: US Food and Drug Administration; Food data; Information dissemination; Nutrition education; Nutrition labeling; Fruits; Vegetables; Fish; Food composition

Vandana Singh, Tulika Malviya, Devendra Narayan Tripathi, Upma Naraian, An Escherichia coli antimicrobial effect of arabinoglucomannan from fruit of Bryonia lacinosa, Carbohydrate Polymers, Volume 75, Issue 3, 11 February 2009, Pages 534-537, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2008.08.025.
(http://www.sciencedirect.com/science/article/B6TFD-4TF2J3P-1/2/29cf2080b370acf494131222f6d411a3)
Abstract:
Extraction of the pulp of ripe berries of Bryonia lacinosa with 1% aqueous acetic acid yielded a polysaccharide material, having d-glucose, d-mannose and l-arabinose in the molar ratio of. 5.00:3.01:4.00. Hydrolysis of the fully methylated polysaccharide furnished 2,3,4,6-tetra-O-methyl-d-glucose, 2,3-di-O-methyl-d-glucose, 2,3,6-tri-O-methyl-d-mannose, 2,3-di-O-methyl-d-mannose and 2,3,5,-tri-O-methyl-l-arabinose in 1:4:2:1:4 molar ratio. Partial hydrolysis of the polysaccharide furnished; mannobiose, epicellobiose, 6-O-[beta]-l-arabinofuranosyl-d-glucose, 6-O-[alpha]-mannopyranosyl-d-mannose and epimaltose along with the component monosaccharides. On metaperiodate oxidation studies, 100 g of the polysaccharide liberated 0.055 mol of HCOOH consuming 0.7127 mol of periodate, indicating about 8.33% of the end groups. On the basis of the above results, a structure for the repeating unit of the polysaccharide has been proposed. The polysaccharide was tested for the microbial activity and was found to be active against Escherichia coli with a minimum dose of 6.25 mg/mL.
Keywords: Bryonia lacinosa; Fruit polysaccharide; Escherichia coli active

Ulvi Moor, Priit Poldma, Tonu Tonutare, Kadri Karp, Marge Starast, Ele Vool, Effect of phosphite fertilization on growth, yield and fruit composition of strawberries, Scientia Horticulturae, Volume 119, Issue 3, 3 February 2009, Pages 264-269, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.08.005.
(http://www.sciencedirect.com/science/article/B6TC3-4THB4JX-1/2/34d2be22d513c0380c297276f1a4b858)
Abstract:
Traditionally, phosphates (Pi, salts of phosphoric acid, H3PO4) have been used for plant fertilization, and phosphites (Phi, salts of phosphorous acid, H3PO3) have been used as fungicides. Nowadays several Phi fertilizers are available in the EU market despite the fact that in research trials Phi has often had a negative influence on plant growth. The objective of this study was to elucidate the effect of a Phi fertilizer on plant growth, yield and fruit composition of strawberries (Fragaria x ananassa Duch.). Experiments were carried out with `Polka' frigo plants in South Estonia in 2005 and 2006. The number of leaves per plant, total and marketable yields, fruit size, fruit ascorbic acid content (AAC), soluble solids content (SSC), titratable acidity (TA), anthocyanins (ACY) and total antioxidant activity (TAA) were recorded.
The results indicate that Phi fertilization does not affect plant growth. Phi fertilization had no advantages in terms of yield increase, compared to traditional Pi fertilization. Fruit acidity increased and TSS decreased due to foliar fertilization with Phi in 2006. Soaking plants in Phi fertilizer solution prior planting was effective in activating plant defence mechanisms, since fruit ascorbic acid and anthocyanin content increased.
Keywords: Fragaria x ananassa; Ascorbic acid; Soluble solids; Titratable acidity; Anthocyanins; Antioxidant activity

Mustafa Ozgen, Sedat Serce, Cemal Kaya, Phytochemical and antioxidant properties of anthocyanin-rich Morus nigra and Morus rubra fruits, Scientia Horticulturae, Volume 119, Issue 3, 3 February 2009, Pages 275-279, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.08.007.

(http://www.sciencedirect.com/science/article/B6TC3-4TGY46R-2/2/f0e3b362bf32eb32dfcbd74dcc501f24)
Abstract:
In this study, phytochemical and antioxidant properties of anthocyanin-rich mulberry species of Morus nigra L. (black mulberry) and Morus rubra L. (red mulberry) fruits harvested from across Turkey were investigated. Fruit color, total phenolics (TP), total monomeric anthocyanin (TMA), titratable acidity (TA), and individual sugar and organic acid compositions were determined. Total antioxidant capacity (TAC) of fruits was assessed by both the trolox-equivalent antioxidant capacity (TEAC) and the ferric reducing antioxidant power (FRAP) assays. Black mulberry exhibited higher TP, TMA, TAC and TA when compared to red mulberry. The average TP contents of M. nigra and M. rubra were 2737 and 1603 [mu]g gallic acid equivalent in g fresh weight basis (GAE/g fw), respectively. M. nigra had the richest amount of anthocyanin with an average of 571 [mu]g cy-3-glu/g fw. Overall, TAC averaged 10.5 and 12.0 mmol TE/L by the TEAC and FRAP methods, respectively. We found that FRAP, TEAC, TP and TMA were significantly correlated (r = 0.64-0.99) with each other. Fructose (5.27 g/100 mL) and glucose (5.81 g/100 mL) were determined to be the major sugars in both mulberries. M. nigra displayed a higher TA (2.05 g/100 mL) than M. rubra (0.78 g/100 mL), with citric acid as the major acid.
Keywords: Anthocyanin; FRAP; Black mulberry; Red mulberry; Organic acids; Phenolic; TEAC

D.S. Intrigliolo, J.R. Castel, Response of Vitis vinifera cv. `Tempranillo' to partial rootzone drying in the field: Water relations, growth, yield and fruit and wine quality, Agricultural Water Management, Volume 96, Issue 2, February 2009, Pages 282-292, ISSN 0378-3774, DOI: 10.1016/j.agwat.2008.08.001.
(http://www.sciencedirect.com/science/article/B6T3X-4TDYNXY-2/2/f4ba7e7a3910eb77fbb1a1b04e349996)
Abstract:
This paper reports the effects of irrigation amount and partial rootzone drying (PRD) on water relations, growth, yield and wine quality of Vitis vinifera cv. `Tempranillo' during two consecutive years in a commercial vineyard with a deep, light-clay soil located in Requena, Valencia, Spain. Partial rootzone drying applied at two amounts (100% and 50% of the estimated crop evapotranspiration), was compared to conventional drip irrigation, and also to rainfed vines. Results showed that the effects of irrigation amount on yield and wine quality were different between years. In 2003 with low yield values (around 6.3 t ha-1) irrigation did neither affect grape production nor wine quality. However, in the following year, with much higher general yield (17 t ha-1), the high irrigation dose increased yield by 30% compared to rainfed vines and it also increased must total soluble solids and wine alcohol content. In both seasons, PRD did not significantly affect physiological parameters, nor growth, yield or fruit and wine quality, when compared to the same amount of water applied by conventional drip irrigation. Overall these results suggest that, under our experimental conditions, it was the irrigation amount rather than the system of application what affected vine performance, indicating the difficulties of successfully employing the PRD type of irrigation with a drip system in heavy and deep soils.
Keywords: Crop load; Deficit irrigation; Grapevine leaf and stem water potential; Stomatal conductance

M. Saudreau, A. Marquier, B. Adam, P. Monney, H. Sinoquet, Experimental study of fruit temperature dynamics within apple tree crowns, Agricultural and Forest Meteorology, Volume 149, Issue 2, February 2009, Pages 362-372, ISSN 0168-1923, DOI: 10.1016/j.agrformet.2008.09.001.
(http://www.sciencedirect.com/science/article/B6V8W-4TVJJMJ-1/2/4afb2c3d1251d7ed43ad278f32c0a92d)
Abstract:

Inner and surface temperatures of several `Golden Delicious' apples in orchard and air temperature were measured during more than 2 months. In addition to temperature measurements, the 3D canopy structure was measured to compute the light interception of each measured `Golden Delicious' apple. From this we extracted quantitative information about fruit temperature dynamics and fruit temperature variability within a tree crown in relation to air temperature fluctuations and fruit sunniness. Especially, fruit temperature dynamics were analyzed at daily and monthly time scales and compared to the air temperature dynamics. Results showed that when an averaged fruit per tree and a daily time scale were considered, as it is commonly done in fruit or pest development models, fruit temperature was equal to air temperature. However, during daytime, large departure from air temperature and large inner temperature gradients which could have significant effect on fruit physiological processes were measured. Moreover, such departures were highly variable among fruits within a tree canopy. To explain such within tree variability, the light interception by fruits must be taken into account. From this experiment, useful relationships between fruit temperature, air temperature and fruit light interception for fruit physiological model were derived and explained from physical principles.
Keywords: Architecture; Interception; Light; Tree mock-ups; Variability

Chris M. Blanchard, Janet Kupperman, Phillip B. Sparling, Eric Nehl, Ryan E. Rhodes, Kerry S. Courneya, Frank Baker, Do ethnicity and gender matter when using the theory of planned behavior to understand fruit and vegetable consumption?, Appetite, Volume 52, Issue 1, February 2009, Pages 15-20, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.07.001.
(http://www.sciencedirect.com/science/article/B6WB2-4SXYFVB-1/2/5047f635d2d8d50639acfdd277d2251d)
Abstract:
A majority of Americans do not meet the recommendation to eat five servings of fruits and vegetables per day (5-A-Day). The purpose of the present study was to examine the utility of the theory of planned behavior (TPB) for understanding 5-A-Day intentions and behavior and to determine whether any of the TPB relationships were moderated by ethnicity or gender. A total of 413 participants completed a baseline TPB questionnaire and a fruit and vegetable consumption measure 2 weeks later. Path analyses showed that affective attitude and perceived behavioral control significantly predicted intention for blacks, whites, males and females (R2 ranged from .32 to .40), whereas subjective norm was a significant predictor for blacks, males, and females only. Intention significantly predicted 5-A-Day (R2 ranged from .17 to .22) for all groups. Follow-up invariance analyses showed that the subjective norm/intention relationship was significantly stronger for black compared to white students. Finally, several key beliefs were identified for all four demographic groups. Therefore, the current results suggest that the TPB may be a useful framework to utilize when developing 5-A-Day interventions.
Keywords: 5-A-Day; Theory of planned behavior; Ethnicity; Gender

Shi-Biao Wu, Ying Wen, Xu-Wen Li, Yun Zhao, Zheng Zhao, Jin-Feng Hu, Chemical constituents from the fruits of Sonneratia caseolaris and Sonneratia ovata (Sonneratiaceae), Biochemical Systematics and Ecology, Volume 37, Issue 1, February 2009, Pages 1-5, ISSN 0305-1978, DOI: 10.1016/j.bse.2009.01.002.
(http://www.sciencedirect.com/science/article/B6T4R-4VNCJGH-2/2/4bcf0b6942e029a36f04effc2045b56f)
Abstract:
Nine (1-9) and seven (1-6, 10) compounds were isolated from the fruits of Sonneratia caseolaris and Sonneratia ovata, respectively. Their structures were identified by comparing their MS and NMR data as well as the physical properties with the literature. All the isolated compounds were screened against a rat glioma C-6 cell line using the MTT assay method; only compounds (-)-(R)-nyasol (1), (-)-(R)-4'-O-methylnyasol (2) and maslinic acid (6) were found to show moderate

cytotoxic activity. Our findings from these two kinds of fruits can be used as a foundation for further chemotaxonomic studies on Sonneratia species. The nor-lignans (1, 2) and 6H-benzo[b,d]pyran-6-one derivatives (3, 4) were isolated from this genus for the first time, indicating that these two classes of compounds may tentatively be considered as taxonomic markers for Sonneratia genus.
Keywords: Sonneratia caseolaris; Sonneratia ovata; Sonneratiaceae; Chemical constituents; Cytotoxic activity; Chemotaxonomy

Lahdheb Habiba, Bouallagui Hassib, Hamdi Moktar, Improvement of activated sludge stabilisation and filterability during anaerobic digestion by fruit and vegetable waste addition, Bioresource Technology, Volume 100, Issue 4, February 2009, Pages 1555-1560, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.09.019.
(http://www.sciencedirect.com/science/article/B6V24-4TVJJNT-2/2/f8ab32fa6e575d2196c1024e79c27d95)
Abstract:
Anaerobic co-digestion of fruit and vegetable waste (FVW) and activated sludge (AS) was investigated using anaerobic sequencing batch reactors (ASBRs). The effects of AS:FVW ratio and the organic loading rate (OLR) on digesters performances were examined. The mixtures having AS:FVW ratios of 100:00, 65:35, 35:65, by a total solid (TS) basis were operated at an hydraulic retention time (HRT) of 20 d. However, 30:70, 20:80, 15:85, 10:90 and 0:100 ratios were tested at an HRT of 10 d. To investigate effects of aerobic and anaerobic digestion on the sludge filterability, specific resistance to filtration (R) was also determined. Increasing FVW proportions in the feedstock significantly improved the biogas production yield. The reactor that was fed with a 30:70 ratio showed the highest VS removal and biogas production yield of 88% and 0.57 L g-1 VS added, respectively. The filterability results showed that the anaerobic effluent was characterised by a slightly better filterability efficiency of 1.6 x 1016 m kg-1 than 1.74 x 1016 m kg-1 of aerobic effluent. However, FVW addition improved the anaerobic co-digestion effluent filterability (5.52 x 1014 m kg-1).
Keywords: Anaerobic co-digestion; Activated sludge; Fruit and vegetable waste; Sequencing batch reactor; Filterability

Haibin Tong, Fengguo Xia, Kai Feng, Guangren Sun, Xiaoxv Gao, Liwei Sun, Rui Jiang, Dan Tian, Xin Sun, Structural characterization and in vitro antitumor activity of a novel polysaccharide isolated from the fruiting bodies of Pleurotus ostreatus, Bioresource Technology, Volume 100, Issue 4, February 2009, Pages 1682-1686, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.09.004.
(http://www.sciencedirect.com/science/article/B6V24-4TSC3W1-4/2/2e3fa5aec257b865deb6e31bea369437)
Abstract:
A novel water-soluble polysaccharide (POPS-1) was obtained from the fruiting bodies of Pleurotus ostreatus by hot water extraction, ethanol precipitation, and fractionated by DEAE-cellulose ion exchange chromatography and sepharose CL-6B gel filtration chromatography using an ATKA explore 100 purifier. The structure characterization and antitumor activity of the POPS-1 were evaluated in this paper. According to GC analysis, HPGPC, FT-IR, partial acid hydrolysis, periodate oxidation and Smith degradation, methylation and GC-MS analysis, the results indicate POPS-1 (Mw = 31 kDa) was composed of Man; Gal; Glc with a molar ratio of 1:2.1:7.9, it had a backbone of [beta]-(1 --> 3)-linked glucose residues, which occasionally branches at O-6. The branches were composed of (1 --> 3)-linked Glc, (1 --> 4)-linked Gal, (1 --> 4)-linked Man, and terminated with Glc and Gal residues. Cytotoxicity assay showed POPS-1 presented significantly higher antitumor activity against Hela tumor cell in vitro, in a dose-dependent manner, and exhibited significantly lower cytotoxicity to human embryo kidney 293T cells than Hela tumor cells compared with 5-Fu. The results suggest POPS-1 may be considered as a potential candidate for developing a novel low toxicity antitumor agent.

Keywords: Pleurotus ostreatus; Polysaccharide; Structure characterization; Antitumor activity

L. Jimenez, L. Serrano, A. Rodriguez, R. Sanchez, Soda-anthraquinone pulping of palm oil empty fruit bunches and beating of the resulting pulp, Bioresource Technology, Volume 100, Issue 3, February 2009, Pages 1262-1267, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.08.013.
(http://www.sciencedirect.com/science/article/B6V24-4THB4BX-2/2/b71b2da58fb04b886651d38b5685323e)
Abstract:
The influence of soda-anthraquinone pulping variables (temperature, time and soda concentration) and beating (number of PFI beating revolution) of palm oil empty fruit bunches (EFB) on the resulting paper sheets was studied, with a view to identifying the optimum operating conditions. Equations were derived that reproduced the properties of the paper sheets with errors less than 10-12% in 90-95% of cases. An optimum compromise was found as regards operating conditions (15% soda, 170 [degree sign]C, 70 min and 2400 number of PFI beating revolutions) that provided paper properties departing by less than 12% from their optimum values (59.63 Nm/g tensile index, 4.48% stretch, 4.17 kN/g burst index and 7.20 m Nm2/g tear index), and a beating grade of 47.5[degree sign]SR, acceptable to obtain paper sheets. Because these conditions involve a lower soda, temperature, time and beating than those required to maximize the studied paper properties, they can save chemical reagents, energy and immobilized capital for industrial facilities. On the other hand, the stretch properties of these pulp beaten are higher than those of others non-wood pulps, as wheat straw and olive wood.
Keywords: Non-wood; Empty fruit bunches; Pulping; Beating; Soda-anthraquinone

L. Jimenez, L. Serrano, A. Rodriguez, A. Ferrer, TCF bleaching of soda-anthraquinone and diethanolamine pulp from oil palm empty fruit bunches, Bioresource Technology, Volume 100, Issue 3, February 2009, Pages 1478-1481, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.08.012.
(http://www.sciencedirect.com/science/article/B6V24-4TGY418-5/2/8e94f13be7dd8a5d61489ab650541488)
Abstract:
The AOpAZRP bleaching sequence (A is an acid treatment, Op an oxygen and peroxide stage, Z an ozone stage, R a reductive treatment and P a peroxide stage) have been applied to oil palm empty fruit bunches (EFB) soda-anthraquinone and diethanolamine pulp. On similar Kappa numbers for the two types of pulp (14.2 and 17.3), paper from unbleached soda-anthraquinone pulp exhibited increased tensile index (25.8 Nm/g), stretch (2.35%), burst index (1.69 kN/g), tear index (0.50 mN m2/g) and brightness (60.6%) relative to paper for unbleached diethanolamine pulp; but the latter type of pulp exhibited higher viscosity (659 mL/g) than the former. Upon bleaching with the AOpAZRP sequence, diethanolamine pulp exhibited higher viscosity (783 mL/g), and the properties of the paper sheets were close to or even better to those from soda-anthraquinone pulp, namely: 22.2 vs 20.4 Nm/g tensile index, 1.30 vs 1.42 kN/g burst index, 0.71 vs 0.70 mN m2/g tear index and 71.3% vs 77.5% brightness. Therefore, the properties of paper from diethanolamine pulp evolved more favourably during bleaching than did those of paper from soda-anthraquinone pulp.
Keywords: Empty fruit bunches; Soda-anthraquinone; Diethanolamine; Pulping; TCF bleaching

Lars Ostergaard, Don't `leaf' now. The making of a fruit, Current Opinion in Plant Biology, Volume 12, Issue 1, Growth and Development - Edited by Charles S. Gasser and Caroline Dean, February 2009, Pages 36-41, ISSN 1369-5266, DOI: 10.1016/j.pbi.2008.09.011.
(http://www.sciencedirect.com/science/article/B6VS4-4TX6DFD-1/2/efb0124d03c0cc4927f5976b90c2d498)
Abstract:

The fruit of Arabidopsis thaliana is derived from two fused carpels in the centre of the developing flower. Significant progress has been made in the study of Arabidopsis gynoecium and fruit development during the past few years with the identification of key regulators and analysis of the interactions between them. Many of these factors also have roles in leaf development, thereby emphasising the evolutionary origin of carpels as modified leaves. Although work on fruit development has largely been focused on the analysis of individual genes and mutants, the data clearly indicate that in order to get an integrated view of fruit patterning it is necessary to understand the role of the plant hormone auxin in the process and how it becomes distributed.

Scott D Michaels, Flowering time regulation produces much fruit, Current Opinion in Plant Biology, Volume 12, Issue 1, Growth and Development - Edited by Charles S. Gasser and Caroline Dean, February 2009, Pages 75-80, ISSN 1369-5266, DOI: 10.1016/j.pbi.2008.09.005.
(http://www.sciencedirect.com/science/article/B6VS4-4TPS7B4-1/2/f07163616fa5aa6fde8ac3ecbafe3bfd)
Abstract:
Many of the molecular details regarding the promotion of flowering in response to prolonged exposure to cold temperatures (vernalization) and daylength have recently been elucidated in Arabidopsis. The daylength and vernalization pathway converge in the regulation of floral promoters referred to as floral integrators. In the meristem, vernalization promotes flowering through the epigenetic repression of the floral repressor FLOWERING LOCUS C. This allows for the induction of floral integrators by CONSTANS under inductive long days. In the vasculature of leaves, CONSTANS protein is produced only in long days where it acts to promote the expression of FLOWERING LOCUS T (FT). FT protein is then translocated to the meristem where it acts to promote floral induction. Thus a detailed molecular framework for the regulation of flowering time has now been established in Arabidopsis.

Rita Pernice, Giuseppina Borriello, Rosalia Ferracane, Rosa C. Borrelli, Fortuna Cennamo, Alberto Ritieni, Bergamot: A source of natural antioxidants for functionalized fruit juices, Food Chemistry, Volume 112, Issue 3, 1 February 2009, Pages 545-550, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.06.004.
(http://www.sciencedirect.com/science/article/B6T6R-4SR719H-4/2/bd683c44706de986459fd04ef1246322)
Abstract:
Bergamot is a common Italian citrus fruit, cultivated almost exclusively to produce essential oils; the juice is considered a waste product, which represents a serious environmental and economic problem for the industries. The aim of this study was to re-evaluate bergamot juice through its chemical characterization and its use to enrich and fortify fruit juices. To investigate this, apples and apricots were used for the laboratory-scale production of fruit juice, following both the traditional industrial recipe and those with the addition of bergamot juice at 10% or 20%, together with or in order to replace the synthetic additives normally used in the industrial process (ascorbic acid and citric acid). The ascorbic acid content and the antioxidant activity were measured during the different steps of juice production and after storage at 37 [degree sign]C for 15 days to evaluate juice shelf-life. Apricot and apple juices fortified with bergamot juice showed a significant increase in their antioxidant properties and a decreased reduction in ascorbic acid content after the typical production steps. All of the results obtained support the hypothesis that the addition of bergamot juice to juices preserves their ascorbic acid content from thermal degradation and contributes to enhance the antioxidant activity, ensuring a product much richer in antioxidants and ascorbic acid. A preliminary consumer test encouraged the production of bergamot fortified fruit juices. Finally, this is the first time that isorhoifolin and rutin have been detected in bergamot juice.
Keywords: Bergamot; Fruit juice; Ascorbic acid; Phenols; Antioxidant activity

Wissem Aidi Wannes, Baya Mhamdi, Brahim Marzouk, Variations in essential oil and fatty acid composition during Myrtus communis var. italica fruit maturation, Food Chemistry, Volume 112, Issue 3, 1 February 2009, Pages 621-626, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.06.018.
(http://www.sciencedirect.com/science/article/B6T6R-4SSY910-6/2/4fa37962e1372de049df251c8483c8e7)
Abstract:
The essential oil and fatty acid composition of Myrtus communis var. italica fruit during its ripening was determined. The effect of the harvesting time on some physical properties of Myrtus fruits, fruit weight and moisture content, were significant. The increase of fruit weight (from 2.54 to 8.79 g% fruits) during ripeness was correlated positively with that of moisture content (from 28% to 72%). Fruit essential oil yields varied from 0.003% to 0.01% and showed a remarkable increase at 60 days after flowering to reach a maximum of 0.11%. Forty-seven volatile compounds were identified in fruit essential oils; 1,8-cineole (7.31-40.99%), geranyl acetate (1.83-20.54%), linalool (0.74-18.92%) and [alpha]-pinene (1.24-12.64%) were the main monoterpene compounds. Total fatty acid contents varied from 0.81% to 3.10% during fruit maturation and the predominant fatty acids were linoleic (12.21-71.34%), palmitic (13.58-37.07%) and oleic (6.49-21.89%) acids. The linoleic acid proportions correlated inversely with palmitic and oleic acids during all the stages of ripening.
Keywords: Myrtus communis var. italica; Myrtaceae; Fruit; Essential oil; Fatty acids; Maturation

Shiow Y. Wang, Chi-Tsun Chen, Chien Y. Wang, The influence of light and maturity on fruit quality and flavonoid content of red raspberries, Food Chemistry, Volume 112, Issue 3, 1 February 2009, Pages 676-684, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.06.032.
(http://www.sciencedirect.com/science/article/B6T6R-4SV5V9P-3/2/6b6be07e05c169edc53879aaa828016f)
Abstract:
The effects of various fruit maturities and different light intensities on berry fruit quality, antioxidant capacity and phytonutrient levels in red raspberries (Rubus ideaus L.) were determined. At harvest, immature berries contained significantly lower levels of sugars and acids than ripe berries. When berries were harvested at 5% or 20% maturity, they never developed the levels of soluble solids content (SSC) and titratable acid (TA) values observed in ripe berries at harvest. However, fruit harvested at 50% or more advanced maturity had the capacity of attaining comparable levels of SSC, TA and sugars as those harvested at 100% maturity. When 5% and 20% berries were stored under light, higher level of SSC and lower levels of TA values were observed than those kept in the dark. However, light condition showed little effect in 50% and 80% maturity fruit after 4 days at 24/16 [degree sign]C (day/night). Ripe raspberries (100%) had stronger antioxidant activities and higher total anthocyanin content when compared with the pink stage (50% maturity). Fruit harvested at greener stages (5% and 20%) also consistently showed higher antioxidant activities and total phenolics than those harvested at 50%. Cyanindin-based anthocyanins increased during postharvest period. On the other hand, other polyphenols such as ellagic acid, quercetin 3-glucoside, quercetin derivative, and kaempferol 3-glucuronide were initially present at high levels but decreased drastically during storage. Red raspberries harvested at different developmental stages continued their development during storage even under the dark conditions. The antioxidant activity of red raspberries was directly related to the total amount of phenolics and flavonoids. Results of this study indicate that red raspberries harvested at 50% or more advanced maturity could develop comparable quality and antioxidant levels as those harvested at full maturity.
Keywords: Antioxidant activity; Anthocyanins; Total phenolics; Flavonoids; Sugars; Organic acids; Rubus idaeus subsp.

Ryszard Zadernowski, Sylwester Czaplicki, Marian Naczk, Phenolic acid profiles of mangosteen fruits (Garcinia mangostana), Food Chemistry, Volume 112, Issue 3, 1 February 2009, Pages 685-689, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.06.030.
(http://www.sciencedirect.com/science/article/B6T6R-4STGRXT-4/2/5f72f8b3516d1ace62a6576faaa509a8)
Abstract:
The composition of phenolic acids in various parts of mangosteen fruit (Garcinia mangostana) was determined by GC and MS. The total content of phenolic acids, identified by GC-FID ranged from 265.7 +/- 12.7 (aril) to 5027.7 +/- 188.0 (peel) mg per kg of dry matter of sample. Ten phenolic acids were identified in mangosteen fruit. Of these, protocatechuic acid was the major phenolic acid in the peel and rind, while p-hydroxybenzoic acid was the predominant phenolic acid in the aril. m-Hydroxybenzoic acid was detected only in the peel, while 3,4-dihydroxymandelic was present only in the rind. The phenolic acids liberated from esters and glycosidic bonds were the major fractions of phenolic acids in mangosteen fruit.
Keywords: Phenolics acids; Mangosteen; Garcinia Mangostana; Profiles; Rind; Aril; Peel

Willem H. Groenewald, Pieter A. Gouws, R. Corli Witthuhn, Isolation, identification and typification of Alicyclobacillus acidoterrestris and Alicyclobacillus acidocaldarius strains from orchard soil and the fruit processing environment in South Africa, Food Microbiology, Volume 26, Issue 1, February 2009, Pages 71-76, ISSN 0740-0020, DOI: 10.1016/j.fm.2008.07.008.
(http://www.sciencedirect.com/science/article/B6WFP-4T8HHDC-3/2/aa942cd21cededb9cdc2ea21bd2ce467)
Abstract:
Alicyclobacillus acidoterrestris and Alicyclobacillus acidocaldarius are thermo-acidophilic, non-pathogenic, spore-forming bacteria that can survive the typical heat processing of fruit juices and concentrates. Bacterial endospores then germinate, grow and cause spoilage of acid food products. Species of Alicyclobacillus were isolated from orchard soil and a fruit concentrate production factory in South Africa. Preliminary identification of the isolates was based on morphological, biochemical and physiological properties. Identification at species level was done by PCR amplification using genus-specific primers and 16S ribosomal RNA (rRNA) gene sequencing. The majority of isolates belonged to the species A. acidoterrestris, but A. acidocaldarius was also isolated and identified. As far as we could determine, this is the first report of the isolation of A. acidoterrestris from wash water and soil outside a fruit processing plant, as well as the isolation of A. acidocaldarius from vinigar flies. The genotypic relatedness between strains of A. acidoterrestris and between strains of A. acidocaldarius was determined by RAPD-PCR. Sixteen isolates identified as A. acidoterrestris grouped into four clusters based on RAPD-PCR banding patterns, suggesting that they belong to at least four genotypic groups. Three isolateT:/PGN/ELSEVIER/YFMIC/web/00001155/s identified as A. acidocaldarius gave three unique banding patterns.
Keywords: Alicyclobacillus; Fruit processing environment; 16S rRNA gene sequence; RAPD-PCR

Clare Narrod, Devesh Roy, Julius Okello, Belem Avendano, Karl Rich, Amit Thorat, Public-private partnerships and collective action in high value fruit and vegetable supply chains, Food Policy, Volume 34, Issue 1, Collective Action for Smallholder Market Access, February 2009, Pages 8-15, ISSN 0306-9192, DOI: 10.1016/j.foodpol.2008.10.005.
(http://www.sciencedirect.com/science/article/B6VCB-4TYPJHB-1/2/acd25fea4c16607a5777d3fa2c969b7c)
Abstract:
Accessing developed country food markets entails meeting stringent food safety requirements. Food retailers impose protocols relating to pesticide residues, field and pack house operations, and traceability. To enable smallholders to remain competitive in such a system, new institutional

arrangements are required. In particular, public-private partnerships can play a key role in creating farm to fork linkages that can satisfy market demands for food safety, while retaining smallholders in the supply chain. Furthermore, organized producer groups monitoring their own food safety standards through collective action often become attractive to buyers who are looking for ways to ensure traceability and reduce transaction costs. This paper compares the ways in which small producers of fruits and vegetables in Kenya and India have coped with increased demands for food safety from their main export markets.
Keywords: Food safety; Supply chain management; Public-private partnerships; Collective action; Public and private standards; Traceability

Linde Goetz, Harald Grethe, The EU entry price system for fresh fruits and vegetables - Paper tiger or powerful market barrier?, Food Policy, Volume 34, Issue 1, Collective Action for Smallholder Market Access, February 2009, Pages 81-93, ISSN 0306-9192, DOI: 10.1016/j.foodpol.2008.06.005.
(http://www.sciencedirect.com/science/article/B6VCB-4T4HJKY-1/2/10e91471a253efd14dbd1ff133c6365e)
Abstract:
The EU protects EU growers of 15 kinds of fresh fruits and vegetables against international competition by the entry price system (EPS), which is designed to restrict imports below the product-specific, politically designated entry price level. This study investigates the relevance of the EPS per product and country of origin. We develop two indicators for the effectiveness of the EPS, which serve as variables in a cluster analysis identifying four classes differing in the relevance of the EPS. The relevance of the EPS is found to be heterogeneous among products as well as countries of origin. It is highest for artichokes, courgettes, cucumbers, lemons, plums and tomatoes. The influence of the EPS on apples, clementines and pears is significantly lower, and of least relevance for apricots, mandarins, oranges, peaches and nectarines and table grapes. The EPS has the greatest effect on countries which neighbour the EU, whereas it is of minor importance for exports from far-away countries with the exception of China and South Africa.
Keywords: Entry price system; Fruits and vegetables; Import policy; EU; Non-tariff barriers; Minimum import price

J.M. Katz, C.K. Winter, Comparison of pesticide exposure from consumption of domestic and imported fruits and vegetables, Food and Chemical Toxicology, Volume 47, Issue 2, February 2009, Pages 335-338, ISSN 0278-6915, DOI: 10.1016/j.fct.2008.11.024.
(http://www.sciencedirect.com/science/article/B6T6P-4V166DW-1/2/1c17c8d18ee3dffe70cc311e5baebcda)
Abstract:
Estimates of daily dietary human exposure to 18 common pesticides found in fruits and vegetables were developed from residue data obtained from the 2003 US Food and Drug Administration's Regulatory Monitoring Program using probabilistic dietary exposure modeling. The differences between the exposures from domestic versus imported fruit and vegetable residues were compared. Of the 15 pesticides for which quantifiable residues were detected from both domestic and imported fruit and vegetable samples, domestic exposures were significantly higher for 11 pesticides while imported exposures were higher for the remaining four. The five pesticides showing the highest exposures all demonstrated greater domestic exposures than imported exposures. The mean daily exposure estimate for one pesticide, methamidophos, was above the reference dose for domestic fruits and vegetables while slightly below the reference dose for imported fruits and vegetables. Exposures to the other 17 pesticides were well below the established reference doses for domestic and imported fruits and vegetables. Exposure from pesticides in domestic foods exceeds exposure from imported foods and demonstrates that probabilistic modeling of dietary exposure provides more useful information concerning the relative

risks of domestic and imported foods than that obtained from the traditional comparisons of residue detection frequency and violation rates.
Keywords: Pesticides; Residues; Risk assessment; Food safety; Fruits; Vegetables

Lois Englberger, Joseph Schierle, Peter Hofmann, Adelino Lorens, Kiped Albert, Amy Levendusky, Yumiko Paul, Edgar Lickaneth, Amato Elymore, Marie Maddison, Ione deBrum, Janet Nemra, Julia Alfred, Nancy Vander Velde, Klaus Kraemer, Carotenoid and vitamin content of Micronesian atoll foods: Pandanus (Pandanus tectorius) and garlic pear (Crataeva speciosa) fruit, Journal of Food Composition and Analysis, Volume 22, Issue 1, February 2009, Pages 1-8, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.12.001.
(http://www.sciencedirect.com/science/article/B6WJH-4VCNP72-1/2/b42694125bf9eb7c2cab34b1a3dafc29)
Abstract:
The fruit of pandanus (Pandanus tectorius) and garlic pear (Crataeva speciosa) are important indigenous Micronesian atoll foods, but are increasingly neglected due to dietary and lifestyle changes. Previous studies have shown considerable differences in carotenoid concentrations in some pandanus cultivars. There are many Micronesian pandanus cultivars, most of which have not been assessed. Carotenoid-rich foods protect against vitamin A deficiency, anemia, and chronic disease, including cancer, heart disease and diabetes, which are serious problems in Micronesia. Eleven pandanus cultivars of Mwoakilloa and Kapingamarangi Atolls, Pohnpei, Federated States of Micronesia (FSM) (assessed for the first time), dried pandanus paste of the Marshall Islands, and garlic pear of Mortlock Atolls, Chuuk, FSM, were analyzed for carotenoids ([beta]- and [alpha]-carotene, [beta]-cryptoxanthin, lutein, zeaxanthin, and lycopene). Pandanus paste was assessed for 11 vitamins. The pandanus cultivars contained substantial concentrations of provitamin A carotenoids (110-370 [mu]g [beta]-carotene/100 g) and total carotenoids (990-5200 [mu]g/100 g). Pandanus paste contained 1400 [mu]g [beta]-carotene/100 g, 5620 [mu]g total carotenoids/100 g, and 10 vitamins (including 10.8 mg/100 g vitamin C). Garlic pear contained 1070 [mu]g [beta]-carotene/100 g and 1460 [mu]g total carotenoids/100 g. These cultivars and foods should be promoted in Micronesia and possibly elsewhere in the Pacific and other contexts in order to reduce vitamin A deficiency and provide further health benefits and enjoyment.
Keywords: Pandanus fruit; Garlic pear; Carotenoid; Vitamin; Vitamin A deficiency; Micronesian atolls; Indigenous food; Dietary change; Ethnographic approach to food analysis; Nutrition-related chronic disease; Cultivar; Biodiversity of traditional food systems; Biodiversity and nutrition; Food analysis; Food composition

Alisa Perry, Helen Rasmussen, Elizabeth J. Johnson, Xanthophyll (lutein, zeaxanthin) content in fruits, vegetables and corn and egg products, Journal of Food Composition and Analysis, Volume 22, Issue 1, February 2009, Pages 9-15, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.07.006.
(http://www.sciencedirect.com/science/article/B6WJH-4T6CTKV-2/2/fad5f25e967c594fdee2c0c4f13cb2f9)
Abstract:
Lutein and zeaxanthin are carotenoids that are selectively taken up into the macula of the eye where they are thought to protect against the development of age-related macular degeneration. Current dietary databases make it difficult to ascertain their individual roles in eye health because their concentrations in foods are generally reported together. The objective of this work is to determine the concentrations of lutein and zeaxanthin, separately, within major food sources of dietary xanthophylls as determined by NHANES 2001-2002 intakes. Corn and corn products were found to be major contributors of dietary zeaxanthin whereas green leafy vegetables were major contributors of dietary lutein. The predominant isomeric xanthophyll form was trans for all foods. Processed foods contained more cis xanthophyll isomers than fruits and vegetables. These data will provide added information to the current databases for lutein and zeaxanthin content of

commonly consumed foods as well as enhance the validity of estimates of dietary intake of these xanthophylls and their respective contributions to health.
Keywords: Lutein; Zeaxanthin; Carotenoids; Corn products; Egg products; Food composition

J.M. Obon, M.R. Castellar, M. Alacid, J.A. Fernandez-Lopez, Production of a red-purple food colorant from Opuntia stricta fruits by spray drying and its application in food model systems, Journal of Food Engineering, Volume 90, Issue 4, February 2009, Pages 471-479, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.07.013.
(http://www.sciencedirect.com/science/article/B6T8J-4T1Y3K0-1/2/7074dee2e4cf21400f9a88944707c0be)
Abstract:
Opuntia stricta fruit juice is a potential source of betacyanin pigments which can be used as a natural red-purple food colorant. In this work a powder food colorant was obtained by co-current spray drying of O. stricta fruit juices with a bench-scale two fluid nozzle spray dryer. Glucose syrup (DE 29) was used as drying aid. Optimum conditions for spray drying were as follow: juice content (20% v/v; 1.2 [degree sign]Brix), glucose syrup content (10% w/v), liquid feed rate (0.72 l/h), spray air flow-rate (0.47 m3/h), drying air flow-rate (36 m3/h), and inlet drying air temperature 160 [degree sign]C. Color was retained during the drying process (>98%) and drying yield was high (58%). The powder colorant showed high color strength (4.0), being this color strength stable when stored at room temperature for one month. This colorant was successfully applied in two food model systems: a yogurt and a soft-drink. Food presented a vivid red-purple tonality very attractive for consumers that was maintained after one month under refrigeration (4 [degree sign]C) ([Delta]E < 5).
Keywords: Spray-drying; Food colorants; Betacyanins; Betalains; Opuntia juice; Food model systems; Opuntia stricta

Mourad A.M. Aboul-Soud, Hany A. El-Shemy, Identification and subcellular localisation of SI;INT7: A novel tomato (Solanum lycopersicum Mill.) fruit ripening-related and stress-inducible gene, Plant Science, Volume 176, Issue 2, February 2009, Pages 241-247, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2008.10.010.
(http://www.sciencedirect.com/science/article/B6TBH-4TT9GBH-2/2/d11062ea671a777cd662300e39eda755)
Abstract:
The key step in ethylene (C2H4) signalling during tomato fruit ripening is initialized via the direct interaction between C2H4 and specialized membrane-bound receptors, including Never-Ripe (NR), which is strongly induced during ripening. In order to identify novel ripening-related C2H4-dependent components, a yeast two-hybrid interaction screen has previously been employed, in which NR cDNA has been used as bait. This screen has identified a clone corresponding to interacting protein 7 (SI;INT7), through its specific and strong interaction with the NR receptor (L. Alexander, Z. Lin, R. Hackett, I. Wilson and D. Grierson, unpublished work). In this work, our objective was to identify the corresponding NR-interacting gene and subsequently characterize its expression response to various stress treatments, as well as unravelling its subcellular location in the cell. By sequencing and plant database interrogation, SI;INT7 was found to be a small gene with an open reading frame (ORF) of ~243 bb encoding a protein composed of 77 aa that shares no sequence homology with any known gene. Notably, northern analyses demonstrated that SI;INT7 gene expression is up-regulated in response to various stress signalling molecules such as salicylic acid (SA), abscissic acid, jasmonic acid, nitric oxide (NO) and salt, implicating SI;INT7 in biotic and abiotic stress signalling transduction responses. To gain more insight into the possible function of SI;INT7, a construct in which SI;INT7 is C-terminally fused to the green fluorescent protein (GFP) was generated. Subsequently, 35S::SI;INT7::GFP-containing constructs were transiently expressed in both tobacco leaves and onion peels via microprojectiles bombardment.

Subsequently, confocal laser microscopic examination of bombarded tobacco and onion tissues revealed that the expression of GFP-SI;INT7 was observed predominantly in the plasma membrane, compared to the location throughout the cell observed with the control GFP construct alone. These results are discussed in the light of our present knowledge of C2H4-mediated control over fruit ripening and degree of cross-talk with other stress signalling pathways.
Keywords: Ethylene; Fruit ripening; Subcellular localisation; Tomato

Monica Ponce-Valadez, Shanna Moore Fellman, James Giovannoni, Su-Sheng Gan, Christopher B. Watkins, Differential fruit gene expression in two strawberry cultivars in response to elevated CO2 during storage revealed by a heterologous fruit microarray approach, Postharvest Biology and Technology, Volume 51, Issue 2, February 2009, Pages 131-140, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.08.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4TVR27G-1/2/ee27e4bbbb5a0593e9f2f615848dcff8)
Abstract:
The use of a heterologous fruit microarray system to identify differentially expressed genes between strawberry cultivars with different responses to 20 kPa CO2 (balance air) during storage has been evaluated. Specifically, a tomato cDNA microarray containing approximately 12,000 ESTs (representing 8700 unigenes) was hybridized with strawberry cDNA populations to compare gene expression differences between two cultivars: `Jewel', a cultivar that accumulates acetaldehyde and ethanol in response to elevated CO2 during storage, and `Cavendish' that does not accumulate these compounds under the same storage conditions. A set of 80 tomato gene sequences gave differential hybridization signals between the two strawberry cultivar probes when they were stored in CO2 for 48 h, suggesting homologous strawberry genes with differential expression. Within each cultivar, when RNA from fruit stored in air was compared with that from fruit stored in CO2, 168 sequences suggested differential expression in `Jewel', but only 51 were differentially expressed in `Cavendish' fruit. Strawberry genes with putative homologies to enzymes involved in cell wall metabolism, ethylene action and stress were implicated by the tomato array. This research not only demonstrates the usefulness of using a heterologous microarray platform from a model species (tomato) to study a complex process in strawberry, a crop of economic importance, for which genomic resources are still limited, but also provides a foundation for investigating the molecular basis of responses to elevated CO2 during strawberry postharvest storage.
Keywords: Modified atmospheres; Carbon dioxide; Strawberry; Tomato microarray; Ethylene receptors

Marina A. Pombo, Marcela C. Dotto, Gustavo A. Martinez, Pedro M. Civello, UV-C irradiation delays strawberry fruit softening and modifies the expression of genes involved in cell wall degradation, Postharvest Biology and Technology, Volume 51, Issue 2, February 2009, Pages 141-148, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.07.007.
(http://www.sciencedirect.com/science/article/B6TBJ-4T9JWC9-6/2/723e6df8a44043b95ec738ab2395c341)
Abstract:
Exposure to UV-C delays fruit softening, one of the main factors determining fruit postharvest life. This softening delay might be caused by changes in the activities of enzymes and proteins involved in cell wall disassembly. Expansins, polygalacturonases (PGs), endoglucanases (EGs) and pectin-methylesterases (PMEs) are cell wall proteins or enzymes involved in fruit softening. In this work, we analyzed the expression profiles of these genes during ripening of strawberries (Fragaria x ananassa, Duch. cv Aroma) and found a correlation between messenger RNA levels and firmness of Aroma cultivar. In addition, strawberries (Fragaria x ananassa, Duch. cv Aroma) at 50% red ripening stage were harvested and then irradiated with a non-lethal UV-C dose (4.1 kJ m-

2). Treated and control fruit were stored at 20 [degree sign]C during 96 h. Fruit firmness, expression of genes encoding cell wall degrading enzymes and proteins, and the enzyme activity of PG, endoglucanase and PME were analyzed. UV-C treatment delayed fruit softening, and treated fruit showed higher firmness than controls even 96 h after irradiation. The irradiation modified the expression of the genes and the activity of assayed enzymes. In general, the expression of analyzed genes was reduced a few hours after irradiation, while it increased afterwards to reach similar or higher levels than the controls. The expression of three expansins (FaExp2, FaExp4 and FaExp5) was reduced 4 h after irradiation. The expression of FaPG1 was lower in irradiated fruit after 8 h. The amount of FaCel1 transcript was reduced even after 24 h. At different times, the enzyme activities (PG, endoglucanase, PME) remained at a similar or lower level than in non-irradiated fruit. Therefore, the effect of UV-C irradiation on strawberry fruit softening could be related to the decrease of the transcription of a set of genes involved in cell wall degradation, during the first hours after treatment.
Keywords: Fruit; Strawberry; Softening; UV-C; Cell wall

Robert A. Spotts, Kelly M. Wallis, Maryna Serdani, Daniel T. O'Gorman, Peter L. Sholberg, Real time polymerase chain reaction for rapid and quantitative determination of Cystofilobasidium infirmominiatum on the surfaces of apple, pear, and sweet cherry fruit, Postharvest Biology and Technology, Volume 51, Issue 2, February 2009, Pages 227-231, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.07.015.
(http://www.sciencedirect.com/science/article/B6TBJ-4TX6W1H-5/2/aeede5d8334bdfaf7d74d72030e326e1)
Abstract:
The objectives of this study were to develop primers and a real time PCR protocol for the postharvest biocontrol yeast Cystofilobasidium infirmominiatum (Cim). The application of this technology was developed to quantify Cim on the surfaces of apple, two pear cultivars, and sweet cherry fruit treated over a range of concentrations. Statistically significant relationships were observed between Cim DNA on fruit surfaces, expressed as [mu]g/m2, and CFU/L of dip suspensions for apple, pear, and sweet cherry. In addition, the relationship for each fruit was significantly different from the other three fruits. Threshold values of concentrations of Cim DNA on the fruit surface were calculated based on regression equations and a dose of 2.0 x 1011 CFU/L of dip suspension, the dose for optimum decay control, and were 4.8, 7.0, 16.5, and 25.2 [mu]g/m2 for Bosc pear, Lapins sweet cherry, d'Anjou pear, and Golden Delicious apple, respectively. Monitoring Cim DNA concentration on fruit surfaces will assure that Cim is being properly applied to fruit and that a sufficient number of cells are present for optimum decay control.
Keywords: Biological control; Detection; Malus sylvestris; Prunus avium; Pyrus communis; Real time PCR

M. Cecilia N. Nunes, Jean Pierre Emond, Mary Rauth, Sharon Dea, Khe V. Chau, Environmental conditions encountered during typical consumer retail display affect fruit and vegetable quality and waste, Postharvest Biology and Technology, Volume 51, Issue 2, February 2009, Pages 232-241, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.07.016.
(http://www.sciencedirect.com/science/article/B6TBJ-4TXDXGJ-2/2/925e1ea544040bbc2a2a1f95c13457f8)
Abstract:
Temperature and relative humidity (RH) are the most important environmental factors affecting the sensory quality of fresh produce, and therefore, the consumer acceptability for fruits and vegetables displayed in a produce department. Poor temperature management inevitably occurs in commercial handling and reduces the quality and maximum potential shelf life of fruits and vegetables. Since there is a lack of information on the actual temperatures registered inside local distribution trucks or in consumer retail displays, and the effects on the produce quality, the current

study was designed to evaluate the segment of the distribution chain that comprises the time the produce arrives from the distribution center to the store, is displayed at the store, and then stored under household conditions. Temperature and RH were recorded in three different produce departments, at reception and during a 6-week retail display period. Truck and produce temperatures were collected immediately upon opening of the doors, and display temperatures were monitored inside 27 refrigerated and non-refrigerated retail displays. Visual quality of 37 different produce items was evaluated, and surface or pulp temperatures were measured immediately upon unloading from the delivery truck. Reasons for produce waste were recorded on a daily basis during a 6-week period. Shelf life studies were conducted under simulated household conditions using samples collected at the stores. Results from this study showed that chilling-sensitive commodities were transported under too cold conditions, whereas heat-sensitive commodities were transported under too warm conditions. Visual quality of the produce received at the store ranged from good to poor depending on the fruit or vegetable evaluated, with raspberry receiving the lowest visual quality score in 6.7% of store deliveries, and banana, fresh-cut vegetables, peach and pineapple receiving the best visual quality score in 100% of store deliveries. Temperatures measured inside retail displays showed a wide variation, depending on the store and location inside the display, ranging from -1.2 [degree sign]C to 19.2 [degree sign]C in refrigerated displays and from 7.6 [degree sign]C to 27.7 [degree sign]C in non-refrigerated displays. RH ranged from 55.9% to 92.9% in refrigerated displays and from 29.7% to 86.6% in non-refrigerated displays. Poor temperature management was the major cause of produce waste (55%) whereas expired date and mechanical damage accounted for 45% of the produce wasted. Results from this study show that fruits and vegetables are often handled under adverse environmental conditions, resulting in produce with poor quality and shorter shelf life, and increased waste at the retail and consumer levels.
Keywords: Transport; Retail store; Household; Temperature; Humidity; Shelf life

David Sugar, Sally R. Basile, Low-temperature induction of ripening capacity in `Comice' and `Bosc' pears as influenced by fruit maturity, Postharvest Biology and Technology, Volume 51, Issue 2, February 2009, Pages 278-280, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.07.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4T9JWC9-3/2/ead445a945a73c83eb1d77ae2841d047)
Abstract:
The relationship between fruit maturity at harvest and the duration of postharvest exposure to -1 [degree sign]C required to induce ripening capacity was studied in `Comice' and `Bosc' pears. As fruit of both cultivars were harvested progressively later, shorter durations of exposure to -1 [degree sign]C were required to induce ripening capacity. The relationship between the duration of conditioning at -1 [degree sign]C and the fruit flesh firmness after 7 d at 20 [degree sign]C was well-described by second-order polynomial equations. These equations were used to determine the number of days at -1 [degree sign]C required to induce ripening capacity for each harvest date. A linear relationship was observed between the number of days after fruit in the orchard reached maturity that fruit were harvested and the number of days of low-temperature conditioning needed to induce ripening capacity. This relationship may be used to predictively estimate the duration of low-temperature conditioning required to induce ripening based on harvest date.
Keywords: Low-temperature conditioning; Pear ripening; Winter pears; Pyrus communis

Satoru Kondo, Siriwan Meemak, Yusuke Ban, Takaya Moriguchi, Takeo Harada, Effects of auxin and jasmonates on 1-aminocyclopropane-1-carboxylate (ACC) synthase and ACC oxidase gene expression during ripening of apple fruit, Postharvest Biology and Technology, Volume 51, Issue 2, February 2009, Pages 281-284, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.07.012.

(http://www.sciencedirect.com/science/article/B6TBJ-4TXDXGJ-1/2/cf515394153389e1485384d170d5bc6d)
Abstract:
1-Aminocyclopropane-1-carboxylate (ACC) synthase and oxidase activities, their gene expression, and ethylene production in apple fruit [Malus sylvestris (L.) Mill. Var. domestica (Borkh.) Mansf.] treated with a synthetic auxin 2,4-dichlorophenoxy-propionic acid (2,4-DP) and n-propyl dihydrojasmonate (PDJ), a jasmonic acid derivative, has been investigated to clarify the action of auxin and jasmonates on ethylene production. The fruit was harvested at 103 d after full bloom (preclimacteric). The expression of MdACS4 messenger RNA (mRNA) at 48 and 96 h after treatment was higher in fruit treated with 2,4-DP than in the untreated control, but those of MdACS1 and MdACO1 were not affected by treatment. The ethylene production in 2,4-DP-treated fruit increased at 96 h after treatment. In contrast, expression of mRNAs hybridized with MdACS1 and MdACO1 probes in the skin of PDJ-treated fruit were higher than those in the untreated control. In addition, ACC synthase activity and ethylene production also increased after treatment. These results show that the ethylene production rate may differ with the kind of genes which were stimulated by auxin or jasmonates.
Keywords: Auxin; Ethylene; Jasmonates; Malus sylvestris (L.); Preclimacteric

Gopinadhan Paliyath, Berry Fruit: Value-Added Products for Health Promotion, edited by Yanyun Zhao, Published by CRC Press, Boca Raton, Florida, 2007. ISBN-13:978-0-8493-5802-9; 10: 0-8493-5802-7; Food Science and Technology Series, Volume 168. Price-$179.95., Trends in Food Science & Technology, Volume 20, Issue 2, February 2009, Pages 104-105, ISSN 0924-2244, DOI: 10.1016/j.tifs.2009.01.006.
(http://www.sciencedirect.com/science/article/B6VHY-4VBDK8C-6/2/b667cca271c0185ed6dd38dcfebc1cf0)

Karen D. Williams, Marla B. Sokolowski, Evolution: How Fruit Flies Adapt to Seasonal Stresses, Current Biology, Volume 19, Issue 2, 27 January 2009, Pages R63-R64, ISSN 0960-9822, DOI: 10.1016/j.cub.2008.11.035.
(http://www.sciencedirect.com/science/article/B6VRT-4VG1W7R-9/2/f9c483ac974c9a1e40dcfbd8d4ab8b5a)
Abstract: Summary
Fruit flies inhabit a wide range of latitudes, requiring adaptation to the varying local climates. A recent study reports evidence that the ability of North American flies to endure the winter involves adaptive polymorphism of the couch potato gene.

Jean A.T. Pennington, Rachel A. Fisher, Classification of fruits and vegetables, Journal of Food Composition and Analysis, In Press, Corrected Proof, Available online 22 January 2009, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.11.012.
(http://www.sciencedirect.com/science/article/B6WJH-4VF56TB-4/2/a47533658a37afae0522fd6681d6e36b)
Abstract:
Classifications for fruits and vegetables are most helpful for dietary assessment and guidance if they are based on the composition of these foods. This work determined whether levels of food components in fruits and vegetables correlated with classification criteria based on botanic family, color, part of plant, and total antioxidant capacity (TAC). A database of 104 commonly consumed fruits and vegetables was created that contained food components known to be provided primarily by these foods. A mathematical clustering algorithm was used to group the foods into homogeneous clusters based on food component levels and the classification criteria. Most useful in categorizing were the botanic families rose, rue (citrus), amaryllis, goosefoot, and legume; color groupings blue/black, dark green/green, orange/peach, and red/purple; and plant parts fruit-berry,

seeds or pods, and leaves. Groupings based on TAC levels did not match well with the identified clusters. Clusters were often best defined by a combination of classification variables such as color and part of plant. Results suggest that the groupings dark green leafy vegetables; cabbage family vegetables; lettuces; allium family bulbs; legumes; deep orange/yellow fruits, roots, and tubers; citrus family fruits; tomatoes and other red vegetables and fruits; and red/purple/blue berries are predictive for food components provided by fruits and vegetables.
Keywords: Antioxidants; Classification; Dietary assessment; Dietary guidance; Food composition; Fruits; Phytonutrients; TAC; Total antioxidant capacity; Vegetables

Bao Yang, Yueming Jiang, Rui Wang, Mouming Zhao, Jian Sun, Ultra-high pressure treatment effects on polysaccharides and lignins of longan fruit pericarp, Food Chemistry, Volume 112, Issue 2, 15 January 2009, Pages 428-431, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.05.097.
(http://www.sciencedirect.com/science/article/B6T6R-4SNGMB7-D/2/c096295090f52060f7c2c011a7e82547)
Abstract:
Longan fruit pericarp was subjected to ultra-high pressure treatment. The yields of water-soluble polysaccharides, alkali-soluble polysaccharides and cellulose were comparatively analysed before and after ultra-high pressure treatment. A negative relationship was observed between pressure and water-soluble polysaccharide yield. The lowest yield (6.4 +/- 0.6 mg/g) was obtained at 500 MPa. No significant differences ($P > 0.05$) in alkali-soluble polysaccharide and cellulose yields was found between the ultra-high pressure-treated and non-treated samples (control). Furthermore, a similar phenomena was observed for cellulose. The degrees of hydrolysis (DH) of control and 500 MPa-treated cellulose were 26.6% and 29.4%, respectively, and there was a significant difference ($P < 0.05$) between them. The degradation and oxidation of lignins were analysed using high performance liquid chromatography, and four main peaks appeared. A comparative profile suggested that ultra-high pressure treatment could not result in a change in the lignin composition.
Keywords: Longan; Polysaccharide; Cellulose; Lignin

J.S. Rubio, F. Garcia-Sanchez, F. Rubio, V. Martinez, Yield, blossom-end rot incidence, and fruit quality in pepper plants under moderate salinity are affected by K+ and Ca2+ fertilization, Scientia Horticulturae, Volume 119, Issue 2, 6 January 2009, Pages 79-87, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.07.009.
(http://www.sciencedirect.com/science/article/B6TC3-4T72K3M-3/2/2279d733e4d5d68e5ef78fb36df1dd4c)
Abstract:
One of the most important factors limiting agricultural expansion and production is the restricted supply of good quality water. The present study examines the effects of K+ and Ca2+ fertilization on sweet pepper production, blossom-end rot (BER) incidence and fruit quality of pepper plants (Capsicum annuum L.) grown under moderate saline conditions. Pepper plants were grown in a controlled-environment greenhouse under hydroponic conditions with different nutrient solutions obtained by modifying the Hoagland solution. The experiment consisted on four K+ treatments (0.2, 2, 7 and 14 mM) +30 mM NaCl, and four Ca2+ treatments (0.2, 2, 4 and 8 mM) +30 mM NaCl, having in common a control without salt with 7 mM K+/4 mM Ca2+. Salinity decreased total fruit yield and marketable fruit yield by 23% and 37%, respectively. The marketable fruit yield reduction by salt treatment was mainly due to the increase in the number of fruit affected by BER. This typical physiopathy of the pepper fruits occurred between 18 and 25 days after anthesis (DAA), when the highest fruit growth rate was reached. Fruit quality parameters were also affected by salt treatment where the fruit pulp thickness and firmness were decreased, and fructose, glucose and myo-inositol fruit concentrations increased with salinity relative to fruits from control treatment. Under saline conditions an increased supply of K+ reduced the fruit fresh weight, the percentage of BER and the marketable yield although promoted the vegetative growth. However,

increasing Ca2+ concentration in the nutrient solution increased the fruit production, and the marketable yield as consequence of decreasing the percentage of fruit affected with BER. Fruit quality parameters also were affected by the K+ and Ca2+ treatments.
Keywords: Moderate salinity; Mineral nutrition; Pepper; Fruit production parameters

Sabry M. Youssef, Silvia Jimenez-Bermudez, M. Luz Bellido, Carmen Martin-Pizarro, Marta Barcelo, Samia Abdallah Abdal-Aziz, Jose L. Caballero, Jose M. Lopez-Aranda, Fernando Pliego-Alfaro, Juan Munoz, Miguel A. Quesada, Jose A. Mercado, Fruit yield and quality of strawberry plants transformed with a fruit specific strawberry pectate lyase gene, Scientia Horticulturae, Volume 119, Issue 2, 6 January 2009, Pages 120-125, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.07.011.
(http://www.sciencedirect.com/science/article/B6TC3-4T9BXNK-1/2/7e844b11a806c480e33670fb7bcdbeba)
Abstract:
Two transgenic strawberry lines (Pel 1 and Pel 3) containing the open reading frame of a fruit specific strawberry pectate lyase gene (FaplC) under the control of the CaMV35S promoter have been obtained to evaluate the role of this gene on fruit softening. Ripen fruits from both lines showed a significant down-regulation of FaplC, being the percentage of silencing of 84 and 71% on Pel 1 and Pel 3, respectively. The agronomic behaviour of transgenic plants was evaluated during two consecutive years. Fruit set increased in the two transgenic lines when compared with control plants, although Pel 1 showed a significant reduction on fruit weight. Firmness of full ripen fruits from Pel lines was significantly higher than control fruits, while color and soluble solids were not affected. The increase of firmness in Pel lines was maintained when ripe fruits were stored for 3 days at 25 [degree sign]C. Histological analysis of ripe fruits showed lower intercellular spaces and a higher degree of cell to cell contact area in transgenic fruits when compared with controls. Altogether, these results suggest a direct relationship between pectate lyase gene expression and strawberry fruit softening.
Keywords: Fragaria x ananassa; Co-suppression; Fruit texture; Fruit firmness; Cell wall; Pectin metabolism

M.A. Bassal, Growth, yield and fruit quality of `Marisol' clementine grown on four rootstocks in Egypt, Scientia Horticulturae, Volume 119, Issue 2, 6 January 2009, Pages 132-137, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.07.020.
(http://www.sciencedirect.com/science/article/B6TC3-4T9TC8N-2/2/8fc55e6db8bcfcd52ccff65c4dd024f3)
Abstract:
To evaluate the most appropriate rootstocks for mandarin production in Egypt, vegetative growth, yield and fruit quality of `Marisol' clementine (as newly introduced cultivar in Egypt) grafted on Sour orange (the common rootstock), Cleopatra mandarin, Carrizo citrange and `Swingle' citrumelo were evaluated under the Egyptian conditions during 2004/2005 and 2005/2006 seasons. Trees were grown in a private farm at `Wady El-Mullak' region, Ismailia Governorate (Latitude, 30[degree sign]36' N; longitude, 32[degree sign]14' E; Altitude, 10 m above sea level).
`Marisol' clementine trees budded on Sour orange showed higher vegetative growth parameters (canopy circumference and diameter, tree volume, scion trunk girth) than trees on Carrizo citrange, `Swingle' citrumelo and Cleopatra mandarin rootstocks, except the tree height which was shorter than those on Carrizo citrange and `Swingle' citrumelo (in the first season) or similar (in the second season), while the trees budded on Cleopatra mandarin were the shortest. The highest affinity was found with the Sour orange, followed by Cleopatra mandarin and Carrizo citrange, while the lowest affinity was found with `Swingle' citrumelo.
Trees on Sour orange produced the higher yield than those on Cleopatra mandarin, `Swingle' citrumelo and Carrizo citrange rootstocks. The trees on Sour orange had the highest average yield

of two seasons (26.36%, 19.51% and 17.6% over those on Cleopatra mandarin, Carrizo citrange and `Swingle' citrumelo, respectively); however, those budded on Cleopatra mandarin had the lowest one. Trees on all rootstocks exhibited relatively little alternate bearing index, and the trees on Carrizo citrange significantly showed lower alternate bearing index.
Fruit weight, volume, dimensions and shape, peel thickness and percentage, rag percentage and juice content were not significantly affected by rootstock. However, fruit gravity, colour, firmness and juice TSS, acidity, TSS/acid ratio and ascorbic acid contents were significantly affected by rootstock. Sour orange produced fruits with high gravity, firmness and acidity and low fruit colour, TSS and TSS/acid ratio, indicating that Sour orange retarded fruit maturity and, therefore, it is not recommended as a rootstock for this cultivar (whereas its fruit maturation is extra early), despite of its high fruit production. While, Carrizo citrange produced fruits with low gravity, firmness and acidity and best colour, high TSS and TSS/acid ratio, followed by Cleopatra mandarin and `Swingle' citrumelo rootstocks. Carrizo citrange, Cleopatra mandarin and `Swingle' citrumelo can be considered as suitable rootstocks for `Marisol' clementine under the Egyptian conditions.
Keywords: Clementine; Rootstocks; Tree vigor; Yield; Alternate bearing; Fruit quality

P.A. Roussos, N-K. Denaxa, T. Damvakaris, Strawberry fruit quality attributes after application of plant growth stimulating compounds, Scientia Horticulturae, Volume 119, Issue 2, 6 January 2009, Pages 138-146, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.07.021.
(http://www.sciencedirect.com/science/article/B6TC3-4T9JWHV-1/2/280d72cf08b9d978060c73262028d70f)
Abstract:
Strawberry plants cv. Camarosa were treated with different plant growth stimulators, in order to examine their effect on both yield and product quality. The treatments comprised an untreated control and a mixture of a seaweed extract plus a commercial mixture of nitrophenolates and a commercial mixture of an auxin (phenothiol) plus gibberellic acid at two dose rates. The plant growth stimulators increased marketable yield and fruit size, while they had no significant impact on fruit juice pH, titratable acidity and total soluble solids concentration. Furthermore, they had no significant effect on fruit organic acid and carbohydrate concentration and on fruit color, although they enhanced total anthocyanin concentration. The antioxidant activity of the fruit juice was slightly higher in the fruits of control treatment, which could be the result of their higher total phenol, o-diphenol, flavonoid and flavanol concentration. When a taste panel took place, the panelists gave the best score to those fruits deriving from plants treated with the mixture of auxin plus gibberellic acid.
Keywords: Anthocyanins; Antioxidant capacity; Quality; Phenolics; Plant growth stimulator; Strawberry (Fragaria x ananassa Duch.)

A.M. Palese, V. Pasquale, G. Celano, G. Figliuolo, S. Masi, C. Xiloyannis, Irrigation of olive groves in Southern Italy with treated municipal wastewater: Effects on microbiological quality of soil and fruits, Agriculture, Ecosystems & Environment, Volume 129, Issues 1-3, January 2009, Pages 43-51, ISSN 0167-8809, DOI: 10.1016/j.agee.2008.07.003.
(http://www.sciencedirect.com/science/article/B6T3Y-4T72JT8-1/2/e7699776cd09837e28d664ca41dabe34)
Abstract:
The use of municipal wastewater in agriculture requires a careful monitoring of a range of hygiene parameters. Yearly hygienic impact assessments on soil and fruit were made between 2000 and 2006 in an olive (Olea europaea L.) grove established near a municipal wastewater treatment plant in Southern Italy (Ferrandina-Basilicata region, 40[degree sign]29' N, 16[degree sign]28' E). The experimental grove was managed in two plots. The first plot, non-tilled, was drip irrigated daily with reclaimed wastewater. The second plot was unirrigated (i.e. rainfed) and subject to conventional management for the region. Samples of wetted soil from different depths and of

treated wastewater were analysed for Escherichia coli, enterococci, sulphite-reducing Clostridium spores and Salmonella spp. Fruits were collected both from the canopy and from nets spread on the ground and analysed for faecal contamination. The average annual quantity of wastewater distributed was 293 mm. E. coli concentration in the wastewater varied considerably, being frequently above the stringent Italian mandatory limit of 10 CFU 100 mL-1 and also the WHO limit of 1000 MPN 100 mL-1. Salmonella was never detected in the wastewater, the soil or on the fruit samples. Slight increases in the other bacteria were observed in the wastewater-irrigated soil during the irrigation season and especially in the top 10 cm. Soil resilience and bacterial mortality/inactivation probably explains the seasonal decrease of soil bacteria content over the 7 years of the study. Because of their high resistance to disinfection treatments and to environmental conditions, the spores of the sulphite-reducing bacterium Clostridium could be useful as an indicator of contamination in future guidelines that might be enacted for the use of wastewater in agriculture. No significant microbial contamination was recorded on fruit harvested directly from the canopy of the wastewater-irrigated trees. Contaminations on fruits sampled from the ground in the wastewater-irrigated plot were always low and usually similar to, or lower than those observed on drupes collected from the rainfed plot. In the rainfed plot, the recorded occasional contaminations were probably due to a number of factors, such as grazing of farm stock, presence of wild animals and surface water runoff from adjacent agricultural areas. This work confirms that, under suitable conditions, low-quality wastewater can be useful as an additional water resource for olive irrigation in water-scarce Mediterranean environments.
Keywords: Olea europaea L.; Faecal indicators; Health hazards; Agricultural recycling; Wastewater reuse

Carlos H. Vergara, Ernesto I. Badano, Pollinator diversity increases fruit production in Mexican coffee plantations: The importance of rustic management systems, Agriculture, Ecosystems & Environment, Volume 129, Issues 1-3, January 2009, Pages 117-123, ISSN 0167-8809, DOI: 10.1016/j.agee.2008.08.001.
(http://www.sciencedirect.com/science/article/B6T3Y-4TGGCHG-1/2/53152de9d09f982b32d23c9a0503ebe0)
Abstract:
Pollination is an ecological process that provides important services to humans. Pollination service in agroecosystems depends on several factors, including the land management systems used by farmers. Here we focused on the effects of insect pollinator diversity on coffee fruit production along a gradient of management systems in central Veracruz, Mexico. The gradient ranged from low environmental impact management systems (the native forest is not completely removed) to high environmental impact management systems (the native forest is completely removed). We hypothesized that pollinator diversity should be higher in low-impact systems. Then, if fruit production is positively related to pollinator diversity, plantations with low-impact management systems should display higher fruit production than plantations with high-impact management systems. We used observational and experimental data to test this hypothesis. Our results indicated that low-impact management systems have higher species richness and relative diversity (measured with the Shannon-Wiener diversity index) of pollinators than high-impact management systems. In all cases, fruit production was positively related with species richness and diversity of pollinators. Moreover, fruit production was higher in low-impact than in high-impact management systems. These results suggest that the diversity of insect pollinators can be influenced by the management system applied by farmers, and that such effects may have strong consequences on coffee fruit production.
Keywords: Coffee; Mexico; Pollination service; Pollinator diversity; Fruit production

Yongxu Sun, Jicheng Liu, Purification, structure and immunobiological activity of a water-soluble polysaccharide from the fruiting body of Pleurotus ostreatus, Bioresource Technology, Volume

100, Issue 2, January 2009, Pages 983-986, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.06.036.
(http://www.sciencedirect.com/science/article/B6V24-4T3CPYV-1/2/7bf13b35537b706429207aa5fffe3586)
Abstract:
The water-soluble polysaccharide (POP), with a molecular mass of 2.4 x 104 Da, was obtained from the fruiting body of Pleurotus ostreatus. Structure features of the purified polysaccharide were investigated by a combination of chemical and instrumental analysis, such as methylation analysis, Smith degradation, GC-MS, 13C and 1H NMR and FTIR. The results indicated that the backbone of POP was composed of (1 --> 6)-linked-[alpha]-d-galactopyranosyl and (1 --> 2,6)-linked-[alpha]-d-galactopyranosyl residues, which were terminated with a single terminal (1-->)-[beta]-d-glucose residue at the O-2 position of galactosyl along the main chain in the ratio of 1:1:1. Preliminary tests in vitro showed POP is capable of enhancing concanavalin A (ConA)- or lipopolysaccharide (LPS)-induced lymphocyte proliferation, which suggested that POP could be a potential immunostimulating agent for use in functional foods or medicine against both pathogens and cancer.
Keywords: Pleurotus ostreatus; Polysaccharide; Structural analysis; NMR spectroscopy; Lymphocyte proliferation

A. Vicent, J. Armengol, J. Garcia-Jimenez, Protectant activity of reduced concentration copper sprays against Alternaria brown spot on `Fortune' mandarin fruit in Spain, Crop Protection, Volume 28, Issue 1, January 2009, Pages 1-6, ISSN 0261-2194, DOI: 10.1016/j.cropro.2008.07.004.
(http://www.sciencedirect.com/science/article/B6T5T-4TRR8M0-1/2/bc0ff3c09aef534b4e4b4b97c7b5ae0d)
Abstract:
Alternaria brown spot (ABS) of mandarins is a serious disease of fruit and foliage of citrus, causing defoliation, fruit drop and rind blemishes on susceptible cultivars. In Spain, the disease causes severe losses on the late-maturing cultivars for export of `Fortune' and `Nova'. Several fungicide sprays are needed to protect susceptible organs during the critical infection periods through the growing season. In Spain, copper compounds and mancozeb are the only fungicides registered for ABS control in conventional production, and copper is accepted for organic production as long as total dose does not exceed 6 kg ha-1 annually, but considerably higher amounts are currently applied for ABS control. Therefore, experiments were performed to evaluate the protective effect of reduced copper concentrations on fruits of the highly susceptible cultivar `Fortune'. All copper compounds evaluated effectively protected `Fortune' fruit from infection for the 28-d period of study in two field trials, where a daily average of 9 h of leaf wetness was recorded. Reducing the concentration of copper in the spray tank from 1 to 0.5 g l-1 had no negative effect on persistence. Copper compounds applied at 0.5 g l-1 displayed excellent rain fastness in the simulated rainfall experiment, even with the highest precipitation of 90 mm. The use of reduced concentration copper sprays would diminish the economic and environmental costs of disease control and may assist growers moving towards organic production.
Keywords: Alternaria alternata; Tangerine pathotype; Organic production; Disease control

H. Shiotani, H. Uematsu, T. Tsukamoto, Y. Shimizu, K. Ueda, A. Mizuno, S. Sato, Survival and dispersal of Xanthomonas citri pv. citri from infected Satsuma mandarin fruit, Crop Protection, Volume 28, Issue 1, January 2009, Pages 19-23, ISSN 0261-2194, DOI: 10.1016/j.cropro.2008.08.002.
(http://www.sciencedirect.com/science/article/B6T5T-4TJ058R-2/2/5a701257bf70e2ab933dd3380f2a7b35)
Abstract:

Xanthomonas citri pv. citri was not detected by PCR in aqueous sonicates from 3491 mature, asymptomatic fruit harvested from severely diseased Satsuma mandarin trees growing in Saga city, Japan. No strains of X. citri pv. citri were recovered from the fruit in either 2005 or 2006. Thus it is unlikely that healthy, asymptomatic Satsuma mandarin fruits harbour detectable populations of X. citri pv. citri. The survival of X. citri pv. citri on Satsuma mandarin fruits discarded in an orchard was determined in two consecutive years. Bacterial numbers on the contaminated fruits decreased significantly in the first 3 d after fruits were discarded. Using a PCR technique to detect the bacterium, there was no detectable spread of X. citri pv. citri from contaminated fruit into rainwater collected beneath the fruit. The results of this investigation demonstrate that populations of X. citri pv. citri present in contaminated fruit were not transferred to susceptible hosts, even when the fruits were placed in close proximity to hosts that were in a receptive stage. There was no spread of X. citri pv. citri in this study, indicating that there is a low risk transmission of this bacterium.
Keywords: Satsuma mandarin; Resistant cultivar; Citrus canker

Julieta Genini, Mauro Galetti, L. Patricia C. Morellato, Fruiting phenology of palms and trees in an Atlantic rainforest land-bridge island, Flora - Morphology, Distribution, Functional Ecology of Plants, Volume 204, Issue 2, 2009, Pages 131-145, ISSN 0367-2530, DOI: 10.1016/j.flora.2008.01.002.
(http://www.sciencedirect.com/science/article/B7GX0-4THS3FG-1/2/4517c756d965f351171ab05bc5424037)
Abstract:
Tropical forests show periods of scarcity and high fruit production in the same year and/or between years. Palms are an important component of Neotropical rainforests and a significant food resource for several frugivores. Therefore, their role as keystone resource may be exacerbated in highly impoverished areas. In Anchieta Island, Sao Paulo/Brazil, human settlements have modified and impoverished the forest, mainly through overharvesting and the introduction of exotic plants and several mammal species. We assessed the offer of fruits consumed by vertebrate frugivores at this island, the vegetation of which is belonging to the Brazilian Atlantic rainforest. We compared whether the fruiting patterns and fruit fall differ between palms and trees, and discuss the importance of palms as a food resource for frugivores and the implications for Anchieta Island conservation. Phenological patterns were seasonal for both trees and palms; however, the times of fruiting occurrence differed. Fruit fall biomass was at least twice lower than reported for other Atlantic rain forests and was also different between trees and palms. Palms contributed more than 80% of the overall fruit fall biomass. Palms may constitute an alternative food resource in periods of low fruit availability, although they do not provide resources for the entire assemblage of vertebrate frugivores. Energy-rich fruits, such as those produced by palms, may play an important role in the maintenance of frugivore populations in isolated, disturbed environments with a high density of vertebrate frugivores, low diversity of fruiting species and fruit biomass such as those found on Anchieta Island.
Keywords: Attalea; Euterpe; Island ecosystem; Keystone species; Exotic species

Franco E. Chiarini, Gloria E. Barboza, Fruit anatomy of species of Solanum sect. Acanthophora (Solanaceae), Flora - Morphology, Distribution, Functional Ecology of Plants, Volume 204, Issue 2, 2009, Pages 146-156, ISSN 0367-2530, DOI: 10.1016/j.flora.2008.01.010.
(http://www.sciencedirect.com/science/article/B7GX0-4TC2RVJ-1/2/96ff53f669d35e0bb46912b5a55e1400)
Abstract:
The fruits of 10 species of Solanum sect. Acanthophora were studied. Cross and/or longitudinal and/or tangential microtome sections, stained mostly with astra blue/basic fuchsin, were made for microscopic examination. Three different kinds of cells were found in the epidermis, immediately below which a hypodermis, consisting in any of four types of structures, was always found. The

mesocarp exhibits two histologically differentiated zones, an external one (formed by normal or spongy parenchyma, according to the species), and an internal one, commonly juicy, and with proliferations among the seeds. The diagnostic value of all these structures is assessed. Morpho-anatomical information is used to define fruit types beyond the berry, traditionally described for Solanum, and the probable dispersal syndrome related to them is discussed. Fruit similarities are slightly noticeable in several cases, while differences may be the result of their sexual system - which affects specially the size - and their histology, which is related to the dispersal syndrome. The comparison of our data with previous molecular phylogeny of the section suggests that a significant morphological variation is not associated with significant DNA sequence changes.
Keywords: Anatomy; Epidermis; Fruit; Phylogeny; Solanum; subgen. Leptostemonum

Paulo Milet-Pinheiro, Airton Torres Carvalho, Peter G. Kevan, Clemens Schlindwein, Permanent stigma closure in Bignoniaceae: Mechanism and implications for fruit set in self-incompatible species, Flora - Morphology, Distribution, Functional Ecology of Plants, Volume 204, Issue 1, 2009, Pages 82-88, ISSN 0367-2530, DOI: 10.1016/j.flora.2007.11.006.
(http://www.sciencedirect.com/science/article/B7GX0-4TCGKYN-2/2/90b5432e60bfffca1315081b368d1831)
Abstract:
The Bignoniaceae possess sensitive bilobate stigmas that close after stimulation. We determined factors involved in stigma closure and reopening in four species of Bignoniaceae from the National Parks of Catimbau, Northeastern Brazil (Anemopaegma laeve, Arrabidaea limae, Jacaranda rugosa and Tabebuia impetiginosa). The study showed that any mechanical touch promoted the stigmatic closure. Only the deposition of viable con-specific pollen (self- and cross-pollen), however, maintained stigmas permanently closed. In Arrabidaea limae part of the stigmas reopened after self- and cross-pollination. After mechanical stimulation, deposition of pollen from other plant species, of dead con-specific pollen or of sand, the stigma lobes opened again after 38 to 68 min. The definitive closure may have a negative effect on the reproductive success of the involved plants, because the stigmas are permanently unavailable for pollen deposition. In self-incompatible species with mass-flowering blooming pattern, where pollinators promote high levels of geitonogamy, definitive stigma closure causes low fruit set.
Keywords: Sensitive stigmas; Pollination; Self-incompatibility; Geitonogamy; Mass flowering; Northeastern Brazil

Vassiliki T. Papoti, Maria Z. Tsimidou, Looking through the qualities of a fluorimetric assay for the total phenol content estimation in virgin olive oil, olive fruit or leaf polar extract, Food Chemistry, Volume 112, Issue 1, 1 January 2009, Pages 246-252, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.05.081.
(http://www.sciencedirect.com/science/article/B6T6R-4SN8FJR-3/2/e8e7f2f1d371fe67cf17fbcec1073c85)
Abstract:
As an alternate to the Folin-Ciocalteu assay (F-C) we propose a fluorimetric estimation of the total phenol content in virgin olive oil (VOO), olive fruit and leaf polar extracts. Phenol content was determined at excitation/emission wavelengths set at 280/320 nm. Standard operational procedures (slit widths, temperature, pH) and method validation were carried out according to Eurachem guidelines. The qualities of the proposed assay are better than those of the F-C one, as the procedure is more sensitive (LOD and LOQ values 10-fold lower), three times faster, needs no reagents and most importantly, is not destructive for the sample that can be further used in HPLC or other assays. Data for VOO extracts correlated well with the colorimetric ones ($r = 0.69$, $n = 65$). HPLC coupled with diode array and fluorescence detectors supported the above findings. Good correlations were also found between the respective data for olive fruit and leaf extracts ($r = 0.96$, $n = 18$).

Keywords: Virgin olive oil; Total polar phenol content; Fluorimetry; Folin-Ciocalteu assay; Olive fruit; Olive leaves

Mohammad B. Habibi Najafi, M.H. Haddad Khodaparast, Efficacy of ozone to reduce microbial populations in date fruits, Food Control, Volume 20, Issue 1, January 2009, Pages 27-30, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2008.01.010.
(http://www.sciencedirect.com/science/article/B6T6S-4RRFN83-1/2/e5ff21512fbf8225f1e3a25e53f9c50f)
Abstract:
Ozone is strong oxidant and potent disinfecting agent. There are numerous application areas of ozone in food industry such as sanitation of food plant equipments, surface hygiene and reuse of waste water. While the application of ozone for dried fruits disinfection and for fresh fruits and vegetables microflora destruction has been studied extensively, relatively little information is available on the potential of ozone to reduce microbial populations in date fruits. In this study, ozone was applied in gas form at three concentrations (1, 3, and 5 ppm) for four different periods (15, 30, 45 and 60 min) on Iranian date fruits and the reduction in the total bacterial count, Coliform, Staphylococcus aureus as well as yeast/mold counts were examined. The promising results indicated the efficacy of ozone to reduce the microbial populations in date fruits. Escherichia coli and S. aureus were not found on cultured plates inoculated with the treated samples after treatment with 5 ppm ($p < 0.05$) in 60 min. The method of ozone generation, type of application, as well as the optimal exposure time and concentration of ozone as an antimicrobial agent in date fruit is mentioned in detail.
Keywords: Ozone application; Pathogenic organisms; Growth inhibition; Date fruits

F.R. Harker, B.T. Carr, M. Lenjo, E.A. MacRae, W.V. Wismer, K.B. Marsh, M. Williams, A. White, C.M. Lund, S.B. Walker, F.A. Gunson, R.B. Pereira, Consumer liking for kiwifruit flavour: A meta-analysis of five studies on fruit quality, Food Quality and Preference, Volume 20, Issue 1, January 2009, Pages 30-41, ISSN 0950-3293, DOI: 10.1016/j.foodqual.2008.07.001.
(http://www.sciencedirect.com/science/article/B6T6T-4SY6W43-1/2/8e951db1803d969a3b91ae86f4a6587d)
Abstract:
Consumer liking for `Hayward', `Hort16A' and organic kiwifruit harvested with differing dry matter contents (DM) has been studied in five separate studies over a seven-year period. The results were combined with the aim of generating a larger dataset for exploring the relationship between DM, which is measured at harvest and can be used to predict the sugar content of ripe kiwifruit (rSSC), and consumer liking of kiwifruit flavour. The dataset also allowed the demographic structure of consumer segments with markedly different flavour preferences to be characterised. The range and specifications of different DM categories varied across studies. For this reason, a quadratic regression analysis was used to model the overall liking responses of individual consumers. The re-analysis demonstrated that seasonal differences and methodological variations need to be taken into account when interpreting research on flavour of fresh fruit. Participants who were female, older and more frequent consumers of kiwifruit were more likely to provide consistent responses. Overall the study demonstrated that the majority of consumers responded positively to increasing DM.
Keywords: Fruit; Consumer; Flavour

Piritta Lampila, Maartje van Lieshout, Bart Gremmen, Liisa Lahteenmaki, Consumer attitudes towards enhanced flavonoid content in fruit, Food Research International, Volume 42, Issue 1, January 2009, Pages 122-129, ISSN 0963-9969, DOI: 10.1016/j.foodres.2008.09.002.
(http://www.sciencedirect.com/science/article/B6T6V-4TF7C7G-2/2/aa998c5424d253a59883c0e404e5f02e)

Abstract:
Flavonoids from fruit and vegetables are currently widely studied as components that have the potential to provide multiple health benefits. In this study consumer perceptions of flavonoids were examined. The data (N = 130) were collected in focus group discussions in Finland, The Netherlands and France. In general, the term `flavonoid' was unfamiliar. After receiving information about the possible health benefits, positive attitudes towards flavonoids were expressed. Relevant issues for the acceptance of flavonoids were the natural occurrence and the health benefits associated with common diseases. However, the need to enhance flavonoid content was questioned since fruit and vegetables were perceived to be already healthy with the natural flavonoid content; additionally, consumers had perceptions of risk and uncertainty associated with breeding and processing methods. Familiar processing methods were said to be most acceptable for enhancing flavonoid content. Consumer knowledge on the health effects of flavonoids is limited, and thus there is a need to inform consumers about them. The challenge in informing consumers about the benefits of flavonoids is to maintain the natural image of fruit-based products.
Keywords: Flavonoid; Polyphenols; Fruit; Vegetables; Consumer; Acceptance; Processing

Fabiana S. Paula, Luciana M. Kabeya, Alexandre Kanashiro, Andrea S.G. de Figueiredo, Ana Elisa C.S. Azzolini, Sergio A. Uyemura, Yara Maria Lucisano-Valim, Modulation of human neutrophil oxidative metabolism and degranulation by extract of Tamarindus indica L. fruit pulp, Food and Chemical Toxicology, Volume 47, Issue 1, January 2009, Pages 163-170, ISSN 0278-6915, DOI: 10.1016/j.fct.2008.10.023.
(http://www.sciencedirect.com/science/article/B6T6P-4TV2X95-1/2/6735ac88bb89715babc69c2ae03d003b)
Abstract:
The tamarind (Tamarindus indica L.) is indigenous to Asian countries and widely cultivated in the American continents. The tamarind fruit pulp extract (ExT), traditionally used in spices, food components and juices, is rich in polyphenols that have demonstrated anti-atherosclerotic, antioxidant and immunomodulatory activities. This study evaluated the modulator effect of a crude hydroalcoholic ExT on some peripheral human neutrophil functions. The neutrophil reactive oxygen species generation, triggered by opsonized zymosan (OZ), n-formyl-methionyl-leucyl-phenylalanine (fMLP) or phorbol myristate acetate (PMA), and assessed by luminol- and lucigenin-enhanced chemiluminescence (LumCL and LucCL, respectively), was inhibited by ExT in a concentration-dependent manner. ExT was a more effective inhibitor of the PMA-stimulated neutrophil function [IC50 (in [mu]g/106cells) = 115.7 +/- 9.7 (LumCL) and 174.5 +/- 25.9 (LucCL)], than the OZ- [IC50 = 248.5 +/- 23.1 (LumCL) and 324.1 +/- 34.6 (LucCL)] or fMLP-stimulated cells [IC50 = 178.5 +/- 12.2 (LumCL)]. The ExT also inhibited neutrophil NADPH oxidase activity (evaluated by O2 consumption), degranulation and elastase activity (evaluated by spectrophotometric methods) at concentrations higher than 200 [mu]g/106 cells, without being toxic to the cells, under the conditions assessed. Together, these results indicate the potential of ExT as a source of compounds that can modulate the neutrophil-mediated inflammatory diseases.
Keywords: Tamarindus indica; Neutrophils; Reactive oxygen species; Chemiluminescence; Elastase

Edwin Vera, Jacqueline Sandeaux, Francoise Persin, Gerald Pourcelly, Manuel Dornier, Jenny Ruales, Deacidification of passion fruit juice by electrodialysis with bipolar membrane after different pretreatments, Journal of Food Engineering, Volume 90, Issue 1, January 2009, Pages 67-73, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.06.003.
(http://www.sciencedirect.com/science/article/B6T8J-4SR710F-2/2/1934dce047f4467ccb4c1a447fa2f64a)
Abstract:

The reduction of acidity of passion fruit juice was investigated by electrodialysis (ED) with bipolar membranes (BM) at the laboratory and pre-industrial scale. Four states of juice were tested: initial pulpy juice, juice clarified by tangential microfiltration, twice-concentrated clarified juice, centrifuged juice. The ED performances were compared in terms of deacidification rate, current efficiency, and energy consumption. The deacidification was carried out up to pH 4.5 with satisfactory results. ED performances were lower with the pulpy and concentrated juices because of fouling of the anion-exchange membrane, which increased voltage. The differences in acidity between the juices was reduced by the pre-industrial ED stack, which involved better hydrodynamics through high flow rates and low compartment thickness. Whatever the juices, physico-chemical analysis showed that colour changed only slightly.
Keywords: Passion fruit juice; Deacidification; Bipolar electrodialysis; Pulpy juice; Clarified juice; Centrifuged juice

Francisco J. Cuesta, Manuel Lamua, Fourier series solution to the heat conduction equation with an internal heat source linearly dependent on temperature: Application to chilling of fruit and vegetables, Journal of Food Engineering, Volume 90, Issue 2, January 2009, Pages 291-299, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.06.036.
(http://www.sciencedirect.com/science/article/B6T8J-4SX9FT8-1/2/f247bcdf4b770670c8bbaee75b5c0bc3)
Abstract:
This paper proposes a separation of variables solution to the equation for heat transfer by conduction in simply-shaped, homogeneous and isotropic bodies subjected to cooling or heating processes without a phase change and with an internal heat source that is a linear function of temperature and subject to homogeneous external conditions of the third kind. The solution is given by the sum of an infinite Fourier series. Starting from this solution, the paper also proposes a simple calculation of chilling time based on an approximation to the first term of that solution (exponential zone); it further proposes a first approximation to the maximum value attained by the temperature history, and to the corresponding time.
Keywords: Transient heat transfer; Cooling; Heat of respiration; Chilling times

Joydeb Kumar Kundu, Ki-Seok Choi, Hajime Fujii, Buxiang Sun, Young-Joon Surh, Oligonol, a lychee fruit-derived low molecular weight polyphenol formulation, inhibits UVB-induced cyclooxygenase-2 expression, and induces NAD(P)H:quinone oxidoreductase-1 expression in hairless mouse skin, Journal of Functional Foods, Volume 1, Issue 1, January 2009, Pages 98-108, ISSN 1756-4646, DOI: 10.1016/j.jff.2008.09.016.
(http://www.sciencedirect.com/science/article/B9848-4TN5MRW-6/2/ea614b2811d284f6c466c648fd416632)
Abstract:
Plant polyphenols with antioxidant and anti-inflammatory properties are effective in chemoprotection and chemoprevention. Oligonol is a novel formulation enriched with low molecular weight catechin-type oligomeric polyphenols. Administration of oligonol-L and oligonol-G, derived, respectively, from lychee fruit and grape seeds, by gavage significantly attenuated UVB-induced expression of COX-2 in hairless mouse skin. Intragastric administration of oligonol-L attenuated UVB-induced phosphorylation of extracellular signal-regulated protein kinase-1/2 and p38 mitogen-activated protein kinase in UVB-irradiated mouse skin. UVB irradiation induced phosphorylation of mitogen- and stress-activated kinase-1 (Msk1), Janus-activated kinase-2 (JAK2) and signal transducer and activator of transcription-3 (STAT3) in mouse skin. Pretreatment with oligonol-L diminished UVB-induced phosphorylation of Msk1, JAK2 and STAT3 in UVB-irradiated mouse skin. Furthermore, oligonol-L significantly induced the expression of NAD(P)H:quinone oxidoreductase-1 (NQO-1) in mouse skin. In summary, oligonol-L inhibited UVB-induced expression of COX-2 and various upstream kinases, and induced the expression of

NQO-1, which may account for its protective effects against photoinjury, including photoageing and photocarcinogenesis.
Keywords: Oligonol; Cyclooxygenase-2; Mouse skin; Msk1; JAK2; STAT3; NAD(P)H:quinine oxidoreductase-1; Photoprotection

Antoinette P. Malan, Aruna Manrakhan, Susceptibility of the Mediterranean fruit fly (Ceratitis capitata) and the Natal fruit fly (Ceratitis rosa) to entomopathogenic nematodes, Journal of Invertebrate Pathology, Volume 100, Issue 1, January 2009, Pages 47-49, ISSN 0022-2011, DOI: 10.1016/j.jip.2008.09.007.
(http://www.sciencedirect.com/science/article/B6WJV-4THSX9K-3/2/b326b1481c14efadf056d64510ba95c9)
Abstract:
The potential of entomopathogenic nematodes, Heterorhabditis bacteriophora, Heterorhabditis zealandica and Steinernema khoisanae, to infect pupariating larvae, pupae and adults of Ceratitis capitata and Ceratitis rosa was investigated in laboratory bioassays. Pupariating larvae and adult flies were susceptible to nematode infection, with no infection recorded for the pupae. Pupariating larvae of C. capitata were generally more susceptible to infection than those of C. rosa. Significantly more larvae of C. capitata were infected by H. bacteriophora. For C. rosa, highest infectivity of larvae was obtained with H. zealandica. In contrast, adults of both species were highly infected by S. khoisanae.
Keywords: Biological control; Ceratitis capitata; Ceratitis rosa; Entomopathogenic nematodes; Fruit fly; Heterorhabditis; Tephritidae

Kathleen Fleege Harrington, Connie L. Kohler, Leslie A. McClure, Frank A. Franklin, Fourth Graders' Reports of Fruit and Vegetable Intake at School Lunch: Does Treatment Assignment Affect Accuracy?, Journal of the American Dietetic Association, Volume 109, Issue 1, January 2009, Pages 36-44, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.10.006.
(http://www.sciencedirect.com/science/article/B758G-4V6SCMB-B/2/d1c6093695f73445bfd030b9afb194ea)
Abstract: Objective
Dietary interventions with children often use self-reported data to assess efficacy despite that objective methods rarely support self-report findings in validation studies. This study compared fourth graders' self-reported to observed lunch fruit and vegetable intake to determine if the accuracy of self-reported intake varied by treatment condition.Design
Matched randomized follow-up design examined three treatment groups (high and low intensity interventions and control) post-intervention.Subjects/setting
Three hundred seventy-nine middle-school children participating in a randomized controlled trial of a school-based fruit and vegetable intervention were observed during school lunch one day and asked to recall intake the following day.Main outcome measures
Food items were coded as: 'match,' 'omission,' or 'intrusion.' Students were classified as accurate if all food items matched, otherwise inaccurate. Matched foods' portions were compared for accuracy. Servings were computed for total fruit and vegetable intake.Analyses
Accuracy for fruits and vegetables were compared in separate analyses and tested for multiple potential associates: treatment condition, sex, race, body mass index, subsidized meal eligibility, school district, fruit/vegetable availability, age, and test scores. Fitted multivariable regression models included variables found to be significant in univariate or [chi]2 analyses.Results
Variables found to be significant for fruit item accuracy were availability at lunch, body mass index, and subsidized lunch eligibility. For vegetable item accuracy, availability at lunch was significant. No differences were found for food portions or for efficacy of the intervention between the two methods of dietary data collection: observation and self-report.Conclusions
Condition assignment did not bias recalled fruit and vegetable intakes among fourth graders.

Emily Locke, Gloria D. Coronado, Beti Thompson, Alan Kuniyuki, Seasonal Variation in Fruit and Vegetable Consumption in a Rural Agricultural Community, Journal of the American Dietetic Association, Volume 109, Issue 1, January 2009, Pages 45-51, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.10.007.
(http://www.sciencedirect.com/science/article/B758G-4V6SCMB-C/2/f6d92e67f31001e12403b0519befe125)
Abstract: Background
Seasonal variation in fruit and vegetable consumption has been documented in a limited number of previous investigations and is important for the design of epidemiologic investigations and in the evaluation of intervention programs.Objective
This study investigates fruit and vegetable consumption behaviors among Hispanic farmworkers and non-farmworkers in a rural agricultural community.Design
A larger study recruited 101 farmworker families and 100 non-farmworker families from the Yakima Valley in Washington State between December 2004 and October 2005. All families were Hispanic. An in-person administered questionnaire collected information on consumption of locally grown fruits and vegetables and sources of obtaining fruits and vegetables. Data on dietary intake asked whether or not the respondent had consumed a given fruit or vegetable in the past month. Data were collected longitudinally, coinciding with three agricultural seasons: thinning (summer), harvest (fall), and nonspray (winter).Statistical analyses performed
Generalized estimating equations were used to test for statistical significance between proportions of the population who consumed a given fruit or vegetable across agricultural seasons. Multivariable logistic regression was performed and corresponding odds ratios and 95% confidence intervals are reported.Results
The proportion of respondents who ate apples, pears, plums, peaches, apricots, peppers, corn, and cucumbers was highest in the fall harvest season, whereas the proportions of those who ate cherries and asparagus were highest in the summer thinning season. Compared to non-farmworkers, a higher proportion of farmworkers reported having eaten peaches, apricots, cherries, green beans, carrots, peppers, corn, pumpkin, squash, and onions, in the past month.Conclusions
Epidemiologic investigations and public health interventions that examine the consumption of fruits and vegetables should consider seasonal variation in consumption patterns, especially in agricultural communities.

Lihua Gu, Tao Wu, Zhengtao Wang, TLC bioautography-guided isolation of antioxidants from fruit of Perilla frutescens var. acuta, LWT - Food Science and Technology, Volume 42, Issue 1, 2009, Pages 131-136, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.04.006.
(http://www.sciencedirect.com/science/article/B6WMV-4SC78YF-1/2/9e07ca0fb454678c2087875cdda8d5d6)
Abstract:
Guided isolation through bioautography on TLC using 1,1-diphenyl-2-picryl-hydrazyl radical (DPPH) as a detection reagent led to the isolation of four antioxidant compounds from fruit of Perilla frutescens var. acuta. These compounds were identified as rosmarinic acid (1), luteolin (2), apigenin (3), and chrysoeriol (4), by means of UV, NMR, and ESI MS. All the compounds were isolated for the first time from the fruit of the plant. Compounds 1 and 2 showed significant DPPH scavenging capacities, with IC50 values of 8.61 and 7.50 [mu]M, respectively. Further quantitative HPLC analysis confirmed that compounds 1-4 are the predominant contributors to the free radical scavenging activity of the extract of P. frutescens var. acuta.
Keywords: TLC bioautography; Perilla frutescens var. acuta; DPPH; Antioxidant

Grant G. Harris, Robert G. Brannan, A preliminary evaluation of antioxidant compounds, reducing potential, and radical scavenging of pawpaw (Asimina tribloba) fruit pulp from different stages of ripeness, LWT - Food Science and Technology, Volume 42, Issue 1, 2009, Pages 275-279, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.05.006.
(http://www.sciencedirect.com/science/article/B6WMV-4SHMCRX-2/2/d031551cb8057ccc666d0625a8bc95ce)
Abstract:
This study reports preliminary findings for total phenolics, flavonoids, ascorbic acid, reducing potential, and radical scavenging of pawpaw pulp extracts from underripe, ripe, and overripe fruits. Total phenolics were affected by ripeness {underripe = ripe > overripe}, as were flavonoids (ripe < underripe < overripe). Reducing potential and radical scavenging were highest in ripe pulp and lowest in overripe pulp. Total phenolics were positively correlated with reducing potential and radical scavenging. Storing pawpaws at 4 [degree sign]C for 7 d prior to methanol extraction affected total phenolic levels, ascorbic acid, and flavonoids, but had no effect on reducing potential or radical scavenging. Cooking pawpaws prior to extraction did not decrease the reducing capacity or radical scavenging. Storing pawpaw pulp extracts at -18 [degree sign]C for 300 d increased reducing potential and radical scavenging. Storing pulp at -18 [degree sign]C for 300 d before extraction caused a fourfold increase in total phenolics and flavonoids. These results indicate that pawpaw pulp from varying ripeness levels is a potential source of natural phenolic and flavonoid antioxidants that could lead to the development of value-added products from pawpaw.

Shu-Chen Chang, Ching-Wen Lin, Chii-Ming Jiang, Hwi-Chang Chen, Ming- Kuei Shih, Yu-Ywan Chen, Yung-Hsiang Tsai, Histamine production by bacilli bacteria, acetic bacteria and yeast isolated from fruit wines, LWT - Food Science and Technology, Volume 42, Issue 1, 2009, Pages 280-285, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.04.011.
(http://www.sciencedirect.com/science/article/B6WMV-4SFXKCG-1/2/b721ab4ae9865ff78a2905db52c09439)
Abstract:
Eleven red wines imported from foreign country and 40 domestic fruit wines, including 15 red wines, 4 white wines, 7 plum wines, and 14 other fruit wines, sold in the supermarkets in Taiwan were purchased and tested to determine the occurrence of biogenic amines and histamine-forming bacteria. The levels of pH, total soluble solids (TSS), titratable acidity (TA), reducing sugar (RS), total sugar (TS), sulphites, methanol (milligram per liter of pure ethanol), ethanol and Pb in all samples ranged from 3.0 to 4.1, 6.8 to 24.4 [degree sign]Brix, 0.3 to 1.7 g/100 mL, 0.2 to 17.6 g/100 mL, 1.6 to 28.4 g/100 mL, <2 to 260.5 mg/L, <1 to 2559 mg/L, 5.0 to 15.6 g/100 mL and <1 to 46.2 [mu]g/L, respectively. The levels of TSS, TA, RS, and TS in plum wine samples were significantly higher than those of the other wines samples, whereas the pH value in plum wine samples was lower than that of the other wines samples. The average content for each of the nine biogenic amines in all samples was less than 5.2 mg/L. However, higher levels of histamine and spermine were detected in domestic fruit wine samples than the imported red wine samples. Five histamine-forming isolates isolated from domestic red wine and jackfruit wine, capable of producing 13.0 mg/L to 69.1 mg/L of histamine in trypticase soy broth (TSB) supplemented with 2 g/100 mL l-histidine (TSBH) or MRS broth supplemented with 2 g/100 mL l-histidine (MRSH), were identified as Bacillus pumilus (one strain), Bacillus sp. (two strains) and Acetobacter pasteurianus (one strain) by 16S rDNA sequencing with PCR amplification, and Zygoascus hellenicus var. hellenicus (one strain) by internal transcribed spacer sequencing with PCR amplification. To our knowledge, this is the first report to demonstrate the occurrence of histamine-forming bacilli bacteria, acetic bacteria and yeast in fruit wine.
Keywords: Histamine; Biogenic amines; Bacilli bacteria; Acetic bacteria; Yeast; Wine

Nitra Nuengchamnong, Kornkanok Ingkaninan, On-line characterization of phenolic antioxidants in fruit wines from family myrtaceae by liquid chromatography combined with electrospray ionization tandem mass spectrometry and radical scavenging detection, LWT - Food Science and Technology, Volume 42, Issue 1, 2009, Pages 297-302, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.04.012.
(http://www.sciencedirect.com/science/article/B6WMV-4SFXKCG-2/2/27f5621878dabdf2af8acd3901b19f0c)
Abstract:
A screening method based on high-performance liquid chromatography (HPLC) coupled on-line to a radical scavenging detection system and mass spectrometry (MS) was used to identify and characterize antioxidant compounds in two fruit wines from the family of the Myrtaceae, Syzygium cumini and Cleistocalyx nervosum var. paniala. The active compounds were identified by comparison of retention time and mass data with the authentic standards and with the published mass spectra assisted by multi-dimension information from a liquid chromatography combined with electrospray ionization tandem mass spectrometry (LC-ESI-MS/MS) and a radical scavenging detection. Major antioxidants found in S. cumini wine were complicated mixture of hydrolysable tannins and the fruit acids. A trace amount of an anthocyanin, malvidin -3-o-p-coumaroyl glucoside was also found. In C. nervosum var. paniala wine, the active compounds were identified as hydrolysable tannins and their derivative i.e. caffeoylquinic acid, gallic acid, ellagic acid and methoxymethylgallate.
Keywords: On-line LC-ESI-MS-antioxidant assay; Fruit wine; DPPH; Myrtaceae; Hydrolysable tannins

Sylvie Bureau, Catherine M.G.C. Renard, Maryse Reich, Christian Ginies, Jean-Marc Audergon, Change in anthocyanin concentrations in red apricot fruits during ripening, LWT - Food Science and Technology, Volume 42, Issue 1, 2009, Pages 372-377, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.03.010.
(http://www.sciencedirect.com/science/article/B6WMV-4S7JG56-1/2/46a0ef799060f1a86729ae104fcc4c42)
Abstract:
Here we report on accumulation patterns of anthocyanins and of [beta]-carotene during fruit maturation, between 82 and 125 days after flowering, of two apricot (Prunus armeniaca L.) cultivars, A3576 and A3751. Both cultivars displayed an intense red colour of the skin but differed in their genetic background. The pigments were extracted from skin and flesh, separately, and analysed using HPLC-DAD-MS. Out of three anthocyanins detected here, the major compound, cyanidin-3-O-rutinoside was present at 75%. The two minor compounds were cyanidin-3-O-glucoside and peonidin-3-O-rutinoside. This is the first time that peonidin-3-O-rutinoside has been detected in apricot fruit. During maturation, A3751 accumulated anthocyanins in both skin and flesh, whereas anthocyanins were present only in the skin of A3576. The skin anthocyanin content was higher in A3751 (296 mg kg-1) than in A3576 (41 mg kg-1). Maximum anthocyanin levels were attained after 108 and 118 days of flowering in A3751 and A3576, respectively, in conjunction with loss of firmness and red colour acquisition on the un-blushed side of the fruit. At the end of ripening, the [beta]-carotene flesh concentration reached 5 mg kg-1 in A3576 and 15 mg kg-1 in A3751. A significant effect of environment was observed on the anthocyanin content in the two cultivars.
Keywords: Prunus armeniaca L.; Maturation; Pigments; [beta]-Carotene; HPLC-DAD-MS

Hanumanthan Raghuram, Chinnathambi Thangadurai, Nagappan Gopukumar, Kulam Nathar, Kandula Sripathi, The role of olfaction and vision in the foraging behaviour of an echolocating megachiropteran fruit bat, Rousettus leschenaulti (Pteropodidae), Mammalian Biology - Zeitschrift

fur Saugetierkunde, Volume 74, Issue 1, January 2009, Pages 9-14, ISSN 1616-5047, DOI: 10.1016/j.mambio.2008.02.008.
(http://www.sciencedirect.com/science/article/B7GX2-4V053HX-1/2/c238d184e4477f5828d6d6a9055e8b3e)
Abstract:
Many mammals use multimodal sensory information to find their food in complex environments. We studied the roles of olfactory and visual cues in the foraging behaviour of Rousettus leschenaulti, a tongue-clicking megachiropteran bat. We conducted experiments by offering a whole fruit, mashed fruit without shape and an artificial fruit to R. leschenaulti in dim light as well as in total darkness. R. leschenaulti responded to whole guava fruit and mashed guava fruit even in total darkness, whereas, artificial fruit similar to real fruit in size, shape and structure was ignored even when illuminated. These results reveal that odour may act as the primary cue for R. leschenaulti in finding fruit.
Keywords: Megachiroptera; Rousettus leschenaulti; Olfaction; Vision; Foraging behaviour

Edward C. Sisler, Raphael Goren, Akiva Apelbaum, Margrethe Serek, The effect of dialkylamine compounds and related derivatives of 1-methylcyclopropene in counteracting ethylene responses in banana fruit, Postharvest Biology and Technology, Volume 51, Issue 1, January 2009, Pages 43-48, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.06.009.
(http://www.sciencedirect.com/science/article/B6TBJ-4TP7H4M-1/2/ed423eaba3d848310970df2a40c6b5fb)
Abstract:
Compounds that can block the ethylene receptor and be applied either as a gas or as a salt by spray or dip have been prepared and tested. Cyclopropenes with a methyl group in the 1-position, on which was attached a substituted amine, were allowed to evaporate in the presence of bananas that were treated with the gas. The minimum amount of a given compound required to inhibit chlorophyll degradation in the banana peel (an indicator of protective effect of the compound against ethylene action) that was subsequently exposed to ethylene, varied considerably depending on the compound, but N,N-dipropyl-(1-cyclopropenylmethyl)amine and N,N-di-(1-cyclopropenylmethyl)amine were the most effective. The degree of response to the ethylene inhibitory effect was similar for all of the compounds tested (32-34 d). The amount of cyclopropene compound required for inhibiting ethylene action following a 24 h exposure of bananas to the salt followed by a 15 h exposure to ethylene was higher than that required by the gas form used under the same conditions for the same effect. However, time of exposure could be much longer than 24 h with the salt than with the gas. The bananas treated with the salt do not need to be in an air-tight container, but could be used in open spaces. Only the banana peel appeared to be protected against ethylene during the 24 h interval when the salt was used. The pulp ripened upon exposure to ethylene.
Keywords: Cyclopropenes; Ethylene; Ethylene antagonists; Ethylene receptor; N,N-Dialkyl-(1-cyclopropenylmethyl)amines

Tong Sun, Hongjian Lin, Huirong Xu, Yibin Ying, Effect of fruit moving speed on predicting soluble solids content of `Cuiguan' pears (Pomaceae pyrifolia Nakai cv. Cuiguan) using PLS and LS-SVM regression, Postharvest Biology and Technology, Volume 51, Issue 1, January 2009, Pages 86-90, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.06.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4TGGCNT-1/2/055525adfbe24c276f0aface19a7a9f7)
Abstract:
Visible (Vis)/near infrared (NIR) spectroscopy is an excellent technique for non-destructive fruit quality assessment. This research was focused on evaluating the use of Vis/NIR spectroscopy for measuring soluble solids content (SSC) of intact `Cuiguan' pears (Pomaceae pyrifolia Nakai cv.

Cuiguan) on-line. Also, the effect of fruit moving speed on SSC measurements was investigated. Diffuse transmission spectra were collected using a fiber spectrometer equipped with a 3648-element linear silicon CCD array detector in the wavelength range of 345-1040 nm, and all sample spectra were collected three times at different fruit moving speeds of 0.3 m s-1, 0.5 m s-1 and 0.7 m s-1. Spectral pre-processing such as derivative, standard normal variate transformation (SNV) and multiplicative scatter correction (MSC) was used before calibration. Partial least squares (PLS) and least squares support vector machines (LS-SVM) were used to develop calibration models for SSC. The results show that fruit moving speed has few effects on spectra and model performance at a fruit moving speed of 0.3-0.7 m s-1. At 0.5 m s-1, the best model for SSC was PLS regression coupled with original spectra, its coefficient of determination (R2) and root mean square error of prediction (RMSEP) being 0.916% and 0.530%, respectively.
Keywords: Visible/near infrared spectroscopy; Soluble solids content; Pear; Fruit moving speed; Partial least squares; Least squares support vector machines

Mohamed E.I. Badawy, Entsar I. Rabea, Potential of the biopolymer chitosan with different molecular weights to control postharvest gray mold of tomato fruit, Postharvest Biology and Technology, Volume 51, Issue 1, January 2009, Pages 110-117, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.05.018.
(http://www.sciencedirect.com/science/article/B6TBJ-4TDYNW7-1/2/bbdfcff025ff6c44ce06069883f07b05)
Abstract:
Gray mold caused by Botrytis cinerea (Pers.) is the most economically important postharvest disease of fruit and vegetables at harvest and during storage. Therefore the current study was conducted to investigate the effectiveness of chitosan with different molecular weights on gray mold in vitro and in vivo in tomato fruit (Solanum lycopersicum L. var. lycopersicum) stored at different temperatures. In an in vitro experiment, the results demonstrated that the antifungal activity increased as the chitosan molecular weight decreased. In an in vivo study, chitosan treatments significantly reduced fungal decay and all compounds with concentrations of 2000 and 4000 mg/L showed complete control of the fungus in wound-inoculated fruit. Chitosan with a molecular weight of 5.7 x 104 g/mol was the most effective compound among those tested. The results also revealed that high chitosan concentrations correlated with low disease incidence regardless of storage conditions. In addition to the antifungal activity, chitosan had the potential for the elicitation of defense markers, including total soluble phenolic compounds, polyphenoloxidase (PPO) activity and total protein content. Chitosan treatment decreased the activity of PPO and enhanced total protein and phenolic compounds in wounded tomato fruit. These findings suggest that the effects of chitosan with different molecular weights on gray mold in tomato fruit may be associated with direct fungitoxic properties against the pathogen, and the elicitation of biochemical defense responses in fruit.
Keywords: Chitosan; Botrytis cinerea; Solanum lycopersicum; Polyphenoloxidase; Total protein; Phenolic compounds

G.L. Wu, Q.L. Liu, J.A. Teixeira da Silva, Ultrastructure of pericarp and seed capsule cells in the developing walnut (Juglans regia L.) fruit, South African Journal of Botany, Volume 75, Issue 1, January 2009, Pages 128-136, ISSN 0254-6299, DOI: 10.1016/j.sajb.2008.09.001.
(http://www.sciencedirect.com/science/article/B7XN9-4TKBP7R-1/2/ecdad50983659333820e24b7a4bd5302)
Abstract:
Juglans regia L. is an important nut fruit, but our basic knowledge of it still lags behind that of other plants. In this study, the ultrastructure of the fleshy pericarp and seed coat cells was systematically investigated using transmission electron microscopy during the entire developmental process of the fruit. Our observations showed that during the early stage of fruit development mesocarp cells

display the primary characteristics of immature cells, namely numerous organelles, an extensive distribution of plasmodesmata, and the presence of starch grains. As the fruit develops, the vacuole, vesicles and intercellular spaces clearly enlarge, organelles begin to degrade and, at a later stage, phenol grains appear. Although there are no plasmodesmata in the endocarp there is a complex cytoarchitecture in the episperm of the developing seed, with many phenolic substance granules. The mesosperm contains an electron-dense protoplasm with a thin cell wall, enriched with organelles, and has numerous plasmodesmata, although there are almost no starch grains. The companion cells (CCs) are enriched with mitochondria, and the sieve elements (SEs) contain many vesicles in the SE-CC complex of the mesosperm, from which the sieve plate of the SE is built up. The endotesta cells, which are large and loose, form a nourishment-free diffusion space. There is complex vesicle movement in the fleshy pericarp and seed coat. Based on structural and diagnostic changes within the fleshy pericarp and seed coat, the cytological characteristics of substance transport in the walnut fruit are discussed. The main conclusion is that fleshy pericarp parenchyma cells are the nutrient bank, while the parenchyma tissue of the seed coat is the transfer station that transports nutrients to the embryo. Vesicle transportation is the third method of transportation of materials between cells and the transfer cell of the walnut seed coat is characterized by a multitude of mitochondria. This study makes a significant contribution to our understanding of ultracellular events in the developing walnut fruit.
Keywords: Endocarp; Fleshy pericarp; Mesocarp; Plasmodesmata; Seed coat

Philipp Krupczynski, Stefan Schuster, Fruit-Catching Fish Tune Their Fast Starts to Compensate for Drift, Current Biology, Volume 18, Issue 24, 23 December 2008, Pages 1961-1965, ISSN 0960-9822, DOI: 10.1016/j.cub.2008.10.066.
(http://www.sciencedirect.com/science/article/B6VRT-4V5PJ4M-5/2/f6e497150536a202a8ae1e57086a53a1)
Abstract: Summary
Numerous animal navigators are not simply at the mercy of winds and currents but cope with drift to reach their goals [1], [2], [3], [4], [5], [6] and [7]. Here, we report how a fruit-catching Costa Rican fish combines an analysis of aerial motion with a novel way of compensating for drift to optimize its catching success. In the field, schools of this riverine fish never waited until a falling fruit actually landed in the stream. Rather, the fish responded to visual motion and started early to arrive on time at the spot where their food would land. To be successful with their early starts, the fish must cope with the strong relative drift that arises, because the fish, but not their airborne target, experience strong flow on their way toward the fruit's landing point. Surprisingly, the fish solve this problem right at the beginning--by turning rapidly and taking an initial aim that is already optimally adapted to the prevailing drift, so as to lead them straight to their food. Fruit-catching fish thus provide a stunning case of how rapidly animals can generate drift-compensating trajectories in their everyday local lives.
Keywords: SYSNEURO; EVOL_ECOL

Saw Bawm, Hideyuki Matsuura, Ahmed Elkhateeb, Kensuke Nabeta, Subeki, Nariaki Nonaka, Yuzaburo Oku, Ken Katakura, In vitro antitrypanosomal activities of quassinoid compounds from the fruits of a medicinal plant, Brucea javanica, Veterinary Parasitology, Volume 158, Issue 4, 20 December 2008, Pages 288-294, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2008.09.021.
(http://www.sciencedirect.com/science/article/B6TD7-4TJ1HRT-4/2/ac42671d9f49e02b66dd8bc7027a355d)
Abstract:
The medicinal plant Brucea javanica (L.) Merr. (Simaroubaceae) is widely distributed throughout Asia where its bitter fruits have been used in traditional medicine for various ailments. Fifteen C-20 quassinoids were isolated from the fruits of B. javanica and examined for their in vitro antitrypanosomal activities against trypomastigotes of Trypanosoma evansi. Bruceine A,

bruceantinol, bruceine C, brusatol, and bruceine B showed strong antitrypanosomal activities with IC50 values in the range of 2.9-17.8 nM, which compared well with the standard trypanocidal drugs diminazene aceturate (IC50 = 8.8 nM) and suramin (IC50 = 43.2 nM). However, dehydrobruceine A, dehydrobruceine B, and dehydrobrusatol were about 2100, 900, and 1200 times less active, respectively, than bruceine A, bruceine B, and brusatol. The relationship of the structure and antitrypanosomal activity of these quassinoid compounds suggested that the presence of a diosphenol moiety in ring A and the nature of the C-15 side chain are important for their activities against T. evansi. This is the first report on the antitrypanosomal activity of isolated quassinoids.
Keywords: Brucea javanica; Quassinoids; Trypanosoma evansi; Antitrypanosomal; Medicinal plant

Catalina Vasco, Jenny Ruales, Afaf Kamal-Eldin, Total phenolic compounds and antioxidant capacities of major fruits from Ecuador, Food Chemistry, Volume 111, Issue 4, 15 December 2008, Pages 816-823, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.04.054.
(http://www.sciencedirect.com/science/article/B6T6R-4SCDB5V-7/2/bffe164d4c8a312bb8607ee66cd2b39d)
Abstract:
Seventeen fruits from Ecuador were analysed for total soluble phenolic compounds content and for antioxidant capacity, using three different methods (DPPH, FRAP and ABTS+). For the total phenolic content measured by the Folin-Ciocalteu method, three groups, having <100, 200-500 and >1000 mg GAE/100 g FW, were clearly distinguishable. Andean blackberry, capuli cherry peel and banana passion fruit were classified in the third group, with concentrations of 2167, 1494 and 1010 mg of GAE/100 g FW, respectively. Antioxidant capacity analyses revealed the same classes. FRAP and ABTS+ gave comparable results and were highly correlated (y = 0.691x + 6.78; r2 = 0.908). Spectrophotometric measurements showed that the Andean blackberry and capuli peel but not banana passion fruit contained high levels of anthocyanins ([lambda]max = 520 nm).
Keywords: Fruits; Ecuador; Phenolic compounds content; Antioxidant capacity; Spectrophotometry

Rupinder Singh, Upendra N. Dwivedi, Effect of Ethrel and 1-methylcyclopropene (1-MCP) on antioxidants in mango (Mangifera indica var. Dashehari) during fruit ripening, Food Chemistry, Volume 111, Issue 4, 15 December 2008, Pages 951-956, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.05.011.
(http://www.sciencedirect.com/science/article/B6T6R-4SH0Y55-7/2/32765259877127fc62bdc3b1a03d1f3b)
Abstract:
Ripening affects the quality and nutritional contents of fleshy fruits. Mango, a climacteric fruit, is very susceptible to post-harvest losses, due to fast softening. In the present paper we report the effect of 1-methylcyclopropene (1-MCP) and Ethrel on antioxidant levels in mango fruit during ripening. Use of 1-MCP is applied commercially to delay ripening while Ethrel is used to accelerate ripening of climacteric fruits. 1-MCP treatment led to decreased levels of H2O2 and lipid peroxidation, concomitant with increased activities and isozymes of catalase (CAT) and superoxide dismutase (SOD), as compared to respective controls. On the other hand, Ethrel treatment led to an increase in H2O2 and lipid peroxidation, concomitant with a decrease in the activities and isozymes of catalase and SOD. Guaiacol peroxidase (GPX) could not be detected in the control or in treated fruits. Activity of ascorbate peroxidase (APX) was found to drastically increase in the presence of Ethrel while 1-MCP treatment led to only a marginal increase in APX.
Keywords: Fruit ripening; Antioxidant enzymes; Oxidative stress; 1-MCP; Ethrel; Mangifera indica var. Dashehari

Laura M. Bystrom, Betty A. Lewis, Dan L. Brown, Eloy Rodriguez, Ralph L. Obendorf, Characterisation of phenolics by LC-UV/Vis, LC-MS/MS and sugars by GC in Melicoccus bijugatus Jacq. `Montgomery' fruits, Food Chemistry, Volume 111, Issue 4, 15 December 2008, Pages 1017-1024, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.04.058.
(http://www.sciencedirect.com/science/article/B6T6R-4SDGR7C-1/2/6b465faefbc4fb696b3cefa4ac4ea919)
Abstract:
Fruits of the native South American tree Melicoccus bijugatus Jacq. (Sapindaceae) are consumed for both dietary and medicinal purposes, but limited information is available about the phytochemistry and health value of M. bijugatus fruits. Fruit tissues of the Florida Montgomery cultivar were assessed for sugars, using gas chromatography, and for total phenolics, using UV spectroscopy. Reverse-phase high performance liquid chromatography (HPLC) fingerprints of crude methanolic pulp, embryo and seed coat extracts were obtained at 280 nm. Phenolics were characterised by both HPLC-UV/Vis analysis and HPLC electrospray ionisation tandem mass spectrometry. Major sugars detected in the pulp and embryo extracts were sucrose, followed by glucose and fructose. The glucose:fructose ratio was 1:1 in the pulp and 0.1:1 in the embryo. Total phenolic concentrations of the fruit tissues were in the order: seed coat > embryo > pulp. Phenolic acids were identified mostly in pulp tissues. Phenolic acids, flavonoids, procyanidins and catechins were identified in embryo tissues, and higher molecular weight procyanidins were identified in seed coat tissues. This study provides new information about the phytochemistry and the potential health value of the Montgomery cultivar M. bijugatus fruit tissues.
Keywords: Melicoccus bijugatus; Fruit phenolics; Fruit sugars; HPLC; LC-MS/MS

Shanthi G. Parkar, David E. Stevenson, Margot A. Skinner, Erratum to `The potential influence of fruit polyphenols on colonic microflora and human gut health' [Int. J. of Food Microbiol. 124 (2008) 295-298], International Journal of Food Microbiology, Volume 128, Issue 2, 10 December 2008, Page 416, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2008.06.015.
(http://www.sciencedirect.com/science/article/B6T7K-4T8KXVJ-1/2/d4db23027b07e6b94ccf0fa592005e51)

R.R. Sharma, Rajbir Singh, Fruit nutrient content and lipoxygenase activity in relation to the production of malformed and button berries in strawberry (Fragaria x ananassa Duch.), Scientia Horticulturae, Volume 119, Issue 1, 10 December 2008, Pages 28-31, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.07.002.
(http://www.sciencedirect.com/science/article/B6TC3-4T5HJ5R-1/2/7d3c7985b8dd64f8403248096533f390)
Abstract:
Fruit nutrient content and lipoxygenase (LOX) activity were determined in strawberry fruit to establish a relationship, if it exists, between nutrients, and LOX activity with the fruit malformation and nubbins or button berry disorders. Nearly 17% fruit were affected by malformation and 10% by nubbins in open-field-grown strawberries. `Etna' produced higher proportion of malformed (22.7%) as well as button berries (16.9%) and `Sweet Charlie' the lowest (8.9% and 3.3%, respectively). Dry matter content (%) was lower in malformed (5.2%) and button berries (3.23%) than normal berries (7.41%). The concentration of P and Mg did not differ significantly, but that of N and K was notably higher and of Ca and B was lower in malformed and button berries than normal berries. Consequently, the N/Ca and K/Ca ratios were higher in malformed and button berries. LOX activity was significantly higher in malformed as well as button berries than normal berries, with significant differences among cultivars. The correlations between N, K and malformed and button berries were positive and between Ca and B, and malformed and button berries were negative. Similarly, the correlation between LOX activity and malformed, and button berries were also positive,

indicating that excess of N and K, and deficiency of Ca and B are related to the production of malformed and buttons or nubbins in strawberry.
Keywords: Button berries; Fragaria x ananassa; Malformed berries; Nubbins; Nutrient content; LOX activity

I. Iglesias, G. Echeverria, Y. Soria, Differences in fruit colour development, anthocyanin content, fruit quality and consumer acceptability of eight `Gala' apple strains, Scientia Horticulturae, Volume 119, Issue 1, 10 December 2008, Pages 32-40, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.07.004.
(http://www.sciencedirect.com/science/article/B6TC3-4T6CF63-1/2/df76a5097a0a01f3e199d7132ee9abec)
Abstract:
The effect of strain on fruit colour development, chromaticity values and anthocyanin content, fruit quality and consumer acceptance was evaluated on eight `Gala' apple strains (Malus domestica Borkh.) at the IRTA (Spain), during a period from 4 weeks before to 1 week after commercial harvest. Based on fruit colour, measured with a Minolta CR-200 portable tristimulus colorimeter, and anthocyanin content, the most coloured strains were `Royal Beaut', `Buckeye Gala' (both semistriped) and `Ruby Gala' (blushed). `Brookfield' and `Schniga' (both striped) provided an intermediate level of colour, while `Galaxy' and `Mondial Gala' (both striped) were the least coloured ones. The most important increase in colour development was recorded from 2 weeks before the commercial harvest and continued also increasing after harvest. Highly coloured strains developed a red colour on both fruit sides with greater average of fruit surface coloured, while the less coloured strains exhibited different colouration between sides, more bicolour fruits and lower average of fruit coloured.
Fruit size and yield were, in general, the same for all strains. Instrumental fruit quality parameters along the different harvest date: fruit firmness, soluble solids content (SSC), titratable acidity (TA), and starch index were similar for the different cultivars. Differences in fruit colour/anthocyanin content were not related to differences in fruit quality parameters of different strains. Thus, ripening time was not related to the degree of fruit colour.
Principal component analysis of the samples characterized by all the variables showed a chronological distribution along the first principal component PC1, indicating different maturity stages. Internal preference mapping showed three consumer clusters and indicated that the largest number of consumers preferred samples harvested at commercial harvest or 2 weeks before this date. We also observed a clear influence of maturity stage on consumer acceptance but there was no clear influence with respect to strain.
Keywords: Apple; `Gala' strains; Colour; Anthocyanin; Fruit quality; Consumer acceptability

Anita Sonsteby, Ola M. Heide, Temperature responses, flowering and fruit yield of the June-bearing strawberry cultivars Florence, Frida and Korona, Scientia Horticulturae, Volume 119, Issue 1, 10 December 2008, Pages 49-54, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.07.005.
(http://www.sciencedirect.com/science/article/B6TC3-4T72K3M-2/2/253bad6247dcfc85488933bf43550127)
Abstract:
The effect of night temperature on short day (SD) floral induction has been studied in three June-bearing strawberry cultivars of different geographic origin and compared with yield performance in the cool Nordic environment. At the optimum day temperature of 18 [degree sign]C, the SD flowering response of the cultivars `Florence' and `Korona' increased significantly with increasing night temperature from 9 to 18 [degree sign]C, while an optimum was reached at 15 [degree sign]C in the cultivar `Frida' that is selected under cool-environment conditions in Norway. Also, while saturated flowering response was obtained with 3 weeks of SD treatment at all temperatures in `Frida', several plants of `Florence' and `Korona' failed to initiate flowers at 9 [degree sign]C

night temperature even with 5 weeks of SD. The effect of extended SD period was particularly pronounced in `Florence'. The slow SD floral induction response of `Florence' was associated with a 2 week delay of anthesis in subsequent long day (LD) conditions at 21 [degree sign]C. Yield performance of the same cultivars during 2 years under field conditions at Nes Hedmark and in North Norway also demonstrated that the yield potential of `Florence' was not realized under the climatic conditions prevailing at these locations. In both years the yields varied significantly among the cultivars, `Frida' having the highest yields followed by `Korona', with `Florence' far below. It is concluded that, in the Nordic environment, autumn (September) night temperatures are obviously sub-optimal for yield performance of some June-bearing strawberry cultivars, and that this effect is mediated by autumn temperature effects on flower initiation responses.
Keywords: Climate; Flowering; Fragaria; Night temperature; Strawberry; Fruit yield

N. Gariglio, C. Reig, A. Martinez-Fuentes, C. Mesejo, M. Agusti, Purple spot in loquat (Eriobotrya japonica Lindl.) is associated to changes in flesh-rind water relations during fruit development, Scientia Horticulturae, Volume 119, Issue 1, 10 December 2008, Pages 55-58, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.07.006.
(http://www.sciencedirect.com/science/article/B6TC3-4T7W3KY-1/2/40e258903880e2423762bc08a02678c8)
Abstract:
Experiments were conducted to assess the link between purple spot in loquat fruit (Eriobotrya japonica Lindl.) and changes in the water relations of the flesh and the rind. Panicles were thinned to 1, 3 or 5 fruit or left unthinned (control), fruit wrapped in foil or exposed to the sun, or trees grown under plastic (night temperature >15 [degree sign]C) or in the open (night temperature 5-3 [degree sign]C) to induce different levels of the disorder. Typically, spotting increased with thinning (R2 = 0.95), and was higher in exposed fruit (26.3% of fruit affected) than in wrapped fruit (nil), and higher with cool nights (16.2%) than with warm nights (2.7%). Mean tissue water potential ([Psi]w) was similar in the flesh and rind, whereas osmotic potential ([pi]) was higher (less negative) in the flesh, and pressure potential ([Psi]p) lower in the flesh. There were no consistent effects of thinning on [Psi]w, whereas [pi] of the rind decreased (more negative) with thinning during fruit color break. This response was associated with an increase in [Psi]p (more positive) in the rind at the same time. The external rind of exposed fruit had lower [pi] than the external rind of warped fruit, and higher [Psi]p. Similarly, the fruit from trees grown under cool nights had lower rind [pi] and higher rind [Psi]p than fruit under warm nights. These results suggest that low rind [pi] and high rind [Psi]p are associated with purple spotting in loquat, and possibly reflect relatively high sugar concentrations in the flesh that increases the gradient of solute concentration between the flesh and the rind, making easy a dehydration process in the rind, which is responsible for purple spot.
Keywords: Fruit growth; Osmotic potential; Pressure potential; Physiological disorder; Water potential

Xiao-lei LI, Luan KANG, Jing-jing HU, Xue-fei LI, Xiang SHEN, Aroma Volatile Compound Analysis of SPME Headspace and Extract Samples from Crabapple (Malus sp.) Fruit Using GC-MS, Agricultural Sciences in China, Volume 7, Issue 12, December 2008, Pages 1451-1457, ISSN 1671-2927, DOI: 10.1016/S1671-2927(08)60402-2.
(http://www.sciencedirect.com/science/article/B82XG-4V74K46-7/2/40ce42a7158a5d6b9010347f9093693b)
Abstract:
Volatile compounds from the ripened crabapple fruit of six varieties (Red Splendor, Strawberry Parfait, Pink Spire, Radiant, Sparkler, and Flame) were analyzed by the use of the SPME/GC/MS method. The changes in the volatiles between the ripened and upon full maturity fruit states were studied in Red Splendor and Strawberry Parfait. An effort was made to summarize an effective

method for searching and identifying new idioplasms containing a particular fruit aroma within Malus. A total of 37 compounds were identified from the sample. The main aroma volatiles of the six varieties of fruit were comprised of 2-hexenal, 3-hexenal, hexanal, 2,4-hexadienal, benzaldehyde, diethyl phthalate. The main volatile compound of the crabapple fruit was 2-hexenal, but the relative content percentages were different (45.37, 21.98, 33.56, 32.21, 38.60, and 45.88%). The aroma components accumulated differently as the fruits ripened. The relative content of aldehydes and esters decreased as alcohols increased after the Red Splendor and Strawberry Parfait fruit ripened. For Red Splendor, the main volatile was still 2-hexenal, but the relative content decreased to 42.89%, and the relative content of alcohols increased by 13.86% as aldehydes and esters declined by 12.16 and 7.18%, respectively. For Strawberry Parfait, the main volatile was changed to cyclohexanol, and the relative content increased to 46.43%, while the relative content of alcohols increased by 49.03% as aldehydes and esters declined by 23.74 and 9.34%, respectively.
Keywords: crabapple (Malus sp.); fruit; volatile compound

Chien-Tsong Lin, Chi-Jung Chen, Ting-Yu Lin, Judia Chen Tung, Sheng-Yang Wang, Anti-inflammation activity of fruit essential oil from Cinnamomum insularimontanum Hayata, Bioresource Technology, Volume 99, Issue 18, December 2008, Pages 8783-8787, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.04.041.
(http://www.sciencedirect.com/science/article/B6V24-4SMF29N-6/2/c661f5f5128946808eff602b99288d5a)
Abstract:
In this study, the fruit essential oil of Cinnamomum insularimontanum was prepared by using water distillation. Followed by GC-MS analysis, the composition of fruit essential oil was characterized. The main constituents of essential oil were [alpha]-pinene (9.45%), camphene (1.70%), [beta]-pinene (4.30%), limonene (1.76%), citronellal (24.64%), citronellol (16.78%), and citral (35.89%). According to the results obtained from nitric oxide (NO) inhibitory activity assay, crude essential oil and its dominant compound (citral) presented the significant NO production inhibitory activity, IC50 of crude essential oil and citral were 18.68 and 13.18 [mu]g/mL, respectively. Moreover, based on the results obtained from the protein expression assay, the expression of IKK, iNOS, and nuclear NF-[kappa]B was decreased and I[kappa]B[alpha] was increased in dose-dependent manners, it proved that the anti-inflammatory mechanism of citral was blocked via the NF-[kappa]B pathway, but it could not efficiently suppress the activity on COX-2. In addition, citral exhibited a potent anti-inflammatory activity in the assay of croton oil-induced mice ear edema, when the dosage was 0.1 and 0.3 mg per ear, the inflammation would reduce to 22% and 83%, respectively. The results presented that the fruit essential oil of C. insularimontanum and/or citral may have a great potential to develop the anti-inflammatory medicine in the future.
Keywords: Cinnamomum insularimontanum; Essential oil; Anti-inflammation; Citral

Anna J. Keutgen, Elke Pawelzik, Contribution of amino acids to strawberry fruit quality and their relevance as stress indicators under NaCl salinity, Food Chemistry, Volume 111, Issue 3, 1 December 2008, Pages 642-647, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.04.032.
(http://www.sciencedirect.com/science/article/B6T6R-4S9G98P-2/2/991f570517811848680b55164e9926cd)
Abstract:
Strawberry cvs Korona and Elsanta, differing in their sensitivity to salt stress, were exposed to 0, 40, or 80 mM NaCl in the root medium from the end of April to mid-August. Although fruits of both cultivars contained comparable amounts of Na+ and Cl-, fruit quality was more impaired in cv. Elsanta, as indicated by the larger reductions of fruit size and sugar/acid ratios. Malondialdehyde levels started to rise significantly at 40 mM NaCl in the more sensitive cv. Elsanta, but at 80 mM in cv. Korona. Total amino acid levels, especially contents of essential amino acids, rose significantly

in both cvs. Salt stress also increased contents of free proline, asparagine, and glutamine. Their increases may contribute to osmotic adjustment. The results of the present study favour the interpretation that elevated levels of proline, asparagine and glutamine are indicative of salt stress damage.
Keywords: Fragaria x ananassa Duch.; Amino acids; Proline; Asparagines; Glutamine; Stress tolerance

Lorena Garitta, Guillermo Hough, Else Hulshof, Determining optimum ripening time of fruits by applying survival analysis statistics to consumer data, Food Quality and Preference, Volume 19, Issue 8, Seventh Rose Marie Pangborn Sensory Science Symposium, December 2008, Pages 747-752, ISSN 0950-3293, DOI: 10.1016/j.foodqual.2008.03.003.
(http://www.sciencedirect.com/science/article/B6T6T-4S32NK8-2/2/c95619a50fe2578a4dcb230044b9e0bf)
Abstract:
When a consumer chooses a fruit like a tomato he or she can find it under-ripe, ok or over-ripe; leading to two events of interest: the transition of under-ripe to ok, and the transition of ok to over-ripe. The objective of the present work was to develop a methodology using survival analysis statistics to allow prediction of the optimum ripeness time based on acceptance or rejection data obtained from consumers. Concepts and calculations were applied to a data set obtained from 60 consumers who were asked to assess the appearance and the flavor of tomatoes picked at eight different ripening stages and answer whether they found the samples under-ripe, ok or over-ripe. The tomato at a time = 0 was completely green except for signs of initial redness at the tomato base, the tomato at a time = 7 days was completely red and with wrinkles on the outer surface. From the censored data set parametric models were obtained which allowed optimum ripeness time estimations and segmentation of consumers in groups according to whether they preferred more under-ripe or more over-ripe tomatoes. The optimum ripening times were 3.4 +/- 0.7 days for appearance and 3.3 +/- 0.8 days for flavor. These times were similar, but as ripening progressed tomato appearance was more important than flavor in the rejection of the fruit.
Keywords: Optimum ripeness time; Sensory acceptability; Survival analysis

S.L. Birla, S. Wang, J. Tang, G. Tiwari, Characterization of radio frequency heating of fresh fruits influenced by dielectric properties, Journal of Food Engineering, Volume 89, Issue 4, December 2008, Pages 390-398, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.05.021.
(http://www.sciencedirect.com/science/article/B6T8J-4SKB376-1/2/dd35a221a9bcff3651ae5b3a2d003edc)
Abstract:
Because of its fast and volumetric nature, radio frequency (RF) heating has been looked upon as a way to overcome the problems associated with conventional heating methods used for disinfestation of fruits. But non-uniform heating within fruits is a major obstacle in adaptation of this technology. In this study, RF heating patterns influenced by dielectric properties (DPs) of fruits were investigated both experimentally and mathematically. A computer simulation model was developed using FEMLAB 3.4, a commercial software for solving Maxwell's electromagnetic and Fourier's heat transfer equations. Orange, apple, grapefruit, peach, and avocado fruits, selected for these studies were subjected to RF heating in a water filled container equipped with a mechanism to keep fruits rotating and moving during RF heating in a 27.12 MHz, 12 kW parallel plate RF unit. DPs of constitutional parts of the selected fruits were measured by open-ended coaxial probe method. The study showed that dissimilarity in peel and pulp DPs greatly influenced the RF heating behavior of the fruits. Core heating was prominent in apple, peeled orange and grapefruit; whereas subsurface/peripheral heating in whole oranges and grapefruit, and avocado. The computer model was an effective tool in characterizing and explaining the heating patterns in the fruits based on DPs. The study helped in better understanding the complex RF heating

characteristics of fruits, which may be useful in assessing the design feasibility of product specific RF energy based treatment protocol.
Keywords: Dielectric properties; Radio frequency; Electromagnetic field; Heating uniformity; Heat treatment; Quarantine

Swarup Roy Choudhury, Sujit Roy, Dibyendu N. Sengupta, Characterization of transcriptional profiles of MA-ACS1 and MA-ACO1 genes in response to ethylene, auxin, wounding, cold and different photoperiods during ripening in banana fruit, Journal of Plant Physiology, Volume 165, Issue 18, December 2008, Pages 1865-1878, ISSN 0176-1617, DOI: 10.1016/j.jplph.2008.04.012.
(http://www.sciencedirect.com/science/article/B7GJ7-4SRDF3F-1/2/cfab1f2daa8c73d0d68955674d8bd772)
Abstract: Summary
The ripening-specific genes MA-ACS1 (Musa acuminata ACC synthase1) and MA-ACO1 (M. acuminata ACC oxidase 1) are regulated in response to a wide variety of factors. Here, we have studied the differential transcript accumulation pattern and protein levels of MA-ACS1 and MA-ACO1 genes in response to ethylene, auxin, wounding and low temperature in preclimacteric banana fruit. We have shown that exogenous application of ethylene and auxin induced the expression of MA-ACS1, while MA-ACO1 showed marginal expression following ethylene treatment in preclimacteric stage. Auxin did not induce MA-ACO1 expression. Thus, auxin-treated banana fruits showed lower ethylene production rate as compared to ethylene-treated fruits. Conversely, wounding and cold treatment down-regulated the expression of both the genes and thus inhibited ethylene production. Furthermore, we have detected a GCC-box putative ethylene-responsive element (ERE)- and an auxin-responsive element (ARE)-specific DNA-binding activity in the banana pulp and studied the ethylene and auxin responsive characteristics of the GCC-box and ARE (TGTCTC) containing synthetic promoter fragments. In addition, we have detected an enhanced ethylene production rate and expression level of MA-ACS1 and MA-ACO1 genes along with a strong GCC-box-specific DNA-binding activity following exposure to constant dark period for 8 d at the preclimacteric stage. Together, our study provides interesting information about the regulation of expression of MA-ACS1 and MA-ACO1 genes in response to various factors during ripening in banana fruit, which may have physiological relevance concerning ethylene biosynthesis during post-harvest conditions.
Keywords: ACC oxidase; ACC synthase; Auxin-responsive element; Ethylene; Ethylene-responsive element

Satoshi Okubo, Tomiko Asakura, Kazue Okubo, Kazutoshi Abe, Takumi Misaka, Toru Akita, Keiko Abe, Neoculin, a taste-modifying sweet protein, accumulates in ripening fruits of cultivated Curculigo latifolia, Journal of Plant Physiology, Volume 165, Issue 18, December 2008, Pages 1964-1969, ISSN 0176-1617, DOI: 10.1016/j.jplph.2008.04.019.
(http://www.sciencedirect.com/science/article/B7GJ7-4SXRTH6-1/2/3a259bf9c3bcf5bd7487e99db41c4199)
Abstract: Summary
Neoculin is a sweet protein with a taste-modifying activity of converting sourness to sweetness. It occurs in the fruits of Curculigo latifolia, a wild plant found in tropical Asia. We successfully cultivated the plant and evaluated the production of neoculin. The neoculin content of the fruit was high for 10 weeks after flowering, following which the yield decreased gradually. The optimal period for harvesting the fruits with sensory activity coincided with this 10-week peak period during which the amount of neoculin was 1-3 mg in the whole fruit and 1.3 mg/g of pulp. Immunohistochemical staining showed that neoculin occurred in the whole fruit, especially at the basal portion. Although it is known that neoculin comprises an acidic subunit (NAS) with an N-glycosylated moiety and a basic subunit (NBS), protein gel blot analysis revealed the presence of

a non-glycosylated NAS species. This suggests the presence of multiple NAS-NBS heterodimers in our cultivar.
Keywords: Curculigo latifolia; Neoculin; Sour; Sweet; Taste-modifying protein

Carla Estaquio, Nathalie Druesne-Pecollo, Paule Latino-Martel, Luc Dauchet, Serge Hercberg, Sandrine Bertrais, Socioeconomic Differences in Fruit and Vegetable Consumption among Middle-Aged French Adults: Adherence to the 5 A Day Recommendation, Journal of the American Dietetic Association, Volume 108, Issue 12, December 2008, Pages 2021-2030, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.09.011.
(http://www.sciencedirect.com/science/article/B758G-4V03C8S-S/2/309d05e544d70c194b53f50cb0d6418c)
Abstract: Background
Numerous studies support the protective effect of high fruit and vegetable consumption on chronic disease risk, mainly against cancer and cardiovascular diseases. The increase of fruit and vegetable intake has become a public health priority in many countries.Objective
The aim of the study was to investigate the relationships of socioeconomic, demographic, and behavioral factors with both quantity and variety of fruit and vegetable consumption.Design/subjects
Fruit and vegetable intake was assessed using repeated 24-hour dietary records collected during a 2-year period from 4,282 French subjects (2,373 men and 1,909 women), aged 45 to 62 years, who participated in a large prospective study.Statistical analysis
Both education level and occupation categories were used as socioeconomic indicators. Logistic regression models were applied to assess factors related to meeting the 5 A Day fruit and vegetable recommendation. Covariance analyses were performed to compare the fruit and vegetable variety scores and the contributions of fruit and vegetables to the total daily diet cost across socioeconomic indicators within each sex.Results
Meeting the 5 A Day recommendation was more likely in subjects aged 50 years and older, higher education levels, nonsmokers, moderate alcohol drinkers and in women engaging in regular physical activity. The odds ratio (95% confidence interval) for the lower vs higher education level was 0.70 (0.54 to 0.92) in men and 0.65 (0.48 to 0.85) in women. No significant difference was observed between occupation categories. A positive relationship between vegetable variety and education level was found in both sexes. Fruit variety was positively associated with both education and occupation categories, but only in men. The contribution of fruits to the total daily diet cost increased with occupation ($P<0.02$) and education ($P<0.0001$) in men, but decreased with occupation in women ($P<0.05$).Conclusions
Although cost constraints may explain the lower fruit and vegetable intake in lower socioeconomic groups, the relative influence of budgetary resources, nutrition knowledge, and social and environmental barriers in socioeconomic disparities need further investigation.

Jingyu Shi, Jian Sun, Xiaoyi Wei, John Shi, Guiping Cheng, Mouming Zhao, Jinshui Wang, Bao Yang, Yueming Jiang, Identification of (-)-epicatechin as the direct substrate for polyphenol oxidase from longan fruit pericarp, LWT - Food Science and Technology, Volume 41, Issue 10, December 2008, Pages 1742-1747, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.02.003.
(http://www.sciencedirect.com/science/article/B6WMV-4RTW416-2/2/db4487cc80b8ef01c0bc472824d1e424)
Abstract:
Postharvest browning of longan fruit results in a short life and a reduced commercial value. The experiments were conducted to separate, then purify and finally identify the polyphenol oxidase (PPO) substrates that cause longan fruit to brown. PPO and its substrates were, respectively, extracted from longan fruit pericarp tissues. The substrate for longan PPO was separated and purified using polyamide column chromatography, Sephadex LH-20 column chromatography and

silica gel column chromatography, respectively. The substrate was further identified by 0.5% FeCl3 solution and enzymatic reaction with longan PPO. On the bases of UV, 1H NMR, 13C NMR, and ESI-MS data, the direct substrate for the PPO from pericarp tissues of longan fruit was identified to be (-)-epicatechin. Furthermore, the contents of (-)-epicatechin of pericarp tissues of longan fruit of two major cultivars were determined by high performance liquid chromatography (HPLC). The HPLC analysis exhibited that the contents of (-)-epicatechin of fruit pericarp of `Shixia' and `Chuliang' were 0.26 and 0.56 mg/g on fresh weight (FW) basis at harvest and 0.15 and 0.09 mg/g FW after 3 days of storage. The more rapid decrease in the (-)-epicatechin content of `Chuliang' was due to the oxidization catalyzed by PPO, which was in agreement with the higher browning index.
Keywords: Longan; Substrate; (-)-Epicatechin; Browning; Polyphenol oxidase

Paulo F. Da Silva, Rosana G. Moreira, Vacuum frying of high-quality fruit and vegetable-based snacks, LWT - Food Science and Technology, Volume 41, Issue 10, December 2008, Pages 1758-1767, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.01.016.
(http://www.sciencedirect.com/science/article/B6WMV-4RSBYKR-1/2/a087d07a537e6a831133868042e725eb)
Abstract:
Sweet potato, green beans, Tommy Atkins mango, and blue potato were fried in a vacuum frying process at a temperature of 120-130 +/- 1[degree sign]C. Before frying, green beans and mango slices were soaked in a 50% maltodextrine 0.15% citric acid solution. The products were also fried in a traditional (atmospheric pressure) fryer at 160-165 +/- 1[degree sign]C for 4 min. A 30-member consumer panel rated the sensory quality of both types of fried snacks using a 1-9 hedonic scale. Compared with traditional frying, oil content of vacuum-fried sweet-potato chips and green beans was 24% and 16% lower, respectively. Blue potato and mango chips had 6% and 5% more oil, respectively, than the traditional-fried samples. Anthocyanin (mg/100 g d.b.) of vacuum-fried blue potato chips was 60% higher. Final total carotenoids (mg/g d.b.) were higher by 18% for green beans, 19% for mango chips, and by 51% for sweet-potato chips. Sensory panelists overwhelmingly preferred ($p < 0.05$) the vacuum-fried products for color, texture, taste, and overall quality. Most of the products retained or accentuated their original colors when fried under vacuum. The traditional-fried products showed excessive darkening and scorching. These results support the applicability of vacuum frying technology to provide high-quality fruit and vegetable snacks.
Keywords: Vacuum frying; Fruit and vegetables; Oil content; Vitamin; Sensory

P.S. Negi, G.K. Jayaprakasha, B.S. Jena, Antibacterial activity of the extracts from the fruit rinds of Garcinia cowa and Garcinia pedunculata against food borne pathogens and spoilage bacteria, LWT - Food Science and Technology, Volume 41, Issue 10, December 2008, Pages 1857-1861, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.02.009.
(http://www.sciencedirect.com/science/article/B6WMV-4RXJYYN-2/2/5620fa62dda7437743da676aa95f1133)
Abstract:
The crude hexane and chloroform extracts from the fruit rinds of Garcinia cowa and Garcinia pedunculata were studied for their antibacterial activity against some foodborne pathogens and spoilage bacteria such as Bacillus cereus, Bacillus coagulans, Bacillus subtilis, Staphylococcus aureus and Escherichia coli. The minimum inhibitory concentrations (MICs) of the extracts determined by the agar dilution method were ranging from 15 to 500 [mu]g/ml and 300 to 1250 [mu]g/ml for G. cowa and G. pedunculata, respectively. However, the hexane and chloroform extracts from the fruit rinds of G. cowa exhibited marked inhibitory effect against all the test organisms and were more effective than that of G. pedunculata extracts. The antibacterial activity of all the extracts was more pronounced against the tested Gram-positive bacteria than the tested

Gram-negative bacterium. Furthermore, this study is the first report on the in vitro antibacterial activity of extracts from the fruit rinds of G. cowa and G. pedunculata.
Keywords: Garcinia cowa; Garcinia pedunculata; Antibacterial activity

Patricia Arancibia-Avila, Fernando Toledo, Yong-Seo Park, Soon-Teck Jung, Seong-Gook Kang, Buk Gu Heo, Sang-Hyun Lee, Mietek Sajewicz, Teresa Kowalska, Shela Gorinstein, Antioxidant properties of durian fruit as influenced by ripening, LWT - Food Science and Technology, Volume 41, Issue 10, December 2008, Pages 2118-2125, ISSN 0023-6438, DOI: 10.1016/j.lwt.2007.12.001.
(http://www.sciencedirect.com/science/article/B6WMV-4RDR1KM-18/2/c4b081bf5eab60c5cffa2efa9760ad8f)
Abstract:
The antioxidant properties of durian (Durio zibethinus Murr., cv. Mon Thong) at different stages of ripening were investigated using fluorometry, UV spectroscopy, and HPLC/DAD analyses. Total polyphenols, flavonoids, anthocyanins and flavanols in ripe durian were significantly higher ($p < 0.05$) than in mature and overripe fruits. Free polyphenols and flavonoids were at lower levels than hydrolyzed ones. Caffeic acid and quercetin were the dominant antioxidant substances in ripe durian. In these fruits, methanol extracts contained a relatively high capacity of 74.9 +/- 7.1% inhibition using [beta]-carotene-linoleic acid assay. Ferric-reducing/antioxidant power (FRAP) and cupric-reducing antioxidant capacity (CUPRAC) assays supported this finding. The correlation coefficients between polyphenols and antioxidant capacities of durian samples with all applied assays were about 0.98. In conclusion, the bioactivity of ripe durian was high and the total polyphenols were the main contributors to the overall antioxidant capacity.
Keywords: Ripe, overripe and mature durian; Bioactive compounds; Antioxidant capacity

T. Yayneshet, L.O. Eik, S.R. Moe, Feeding Acacia etbaica and Dichrostachys cinerea fruits to smallholder goats in northern Ethiopia improves their performance during the dry season, Livestock Science, Volume 119, Issues 1-3, December 2008, Pages 31-41, ISSN 1871-1413, DOI: 10.1016/j.livsci.2008.02.007.
(http://www.sciencedirect.com/science/article/B7XNX-4S4J6TX-1/2/82f4d9fbf55518437e15b36a41556793)
Abstract:
Acacia etbaica Schweinf. and Dichrostachys cinerea (L.) Wight et Arn. are among the common woody browse plants that naturally grow in many arid and semi-arid rangelands in sub Saharan Africa. An experiment was conducted to compare the voluntary dry matter intake, body weight gain, nitrogen balance, carcass composition and sensory attributes of goats supplemented with different levels of A. etbaica and D. cinerea fruits. Average initial body weight of the goats was 20.4 kg (+/- 0.8SE) and received one of the following fruit supplementation regimes for 120 days (on body weight basis, n = 4 goats per group): (1) Control, no supplement; (2) 0.5% of A. etbaica; (3) 0.5% of D. cinerea; (4) 1.0% of A. etbaica; (5) 1.0% of D. cinerea; (6) 1.5% of A. etbaica; (7) 1.5% of D. cinerea. All groups were allowed to graze/browse during the day. Compared to A. etbaica, D. cinerea fruits contained higher amounts of crude protein (182 vs 135 g/kg DM), metabolizable energy (11 vs 8.4 MJ/kg DM), and in vitro dry matter digestibility coefficient (0.7 vs 0.6). The concentrations of acid detergent fiber (ADF), sulphuric acid solubulized lignin, and tannin (soluble and condensed) were lower ($P < 0.05$) in D. cinerea than in A. etbaica fruits. A. etbaica fruits, however, contained higher amounts of Na, K, Fe, and Zn concentrations than D. cinerea fruits. Dry matter intake was markedly higher in supplemented groups than in the control group without supplement. Similarly, body weight gain in the control group was negative and lower ($P < 0.05$) than any of the supplemented groups. During the course of the experimental period (120 days) the group placed in the 1.5% D. cinerea fruit diet gained 2.6 kg whereas the control group lost 2.0 kg. Thus, the difference between these two groups was 4.6 kg, which suggests about

22.5% increment of the goats' initial body weight. N retention was negative for the control group and varied little among the remaining treatment groups. Dressing percent increased with increased level of either type of fruit supplement, the highest (51.8%) being achieved at the 1.5% D. cinerea level. There was no difference in bone tissue across treatment groups. D. cinerea fruit intake also resulted in juicy/watery flavor and tender carcass. D. cinerea fruits appeared to have no adverse effects when included at the highest level (1.5%) and could be collected and stored as dry season supplement to smallholder goats. This study shows that poor farmers can increase goat performance substantially through supplement feeding with wild fruits. Areas in Ethiopia originally set aside for provision of ecological services and biodiversity protection can also be used for wild fruit production and feeding of small stock. The effect of increasing D. cinerea fruits above the 1.5% body weight level should be a focus of future investigation. Further work on deactivation mechanism of tannins is required for A. etbaica fruits included at levels higher than 1.0%.
Keywords: Exclosure; Body weight; Dry matter intake; Supplement; Tigray

Wei Wang, Si-Bao Wan, Ping Zhang, Hui-Ling Wang, Ji-Cheng Zhan, Wei-Dong Huang, Prokaryotic expression, polyclonal antibody preparation of the stilbene synthase gene from grape berry and its different expression in fruit development and under heat acclimation, Plant Physiology and Biochemistry, Volume 46, Issue 12, December 2008, Pages 1085-1092, ISSN 0981-9428, DOI: 10.1016/j.plaphy.2008.07.005.
(http://www.sciencedirect.com/science/article/B6VRD-4T1Y3PG-1/2/037850ae62d0a47ccbf6a624753e2404)
Abstract:
Stilbene synthase (STS, EC 2.3.1.95) leads to the production of resveratrol compounds, which are major components of the phytoalexin response against fungal pathogens of the plant and are highly bioactive substances of pharmaceutical interest. STS expression and regulation are important. Temperature is one of the main external factors affecting phytoalexin accumulation in plant tissues, the effect of temperature on resveratrol synthesis and stilbene synthase expression in grape berries has not been reported before. Here we cloned the full-length sts cDNA with 1179 bp from grape berry via PCR, and then introduced into an expressed plasmid pET-30a(+) vector at the EcoRI and XhoI restriction sites. With the isopropyl-[beta]-d-thiogalactoside (IPTG) induced, the pET-sts was highly expressed in Escherichia coli BL21 (DE3) pLysS cells. A fusion protein with the His-Tag was purified by Ni-NTA His [middle dot] Bind Resin and then used as the antigen to immunize a New Zealand rabbit. Furthermore, the antiserum was precipitated by 50% saturated ammonium sulfate and DEAE-Sephadex A-50 chromatography to obtain the immunoglobulin G (IgG) fraction. These results provide a substantial basis for the further studies of the STS in grape berry as well as in other species of plants. The sts expression in fruit development and in response to heat acclimation was then assayed. The results indicated STS was regulated in fruits depending on the developmental stage and significantly accumulation of STS mRNA and synthesis of new STS protein during the early of heat acclimation, this work offers an important basis for further investigating the mechanism of post-harvest fruit adaptation to environmental stresses.
Keywords: Stilbene synthase; Escherichia coli expression; Antibody; Purification; Grape berry; Heat acclimation

Poorinima Singh, Upendra N. Dwivedi, Purification and characterisation of multiple forms of polygalacturonase from mango (Mangifera indica cv. Dashehari) fruit, Food Chemistry, Volume 111, Issue 2, 15 November 2008, Pages 345-349, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.03.072.
(http://www.sciencedirect.com/science/article/B6T6R-4S62RSG-3/2/6f015f69b2ae5aa578016bf2763fb8cf)
Abstract:

Three multiple forms of polygalacturonase (PG) namely PGI, PGII and PGIII were isolated, purified and characterized from ripe mango (Mangifera indica cv. Dashehari) fruit. Native molecular weights of PGI, PGII and PGIII were found to be 120, 105 and 65 kDa, respectively. On SDS-PAGE analysis, PGI was found to be a homodimer of subunit size 60 kDa each while those of PGII and PGIII were found to be heterodimers of 70, 35 and 38, 27 kDa subunit size each, respectively. Three isoforms of PG differed with respect to the effect of pH, metals, reducing agents and their susceptibility towards heat. PG isoforms also differed with respect to the effect of substrate concentration on enzyme activity. PGI and PGIII exhibited inhibition at high substrate concentration while PGII did not. Km for polygalacturonic acid was found to be 0.02% for PGI.
Keywords: Mango; Dashehari; Polygalacturonic acid; Polygalacturonase; Ripening; Multiple forms

C.R. Soliva, A.B. Zeleke, C. Clement, H.D. Hess, V. Fievez, M. Kreuzer, In vitro screening of various tropical foliages, seeds, fruits and medicinal plants for low methane and high ammonia generating potentials in the rumen, Animal Feed Science and Technology, Volume 147, Issues 1-3, Shrubby vegetation and agro-industrial by-products as alternative feed resources for sheep and goats, 14 November 2008, Pages 53-71, ISSN 0377-8401, DOI: 10.1016/j.anifeedsci.2007.09.009. (http://www.sciencedirect.com/science/article/B6T42-4PXNHH9-2/2/40eeea47aa404d6d04927347ebf8e542)
Abstract:
An extensive in vitro screening of various leaves, seeds and fruits of tropical multi-purpose shrubs and trees (MPT), leaves of medicinal plants and residues of leguminous food-feed crops was conducted to test their methane and ammonia generating potential. Plant materials were incubated with ruminal fluid/buffer mixture in four replicates for 24 h using the Hohenheim gas test method. In the group of the MPT leaves, different accessions of Acacia angustissima and Sesbania sesban were tested. Comparing the methanogenic potential, significant differences occurred both between and within the four plant groups tested. Generally, the methane-to-total gas ratio was lower for the leaves of the MPT and the medicinal plants than for the leguminous crop residues and the MPT seeds and fruits. Out of the latter group, Albizia rhizonse and Sapindus saponaria showed the lowest methanogenic potential. Within the MPT leaves the lowest methanogenic potential was found with Samanea saman and different Acacia and Sesbania species, plants known to contain plant secondary metabolites able to suppress methanogenesis. Differences between accessions of either Acacia angustissima or Sesbania sesban were large, illustrating the need to differentiate between accessions. The protozoal population was affected by the plant secondary metabolites to a smaller extent than expected, and leaves of Acacia angustissima and Sesbania sesban did not show any anti-protozoal effect. The plant group with the highest variation in their anti-protozoal effects was the MPT fruits and seeds with protozoal counts ranging between 0.6 and 5.7 x 104/ml incubation liquid. Ammonia concentrations largely differed between and within the four plant groups with values ranging from 7 to 16, 10 to 33, 9 to 20, and 15 to 23 mmol/ml incubation liquid for the MPT leaves, for the MPT fruits and seeds, for the medicinal plant leaves, and for the leguminous food-feed crop residues, respectively. The correlation coefficient between plant crude protein content and ammonia concentration was as high as 0.75, indicating that plant secondary compounds such as tannins did not excessively inhibit feed protein degradation. In conclusion, various plant materials, including accessions of Acacia angustissima, Sesbania sesban and Cajanus cajan, were found promising to approach the goal of an improved nutrition of small ruminants in the tropics at simultaneously limited methane emissions.
Keywords: Tropical plants; Methane; Ammonia; Ruminant nutrition; Protozoa; Rusitec

Diego J. Inclan, Felipe J. Bermudez, Edgar Alvarado, Mike Ellis, Roger N. Williams, Nuris Acosta, Comparison of biological and conventional insecticide treatments for the management of the pineapple fruit borer, Strymon megarus (Lepidoptera: Lycaenidae) in Costa Rica, Ecological Engineering, Volume 34, Issue 4, Ecological management and sustainable development in the

humid tropics of Costa Rica, 5 November 2008, Pages 328-331, ISSN 0925-8574, DOI: 10.1016/j.ecoleng.2008.07.005.
(http://www.sciencedirect.com/science/article/B6VFB-4V2H74X-7/2/d04fa2f46298f263c00e7a23b1d06c0d)
Abstract:
Carbaryl is currently one of the most commonly used insecticides for the control of the pineapple fruit borer, Strymon megarus (Godart), in commercial pineapple production. To evaluate more sustainable biological alternatives to conventional insecticides, three microbial and one botanical insecticide were studied. Beauveria bassiana, Metarhizium anisopliae, Bacillus thuringiensis (Bt) and a plant extract from Quassia amara were compared with carbaryl in replicated field trials in Costa Rica during 2005 and 2006. In both years of testing, the untreated control received over 50% fruit damage from S. megarus. Bt and carbaryl provided the highest level of control and the lowest level of fruit damage compared to all other treatments. Based on the results of this study, Bt appears to be an acceptable biological alternative to the conventional insecticide (carbaryl) for control of S. megarus on pineapple. In addition, Bt was the least expensive treatment used in this study.
Keywords: Pineapple; Thecla; Fruit borer; Strymon megarus; Natural insecticides; Carbaryl; Economics

M. Naderi-Boldaji, R. Fattahi, M. Ghasemi-Varnamkhasti, A. Tabatabaeefar, A. Jannatizadeh, Models for predicting the mass of apricot fruits by geometrical attributes (cv. Shams, Nakhjavan, and Jahangiri), Scientia Horticulturae, Volume 118, Issue 4, 4 November 2008, Pages 293-298, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.06.025.
(http://www.sciencedirect.com/science/article/B6TC3-4T4HJKS-2/2/2b32fe575ca8b629acc029d6f84f44d3)
Abstract:
Fruits with the similar weight and uniform shape are in high demand in terms of marketing value. Therefore, an awareness of grading fruit based on weight is crucial. A part of this research was aimed to present some physical properties of three Iranian apricot cultivars (Shams, Nakhjavan, and Jahangiri). In addition, apricot mass was predicted by different physical characteristics with linear and nonlinear models as three different classifications: (1), single or multiple variable regressions of apricot dimensional characteristics. (2), single or multiple variable regressions of apricot projected areas and (3), estimating apricot mass based on its volume. All properties considered in the current study were found to be statistically significant at the 1% probability level. The highest and the lowest dimensional characteristics were found for Jahangiri and Nakhjavan cultivars, respectively. Sphericity values had significant difference among the tested cultivars. The latter property values were 0.971, 0.917, and 0.973 for Shams, Nakhjavan, and Jahangiri cultivars, respectively. Based on the results, the surface area of the Jahangiri cultivar was found to be 6458.35 mm2, followed by the Shams and Nakhjavan cultivars, which had a mean of 6115.36, and 4395.25 mm2, respectively. In this paper, the coefficients of static friction of the cultivars on three different surfaces are also reported. The results showed that mass modeling of apricot based on minor diameter and three projected areas are the most appropriate models in the first and the second classifications, respectively. In third classification, the best model was obtained on the basis of the actual volume as M = 0.997Vm + 0301, R2 = 0.98, R.S.E. = 1.711 withR2 = 0.98. It was concluded that the suitable grading system of apricot mass is based on minor diameter as nonlinear relation: M = 0.0019c2.693, R2 = 0.96, R.S.E. = 2.2.
Keywords: Apricot; Prunus armeniaca L.; Physical characteristic; Iranian cultivars; Mass models

Aiman K.A. Mohamed, Erratum to 'The effect of chilling, defoliation and hydrogen cyanamide on dormancy release, bud break and fruiting of Anna apple cultivar' [Sci. Hortic. 118 (2008) 25-32],

Scientia Horticulturae, Volume 118, Issue 4, 4 November 2008, Pages 351-352, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.08.021.
(http://www.sciencedirect.com/science/article/B6TC3-4TK7XDW-1/2/65f4bad58264c50cd06ebe77b8129312)

Deborah Brzys Busick, Judith Brooks, Sandra Pernecky, Rebecca Dawson, Joy Petzoldt, Parent food purchases as a measure of exposure and preschool-aged children's willingness to identify and taste fruit and vegetables, Appetite, Volume 51, Issue 3, November 2008, Pages 468-473, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.01.013.
(http://www.sciencedirect.com/science/article/B6WB2-4SH0XNY-1/2/12dffb0036fb013c2b233492773e2d81)
Abstract:
This study explored whether parents who purchase more fruit/vegetables have preschool-aged children who are able to identify fruit/vegetables and in turn are more likely to consume them. Sixty-two parent-child pairs were recruited during a 4-month period. The data collection included a child interview, a parent/guardian interview, a fruit/vegetable taste test for children, and a month-long food-receipt collection by the parent/guardian. As the percentage of fruit/vegetables purchased by parent increased, the child was more likely to accept all of the fruit/vegetables offered to him/her. A weak correlation was found between the child's ability to name fruit/vegetables and their willingness to try the fruit/vegetables offered. A trend was established between the child's ability to name the 10 fruits/vegetables and parent fruit/vegetable purchases. Parents who purchased the most fruit/vegetables, causing increased exposure, had children who were more willing to taste the fruit/vegetables offered to them.
Keywords: Fruit and vegetable; Exposure; Food purchases; Food preferences; Children; Parents

Esther Jansen, Sandra Mulkens, Yvette Emond, Anita Jansen, From the Garden of Eden to the land of plenty: Restriction of fruit and sweets intake leads to increased fruit and sweets consumption in children, Appetite, Volume 51, Issue 3, November 2008, Pages 570-575, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.04.012.
(http://www.sciencedirect.com/science/article/B6WB2-4SBHWV4-1/2/4c64603213300624b4f92b560a1eed12)
Abstract:
Overweight is increasing rapidly in children, compelling researchers to seek for determinants of adverse food intake. In a previous experiment it was found that manipulating the restriction of attractive snacks increased the desirability and intake of these snacks. In the present study, we tested whether this paradoxical restricting effect is also seen in relatively less attractive but healthy food, i.e. fruit. Will fruit become more desirable through restriction, and will children eat more forbidden fruit than non-forbidden fruit?
Two groups of young children were forbidden to eat fruits and sweets, respectively, whereas a control group was invited to eat everything. Desire for sweets remained high in the sweets-prohibition condition, whereas it decreased in the fruit-prohibition and no-prohibition conditions. No group differences were found regarding the desire for fruit. With respect to intake, children in both the fruit- and the sweets-prohibition condition consumed more of the formerly forbidden food during a taste session as compared to the no-prohibition condition. In addition, total food intake was higher in the two prohibition conditions than in the no-prohibition condition. These data indicate that the adverse effects of restriction apply to both attractive unhealthy and relatively less attractive but healthy food.
Keywords: Parental control; Child feeding practices; Restriction; Fruit consumption; Eating behaviour; Childhood obesity; Overeating

G. Herbert, O. Kennedy, A. Lobb, L.T. Butler, Gender differences in young adults' beliefs and behaviour towards fruit and vegetable consumption, Appetite, Volume 51, Issue 3, November 2008, Page 758, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.05.029.
(http://www.sciencedirect.com/science/article/B6WB2-4SV12JV-10/2/da24e0e1e0bebb26c2ea050ad2ed765f)

Rajbir Singh, R.R. Sharma, Satyendra Kumar, R.K. Gupta, R.T. Patil, Vermicompost substitution influences growth, physiological disorders, fruit yield and quality of strawberry (Fragaria x ananassa Duch.), Bioresource Technology, Volume 99, Issue 17, November 2008, Pages 8507-8511, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.03.034.
(http://www.sciencedirect.com/science/article/B6V24-4SJ9G6C-1/2/577ca93998ca969cc1d0d42be7b359bf)
Abstract:
Studies were conducted to determine the effect of vermicompost on growth, physiological disorders, fruit yield and quality of `Chandler' strawberry. For this, 4 levels of vermicompost (2.5, 5.0, 7.5 and 10.0 t ha-1) were supplemented with inorganic fertilizers to balance fertilizer requirement of strawberry under semi-arid region of northern India. The vermicompost was incorporated into top 10 cm layer of soil, which was supplemented on the basis of chemical analysis, with amount of inorganic N, P, K fertilizer calculated to equalize the recommended dose of nutrients. Vermicompost application increased plant spread (10.7%), leaf area (23.1%) and dry matter (20.7%), and increased total fruit yield (32.7%). Substitution of vermicompost drastically reduced the incidence of physiological disorders like albinism (16.1-4.5%); fruit malformation (11.5-4.0%) and occurrence of grey mould (10.4-2.1%) in strawberry indicating that vermicompost had significant role in reducing nutrient-related disorders and disease like Botrytis rot, and thereby increasing the marketable fruit yield up to 58.6% with better quality parameters. Fruit harvested from plant receiving vermicompost were firmer, have higher TSS, ascorbic acid content and lower acidity, and have attractive colour. All these parameters appeared to be dose dependent and best results were achieved @ 7.5 t ha-1, however, beyond this dose of vermicompost, there was not significant influence on these parameters.
Keywords: Vermicompost; Growth parameters; Fruit malformation; Fruit yield; Strawberry

O.K. Owolarafe, A.S. Osunleke, O.A. Odejobi, S.O. Ajadi, M.O. Faborode, Mathematical modelling and simulation of the hydraulic expression of oil from oil palm fruit, Biosystems Engineering, Volume 101, Issue 3, November 2008, Pages 331-340, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2008.08.007.
(http://www.sciencedirect.com/science/article/B6WXV-4TW6D02-2/2/505680d62bcdf0349602ca1d304c214c)
Abstract:
A mathematical model for expressing palm oil was developed using the properties of the fruit and based on previous work on seed-oil expression. Linearisation of the theoretical model developed was carried out by using empirical expressions for flow parameters such as permeability, viscosity and pressure-porosity relationship. The general equation developed was solved numerically using MatLab. The model was validated by comparing the experimental and predicted oil yield recovery at combinations of sterilisation time (30, 60 and 90 min), digestion time (3, 5 and 10 min) and expression pressure (0.5, 1.0 and 1.5 MPa). The result indicated that generally, both the measured and predicted oil recovery increased with increasing sterilisation time, digestion time and expression pressure. The model had an overall deviation between the predicted and measured values of about 5%.

Xuewu Duan, Guiping Cheng, En Yang, Chun Yi, Neungnapa Ruenroengklin, Wangjin Lu, Yunbo Luo, Yueming Jiang, Modification of pectin polysaccharides during ripening of postharvest banana

fruit, Food Chemistry, Volume 111, Issue 1, 1 November 2008, Pages 144-149, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.03.049.
(http://www.sciencedirect.com/science/article/B6T6R-4S32NSK-8/2/6a31c84e621032e2796e4a9729084e18)
Abstract:
Pectin is one of the major components of the primary cellular walls and middle lamella in plant tissues. In this study, water-soluble pectin (WSP) and acid-soluble pectin (ASP) fractions were isolated from pulp tissues of banana fruit at various ripening stages. Their monosaccharide compositions, glycosyl linkages and molecular mass distributions were evaluated. As ripening progressed, fruit firmness decreased rapidly, which was associated with the increase in the WSP content and the decrease in the ASP content. Meanwhile, the molecular mass distributions of WSP and ASP fractions exhibited a downshift tendency, indicating the disassembly of pectin polysaccharides. Moreover, galactose and galacturonic acid as the major monosaccharide compositions of pectin polysaccharides increased in WSP fraction but decreased in ASP fraction during fruit softening. GC-MS analysis further revealed that pectin polysaccharide had a 1,4-linked galactan/galacturonan backbone with different types of branching and terminal linkages in WSP and ASP fractions. During banana fruit ripening, the amount of 1,4-linked Galp residues of ASP fraction decreased significantly whereas 1,3,6-linked Galp, 1,2-linked Manp and 4-linked Araf residues disappeared, which was related to depolymerization of pectin polysaccharides. Overall, the study indicated that the modifications in polysaccharide compositions and glycosyl linkages, reduced molecular mass distributions and enhanced depolymerization of pectin fraction during banana ripening were responsible for fruit softening.
Keywords: Banana; Fruit; Pectin polysaccharide; Glycosyl linkage; Molecular mass distribution

Hyun Jeong Kim, Mi-Hee Yu, In-Seon Lee, Inhibitory effects of methanol extract of plum (Prunus salicina L., cv. `Soldam') fruits against benzo([alpha])pyrene-induced toxicity in mice, Food and Chemical Toxicology, Volume 46, Issue 11, November 2008, Pages 3407-3413, ISSN 0278-6915, DOI: 10.1016/j.fct.2008.08.012.
(http://www.sciencedirect.com/science/article/B6T6P-4T8JXJ0-2/2/c13f19bd471be390bcb4a0ea56df1f24)
Abstract:
This study was carried out to investigate the chemopreventive effects of immature plum extracts. The methanol extract of immature plums (plum 1), that are picked at 20-40 days before final harvest, has remarkably inhibited the growth of hepatoma HepG2 cells. The effects of immature plum extracts on hepatotoxicity in benzo([alpha])pyrene (B([alpha])P, carcinogen)-treated mice were investigated. Male ICR mice were pretreated with immature plum extracts (2.5 or 5 g/kg bw/day, for 5 days, i.p.) before treatment with B([alpha])P(0.5 mg/kg bw, i.p., single dose). The activities of serum aminotransferase, cytochrome P450 (CYPs) and the hepatic content of lipid peroxide were increased on B([alpha])P-treatment group than control, but those levels were significantly decreased by the pretreatment of immature plum extracts. The primary CYPs involved in the metabolism and bioactivation of B([alpha])P are CYP1A1. The pretreatment of immature plum extracts inhibited the induction of CYP1A1 expression. The activities of glutathione peroxidase, superoxide dismutase and catalase were decreased by the pretreatment of immature plum extracts more than with B([alpha])P alone. Whereas, the hepatic content of glutathione and glutathione S-transferase activity depleted by B([alpha])P was significantly increased ($p > 0.05$). These results suggest that immature plum extracts may counteract toxic effects of carcinogens, such as B([alpha])P, and therefore possess the chemopreventive efficacy.
Keywords: Immature plums; Benzo([alpha])pyrene; Hepatotoxicity; Chemoprevention

C.P. Leh, W.D. Wan Rosli, Z. Zainuddin, R. Tanaka, Optimisation of oxygen delignification in production of totally chlorine-free cellulose pulps from oil palm empty fruit bunch fibre, Industrial

Crops and Products, Volume 28, Issue 3, November 2008, Pages 260-267, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2008.02.016.
(http://www.sciencedirect.com/science/article/B6T77-4SBYYF7-1/2/0f4b4bf4dfab9bcf09a5ead57d9eba37)
Abstract:
The effects of oxygen delignification on prehydrolysed-soda pulps produced from oil palm (Elaeis guineensis) empty fruit bunch fibre were statistically investigated by employing response surface methodology (RSM). Polynomial estimation models of five response variables namely yield, Kappa number, [alpha]-cellulose, viscosity and brightness were developed, each model comprised of four-independent variables: reaction temperature, reaction time, the alkali charge, and initial Kappa number. The calculated optimum condition (95 [degree sign]C reaction temperature, 60 min reaction time, 2% alkali charge, and initial Kappa number of 6.6) is capable to produce pulp with 98.1% yield, Kappa number 2.4, 97.38% [alpha]-cellulose, pulp viscosity 13.8 cPs and ISO brightness 67.1%, which were proven close to the predicted values calculated from estimation models. The results indicated that oxygen delignification which is used as the first stage of bleaching sequence has the ability to both delignify and increase pulp brightness without substantial reduction in viscosity and [alpha]-cellulose, that appeared to be beneficial for subsequent TCF bleaching.
Keywords: Cellulose pulp; Oxygen delignification; Oil palm fibre (EFB); Experimental design; TCF (totally chlorine free)

Jose Guilherme S. Maia, Eloisa Helena A. Andrade, Milton Helio L. da Silva, Aroma volatiles of pequi fruit (Caryocar brasiliense Camb.), Journal of Food Composition and Analysis, Volume 21, Issue 7, November 2008, Pages 574-576, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.05.006.
(http://www.sciencedirect.com/science/article/B6WJH-4SM1TC4-4/2/0a7bc96b328aace586109170a8ba8ec7)
Abstract:
The aroma volatiles of Caryocar brasiliense, the 'pequi' fruit, were analyzed by GC and GC-MS. It is rich on vitamins, lipids and proteins and an edible fruit after cooking. The 'pequi' flavor has been used to aromatize many foods eaten up in the Central West and South Eastern of Brazil. The ethyl esters prevailed in the aroma concentrate of 'pequi' followed by other analogous esters, saturated fatty acids and long chain hydrocarbons. The major component was ethyl hexanoate (52.9%) followed of minor amounts of ethyl octanoate (4.6%), tetrahydrofurfurylalcohol (4.3%), ethyl butanoate (4.1%), butyl palmitate (3.7%), isobutyl stearate (2.6%) and 3-methylvaleric acid (2.6%). The fatty acids and their derivatives varied from C-8 (caprylic acid and ethyl octanoate) to C-18 (stearyl acetate and isobutyl stearate). The existing homologous series of hydrocarbons ranged from C-11 (undecane) to C-26 (hexacosane).
Keywords: Caryocar brasiliense; Caryocaraceae; Pequi; GC-MS; Aroma volatiles; Ethyl hexanoate

Anantha P. Lakkakula, Michael Zanovec, Linda Silverman, Ellen Murphy, Georgianna Tuuri, Black Children with High Preferences for Fruits and Vegetables Are at Less Risk of Being at Risk of Overweight or Overweight, Journal of the American Dietetic Association, Volume 108, Issue 11, November 2008, Pages 1912-1915, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.08.019.
(http://www.sciencedirect.com/science/article/B758G-4TT89NH-S/2/bfc9db19ba8d1f1328a62424738dc736)
Abstract:
Food preferences play a central role in food choices and consumption. The primary objective of this study was to examine the relationship between children's preferences for fruits and vegetables and their weight status. A total of 341 black children (43% boys; 68% fourth graders) attending low-income, public elementary schools in southeastern Louisiana volunteered to participate. Children were measured for height and weight and completed a survey that sought their

preferences for 38 different fruits and vegetables during the fall of 2005. Results indicated that children preferred fruits more than vegetables and that there was a negative association between children's mean fruit and vegetable preference score and their body mass index for age percentile (r=-0.26; P=0.01). Children who reported a very low preference for fruits and vegetables were 5.5 times more likely to be categorized as at risk for overweight or overweight than were those who reported a high preference for fruits and vegetables (odds ratio: 5.5; confidence interval: 1.97 to 15.44; P<0.01). It is believed that food preferences are established early in life; therefore, nutritionists and other health care professionals should promote children's acceptance and intake of fruits and vegetables as a measure to reduce the prevalence of overweight among children.

Angel Hernandez, Fruit removal by climbing rodents in guelder rose: Comparison with birds and differences between inner and outer racemes, Mammalian Biology - Zeitschrift fur Saugetierkunde, Volume 73, Issue 6, November 2008, Pages 472-477, ISSN 1616-5047, DOI: 10.1016/j.mambio.2008.02.005.
(http://www.sciencedirect.com/science/article/B7GX2-4S7HSCX-2/2/708a923101665369790aa79c24975a11)
Keywords: rodents; birds; Viburnum opulus; fruit consumption; climbing ability

Ruth E. Stark, Bin Yan, Suzanne M. Stanley-Fernandez, Zhen-jia Chen, Joel R. Garbow, NMR characterization of hydration and thermal stress in tomato fruit cuticles, Phytochemistry, Volume 69, Issue 15, November 2008, Pages 2689-2695, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2008.08.016.
(http://www.sciencedirect.com/science/article/B6TH7-4TMMGMX-1/2/4215f06225ab06ecccf7f83b2b9ce94f)
Abstract:
In its natural environment, the plant cuticle, which is composed of the biopolymer cutin and a mixture of surface and embedded cuticular waxes, experiences a wide variety of temperatures and hydration states. Consequently, a complete understanding of cuticular function requires study of its thermal and mechanical properties as a function of hydration. Herein, we report the results of a comprehensive 13C nuclear magnetic resonance (NMR) relaxation study of hydrated tomato fruit cuticle. Cross-polarization and direct-polarization experiments serve to measure the solid-like and liquid-like components, respectively, of hydrated cuticle. Localized, high-frequency motions are probed by T1(C) spin relaxation measurements, whereas T1[rho](H) and T1[rho](C) experiments reflect low-frequency, lower amplitude polymer-chain motions. In addition, variable-temperature measurements of T1(C) and T1[rho](C) for dry tomato cuticles are used to evaluate the impact of temperature stress. Results of these experiments are interpreted in terms of changes occurring in individual polymer motions of the cutin/wax components of tomato cuticle and in the interaction of these components within intact cuticle, both of which are expected to influence the functional integrity of this protective plant covering.
Keywords: Lycopersicon esculentum; Solanaceae; Tomato; Fruit; Cuticle; Plant cuticle; Polyester; Hydration stress; Temperature stress; NMR; Solid-state NMR; C-13 NMR; CPMAS; Spin relaxation; Molecular dynamics

Zengping Gao, Zulfiqar Ali, Ikhlas A. Khan, Glycerogalactolipids from the fruit of Lycium barbarum, Phytochemistry, Volume 69, Issue 16, November 2008, Pages 2856-2861, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2008.09.002.
(http://www.sciencedirect.com/science/article/B6TH7-4TT9VXS-1/2/60cafdb067068c5127fa28af498e045e)
Abstract:
Four glycerogalactolipids (1-4), together with 11 other previously known homologues were isolated from the fruit of Lycium barbarum. Their structures were elucidated by chemical analyses including

regio-selective enzymatic, alkaline and acidic hydrolyses and spectroscopic methods involving GCMS, HRESIMS and 1D and 2D NMR, respectively.
Keywords: Lycium barbarum; Solanaceae; Goji berries; Glycerogalactolipids

D. Page, I. Marty, J.P. Bouchet, B. Gouble, M. Causse, Isolation of genes potentially related to fruit quality by subtractive selective hybridization in tomato, Postharvest Biology and Technology, Volume 50, Issues 2-3, November 2008, Pages 117-124, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.05.017.
(http://www.sciencedirect.com/science/article/B6TBJ-4T719SW-1/2/a376b93feb8dfb33c14e1dfe57ddd565)
Abstract:
Improved understanding of the genetic and physiological control of quality traits could be helpful for identifying new technological or genetic targets to improve tomato fresh fruit quality and shelf life. This study aimed at screening for genes whose expression varied between lines genetically close but differing for fruit quality, using subtractive and selective hybridization (SSH). A set of 310 unigenes was isolated. The differential expression pattern of the SSH clones between LCx and Levovil, the two lines of the trial, was assessed by macroarray screening, and for 14 of them, by real-time PCR. Their putative functions were identified by BLAST comparison with public EST databases, and were classified on the basis of their function. Thirty nine percent of the unigenes corresponded to proteins which had never been isolated in fruit or with functions in fruit that were not clear or unknown. Among the others, proteins related to oxidative stress responses, calcium-binding proteins, a few cell-wall-related proteins, and several transcription regulators were identified. The SSH unigenes were then compared to the EST set of the tomato array Tom2 developed from public resources. The BLAST comparison revealed that 41% of the unigenes were not included in this set. This result revealed that our study emphasizes genes that would not have been considered with commercially available microarrays, and that constitute new targets for fruit quality control.
Keywords: Fruit ripening; Quantitative trait loci; qPCR; Solanum lycopersicum L.; Subtractive library

J. Pablo Fernandez-Trujillo, Javier M. Obando-Ulloa, Juan A. Martinez, Eduard Moreno, Jordi Garcia-Mas, Antonio J. Monforte, Climacteric and non-climacteric behavior in melon fruit: 2. Linking climacteric pattern and main postharvest disorders and decay in a set of near-isogenic lines, Postharvest Biology and Technology, Volume 50, Issues 2-3, November 2008, Pages 125-134, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.04.007.
(http://www.sciencedirect.com/science/article/B6TBJ-4T2J15K-2/2/acf0824e52104fa4be91302a1c22ab8e)
Abstract:
A set of near-isogenic lines (NILs) of melon (Cucumis melo L.) was used to test the relationship between the climacteric pattern and postharvest disorders at harvest and after 30 days at 8 [degree sign]C. The NILs contained different chromosome introgressions in the linkage group III from the non-climacteric exotic Korean accession PI 161375 transferred into the genetic background of the non-climacteric Spanish cultivar `Piel de Sapo' (PS). A quantitative trait locus (QTL) in this linkage group induced climacteric behavior in eight NILs accompanied by a peak of ethylene production and fruit dehiscence to different degrees. The cultivar `Nicolas' and one NIL showed a non-climacteric pattern of respiration rate and ethylene production. The climacteric NILs were used to test the relationship between this pattern and postharvest disorders. The reference climacteric lines `Fado' and `Vedrantais' were more sensitive to CI and associated Cladosporium rot than the NILs or PS. In general, a more intense climacteric behavior was accompanied by fruit dehiscence, and higher total losses and greater skin scald after storage, than in PS. A higher incidence of chilling injury (CI) in the climacteric NILs was found compared with the non-climacteric

ones, although with exceptions (one NIL for CI in the form of scald; the same NIL and one more for pitting). The climacteric onset and netting scald were not related, and CI in the form of skin spots was only found in climacteric NILs and was positively correlated with the maximum peak of ethylene production. Some climacteric NILs did not follow the rule of a higher susceptibility to other disorders and decay after storage compared with PS, such as for example in fruit over-ripening (detected externally or internally), Cladosporium rot at the peduncle and Alternaria rot. Mealiness was independent of climacteric behavior. Three climacteric NILs obtained better flavor scores after storage than PS, although the maximum peak of ethylene production was positively correlated with off-flavor. Genotypic correlation between disorder data and the physiological data of climacteric fruit revealed positive (flavor index) or negative postharvest consequences (skin injuries, rots or off-flavors). At least one QTL can be assigned to most of the quality traits analyzed.
Keywords: Cucumis melo L.; Chilling injury; Ethylene production; Respiration rate; Fruit quality traits; Cold storage; Quantitative trait loci

Jose de Jesus Ornelas-Paz, Elhadi M. Yahia, Alfonso A. Gardea, Changes in external and internal color during postharvest ripening of `Manila' and `Ataulfo' mango fruit and relationship with carotenoid content determined by liquid chromatography-APcI+-time-of-flight mass spectrometry, Postharvest Biology and Technology, Volume 50, Issues 2-3, November 2008, Pages 145-152, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.05.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4ST45TJ-3/2/06276a25f337383cc8ea633995cd8e8d)
Abstract:
High-performance liquid chromatography-atmospheric pressure chemical ionization (APcI+)-time-of-flight mass spectrometry studies revealed that all-trans-[beta]-carotene and the dibutyrates of all-trans-violaxanthin and 9-cis-violaxanthin were the main carotenoids in `Ataulfo' and `Manila' mango fruit mesocarp. The concentration of these carotenoids in the mesocarp was measured during fruit ripening and correlated with colorimetric changes of mesocarp and epidermis. The lowest and highest concentrations of all-trans-[beta]-carotene, all-trans-violaxanthin and 9-cis-violaxanthin (as dibutyrates) during the ripening of `Manila' mango were 0.25 x 10-3 to 35.57 x 10-3, 0.40 x 10-5 to 31.97 x 10-3 and 0 to 16.81 x 10-3 g kg-1 of fresh mesocarp, respectively. For `Ataulfo' they were 2.55 x 10-3 to 39.72 x 10-3, 0.16 x 10-3 to 15.00 x 10-3 and 0.21 x 10-3 to 7.48 x 10-3 g kg-1 of fresh mesocarp, respectively. The concentration of these carotenoids increased in an exponential manner during fruit ripening in `Ataulfo' and in an exponential or second-order polynomial manner in `Manila'. The highest correlation coefficients were obtained for the relationships between the mesocarp and epidermis a* and h[degree sign] color values and the concentration of the evaluated carotenoids in both mango cultivars (R = 0.81-0.94). Equations to predict the concentration of the most important carotenoids in `Manila' and `Ataulfo' mango fruit on the basis of their mesocarp and epidermis color values were obtained.
Keywords: Mangifera indica L.; Xanthophylls esters; Vitamin A; Carotenoid stereoisomers; CIELAB color system

P. Yingsanga, V. Srilaong, S. Kanlayanarat, S. Noichinda, W.B. McGlasson, Relationship between browning and related enzymes (PAL, PPO and POD) in rambutan fruit (Nephelium lappaceum Linn.) cvs. Rongrien and See-Chompoo, Postharvest Biology and Technology, Volume 50, Issues 2-3, November 2008, Pages 164-168, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.05.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4T5V9BD-1/2/042b15be7eaad3554e43b328b760a31b)
Abstract:
Rambutan (Nephelium lappaceum Linn.) fruit cvs. Rongrien and See-Chompoo were stored in low (60-70%) and high (85-95%) relative humidity (RH) environments at 25 [degree sign]C for 6 d. Changes in weight loss, browning index, phenols content and activities of phenylalanine ammonia-

lyase (PAL), polyphenol oxidase (PPO) and peroxidase (POD) were measured. By d 6 of storage, browning was severe in the spinterns but slight in the peel of both cultivars. High RH delayed spintern browning but had only a small effect on peel browning. The phenols content and PAL activity in peel from both cultivars were generally higher than in the spinterns. RH had no effect on the changes in phenols during storage but PAL activity increased in the peel but not spinterns of both cultivars at d 4 of storage in low RH. The initial activities of PPO and POD in spinterns of both cultivars were higher than in peel. PPO activity in the spinterns of both cultivars was similar and was not affected by RH. The initial activity of POD was lower in the peel and the spinterns of Rongrien fruit but there were no clear responses to RH during storage. Higher activities of PPO and POD in the spinterns compared to the peel may also be a factor in the higher rates of browning of the spinterns.
Keywords: Rambutan; Browning; Peel; Spintern; Water loss; PPO; POD

Hiroko Hayama, Miho Tatsuki, Yuri Nakamura, Combined treatment of aminoethoxyvinylglycine (AVG) and 1-methylcyclopropene (1-MCP) reduces melting-flesh peach fruit softening, Postharvest Biology and Technology, Volume 50, Issues 2-3, November 2008, Pages 228-230, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.05.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4T4WKX6-2/2/9507fdf43e71785a9d313bb7baf480fe)
Abstract:
The effects of postharvest application of aminoethoxyvinylglycine (AVG) and 1-methylcyclopropene (1-MCP) on ethylene production and fruit quality, and thus on transportation and shelf-life, were evaluated in melting-flesh peaches. AVG (150 mg L-1) significantly reduced ethylene production, and the effect was enhanced in combination with 1-MCP (1 [mu]L L-1). However, fruit treated with AVG alone softened to untreated control levels 2 d after harvest (DAH). Treatment with 1-MCP significantly reduced the rate of softening until 2 DAH, but the fruit rapidly softened thereafter, and reached untreated control levels by 4 DAH. A combination of AVG and 1-MCP significantly reduced fruit tissue softening throughout ripening. The effect of each chemical on flesh firmness indicated that 1-MCP affected fruit response in the early stages of ripening up to 4 DAH, and AVG significantly reduced softening in the latter stages from 4 to 9 DAH. Peaches treated with AVG and 1-MCP retained their ground color during ripening, but the effect of each chemical on color is unclear. The present study indicates that combined treatment with AVG and 1-MCP significantly delays the ripening of melting-flesh peaches.
Keywords: Ethylene; Fruit quality; Prunus persica; Shelf-life

G.P.P. Kamatou, A.M. Viljoen, T. Ozek, K.H.C. Baser, Head-space volatiles of Gethyllis afra and G. ciliaris fruits ('kukumakranka'), South African Journal of Botany, Volume 74, Issue 4, November 2008, Pages 768-770, ISSN 0254-6299, DOI: 10.1016/j.sajb.2008.07.002.
(http://www.sciencedirect.com/science/article/B7XN9-4T5S4SP-1/2/f266272cc2e50b2842cf9de8d02dcd51)
Abstract:
The head-space volatiles of Gethyllis afra and G. ciliaris fruits collected in the South Western Cape Province of South Africa were analysed by solid phase micro-extraction (SPME) followed by gas chromatography coupled to mass spectrometry (GC-MS). Twenty-nine compounds were characterized in the fruit of G. ciliaris representing 96.5% of the total composition. Major compounds include pentacosane (19.2%); ethyl octanoate (18.0%); ethyl isovalerate (11.7%); ethyl hexanoate (9.1%) and ethyl benzoate (7.4%). These compounds may be the major contributors to the fruity-sweet odour of G. ciliaris. Forty-three compounds were identified in the fruit of G. afra representing 87.9% of the total composition with [alpha]-pinene (11.2%), n-butyl n-butyrate (8.5%), isoamyl acetate (8.1%), [beta]-pinene (6.4%) and 2-methylbutyl butyrate (5.8%) as main constituents. These major constituents may impart the banana/piney/fruity odours

associated with the G. afra. The compounds identified in the volatiles of the two fruits in amounts greater than 1% include ethyl butyrate, ethyl isovalerate, isobutyl 3-methyl butyrate, ethyl octanoate and ethyl benzoate.
Keywords: Ethyl isovalerate; Gethyllis ciliaris; Gethyllis afra; Head-space; Isoamyl acetate; Pentacosane; SPME; [alpha]-Pinene

Nigel Williams, Fruitful insights, Current Biology, Volume 18, Issue 20, 28 October 2008, Pages R939-R940, ISSN 0960-9822, DOI: 10.1016/j.cub.2008.09.056.
(http://www.sciencedirect.com/science/article/B6VRT-4TSMC9G-6/2/ba3891dd58f889dc23c816628c351903)

Jittawan Kubola, Sirithon Siriamornpun, Phenolic contents and antioxidant activities of bitter gourd (Momordica charantia L.) leaf, stem and fruit fraction extracts in vitro, Food Chemistry, Volume 110, Issue 4, 15 October 2008, Pages 881-890, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.02.076.
(http://www.sciencedirect.com/science/article/B6T6R-4S03RKK-6/2/a2623d225250a4743a45c1e8f7072bad)
Abstract:
Bitter gourd (Momordica charantia L.) has long been regarded as a food and medicinal plant. We investigated the antioxidant activity of the water extract of leaf, stem and fruit fractions by several in vitro systems of assay, namely DPPH radical-scavenging activity, hydroxyl radical-scavenging activity, [beta]-carotene-linoleate bleaching assay, ferric reducing/antioxidant power (FRAP) assay and total antioxidant capacity. Total phenolic content was measured by Folin-Ciocalteu reagent. Identification of phenolic compounds was achieved using HPLC with the UV-diode array detection. The extracts of different fractions were found to have different levels of antioxidant activity in the systems tested. The leaf extract showed the highest value of antioxidant activity, based on DPPH radical-scavenging activity and ferric reducing power, while the green fruit extract showed the highest value of antioxidant activity, based on hydroxyl radical-scavenging activity, [beta]-carotene-linoleate bleaching assay and total antioxidant capacity. The predominant phenolic compounds were gallic acid, followed by caffeic acid and catechin. The present study demonstrated that the water extract fractions of bitter gourd have different responses with different antioxidant methods. Total phenol content was shown to provide the highest association with FRAP assay in this present study (R2 = 0.948).
Keywords: Bitter gourd (Momordica charantia L.); DPPH assay; Hydroxyl radical-scavenging activity; [beta]-Carotene-linoleate bleaching assay; FRAP assay; Total antioxidant capacity; Total phenol content

S.A. Vekiari, M.H. Gordon, P. Garcia-Macias, H. Labrinea, Extraction and determination of ellagic acid contentin chestnut bark and fruit, Food Chemistry, Volume 110, Issue 4, 15 October 2008, Pages 1007-1011, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.02.005.
(http://www.sciencedirect.com/science/article/B6T6R-4RSYCF0-2/2/08c05e556e01a280c671d830e9884c5d)
Abstract:
Chestnuts are an important economic resource in the chestnut growing regions, not only for the fruit, but also for the wood. The content of ellagic acid (EA), a naturally occurring inhibitor of carcinogenesis, was determined in chestnut fruits and bark. EA was extracted with methanol and free ellagic acid was determined by HPLC with UV detection, both in the crude extract and after hydrolysis. The concentration of EA was generally increased after hydrolysis due to the presence of ellagitannins in the crude extract. The concentration varied between 0.71 and 21.6 mg g-1 (d.w.) in un-hydrolyzed samples, and between 2.83 and 18.4 mg g-1 (d.w.) in hydrolyzed samples. In chestnut fruits, traces of EA were present in the seed, with higher concentrations in the pellicle and

pericarp. However, all fruit tissues had lower concentrations of EA than had the bark. The concentration of EA in the hydrolyzed samples showed a non-linear correlation with the concentration in the unhydrolyzed extracts.
Keywords: Ellagic acid; Chestnut fruit; Chestnut bark; HPLC

Jasper Mbae Kirika, Barbel Bleher, Katrin Bohning-Gaese, Robert Chira, Nina Farwig, Fragmentation and local disturbance of forests reduce frugivore diversity and fruit removal in Ficus thonningii trees, Basic and Applied Ecology, Volume 9, Issue 6, 6 October 2008, Pages 663-672, ISSN 1439-1791, DOI: 10.1016/j.baae.2007.07.002.
(http://www.sciencedirect.com/science/article/B7GVS-4R1NNPD-4/2/71844895ee60f90693c97a86ec6c0d80)
Abstract:
Clearance, fragmentation, and degradation of tropical forests have resulted in declines of biodiversity. This loss of biodiversity is endangering important ecosystem processes such as seed dispersal. If anthropogenic disturbances affect seed dispersal of keystone plants, effects on tropical ecosystems might be especially pronounced. We studied frugivore assemblages and fruit removal from 25 Ficus thonningii trees in the heavily fragmented and disturbed Kakamega Forest, western Kenya. During 400 observation hours we recorded 36 frugivores visiting F. thonningii trees. We recorded significantly fewer frugivorous species in fragments compared to the main forest and in highly, compared to little, disturbed sites. Effects of fragmentation and local disturbance on the number of individuals were not significant but showed similar trends to those in the previous analyses. Furthermore, fruit removal from focal trees was slightly reduced in fragmented and significantly reduced in highly disturbed sites. These results suggest that mutualistic interactions of keystone species can be particularly sensitive to human forest disturbance with potential long-term effects on the biodiversity of tropical forests.
Keywords: Plant-animal interaction; Ecosystem process; Keystone species; Figs; Kenya

E.D. Cittadini, M.T.M.H. Lubbers, N. de Ridder, H. van Keulen, G.D.H. Claassen, Exploring options for farm-level strategic and tactical decision-making in fruit production systems of South Patagonia, Argentina, Agricultural Systems, Volume 98, Issue 3, October 2008, Pages 189-198, ISSN 0308-521X, DOI: 10.1016/j.agsy.2008.07.001.
(http://www.sciencedirect.com/science/article/B6T3W-4T6CF69-1/2/642756e5057e690221cc2685604913d4)
Abstract:
In South Patagonia, Argentina, sweet cherry is the main fruit-tree crop grown for export, resulting in a highly seasonal labour demand. Managers of deciduous perennial fruit orchards must consider both biological and economic relationships in selecting crop species and orchard design. This makes decisions at the farm-level extremely complex, as especially in such perennial crops, strategic (`what to plant', `with which technology' and `how much area of each activity', i.e. the final design) and tactical (`when, what and how to plant in time', the pathway to the planned farm) decisions have a long-term effect. The objective of this study was to explore the consequences of different strategic and tactical decisions at farm scale in fruit production systems of South Patagonia, considering the variation in interests and aims of different stakeholders, and using a sensitivity analysis to evaluate the consequences of possible changes in external conditions. A dynamic farm-scale optimization model called OPTIFROP was developed to generate alternative farm development plans, by allocating, in the course of the time horizon of the run, production activities to different land units, while optimising different objective functions, subject to several constraints. Although time-dependent, dynamic, mathematical programming models for analysing farming systems have been described in literature, the dynamic aspects of long-term decision-making in orchard design and their impact on the sequential (annual) nature of orchards in different growth phases (i.e. medium-term decision-making), need a higher time-staged dynamic

approach with a staircase matrix structure. The model includes two objective functions at farm level: (1) maximization of the present value of cumulative financial result, which is the main objective for growers, and (2) maximization of cumulative farm labour, which is an objective often mentioned by policy makers. The inter-months deviation for labour demand (during the period of high labour demand, November-April) was included as an upper-bound. Input and output coefficients for the land use options considered in OPTIFROP were quantified using the Technical Coefficient Generator FRUPAT. Model results indicated that the present value of cumulative financial result and the cumulative farm labour are conflicting to a very limited extent. Timing and feasibility of implementing certain combinations of production technologies are affected by resource endowments and initial conditions, but these factors do not influence land use selection in the long term. Land use selection is driven by the objectives of the stakeholders. OPTIFROP showed that, through introduction of alternative crops, substantial reductions in labour peaks in the period November-April could be achieved with a relatively small reduction in farm income. The sensitivity of the model solution to the cherry price suggests that the fruit production sector of South Patagonia should pay more attention to the robustness of their land use plans and take preventive measures to avoid being caught by a possible crisis due to changes in the context.
Keywords: Sweet cherry; Development plan; Linear programming; Trade-off; Labour demand; Seasonality

Ayse Yarali, Thomas Niewalda, Yi-chun Chen, Hiromu Tanimoto, Stefan Duerrnagel, Bertram Gerber, `Pain relief' learning in fruit flies, Animal Behaviour, Volume 76, Issue 4, October 2008, Pages 1173-1185, ISSN 0003-3472, DOI: 10.1016/j.anbehav.2008.05.025.
(http://www.sciencedirect.com/science/article/B6W9W-4T5HJ41-1/2/d29cc87d02482662d3f95e0203cf897f)
Abstract:
We studied the behavioural consequences of `traumatic', painful experiences. These consequences were fundamentally asymmetric. Fruit flies, Drosophila melanogaster, learned two kinds of prediction regarding a `traumatic' experience. If an odour preceded an electric shock during training, it predicted shock, and flies subsequently avoided it. When the sequence of events during training was reversed, that is odour followed shock, the odour predicted relief from shock and flies approached it. We call this latter effect `relief' learning and showed that, in terms of psychological mechanisms, it established genuinely associative conditioned approach behaviour. Parametric analyses showed that relief learning was reproducible across experimenters; it did not depend on the flies' gender and reached asymptotic levels after six training trials. Of five chosen odour-pairs, two supported relief learning at all concentrations tested; for one odour-pair, we observed optimal relief learning at an intermediate odour concentration; for two odour-pairs, relief learning could not be demonstrated. Furthermore, relief learning was maximal with relatively mild shocks, supporting stable retention for the first 2 h after training. Knowledge of these parametric features should aid uncovering relief learning in other experimental systems. In terms of psychological mechanism, context-shock pretraining had no effect on subsequent relief learning, suggesting that it is not mediated by context associations. These analyses may further our understanding of the psychological mechanisms underlying behavioural changes after traumatic experience. They facilitate research into the neurobiology of pain relief learning, enabling the implementation of truly bioinspired learning rules for technical devices.
Keywords: associative learning; Drosophila melanogaster; fruit fly; olfaction; pain relief; parametric analyses

S.N. Ramanujam, B.K. Ratha, Effect of alcohol extract of a natural piscicide -- Fruits of Zanthoxylum armatum DC. on Mg2+- and Na+, K+-ATPase activity in various tissues of a freshwater air-breathing fish, Heteropneustes fossilis, Aquaculture, Volume 283, Issues 1-4, 1 October 2008, Pages 77-82, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2008.07.033.

(http://www.sciencedirect.com/science/article/B6T4D-4T26314-3/2/26fc328e4ffd57c9fb52b3c986ab7935)
Abstract:
Effect of ethyl alcohol extract of fruits of a piscicidal plant, Zanthoxylum armatum DC., was evaluated on Mg2+- and Na+, K+-ATPase activity in different tissues of a carnivorous air-breathing catfish, Heteropneustes fossilis. Exposure of fish to various concentrations of extract, and at LC50 concentration for different time intervals revealed significant inhibition of enzyme activity in liver, brain and muscle tissues. Tissue specific inhibition was both dose and time dependent, and reversible. Activity of Mg2+-ATPase was inhibited more than that of Na+, K+-ATPase. In vitro studies on Mg2+-ATPase activity revealed that inhibition was more in tissue extract of brain than muscle and gill. Kinetic studies on Mg2+-ATPase activity suggested that piscicide is a non-competitive inhibitor. Noxious effect of extract was reversible. Hence, fruits of Z. armatum can advantageously be used as an effective piscicide in fish nursery management.
Keywords: Fruit extract; Piscicide; Carnivorous catfish; Mg2+- and Na+, K+-ATPase; Non-competitive inhibition; Reversible

Hongyin Zhang, Longchuan Ma, Lei Wang, Song Jiang, Ying Dong, Xiaodong Zheng, Biocontrol of gray mold decay in peach fruit by integration of antagonistic yeast with salicylic acid and their effects on postharvest quality parameters, Biological Control, Volume 47, Issue 1, October 2008, Pages 60-65, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2008.06.012.
(http://www.sciencedirect.com/science/article/B6WBP-4SXYFYF-1/2/3e728feba3be34b6481ffe9211b16e96)
Abstract:
The potential of using Rhodotorula glutinis alone or in combination with salicylic acid (SA) for the control of postharvest gray mold decay of peach fruit, and their effects on postharvest quality of fruit was investigated. Washed cell suspensions of yeast controlled gray mold better than yeast in culture broth. Treatment of wounds with autoclaved cell cultures or cell-free culture filtrate did not prevent decay. Rapid colonization of the yeast in wounds was observed during the first day at 20 [degree sign]C, then the populations stabilized for the remaining storage period. Spore germination and germ tube elongation of Botrytis cinerea in PDB was controlled by the living cell of R. glutinis: the percentage of spore germination of B. cinerea incubated with R. glutinis was reduced by 69.3% compared with control; similarly, the length of germ tube of B. cinerea incubated with R. glutinis was reduced by 65.8% compared with control. SA (100 [mu]g/mL) could enhance the biocontrol activity of R. glutinis against gray mold decay in peach fruit. The application of SA and R. glutinis as stand-alone treatments did not produce significant control efficacy to natural infection of peach fruits. However, R. glutinis in combination with SA resulted in low average natural infection incidence in fruit, 16.67%, compared with 46.67% in the water-treated control fruit. SA, the yeast antagonist and the combination of them both had no significant effect on quality parameters after 7 days at 20 [degree sign]C.
Keywords: Rhodotorula glutinis; Salicylic acid; Biocontrol; Botrytis cinerea; Peach fruit; Natural infection; Quality parameters

D.M. Bulanon, T.F. Burks, V. Alchanatis, Study on temporal variation in citrus canopy using thermal imaging for citrus fruit detection, Biosystems Engineering, Volume 101, Issue 2, October 2008, Pages 161-171, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2008.08.002.
(http://www.sciencedirect.com/science/article/B6WXV-4THB4GF-2/2/9dd95bdf47f50a8bb36350cdf826fb2f)
Abstract:
This paper presents a study of the thermal temporal variation in citrus canopy as a potential approach for improving fruit detection for harvesting orange. Tree canopy was monitored on 24 h cycles using a thermal infrared camera. Four different trees (4 regions of interest in 4 different tree

canopies) were observed on four separate days. Surface temperature of the fruit, ambient temperature and relative humidity (RH) were measured using a portable Dew Point Meter. The acquired thermal images were corrected for fruit emissivity, which was estimated to be 0.90, the ambient temperature, the RH and the reflected temperature. Fruit and canopy temperature profile demonstrated a relatively large temperature gradient, which occurred from afternoon (16:00) until midnight. This was evident from the acquired thermal images of the canopy. In addition, the fruits were successfully segmented in the thermal images using image processing techniques during the time range of the largest temperature difference, which suggest potential application of thermal imaging for improved detection for harvesting.

Michelle Walker, Carol A. Phillips, The effect of preservatives on Alicyclobacillus acidoterrestris and Propionibacterium cyclohexanicum in fruit juice, Food Control, Volume 19, Issue 10, October 2008, Pages 974-981, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2007.10.003.
(http://www.sciencedirect.com/science/article/B6T6S-4PWKSK0-2/2/189029d88ebecf3b30315dace5261164)
Abstract:
Processors within the soft drinks industry utilise various methods to preserve the quality of juice products, which may include the use of chemical preservatives. Alicyclobacillus acidoterrestris, especially its spores, is acknowledged as a threat to the industry in that it is increasingly being reported as a cause of spoilage incidents. Propionibacterium cyclohexanicum has also been shown to cause spoilage, with one incident in orange juice reported to date. This study investigated the effect of the preservatives sodium benzoate and potassium sorbate and also the bacteriocin nisin on these two spoilage bacteria.
In apple juice at 30 [degree sign]C 0.1 mg/ml sodium benzoate or potassium sorbate inhibit growth of 101 cells/ml A. acidoterrestris while 0.5 mg/ml inhibits growth of 104 cells/ml. Nisin at 5-10 IU/ml alone, and in combination with either sodium benzoate or potassium sorbate, is also effective in inhibiting multiplication of A. acidoterrestris.
Sodium benzoate (0.5 mg/ml and 1.0 mg/ml) and potassium sorbate (1.0 mg/ml), both alone and in combination with 2.5, 5 or 10 IU/ml nisin, inhibit growth of P. cyclohexanicum in orange juice at 30 [degree sign]C with no viable cells detected at 29 days, although nisin alone at concentrations up to 1000 IU/ml were not effective in inhibiting multiplication of P. cyclohexanicum, suggesting that this organism may be resistant to nisin.
Keywords: Alicyclobacillus acidoterrestris; Propionibacterium cyclohexanicum; Preservatives; Nisin; Fruit juices

E.M. O'Donoghue, S.D. Somerfield, Biochemical and rheological properties of gelling pectic isolates from buttercup squash fruit, Food Hydrocolloids, Volume 22, Issue 7, October 2008, Pages 1326-1336, ISSN 0268-005X, DOI: 10.1016/j.foodhyd.2007.07.002.
(http://www.sciencedirect.com/science/article/B6VP9-4P940SX-2/2/ab748680f4af081c08ac30c781df4ed7)
Abstract:
In order to examine the gelation properties of pectins isolated from `Supermarket' buttercup squash (Cucurbita maxima x Cucurbita moshata), flesh tissue was extracted with 100 mM HCl, 200 mM citric acid or 200 mM HNO3, at 100 [degree sign]C. All extracted material contained <40% pectin (galacturonic acid equivalents), along with starch and a significant proportion of co-extracted, unidentified carbohydrate material. Citric acid-extracted pectin was of much longer chain length than that extracted with HCl or HNO3. Pectin extracted with HCl or citric acid was 40-50% esterified, while HNO3 extraction reduced esterification to ~32%. The isolates were used to gel high sugar/low pH solutions. Storage (G') and loss (G'') moduli recorded during sample cooling and rewarming showed that, despite their low degree of esterification, pectins in isolates extracted with HCl or citric acid produced typical biopolymer gels with G'>G'' and little frequency

dependence of both G' and G'' at 20 [degree sign]C. Pectins extracted with HNO3 formed only weak gels. Gels containing the citric acid-extracted pectin were already forming solid structure at 90 [degree sign]C, similar to a commercial rapid-set pectin, while a sol-gel transition began for the HCl-extracted samples at <70 [degree sign]C, similar to a commercial slow-set pectin. A longer extraction time coupled with removal of starch by enzyme digestion during preparation affected isolated pectin chain length and esterification, resulting in altered subsequent gel rheology, depending on the extraction acid.
Keywords: Pectin; Gelation; Rheology; Buttercup squash; Cucurbita maxima; Cucurbita moshata

Abay Asfaw, Fruits and vegetables availability for human consumption in Latin American and Caribbean countries: Patterns and determinants, Food Policy, Volume 33, Issue 5, October 2008, Pages 444-454, ISSN 0306-9192, DOI: 10.1016/j.foodpol.2008.01.007.
(http://www.sciencedirect.com/science/article/B6VCB-4S2VG3H-1/2/c984856cd4a45c815e24b2828e9331d0)
Abstract:
Inadequate intake of fruits and vegetables (F&V) is one of the leading causes of chronic diseases in the world. This study examined the patterns and determinants of F&V availability for human consumption in Latin American and Caribbean countries between 1991 and 2002. The results showed that there were considerable disparities between and within countries and only one-third of the sampled countries (if only 20% wastage is assumed) could achieve the World Health Organization's recommendation of 146 kg of F&V intake/capita/year. The elasticities estimated from a fixed effect regression also showed that income, urbanization, price, and poverty were some of the important factors that affect the long-term availability of F&V.
Keywords: Fruit and vegetable availability; Fruit and vegetable intake; Latin America; Chronic disease; Panel data; Stationarity

Ahmet Kaya, Orhan Aydin, Ibrahim Dincer, Experimental and numerical investigation of heat and mass transfer during drying of Hayward kiwi fruits (Actinidia Deliciosa Planch), Journal of Food Engineering, Volume 88, Issue 3, October 2008, Pages 323-330, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.02.017.
(http://www.sciencedirect.com/science/article/B6T8J-4RXJYHC-2/2/d820d0ef6a4b05bd9e76c3b2f019516a)
Abstract:
In this paper we undertake an experimental and numerical study on heat and mass transfer analysis during drying of kiwi fruits. In the experimental part, the effects of various drying conditions in terms of air velocity, temperature and relative humidity on drying characteristics of kiwi fruits are investigated. In the numerical part, the external flow and temperature fields are studied using a commercial CFD package. From these fields, the local distributions of the surface convective heat transfer coefficients for the fruits are determined to predict the local convective mass transfer coefficients through the analogy between the thermal and concentration boundary layers (known as the Chilton-Colburn analogy). In addition, the time-dependent temperature and moisture distributions for different cases are obtained using the code developed to investigate heat and mass transfer aspects inside the fruits. Numerical results are then compared with experimental data and a considerably high agreement is obtained.
Keywords: Kiwi fruit; Drying characteristic; Heat and mass transfer; Experiment; Model; CFD

R. Moreira, F. Chenlo, M.D. Torres, N. Vallejo, Thermodynamic analysis of experimental sorption isotherms of loquat and quince fruits, Journal of Food Engineering, Volume 88, Issue 4, October 2008, Pages 514-521, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.03.011.
(http://www.sciencedirect.com/science/article/B6T8J-4S2MHSW-3/2/799d38a9ec16bff202ca07b6e2c360f4)

Abstract:
Sorption isotherms of loquat and quince fruits were determined by static gravimetric method at different temperatures, in the range from 20 to 65 [degree sign]C. The curves obtained can be considered as type II at 20 [degree sign]C and type III at higher temperatures according to the Brunauer-Emmett-Teller (BET) classification. Equilibrium moisture content data were correlated by different mathematical models usually applied to foodstuffs (GAB, Peleg and Halsey). The best fit of the experimental data was obtained with Peleg and GAB models. Experimental data were analysed by a thermodynamic approach to obtain such properties as net isosteric heat, net equilibrium heat, differential and integral entropy that provide a deeper understanding of the properties of water and energy requirements associated with sorption process. Particularly, for loquat and quince fruits, the differential enthalpy and entropy decreased with increasing moisture content and satisfied the compensation theory. The net integral enthalpy show maximum values (32, 26, 24 kJ/mol for loquat pulp, loquat seeds and quince, respectively) and the net integral entropy has the opposite behaviour with minimum values (-90.8, -70.8, -68.1 J/mol K for loquat pulp, loquat seeds and quince, respectively) at specified moisture contents.
Keywords: Water activity; Equilibrium moisture content; Isosteric heat; Equilibrium heat

Jian Xin Shi, Songbi Chen, Natan Gollop, Raphael Goren, Eliezer E. Goldschmidt, Ron Porat, Effects of anaerobic stress on the proteome of citrus fruit, Plant Science, Volume 175, Issue 4, October 2008, Pages 478-486, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2008.05.019.
(http://www.sciencedirect.com/science/article/B6TBH-4SP3SJS-2/2/4f918b5849269ff28d4230f19c664883)
Abstract:
Exposure of citrus fruit to anaerobic conditions results in induction of anaerobic respiration and accumulation of the off flavor volatiles ethanol and acetaldehyde. In this study, we evaluated the effects of anaerobic stress (exposure to N2 atmospheres for 24 h) on the proteome of mandarins and grapefruit. With two-dimension polyacrylamide gel electrophoresis (2D-PAGE), we detected more than 400 protein spots in the flavedo tissue and 300 spots in the juice vesicle tissue, that were reproducibly stained in mandarins and grapefruit. Exposure to the anaerobic treatment significantly affected the abundances of 33 different proteins by a factor of at least 1.5. Identification of the citrus anaerobic proteins (ANPs) by mass spectrometry (MS) and annotation according to the Munich Information Center for Protein Sequence (MIPS) revealed tissue- and cultivar-specific differences in the anaerobic response of citrus fruit. In the peel tissue, 64% of the detected ANPs were stress-related proteins involved in cell rescue, defense and virulence and only 6% in energy production, whereas 38% of the ANPs in juice vesicle tissue were involved in energy and 31% in either cell rescue and defense or in cell cycle and protein fate. Furthermore, exposure to N2 for 24 h had only minor affects on protein abundance in grapefruit juice vesicle tissue (suppression of 5 proteins) but remarkably affected protein accumulation in mandarins, including induction of glycolytic enzymes, a 10-fold increase in the abundance of alcohol dehydrogenase (ADH), and induction of stress proteins, such as heat shock proteins and ascorbate peroxidase. Overall, the present study provides the first 2D-PAGE proteome analysis of fruit tissue responses to anaerobic stress, and the observed data reflect both common as well as citrus-specific anaerobic-response mechanisms.
Keywords: Anaerobic proteins; Citrus paradisi Macf.; Citrus reticulata Blanco; Ethanol; Off flavors; Two-dimension polyacylamide gel electrophoresis (2D-PAGE)

J. Usall, J. Smilanick, L. Palou, N. Denis-Arrue, N. Teixido, R. Torres, I. Vinas, Preventive and curative activity of combined treatments of sodium carbonates and Pantoea agglomerans CPA-2 to control postharvest green mold of citrus fruit, Postharvest Biology and Technology, Volume 50, Issue 1, October 2008, Pages 1-7, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.03.001.

(http://www.sciencedirect.com/science/article/B6TBJ-4ST45TJ-1/2/c856872991d80d36b87bd59c6638510e)
Abstract:
Preventive and curative activity of 2 min dips in 3% sodium carbonate (SC) or sodium bicarbonate (SBC) aqueous solutions heated to 40 [degree sign]C, alone or followed by the application of 2 x 108 CFU/mL of the biocontrol agent Pantoea agglomerans CPA-2 (BA), were simultaneously evaluated for the control of postharvest green mold, caused by Penicillium digitatum, in artificially inoculated Lanelate and Valencia oranges. Fresh cells of BA proliferated inside rind wounds and their survival was not adversely affected by the presence of residues of SC or SBC. Green mold incidence after 7 d of incubation at 20 [degree sign]C in rind wounds treated after fungal inoculation (curative activity) was 15%, 40%, or 15% in oranges treated with SC, BA, or SC + BA and 5%, 45% or 0% in oranges treated with SBC, BA, or SBC + BA, respectively, while it was about 90% in untreated control fruit. Green mold incidence in rind wounds treated before inoculation or reinoculation with the pathogen (preventive activity in pre-existing wounds) was 10% and 2%, or 15% and 8%, respectively, in oranges treated with SC and SC + BA, and 3% and 5%, or 20% and 5%, respectively, in oranges treated with SBC and SBC + BA. Green mold incidence in wounds inoculated after treatment (preventive activity in new wounds) was 55% and 25%, and 60% and 40% in oranges treated with SC and SC + BA, or SBC and SBC + BA, respectively. Additionally, the duration of the protective effect of SBC, BA, and SBC + BA was assessed in Eureka lemons and Valencia oranges. In both species, all three treatments effectively protected pre-existing rind wounds during 7 d of storage at 10 [degree sign]C. After 0, 1, and 2 d, but not after 4 or 7 d, the protective effect of SBC was significantly inferior to that of BA and SBC + BA. The integration of treatments is a promising approach to replace the use of conventional fungicides to control green mold in citrus packinghouses.
Keywords: Penicillium digitatum; Postharvest decay; Biocontrol; Biological control; Soda ash; Baking soda; Integrated disease management

D.M. Modise, Does freezing and thawing affect the volatile profile of strawberry fruit (Fragaria x ananassa Duch.)?, Postharvest Biology and Technology, Volume 50, Issue 1, October 2008, Pages 25-30, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.03.009.
(http://www.sciencedirect.com/science/article/B6TBJ-4SXRTMK-1/2/3a28931540bf292fcfb09abfb4325f4e)
Abstract:
This research was aimed at determining if there were any changes in the volatile profile of strawberries cv. Camarosa, when subjected to various freezing and thawing treatments. Strawberries were cut in half, one half of the berries were frozen directly at -20 [degree sign]C or -80 [degree sign]C or rapidly frozen in liquid nitrogen (N2) (-196 [degree sign]C). They were then stored overnight or for a week. Berries were later left to thaw at room temperature (natural thawing) for about 1 h and some were forced-thawed in a 30 [degree sign]C water bath. Headspace volatile compounds were determined using an Atmospheric Pressure Chemical Ionisation-Mass Spectrometer (APCI-GPA) and validated with a Gas Chromatograph-Mass Spectrometer (GC-MS). In a comparison of thawed half berries and fresh berries, most esters such as hexyl acetate, ethyl methyl hexanoate, methyl acetate were increased significantly by week-long and not by overnight freeze/thaw treatments. Ethyl butyrate was not affected by any treatment. The abundance of aldehydes such as the acetaldehyde compounds was increased significantly when thawed naturally compared to when forced-thawed in all the cold storage treatments.
Keywords: Freezing; Headspace; Strawberries; Thawing; Volatile compounds; Volatile profile

Siriwan Dangcham, Judith Bowen, Ian B. Ferguson, Saichol Ketsa, Effect of temperature and low oxygen on pericarp hardening of mangosteen fruit stored at low temperature, Postharvest Biology

and Technology, Volume 50, Issue 1, October 2008, Pages 37-44, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.02.005.
(http://www.sciencedirect.com/science/article/B6TBJ-4SP49WS-1/2/522ec5bf3358ce5b2f55264fb83701d9)
Abstract:
To investigate chilling injury of mangosteen fruit (Garcinia mangostana L.), expressed as pericarp hardening, fruit at the red-brown and red-purple stages of maturity were stored at 6 [degree sign]C (87.0% RH) and 12 [degree sign]C (83.5% RH) for 15 d. Fruit stored at 6 [degree sign]C had greater pericarp firmness than when stored at 12 [degree sign]C and red-purple fruit were firmer than the less mature red-brown fruit. When pericarp hardening occurred, pericarp firmness and lignin contents increased while total phenolics decreased. Of the phenolic acids predominant in the hardened pericarp, p-coumaric acid declined whereas sinapic acid increased throughout the storage time. Application of low O2 (0.25%) to red-purple fruit during storage at 6 [degree sign]C (84% RH), or at room temperature (30 [degree sign]C, 71.5% RH) following storage at 6 [degree sign]C, did not reduce pericarp hardening and there were no significant differences in firmness, lignin and total free phenolics when compared with fruit in normal air conditions. Activities of enzymes involved in the lignin biosynthetic pathway, namely phenylalanine ammonia lyase (PAL), cinnamyl alcohol dehydrogenase (CAD) and peroxidase (POD), were determined. PAL and POD activities in pericarp tissue increased with storage time, whereas there was no change in CAD activity. Expression patterns of PAL and lignin peroxidase (LgPOD) genes in fruit pericarp were also determined using northern blot analysis. PAL and LgPOD mRNA accumulation increased with storage time at 6 [degree sign]C coincident with their enzyme activities. Low O2 treatment had only a slight effect on PAL and LgPOD gene expression. Our results suggest that the increase in pericarp firmness of mangosteen fruit results from induction of lignin synthesis, associated with an increase in PAL and POD activity and gene expression.
Keywords: Chilling injury; Cinnamyl alcohol dehydrogenase; Gene expression; Lignin; Low O2; Mangosteen; Phenylalanine ammonia lyase; Pericarp hardening; Peroxidase; Total phenolics

Seok-Kyu Jung, Chris B. Watkins, Superficial scald control after delayed treatment of apple fruit with diphenylamine (DPA) and 1-methylcyclopropene (1-MCP), Postharvest Biology and Technology, Volume 50, Issue 1, October 2008, Pages 45-52, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.05.006.
(http://www.sciencedirect.com/science/article/B6TBJ-4SV6PF5-1/2/907e86093f0e5f0d958d237f8e609e1f)
Abstract:
The effects of delayed treatments of diphenylamine (DPA) and 1-methylcyclopropene (1-MCP) on superficial scald development of `Cortland' and `Law Rome' apples were examined. Fruit were stored in air at 0.5 [degree sign]C for 24 weeks after being treated with DPA or 1-MCP at harvest or after delays of 1, 7, 14 or 21 d (`Law Rome', experiment 1) or at harvest or after delays of 3, 7, 14 or 21 d (`Cortland' and `Law Rome', experiment 2). Inhibition of scald development was affected by cultivar, DPA concentration, and delays between harvest and either DPA or 1-MCP application. Loss of scald control was associated with increasing internal ethylene concentrations (IEC) in the fruit with greater time delays before treatment, but to a greater extent for 1-MCP than DPA. DPA effects on scald development were independent of [alpha]-farnesene accumulation in the fruit skin but were associated with inhibition of its oxidation as indicated by lower concentrations of conjugated trienols (CTols). In contrast, 1-MCP effects were dependent on inhibition of [alpha]-farnesene accumulation and thereby the availability of less substrate for oxidation. The results show that minimal delays between harvest and treatment of fruit with either DPA or 1-MCP are necessary to maximize control of scald, but may be more critical for 1-MCP than for DPA.

Keywords: Apple; Superficial scald; Ethylene; Firmness; [alpha]-Farnesene; Malus x domestica Borkh; Senescent breakdown

P. Varela, A. Salvador, S. Fiszman, Shelf-life estimation of `Fuji' apples: II. The behavior of recently harvested fruit during storage at ambient conditions, Postharvest Biology and Technology, Volume 50, Issue 1, October 2008, Pages 64-69, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.03.016.
(http://www.sciencedirect.com/science/article/B6TBJ-4T0FHP8-1/2/11c28e909cd367ee1b9f27fefa9a84ca)
Abstract:
Variations in the eating quality of recently harvested `Fuji' apples during long-term storage at ambient temperature were analyzed from different approaches: sensory (consumers and trained descriptive panel), instrumental (texture and dynamic rheology), and physicochemical (acidity, soluble solids, and pectin content). In particular, the application of dynamic rheological tests is a new tool which proved to be successful to characterize the whole apple tissue. The percentage of consumers rejecting the apples did not increase with storage time, even at 61 d of storage and the overall acceptability was not significantly different between the sampling dates over all the storage period, and most quality parameters remained stable up to more than 61 d storage (20 [degree sign]C, no controlled atmosphere (CA)). From day 70, the apples became shriveled as a result of the non-controlled atmosphere storage; this physiological deterioration would cause rejection of the fruit before consumption, this being the major determinant of their shelf-life.
Keywords: `Fuji' apples; Shelf-life; Consumer acceptability; Descriptive analysis; Rheology; Texture

Antonio Daza, Pedro A. Garcia-Galavis, Maria J. Grande, Carmen Santamaria, Fruit quality parameters of `Pioneer' Japanese plums produced on eight different rootstocks, Scientia Horticulturae, Volume 118, Issue 3, 1 October 2008, Pages 206-211, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.06.003.
(http://www.sciencedirect.com/science/article/B6TC3-4SYDB0T-5/2/d919af1f98547d1211ff80c7590ec566)
Abstract:
The influence of Marianna GF 8-1, GF 677, Julior-Ferdor, Nemared, Monegro (G x N 9), Felinem (G x N 22), Adesoto 101 and Cadaman rootstocks on fruit quality of `Pioneer' Japanese plum was analysed. The study was performed during three consecutive years in the Guadalquivir Valley (Seville, Spain), on a silt loam and calcareous soil. Colour, fruit size, fruit and stone weights, hardness, soluble solid concentration and acidity were measured for fruit quality evaluation. In general, the effect of the different rootstocks on most of the analysed quality parameters was variable because a strong interaction rootstock x year was observed. However, several parameters as fruit shape, soluble solid concentration, acidity and maturity seem to be harder conditioned in some rootstocks, did not show significant differences year-by-year. Fruits produced on scions grafted on Marianna and Nemared showed the highest soluble solid concentration and Cadaman the lowest, the last also originated the hardest fruits and the lowest maturity.
Keywords: Prunus salicina Lindl.; Rootstocks; Fruit quality; Soluble solids; Agroclimatic conditions

A.E. Rato, A.C. Agulheiro, J.M. Barroso, F. Riquelme, Soil and rootstock influence on fruit quality of plums (Prunus domestica L.), Scientia Horticulturae, Volume 118, Issue 3, 1 October 2008, Pages 218-222, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.06.013.
(http://www.sciencedirect.com/science/article/B6TC3-4T1SKJ0-1/2/0c0bb8019bd42f582b98d97c72cc9cb8)
Abstract:

Soil and rootstock can particularly affect the `Rainha Claudia Verde' (Prunus domestica) fruit quality, mainly its firmness characteristics. To investigate the variation in fruit quality, plums were harvested at commercial maturity from trees grafted on Marianna GF8-1 (Prunus cerasifera x munsoniana) and Marianna GF10-2 (P. cerasifera x munsoniana) rootstocks on two different soils: Haplic Luvisol and Vertic Luvisol. After harvest fruits were stored at 2 [degree sign]C for 3 weeks. At the harvest day a small group of fruits were analysed without cold storage. During storage fruits were tested for firmness, soluble solids content, titratable acidity and fruit mineral content. Tree vigour was evaluated from trunk cross-sectional areas values.
The GF8-1 rootstock promoted the highest vegetative development, comparing to GF10-2. This rootstock promoted the largest fruits size and the higher calcium fruit level. Positive correlations were found between higher concentrations of calcium in the pulp fruits and firmness. Fruits from two different rootstocks showed the same firmness at harvest but during cold storage, fruits from GF10-2 rootstock exhibited the highest firmness pulp values. There weren't significant differences in fruit nitrogen and potassium levels for any studied factor.
At harvest solids soluble content and solids soluble content/titratable acidity ratio weren't affected by soil type or rootstock. As expected, solids soluble content during cold storage increased and solids soluble content/titratable acidity had a slight increase.
GF10-2 revealed to be a good option as a `Rainha Claudia Verde' rootstock for plums growers due to its intermediate-vigour. Also GF10-2 fruits presented better quality during storage comparing with GF8-1.
Keywords: Plums; Rootstock vigour; Soil fertility; Calcium; Firmness

O. Kodad, R. Socias i Company, Fruit set evaluation for self-compatibility selection in almond, Scientia Horticulturae, Volume 118, Issue 3, 1 October 2008, Pages 260-265, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.06.002.
(http://www.sciencedirect.com/science/article/B6TC3-4SY5X2D-1/2/fb734a53027155afc25d24b635c6730c)
Abstract:
Self-compatibility was assessed in 19 almond selections by genetic and physiological means, such as PCR with specific primers for the Sf allele, pollen tube growth, and fruit set after self-pollination and in bagged branches. Although all genotypes possessed the Sf allele and showed a similar pollen tube growth after self-pollination than after cross-pollination with cross-compatible pollen, fruit sets showed a different behaviour between years, ranging from 16.2 to 24.7%, as well as between treatments, with the highest after self-pollination. The differences between genotypes could be due to the genetic constitution of each genotype, where inbreeding may reduce set by the accumulation of deleterious genes in different members of a progeny. Flower morphology may also affect sets in bagged branches. Thus, in addition to bud density, flower sterility, pollination success and environmental conditions, other traits must be taken into account when evaluating yield in self-compatible almond cultivars, such as the inbreeding effect and the effective autonomous self-pollination.
Keywords: Prunus amygdalus; Breeding; Autogamy; Fruit set; Pollen tube growth; S alleles

Rosalia Trias, Esther Badosa, Emilio Montesinos, Lluis Baneras, Bioprotective Leuconostoc strains against Listeria monocytogenes in fresh fruits and vegetables, International Journal of Food Microbiology, Volume 127, Issues 1-2, 30 September 2008, Pages 91-98, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2008.06.011.
(http://www.sciencedirect.com/science/article/B6T7K-4SSND0X-1/2/05646b2fbce58d4f38c2049570247afa)
Abstract:
Ten Leuconostoc mesenteroides and one Ln. citreum strains isolated from fresh fruit and vegetables were tested for their antagonistic capacity against Listeria monocytogenes. Genetic

differences among strains were analyzed by Random Amplified Polymorphic DNA (RAPD). All the isolates clustered together and differed from the type strain Ln. mesenteroides ATCC 8293 as well as from Ln. fallax and Ln. citreum. Organic acids, hydrogen peroxide and bacteriocins were detected as main inhibition mechanisms. Characterization of culture supernatants from the bacteriocinogenic strains, CM135 and CM160 revealed a high resistance of antibacterial activity to temperature and pH, and a bactericidal mode of action against L. monocytogenes. Produced bacteriocins belonged to the Class IIa and sequencing of genes showed complete homology with mesentericin Y105. A study of the effect of the relative dose of pathogen and LAB on control of L. monocytogenes in wounds of Golden Delicious apples and Iceberg lettuce leaf cuts was performed. A comparison of the dose of bioprotective strain needed for a ten fold reduction of the viable pathogen concentration (ED90) revealed that strain CM160 was the most effective against L. monocytogenes. ED90 values varied from 1.3 [middle dot] 104 to 5.0 [middle dot] 105 cfu[middle dot]g- 1 or wound, at ranges of pathogen levels from 1.0 [middle dot] 103 to 5.0 [middle dot] 104 cfu[middle dot]g- 1 of lettuce or wound of apple. The efficiency of the strains was also calculated as the ratio of the ED90 value to the pathogen dose inoculated. The lowest ratio was found for strain CM160 at 5 to 50 cells of LAB per cell of pathogen. The strain offers potential application for prevention of the presence of L. monocytogenes in fresh fruit and vegetables.
Keywords: Leuconostoc; Fresh fruits; Vegetables; Listeria monocytogenes; Bacteriocin; Bioprotection

Miriam E. Arena, Nestor Curvetto, Berberis buxifolia fruiting: Kinetic growth behavior and evolution of chemical properties during the fruiting period and different growing seasons, Scientia Horticulturae, Volume 118, Issue 2, 16 September 2008, Pages 120-127, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.05.039.
(http://www.sciencedirect.com/science/article/B6TC3-4SYDB0T-4/2/ec0515cf2c63fb897e17f8dd56fdb259)
Abstract:
This work studied the growth of Berberis buxifolia fruits and some of their chemical attributes during the fruiting period and different growing seasons (2004/2005, 2005/2006, 2006/2007) from November (14 days from full flower phase) till March (126 days from full flower phase) for plants growing in a natural environment near Ushuaia city (Tierra del Fuego, Argentina). B. buxifolia fruit growth and composition presented significant changes during the fruiting period and the studied growing seasons. Fresh and dry weight of B. buxifolia fruits exhibited a typical double sigmoid curve. The first period of rapid growth was from full flower phase till 42-56 days after, while the second phase of rapid growth began around the 56-70 days from full flower and ended approximately 4 months later. On a dry weight basis the maximum fruit biomass (119.5 mg) was reached 112 days after full flower while maximum fresh weight fruit biomass (424.3 mg) occurred by day 84. Evolution of fruit growth was related with the compositional changes evaluated. By day 126 from full flower, soluble solids (24.9[degree sign]Brix) and anthocyanin concentration (761.3 mg/100 g fruit fresh weight) were at their maximum values, while at this time the total titratable acidity was at a minimum value (2.56%). The results obtained not only contributes to the knowledge of the quantitative content of anthocyanin, a metabolite with nutraceutical value but, gives some tools for the definition of the optimal harvest time of B. buxifolia fruits, what it is important for fruit destination.
Keywords: Ripening; Anthocyanin; Small fruits; Tierra Del Fuego; South Patagonia

Bao Yang, Mouming Zhao, Yueming Jiang, Optimization of tyrosinase inhibition activity of ultrasonic-extracted polysaccharides from longan fruit pericarp, Food Chemistry, Volume 110, Issue 2, 15 September 2008, Pages 294-300, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.01.067.

(http://www.sciencedirect.com/science/article/B6T6R-4RSRDPH-5/2/e51da243886cb40998d3ca0875711cf3)
Abstract:
Various ultrasonic conditions were employed to prepare polysaccharides from longan fruit pericarp (PLFP) and the Lineweaver-Burk equation was then used to determine the effect of PLFP on inhibition of tyrosinase activity. This result showed that PLFP acted as a non-competitive inhibitor of tyrosinase. The highest slope was observed for ultrasonic extraction, followed by the hot-water extraction, suggesting that the ultrasonic treatment of PLFP increased the inhibition of tyrosinase activity. Furthermore, a multilayer feed-forward neural network trained with an error back-propagation algorithm was used to evaluate the effects of ultrasonic power, time and temperature on the slope value. The trained network gave a regression coefficient (R2) of 0.98 and a mean squared error (MSE) of 0.58, implying a good agreement between the predicted value and the actual value of the slope, and confirmed a good generalization of the network. Based on the artificial neural network-genetic algorithm, the optimal ultrasonic extraction conditions to obtain the highest slope value (154.1) were determined to be 120 W, 12 min and 57 [degree sign]C. Application of response surface plots showed the slope value as a function of every two factors under various ultrasonic extraction conditions, which can be observed directly. Therefore, the artificial neural network provided a model with high performance and indicated the non-linear nature of the relation between ultrasonic conditions and slope value.
Keywords: Longan; Polysaccharide; Ultrasonic extraction; Artificial neural network-genetic algorithm; Tyrosinase

D. Remorini, S. Tavarini, E. Degl'Innocenti, F. Loreti, R. Massai, L. Guidi, Effect of rootstocks and harvesting time on the nutritional quality of peel and flesh of peach fruits, Food Chemistry, Volume 110, Issue 2, 15 September 2008, Pages 361-367, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.02.011.
(http://www.sciencedirect.com/science/article/B6T6R-4RV17S8-2/2/d387785436ecc0c8d2494dc89f1994e1)
Abstract:
The influence was evaluated of four rootstocks (Ishtara, Mr. S 2/5, GF 677 and Barrier 1) and of harvesting time (early, middle, late) on the quality characteristics and nutritional value (vitamin C, phenols, carotenoids, total antioxidant capacity) of `Flavorcrest' peach. The better rootstocks were Mr. S 2/5 (low-vigour) and Barrier 1 (high-vigour). In particular, Flavorcrest fruit on Mr. S 2/5 and on Barrier 1 rootstocks had higher antioxidant capacities and also higher phytochemical content, although fruits on Mr. S 2/5 were less firm.
Flesh firmness was best for fruits at mid-harvest (H2, 7 July 2006), whereas phytochemical contents were best at late harvest (H3, 13 July 2006), when, for all rootstocks, the best nutritional characteristics were also recorded. Total antioxidant capacity and phytochemical content were determined for the peel and flesh. The results show that removal of peel from peach results in a significant loss of total antioxidant capacity.
Keywords: Carotenoids; Flesh; Harvesting time; Peach; Peel; Rootstock; Total antioxidant capacity; Vitamin C

Christina Kurz, Reinhold Carle, Andreas Schieber, HPLC-DAD-MSn characterisation of carotenoids from apricots and pumpkins for the evaluation of fruit product authenticity, Food Chemistry, Volume 110, Issue 2, 15 September 2008, Pages 522-530, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.02.022.
(http://www.sciencedirect.com/science/article/B6T6R-4RV7YKY-B/2/81afe4a97fa9c84267fd9e52e4040d50)
Abstract:

Carotenoids including carotenoid esters from six apricot (Prunus armeniaca L.) cultivars and from eight cultivars from three pumpkin species (Cucurbita maxima Duch., Cucurbita pepo L., and Cucurbita moschata Duch.) were extracted without saponification, separated on a C-30 reversed-phase column and characterised by high-performance liquid chromatography/atmospheric pressure chemical ionisation-mass spectrometry (LC-MS). The predominant free carotenoids were quantified by HPLC with diode array detection. In contrast to previously published data, [alpha]-carotene could not be detected in apricots. Although the pumpkins showed significant differences in their free carotenoid profiles, major unesterified compounds different from those found in apricots could be determined. However, due to the natural heterogeneity, authentication of the apricot products cannot be accomplished exclusively using the profile of free carotenoids. Therefore, the investigations were extended to carotenoid esters. The xanthophyll ester profiles in pumpkins significantly differed from those in apricots in that the latter also contained both saturated and unsaturated fatty acids, whereas in pumpkins exclusively saturated fatty acids were detected. Admixtures of lower cost pumpkins could be detected in quantities of [greater-or-equal, slanted]5% by increased contents of lutein and zeaxanthin, and by the appearance of antheraxanthin and [alpha]-carotene, respectively, depending on the added pumpkin cultivar, as well as the presence of characteristic lutein and antheraxanthin esters. However, pronounced differences in the carotenoid profiles of the investigated pumpkins and the partly minor amount of characteristic compounds lead to limitations of the detection of 5% level of admixture of pumpkin to apricot and of the method in general.
Keywords: Apricot; Authenticity; Carotenoids; LC-MS; Pumpkins

Faouzi Horchani, Philippe Gallusci, Pierre Baldet, Cecile Cabasson, Mickael Maucourt, Dominique Rolin, Samira Aschi-Smiti, Philippe Raymond, Prolonged root hypoxia induces ammonium accumulation and decreases the nutritional quality of tomato fruits, Journal of Plant Physiology, Volume 165, Issue 13, 8 September 2008, Pages 1352-1359, ISSN 0176-1617, DOI: 10.1016/j.jplph.2007.10.016.
(http://www.sciencedirect.com/science/article/B7GJ7-4RH2SNB-2/2/259c7a85b534e766e73474c8416884a5)
Abstract: Summary
Here we examined the effects of root hypoxia (1-2% oxygen) on the physiology of the plant and on the biochemical composition of fruits in tomato (Solanum lycopersicum cv. Micro-Tom) plants submitted to gradual root hypoxia at first flower anthesis. Root hypoxia enhanced nitrate absorption with a concomitant release of nitrite and ammonium into the medium, a reduction of leaf photosynthetic activity and chlorophyll content, and an acceleration of fruit maturation, but did not affect final fruit size. Quantitative metabolic profiling of mature pericarp extracts by 1H NMR showed that levels of major metabolites including sugars, organic acids and amino acids were not modified. However, ammonium concentration increased dramatically in fruit flesh, and ascorbate and lycopene concentrations decreased. Our data indicate that the unfavorable effects of root hypoxia on fruit quality cannot be explained by two of the well-known effects of root hypoxia on the plant, namely a decrease in photosynthesis or an excess in ethylene production, but may instead result from disturbances in the supply of either growth regulators or ammonium, by the roots.
Keywords: Flooding; Fruit quality; Lycopene; Metabolite profiling; Nitrate

John F. Kennedy, Anna Stepien, Handbook of fruits and fruit processing, Y.H. Hui (ed.), Blackwell Publishing, Ames, Iowa, USA, 2006 (xii + 697 pp., [pound sign]125, ISBN: 0-8138-1981-4)., Carbohydrate Polymers, Volume 73, Issue 4, 5 September 2008, Pages 677-678, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2007.12.014.
(http://www.sciencedirect.com/science/article/B6TFD-4RFSCWW-3/2/8cbd36c48cd4ef669df2ea461b540f8d)

Dongjuan Yuan, Jia Chen, Huolin Shen, Wencai Yang, Genetics of flesh color and nucleotide sequence analysis of phytoene synthase gene 1 in a yellow-fruited tomato accession PI114490, Scientia Horticulturae, Volume 118, Issue 1, 2 September 2008, Pages 20-24, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.05.011.
(http://www.sciencedirect.com/science/article/B6TC3-4SVD1HT-2/2/5f026b49c6fab31cfd07c44027b815f7)
Abstract:
Yellow flesh color in tomato is believed to be caused by abnormal transcript of phytoene synthase gene 1 (Psy1). However, our initial work indicated that a yellow-fruited line PI114490 might have full length of genomic DNA sequence for Psy1. To understand the genetics of flesh color in PI114490, we crossed this line to red-fruited lines, OH9242 and LA3189, to develop F1 and F2 progenies, and sequenced the genomic DNA fragment of Psy1 from PI114490 and OH9242. All F1 plants had red fruits, and F2 populations segregated as 3:1 for red and yellow, indicating that one single recessive gene controlled the yellow flesh color in PI114490. This gene was allelic to the known r gene based on tests between PI114490 and four r mutants LA2056, LA3003, LA0353, and LA3532. Sequence analysis indicated that PI114490 had a complete genomic DNA sequence for Psy1 gene with only one nucleotide difference in the fourth intron: G in PI114490 and A in OH9242. This substitution was associated with yellow flesh in the F2 population. There was no detectable or very low lycopene in PI114490 and all yellow-fruited F2 individuals. Lycopene in the F1 (9.77 mg/100 g) was higher than the mean (6.52 mg/100 g) of two parents, and ranged from 0 to 11.69 mg/100 g in all red-fruited F2 individuals. These results suggested that lycopene content was quantitatively inherited.
Keywords: Genetics; Genomic DNA sequence; Lycopene; Psy1; Yellow flesh

Aiman K.A. Mohamed, The effect of chilling, defoliation and hydrogen cyanamide on dormancy release, bud break and fruiting of Anna apple cultivar, Scientia Horticulturae, Volume 118, Issue 1, 2 September 2008, Pages 25-32, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.05.015.
(http://www.sciencedirect.com/science/article/B6TC3-4SXS3FF-3/2/f9a1076e02c2ebb40a1d0a274730fdf2)
Abstract:
The effect of defoliation (DEF) alone or combined with hydrogen cyanamide (HC) on dormancy state, fruit quality and yield of Anna apple cultivar was studied. Trees were manually defoliated on three successive dates, November 15th, December 1st and December 15th. The flower buds (FB) entered the endodormancy synchronized with vegetative buds (VB) for most of the treatments. Most of the treatments terminated endodormancy between January 27th and February 8th during the season 2004/2005 and between January 18th and February 8th during the season 2005/2006. The treatments were effective in dormancy release of FB and somewhat with VB. Defoliation on November 15th + HC recorded the lowest chilling accumulation needed to reach 50% bud break. All the treatments exceeded the control considering the percentage of flower (FBB) and vegetative bud break (VBB) either in the lab or at the field. Growing degree hours and the number of days required to reach each stage of fruiting were differed between the two studied seasons. The control and DEF on December 15th exceeded all the treatments regarding initial fruit set percentage (IFS). The defoliation treatments alone gave the highest yield (kg/tree). Defoliation + HC treatments gave the best fruit quality, while the control gave the least values.
Keywords: Endodormancy; Chill units; Growing degree hours; Dormex; Dormancy-breaking agents

J.J. Magan, M. Gallardo, R.B. Thompson, P. Lorenzo, Effects of salinity on fruit yield and quality of tomato grown in soil-less culture in greenhouses in Mediterranean climatic conditions, Agricultural Water Management, Volume 95, Issue 9, September 2008, Pages 1041-1055, ISSN 0378-3774, DOI: 10.1016/j.agwat.2008.03.011.

(http://www.sciencedirect.com/science/article/B6T3X-4SJ9G87-1/2/1774967c0ce0b0a6a56524895fe5553b)

Abstract:
There is increasing pressure to reduce water use and environmental impact associated with open system, soil-less production in simple, plastic greenhouses on the Mediterranean coast. This may force the adoption of re-circulation of nutrient solutions. In south-eastern Spain, irrigation water is mostly from aquifers and has moderate levels of salinity. The adoption of re-circulation using moderately saline water requires detailed information of crop response to salinity, in order to optimise management. The effect of salinity on fruit yield, yield components and fruit quality of tomato grown in soil-less culture in plastic greenhouses in Mediterranean climate conditions was evaluated. Two spring growing periods (experiments 1 and 2) and one long season, autumn to spring growing period (experiment 3) studies were conducted. Two cultivars, `Daniela' (experiment 1) and `Boludo' (experiments 2 and 3), were used. Seven levels of electrical conductivity (EC) in the nutrient solution were compared in experiment 1 (2.5-8.0 dS m-1) and five levels in experiments 2 and 3 (2.5-8.5 dS m-1). Total and marketable yield decreased linearly with increasing salinity above a threshold EC value (ECt). There were only small effects of climate and cultivar on the ECt value for yield. Average threshold EC values for total and marketable fruit yield were, respectively, 3.2 and 3.3 dS m-1. The linear reductions of total and marketable yield with EC above ECt showed significant differences between experiments, the slope varying from 7.2% (autumn to spring period, `Boludo') to 9.9% (spring period, `Boludo') decreases per dS m-1 increase in EC for total yield, and from 8.1% (spring period, `Daniela') to 11.8% (spring period, `Boludo') for marketable yield. The decrease of fresh fruit yield with salinity was mostly due to a linear decrease of the fruit weight of 6.1% per dS m-1 from an ECt of 3.0 dS m-1 for marketable fruits. Reduction in fruit number with salinity made a smaller relative contribution to reduced yield. Blossom-end rot (BER) increased with increasing salinity. There was a higher incidence of BER with spring grown crops, and `Boludo' was more sensitive than `Daniela'. Increasing salinity improved various aspects of fruit quality, such as: (i) proportion of `Extra' fruits (high visual quality), (ii) soluble solids content, and (iii) titratable acidity content. However, salinity decreased fruit size, which is a major determinant of price. An economic analysis indicated that the EC threshold value above which the value of fruit production decreased linearly with increasing salinity was 3.3 dS m-1, which was the same as that for marketable yield. In the economic analysis, the value of increased visual fruit quality was offset by reduced yield and smaller fruit size.
Keywords: Almeria; Electrical conductivity; Hydroponic; Re-circulation; Substrate; Vegetable

Maria Conceicao de Oliveira, Rosely Sichieri, Renzo Venturim Mozzer, A low-energy-dense diet adding fruit reduces weight and energy intake in women, Appetite, Volume 51, Issue 2, September 2008, Pages 291-295, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.03.001.
(http://www.sciencedirect.com/science/article/B6WB2-4S0PK30-2/2/6bb9c0b191037f09f917243fed1fbab0)

Abstract:
This study evaluated the effect of adding fruit or oats to the diet of free-living women on energy consumption and body weight. Fruit and oat cookies had the same amount of fiber and total calories (~200 kcal), but differed in energy density.
We analyzed data from a clinical trial conducted in a primary care unit in Rio de Janeiro, Brazil. Forty-nine women, ages ranging from 30 to 50 years, with body mass index (BMI) > 25 kg/m2, were randomly chosen to add three apples (0.63 kcal/g energy density) or three pears (0.64 kcal/g energy density) or three oat cookies (3.7 kcal/g energy density) to their usual diet for 10 weeks. Fiber composition was similar (~6 g). Statistical analysis of the repeated measures of dietary composition and body weight were analyzed using mixed model procedures. Results showed a significant decrease in the energy density during the follow-up (-1.23 kcal/g, $p < 0.04$, and -1.29 kcal/g, $p < 0.05$) for apples and pears, respectively, compared to the oat group.

The energy intake also decreased significantly (-25.05 and -19.66 kcal/day) for the apple and pear group, respectively, but showed a small increase (+0.93) for the oat group. Apples and pears were also associated ($p < 0.001$) with weight reduction (-0.93 kg for the apple and -0.84 for the pear group), whereas weight was unchanged (+0.21; $p = 0.35$) in the oat group. Results suggest that energy densities of fruits, independent of their fiber amount can reduce energy consumption and body weight over time.
Keywords: Energy density; Diets; Fruit; Oats; Randomized; Clinical trial

Yael Argov, Yoav Gazit, Biological control of the Mediterranean fruit fly in Israel: Introduction and establishment of natural enemies, Biological Control, Volume 46, Issue 3, September 2008, Pages 502-507, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2008.04.021.
(http://www.sciencedirect.com/science/article/B6WBP-4SDX2ST-1/2/ff77733583e5fa0b5093aee93bf473a5)
Abstract:
The Mediterranean fruit fly (Medfly) Ceratitis capitata (Wiedemann) is a key pest of citrus and many other fruits in Israel. Four braconid species that parasitize medfly were imported into Israel and released between 2002 and 2004: the egg-pupal parasitoids Fopius arisanus and F. ceratitivorus; and the larval-prepupal parasitoids Psyttalia concolor (complex) and Diachasmimorpha krausii. All were initially cultured on medfly, and as soon as stable colonies were established, with a substantial ratio of females to males, the parasitoids were released in the field. To increase the chances for establishment, sites bearing high and stable medfly populations (e.g. back yards and orchards with a variety of fruit species) were chosen for periodical parasitoid releases. Recovery and establishment at various sites in the country were monitored by fruit sampling. All four species were recovered, and at least two, F. ceratitivorus and D. krausii, have shown signs of long-term establishment.
Keywords: Ceratitis capitata; Medfly; Fopius arisanus; Fopius ceratitivorus; Psyttalia concolor; Diachsmimorpha krausii; Biological control; Establishment

Eloi'sa Rovaris Pinheiro, Iolanda M.D.A. Silva, Luciano V. Gonzaga, Edna R. Amante, Reinaldo F. Teofilo, Marcia M.C. Ferreira, Renata D.M.C. Amboni, Optimization of extraction of high-ester pectin from passion fruit peel (Passiflora edulis flavicarpa) with citric acid by using response surface methodology, Bioresource Technology, Volume 99, Issue 13, September 2008, Pages 5561-5566, ISSN 0960-8524, DOI: 10.1016/j.biortech.2007.10.058.
(http://www.sciencedirect.com/science/article/B6V24-4RWFJB8-1/2/d7756d492837e80843ccc41fdec3ddb7)
Abstract:
A central composite design was employed to optimize the extraction of pectin with citric acid. The independent variables were citric acid concentration (0.086-2.91% w/v) and extraction time (17-102 min). The combined effect of these variables on the degree of esterification was investigated. Results have shown that the generated regression models adequately explained the data variation and significantly represented the actual relationship between the independent variables and the responses. Besides that, the citric acid concentration was the most important factor to affect the degree of esterification, as it exerted a significant influence on the dependent variable. Lower citric acid concentration increased the pectin degree of esterification. The surface response showed the relationships between the independent variables, and thus responses were generated. Through this surface, the satisfactory condition of 0.086% w/v citric acid for 60 min was established for extraction of high-ester yellow passion fruit pectin.
Keywords: Pectin extraction; Passion fruit peel; Degree of esterification; Response surface methodology; Central composite design

Michael Van Zeebroeck, Geert Lombaert, Edward Dintwa, Herman Ramon, Geert Degrande, Engelbert Tijskens, The simulation of the impact damage to fruit during the passage of a truck over a speed bump by means of the discrete element method, Biosystems Engineering, Volume 101, Issue 1, September 2008, Pages 58-68, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2008.06.003.
(http://www.sciencedirect.com/science/article/B6WXV-4T3TPYH-1/2/d4af7aaa2c956a76a7a49edcb0ea8bed)
Abstract:
The discrete element method (DEM) was used to study fruit damage during transportation. The DEM is a particle-based simulation technique which is well suited for the solution of granular material related problems in food and agriculture. In this paper, the application of DEM to food transport problems was demonstrated by simulation of bruising to apples stored in bulk bins during the passage of a truck over a speed bump. The effects of truck load, bulk bin position, suspension type and driving speed on damage were investigated. The simulations showed that higher truck loads lead to less bruising and that apples in bulk bins behind the rear axle suffered more damage than those in bulk bins in front of the rear axle. Furthermore, a considerable reduction in the damage was predicted in simulations where the truck has a soft suspension. Independent of truck load, suspension type and bulk bin position, the commercially significant bruising (i.e. apples with bruise volume of maximum bruise above 500 mm3) was predicted to be insignificant for driving speeds below 20 km h-1. At higher driving speeds, the extent of commercially acceptable bruising depended on various parameters. A reduction in the driving speed, an increase in the truck load and a reduction in the suspension stiffness all helped to reduce the occurrence of fruit damage.

C. Juan, A. Zinedine, J.C. Molto, L. Idrissi, J. Manes, Aflatoxins levels in dried fruits and nuts from Rabat-Sale area, Morocco, Food Control, Volume 19, Issue 9, September 2008, Pages 849-853, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2007.08.010.
(http://www.sciencedirect.com/science/article/B6T6S-4PJ04VH-4/2/c9e96313d72fbeabb37d4028e710860d)
Abstract:
The occurrence of aflatoxins (AFs) in dried fruits and nuts available in Rabat-Sale area (Morocco) was surveyed in this study. One hundred samples of dried fruits and nuts, purchased from retail shops and local markets from January to October 2006, were analyzed for AFs content by immunoaffinity (IAC) clean-up with liquid chromatography and fluorescence detection. Results showed that the incidences of total aflatoxins (AFT) and aflatoxin B1 (AFB1) in peanut, dried raisins, dried figs, walnut, and pistachio were 5%, 20%, 30%, 30% and 45% and 5%, 20%, 5%, 30% and 45%, respectively. The highest contamination levels of AFB1 were found in one walnut sample (2500 [mu]g/kg) and one pistachio sample (1430 [mu]g/kg). 5%, 20% and 20% of samples of pistachio, walnut and dried raisins exceeded the maximum tolerable limit (2 [mu]g/kg) set for AFB1 by EU regulations. While 15% of dried figs samples were above the maximum limit (4 [mu]g/kg) set by EU regulations for AFT. The present paper is the first report on the natural occurrence of AFs in dried fruits and nuts available in Rabat-Sale area in Morocco.
Keywords: Aflatoxin; Occurrence; Dried fruits

Anneke Dierks, Klaus Fischer, Feeding responses and food preferences in the tropical, fruit-feeding butterfly, Bicyclus anynana, Journal of Insect Physiology, Volume 54, Issue 9, September 2008, Pages 1363-1370, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2008.07.008.
(http://www.sciencedirect.com/science/article/B6T3F-4T2S8XM-3/2/8ddbdfd0d41a9152701da26f633fa782)
Abstract:
In the tropical butterfly Bicyclus anynana (Nymphalidae) essential components of fitness (such as fecundity and longevity) depend to a large degree on exogenous adult-derived nutrients,

particularly carbohydrates. We investigated which of the nutrients/compounds found in the adult diet act as feeding stimuli, and whether butterflies show preferences for particular nutrients or combinations. Only sugars and alcohols acted as feeding stimuli, the highest responses being found for sucrose, glucose, ethanol, butanol and propanol. Various other compounds (e.g. amino acids, acetic acid, vitamins, lipids, salts, and yeast) did not elicit any probing or feeding responses. Behavioural tests revealed a clear preference hierarchy for sugars (sucrose > glucose > fructose > maltose), but not for alcohols. Butterflies did not discriminate between sucrose solutions enriched with different nutrients and plain sucrose solutions, although they showed a preference for acetic acid and an aversion to salts and ascorbic acid when offered in combination with sucrose. Throughout, both sexes showed very similar patterns. We conclude that locating carbohydrate sources seems sufficient to cover all the butterflies' nutritional needs, while alcohols function primarily as long range signals, guiding the butterflies to food sources. Thus, fruit-feeding butterflies, in contrast to nectar-feeding butterflies, appear not to have distinctive preferences for e.g. amino acids or salts, but do share a common primary preference for sucrose.
Keywords: Adult diet; Feeding stimuli; Income breeding; Nutritional resources; Reproductive resource allocation

A. Behar, B. Yuval, E. Jurkevitch, Gut bacterial communities in the Mediterranean fruit fly (Ceratitis capitata) and their impact on host longevity, Journal of Insect Physiology, Volume 54, Issue 9, September 2008, Pages 1377-1383, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2008.07.011.
(http://www.sciencedirect.com/science/article/B6T3F-4T2S8XM-5/2/d6d853fbfb0b152f10cb23fd4b7a5093)
Abstract:
Fruit flies (Diptera: Tephritidae) harbor stable bacterial communities in their digestive system, composed mainly of members of the Enterobacteriaceae. However, the Enterobacteriaceae are not the sole community in this habitat. We examined the hypothesis that Pseudomonas spp. form a cryptic community in the gut of Ceratitis capitata, the Mediterranean fruit fly (`medfly'). Suicide polymerase restriction PCR (SuPER PCR), a novel culture-independent technique, revealed that Pseudomonas spp. form minor, common and stable communities within the medfly's gut. These include P. aeruginosa, a known pathogen of arthropods. Experimental inoculations with high levels of P. aeruginosa reduced the medfly's longevity while inoculations with members of the Enterobacteriaceae extended the fly's life.
Accordingly, we suggest that in addition to their possible contribution to the fly's nitrogen and carbon metabolism, development and copulatory success (as shown in previous studies), the Enterobacteriaceae community within the medfly's gut may also have an indirect contribution to host fitness by preventing the establishment or proliferation of pathogenic bacteria.
Keywords: Ceratitis capitata; SuPER-PCR; Enterobacteriaceae; Pseudomonas aeruginosa; Gut microbiology

M.K. Crepinsek, A. Wilson, R. Briefel, A National Study of School Food Environments and Policies School Food Policies Affect Fruit and Vegetable Consumption at School, Especially in Elementary Schools, Journal of the American Dietetic Association, Volume 108, Issue 9, Supplement 1, ADA 2008 Food & Nutrition Conference & Expo, ADA 2008 Food & Nutrition Conference & Expo, September 2008, Page A10, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.06.013.
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& Expo, ADA 2008 Food & Nutrition Conference & Expo, September 2008, Page A59, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.06.134.
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B. Landis, T. Smith, M. Lairson, K. McKay, H. Nelson, J. O'Briant, Fruit and Vegetable Intakes and Demographic Characteristics of Community Supported Agriculture Program Participants in North Carolina, Journal of the American Dietetic Association, Volume 108, Issue 9, Supplement 1, ADA 2008 Food & Nutrition Conference & Expo, ADA 2008 Food & Nutrition Conference & Expo, September 2008, Page A71, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.06.184.
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C.E. Shepherd, L.M. Graves, E.B. Foland, M.L. Goodman, K.M. Morris, J.Z. Ali, J.A. Shertzer, A.D. Fly, A Comparison of 4th-12th Grade Students in 27 Indiana Schools Regarding Their Perceived Need to Eat Fruits and Vegetables Daily to Be Healthy, Journal of the American Dietetic Association, Volume 108, Issue 9, Supplement 1, ADA 2008 Food & Nutrition Conference & Expo, ADA 2008 Food & Nutrition Conference & Expo, September 2008, Page A88, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.06.239.
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T. Kidd, M. Bradshaw, C. Snyder, Evaluating the Fruit and Vegetable Intake of Walk Kansas: Assessing the Community-Based Approach, Journal of the American Dietetic Association, Volume 108, Issue 9, Supplement 1, ADA 2008 Food & Nutrition Conference & Expo, ADA 2008 Food & Nutrition Conference & Expo, September 2008, Page A95, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.06.267.
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J. Heesacker, D. Gee, L.K. Cashman, S. Bedsaul, Grab `N' Go Dinners: A Pilot Program to Increase Fruit and Vegetable Intake among Low Income Residents in a Rural Northwest County, Journal of the American Dietetic Association, Volume 108, Issue 9, Supplement 1, ADA 2008 Food

& Nutrition Conference & Expo, ADA 2008 Food & Nutrition Conference & Expo, September 2008, Page A102, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.06.295.
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(http://www.sciencedirect.com/science/article/B758G-4T8SD0X-G5/2/9773d7b21ca6ba18f83b9081978d1919)

Gurmeet Singh, Kasiviswanathan Muthukumarappan, Influence of calcium fortification on sensory, physical and rheological characteristics of fruit yogurt, LWT - Food Science and Technology, Volume 41, Issue 7, September 2008, Pages 1145-1152, ISSN 0023-6438, DOI: 10.1016/j.lwt.2007.08.027.
(http://www.sciencedirect.com/science/article/B6WMV-4PNFVDW-1/2/1d99f8b8a5fdc078a42ee6209e483151)
Abstract:
There has been great demand of calcium fortified dairy products as they can serve as an ideal vehicle for carrying extra calcium to fulfill the nutritional needs but there is need to generate information on the effect of fortification of calcium on the physical properties of these products. In the present study, the calcium enriched mango yogurt was prepared after fortification of pasteurized yogurt mix with 50 mg Ca/100 ml of calcium lactate, this level selected from a preliminary study of sensory evaluation. Fortification of yogurt with calcium lactate at this level significantly ($P<0.005$) increased the water holding capacity (WHC) by 2.99% on 1st day of storage. WHC of calcium fortified fruit yogurt was higher than control fruit yogurt on 7th and 14th day of storage. Measurements performed on slowly stirred samples (flow curves and final apparent viscosity) showed that calcium-enriched fruit yogurt had stronger structures. Calcium fortified fruit yogurt showed less shear thinning behavior as compared to control. Also, apparent viscosity measurements at constant shear rate showed a significantly ($P<0.05$) less decrease in initial apparent viscosity in calcium fortified fruit yogurt. However, no statistically significant ($P>0.05$) difference was observed in tan [delta] values of control and calcium fortified fruit yogurt indicating similar nature of bonds involved in the gel structure formation of both the yogurt samples. The more firm structure of the calcium fortified fruit yogurt is thus attributed to the higher extent of colloidal calcium phosphate cross-linking between casein micelles due to increased calcium content by fortification. Also flavor, color, and body and texture scores of control and calcium fortified fruit yogurt did not show any significant difference ($P>0.05$).
Keywords: Yogurt; Calcium fortification; Rheology; Apparent viscosity; Water holding capacity

K. Kailasapathy, I. Harmstorf, M. Phillips, Survival of Lactobacillus acidophilus and Bifidobacterium animalis ssp. lactis in stirred fruit yogurts, LWT - Food Science and Technology, Volume 41, Issue 7, September 2008, Pages 1317-1322, ISSN 0023-6438, DOI: 10.1016/j.lwt.2007.08.009.
(http://www.sciencedirect.com/science/article/B6WMV-4PJM9VV-1/2/f81a752f4e0f4a48488e6bc318eaccc7)
Abstract:
The effect of commercial fruit preparations (mango, mixed berry, passion fruit and strawberry) on the viability of probiotic bacteria, Lactobacillus acidophilus LAFTI(R) L10 and Bifidobacterium animalis ssp. lactis LAFTI(R) B94 in stirred yogurts during storage (35 days) at refrigerated temperature (4 [degree sign]C) was evaluated. The results showed that addition of either 5 or 10

g/100 g fruit preparations had no significant ($p>0.05$) effect on the viability of the two probiotic strains except on L. acidophilus LAFTI L10 yogurt with 10 g/100 g passion fruit or mixed berry. After the addition of fruit preparation, 96% of the yogurts incorporated with fruit preparation did not exhibit a greater loss in the viability of probiotic bacteria compared to plain yogurt during the storage period. A correlation between the post-storage pH in yogurts and the survival of probiotic bacteria was observed. All the yogurts, however, contained the recommended levels of (106-107 cfu/g) probiotic bacteria at the end of 35-day shelf life.
Keywords: Fruit yogurt; Survival of probiotic bacteria; pH; Fruit

Han-Qi Yang, Jun-Bo Yang, Zhen-Hua Peng, Jian Gao, Yu-Ming Yang, Sheng Peng, De-Zhu Li, A molecular phylogenetic and fruit evolutionary analysis of the major groups of the paleotropical woody bamboos (Gramineae: Bambusoideae) based on nuclear ITS, GBSSI gene and plastid trnL-F DNA sequences, Molecular Phylogenetics and Evolution, Volume 48, Issue 3, September 2008, Pages 809-824, ISSN 1055-7903, DOI: 10.1016/j.ympev.2008.06.001.
(http://www.sciencedirect.com/science/article/B6WNH-4SRKMHW-1/2/58cd33e52d77eb74c6a8d55ce041150e)
Abstract:
This study presented the first molecular phylogenetic analysis of the major clades of woody bamboos of the Old World tropics based on nuclear and chloroplast sequences (ITS, GBSSI and trnL-F). Sequence data from 53 species, representing 17 paleotropical woody bamboo genera, were analyzed using the maximum parsimony and Bayesian inference methods. All examined ingroup taxa were clustered into two clades, i.e., the Bambusinae + Dinochloa clade and the Melocanninae clade. The former clade included Bambusa, Bonia, Dendrocalamus, Dendrocalamopsis, Dinochloa, Gigantochloa, Molecalamus, Neomicrocalamus, Neosinocalamus, Oxytenanthera s. str. (sensu stricto), Racemobambos and Thyrsostachys. The Melocanninae clade consisted of Cephalostachyum, Leptocanna (better treated as part of Cephalostachyum), Melocanna, Pseudostachyum and Schizostachyum s. str. The subtribe Racemobambosinae and tribes Dendrocalameae and Oxytenanthereae were not supported and may be better placed in subtribe Bambusinae. The ovary characters seemed to be good criteria to distinguish these two clades. The reconstruction of ancestral fruit characters indicated that the bacoid caryopsis, namely, fleshy or berry-like fruits, was found to be scattered in three lineages of the examined paleotropical woody bamboos. Fruit characters are thus not reliable indicators of phylogeny and bacoid caryopsis likely represents a specialization for particular ecological conditions.
Keywords: Caryopsis type; Fruit evolution; GBSSI gene; ITS; Molecular systematics; Paleotropics; trnL-F; Woody bamboos

Sabina Berne, Franc Pohleven, Tom Turk, Kristina Sepcic, Induction of fruiting in oyster mushroom (Pleurotus ostreatus) by polymeric 3-alkylpyridinium salts, Mycological Research, Volume 112, Issue 9, September 2008, Pages 1085-1087, ISSN 0953-7562, DOI: 10.1016/j.mycres.2008.03.009.
(http://www.sciencedirect.com/science/article/B7XMR-4S80XRK-3/2/59f8c1f1c76fb33863a67c22771b72c6)
Abstract:
Polymeric 3-alkylpyridinium salts (poly-APS), surface-active compounds from the marine sponge Reniera sarai, have been shown to stimulate the fruit body formation from Pleurotus ostreatus mycelium. In nutrient media supplemented with poly-APS (>=0.01 [mu]g ml-1), the formation of primordia and development of fruit bodies were detected approximately 10 d earlier than in the absence of poly-APS, and also led to a considerably larger quantity of young mushrooms. This effect appears to be specific, as other surface-active compounds, lysophospholipids and fatty acids, showed no induction of fruiting.
Keywords: Alkylpyridinium salts; Mushroom fruiting; Pleurotus ostreatus; Surfactant

V. Ziosi, M. Noferini, G. Fiori, A. Tadiello, L. Trainotti, G. Casadoro, G. Costa, A new index based on vis spectroscopy to characterize the progression of ripening in peach fruit, Postharvest Biology and Technology, Volume 49, Issue 3, September 2008, Pages 319-329, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.01.017.
(http://www.sciencedirect.com/science/article/B6TBJ-4SHN0D8-2/2/c450f07931c95a69c63973bd1ccdca27)
Abstract:
In peach fruit (Prunus persica L. Batsch), establishing the optimal harvest time is a crucial issue, since fruit shelf-life potential and quality are closely related to the ripening stage at harvest. In order to develop a non-destructive index for monitoring the progression of ripening, the difference in absorbance between two wavelengths near the chlorophyll-a absorption peak (670 and 720 nm; index of absorbance difference, IAD) was related to the time course of ethylene production during on-tree ripening of peaches (cv. `Fayette') and nectarines (cvs. `Laura' and `Stark Red Gold'). For each variety, consecutive stages of ripening, as defined according to ethylene production (pre-climacteric, climacteric, post-climacteric), occurred in the same ranges of IAD in different years (2003 and 2004). In 2005, the relationship IAD/ethylene production was used to classify fruit at harvest according to their ripening stage (class 0: pre-climacteric; class 1: onset of climacteric; class 2: climacteric). For each cultivar, the transition from class 1 to 2 was marked by increased ethylene production, and reduced flesh firmness (FF) and titratable acidity (TA). In contrast, fruit quality traits did not discriminate between fruit belonging to classes 0 and 1. In `Stark Red Gold' nectarines, the robustness of the IAD was further corroborated by changes in transcript levels of genes which are either up- or down-regulated during peach fruit ripening. Class 0 fruit had the lowest transcript amount of the up-regulated genes and the highest of the down-regulated ones, while the opposite occurred in class 2 fruit. Moreover, mRNA abundance of some marker genes discriminated class 0 and 1 fruit. Peaches and nectarines graded at harvest according to the IAD also differed in their postharvest ripening behaviour: fruit with higher IAD produced lower amounts of ethylene, began to soften later, and maintained higher TA than those with lower IAD. Present data demonstrate that the IAD identifies physiological changes occurring during ripening regardless of the fact that they might have or not led to appreciable modifications in fruit quality. Therefore, the IAD can be regarded as a very promising tool both for practical and scientific applications, since it allows to monitor on-tree fruit ripening, to establish accurately the optimal harvest time, and to reduce the variability which is present in fruit batches.
Keywords: Vis spectroscopy; Chlorophyll; Ripening; Ethylene; Fruit quality

Yanmin Zhu, David R. Rudell, James P. Mattheis, Characterization of cultivar differences in alcohol acyltransferase and 1-aminocyclopropane-1-carboxylate synthase gene expression and volatile ester emission during apple fruit maturation and ripening, Postharvest Biology and Technology, Volume 49, Issue 3, September 2008, Pages 330-339, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.03.015.
(http://www.sciencedirect.com/science/article/B6TBJ-4SH1HX0-2/2/ad7e79cca10da699d0fc2e400019f0c6)
Abstract:
Alcohol acyltransferase (AAT) catalyzes the last step of volatile ester biosynthesis, and ethylene purportedly regulates AAT gene expression. In this study, expression patterns of apple (Malus x domestica Borkh.) AAT genes and ethylene biosynthesis genes of 1-aminocyclopropane-1-carboxylate synthase (ACS) were investigated in cultivars with relatively high (`Golden Delicious') or low (`Granny Smith') volatile ester production. All four AAT genes expressed stronger in `Golden Delicious' than in `Granny Smith'. MdAAT1 and MdAAT2 are the predominant genes expressed in fruit tissues. The expression levels of MdAAT1 and MdAAT2 were increasing as ripening progressed and were consistent with the total amount of esters detected between two

cultivars. The transcript levels of MdAAT3 and MdAAT4 decreased at or after the onset of ripening. The expression of MdACS1 was significantly increased at the onset of ripening in both cultivars, while the expression of MdACS3 was detected throughout the harvest period in `Golden Delicious'. Postharvest methylcyclopropene (1-MCP) exposure had little impact on expression of MdAAT1 and MdACS3 genes, but substantially suppressed the transcript level for MdACS1 in both cultivars, and MdAAT2 in `Golden Delicious'. The results indicated that (1) differential expression of AAT genes may contribute to phenotypic variation of volatile ester biosynthesis, and (2) the expression of MdACS3 may play a role on induction of AAT genes expression in early fruit development, because it was expressed prior to ACS1. (3) The climacteric expression of MdACS1 greatly enhanced the expression levels of MdAAT1 and MdAAT2 genes and the emission of aromatic volatile esters. (4) Postharvest 1-MCP treatment showed selected inhibition on gene expression of specific AAT and ACS family members.
Keywords: Malus domestica (Borkh.); Volatile esters; Ethylene; 1-Methylcyclopropene; Fruit ripening

A. Salvador, L. Arnal, C. Besada, V. Larrea, I. Hernando, I. Perez-Munuera, Reduced effectiveness of the treatment for removing astringency in persimmon fruit when stored at 15 [degree sign]C: Physiological and microstructural study, Postharvest Biology and Technology, Volume 49, Issue 3, September 2008, Pages 340-347, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.01.015.
(http://www.sciencedirect.com/science/article/B6TBJ-4SM206M-1/2/4ce5c2cedf99260311dc93348b4b8b39)
Abstract:
Persimmon cv. `Rojo Brillante' is astringent at harvest. Treatment with 95% CO2 for 24 h at 20 [degree sign]C applied prior to storage has been adopted by the industry as the standard method to remove astringency. However, it may sometimes be useful to remove astringency of the fruit after storage. The present work has studied the effectiveness of this treatment applied after different periods of storage at 15 [degree sign]C. The longer the fruit was in storage, the less effective was the treatment. The structural changes at the cell level that the fruit flesh undergoes during storage at 15 [degree sign]C show that a progressive degradation takes place. The intercellular spaces are progressively occupied by soluble and non-soluble material. These structural changes could be related to a smaller increase of acetaldehyde after CO2 treatment and this was the direct cause of the loss of effectiveness, since acetaldehyde is necessary for tannin polymerization.
Keywords: Tannins; Storage; Carbon dioxide; Acetaldehyde; Cell structure

Jianwei Qin, Renfu Lu, Measurement of the optical properties of fruits and vegetables using spatially resolved hyperspectral diffuse reflectance imaging technique, Postharvest Biology and Technology, Volume 49, Issue 3, September 2008, Pages 355-365, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.03.010.
(http://www.sciencedirect.com/science/article/B6TBJ-4SH1HX0-1/2/dce7e1f8efbc956332997e304699d132)
Abstract:
This paper reports on the measurement of the optical properties of fresh fruits and vegetables over the visible and short-wave near-infrared region (500-1000 nm) using a spatially resolved steady-state diffuse reflectance technique. A hyperspectral imaging system in line scan mode was used to acquire spatially resolved diffuse reflectance images from the samples of apple (three varieties), peach, pear, kiwifruit, plum, cucumber, zucchini squash, and tomato (at three ripeness stages) over the spectral range of 500-1000 nm. The absorption and reduced scattering coefficients of the samples were determined from the spatially resolved scattering profiles using inverse algorithms for a diffusion theory model. Spectra of the absorption coefficient were featured by major pigments

(chlorophyll, anthocyanin, and carotenoid) and water in the samples, whereas spectra of the reduced scattering coefficient generally decreased with the increase of wavelength. Values of the absorption and reduced scattering coefficients varied greatly among the test samples. Large differences in the absorption spectra were observed for the tomatoes of three ripeness stages (green, pink, and red), and their ripeness was correctly classified using the ratio of the absorption coefficient at 675 nm (for chlorophyll) to that at 535 nm (for anthocyanin). Values of the reduced scattering coefficient positively correlated with the firmness of tomatoes at individual wavelengths of 500-1000 nm, with the maximum correlation of 0.66 being obtained at 790 nm. Light penetration depths, defined as the depths at which the incident light was reduced by 99%, were estimated to be between 0.97 and 6.52 cm for the fruit and vegetable samples over the wavelength range of 500-1000 nm; they were influenced by major pigments in the plant tissue. The spatially resolved steady-state diffuse reflectance technique provides a convenient and efficient means for measuring the optical properties of turbid food and agricultural products.
Keywords: Hyperspectral imaging; Spatially resolved spectroscopy; Diffuse reflectance; Optical properties; Diffusion theory model; Fruits; Vegetables; Light penetration depth

Xiangbin Xu, Shiping Tian, Salicylic acid alleviated pathogen-induced oxidative stress in harvested sweet cherry fruit, Postharvest Biology and Technology, Volume 49, Issue 3, September 2008, Pages 379-385, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.02.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4SHFSJ4-2/2/77d5133d72e867f42f4cb2355432e7af)
Abstract:
The role of exogenous salicylic acid (SA) in regulating an antioxidative defense response of sweet cherry (Prunus avium L. cv. Hongdeng) fruit inoculated with Penicillium expansum was investigated by immunodetection of carbonylated proteins. After inoculation with P. expansum, carbonylated proteins accumulated to a lesser extent in SA-treated fruit than in control fruit, ranging from molecular mass 29-45 kDa. Higher activities of catalase (CAT), glutathione peroxidase (GPX), chitinase and [beta]-1,3-glucanase were observed in SA-treated fruit. Similarly, the expressions of CAT, GPX and [beta]-1,3-glucanase genes were also stimulated by SA treatment. Moreover, 2 mM SA did not inhibit P. expansum growth in vitro. These results indicate that SA activated antioxidant defense responses of sweet cherry fruit, which may play a role in the resistance against P. expansum.
Keywords: Salicylic acid; Oxidative stress; Proteins carbonylation; Induced resistance

Maria Serrano, Domingo Martinez-Romero, Fabian Guillen, Juan Miguel Valverde, Pedro Javier Zapata, Salvador Castillo, Daniel Valero, The addition of essential oils to MAP as a tool to maintain the overall quality of fruits, Trends in Food Science & Technology, Volume 19, Issue 9, September 2008, Pages 464-471, ISSN 0924-2244, DOI: 10.1016/j.tifs.2008.01.013.
(http://www.sciencedirect.com/science/article/B6VHY-4RSBY22-1/2/72e2e305b92d32d5e58965936e5e4fb4)
Abstract:
This paper covers the recent literature on fruit ripening and problems related to quality loss during postharvest storage, as well as the use of essential oils as antioxidants and antimicrobials. This review sets the principles for the creation of innovative technological developments by using an active packaging based on the combination of modified atmosphere packaging (MAP) with natural antimicrobial compounds. The use of this active packaging on the delay of fruit ripening and the extension of shelf-life based on safety and the preservation of sensory attributes and bioactive compounds with functional properties will be provided.

M.M. Gonzalez-Real, A. Baille, H.Q. Liu, Influence of fruit load on dry matter and N-distribution in sweet pepper plants, Scientia Horticulturae, Volume 117, Issue 4, 18 August 2008, Pages 307-315, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.05.026.
(http://www.sciencedirect.com/science/article/B6TC3-4SXS3FF-6/2/71031cf00ef8b077675e9d06105a9458)
Abstract:
The influence of fruit load on the leaf characteristics and on the distribution of dry matter (DM) and nitrogen (N) in sweet pepper (Capsicum annuum L., cv. Cornado) plants was investigated under Mediterranean glasshouse conditions during a winter-spring production cycle (from December till June). DM weight of all organs (roots, stems + petioles, leaves and fruits) and N content were determined throughout the growing cycle over a 3-week interval. The results showed that the cyclic fruit load pattern (production flushes) was associated with strong variations of N-leaf content on an area basis and specific leaf weight, SLW. On a whole plant scale, the value of SLW dramatically decreased ([approximate]30%) with increasing fruit load; the reverse held true as long as the fruit dry weight remained low (<30 g pl-1). The decline in SLW was coincident with a shift in distribution of DM and N in the plant, both preferentially diverted to the fruits. The time evolution of DM and N fractions in organs exhibited periodic fluctuations, with a duration close to the length of a fruit growth cycle (about 70 days, from anthesis to harvest). Linear relationships were found between the fraction of dry mass and N in fruits, and those of the other organs. The slope of these relationships was considered as an indicator of the response and sensitivity of the organ growth to an increase in fruit load. The root dry mass fraction was the most affected by increases in fruit load (slope of -0.75), while the N fraction in roots and in leaves was affected to a similar extent (slope of -0.50 and of -0.40, respectively). We conclude that, in the sweet pepper, the cyclic pattern of fruit load induces opposite cyclic patterns of dry matter and N content in the other aerial organs as well as in the roots, thereby reflecting close shoot-root coordination in the allocation of carbon and nitrogen resources among the organs. Finally, we discuss the possible implications that could derive from these findings for modelling dry matter partitioning in plants subjected to continuous fruit harvesting.
Keywords: Plant nitrogen partitioning; Leaf nitrogen content; Fruit sink strength; Organs dry mass fraction; Organs nitrogen fraction; Functional equilibrium

Huseyin Celik, Mustafa Ozgen, Sedat Serce, Cemal Kaya, Phytochemical accumulation and antioxidant capacity at four maturity stages of cranberry fruit, Scientia Horticulturae, Volume 117, Issue 4, 18 August 2008, Pages 345-348, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.05.005.
(http://www.sciencedirect.com/science/article/B6TC3-4SW85HP-2/2/9f303944d9fc5211b7e74202476ba341)
Abstract:
Specific components of cranberry fruit are being associated with human health attributes, such as maintenance of urinary tract health and antioxidant status. Some of the chemical properties and antioxidant capacity of cranberry (Vaccinium macrocarpon Ait. cv. Pilgrim) fruits were investigated at light green, blush, light red and dark red maturation stages. Fruit total phenolics, total monomeric anthocyanins, soluble solids, titratable acidity and individual organic acids were examined. Antioxidant capacity of fruits were determined by both the ferric reducing antioxidant power (FRAP) and trolox equivalent antioxidant capacity (TEAC) assays. The fruit color was measured using a portable chromameter. A converse relationship was found between total phenolics and anthocyanin as fruits mature. Total phenolic concentration was declined from 7990 to 4745 mg GAE/kg fw, while total monomeric anthocyanin content was increased from 0.8 to 111.0 mg/kg fw from green to dark red stage. Brix was increased from 6 to 9.3% as well. The main organic acid was citric acid determined by the HPLC method. The antioxidant capacity of cranberries decreased to light red stage; when a fruit accumulates more anthocyanin the activity

increased again in both FRAP and TEAC methods. Averaged antioxidant capacity measured was 12.61 and 17.48 mmol TE/kg fw by FRAP and TEAC methods.
Keywords: Vaccinium macrocarpon L.; TEAC; FRAP; Organic acids; Anthocyanin; Phenolic

Jorge A. Pino, Oscar Queris, Differences of volatile constituents between unripe, partially ripe and ripe guayabita del pinar (Psidium salutare H.B.K.) fruit macerates, Food Chemistry, Volume 109, Issue 4, 15 August 2008, Pages 722-726, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.01.024.
(http://www.sciencedirect.com/science/article/B6T6R-4RMW9SF-2/2/578e0908c165431adac709d7802a0b6f)
Abstract:
The effect of the maturation stages on the volatile constituents of the guayabita del pinar (Psidium salutare H.B.K.) fruit macerates was investigated during three different stages (unripe, partially ripe and ripe). Volatile compounds were isolated by continuous liquid-liquid extraction with pentane and analyzed by means of GC-FID and GC-MS. In unripe fruit macerate the fruit volatiles were predominantly the mono- and sesquiterpenes. During maturation, levels of the mono- and sesquiterpenes decreased drastically in macerates, whereas levels of some esters (ethyl nicotinate, ethyl malate, ethyl 3-phenylpropanoate, pentyl benzoate, benzyl benzoate and ethyl cinnamates) and cinnamic acid increased significantly.
Keywords: Guayabita del pinar; Psidium salutare; Maturation; Macerate; Volatile compounds; GC-MS

Olfa Baccouri, Mokhtar Guerfel, Bechir Baccouri, Lorenzo Cerretani, Alessandra Bendini, Giovanni Lercker, Mokhtar Zarrouk, Douja Daoud Ben Miled, Chemical composition and oxidative stability of Tunisian monovarietal virgin olive oils with regard to fruit ripening, Food Chemistry, Volume 109, Issue 4, 15 August 2008, Pages 743-754, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.01.034.
(http://www.sciencedirect.com/science/article/B6T6R-4RR8YXY-1/2/493cd335f6d9d374a6a0f2b1ad8221f6)
Abstract:
The chemical composition of virgin olive oil may be influenced by genotype and different agronomic (i.e. fruit ripeness degree, water supply) and technological factors. This article reports the evaluation of the influence of the olive ripening stage on the quality indices, the major and the minor components and the oxidative stability of the two main monovarietal Tunisian cultivars (cvv. Chetoui and Chemlali) virgin olive oils. Moreover, the olives cv. Chetoui were tested in a rain-fed control and an irrigation regime. The oils sampled at five different ripeness stages were submitted to liquid chromatographic determination (HPLC-DAD/MSD) of their quali-quantitative phenolic and tocopherolic profiles. Moreover, the triacylglycerol and fatty acid compositions, and minor components such as squalene, pigments and their relation with the oil oxidative stability were evaluated. The tested oils showed very good correlation between the oxidative stability and the concentrations of total phenols, practically secoiridoids and [alpha]-tocopherol.
Keywords: Virgin olive oil; Tunisian varieties; Composition; Oxidative stability; Antioxidants; Ripening stage; Irrigation

Athanasios Moukas, Vasiliki Panagiotopoulou, Panagiota Markaki, Determination of patulin in fruit juices using HPLC-DAD and GC-MSD techniques, Food Chemistry, Volume 109, Issue 4, 15 August 2008, Pages 860-867, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.01.015.
(http://www.sciencedirect.com/science/article/B6T6R-4RMNYM1-3/2/d41114f4d1f369989ef6bfa376631147)
Abstract:

A high performance liquid chromatography with a diode-array detector (HPLC-DAD) and a gas chromatography with a mass spectrometer (GC-MSD) are described for the determination of patulin (PAT) in apple juice. The limits of detection (DL) and quantification (QL) for the HPLC-DAD and GC-MSD method were found to be (DL = 0.23 [mu]g kg-1 QL = 1.2 [mu]g kg-1) and (DL = 5.8 [mu]g kg-1 and QL = 13.8 [mu]g kg-1), respectively. The recovery factors for HPLC-DAD and GC-MSD were found to be 99.5% (RSD% = 0.73) and 41% (RSD% = 10.03), respectively. The HPLC-DAD method was used to determine the occurrence of PAT in 90 samples of fruit juices.
Results revealed the presence of PAT in 100% of the samples examined. The mean values of PAT in concentrated fruit juices and in the commercial fruit juices collected from the Greek market were found to be 10.54 [mu]g PAT kg-1 and 5.57 [mu]g PAT kg-1 juice, respectively. The most contaminated samples were four concentrated juices ranging from 18.10 [mu]g PAT kg-1 to 36.8 [mu]g PAT kg-1 juice. The daily exposure to patulin for the consumers of all ages in Greece, is ranging from 0.008 [mu]g PAT kg-1 bw to 0.1 [mu]g PAT kg-1 bw if the daily intake of fruit juices is from 0.1 to 0.5 kg. With the exception to the most contaminated sample, the daily exposure due to the samples examined, is below the provisional maximum tolerable daily intake for PAT (0.4 [mu]g PAT kg-1 bw).
Keywords: HPLC-DAD; GC-MSD; Patulin; Fruit juices; Risk assessment

Kurt A. Reynertson, Hui Yang, Bei Jiang, Margaret J. Basile, Edward J. Kennelly, Quantitative analysis of antiradical phenolic constituents from fourteen edible Myrtaceae fruits, Food Chemistry, Volume 109, Issue 4, 15 August 2008, Pages 883-890, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.01.021.
(http://www.sciencedirect.com/science/article/B6T6R-4RMNYM1-9/2/50b7b40f20fc98d06aacf6e3af100a46)
Abstract:
Many species of Myrtaceae are cultivated in home gardens throughout the tropics for their edible fruit, and have been used in traditional medicine to treat several inflammatory conditions. Fruit phenolics are important dietary antioxidant and anti-inflammatory constituents. We have investigated the antiradical activity, total phenolic content (TPC), and total anthocyanin content (TAC) of 14 underutilized Myrtaceae fruits, namely Eugenia aggregata, E. brasiliensis, E. luschnathiana, E. reinwardtiana, Myrciaria cauliflora, M. dubia, M. vexator, Syzygium cumini, S. curranii, S. jambos, S. javanicum, S. malaccense, S. samarangense, and S. samarangense var. Taiwan pink. An HPLC-PDA method was developed to quantify the amounts of cyanidin 3-glucoside (1), delphinidin 3-glucoside (2), ellagic acid (3), kaempferol (4), myricetin (5), quercetin (6), quercitrin (7), and rutin (8) present in MeOH extracts of the fruit. TPC ranged from 3.57 to 101 mg/g, TAC ranged from undetectable to 12.1 mg/g, and antiradical activity, measured as DPPH[dot above] IC50, ranged from very active (19.4 [mu]g/ml) to inactive (389 [mu]g/ml).
Keywords: HPLC-PDA; Quantitative analysis; Myrtaceae; Myrciaria; Eugenia; Syzygium; Antioxidant; Flavonoid; Anthocyanin; Folin-Ciocalteu; DPPH; Polyphenolic

Xiaoli Liu, Chun Cui, Mouming Zhao, Jinshui Wang, Wei Luo, Bao Yang, Yueming Jiang, Identification of phenolics in the fruit of emblica (Phyllanthus emblica L.) and their antioxidant activities, Food Chemistry, Volume 109, Issue 4, 15 August 2008, Pages 909-915, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.01.071.
(http://www.sciencedirect.com/science/article/B6T6R-4RV7YKY-1/2/909d1487528df69c89cfde8c5119abc9)
Abstract:
An activity-directed fractionation and purification process was used to identify the antioxidative components of emblica fruit. Dried fruit of emblica was extracted with methanol and then partitioned by ethyl ether, ethyl acetate, butanol and water. The ethyl acetate fraction showed the strongest 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity among four fractions.

The ethyl acetate fraction was then subjected to separation and purification using Sephadex LH-20 chromatography and reverse-phase high-performance liquid chromatography (HPLC). Six compounds were identified to be geraniin (1), quercetin 3-[beta]-d-glucopyranoside (2), kaempferol 3-[beta]-d-glucopyranoside (3), isocorilagin (4), quercetin (5), and kaempferol (6), respectively, by spectral methods, 1H and 13C nuclear magnetic resonance (NMR) spectroscopy, ultraviolet-visible (UV-Vis) spectrophotometry and mass spectroscopy (MS), and comparison with literatures. Compounds 2-4 and 6 were identified from emblica fruit for the first time. Furthermore, the antioxidant activities of purified compounds were screened for their antioxidative potential using lipid peroxidation and DPPH systems. All the purified compounds showed strong antioxidant and radical scavenging activities. Amongst, geraniin showed the highest antioxidant activity (4.7 and 65.7 [mu]M of IC50 values for DPPH and lipid peroxidation assay, respectively) than other purified compounds.
Keywords: Phyllanthus emblica L.; Phenolic; Antioxidatant activity; Identification

B. Guijarro, P. Melgarejo, A. De Cal, Influence of additives on adhesion of Penicillium frequentans conidia to peach fruit surfaces and relationship to the biocontrol of brown rot caused by Monilinia laxa, International Journal of Food Microbiology, Volume 126, Issues 1-2, 15 August 2008, Pages 24-29, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2008.04.018.
(http://www.sciencedirect.com/science/article/B6T7K-4SDPX40-2/2/7ca181e645ff04be1ba497976ba50693)
Abstract:
Additives, such as sucrose, d-sorbitol, glycerol, sodium alginate, carboxymethyl cellulose, silica gel, gelatine, non-fat skimmed milk and a commercial adhesive were added to conidia of Penicillium frequentans at two different points in the production process of the formulation of this fungus to improve conidial adhesion. Conidial adhesion was estimated as the number of P. frequentans conidia (no. conidia cm- 2) and colony-forming units of P. frequentans per unit area (cfu cm- 2) that adhered to glass slides or to peach surfaces. The P. frequentans conidial concentration had a significant effect on conidial adhesion, while the shelf life of conidia did not have any effect. The highest adhesion of P. frequentans conidia to glass slides was observed when conidial concentrations were greater than 106 conidia ml- 1. P. frequentans conidial adhesion was improved when 1.5% sodium alginate or 1.5% carboxymethyl cellulose were added to the conidial mass obtained after production and before drying by the fluid bed drying process. Conidial adhesion was also enhanced when 1.5% sodium alginate, 1.5% carboxymethyl, or 1.5% gelatine were added to conidia after fluid bed drying. P. frequentans formulations with 1.5% sodium alginate or 1.5% carboxymethyl cellulose were more effective in reducing brown rot caused by Monilinia laxa than dried P. frequentans conidia alone. Our results show that additives can improve adhesion of P. frequentans conidia to fruit surfaces, resulting in more effective control of brown rot in peaches.
Keywords: Biofungicide; Biological agent; Biological control; Formulation; Stone fruit

Xiangbin Xu, Guozheng Qin, Shiping Tian, Effect of microbial biocontrol agents on alleviating oxidative damage of peach fruit subjected to fungal pathogen, International Journal of Food Microbiology, Volume 126, Issues 1-2, 15 August 2008, Pages 153-158, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2008.05.019.
(http://www.sciencedirect.com/science/article/B6T7K-4SK62R9-1/2/86e65a10581e39666fd60071cb9ac792)
Abstract:
Levels of protein carbonylation in peach fruits inoculated with four antagonistic yeasts (Pichia membranaefaciens, Cryptococcus laurentii, Candida guilliermondii and Rhodotorula glutinis) were significantly reduced in response to reactive oxygen species (ROS) caused by Monilinia fructicola. In control fruit without yeast treatments, proteins carbonylation obviously increased after

inoculation with M. fructicola, ranging from molecular mass 20 to 120 kDa. However, in yeast-treated fruits, no proteins carbonylation was detected at 1 d, only a small quantity of carbonylation ranging from 28.5 to 45 kDa was found at 2 d. Antagonistic yeasts significantly stimulated the activities of chitinase, [beta]-1,3-glucanase, catalase (CAT), peroxidase (POD) and the expressions of relevant genes during all storage periods. These results suggest that yeast treatments may be related to alleviating proteins carbonylation and mitigating pathogen-induced oxidative damage, which result in decrease of fruit decay and imply that antioxidant defense response may be involved in the mechanisms of microbial biocontrol agents against fungal pathogen.
Keywords: Antagonistic yeast; Postharvest diseases; Peach fruits; Antioxidant defense; Protein carbonylation; Biocontrol

Shifeng Cao, Yonghua Zheng, Shuangshuang Tang, Kaituo Wang, Improved control of anthracnose rot in loquat fruit by a combination treatment of Pichia membranifaciens with CaCl2, International Journal of Food Microbiology, Volume 126, Issues 1-2, 15 August 2008, Pages 216-220, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2008.05.026.
(http://www.sciencedirect.com/science/article/B6T7K-4SM1T89-1/2/c08c95c9f031a5d9fd56644f107abb5f)
Abstract:
The beneficial effect of 2% CaCl2 (w/v) on the antagonistic yeast Pichia membranifaciens for control of anthracnose rot caused by Colletotrichum acutatum in postharvest loquat fruit (Eriobotrya japonica L.) and the possible mechanisms involved were investigated. The results showed that treatment with P. membranifaciens at 1 x 108 CFU ml- 1 or 2% CaCl2 alone both resulted in significantly smaller lesion diameter and lower disease incidence of anthracnose rot on loquat fruit wounds compared with the controls. The biocontrol activity of P. membranifaciens on the disease was enhanced by the addition of 2% CaCl2, the combined treatment of P. membranifaciens with CaCl2 resulted in a remarkably improved control of the disease in comparison with the treatment of P. membranifaciens or CaCl2 alone. P. membranifaciens in combination with CaCl2 induced higher activities of two defense-related enzymes chitinase and [beta]-1,3-glucanase in loquat fruit than applying the yeast or CaCl2 alone. The in vitro experiment showed that the addition of 2% CaCl2 in the suspensions of P. membranifaciens significantly inhibited spore germination and germ tube elongation of C. acutatum than the yeast or CaCl2 alone. However, adding CaCl2 did not significantly influence the population of P. membranifaciens in NYDB medium or fruit wounds. These results suggest that CaCl2 could improve the biocontrol activity of P. membranifaciens on anthracnose rot in loquat fruit. It is postulated that the improved control of the disease is directly because of the higher inhibitory effect on pathogen growth and indirectly because of the enhanced disease resistance in loquat fruit by the combination treatment.
Keywords: Biological control; Pichia membranifaciens; Loquat fruit; CaCl2; Anthracnose rot

C.A. Uchima, M.F.P.M. de Castro, C.R. Gallo, A.C.B. Rezende, E.R. Benato, A.L. Penteado, Incidence and growth of Listeria monocytogenes in persimmon (Diospyros kaki) fruit, International Journal of Food Microbiology, Volume 126, Issues 1-2, 15 August 2008, Pages 235-239, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2008.05.033.
(http://www.sciencedirect.com/science/article/B6T7K-4SMNXN6-5/2/c32c83aaa335d4178c69dae44b3c188d)
Abstract:
The incidence of Listeria monocytogenes on persimmon (Diospyros kaki) surface of `Fuyu' and `Rama Forte' was evaluated during a 5-month-period (from March to July) of two seasons periods (years 2005 and 2006). The fruits were collected in wholesale and street markets and retail in Sao Paulo and Campinas City, Brazil. A total of 582 fruits were analyzed using the Bax(R) System which is based on the Polymerase Chain Reaction. The ability of this pathogen to grow on the peel

and pulp of the two persimmon varieties was also verified at different incubation periods at the temperatures of 10, 20 and 30 [degree sign]C. The growth parameters were obtained by modeling the experimental data using the Gompertz function. The incidence survey showed the absence of L. monocytogenes. The growth curves showed that L. monocytogenes can grow on the peel as well as in the pulp of the two persimmon varieties studied incubated at 10, 20 and 30 [degree sign]C and that low temperatures can reduce the generation rate but does not inhibit its growth.
Keywords: Persimmon fruit; Listeria monocytogenes; Growth modeling; Food safety

Christian Mertz, Anne-Laure Gancel, Ziya Gunata, Pascaline Alter, Claudie Dhuique-Mayer, Fabrice Vaillant, Ana Mercedes Perez, Jenny Ruales, Pierre Brat, Phenolic compounds, carotenoids and antioxidant activity of three tropical fruits, Journal of Food Composition and Analysis, In Press, Corrected Proof, Available online 14 August 2008, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.06.008.
(http://www.sciencedirect.com/science/article/B6WJH-4T7087F-2/2/cf8ca131a699ea2cf8e1424a73318237)
Abstract:
Major compounds (i.e. phenolic compounds and carotenoids) were analysed in the extracts of the edible part of three tropical fruits: the Andean blackberry, the naranjilla and the tree tomato. Ellagitannins and anthocyanins were predominant in blackberries and phenolic composition can be used to differentiate the two species studied. Similar phenolic composition occurred in red and yellow tree tomato except for anthocyanins which were absent in the yellow tree tomato. Phenolic acids were detected in the naranjilla pulp. Carotenoids were analysed in the fruits. The composition in carotenoids was similar in the two varieties of tree tomato and their vitamin A activity was calculated. Carotenol fatty acid esters were predominant. [beta]-Cryptoxanthin esters and [beta]-carotene were the major carotenoids. The carotenoid content was high compared to literature data, providing an important high vitamin A activity. In blackberries and naranjilla, this class of compounds was found only at trace level. Finally, ORAC values were estimated in different solvent extracts and results were compared with published data in common fruits.
Keywords: Solanum quitoense; Solanum betaceum; Rubus glaucus; Rubus adenotrichus; Phenolic compounds; Carotenoids; HPLC-MS; ORAC; Food composition; Food analysis

Ting Yu, Hongyin Zhang, Xiaoling Li, Xiaodong Zheng, Biocontrol of Botrytis cinerea in apple fruit by Cryptococcus laurentii and indole-3-acetic acid, Biological Control, Volume 46, Issue 2, August 2008, Pages 171-177, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2008.04.008.
(http://www.sciencedirect.com/science/article/B6WBP-4S9P5PV-4/2/c304726248e791d749c1e300bb29ab3c)
Abstract:
This study evaluated the effect of a yeast antagonist Cryptococcus laurentii and a plant regulator indole-3-acetic acid (IAA) on inhibition of Botrytis cinerea infection in harvested apple fruit. The results showed that the combined treatment with C. laurentii and IAA at 20 [mu]g/ml was a more effective approach to reduce the gray mold rot in apple wounds than the C. laurentii alone. After 4 days of incubation, gray mold incidence in the combined treatment with C. laurentii and IAA was about 18%, which was a 50% reduction in incidence compared to the treatment with C. laurentii alone. Although IAA had no direct antifungal activity against B. cinerea infection when the time interval between IAA treatment and pathogen inoculation was within 2 h, application of IAA strongly reduced gray mold infection when IAA was applied 24 h prior to inoculation with B. cinerea in apple fruit wounds. Moreover, combination of IAA and C. laurentii stimulated the activities of superoxide dismutase, catalase and peroxidase with above 1.5-fold higher than that treatment with C. laurentii alone at 48 h. Therefore, combination of C. laurentii with IAA, which integrated the dual biological activity from the antagonistic yeast and plant regulator, might be developed to be a useful approach to control gray mold in harvested apple fruit.

Keywords: Apple; Biocontrol; Cryptococcus laurentii; Gray mold; Indole-3-acetic acid; Postharvest

Dionisio G. Alvindia, Keiko T. Natsuaki, Evaluation of fungal epiphytes isolated from banana fruit surfaces for biocontrol of banana crown rot disease, Crop Protection, Volume 27, Issue 8, August 2008, Pages 1200-1207, ISSN 0261-2194, DOI: 10.1016/j.cropro.2008.02.007.
(http://www.sciencedirect.com/science/article/B6T5T-4S80CMK-1/2/a3f15bd3a455b6b963f6f3815c6ff1fe)
Abstract:
Fungi isolated from the surface of banana fruits were evaluated for in vitro antagonism towards Lasiodiplodia theobromae. Thirteen fungi exhibiting pronounced growth inhibition of test pathogens were further tested for antibiosis against Thielaviopsis paradoxa, Colletotrichum musae, and Fusarium verticillioides. Clonostachys byssicola, Curvularia pallescens, Penicillium oxalicum, and Trichoderma harzianum were antagonistic to all test pathogens. Inhibition by C. pallescens and P. oxalicum to pathogens was at a distance, while C. byssicola and T. harzianum directly parasitized and killed the pathogens. The metabolites of C. byssicola, C. pallescens, and T. harzianum significantly affected the mycelial growth and conidial germination of the pathogens. In the artificial inoculation study, the antagonists survived and colonized banana fruits after 3 d. Interfungal parasitic relationship was observed between the antagonist and pathogen on artificial media and natural substrate. Postharvest application in the packing house showed that the incidence of crown rot in antagonist-treated banana was significantly lower when compared to fungicide and untreated control fruits.
Keywords: Native fungal epiphytes; Banana crown rot-causing pathogens; Clonostachys byssicola; Curvularia pallescens; Penicillium oxalicum; Trichoderma harzianum

Alejandro David Rodarte Castrejon, Ines Eichholz, Sascha Rohn, Lothar W. Kroh, Susanne Huyskens-Keil, Phenolic profile and antioxidant activity of highbush blueberry (Vaccinium corymbosum L.) during fruit maturation and ripening, Food Chemistry, Volume 109, Issue 3, 1 August 2008, Pages 564-572, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.01.007.
(http://www.sciencedirect.com/science/article/B6T6R-4RM7N41-2/2/26c501d516b921b0b13b3f3f92a07a01)
Abstract:
The phenolic profile and quantitative composition of blueberries as well as the corresponding antioxidant activity of blueberries is well documented. Unfortunately, little is reported on the development of phenolic compounds and antioxidant activity during fruit maturation and ripening. In the present study, the total phenolic content and main phenolic compounds of four highbush blueberry cultivars (Vaccinium corymbosum L.) were analyzed at five stages of maturation and ripening. Antioxidant activity was screened with electron spin resonance spectrometry and trolox equivalent antioxidant capacity (TEAC) assay. An adequate picture of phenolic compounds developed during maturation and ripening was determined using HPLC-DAD. Anthocyanins of all varieties increased during successive harvest stages; meanwhile flavonols and hydroxycinnamic acids decreased from unripe green to ripe blue stage of berry ripening. Blueberry antioxidant activity, as well as total phenolic content tended to decrease during ripening.
Keywords: Highbush blueberry; Anthocyanins; Flavonols; Hydroxycinnamic acids; Antioxidant activity; Electron spin resonance spectrometry

J.M. Laparra, A. Alegria, R. Barbera, R. Farre, Antioxidant effect of casein phosphopeptides compared with fruit beverages supplemented with skimmed milk against H2O2-induced oxidative stress in Caco-2 cells, Food Research International, Volume 41, Issue 7, August 2008, Pages 773-779, ISSN 0963-9969, DOI: 10.1016/j.foodres.2008.06.002.
(http://www.sciencedirect.com/science/article/B6T6V-4SSG4SK-1/2/edd3d6e738aca8a98f6c45490ca32c0d)

Abstract:
Casein phosphopeptides (CPPs) have been proposed as potential dietary antioxidants on designing new functional products. A fruit beverage, with/without milk, was subjected to in vitro digestion. Caco-2 cultures were preincubated with soluble fractions or isolated CPPs, the latter obtained from skimmed milk. The mitochondrial activities (MTT test), intracellular GSH and GSH-reductase activity (GSH-Rd), cell cycle analysis and RNA distribution in cycle phases were studied after inducing oxidative stress status (5 mM $H_2O_2$). MTT conversion was better preserved by soluble fractions of fruit beverages, either with or without milk. GSH concentration was equally decreased, and GSH-Rd was increased in all preincubations. However, failed to inhibit a decreased G1 cell population. CPPs produced RNA accumulation in the G2 phase, suggesting a modulating effect on cell response. We can postulate an antioxidant effect derived from dietary CPPs on a biological system which can be synergistic with other antioxidant compounds derived from fruit beverage.
Keywords: Casein phosphopeptides; Oxidative stress; Caco-2; Fruit beverage; Milk

Chintan Patel, Paresh Dadhaniya, Lal Hingorani, M.G. Soni, Safety assessment of pomegranate fruit extract: Acute and subchronic toxicity studies, Food and Chemical Toxicology, Volume 46, Issue 8, August 2008, Pages 2728-2735, ISSN 0278-6915, DOI: 10.1016/j.fct.2008.04.035.
(http://www.sciencedirect.com/science/article/B6T6P-4SF307Y-2/2/dc274a2a988a61d2a877ad99d0b8a75d)
Abstract:
Pomegranate (Punica granatum L.) fruit is widely consumed as fresh fruit and juice. Because of its potential for health benefits, pomegranate fruit extracts have been commonly marketed as dietary supplements in recent years. The objective of the present study was to investigate potential adverse effects, if any, of a standardized pomegranate fruit extract in rats following subchronic administration. The extract was standardized to 30% punicalagins, the active anomeric ellagitannins responsible for over 50% of the antioxidant potential of the juice. The oral LD50 of the extract in rats and mice was found to be greater than 5 g/kg body weight. The intraperitoneal LD50 in rats and mice was determined as 217 and 187 mg/kg body weight, respectively. In the subchronic study, Wistar strain rats (10/sex/group) were administered via gavage 0 (control), 60, 240 and 600 mg/kg body weight/day of the extract for 90 days. Two additional groups received 0 and 600 mg/kg/day of the extract for 90 days, followed by a 28 day recovery phase. Compared to the control group, administration of the extract did not result in any toxicologically significant treatment-related changes in clinical observations, ophthalmic examinations, body weights, body weight gains, feed consumption, clinical pathology evaluations and organ weights. The hematology and serum chemistry parameters that showed statistical significant changes compared to control group were within the normal laboratory limits and were considered as biological variations and not the toxic effect of the extract. Terminal necropsy did not reveal any treatment-related gross or histopathology findings. Based on the results of this study, the no observed-adverse-effect level (NOAEL) for this standardized pomegranate fruit extract was determined as 600 mg/kg body weight/day, the highest dose tested.
Keywords: Pomegranate extract; Food ingredient; Safety; Toxicity; Punicalagins

M.D. Arbo, E.R. Larentis, V.M. Linck, A.L. Aboy, A.L. Pimentel, A.T. Henriques, E. Dallegrave, S.C. Garcia, M.B. Leal, R.P. Limberger, Concentrations of p-synephrine in fruits and leaves of Citrus species (Rutaceae) and the acute toxicity testing of Citrus aurantium extract and p-synephrine, Food and Chemical Toxicology, Volume 46, Issue 8, August 2008, Pages 2770-2775, ISSN 0278-6915, DOI: 10.1016/j.fct.2008.04.037.
(http://www.sciencedirect.com/science/article/B6T6P-4SF307Y-3/2/cbfe8759fddf956d9323a09e438167e8)
Abstract:

Dietary supplements containing bitter orange unripe fruit extract/p-synephrine are consumed worldwide for lose weight. This study were conducted to determine the concentration of p-synephrine in unripe fruits and leaves from Citrus aurantium Lin, C. sinensis Osbeck, C. deliciosa Ten, C. limon Burm and C. limonia Osbeck, collected in Southern Brazil, and to evaluate the acute toxicity of C. aurantium extract and p-synephrine. A high performance liquid chromatographic method with diode array detector (HPLC-DAD) was optimized and validated for determination of p-synephrine. The results indicate that all of analyzed samples present p-synephrine in amounts that range from 0.012% to 0.099% in the unripe fruits and 0.029 to 0.438% in the leaves. Acute oral administration of C. aurantium extracts (2.5% p-synephrine, 300-5000 mg/kg) in mice produced reduction of locomotor activity, p-synephrine (150-2000 mg/kg) produced piloerection, gasping, salivation, exophtalmia and reduction in locomotor activity, which was confirmed in spontaneous locomotor activity test. All the effects were reversible and persisted for 3-4 h. The toxic effects observed seem to be related with adrenergic stimulation and should alert for possible side effects of p-synephrine and C. aurantium.
Keywords: Synephrine; Citrus; Rutaceae; Acute toxicity

Maria D. Raigon, Jaime Prohens, Julio E. Munoz-Falcon, Fernando Nuez, Comparison of eggplant landraces and commercial varieties for fruit content of phenolics, minerals, dry matter and protein, Journal of Food Composition and Analysis, Volume 21, Issue 5, August 2008, Pages 370-376, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.03.006.
(http://www.sciencedirect.com/science/article/B6WJH-4SDPX6D-7/2/66aa1d825dc7d71e676d0d8e189dc2f3)
Abstract:
Development of eggplant (Solanum melongena) varieties with an improved content in phenolics and nutritionally relevant minerals in the fruit is an increasingly important breeding objective. We analyzed several proximate composition traits (dry matter and protein content), content in phenolics, and eight minerals (P, K, Ca, Mg, Na, Fe, Cu, and Zn) in 31 varieties of eggplant from three different varietal groups (commercial varieties, landraces, and hybrids between the landraces). Considerable differences in the composition among varieties were detected in all the traits studied, with relative differences between the lowest and highest values of 42.9% for dry matter and 156.3% for Ca. Results show that eggplant provides relevant quantities of phenolics, P, K, and Cu to the diet, with global mean values of 48.26 mg/100 g, 26.6 mg/100 g, 198.5 mg/100 g, and 0.062 mg/100 g of fresh weight, respectively. Landraces had, as a mean, higher contents in phenolics (16.4%), P (34.6%), and Zn (30.0%) than commercial varieties. Positive mean heterosis was detected for dry matter content (8.4%) and Na concentration (12.1%), and negative mean heterosis for P (-16.0%), K (-5.5%), and Ca (-38.5%) concentrations. Mean heterosis was not significant for the content in phenolics, although positive values were found for some individual hybrids. Contents in dry matter, protein and the main macrominerals were positively correlated. Also, positive correlations between mid-parent and hybrid values were found for dry matter (r=0.596), P (r=0.658) and K (r=0.599). The results obtained indicate that there is ample variation within eggplant for composition traits and this can be exploited for the selection of varieties with nutritionally improved characteristics. In this respect, we have identified several landraces with high nutritional quality.
Keywords: Breeding; Hybrids; Landraces; Minerals; Phenolics; Selection; Solanum melongena

Chih-Yao Hou, Yeong-Shenn Lin, Yuh Tai Wang, Chii-Ming Jiang, Ming-Chang Wu, Effect of storage conditions on methanol content of fruit and vegetable juices, Journal of Food Composition and Analysis, Volume 21, Issue 5, August 2008, Pages 410-415, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.04.004.
(http://www.sciencedirect.com/science/article/B6WJH-4SDPX6D-C/2/24ae2ed1ec77c4bea90bfbbb6ad83f9e)

Abstract:
Methanol contents of fresh squeezed juices from 10 fruits and 5 vegetables were determined and the relation of methanol release from stored juices on the physico-chemical properties including degree of esterification (DE), total pectin content, pH value, titratable acidity and the hydrolytic activities of pectinesterase (PE), polygalacturonase (PG), cellulase (CE) and pectate lyase (PAL) of fresh squeezed juices were investigated. The range of methanol content in fresh squeezed juices of fruits and vegetables were 1.14-6.77 and 2.04-10.92 mg/100 mL, respectively, but increased to 1.13-14.82 and 4.73-24.08 mg/100 mL after 3 h storage. In most of the juices, the increase of methanol content was significant ($p<0.05$) after 3 h storage, except grape (4 and 30 [degree sign]C), guava (4 [degree sign]C), lemon (4 and 30 [degree sign]C), and star fruit (4 [degree sign]C). The methanol levels above 10 mg/100 mL (the given limit of alcoholic beverages) were found in fresh tomato juices (squeezed and stored) and several other stored juices including pea shoot juices (after 60 min storage), star fruit juices (after 180 min storage), papaya juices (after 180 min storage), pineapple juices (after 180 min storage) and Valencia orange (after 30 min storage), and alfalfa sprout juices (after 60 and 120 min storages for 4 and 30 [degree sign]C, respectively). After analyzing with multiple regressions, methanol release was positively associated with enzyme activities of PE and PAL, while negatively associated with total pectin content in fruit juices. In vegetable juices, methanol release was positively associated with PE activity, pH value and titratable acidity, while negatively associated with PG activity.
Keywords: Methanol; Fruit; Vegetable; Juice; Storage; Food safety and quality; Methanol safety limit; Taiwan; Food composition; Food analysis

Sanjay Sarang, Sudhir K. Sastry, Lynn Knipe, Electrical conductivity of fruits and meats during ohmic heating, Journal of Food Engineering, Volume 87, Issue 3, August 2008, Pages 351-356, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.12.012.
(http://www.sciencedirect.com/science/article/B6T8J-4RPKYG5-1/2/f8078e311d9988f6a7a04c5e2a829479)
Abstract:
The design of effective ohmic heaters depends on the electrical conductivity of foods. Electrical conductivities of six different fresh fruits (red apple, golden apple, peach, pear, pineapple and strawberry) and several different cuts of three types of meat (chicken, pork and beef) were determined from room temperature through to the sterilization temperature range (25-140 [degree sign]C). In all cases, conductivities increased linearly with temperature. In general, fruits were less conductive than meat samples. Within fruits, peach and strawberry were more conductive than apples, pear, and pineapple. Conductivity measurements of meat cuts showed that lean is much more conductive than fat. The fat content of all lean muscle cuts was measured, and no strong relationship was observed between the electrical conductivity and the fat content of lean muscle.
Keywords: Ohmic heating; Electrical conductivity; Solids; Fruit; Meat; Fat

L. Ruiz-Garcia, P. Barreiro, J.I. Robla, Performance of ZigBee-Based wireless sensor nodes for real-time monitoring of fruit logistics, Journal of Food Engineering, Volume 87, Issue 3, August 2008, Pages 405-415, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.12.033.
(http://www.sciencedirect.com/science/article/B6T8J-4RM1KMG-1/2/f0c7c53821ab84b185dfda26fdf34398)
Abstract:
Progress in fruit logistics requires an increasing number of measurements to be performed in refrigerated chambers and during transport. Wireless sensor networks (WSN) are a promising solution in this field. This paper explores the potential of wireless sensor technology for monitoring fruit storage and transport conditions. It focuses in particular on ZigBee technology with special regard to two different commercial modules (Xbow and Xbee). The main contributions of the paper relate to the analysis of battery life under cooling conditions and the evaluation of the reliability of

communications and measurements. Psychrometric equations were used for quick assessment of changes in the absolute water content of air, allowing estimation of future water loss, and detection of condensation on the product.
Keywords: Perishable products; Postharvest; Information technologies; Motes; Cold chain

Randi L. Wolf, Stephen J. Lepore, Jonathan L. Vandergrift, Lindsay Wetmore-Arkader, Elizabeth McGinty, Gabriel Pietrzak, Amy L. Yaroch, Knowledge, Barriers, and Stage of Change as Correlates of Fruit and Vegetable Consumption among Urban and Mostly Immigrant Black Men, Journal of the American Dietetic Association, Volume 108, Issue 8, August 2008, Pages 1315-1322, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.05.011.
(http://www.sciencedirect.com/science/article/B758G-4T25TH5-9/2/a7e859b0f249e7737264e58239dc1387)
Abstract: Background
Daily fruit and vegetable consumption in black men is low and has remained relatively unchanged during the past 20 years.Objective
To examine awareness of fruit and vegetable recommendations promoted by federal agencies and correlates of fruit and vegetable consumption among an urban and mostly immigrant population of adult black men.Design
A cross-sectional study analyzing baseline data (n=490) from a randomized controlled trial.Setting
A large health care worker's union.Main outcome measures
Knowledge, perceived benefits, stage of readiness, perceived barriers, and daily servings of fruit and vegetable intake.Statistical analyses performed
One-way analysis of variance and t tests were used to compare fruit and vegetable intake across main study variables. Regression analysis was used to identify independent predictors of fruit and vegetable intake.Results
Fruit and vegetable intake was low (mean was three servings/day). Ninety-four percent were not aware that men should consume at least nine servings of fruits and vegetables daily and 59.8% were not aware that eating a colorful variety is important. In contrast, over half (54.7%) were aware that a single serving is equal to about a handful; 94.1% correctly reported fruit and vegetables as an important source of fiber; 79.6% correctly reported vitamin pills were not a substitute for eating fruits and vegetables; and 94.5% recognized that there are health benefits to eating fruits and vegetables, although identification of specific benefits was minimal. In regression analysis, a greater level of fruit and vegetable consumption was significantly associated with greater knowledge of fruit and vegetable recommendations, lower perceived barriers, and a more advanced stage of change (action vs contemplation/preparation). Perceived health benefits were not associated with fruit and vegetable consumption.Conclusions
There is a lack of awareness of the current fruit and vegetable recommendations. In addition, men reported fruit and vegetable intakes that were far below national recommendations. Greater efforts are needed to help urban and primarily immigrant black men realize the importance of and recommendations for fruit and vegetable consumption.

Youngjae Shin, Jung-A. Ryu, Rui Hai Liu, Jacqueline F. Nock, Christopher B. Watkins, Harvest maturity, storage temperature and relative humidity affect fruit quality, antioxidant contents and activity, and inhibition of cell proliferation of strawberry fruit, Postharvest Biology and Technology, Volume 49, Issue 2, August 2008, Pages 201-209, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.02.008.
(http://www.sciencedirect.com/science/article/B6TBJ-4S69H56-1/2/619c691f28b63a6d8745d1a12055af27)
Abstract:
The physical qualities, antioxidant content and activity, and antiproliferation activity of `Jewel' strawberry fruit that were harvested at the white tip and red ripe maturity stages and stored in 65

or 95% relative humidity (RH) at 3 and 10 [degree sign]C for 12 d were studied. Overall quality and firmness of fruit harvested at the red ripe stage declined more rapidly than at the white tip stage, and decreased more rapidly at 10 [degree sign]C than at 3 [degree sign]C in fruit of both maturity stages. RH did not affect fruit quality in any treatment. Lightness (L*) and hue angle decreased, and anthocyanin concentrations increased, more rapidly at 10 [degree sign]C than at 3 [degree sign]C in the white tip fruit. The L* of red ripe fruit decreased by day 3 and was maintained during the rest of the storage time. The initial anthocyanin concentrations of red ripe fruit were about five times greater than that in white tip fruit and declined during the storage. Total flavonoid and phenolic concentrations, and total antioxidant activity of fruit harvested at the white tip stage were greater than those harvested at the red ripe stage. These differences were maintained during the storage, except for red ripe fruit, where concentrations and activity decreased rapidly by day 12 in fruit stored at 10 [degree sign]C, especially at 95% RH. Total ascorbic acid concentrations of white tip fruit were lower than in red ripe fruit at harvest, but increased slightly over time, while those in red ripe fruit were relatively stable until they decreased at 10 [degree sign]C at 12 d. Overall changes of total antioxidant activity were similar to those of total flavonoid and total phenolic concentrations, but not anthocyanin or ascorbic acid concentrations. Fruit quality was correlated with firmness and color attributes as well as with total flavonoid and phenolic concentrations and with antioxidant activity. A 50 g L-1 concentration of strawberry extracts inhibited HepG2 human liver cancer cell proliferation by approximately 80%. The EC50 of antiproliferative activity of strawberry fruit value was not affected by the maturity stage at harvest or by storage temperature.
Keywords: Strawberry; Fragaria x ananassa Duch.; Storage; Maturity; Quality; Ascorbic acid; Phenolic; Flavonoid; Anthocyanin; Antioxidant activity; HepG2 liver cells; Antiproliferation activity

Carlos R. Figueroa, Paula Pimentel, Carlos Gaete-Eastman, Mario Moya, Raul Herrera, Peter D.S. Caligari, Maria Alejandra Moya-Leon, Softening rate of the Chilean strawberry (Fragaria chiloensis) fruit reflects the expression of polygalacturonase and pectate lyase genes, Postharvest Biology and Technology, Volume 49, Issue 2, August 2008, Pages 210-220, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.01.018.
(http://www.sciencedirect.com/science/article/B6TBJ-4S6GRN3-2/2/edcadffbf0e9d88b30d58876a743d5a5)
Abstract:
The Chilean strawberry (Fragaria chiloensis) is noted for its good fruit quality characters and is one of the wild parents of the commercial strawberry (Fragaria x ananassa). However, the fruit of the Chilean strawberry shows a higher level of softening than that of F. x ananassa, a factor that can affect its shelf-life and reduce its keeping quality. Fruit of both species were collected at different developmental and ripening times, and classified into four stages according to weight and color: stages 1 and 2 correspond to small, unripe and hard fruit, while stages 3 and 4 correspond to color-breaker and ripening fruit. Two full-length cDNAs were isolated from F. chiloensis, FcPG1 and FcPL1 encoding polygalacturonase (PG) and pectate lyase (PL) proteins, respectively. In F. chiloensis a considerable increase in PG transcripts was observed between stages 2 and 3, while a lower expression level was observed in F. x ananassa in the same developing stages. The expression pattern of PL in F. chiloensis revealed a gradual increment in the transcript level between stages 2 and 4, with a higher increment between stages 2 and 3 in F. x ananassa than in F. chiloensis. The increase in expression of both genes correlated well with the decrease in firmness observed in the fruit. The faster softening observed in F. chiloensis may result from the earlier and higher level expression of PG. In addition, Southern blot analyses showed that PG and PL genes belong to a multigene family in both species. This study highlights the participation of PG and PL during softening of F. chiloensis fruit, and gives an indication of target genes that can be used to help strawberry breeding programmes.
Keywords: Fruit ripening; Chilean strawberry; Softening; Cell wall degrading enzymes

Marie-Noelle Ducamp-Collin, Hassina Ramarson, Marc Lebrun, Guy Self, Max Reynes, Effect of citric acid and chitosan on maintaining red colouration of litchi fruit pericarp, Postharvest Biology and Technology, Volume 49, Issue 2, August 2008, Pages 241-246, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.01.009.
(http://www.sciencedirect.com/science/article/B6TBJ-4S80CS0-1/2/64095aa5dfece18a369d2ae824cc8901)
Abstract:
A postharvest treatment based on citric acid and chitosan was tested on two litchi cultivars of different provenance. Its effects on the activities of polyphenol oxidase (PPO), peroxidase (POD) and anthocyanase and on the anthocyanin content of the pericarp were measured as factors responsible for pericarp browning. The red colour of the pericarp was measured during storage of the fruit. The major anthocyanins present in both cultivars were cyanidin-3-rutinoside and cyanidin-3-glucoside. Although the concentration of cyanidin-3-rutinoside was 64% lower in the cultivar Kwai may (Guiwei) than in Wai chee (Huaizhi), this component represented more than 90% of total anthocyanins in both cultivars. The activity of PPO was six times greater in Kwai may than in Wai chee and the activity of POD was 30-times greater. The activity of POD was greater than that of PPO in both cultivars. The two cultivars, which differ in anthocyanin and oxidative enzyme compositions, responded differently to the acid and chitosan treatment, with the result that the red colour of Kwai may was better preserved during storage than that of Wai chee. This technique could be a future replacement for current sulphur treatments used to treat litchis transported by sea.
Keywords: Litchi chinensis Sonn.; Anthocyanins; Polyphenol oxidase (PPO); Peroxidase (POD); Browning

Edward Dintwa, Michael Van Zeebroeck, Herman Ramon, Engelbert Tijskens, Finite element analysis of the dynamic collision of apple fruit, Postharvest Biology and Technology, Volume 49, Issue 2, August 2008, Pages 260-276, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.01.012.
(http://www.sciencedirect.com/science/article/B6TBJ-4SDNK78-1/2/aa23fd9da28562a6715a7b914a620474)
Abstract:
Possible sources of modelling error in discrete element method simulations of postharvest bulk processes are discussed. Finite element models are used to analyse the dynamic process of the collision of apple fruit amongst each other or with rigid walls. The major objective was to use these models to investigate the collision of apples in conditions that closely resemble typical practical collision regimes of such fruit during unit operations such as transportation in trucks, sorting operations or any other handling operations. Specifically, information on the quantity of energy loss that can be attributed to the excitation of elastic waves within the body was assessed in isolation to energy dissipation due to the viscoelastic nature of the material. Viscous dissipation effects of the fruit collisions are also studied. In particular, an assessment of two different methods of determining the effective viscous coefficient for a collision involving two viscoelastic objects (namely, the sum of inverses method and the arithmetic mean method) is carried out. For soft and relatively large objects such as the apple, the absorption of dynamic waves excited during collisions can lead to substantial kinetic energy losses. Amount of energy loss is dependent on the elastic properties of the material, the geometrical size of the colliding objects as well as the collision velocity. The currently available techniques for obtaining the viscoelastic properties of fruit using the stress relaxation experiments are not suitable for providing the characterization needed to describe the very short term processes such as collisions. The arithmetic mean method advocated by some researchers to determine the effective viscous coefficient during the collision of objects of different viscous properties is not appropriate. A more theoretically accurate assessment of the problem is necessary.

Keywords: Discrete element method; Restitution coefficient; Dissipation; Viscoelasticity; Apple; Elastic waves

Shifeng Cao, Yonghua Zheng, Zhenfeng Yang, Shuangshuang Tang, Peng Jin, Kaituo Wang, Xiaomei Wang, Effect of methyl jasmonate on the inhibition of Colletotrichum acutatum infection in loquat fruit and the possible mechanisms, Postharvest Biology and Technology, Volume 49, Issue 2, August 2008, Pages 301-307, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.12.007.
(http://www.sciencedirect.com/science/article/B6TBJ-4S38BWR-1/2/663f4cf0f220b23be2b0f3da6ce1266c)
Abstract:
The effect of methyl jasmonate (MeJA) on reducing anthracnose rot caused by Colletotrichum acutatum infection in postharvest loquat fruit (Eriobotrya japonica L. cv. Jiefangzhong) and the possible mechanisms involved were investigated. Freshly harvested loquat fruit were treated with 10 [mu]mol/L MeJA at 20 [degree sign]C for 24 h. Both the treated and the untreated fruit were artificially wounded and inoculated with Colletotrichum acutatum spore suspension (1.0 x 105 spores/mL) 1 day after the treatment, and then incubated at 20 [degree sign]C for 6 days. Treatment of loquat fruit with MeJA resulted in significantly lower disease incidence and smaller lesion diameters than in control fruit. MeJA treatment significantly inhibited activities of catalase (CAT) and ascorbate peroxidase (APX) while superoxide dismutase (SOD) activity was not significantly affected in early infection, thus resulting in a higher level of H2O2 in the earlier period of incubation. The enhanced H2O2 generation by MeJA treatment might serve as a signal to induce resistance against C. acutatum infection. However, MeJA treatment inhibited the increase in phenylalanine ammonia-lyase (PAL), polyphenoloxidase (PPO) and peroxidase (POD) activities and lignin content, indicating that lignification is not the major defense mechanism against anthracnose rot in loquat fruit. The in vitro experiment showed that MeJA significantly inhibited spore germination, germ tube elongation and mycelial growth of C. acutatum. These results suggest that MeJA treatment can effectively inhibit anthracnose rot caused by C. acutatum in postharvest loquat fruit. It is postulated that the control of the disease is directly because of the inhibitory effect of MeJA on pathogen growth, and indirectly because of the induced disease resistance triggered by enhanced H2O2 levels.
Keywords: Loquat fruit; Methyl jasmonate; Anthracnose rot; Disease resistance

David L. Smith, Kenneth C. Gross, Bruce D. Whitaker, Analysis of softening in air- and ethylene-treated rin, nor and wild-type tomato fruit, Postharvest Biology and Technology, Volume 49, Issue 2, August 2008, Pages 314-317, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.02.010.
(http://www.sciencedirect.com/science/article/B6TBJ-4S69H56-3/2/02a7577819fc431e35d31179a57821ff)
Abstract:
Rin; ripening-inhibitor and nor; non-ripening are previously identified spontaneous mutations that affect the primary regulation of tomato fruit ripening. Mutations at these loci result in fruit that are either partially or completely inhibited in their ability to ripen. Internal and whole fruit firmness of air- and ethylene-treated wild-type fruit declined by 59-87%. Firmness of whole rin and nor fruit decreased slightly after 9 days of air-treatment and internal fruit firmness did not change. Ethylene-treated rin and nor whole fruit softened over 9 days, but substantially less than wild type. At harvest and after air or ethylene treatment, firmness was greater in nor than in rin fruit. Surprisingly, slices from ethylene-treated rin and nor fruit softened much more than whole fruit, and softening of slices was similar for fruit of rin and nor.
Keywords: Tomato fruit; Lycopersicon esculentum; Ripening; Softening; Ethylene; Non-ripening mutants

Niels Skovgaard, Charles L. Wilson, Editor, Intelligent and Active Packaging for Fruit and Vegetables, CRC Press (2007) xiiii + 336 pages, hardback, UK [pound sign] 179,95, ISBN 0849391660; www.crcpress.com., International Journal of Food Microbiology, Volume 125, Issue 3, 31 July 2008, Page 362, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2008.05.024.
(http://www.sciencedirect.com/science/article/B6T7K-4SKB37X-5/2/76a1bcc0991940c5b996ffb244452543)

Mallory Draye, Pierre Van Cutsem, Pectin methylesterases induce an abrupt increase of acidic pectin during strawberry fruit ripening, Journal of Plant Physiology, Volume 165, Issue 11, 31 July 2008, Pages 1152-1160, ISSN 0176-1617, DOI: 10.1016/j.jplph.2007.10.006.
(http://www.sciencedirect.com/science/article/B7GJ7-4RFD66P-3/2/86aeabd30944dfae85cc6a2744376cff)
Abstract: Summary
The decrease of strawberry (Fragariaxananassa Duch.) fruit firmness observed during ripening is partly attributed to pectolytic enzymes: polygalacturonases, pectate lyases and pectin methylesterases (PMEs). In this study, PME activity and pectin content and esterification degree were measured in cell walls from ripening fruits. Small green, large green, white, turning, red and over-ripe fruits from the Elsanta cultivar were analyzed. Using the 2F4 antibody directed against the calcium-induced egg box conformation of pectin, we show that calcium-bound acidic pectin was nearly absent from green and white fruits, but increased abruptly at the turning stage, while the total pectin content decreased only slightly as maturation proceeded. Isoelectrofocalisation performed on wall protein extracts revealed the expression of at least six different basic PME isoforms. Maximum PME activity was detected in green fruits and steadily decreased to reach a minimum in senescent fruits. The preliminary role of PMEs and subsequent pectin degradation by pectolytic enzymes is discussed.
Keywords: Egg box pectin; Fruit; Maturation; Pectin methylesterase; Strawberry

F.M. del Amor, A. Serrano-Martinez, M.I. Fortea, P. Legua, E. Nunez-Delicado, The effect of plant-associative bacteria (Azospirillum and Pantoea) on the fruit quality of sweet pepper under limited nitrogen supply, Scientia Horticulturae, Volume 117, Issue 3, 23 July 2008, Pages 191-196, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.04.006.
(http://www.sciencedirect.com/science/article/B6TC3-4SMF2HH-2/2/75655f6a3e340ab80b0ed27e2949560e)
Abstract:
This study investigates the influence of a commercial product, Biopron(R), consisting of the bacteria Azospirillum brasilense and Pantoea dispersa on sweet pepper fruits (Capsicum annuum L.) under limited N supply. When the N supply was reduced from 12 (control) to 7 mmol L-1, the concentration of total-N in the fruits was significantly reduced in both inoculated and non-inoculated plants. The N supply or inoculation did not affect the dry matter content or fruit firmness, but non-inoculated fruit with low N showed a decrease in pericarp thickness and a significant increase in the color parameter a* compared with the control. Under limited N, inoculation increased the concentration of citric, ascorbic and succinic acids in green fruit compared with non-inoculated fruit, which showed lower values than control fruit. At a later (yellow) stage of development, only succinic acid showed a response to inoculation. Fruit peroxidase (EC 1.11.1.7) activity in fruit of inoculated plants was lower than that observed for non-inoculated fruit grown at both high- and low-N. In contrast, in yellow fruit, total phenolic compounds were increased under N limitation, with no inoculation effect. Our study shows that the effect of plant associative bacteria is not directly related with the increased potential availability of nutrients for uptake, especially for fruit quality characteristics.
Keywords: Rhizobacteria; Biofertilizers; N efficiency; Color; Organic acids; Peroxidase; Phenolics; Soilless

Guiping Cheng, Xuewu Duan, John Shi, Wangjin Lu, Yunbo Luo, Weibo Jiang, Yueming Jiang, Effects of reactive oxygen species on cellular wall disassembly of banana fruit during ripening, Food Chemistry, Volume 109, Issue 2, 15 July 2008, Pages 319-324, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.12.041.
(http://www.sciencedirect.com/science/article/B6T6R-4RF45D6-9/2/733c878fc9ef0257b75a9693d2c31e86)
Abstract:
Fruit softening is generally attributed to cell wall disassembly. Experiments were conducted to investigate effects of various reactive oxygen species (ROS) on in vitro cellular wall disassembly of harvested banana fruit. The alcohol-extracted insoluble residue (AEIR) was obtained from the pulp tissues of banana fruit at various ripening stages and then used to examine the disassembly of cellular wall polysaccharides in the presence of superoxide anion (), hydrogen peroxide (H2O2) or hydroxyl radical (OH) and their scavengers. The presence of OH accelerated significantly disassembly of cellular wall polysaccharides in terms of the increase in contents of total sugars released and uronic acid, and the decrease in molecular mass of soluble polysaccharides, using gel permeation chromatography. However, the treatment with H2O2 or showed no significant effect on the disassembly of cellular wall polysaccharides. Furthermore, the degradation of the de-esterified AEIR was more susceptible to OH attack than the esterified AEIR. In addition, the effect of OH could be inhibited in the presence of OH scavenger. This study suggests that disassembly of cellular wall polysaccharides could be initiated by OH as the solublisation of the polysaccharides increased, which, in turn, accelerated fruit softening.
Keywords: Banana; Cellular wall disassembly; Fruit; Polysaccharides; Reactive oxygen species

Anne Guillemin, Fabienne Guillon, Pascal Degraeve, Corinne Rondeau, Marie-Francoise Devaux, Francoise Huber, Eric Badel, Remi Saurel, Marc Lahaye, Firming of fruit tissues by vacuum-infusion of pectin methylesterase: Visualisation of enzyme action, Food Chemistry, Volume 109, Issue 2, 15 July 2008, Pages 368-378, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.12.050.
(http://www.sciencedirect.com/science/article/B6T6R-4RF45D6-H/2/9d13369c3725535e6838931079df6639)
Abstract:
Apple pieces were vacuum-impregnated with either a pectin methylesterase (PME) and calcium solution or with water prior to pasteurization. Pasteurized apple pieces impregnated with PME and calcium showed a significantly higher firmness. Moreover, solid state 13C NMR spectroscopy of apple cell wall residues revealed an increase of their molecular rigidity. Exogenous PME addition involved a decrease from 82% to 45% of apple pectin degree of methyl-esterification. Microscopic observations of apple slices immunolabelled with antibodies specific for pectins showed that (i) demethyl-esterification was more intense in the cell wall region lining intercellular spaces (demonstrating a key role for these intercellular channels in the enzyme penetration in the tissue during vacuum-infusion) and that (ii) the number of calcium-dimerized deesterified homogalacturonan chains increased. The results corroborate the hypothesis that vacuum-impregnated PME action liberates free carboxyl groups along pectin chains that could interact with calcium, increasing the rigidity of pectins and finally the mechanical rigidity of apple tissue.
Keywords: Vacuum-impregnation; Fruit firmness; Pectin; Pectin methylesterase

Christina Kurz, Melanie Munz, Andreas Schieber, Reinhold Carle, Determination of the fruit content of apricot and strawberry jams and spreads and apricot and peach fruit preparations by gravimetric quantification of hemicellulose, Food Chemistry, Volume 109, Issue 2, 15 July 2008, Pages 447-454, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.12.061.
(http://www.sciencedirect.com/science/article/B6T6R-4RJ9X7D-2/2/c7cec9a5595ff1f56861541667d4f104)

Abstract:
An innovative method developed for fruit content determination based on the quantification of hemicellulose was applied to apricot and peach fruit preparations, apricot and strawberry jams and spreads. For this purpose, the hemicellulose fraction was isolated from the alcohol-insoluble residue from peaches, apricots, and strawberries, yielding the amount of the respective fresh fruit per gram hemicellulose. Fruit preparations from peaches with 34.4%, 47.2% and 66.4% fruit content were produced using pectin and carrageenan, xanthan or starch, respectively, as hydrocolloids. Jams from apricots and strawberries were prepared with pectin. Fruit contents of apricot jams were 34.1% and 48.2%, and 36.6% and 46.4% in strawberry jams, respectively. Furthermore, a range of commercial apricot spreads and jams and one strawberry spread as well as apricot and peach fruit preparations were examined. The fruit content was calculated based on the amount of hemicellulose. Calculated fruit contents were in good agreement with the respective product specifications (e.g. 62.6% vs. 66.4%, 35.2% vs. 34.1%, 67.5% vs. 70.0% and 54.0% vs. 53.7%, respectively) with deviations ranging between 0.3% and 4.2%. Maximal deviation was found only in the case of a self-made peach fruit preparation (40.9% vs. 34.4%), where interference of added hydrocolloids and fruit ingredients probably resulted in significant overestimation of the fruit content. Although sample preparation needed to be adapted to different fruit matrices, this novel method proved to be suitable for the determination of fruit contents of fruit preparations, spreads and jams. For the first time, this method was successfully applied to industrially manufactured fruit products without knowledge of fruit specification and the complex recipes of jams, spreads, and fruit preparations, respectively.
Keywords: Alcohol-insoluble residue; Fractionation; Fruit content; Jams; Spreads; Fruit preparations; Hemicellulose; Apricot; Peach; Strawberry

Hans Jacquemyn, Rein Brys, Olivier Honnay, Martin Hermy, Effects of coppicing on demographic structure, fruit and seed set in Orchis mascula, Basic and Applied Ecology, Volume 9, Issue 4, Special feature: Ecotoxicology and ecosystems: relevance, restrictions, research needs, 1 July 2008, Pages 392-400, ISSN 1439-1791, DOI: 10.1016/j.baae.2007.05.002.
(http://www.sciencedirect.com/science/article/B7GVS-4P5YK9W-3/2/c400146a424dfb615fa72cfa037fe3c2)
Abstract: Summary
Opening of the forest canopy may result in higher fitness of understory plants due to increased light intensity on the forest soil and increased nutrient availability. Especially, tuberous orchids may profit from increased light as photosynthetic assimilation products and nutrients are accumulated in their belowground storage organs. We investigated the effects of coppicing on demographic structure and fruit and seed set in 15 populations of the tuberous, perennial orchid Orchis mascula, seven of which were located in undisturbed, shaded woodland and eight in recently coppiced woodland. Coppicing resulted in a massive increase in flowering and in increased fruit set. On average, 42.9% of all individuals consisted of flowering plants in coppiced woodland, whereas in undisturbed woodland only 20.8% of all individuals flowered. The percentage fruit set varied between 20% and 55% in coppiced woodland and was strongly related to population size (measured as the number of flowering individuals). Mean fruit weight and fruit size were also significantly higher in populations located in coppiced woodland than in undisturbed woodland, whereas the proportion of viable seeds was not related to woodland type. Given that O. mascula is dependent on seed set to fill space with new individuals, these results suggest that the long-term survival of this species strongly depends on frequent opening of the canopy.
Keywords: Woodland management; Orchis mascula; Orchidaceae; Seed viability

Gesine Pufal, Carolin Mayer, Stefan Porembski, Norbert Jurgens, Factors affecting fruit set in Aizoaceae species of the Succulent Karoo, Basic and Applied Ecology, Volume 9, Issue 4, Special

feature: Ecotoxicology and ecosystems: relevance, restrictions, research needs, 1 July 2008, Pages 401-409, ISSN 1439-1791, DOI: 10.1016/j.baae.2007.06.001.
(http://www.sciencedirect.com/science/article/B7GVS-4PCR1X4-1/2/6f21d5ad953f6ae798055c8c0013acc9)
Abstract:
By reducing the number of flowers and fruits, intense grazing activities of domestic livestock are considered to have negative effects on the plant recruitment of perennial plants in the Succulent Karoo, South Africa. In the present study, the fruit set of six perennial species belonging to the Aizoaceae was investigated under two different grazing intensities. Two species (Cheiridopsis imitans and Leipoldtia schultzei) were examined more closely to determine whether factors other than grazing impact fruit production of these plants. Apart from reproductive output, the population structure of these two species was explored in heavily and slightly grazed areas.
For all investigated species, heavy livestock grazing was identified as a major threat to fruit production. Deviations from this pattern were recorded in a drought year, when harsh weather conditions reduced herd sizes dramatically and the usually high grazing pressure was alleviated. However, detailed analyses revealed that also other biotic factors can cause severe fruit and flower losses even exceeding that caused by grazing. Caterpillars of the noctuid moth, Diaphone eumela, and two rodent species, Otomys unisulcatus and Rhabdomys pumilio, proved to be further important herbivores of flowers and fruits. Experiments with caged plants, excluding livestock from grazing, confirmed though that livestock grazing definitely accounts for a continuous reduction of fruit production. Insufficient pollination success was another parameter reducing fruit set; however, this was almost exclusively observed under low grazing pressure.
Keywords: Cheiridopsis imitans; Herbivory; Lack of pollination; Land use; Leipoldtia schultzei; Livestock exclusion; Population structure

G.K. Jayaprakasha, Basavaraj Girennavar, Bhimanagouda S. Patil, Radical scavenging activities of Rio Red grapefruits and Sour orange fruit extracts in different in vitro model systems, Bioresource Technology, Volume 99, Issue 10, July 2008, Pages 4484-4494, ISSN 0960-8524, DOI: 10.1016/j.biortech.2007.07.067.
(http://www.sciencedirect.com/science/article/B6V24-4R1NN8G-5/2/0378be18e77085d2b13a0e27c5be4c39)
Abstract:
Antioxidant fractions from two different citrus species such as Rio Red (Citrus paradise Macf.) and Sour orange (Citrus aurantium L.) were extracted with five different polar solvents using Soxhlet type extractor. The total phenolic content of the extracts was determined by Folin-Ciocalteu method. Ethyl acetate extract of Rio Red and Sour orange was found to contain maximum phenolics. The dried fractions were screened for their antioxidant activity potential using in vitro model systems such as 1,1-diphenyl-2-picryl hydrazyl (DPPH), phosphomolybdenum method and nitroblue tetrazolium (NBT) reduction at different concentrations. The methanol:water (80:20) fraction of Rio Red showed the highest radical scavenging activity 42.5%, 77.8% and 92.1% at 250, 500 and 1000 ppm, respectively, while methanol:water (80:20) fraction of Sour orange showed the lowest radical scavenging activity at all the tested concentrations. All citrus fractions showed good antioxidant capacity by the formation of phosphomolybdenum complex at 200 ppm. In addition, superoxide radical scavenging activity was assayed using non-enzymatic (NADH/phenaxine methosulfate) superoxide generating system. All the extracts showed variable superoxide radical scavenging activity. Moreover, methanol:water (80:20) extract of Rio Red and methanol extract of Sour orange exhibited marked reducing power in potassium ferricyanide reduction method. The data obtained using above in vitro models clearly establish the antioxidant potential of citrus fruit extracts. However, comprehensive studies need to be conducted to ascertain the in vivo bioavailability, safety and efficacy of such extracts in experimental animals.

To the best of our knowledge, this is the first report on antioxidant activity of different polar extracts from Rio Red and Sour oranges.
Keywords: Rio Red; Sour orange; Antioxidant activity; DPPH; Phosphomolybdenum; NADH/phenaxine methosulfate

Joe-Air Jiang, Chwan-Lu Tseng, Fu-Ming Lu, En-Cheng Yang, Zong-Siou Wu, Chia-Pang Chen, Shih-Hsiang Lin, Kuang-Chang Lin, Chih-Sheng Liao, A GSM-based remote wireless automatic monitoring system for field information: A case study for ecological monitoring of the oriental fruit fly, Bactrocera dorsalis (Hendel), Computers and Electronics in Agriculture, Volume 62, Issue 2, July 2008, Pages 243-259, ISSN 0168-1699, DOI: 10.1016/j.compag.2008.01.005.
(http://www.sciencedirect.com/science/article/B6T5M-4RWB0PX-3/2/eabf703ed9167054398e9b32024817b1)
Abstract:
Monitoring field conditions is the foundation of modern agricultural management. In order to improve the efficiency of the data collection procedure, and to improve the precision with which agricultural operations are managed, it is necessary that we have an automated system that collects environmental data, especially to record long-term and up-to-the-minute environmental fluctuations. The purpose of this study was to design a remote pest monitoring system based on wireless communication technology. This system automatically reports environmental conditions and traps pest in real-time. The data we acquired was integrated into a database for census and further analysis. The system consists of two components, a remote monitoring platform (RMP) and a host control platform (HCP). Furthermore, based on the bio-characteristics of the oriental fruit fly, a high precision automated trapping and counting device was designed. This device counts the number of trapped flies and then sends the information back to the RMP. The RMP is in charge of acquiring the environmental data and the number of trapped flies, and it sends all the data back to the HCP in the form of a short cell phone message through the wireless Global System of Mobile Communication (GSM). Our system then transmits the data via a commercial base station. The system can work properly based on the effective coverage of base stations, no matter the distance from RMP to HCP. The function of the HCP is to receive and store, display, and analyze the database on line. It also provides functions like inquiries, early warning, and announcements. The system was field tested over a 1-year period (March 2006 to July 2007), and the experimental results demonstrated that it can monitor the environmental parameters and population dynamics of the oriental fruit fly in real-time. Based on the long-term monitoring database acquired by our system, the relationship between the population dynamics of the fruit fly and the environmental changes can be easily analyzed. With the help of this system, researchers can judge the correlation of the occurrence of the oriental fruit fly and climate conditions. Since the long-term database provides us with the details of the population dynamics of the fruit fly, the system allows us to control the pest in time and reduce agricultural losses. The experimental results demonstrate that large scale, long distance, and long-term monitoring for agricultural information can be achieved by using our proposed monitoring system. Much improved spatial resolution and temporal resolution is obtained compared to traditional methods for monitoring the data of the oriental fruit fly based on environmental changes.
Keywords: Precision agriculture; Environmental parameter monitoring; Wireless communication technology; Mechatronics technology; Bactrocera dorsalis (Hendel); Ecological environment

Nele Geeroms, Wim Verbeke, Patrick Van Kenhove, Health advertising to promote fruit and vegetable intake: Application of health-related motive segmentation, Food Quality and Preference, Volume 19, Issue 5, July 2008, Pages 481-497, ISSN 0950-3293, DOI: 10.1016/j.foodqual.2008.02.004.
(http://www.sciencedirect.com/science/article/B6T6T-4RWH88B-1/2/a8cbfcbd269e86a4b0e273507a9bb219)

Abstract:
The purpose of this study was to identify subgroups within a population on the basis of their health-related motive orientations (HRMO). Participants were 615 consumers between the ages of 17 and 77, drawn from the Dutch-speaking part of Belgium. They provided ratings of 45 health statements referring to people's motives for health, i.e., those things that give health meaning. We also obtained information on daily intake of fresh fruits and vegetables (F&V) by using a short food frequency scale. In addition, we asked the respondents to provide evaluative ratings of four targeted F&V health advertisements, which differed from each other on two dimensions, i.e., message tonality (informational vs. transformational) and directionality (self-directed vs. other-directed). As a benchmark, we used an existing Belgian public health campaign that had a more general character. Based on a two-step cluster analysis, we identified 5 distinct subgroups in the sample, with different HRMO: health is about energy (Energetic Experimenters), emotional well-being (Harmonious Enjoyers), social responsibility (Normative Carers), management/outward appearance (Conscious Experts) and physical well-being/functionality (Rationalists). Besides differences in (category-specific) F&V consumption among these segments, also different types of advertising messages are appropriate for each of the subgroups, i.e., transformational/self-directed for the Energetic Experimenters, transformational/other-directed for the Harmonious Enjoyers, informational/other-directed for the Normative Carers and informational/self-directed for the Conscious Experts/Rationalists. Moreover, the segments provided more positive evaluations of the most appropriate targeted advertisement compared to the benchmark advertisement, which stresses the benefits of targeted F&V advertising strategies over and above more general messages.
Keywords: Advertising; Consumer; Fruit and vegetables; Health; Motive; Segmentation

Gurpreet Kaur, Raman Preet Singh, Antibacterial and membrane damaging activity of Livistona chinensis fruit extract, Food and Chemical Toxicology, Volume 46, Issue 7, July 2008, Pages 2429-2434, ISSN 0278-6915, DOI: 10.1016/j.fct.2008.03.026.
(http://www.sciencedirect.com/science/article/B6T6P-4S6G92T-4/2/50e677ede7c603e34217cb4a3c8c38f9)
Abstract:
Livistona chinensis is used in traditional Chinese medicine as an anticancer agent. Experimental studies have shown the antiproliferative and antiangiogenic properties of extracts of L. chinensis fruits and seeds. In the present study, qualitative phytochemical composition of L. chinensis fruits was investigated. We hypothesized that the presence of high concentration of phenolic compounds with astringent properties may result in bacterial cell death. Hence, antibacterial activity of an aqueous extract of L. chinensis fruits was investigated against Staphylococcus aureus. The antibacterial activity was attributed to DNA, enzyme and protein denaturing properties of the phenolic compounds present in the extract. The extract also resulted in increased membrane permeability. The antibacterial, DNA and enzyme denaturing and membrane damaging activity was limited to an acid-precipitable fraction of the extract and these effects were abrogated in presence of proteins. The membrane damaging activity of phenolic compounds was also observed in leucocytes. In conclusion, this study reported the antibacterial activity of the fruits of L. chinensis due to their high content of phenolic compounds.
Keywords: Livistona chinensis; Antibacterial; Phenolic compounds

Jonathan Mosqueda-Melgar, Rosa Martina Raybaudi-Massilia, Olga Martin-Belloso, Non-thermal pasteurization of fruit juices by combining high-intensity pulsed electric fields with natural antimicrobials, Innovative Food Science & Emerging Technologies, Volume 9, Issue 3, July 2008, Pages 328-340, ISSN 1466-8564, DOI: 10.1016/j.ifset.2007.09.003.
(http://www.sciencedirect.com/science/article/B6W6D-4R53RCV-3/2/b9aff4786eb8b25ee5f950bfb2cb82b6)

Abstract:
The effect of high-intensity pulsed electric fields (HIPEF) on the Salmonella Enteritidis and Escherichia coli O157:H7 populations inoculated in apple, pear, orange and strawberry juices as influenced by treatment time and pulse frequency was investigated. Combinations of HIPEF (35 kV/cm, 4 [mu]s pulse length in bipolar mode without exceeding 40 [degree sign]C) with citric acid or cinnamon bark oil against these pathogenic microorganisms in fruit juices were also evaluated. Treatment time was the more influential factor on the microbial reduction in all the fruit juices analyzed. S. Enteritidis and E. coli O157:H7 were reduced by more than 5.0 log10 units in orange juice treated by only HIPEF; whereas strawberry, apple and pear juices were pasteurized when HIPEF was combined with citric acid at 0.5, 1.5, 1.5%, respectively, or cinnamon bark oil at 0.05, 0.1 and 0.1%, respectively. Synergistic and additive killing effects against S. Enteritidis and E. coli O157:H7 in fruit juices by combining treatments were observed.Industrial relevance
The use of high-intensity pulsed electric fields treatment as a non-thermal pasteurization method in combination with organic acids or essential oils is an effective process for eliminating S. Enteritidis and E. coli O157:H7 populations in fruit juices upper 5.0 log10 reductions. Therefore, combinations of those treatments may help to ensure the microbiological safety in juice products, and to reduce the risk of food-borne illness caused by the consumption of these kinds of foods.
Keywords: HIPEF; Citric acid; Cinnamon bark oil; S. Enteritidis; E. coli O157:H7; Apple; Pear; Orange; Strawberry

Maricel Keyser, Ilze A. Muller, Frans P. Cilliers, Wihann Nel, Pieter A. Gouws, Ultraviolet radiation as a non-thermal treatment for the inactivation of microorganisms in fruit juice, Innovative Food Science & Emerging Technologies, Volume 9, Issue 3, July 2008, Pages 348-354, ISSN 1466-8564, DOI: 10.1016/j.ifset.2007.09.002.
(http://www.sciencedirect.com/science/article/B6W6D-4R40SN5-2/2/222742afa86352114694a2f7d947fb26)
Abstract:
Fruit juices can be processed using ultraviolet (UV-C) light to reduce the number of microorganisms. The UV-C wavelength of 254 nm is used for the disinfection and has a germicidal effect against microorganisms. A novel turbulent flow system was used for the treatment of apple juice, guava-and-pineapple juice, mango nectar, strawberry nectar and two different orange and tropical juices. In comparison to heat pasteurization, juices treated with UV did not change taste and color profiles. Ultraviolet dosage levels (J L- 1) of 0, 230, 459, 689, 918, 1 148, 1 377, 1 607 and 2 066 were applied to the different juice products in order to reduce the microbial load to acceptable levels. UV-C radiation was successfully applied to reduce the microbial load in the different single strength fruit juices and nectars but optimization is essential for each juice treated. This novel UV technology could be an alternative technology, instead of thermal treatment or application of antimicrobial compounds.Industrial relevance
This novel UV-C system can be applied successfully to the Food Industry. UV-C can be effectively used to reduce the number of spoilage and pathogenic bacteria, as well as yeasts and moulds in different kinds of fruit juices.
Keywords: Aerobic plate count; Fruit juices; Microbial inactivation; Novel UV system; Ultraviolet radiation

A. Kilickan, M. Guner, Physical properties and mechanical behavior of olive fruits (Olea europaea L.) under compression loading, Journal of Food Engineering, Volume 87, Issue 2, July 2008, Pages 222-228, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.11.028.
(http://www.sciencedirect.com/science/article/B6T8J-4R8MDG6-2/2/c340662cb956dba026664991f0a64154)
Abstract:

In this research, Gemlik variety of olive fruits (Olea europaea L.) and their pits from Aydin in Turkey were analyzed for some physical properties and mechanical behavior under compression loading. The average length, width, thickness, arithmetic mean diameter, geometric mean diameter, sphericity, volume, unit mass, bulk density, true density, porosity, terminal velocity, projected area, drag coefficient, specific deformation, rupture force, and rupture energy were investigated experimentally. Olive fruits and olive pits were loaded between two parallel plates to determine the specific deformation, rupture force, and rupture energy to initiate skin and pit rupture. Rupture force, rupture energy, and specific deformation of the olive pit and olive fruit increased in magnitude with an increase in deformation rate and size. The highest rupture force, rupture energy, and specific deformation of the olive pit and olive fruit among the axes at all deformation rates and sizes were obtained for X-axis except for specific deformation for olive fruit.
Keywords: Olive; Gemlik; Olea europaea L.; Physical properties; Mechanical behavior

S.D. Bhande, M.R. Ravindra, T.K. Goswami, Respiration rate of banana fruit under aerobic conditions at different storage temperatures, Journal of Food Engineering, Volume 87, Issue 1, CHISA 2006 Special Section (pp. 1-63) - Selected papers from the symposium 'Food Processing and Technology' held at the 2006 CHISA Congress, Prague, Czech Republic, 2006 CHISA Congress, July 2008, Pages 116-123, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.11.019.
(http://www.sciencedirect.com/science/article/B6T8J-4R7J5XS-1/2/2163cf19bf8ad311ecdcdd66caa22e87)
Abstract:
The underlying principle behind storage techniques like controlled atmosphere storage and modified atmosphere packaging involves manipulation of respiration rate of the stored produce. However, since respiration rate is dependent on factors like storage temperature and composition of storage atmosphere, a mathematical approach to predict the respiration rate under given conditions would be an immense help in both design and process control of such storage systems. Experimental data were generated at temperatures 10, 15, 20, 25 and 30 [degree sign]C for banana fruit using the closed system method. The generated data were used to develop two different models based on regression analysis and enzyme kinetics, respectively. Both models were tested for its validity at 12 [degree sign]C. The models showed good agreement with the experimentally estimated respiration rate, though the model based on enzymatic kinetic with Arrhenius type temperature dependence was found to have a closer agreement than the other model studied.
Keywords: Banana; Respiration rate; Enzyme kinetics; Regression coefficient; Modeling

Tom Baranowski, Kathy Watson, Mariam Missaghian, Alison Broadfoot, Karen Cullen, Theresa Nicklas, Jennifer Fisher, Janice Baranowski, Sharon O'Donnell, Social Support Is a Primary Influence on Home Fruit, 100% Juice, and Vegetable Availability, Journal of the American Dietetic Association, Volume 108, Issue 7, July 2008, Pages 1231-1235, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.04.016.
(http://www.sciencedirect.com/science/article/B758G-4SV7KCR-10/2/17177cabbf5a45b66fb11df41e04aa76)
Abstract:
Children tend to eat more fruit and vegetables when more are available in the home. We proposed and tested a model that predicts the availability at home (hereinafter termed 'home availability') of fruit, 100% juice, and vegetables, using new measures of frequency of food shopping, purchase, and comparative purchase outcome expectancies (ie, the perceived benefits and costs of purchasing fruit and vegetables), home food pantry management practices, family social support for purchasing fruit and vegetables, food shopping practices, and body mass index (BMI). Participants (N=98) were recruited in 2004 in front of grocery stores and completed two telephone interviews. Cross-sectional hierarchical regression was employed with backward deletion of

nonsignificant variables. Despite many statistically significant bivariate correlations between the new variables and home fruit, 100% juice, and vegetable availability, social support was the primary predictor of home fruit availability in multivariate regression. BMI and home 100% juice pantry management were the primary predictors of home 100% juice availability. Social support, BMI, and shopping practices were the primary predictors of home vegetable availability. Social support for purchasing fruit, 100% juice, and vegetables was an important, consistent predictor of home availability. These findings need to be replicated in larger samples.

Michele L. Largeteau, Jean-Michel Savoie, Effect of the fungal pathogen Verticillium fungicola on fruiting initiation of its host, Agaricus bisporus, Mycological Research, Volume 112, Issue 7, July 2008, Pages 825-828, ISSN 0953-7562, DOI: 10.1016/j.mycres.2008.01.018.
(http://www.sciencedirect.com/science/article/B7XMR-4RVG3TX-4/2/a7b62888dc63f35bf4a2d96ef20a6b1c)
Abstract:
Dry bubble disease caused by the fungal pathogen Verticillium fungicola1 is responsible for large losses to the mushroom (Agaricus bisporus) industry. The pathogen induces various symptoms on the host, bubbles (undifferentiated spherical masses), bent and/or split stipes (blowout) and spotty caps. Inoculation of A. bisporus crops with isolates of V. fungicola var. fungicola of various degrees of aggressiveness showed that the more aggressive isolates induced higher numbers of bubbles. The production of other symptoms did not vary with the isolate of pathogen. The total weight of the crop (healthy and diseased mushrooms) was not significantly affected by the disease, but inoculation with highly aggressive isolates resulted in a significant increase in the total numbers of mushrooms. Two hypotheses are proposed to explain the effect of the pathogen on fruiting initiation in relation to aggressiveness.
Keywords: Fruit body initiation; Fungicolous fungi; Mushroom; Mycoparasites; Lecanicillium fungicola

A. Ortuno, I. Nemsa, N. Alvarez, A. Lacasa, I. Porras, A. Garcia Lidon, J.A. Del Rio, Correlation of ethylene synthesis in Citrus fruits and their susceptibility to Alternaria alternata pv. citri, Physiological and Molecular Plant Pathology, Volume 72, Issues 4-6, July-September 2008, Pages 162-166, ISSN 0885-5765, DOI: 10.1016/j.pmpp.2008.08.003.
(http://www.sciencedirect.com/science/article/B6WPC-4TRR8SM-1/2/2e7abc9d448a938f1f6c78d849e00928)
Abstract:
The susceptibility of Fortune (Citrus clementina x Citrus reticulata), Citrus paradisi and Citrus limon fruits to Alternaria alternata pv. citri was investigated using different artificial inoculation methods. The results obtained reveal that the C. paradisi and C. limon fruits are less susceptible to A. alternata pv. citri than Fortune fruits, although all showed symptoms of Alternaria brown spot when the cuticle was broken and the flavedo or flavedo + albedo was removed. Furthermore, it was seen that susceptibility to the fungus decreased as the age of the fruit increased. There was a positive correlation between the susceptibility of the different Citrus fruits to A. alternata pv. citri and their 'in vivo' ethylene levels, the most susceptible fruit (Fortune) producing more ethylene during growth than the less susceptible C. limon and C. paradisi. This suggests that ethylene may well be considered as a possible marker of Citrus fruit susceptibility to A. alternata pv. citri. Disease development increased when the Fortune fruits were treated with 1 mM ACC (a precursor of ethylene biosynthesis) or 1 mM Ethephon (an ethylene-releasing compound) prior to inoculation with A. alternata pv. citri. The role of ethylene as a factor involved in disease development is discussed.
Keywords: Fortune; Citrus limon; Citrus paradisi; Alternaria brown spot; Susceptibility; Tolerance; Ethylene

Berta Alquezar, Maria J. Rodrigo, Lorenzo Zacarias, Regulation of carotenoid biosynthesis during fruit maturation in the red-fleshed orange mutant Cara Cara, Phytochemistry, Volume 69, Issue 10, July 2008, Pages 1997-2007, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2008.04.020.
(http://www.sciencedirect.com/science/article/B6TH7-4SP05M5-4/2/0652237e105102ec811cda505717d86d)
Abstract:
Cara Cara is a spontaneous bud mutation of Navel orange (Citrus. sinensis L. Osbeck) characterized by developing fruits with a pulp of bright red coloration due to the presence of lycopene. Peel of mutant fruits is however orange and indistinguishable from its parental. To elucidate the basis of lycopene accumulation in Cara Cara, we analyzed carotenoid profile and expression of three isoprenoid and nine carotenoid genes in flavedo and pulp of Cara Cara and Navel fruits throughout development and maturation. The pulp of the mutant accumulated high amounts of lycopene, but also phytoene and phytofluene, from early developmental stages. The peel of Cara Cara also accumulated phytoene and phytofluene. The expression of isoprenoid genes and of carotenoid biosynthetic genes downstream PDS (phytoene desaturase) was higher in the pulp of Cara Cara than in Navel. Not important differences in the expression of these genes were observed between the peel of both oranges. Moreover, the content of the plant hormone ABA (abscisic acid) was lower in the pulp of Cara Cara, but the expression of two genes involved in its biosynthesis was higher. The results suggest that an altered carotenoid composition may conduct to a positive feedback regulatory mechanism of carotenoid biosynthesis in citrus fruits. Increased levels of isoprenoid precursors in the mutant that could be channeled to carotenoid biosynthesis may be related to the red-fleshed phenotype of Cara Cara.
Keywords: Citrus sinensis L. Osbeck; Orange; Mutant; Carotenoids; Lycopene; ABA; Gene expression

Beatriz Cara, James J. Giovannoni, Molecular biology of ethylene during tomato fruit development and maturation, Plant Science, Volume 175, Issues 1-2, Ethylene Biology, July-August 2008, Pages 106-113, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2008.03.021.
(http://www.sciencedirect.com/science/article/B6TBH-4S98TRX-1/2/df09f63e9c8e3cd924cfeba14a1ae7f7)
Abstract:
Important traits for complete ripening and consumer fruit quality preferences include development of aroma, flavor, color, texture, and nutritional quality. These attributes are influenced by the endogenously produced hormone ethylene in many fleshy fruits such as apple, avocado, banana, mango, pear and tomato. Even in species where endogenous ethylene seems to play little if any role as an endogenous regulator, exogenous ethylene will often promote ripening characteristics and can be the target of post-harvest strategies designed to accelerate, synchronize or delay ripening. In recent decades the YANG cycle for ethylene biosynthesis has been revealed and characterized at the molecular level with much of this important work done via the analysis of fruit systems. However, the genetic regulation that controls ethylene production at different developmental stages of fruits has only recently begun to be studied. Tomato has emerged as the primary model plant to further understand the molecular biology that controls ethylene synthesis and additional ripening regulators during fruit development. Here we summarize data pertaining to ethylene biology specifically as related to fruit maturation and including recent insights into genetic control of the ripening process prior to and controlling ethylene.
Keywords: Ethylene; Fruit; Ripening; Signal transduction; Tomato; Transcriptional regulation

J.C. Pech, M. Bouzayen, A. Latche, Climacteric fruit ripening: Ethylene-dependent and independent regulation of ripening pathways in melon fruit, Plant Science, Volume 175, Issues 1-2, Ethylene Biology, July-August 2008, Pages 114-120, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2008.01.003.

(http://www.sciencedirect.com/science/article/B6TBH-4RM1KN6-3/2/20818cbd0202f05bca547755b4150f2a)
Abstract:
Cantaloupe melons have a typical climacteric behaviour with ethylene playing a major role in the regulation of the ripening process and affecting the ripening rate. Crossing of Cantaloupe Charentais melon with a non-climacteric melon indicated that the climacteric character is genetically dominant and conferred by two duplicated loci only. However, other experiments made by crossing two non-climacteric melons have generated climacteric fruit, indicating that different and complex genetic regulation exists for the climacteric character. Suppression of ethylene production by antisense ACC oxidase RNA in Charentais melon has shown that, while many ripening pathways were regulated by ethylene (synthesis of aroma volatiles, respiratory climacteric and degreening of the rind), some were ethylene-independent (initiation of climacteric, sugar accumulation, loss of acidity and coloration of the pulp). Softening of the flesh comprised both ethylene-dependent and independent components that were correlated with differential regulation of cell wall degrading genes. These results indicate that climacteric (ethylene-dependent) and non-climacteric (ethylene-independent) regulation coexist during climacteric fruit ripening. In addition, ethylene-suppressed melons allowed demonstrating that the various ethylene-dependent events exhibited differential sensitivity to ethylene and that ethylene was promoting sensitivity to chilling injury. Throughout this review, the data generated with melon are compared with those obtained with tomato and other fruit.
Keywords: Antisense ACC oxidase melons; Genetics of the climacteric; Cell wall-degrading genes; Ethylene sensitivity; Aroma volatiles; Chilling injury

Hiroshi Ezura, Willis O. Owino, Melon, an alternative model plant for elucidating fruit ripening, Plant Science, Volume 175, Issues 1-2, Ethylene Biology, July-August 2008, Pages 121-129, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2008.02.004.
(http://www.sciencedirect.com/science/article/B6TBH-4RV17DK-1/2/5517e1a06eccb035b784520bb9a177e3)
Abstract:
Ethylene perception has been studied using Arabidopsis and tomato as model plants during last two decades. Arabidopsis has been an ideal model system for gene identification and subsequent functional analysis of the identified gene. On the other hand, tomato is not only the model of choice to study climacteric fruit ripening but also crops of agronomic importance and hence has been at the forefront of the comparative analysis with Arabidopsis. A number of fruit development and ripening studies in melon have been conducted by many laboratories in the last decade, leading to the accumulation of a great deal of information. These include genetic transformation techniques, isolation of related genes, physiological information and genetics resources. The information accumulated has enabled melon to carve a niche for itself as an alternative model system for fruit for studies. In addition, International Cucurbit Genomics Initiative (ICuGI) was launched 2005, in which melon became a model species in Cucurbit genomics research. In next decade, genomic resources including large collection of ESTs, precise maps and so on will be gathered, indicating that melon will be an alternative model plant for studying fruit ripening in addition to ethylene perception and signaling. In this review, we will summarize the information accumulated so far and discuss the perspectives.
Keywords: Melon; Ethylene perception; Signaling; Functional genomics

Alan B. Bennett, John M. Labavitch, Ethylene and ripening-regulated expression and function of fruit cell wall modifying proteins, Plant Science, Volume 175, Issues 1-2, Ethylene Biology, July-August 2008, Pages 130-136, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2008.03.004.
(http://www.sciencedirect.com/science/article/B6TBH-4S32NGD-2/2/f5e7d0f8facedf733358e1d894efc954)

Abstract:
Two decades of research have provided deep insights into the regulation of cell wall disassembly in ripening fruit. These insights have been important in understanding ethylene-regulated processes of fruit softening in climacteric fruit but have also provided insights into non-climacteric fruit softening as well as cell wall disassembly that accompanies many plant developmental processes such as cell growth and abscission. Major results indicate that no single gene or enzyme can account for the major events that underlie fruit softening and that many of the potentially responsible genes and their corresponding cell wall modifying proteins are members of large gene families that exhibit overlapping patterns of expression and possibly redundant biochemical action. The cooperative action of cell wall modifying proteins and enzymes has been demonstrated to participate in fruit softening as well as to the ripening-regulated increase in necrotrophic pathogen susceptibility. A general model of cooperative cell wall disassembly is now firmly established and future research focusing on complex interactions between cell wall modifying proteins and enzymes and between the major cell wall matrices should be productive in elucidating a general model of ripening-regulated cell wall disassembly and fruit softening.
Keywords: Cell wall; Fruit; Ripening; Pectin; Hemicellulose

Anna J. Keutgen, Elke Pawelzik, Influence of pre-harvest ozone exposure on quality of strawberry fruit under simulated retail conditions, Postharvest Biology and Technology, Volume 49, Issue 1, July 2008, Pages 10-18, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.12.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4S0357F-5/2/0900dee356b3145e3eae1fb30af066d3)
Abstract:
Strawberries (Fragaria x ananassa Duch.) were grown under an ozone-enriched atmosphere, and fruit yield, quality, and postharvest behavior under simulated retail storage conditions were investigated. The more ozone sensitive cv. Korona and the less sensitive cv. Elsanta, according to previous studies, were exposed for 2 months to 156 [mu]g m-3 ozone on average, or air without ozone, in controlled-environment chambers. The influence of ozone depended significantly on the cultivar and its susceptibility to oxidative stress. Generally, ozone decreased the contents of ascorbic acid, caused higher lipid peroxidation and lowered sweetness of the fruit. In the case of lipid peroxidation, the effect was strengthened under retail conditions. The ozone stress did not influence yield, size, antioxidative capacity, anthocyanins, or phenolic compounds of fruit. In the more sensitive cv. Elsanta, ozone-induced sepal injuries were detected and the appearance of fruit was thus impaired; glutathione content of fruit also decreased. In contrast, fruit quality of the less sensitive cv. Korona remained almost constant. In general, retail conditions impaired quality of strawberry fruit and in the case of an effect on quality by ozone during fruit development, quality was slightly worse after storage due to the high perishability of the strawberry fruit.
Keywords: Fragaria x ananassa Duch.; Antioxidants; Color changes; Carbohydrates

Robert Saftner, James Polashock, Mark Ehlenfeldt, Bryan Vinyard, Instrumental and sensory quality characteristics of blueberry fruit from twelve cultivars, Postharvest Biology and Technology, Volume 49, Issue 1, July 2008, Pages 19-26, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.01.008.
(http://www.sciencedirect.com/science/article/B6TBJ-4S0357F-D/2/724e2ac95422d86217f6a05638e891ee)
Abstract:
We compared the instrumental and sensory quality characteristics of blueberry fruit from ten highbush (Vaccinium corymbosum L.) cultivars, Chanticleer, Weymouth, Hannah's Choice, Duke, Bluecrop, Coville, Berkeley, Bluegold, Elliott and Lateblue and two rabbiteye (Vaccinium virgatum Aiton) cultivars, Coastal and Montgomery, grown in New Jersey. Cultivars varied in sensory intensity and acceptability scores. Highbush cultivars, Coville and Hannah's Choice, scored

highest among the cultivars in sensory scores for intensity of blue color, juiciness, sweetness and blueberry-like flavor and for acceptability of appearance, color, fruit size, sweet/tart balance, flavor and overall eating quality. In contrast, rabbiteye cultivars, Coastal and Montgomery, and the highbush cultivars, Elliott and Weymouth, scored lowest among the cultivars in sensory scores for intensity of bursting energy, skin toughness, texture during chewing, juiciness, and blueberry-like flavor and for acceptability of appearance, color, fruit size, flavor and overall eating quality. Analytical quality characteristics of surface color, size, compression firmness, soluble solids content (SSC), pH, titratable acidity (TA), SSC/TA ratio, and aromatic volatile concentration also varied among cultivars, but no instrumental measurement adequately predicted consumer acceptability scores. The overall eating quality of blueberry fruit was best correlated with flavor scores followed by sensory scores for intensity of juiciness, bursting energy and sweetness and for acceptability of appearance.
Keywords: Vaccinium corymbosum; Vaccinium virgatum; Cultivars; Aromatic volatiles; Firmness; Fruit size; Surface color; Soluble solids content; Titratable acidity

Javier M. Obando-Ulloa, Eduard Moreno, Jordi Garcia-Mas, Bart Nicolai, Jeroen Lammertyn, Antonio J. Monforte, J. Pablo Fernandez-Trujillo, Climacteric or non-climacteric behavior in melon fruit: 1. Aroma volatiles, Postharvest Biology and Technology, Volume 49, Issue 1, July 2008, Pages 27-37, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.11.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4S0301F-1/2/6ac01d61c3632c7a602d6e4b5704bb3f)
Abstract:
A near-isogenic line (NIL) SC3-5 and a further nine NILs of melon contained introgressions of an exotic non-climacteric accession of Cucumis melo `Shongwan Charmi' [SC (PI 161375), Conomon Group)] into the non-climacteric Spanish Inodorus type of melon cultivar `Piel de Sapo' (PS). The NILs exhibited different climacteric behavior and aroma. Fruit from SC3-5 and seven NILs showed a climacteric pattern, while fruit from one NIL, both parentals and the cultivar `Nicolas', were non-climacteric. The NILs were compared with the reference aromatic cultivars `Fado' and `Vedrantais', which show climacteric behavior with high levels of respiration and ethylene production. The twenty-eight aromatic compounds common to the cultivars and NILs studied defined the aroma profile, which was composed of fifteen esters, six aldehydes, two alcohols, three derived sulfur compounds (methyldisulfanylmethane; methanethiolate; methyl 2-sulfanylacetate) and other three compounds (1,7,7-trimethylnorbornan-2-one; acetone; 2-ethylfuran). On the basis of the total ion count peak area, three compounds (isobutyl acetate; benzyl acetate; pentanal) allowed the climacteric to be distinguished from the non-climacteric NILs according to univariate analysis. Multivariate analysis of the aroma data on the basis of total ion count peak area separated the aromatic attributes of the climacteric `Vedrantais' and `Fado' melons from the NILs that were closer to their inbred parentals when analyzed by partial least squares regression plus discriminant analysis. In the climacteric reference cultivars or NILs, esters were the predominant volatiles while aldehydes predominated in non-climacteric ones. These results support the hypothesis that at least one QTL in linkage group III boosts a series of maturation signals that are characteristic of climacteric fruit, including a different aroma profile.
Keywords: Cucumis melo L.; Near-isogenic lines; Ethylene production; Respiration rate; Aroma profile; Quantitative trait loci; Multivariate statistics

Gustavo A. Martinez, Pedro M. Civello, Effect of heat treatments on gene expression and enzyme activities associated to cell wall degradation in strawberry fruit, Postharvest Biology and Technology, Volume 49, Issue 1, July 2008, Pages 38-45, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.01.013.
(http://www.sciencedirect.com/science/article/B6TBJ-4S26K0R-2/2/552773f122abf4fa087c41431e77ac2a)

Abstract:
Strawberries at white ripening stage were heat treated at 45 [degree sign]C for 3 h in an air oven and then stored at 20 [degree sign]C for 72 h. Firmness, activity of enzymes associated to cell wall degradation, and expression of related genes were determined during the storage. Fruit firmness decreased during the incubation time, and after 24 h of storage the heat-treated fruit softened less than the control fruit. However, after 3 days at 20 [degree sign]C no differences in firmness were detected between control and heat-treated fruit. Immediately after heat treatment application, the activity of endo-1,4-[beta]-d-glucanase (EGase), [beta]-xylosidase and [beta]-galactosidase decreased, while polygalacturonase activity remained at a level similar to the control fruit. However, lower activities of all these enzymes, including polygalacturonase, were detected in heat-treated fruit after 24 h at 20 [degree sign]C. The enzyme activity of [beta]-xylosidase, [beta]-galactosidase and polygalacturonase increased after 72 h up to similar or higher values than those of controls. However, endo-1,4-[beta]-d-glucanase activity remained lower in heat-treated samples even after 72 h at 20 [degree sign]C. The expression of genes encoding endoglucanase (FaCel1), [beta]-xylosidase (FaXyl1), polygalacturonase (FaPG1) and expansin (FaExp2) was reduced immediately after treatment and during the following 4 h, and then increased after 24 h to levels similar to or higher than those of control fruit.
Therefore, the selected treatment (45 [degree sign]C, 3 h in air) effectively reduced strawberry softening and caused a temporary reduction of both the expression of above-mentioned genes and the activity of a set of enzymes involved in cell wall disassembly.
Keywords: Strawberry fruit; Softening; Heat treatment; Cell wall

Shaolan Yang, Chongde Sun, Ping Wang, Lanlan Shan, Chong Cai, Bo Zhang, Wangshu Zhang, Xian Li, Ian Ferguson, Kunsong Chen, Expression of expansin genes during postharvest lignification and softening of `Luoyangqing' and `Baisha' loquat fruit under different storage conditions, Postharvest Biology and Technology, Volume 49, Issue 1, July 2008, Pages 46-53, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.01.005.
(http://www.sciencedirect.com/science/article/B6TBJ-4S0357F-B/2/0b7843194451275e61039ea686da273b)
Abstract:
Four expansin cDNA fragments, EjEXPA1, EjEXPA2, EjEXPA3 and EjEXPA4, were isolated and characterized from loquat (Eriobotrya japonica Lindl.) fruit. EjEXPA1 mRNA accumulated consistently with the increase in fruit firmness in 0 [degree sign]C storage of `Luoyangqing' (LYQ) fruit, where chilling injury with increased fruit firmness due to lignification was observed. EjEXPA1 mRNA levels were lower in fruit that underwent low temperature conditioning (LTC, 6 d at 5 [degree sign]C then 4 d at 0 [degree sign]C), and in 1-methylcyclopropene (1-MCP) treated fruit, in both cases where chilling injury was alleviated. Fruit of the `Baisha' (BS) cultivar soften after harvest rather than increase in firmness, and high expression levels of EjEXPA1 and EjEXPA4 accompanied the softening of BS fruit stored at 20 [degree sign]C; such mRNA accumulation was much lower when fruit were stored at 0 [degree sign]C, where softening was significantly inhibited by the low temperature. Very low expression of EjEXPA2 and EjEXPA3 was observed during storage of both LYQ and BS fruit under the different storage conditions. Our results showed that of the four genes characterized, EjEXPA1 might be associated with chilling-induced lignification while both EjEXPA1 and EjEXPA4 were closely related to softening of loquat fruit during the postharvest period.
Keywords: Chilling injury; Expansin; Lignification; Loquat fruit; LTC; 1-MCP; Softening

Yoshihiro Imahori, Mari Takemura, Jinhe Bai, Chilling-induced oxidative stress and antioxidant responses in mume (Prunus mume) fruit during low temperature storage, Postharvest Biology and Technology, Volume 49, Issue 1, July 2008, Pages 54-60, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.10.017.

(http://www.sciencedirect.com/science/article/B6TBJ-4RWB0VC-1/2/459868d615d9e21f87df152f671d4944)
Abstract:
Mume (Prunus mume Sieb. et Zucc.) fruit are harvested and consumed at the mature green stage and have a short storage life at ambient temperature. While cold temperature extends their storage life, improper refrigeration causes severe chilling injury (CI), with fruit suffering more severe CI at of 5-6 [degree sign]C than at 1 [degree sign]C. The objective of this research was to determine the involvement of reactive oxygen species (ROS) and antioxidant systems in fruit under chilling stress. `Nankou' fruit were stored at 1 [degree sign]C or 6 [degree sign]C for 15 days. Hydrogen peroxide, a preventive ROS, decreased at a slower rate at 6 [degree sign]C than 1 [degree sign]C during storage. Malondialdehyde (MDA), an indicator of lipid peroxidation caused by ROS, increased during storage and the contents were higher in fruit stored at 6 [degree sign]C than at 1 [degree sign]C. On the other hand, fruit stored at 6 [degree sign]C had a lower total antioxidant capacity (TAC) and lower activities of antioxidant-related enzymes including superoxide dismutase (SOD), catalase (CAT), and ascorbate peroxidase (APX) than at 1 [degree sign]C. These results indicate that the fruit at 6 [degree sign]C had more oxidative stress; thus the fruit had more severe CI symptoms than at 1 [degree sign]C.
Keywords: Antioxidant; Ascorbate peroxidase; Chilling injury; Hydrogen peroxide; Malondialdehyde; Mume fruit; Oxidative stress; Reactive oxygen species; Superoxide dismutase

J. Burdon, N. Lallu, G. Haynes, K. McDermott, D. Billing, The effect of delays in establishment of a static or dynamic controlled atmosphere on the quality of `Hass' avocado fruit, Postharvest Biology and Technology, Volume 49, Issue 1, July 2008, Pages 61-68, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.01.002.
(http://www.sciencedirect.com/science/article/B6TBJ-4S094YD-1/2/1654364608971f73e0cdc1ac1561389d)
Abstract:
The effect of delays of 1, 5, 10 or 15 d after harvest in establishing a static controlled atmosphere (SCA) or dynamic controlled atmosphere (DCA) on the quality of `Hass' avocados (Persea americana Mill.) was investigated. Fruit were stored at 5 [degree sign]C in SCA (5% O2/5% CO2) or DCA (<3% O2/0.5% CO2) for 6 weeks and compared with fruit stored in air. In addition, to determine whether increasing the CO2 in the DCA would affect the fruit quality, DCA-stored fruit were compared with fruit held in a DCA with 5% CO2 (DCA + CO2) established 1 d after harvest. The quality of fruit was assessed at the end of storage and after ripening at 20 [degree sign]C. DCA-stored fruit ripened in 4.6 d compared with 7.2 d for SCA-stored fruit, or 4.8 d for air-stored fruit. In addition, the incidences of stem end rot (SER), body rot (BR) and vascular browning (VB) were lower in DCA-stored fruit (35%, 29% and 29%, respectively) than in SCA-stored fruit (57%, 52% and 49%, respectively), or air-stored fruit (76%, 88% and 95%, respectively). Delaying the establishment of both SCA and DCA for 15 d resulted in significantly more advanced skin colour at the end of storage (average rating score 11.9) compared with other delay periods (4.6-5.1). There was no significant effect of delay on the time to ripen, skin colour when ripe or any ripe fruit disorder incidence. The incidence of diffuse flesh discolouration (DFD) was not only <1% when averaged over all delays but only occurred at >0.5% incidence in the 15 d delay treatment in DCA (4.8%) and not in SCA. The incidence of diffuse flesh discolouration was 62% in air-stored fruit. Inclusion of 5% CO2 in DCA retarded fruit ripening from 4.7 to 6.9 d and increased the incidence of rots at the end of storage from 5% to 14%, and increased the incidence in ripe fruit of SER from 30% to 56% and of BR from 27% to 55%. It is concluded that fruit quality was better after CA storage than after air storage, and that DCA storage was better than SCA. The effect of DCA is to independently reduce the time to ripen after storage and the incidence of rots when ripe. Delaying the application of SCA or DCA did not affect the expression of rots, but may increase the incidence

of DFD. Inclusion of CO2 at 5% in CA retarded fruit ripening but stimulated rot expression and should not be used for CA storage of New Zealand grown `Hass' avocados.
Keywords: Storage; Rot; Physiological disorder; Chilling injury; Oxygen; Carbon dioxide

Fernando Alferez, Yolanda Lluch, Jacqueline K. Burns, Phospholipase A2 and postharvest peel pitting in citrus fruit, Postharvest Biology and Technology, Volume 49, Issue 1, July 2008, Pages 69-76, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.01.010.
(http://www.sciencedirect.com/science/article/B6TBJ-4S0357F-7/2/caaf94d22c3750ee6d14587b7ca163cf)
Abstract:
The role of phospholipase A2 (PLA2) activity in development of postharvest peel pitting in mature `Fallglo' tangerines [Bower citrus hybrid (Citrus reticulata Blanco x C. reticulata Blanco x C. paradisi Macf.) x Temple (C. reticulata Blanco x Citrus sinensis L.)] and `Navel' oranges (Citrus sinensis L. Osbeck) was investigated. Changes in RH from 30% to 90% followed by fruit waxing increased electrolyte leakage and PLA2 activity in flavedo, and induced pitting. Treatment with an aqueous dip of aristolochic acid (AT), a specific inhibitor of secretory phospholipase A2 (sPLA2) activity, immediately before transfer from 30% to 90% RH storage, markedly reduced peel pitting symptoms. Five genes encoding various phospholipase As isolated from citrus (three patatin-like and two sPLA2-like sequences) differentially accumulated in healthy areas, areas with developing lesions and necrotic lesions of disordered fruit. Other PLA2, phospholipase C, and phospholipase D inhibitors also reduced peel pitting; however, PLA2 inhibitors were the most effective in preventing the disorder. In addition, phospholipase inhibitors promoted fruit decay, suggesting that innate resistance is impacted by phospholipase action. Together, the results provide evidence for involvement of phospholipase activity in development of postharvest peel pitting symptoms in citrus fruit.
Keywords: `Fallglo' tangerines; Navel orange; Enzyme activity; Gene expression

S.P. Kang, A.R. East, F.J. Trujillo, Colour vision system evaluation of bicolour fruit: A case study with `B74' mango, Postharvest Biology and Technology, Volume 49, Issue 1, July 2008, Pages 77-85, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.12.011.
(http://www.sciencedirect.com/science/article/B6TBJ-4S26K0R-1/2/f5de99c9741c16e84244f8daa5d63d71)
Abstract:
Colour is an important quality attribute that dictates the quality and value of many fruit products. Accurately measuring and describing heterogenous fruit colour changes during ripening is difficult with the instrumentation available (chromometer and colorimeter) due to the small viewing area of the equipment. Calibrated computer vision systems (CVS) provide another technique that allows capture and quantitative description of whole fruit colour characteristics. Published research has demonstrated errors in CVS due to product curvature. In this work, it was confirmed that of the measured a* and b* colour values on a curved surface, 55% and 69% of the values were within the range measured for the same flat surface. This deviation of measurement results in description of hue angle and chroma with an average error of 2[degree sign] and 2.5, respectively. The system developed allows capture of hue angle data of whole fruit of heterogeneous colour. The usefulness of the device for capturing descriptive colour data during maturation of fruit is demonstrated with `B74' mangoes.
Keywords: Colour vision system; Colour variability; Hue angle

Teresa Paula Canamas, Immaculada Vinas, Josep Usall, Carla Casals, Cristina Solsona, Neus Teixido, Control of postharvest diseases on citrus fruit by preharvest application of the biocontrol agent Pantoea agglomerans CPA-2: Part I. Study of different formulation strategies to improve survival of cells in unfavourable environmental conditions, Postharvest Biology and Technology,

Volume 49, Issue 1, July 2008, Pages 86-95, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.12.006.
(http://www.sciencedirect.com/science/article/B6TBJ-4S1JK0V-1/2/812f266d3e23e9528e25efe400af098c)
Abstract:
The objective in the present study was to investigate the survival and effectiveness of different biological agent Pantoea agglomerans formulations against Penicillium spp. with different preharvest treatments. Results indicated a high sensitivity of non-adapted and osmotic-adapted P. agglomerans cells to environmental conditions in the field, resulting in preharvest treatments which were ineffective against Penicillium spp. In the second part of this study, dry conditions and solar radiation were identified as important environmental conditions that seriously affect populations of P. agglomerans cells. Different formulation strategies were tested in order to improve the resistance of cells to unfavourable environmental conditions. Osmotic-adapted P. agglomerans cells in the presence of 25 g L-1 of NaCl in the production medium [osmotic-adapted treatment (P25)] or at water activities (aw) of 0.98 [osmotic-adapted treatment (P98)] had higher survival rates than non-adapted cells, when these cells were sprayed on oranges and stored in hermetically sealed chambers at a low RH of 43%. Among seven additives tested, the presence of 5% Fungicover in the bacterial suspension improved adherence and persistence of P. agglomerans cells on oranges exposed to unfavourable conditions. Therefore, while P. agglomerans cells sprayed alone had log values of 0.5 CFU cm-2, in combination with Fungicover the population level of P. agglomerans cells reached log values of 5 and 4.2 CFU cm-2, at 0 and 24 h after application. Lyophilised cells showed greater resistance to unfavourable environmental conditions than fresh cells. The present study has demonstrated that the formulation improvement can provide better performance of biocontrol agents under environmental conditions non-conducive for growth and survival.
Keywords: Citrus decay; Additive; Formulation; Osmotic adaptation; Postharvest decay; Biocontrol; Penicillium digitatum; Penicillium italicum; Food Coat; Fungicover

Teresa P. Canamas, Immaculada Vinas, Josep Usall, Rosario Torres, Marina Anguera, Neus Teixido, Control of postharvest diseases on citrus fruit by preharvest applications of biocontrol agent Pantoea agglomerans CPA-2: Part II. Effectiveness of different cell formulations, Postharvest Biology and Technology, Volume 49, Issue 1, July 2008, Pages 96-106, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.12.005.
(http://www.sciencedirect.com/science/article/B6TBJ-4S0PX0V-1/2/9b6d7b56c1a1b8587e60fe028a96c9d6)
Abstract:
Infection of citrus fruit by postharvest pathogens often occurs in the field prior to harvest; therefore, it could be advantageous to apply biocontrol agents before harvest, which would reduce initial infection and then remain active and control pathogens in storage and under commercial conditions. The objective of the present work was to evaluate the effectiveness of different formulations of Pantoea agglomerans applied preharvest for controlling postharvest diseases on citrus. Results confirmed the protective effect of the additive Fungicover (FC) on populations of P. agglomerans exposed to non-conducive field conditions. In general, when osmotic-adapted and lyophilised P. agglomerans cells were used in bacterial treatments, these treatments showed greater survival rates than treatments with non-osmotic-adapted or fresh cells under field conditions. However, this superiority was only found when Fungicover was also added to suspensions of bacterial treatments. Therefore, bacterial treatments with Fungicover had population levels of P. agglomerans cells 1.2 and 2.8 log CFU cm-2 higher than bacterial treatments without Fungicover during field experiments. These results allowed us to conclude that it is possible to improve environmental stress tolerance and ecological competence of P. agglomerans cells by integrating certain formulation strategies. Consequently, the improved

formulation of P. agglomerans provided an effective control for orange fruit against natural postharvest pathogen infections and artificial infections of Penicillium digitatum with values of decay reduction higher than 50%. These latter results also demonstrated that it is possible to control postharvest pathogens using bacterial preharvest treatments.
Keywords: Orange fruit; Penicillium digitatum; Penicillium italicum; Fungicover; Food Coat; Additives; Osmoadaptation; Formulation; Field conditions; Environmental stress

Yan Zhao, Kang Tu, Xingfeng Shao, Wei Jing, Zipeng Su, Effects of the yeast Pichia guilliermondii against Rhizopus nigricans on tomato fruit, Postharvest Biology and Technology, Volume 49, Issue 1, July 2008, Pages 113-120, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.01.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4S0357F-6/2/992bf7c5b569bdddd5ea81af4e236c8b)
Abstract:
The yeast Pichia guilliermondii was examined for its ability to control Rhizopus nigricans on tomato fruit during storage, and in order to highlight the reason for biocontrol, a possible mode of action is discussed. Results showed that autoclaved yeast culture and culture filtrate had no effect on controlling the postharvest disease caused by R. nigricans, although inoculation of P. guilliermondii prior to R. nigricans resulted in enhanced biocontrol efficacy. Moreover, rapid colonization of the yeast on wound sites was observed during the initial 3 days at 20 [degree sign]C, and then the population stabilized for the remaining 4 days. This phenomenon indicated that at room temperature, P. guilliermondii could acclimatize itself to the environment of tomato fruit wounds and occupy the living space quickly. The results indicate that P. guilliermondii did not produce an antifungal substance, however, competition for nutrients and space on wounds appeared to play a role in the activity of the biocontrol and could be one of the mechanisms. In addition, the fruit inoculated with P. guilliermondii demonstrated changes in peroxidase (POD), polyphenoloxidase (PPO), superoxide dismutase (SOD), catalase (CAT), phenylalanine ammonia-lyase (PAL), chitinase (CHI) and [beta]-1,3-glucanase activities, all of which were correlated with the onset of induced resistance. This result suggests that tomato fruit is capable of responding to the yeast P. guilliermondii, which could activate defensive enzymes and thereby induce host disease resistance.
Keywords: Pichia guilliermondii; Rhizopus nigricans; Biocontrol; Antagonistic mechanisms; Tomato fruit

Sun Tay Choi, Donald J. Huber, Influence of aqueous 1-methylcyclopropene concentration, immersion duration, and solution longevity on the postharvest ripening of breaker-turning tomato (Solanum lycopersicum L.) fruit, Postharvest Biology and Technology, Volume 49, Issue 1, July 2008, Pages 147-154, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.01.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4S0357F-8/2/6cc1543e9afa769f4946b5963cae6803)
Abstract:
The influence of aqueous 1-methylcyclopropene (1-MCP) concentration, immersion duration, and solution longevity on the ripening of early ripening-stage tomato (Solanum lycopersicum L.) has been investigated. Tomato fruit at the breaker-turning stage were fully immersed in aqueous 1-MCP at 50, 200, 400 and 600 [mu]g L-1 for 1 min, quickly dried, and then stored at 20 [degree sign]C. Ethylene production, respiration, surface color development, and rate of accumulation of lycopene and polygalacturonase (PG) activity were suppressed and/or delayed in fruit exposed to aqueous 1-MCP. Suppression of ripening was concentration dependent, with maximum inhibition in response to 1 min immersion occurring at concentrations of 400 and 600 [mu]g L-1. Climacteric ethylene peaks were delayed approximately 6, 7, and 9 d and respiration was strongly suppressed in fruit treated with aqueous 1-MCP at 200, 400, and 600 [mu]g L-1, respectively, compared with control fruit. Fruit firmness, lycopene content, PG activity, and surface hue of fruit treated at the

three higher levels remained strongly suppressed compared with control. Skin hue values and pericarp lycopene content in response to treatment at the subthreshold 50 [mu]g L-1 provided evidence for differential ripening suppression in external versus internal tissues. Maximum delay of softening and surface color development in response to 50 [mu]g L-1 aqueous 1-MCP occurred following immersion periods of between 6 and 12 min. Factors affecting fruit penetration by aqueous 1-MCP and mechanisms contributing to recovery from 1-MCP-induced ripening inhibition are discussed.
Keywords: Ethylene; Firmness; Lycopene; 1-Methylcyclopropene; Polygalacturonase; Ripening; Softening; Tomato

Natalie Gerchikov, Alexandra Keren-Keiserman, Rafael Perl-Treves, Idit Ginzberg, Wounding of melon fruits as a model system to study rind netting, Scientia Horticulturae, Volume 117, Issue 2, 26 June 2008, Pages 115-122, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.03.015.
(http://www.sciencedirect.com/science/article/B6TC3-4SDNG6G-2/2/ec8444eb34ce9887248efc343c1d710a)
Abstract:
The rind of muskmelon (Cucumis melo L. var. reticulatus) fruits contains a network of suberized periderm tissue, referred as the `net', which originates in response to cracking of the fruit surface during its enlargement. Shallow cuts were made on the surface of melons to mimic naturally occurring cracking and induce net-like periderm development. Histological analysis of wounded fruits of the climacteric netted variety Krimka, and of two smooth melon varieties: the climacteric Momordica and the non-climacteric Tamdew, indicated that smooth melon varieties can undergo netting when their rind is fissured. Furthermore, the results implied that the climacteric character is not essential for net-tissue development, even though most netted varieties are climacteric. The involvement of ethylene in net-like periderm development was studied by analyzing the expression pattern of the ethylene-biosynthesis genes 1-aminocyclopropane-1-carboxylate synthase 1 and 1-aminocyclopropane-1-carboxylate oxidase 1 following wounding and during periderm development, and by applying the ethylene-generating chemical, Ethrel, as a lanolin paste, on the fresh cuts. Results suggested ethylene involvement in periderm initiation, but continuous exposure may interfere with further tissue development and organization. General implications of the current study on periderm development are further discussed.
Keywords: Cucumis melo; Fruit development; Fruit rind; Ethylene; Periderm; Wounding

G.K. Aseri, Neelam Jain, Jitendra Panwar, A.V. Rao, P.R. Meghwal, Biofertilizers improve plant growth, fruit yield, nutrition, metabolism and rhizosphere enzyme activities of Pomegranate (Punica granatum L.) in Indian Thar Desert, Scientia Horticulturae, Volume 117, Issue 2, 26 June 2008, Pages 130-135, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.03.014.
(http://www.sciencedirect.com/science/article/B6TC3-4SK4XCP-1/2/563e36fbc684def3901daa42689b04a3)
Abstract:
Production of horticultural crops has undergone enormous change in recent years due to development of innovative technologies including integrated nutrient management practices using biofertilizers. The present study represents the positive response of biofertilizers in nursery seedlings followed by their transplantation in harsh field conditions of Indian Thar Desert. Nursery and field experiments were carried out to assess the effectiveness of selected N2-fixing bacteria and AM fungi alone or in combination, on the growth and biomass production of Punica granatum. In both experiments, the combined treatment of Azotobacter chroococcum and Glomus mosseae was found to be the most effective. Besides enhancing the rhizosphere microbial activity and concentration of various metabolites and nutrients, these bioinoculants helped in better establishment of pomegranate plants under field conditions. A significant improvement in the plant height, plant canopy, pruned material and fruit yield was evident in 5-year-old pomegranate plants

in field conditions. In view of the above results, use of biofertilizer technology may be adopted for the establishment and development of other horticultural plant species in arid regions.
Keywords: AM fungi; Azotobacter; Azospirillum; Soil enzymes

Caixi Zhang, Kenji Tanabe, Partitioning of 13C-photosynthates from different current shoots neighboring with fruiting spur in later-maturing Japanese pear during the period of rapid fruit growth, Scientia Horticulturae, Volume 117, Issue 2, 26 June 2008, Pages 142-150, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.03.034.
(http://www.sciencedirect.com/science/article/B6TC3-4SH7F0W-1/2/1377687de0576b1e7d0f0224a7a89dbf)
Abstract:
To elucidate the fate of photosynthates from different current shoots and their influence on fruit growth and bud differentiation in neighboring spur complex during the period of rapid fruit growth in two late-maturing Japanese pear cultivars: `Atago' and `Shinkou' with contrasting fruit size, 13C labeling of single shoot was done to investigate of C-relations in fruit branches of eight shoot-combinations. The results showed that all of the current shoots investigated (bourse shoots of nonfruiting spur, bourse shoots of fruiting spur, extension shoot, nonfruiting spur, vegetative shoot, and water sprout) could export photosynthates to the neighboring fruit and buds. Water sprouts together with vegetative shoots, bourse shoots, and extension shoots are important source for fruit growth after shoot growth termination during the period of rapid fruit growth in production of late-maturing pears. The carbon transfer rate from the neighboring to the fruit bearing spur is depent (i) on the types of shoot which acts as C source, (ii) on the position of the fruiting spur and (iii) on the source-sink distance. Furthermore, the cultivar difference in carbon partitioning from different current shoot-combinations confirmed that the movement of photosynthates into the fruit was determined by sink strength of the fruit, and `Atago' exhibited a greater relative sink strength of fruit than `Shinkou'. In addition, vegetative shoots are very important C sources for fruit growth in `Atago' and the growth pattern of bourse shoot seriously affects C allocated to fruit in `Shinkou'.
Keywords: Photosynthesis; Carbon partitioning; Sink strength; 13C labelling; Fruit growth; Pear

Shogo Matsumoto, Takahiro Eguchi, Tsutomu Maejima, Hiromitsu Komatsu, Effect of distance from early flowering pollinizers `Maypole' and `Dolgo' on `Fiji' fruit set, Scientia Horticulturae, Volume 117, Issue 2, 26 June 2008, Pages 151-159, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.03.025.
(http://www.sciencedirect.com/science/article/B6TC3-4SH1J2R-2/2/d2dd565e15884f09ecb167f1b809135f)
Abstract:
An apple orchard consisting of a single cultivar under the condition of natural pollination must have suitable pollinizers such as Crab apples to ensure stable fruit production. We selected `Maypole' and `Dolgo' as pollinizers for the cultivar `Fuji', and investigated the rate of fruit and seeds in `Fuji' fruits produced by pollen of the pollinizers. We developed a method for tracing pollen flow based on the leaf color of progeny and S-RNase allele of `Maypole', and on Simple Sequence Repeat (SSR) analyses of `Maypole' and `Dolgo'. These were powerful tools for determining the distance insects (mainly Osmia cornifrons) carry pollen from the pollinizers to `Fuji'. Although the fruit set of `Fuji' apples was not reduced with increasing distance between `Fuji' apple trees and pollinizers (probably due to pollen flow from other commercial cultivars planted outside the area), the rate of `Fuji' apple fruit produced by the pollen of the pollinizers decreased with increasing distance. The rate of fruit produced by the pollinizers was 84% and 77% when `Fuji' was 2.5 m from `Maypole' and `Dolgo', respectively, and 71% and 64% when `Fuji' was 5 m from `Maypole' and `Dolgo', respectively, but was reduced to 47% and 39% when `Fuji' was 10 m from `Maypole' and `Dolgo', respectively. However, the spacing could cause reduced fruit size, and require extra fruit thinning

for producing large fruits. It could also cause reduction of the yield for increasing the planting area of pollinizers. We recommend that pollinizers should be planted not more than 10 m from `Fuji'.
Keywords: Pollen flow; Apple pollinizers; S-RNase; SSR; `Fuji'

A. Morales-Sillero, H. Rapoport, J.E. Fernandez, A. Troncoso, Olive fruit pulp and pit growth under differing nutrient supply, Scientia Horticulturae, Volume 117, Issue 2, 26 June 2008, Pages 182-184, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.03.028.
(http://www.sciencedirect.com/science/article/B6TC3-4SHN0MN-1/2/d7645cef785662275a698d6b7864cda0)
Abstract:
The objetive of this work was to study if the addition of nutrients to the irrigation water modified `Manzanilla de Sevilla' olive pulp and pit growth. The experiment was carried out during the 2003 fruit-growth period in an irrigated orchard near Seville, southern Spain. Fruit samples were taken in July and September, at 12 and 21 weeks after full bloom (AFB) respectively, in trees irrigated with (T1) or without (T0) the addition of nutrients (N-P-K). The nutrient availability of T1 fruits increased the fruit fresh and dry weight, longitudinal and equatorial diameters, and the pulp-to-pit ratio, characteristics particularly appreciated for table olives. The balance of growth between the fruit mesocarp (pulp) and endocarp (pit) was modified because those two tissues were affected differently. Mesocarp fresh weight was significantly higher at both 12 and 21 weeks AFB in the fertilized treatment, as was mesocarp dry weight at 12 weeks AFB. Neither the endocarp fresh and dry weight nor shape (the ratio of the equatorial and longitudinal diameters) was altered at either of the two studied dates. These results emphasize the importance of an appropriate fertilization management in irrigated olive orchards, particularly for table olives, and also confirm the olive endocarp as a strong sink tissue that competes with the mesocarp during early development.
Keywords: Olea europaea; Nutrient supply; Endocarp; Mesocarp; Pulp-to-pit ratio

Sladjana Savic, Radmila Stikic, Biljana Vucelic Radovic, Biljana Bogicevic, Zorica Jovanovic, Vesna Hadzi-Taskovic Sukalovic, Comparative effects of regulated deficit irrigation (RDI) and partial root-zone drying (PRD) on growth and cell wall peroxidase activity in tomato fruits, Scientia Horticulturae, Volume 117, Issue 1, 12 June 2008, Pages 15-20, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.03.009.
(http://www.sciencedirect.com/science/article/B6TC3-4SBRTS7-1/2/4ac6ba7485132cfcd1937bd615a5d605)
Abstract:
The effects of regulated deficit irrigation (RDI) and partial root-zone drying (PRD) on tomato fruit growth and cell wall peroxidase activity in tomato exocarp were investigated in growth chamber conditions. The RDI treatment was 50% of water given to fully irrigated (FI) plants and the PRD treatment was 50% of water of FI plants applied to one half of the root system while the other half dried down, with irrigation shifted when soil water content of the dry side decreased 15-20%. RDI significantly reduced fruit diameter, though PRD reduced fresh weight while having no significant effect on fruit diameter. The activity of peroxidase was significantly higher in RDI and PRD treated plants compared to those of FI. Differences between RDI and PRD were expressed on temporal basis. In the fruits of RDI treated plants peroxidase activity began to increase in the phase when fruit growth started to decline with the peak of enzyme activity of 6.1 HRPEU g-1 FW reached in the phase of mature green fruits when fruit growth rate was minimal. Increase of peroxidase activity in PRD fruits coincided with the ripening phase and the peak of enzyme activity (5.3 HRPEU g-1 FW) was measured at the end of fruit ripening. These data potentially identified contrasting and different roles of tomato exocarp cell wall peroxidase in RDI and PRD treated plants. In RDI treated plants peroxidase may have a role in restricting fruit growth rate, although the increase in enzyme activity during ripening of PRD treated fruit pointed out that peroxidase may also control fruit maturation by inducing more rapid process.

Keywords: Tomato fruits; Exocarp; Partial root drying (PRD); Regulated deficit irrigation (RDI); Peroxidase activity

P. Pagamas, E. Nawata, Sensitive stages of fruit and seed development of chili pepper (Capsicum annuum L. var. Shishito) exposed to high-temperature stress, Scientia Horticulturae, Volume 117, Issue 1, 12 June 2008, Pages 21-25, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.03.017.
(http://www.sciencedirect.com/science/article/B6TC3-4SFR7W6-1/2/8b73bdb41c463ad908e02cfabe153411)
Abstract:
The sensitivity of developmental stages to high temperature was investigated in chili pepper (Capsicum annuum L. var. Shishito). Plants were subjected to heat stress (38/30 [degree sign]C day/night) immediately after anthesis for 5 or 10 days, or from 10 to 30 days after anthesis (DAA), from 30 DAA until harvest of the seeds, or immediately after anthesis until harvest of the seeds. Control plants were grown at 30/22 [degree sign]C (day/night). Exposure to high temperature (heat stress) during different periods of development after anthesis adversely affected fruit growth, seed yield, and seed quality in chili pepper. Heat stress for the whole period after anthesis, and from 30 DAA until harvest reduced the growth period of chili fruits by 15 and 10 days, respectively. Heat stress from 10 to 30 DAA reduced fruit width and fruit weight. The early stage of seed development from anthesis until 10 DAA was sensitive to high temperature, which affected fruit length, fruit weight and seed set. Applying high temperatures to plants for 10 DAA increased the proportion of abnormal seeds per fruit. High temperatures from 10 DAA until 30 DAA inhibited carbohydrate accumulation and adversely affected seed germinability and vigor. These results suggest that the stage of development at which chili peppers are exposed to high temperatures is an important factor in fruit and seed growth and in seed quality.
Keywords: Fruit growth; Germination; Heat; Seed vigor

Nawaf M. Freihat, Abd Al-Majeed Al-Ghzawi, Shahera Zaitoun, Ahmad Alqudah, Fruit set and quality of loquats (Eriobotrya japonica) as effected by pollinations under sub-humid Mediterranean, Scientia Horticulturae, Volume 117, Issue 1, 12 June 2008, Pages 58-62, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.03.012.
(http://www.sciencedirect.com/science/article/B6TC3-4SG01JY-2/2/38cc1c5351335de5a6873d0873535b07)
Abstract:
A field experiment was conducted during 2005 and 2006 growing seasons at Ras Munif (32[degree sign]22'N, 35[degree sign]45'E), Ajloun, Jordan, to evaluate different pollination treatments and their effects on fruit set and quality of loquat fruit grown under Mediterranean conditions. Open, supplemental, rain, and covered pollination treatments were imposed on the selected trees. Results showed that under supplemental and open-pollination, extremely higher fruit set was obtained compared with rain and covered treatments. In spite of a heavy crop load, fruits obtained under open and supplemental pollination were also heavier and larger, this could be partly due to a significant increase in seeds and flesh weight. Sugar content was good for both open and supplemental pollination. Wind plays little or no role in loquat pollination process. Loquat flowers attracted very limited number of bee visitors, A. mellifera, Anthophora albigena and Xylocopa violocea of family Apidae and Halictus quadricinctus of family Halictidae were recorded the only loquat flower visitors. They showed a variation in their visiting time but loquat flowers attracted the highest rate and number during the mid of the day.
Keywords: Loquat; Pollination; Bees; Jordan

Shanthi G. Parkar, David E. Stevenson, Margot A. Skinner, The potential influence of fruit polyphenols on colonic microflora and human gut health, International Journal of Food

Microbiology, Volume 124, Issue 3, 10 June 2008, Pages 295-298, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2008.03.017.
(http://www.sciencedirect.com/science/article/B6T7K-4S62RFN-4/2/59ebc300d99c00c19b4c2bea19854c30)
Abstract:
The effect of common dietary polyphenols on growth of human gut bacteria and their adhesion to enterocytes was investigated. The influence on the growth of a probiotic (Lactobacillus rhamnosus), a commensal (Escherichia coli) and two pathogenic bacteria (Staphylococcus aureus, Salmonella typhimurium) was determined, together with effects on adhesion of pathogenic and probiotic bacteria to cultured Caco-2 cells. All polyphenols, except rutin, were found to affect the viability of representative gut flora in vitro, at doses likely to be present in the gastrointestinal tract, but to differing degrees. Naringenin and quercetin were the most active with the lowest minimum inhibitory concentrations for all the four bacteria tested. The remaining polyphenols had the most marked effect on the Gram positive enteropathogen S. aureus. Naringenin and phloridzin were the most effective inhibitors of S. typhimurium adherence to Caco-2 enterocytes while phloridzin and rutin enhanced the adherence of the probiotic L. rhamnosus. Polyphenols appear to have potential to alter gut microecology and, by affecting the total number of beneficial microflora in the gut, may confer positive gut health benefits.
Keywords: Polyphenols; S. typhimurium; L. rhamnosus; Caco-2 cells; Adhesion

He-zhong DONG, Wei TANG, Wei-jiang LI, Zhen-huai LI, Yue-hua NIU, Dong-mei ZHANG, Yield, Leaf Senescence, and Cry1Ac Expression in Response to Removal of Early Fruiting Branches in Transgenic Bt Cotton, Agricultural Sciences in China, Volume 7, Issue 6, June 2008, Pages 692-702, ISSN 1671-2927, DOI: 10.1016/S1671-2927(08)60104-2.
(http://www.sciencedirect.com/science/article/B82XG-4SWFK1G-8/2/6aad70e2d066a6ca51dd7d3f0d6f24d7)
Abstract:
Two-year field experiments were conducted at Linqing, Yellow River valley of China, to study the plant response to the removal of early fruiting branches in transgenic Bt (Bacillus thuringiensis) cotton (Gossypium hirsutum L.) from 2003 to 2004. Plants were undamaged and treated by removing two basal fruiting branches (FB) at squaring to form the control and the removal treatment, respectively. The plant height, leaf area (LA), dry weight of fruiting forms (DWFF), the number of fruiting nodes (NFN), photosynthetic (Pn) rate, and levels of leaf chlorophyll (Chl), N, P, K, and Cry1Ac protein in main-stem leaves were measured at a 10- or 20-d interval after FB removal, and the sink/source ratio as indicated by NFN/LA and DWFF/LA was determined. FB removal significantly increased the plant height, LA, and plant biomass in both years. Lint yields were increased 7.5 and 5.2% by removal compared with their controls in 2003 and 2004, respectively. Significant increases in boll size (5.7 and 5.1%) were also observed in removal than in control for both years. Either NFN/LA or DWFF/LA was significantly reduced by removal before 40 d after removal; however, both NFN/LA and DWFF/LA were significantly enhanced by FB removal at 80 d after removal compared to the untreated control. There was no significant difference in fiber quality in the first two harvests between removal and control, but fiber strength and micronarie in the third harvest were significantly improved by FB removal. In terms of leaf Chl, Pn rate, levels of total N, P, and K in late season, leaf senescence was considerably delayed by FB removal. Levels of Cry1Ac protein in the fully expanded young leaves were considerably higher in FB-excised plants than in control, indicating FB removal enhanced Cry1Ac expression. It is suggested that the yield and quality improvement with FB removal may be attributed to the increased NFN/LA or DWFF/LA in late season and delayed leaf senescence, respectively. FB removal can be a potential practice incorporated into the intensive cultivation system for enhancing transgenic Bt cotton production.

Keywords: branch removal; Bt cotton; Cry1Ac protein; leaf senescence; photosynthetic rate; sink/source ratio

Antonia Spadafora, Silvia Mazzuca, Francesca Fiorella Chiappetta, Attilio Parise, Enzo Perri, Anna Maria Innocenti, Oleuropein-Specific-[beta]-Glucosidase Activity Marks the Early Response of Olive Fruits (Olea europaea) to Mimed Insect Attack, Agricultural Sciences in China, Volume 7, Issue 6, June 2008, Pages 703-712, ISSN 1671-2927, DOI: 10.1016/S1671-2927(08)60105-4.
(http://www.sciencedirect.com/science/article/B82XG-4SWFK1G-9/2/2fe614a2afb3152b6eb988124fcbe616)
Abstract:
Olive fruits are seriously deteriorated by pre and postharvest damage due to the attack of insects, such as Bactrocera olaea, which strongly alters the quality of olives. Defence response in olive fruits injured both by pathogens and by mechanical damages has been associated with the enzyme [beta]-glucosidase, which specifically hydrolyses oleuropein, producing highly reactive aldehyde molecules. In situ detection of [beta]-glucosidase activity in olive fruit tissues following injury, which simulates Bactrocera oleae punctures, is reported. The assay was performed in two cultivars showing different degrees of susceptibilities to fly infestation. In both cultivars, the histochemical assay for [beta]-glucosidase showed that within 20 min after the injury, a strong [beta]-glucosidase activity could be observed in the damaged tissues. Thereafter a progressive enzyme inactivation occurred starting from tissues around the boundary of the injury with decrease of the enzyme activity and stopped after 3 h. Whereas the mass of active cells reached a distance of (300 +/- 50) [micro sign]m from the edge of the injury. Biochemical analyses showed that in extracts of the injured fruit, [beta]-glucosidase activity rapidly increased within 20 min from injury, thereafter decreasing and reaching values comparable with those in intact fruits. Following puncture, the oleuropein contents did not change significantly in the high susceptibility cultivar, whereas it rapidly decreased in the cultivar showing low susceptibility. The results strongly suggest that olive fruits susceptible towards fly infestation could be related to the ability of the oleuropein-degrading-[beta]-glucosidase to produce the highly reactive molecules in the damaged tissues. As a consequence of puncture, high level of peroxidase activity was detected. This feature also suggested that this enzyme could play a key role in the defence response against insect injuries.
Keywords: [beta]-glucosidase (EC 3.2.1.21); oleuropein; Olea europaea; Bactrocera oleae infestation; cultivar resistance

Taisheng Du, Shaozhong Kang, Jianhua Zhang, Fusheng Li, Boyuan Yan, Water use efficiency and fruit quality of table grape under alternate partial root-zone drip irrigation, Agricultural Water Management, Volume 95, Issue 6, June 2008, Pages 659-668, ISSN 0378-3774, DOI: 10.1016/j.agwat.2008.01.017.
(http://www.sciencedirect.com/science/article/B6T3X-4S2VM9D-1/2/059d4eedfbaa6f63d2b44d7b3afd2811)
Abstract:
Two-year field experiments were conducted to investigate the effect of alternate partial root-zone drip irrigation on fruit yield, fruit quality and water use efficiency of table grape (Vitis vinifera L. cv Rizamat) in the arid region of northwest China. Three irrigation treatments were included, i.e. CDI (conventional drip irrigation, both sides of the root-zone irrigated), ADI (alternate drip irrigation, both sides of the root-zone irrigated alternatively with half the water) and FDI (fixed drip irrigation, only one side of the root system irrigated with half the water). Results indicated that compared to CDI, ADI kept the same photosynthetic rate (Pn) but reduced transpiration rate, thus increased leaf water use efficiency (WUE) of table grape. And diurnal variation of leaf water potential showed no significant differences during 7.00 a.m. to 14.00 p.m. in both years. ADI also produced similar yield and improved WUEET by 26.7-46.4% and increased the percentage of edible grape by 3.88-5.78%, vitamin C content in the fruit by 15.3-42.2% and ratio of total soluble solid

concentration/titrated acid in both years as compared to CDI. Thus ADI saved irrigation water, improved the water use efficiency and fruit quality of table grape without detrimental effect on the fruit yield in arid region.
Keywords: Alternate partial root-zone irrigation; Fruit yield; Water use efficiency; Fruit quality; Table grape (Vitis vinifera L.)

Pervin Kinay, Mehmet Yildiz, The shelf life and effectiveness of granular formulations of Metschnikowia pulcherrima and Pichia guilliermondii yeast isolates that control postharvest decay of citrus fruit, Biological Control, Volume 45, Issue 3, June 2008, Pages 433-440, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2008.03.001.
(http://www.sciencedirect.com/science/article/B6WBP-4S19RH6-1/2/9a495e5ae66760a965ee6327b78616c4)
Abstract:
Our overall objectives were to prepare commercially acceptable formulations of the postharvest biological control yeasts, Metschnikowia pulcherrima and Pichia guilliermondii, which have a long storage life and to determine the effectiveness of these formulations to control postharvest green and blue moulds on citrus fruit. Yeasts, grown on a cane molasses-based medium, were combined with talc or kaolin carriers and various adjuvants and the viability of yeast in 12 formulations was determined over a 6 month period. Formulation no. 11, containing talc, sodium alginate, sucrose, and yeast extract, for both yeasts had a significantly higher viable yeast cell content over a 6 month storage period. Among the formulations, three formulations (formulations no. 5, 6, and 11) were selected for additional in vivo testing because they had higher levels of viability amongst yeast cell populations during storage and were easier to resuspend remained in suspension more easily. These formulations were tested on Satsuma mandarin and grapefruit to control green and blue moulds. Formulations no. 5, 6, and 11 for both yeasts effectively controlled green mould, while only formulation no. 11 with either yeast isolate M. pulcherrima (isolate M1/1) or P. guilliermondii (isolate P1/3) effectively controlled both blue and green moulds.
Keywords: Biological control; Yeast; Metschnikowia pulcherrima; Pichia guilliermondii; Granular formulation; Citrus; Penicillium italicum; Penicillium digitatum

Bushra Sultana, Farooq Anwar, Flavonols (kaempeferol, quercetin, myricetin) contents of selected fruits, vegetables and medicinal plants, Food Chemistry, Volume 108, Issue 3, 1 June 2008, Pages 879-884, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.11.053.
(http://www.sciencedirect.com/science/article/B6T6R-4R7RS9M-6/2/d3df1e45834da9f210b725ca0c9827a7)
Abstract:
The concentrations of flavonols (kaempeferol, quercetin, myricetin) were determined in 22 plant materials (9 vegetables, 5 fruits, and 8 medicinal plant organs). The materials were extracted with acidified methanol (methanol/HCl, 100:1, v/v) and analyzed by reverse phase high-performance liquid chromatographic (RP-HPLC) with UV detection. The total flavonols contents varied significantly ($P < 0.05$) among vegetables, fruits and medicinal plant organs ranged from 0 to 1720.5, 459.9 to 3575.4, and 2.42 to 6125.6 mg kg-1 of dry matter, respectively. Among vegetables, spinach and cauliflower exhibited the highest amounts of flavonols (1720.5 and 1603.9 mg kg-1, respectively), however, no flavonols were detected in garlic. Within fruits, highest level of flavonols was observed in strawberry (3575.4 mg kg-1), whereas, the lowest in apple fruit (459.9 mg kg-1). Of the medicinal plant organs, moringa and aloe vera leaves contained the highest contents of flavonols (6125.6 and 1636.04 mg kg-1), respectively, whereas, lowest was present in barks (2.42-274.07 mg kg-1). Overall, leafy green vegetables, soft fruits and medicinal plant leaves exhibited higher levels of flavonols.
Keywords: Plant materials; Anti-oxidants; Extraction/hydrolysis; RP-HPLC; Flavonols

K. Pallauf, J.C. Rivas-Gonzalo, M.D. del Castillo, M.P. Cano, S. de Pascual-Teresa, Characterization of the antioxidant composition of strawberry tree (Arbutus unedo L.) fruits, Journal of Food Composition and Analysis, Volume 21, Issue 4, June 2008, Pages 273-281, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.11.006.
(http://www.sciencedirect.com/science/article/B6WJH-4RSJDSJ-1/2/1a78923eb75fba3543031085e28b035f)
Abstract:
The fruits of the strawberry tree (Arbutus unedo L.) are consumed mainly as processed product, but may be a good source of antioxidants if consumed as fresh fruit. The aim of the present study was to identify and quantify the antioxidant components present in strawberry tree fruits, including flavonoids, vitamins C and E and carotenoids. The fruits are a very good source of antioxidants precisely because they have a high flavonoid content (32.37 mg/100 g edible portion) and, within this group of antioxidant compounds, proanthocyanidins are the most abundant, representing more than 80% of the total flavonoid contents. Anthocyanins are also present as glycosides of cyanidin and delphinidin, with cyanidin-3-galactoside the most abundant. Other antioxidants present in this fruit were ellagic acid and its diglucoside derivative. Vitamin C, vitamin E and carotenoids were also identified and quantified.
Keywords: Arbutus unedo; Strawberry tree; Antioxidant; Flavonoids; Liquid chromatography; Mass spectrometry; LC/MS

T. Mezadri, D. Villano, M.S. Fernandez-Pachon, M.C. Garcia-Parrilla, A.M. Troncoso, Antioxidant compounds and antioxidant activity in acerola (Malpighia emarginata DC.) fruits and derivatives, Journal of Food Composition and Analysis, Volume 21, Issue 4, June 2008, Pages 282-290, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.02.002.
(http://www.sciencedirect.com/science/article/B6WJH-4S03RF1-1/2/fca0d71748339f82b8b926e47e95cd76)
Abstract:
Acerola (Malpighia emarginata DC.) is a wild plant from Central America. This fruit is well known as an excellent food source of vitamin C, and it also contains phytochemicals such as carotenoids and polyphenols. The present work evaluates the antioxidant capacity of hydrophilic extracts of acerola pulps and juices by 2,2'-azino-bis-(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS), ORAC and 1,1-diphenyl-2-picrylhydrazyl (DPPH) methods. Antioxidant activity values obtained for acerola juice were higher than those reported for other fruit juices particularly rich in polyphenols such as strawberry, grape and apple juices, among others. Vitamin C, total phenol index (TPI), total anthocyanins and polyphenolic compounds by high performance liquid chromatography (HPLC), as main factors responsible for antioxidant activity, were determined. Contents in total ascorbic acid ranged from 6.32 to 9.20 g kg-1 of pulp and 9.44 to 17.97 g L-1 of juice. Five different polyphenolic compounds were identified in the samples by means of HPLC and diode-array detection: chlorogenic acid, (-)-epigallocatechin gallate, (-)-epicatechin, procyanidin B1 and rutin, being the two last predominant. By means of solid phase extraction (SPE) three soluble polyphenolic fractions (phenolic acids, anthocyanins and flavonoids) were separated from the different sample extracts, and their respective antioxidant activities calculated. Among them, phenolic acids are the main contributors to the antioxidant activity.
Keywords: Malpighia emarginata DC.; Acerola; Fruit juice; Antioxidant activity; ORAC; DPPH; ABTS; Vitamin C; Polyphenols; HPLC

Saeed Nojavan, Faezeh Khalilian, Fatemeh Momen Kiaie, Atyeh Rahimi, Armin Arabanian, Soheila Chalavi, Extraction and quantitative determination of ascorbic acid during different maturity stages of Rosa canina L. fruit, Journal of Food Composition and Analysis, Volume 21, Issue 4, June 2008, Pages 300-305, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.11.007.

(http://www.sciencedirect.com/science/article/B6WJH-4RSJDSJ-2/2/a8df0f81bd3d7d5455cb6def85411800)
Abstract:
Dog rose (Rosa canina L.) fruit in different stages of proposed was used as a source of ascorbic acid. Two sample preparation methods for extracting ascorbic acid in dog rose fruit were evaluated. These methods used high performance of liquid chromatography (HPLC) for detecting of ascorbic acid, but differed in the preparation of sample (freezing and mild-temperature-drying procedure). Under optimized conditions, the freezing procedure demonstrated better results. The method was used to compare the amount of ascorbic acid in fully ripe, half-ripe and unripe dog rose samples. The results show that dog rose has the highest amount of ascorbic acid in its fully ripe maturity stage. In addition, the intra-day stability of ascorbic acid in standard solution, fully ripe dog rose extract and fully ripe dog rose intact fruit, was investigated. The results show that ascorbic acid has highest stability in untreated dog rose fruits. As a comparative study, orange sample was also analyzed by the methodology developed in this work. The results show that the amount of ascorbic acid in dog rose fruit (417 mg per 100 g) is about 6 times higher than that in orange sample (76 mg per 100 g).
Keywords: Rosa canina L.; Dog rose; Ascorbic acid; Vitamin C; Freezing; Liquid chromatography; Extraction

Ewa Bobrowska-Grzesik, Agata Jakobik-Kolon, Leaching of cadmium and lead from dried fruits and fruit teas to infusions and decoctions, Journal of Food Composition and Analysis, Volume 21, Issue 4, June 2008, Pages 326-331, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.11.008.
(http://www.sciencedirect.com/science/article/B6WJH-4RSJDSJ-3/2/7fe7cbb75fb0f5b1d9ae7c512923a2b2)
Abstract:
Leaching of Cd and Pb from selected dried fruits (bilberries and apples) and commercially available fruit teas into infusions and decoctions during preparation of beverages, has been investigated. The content of Cd and Pb in the studied materials and water extracts was analyzed by graphite furnace atomic absorption spectroscopy. Direct slurry sampling of the examined materials to the graphite furnace gave comparable results with dry ashing mineralisation. The content of Cd and Pb in the studied materials was established and the percentage of the total content extracted to infusions and decoctions was found. The highest content of these elements was found in samples of bilberries: Cd--0.813; Pb--1.370 [mu]g/g. The maximum obtained values for leaching of cadmium from apples, bilberries (boiling for 20 min) and fruit teas (infusion for 10 min) were 7.9%, 5.8% and 8.6%, respectively. Lead is more easily leached from the studied materials than cadmium-maximum values: 47.8% for apples; 35.3% for bilberries and 35.2% for fruit teas have been found. The evaluation of the intake of those elements with the consumption of fruits and extracts on the basis of values of provisional tolerable weekly intake (PTWI) and admissible content of the elements in the studied materials is discussed.
Keywords: Cadmium; Lead; Fruit; Dried fruit; Bilberry; Apple; Decoctions; Infusions; GFAAS analysis; Food safety; Metal contamination in food through leeching; PTWI

P.A. Sopade, P.J. Halley, J.A.Y. Cichero, L.C. Ward, J. Liu, S. Varliveli, Rheological characterization of food thickeners marketed in Australia in various media for the management of dysphagia. III. Fruit juice as a dispersing medium, Journal of Food Engineering, Volume 86, Issue 4, June 2008, Pages 604-615, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.11.013.
(http://www.sciencedirect.com/science/article/B6T8J-4R6B2C5-4/2/562fe6191b9b77bf1b438e3d533089cf)
Abstract:
Apple, orange and pineapple juices were used to prepare thickened fluids from six Australian commercially available food thickeners that are based on guar gum, modified starch and xanthan

gum. Using a strain-controlled rheometer, changes in shear stress with the rate of shear (1-100 s-1) at 20 [degree sign]C were independent of the thickener or fruit juice. As the solids content of the fluids increased, so were the viscosity, density and extrapolated yield stress. The density, yield stress and viscosity of the thickened fluids were not significantly influenced ($p > 0.05$) by fruit juice, but the type of thickener significantly ($p < 0.05$) affected these properties. The Herschel-Bulkley model was found to be the most suitable in describing the rheological data of the thickeners in the fruit juices. The relevant parameters obtained for the recommended models can be used to obtain a known viscosity of the thickened fluids, match to fluids used in videofluoroscopy and obtain objective classification of the thickened fluids. Sample calculations are included.
Keywords: Apple juice; Orange juice; Pineapple juice; Thickened fluids; Starch; Gum; Swallowing; Yield stress; Rheology models; Equiviscosity

Ming-Jun Li, Feng-Wang Ma, Min Zhang, Fei Pu, Distribution and metabolism of ascorbic acid in apple fruits (Malus domestica Borkh cv. Gala), Plant Science, Volume 174, Issue 6, June 2008, Pages 606-612, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2008.03.008.
(http://www.sciencedirect.com/science/article/B6TBH-4S4TNS8-1/2/86d1de6ef3eeadf01e2305001e07b33c)
Abstract:
The objective of this study was to determine ascorbic acid (AsA) distribution, biosynthesis and recycling in different tissues of young and mature fruit of cv. Gala apple (Malus domestica Borkh). Our results showed that the peel of `Gala' apple had the highest AsA levels among all the tissue types, which resulted from a combination of, lower ascorbate peroxidase (APX, EC 1.11.1.11) activity consuming AsA, and higher dehydroascorbate reductase (DHAR, EC 1.8.5.1) and monodehydroascorbate reductase (MDHAR, EC 1.6.5.4) activities used to recycle AsA. Exogenous feeding of AsA synthesis precursors demonstrated that the peel was capable of de nono AsA biosynthesis via l-galactose and d-galacturonic acid pathways whereas the flesh and seed were only able to synthesize AsA via l-galactose pathway. The young fruit had higher AsA concentration and stronger capability of AsA biosynthesis and recycling. The sun-exposed peel had higher AsA concentration and stronger capability of recycling AsA than the shaded peel, while there was no difference in the flesh between the sun-exposed side and the shaded side. Abundant AsA was found in fruit vascular tissue, which suggests that AsA can be transported to vascular tissues of fruit or vascular tissues could synthesize AsA itself in `Gala' apple.
Keywords: Apple fruits; Ascorbic acid; Distribution; Metabolism

A. Mizrach, Ultrasonic technology for quality evaluation of fresh fruit and vegetables in pre- and postharvest processes, Postharvest Biology and Technology, Volume 48, Issue 3, June 2008, Pages 315-330, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.10.018.
(http://www.sciencedirect.com/science/article/B6TBJ-4RW4RXN-1/2/b5a54cca4aa82c0ab62c19282a07337f)
Abstract:
Increasing public demands for improved quality of fruit and vegetables in the fresh market and the food industry, and growers' expectations of high prices for premium quality products, raise the necessity for fast, accurate, and objective methods for measuring and monitoring product quality along the chain of pre- and postharvest processes, from the field to the consumer. Ultrasound technology provides one of the foundations for a non-destructive, fast and reliable technique for correlating specific quality-related indices and characteristics of fruit and vegetables with the stages of development during growth and maturation, and in the course of storage and shelf-life, until they are ready for consumption. This review summarizes the last two decades of studies, adaptation, modification, and innovation of ultrasound technology and devices for determination of material properties of fresh fruit and vegetable tissues, in both pre- and postharvest applications. Included are descriptions of the various methods of ultrasonic measurement, the equipment, the

procedures for data processing and correlating the measurements of ultrasound parameters with quality indices of fruit and vegetables in the course of the various pre- and postharvest processes. It is concluded that much progress has been made in these fields during recent years.
Keywords: Shelf-life; Ripeness; Firmness; Attenuation

Gene E. Lester, D. Mark Hodges, Antioxidants associated with fruit senescence and human health: Novel orange-fleshed non-netted honey dew melon genotype comparisons following different seasonal productions and cold storage durations, Postharvest Biology and Technology, Volume 48, Issue 3, June 2008, Pages 347-354, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.11.008.
(http://www.sciencedirect.com/science/article/B6TBJ-4RR82Y8-2/2/6692605be1fa8befbc6a8e895797d9e6)
Abstract:
Orange-fleshed cantaloupe fruit (Cucumis melo L. Reticulatus group) continues to raise food-safety concerns due to attachment of enteric bacteria to sites on the netted surface inaccessible to sanitation. Non-netted orange-fleshed honey dew fruit (Cucumis melo L. Inodorus group) versus cantaloupe offers a safer and a healthier (nutritional content) option. Some commercially available non-netted orange-fleshed honey dew genotype fruit were compared for antioxidants associated with storage quality following autumn and spring production cycles, harvested at abscission (mature) and stored for up to 24 d at 5 [degree sign]C or 10 [degree sign]C. Spring versus autumn production generally yielded higher overall levels of 5-methyltetrahydrofolate (folic acid), calcium, malondialdehyde (MDA), and lipophilic total antioxidant capacities. `Orange Delight' and `Orange Dew', were generally superior to `Honey Gold', `Temptation' and a breeding line as they consistently demonstrated some of the highest levels of total ascorbic acid, [beta]-carotene, and potassium. `Orange Delight' and `Orange Dew' were also among the cultivars with the highest activities of ascorbate peroxidase (EC 1.11.1.11), catalase (EC 1.11.1.6), and superoxide dismutase (EC 1.15.1.1). These two cultivars also exhibited the least increase in MDA (i.e. lipid peroxidation) during storage, suggesting antioxidant levels limited oxidative-related senescence compared to the other genotypes. Results indicate that there are significant differences in human health-related and storage quality-related phytochemical profiles between orange-fleshed honey dew cultivars and that high antioxidant levels are associated with reduced lipid peroxidation during fruit cold storage.
Keywords: Cucumis melo; Ascorbate peroxidase; Catalase; Malondialdehyde; 5-Methyltetrahydrofolate; Superoxide dismutase

Yasar Karakurt, Donald J. Huber, Cloning and characterization of differentially expressed genes in ethylene-treated watermelon fruit, Postharvest Biology and Technology, Volume 48, Issue 3, June 2008, Pages 372-377, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.002.
(http://www.sciencedirect.com/science/article/B6TBJ-4R1NNCM-1/2/3b89d6a8487a9027691c018f4ebeef6c)
Abstract:
Exposure of watermelon fruit to ethylene leads to acute placental-tissue softening and watersoaking. mRNA differential display strategy was utilized to isolate and characterize genes associated with development of the disorder. Watermelon fruit were harvested at the full-ripe stage and exposed to 50 [mu]L L-1 ethylene for 12 h, and 1, 3, and 6 d at 20 [degree sign]C. DNA-free total RNA (0.2 [mu]g) isolated from fruit treated with air or ethylene for 12 h was reverse transcribed using three different one-base-anchored oligo dT primers. High stringency PCR was performed using eight different 13-mer arbitrary primers in combination with the fluorescent-labeled one-base-anchored oligo dT primers. The PCR fluorescent-labeled products were separated on a 6% polyacrylamide sequencing gel and differentially expressed bands were isolated. Confirmation of true positive bands was performed by reverse northern blotting.

Comparison of mRNA profiles of ethylene- and air-treated fruit revealed that 78 genes were differentially expressed, of which 15 partial cDNAs were isolated and characterized. BLAST search results revealed significant homologies to ethylene biosynthesis and signal transduction pathway genes, lipid-metabolizing enzymes, proteins involved in plant defense responses, radical scavenging enzymes, exonucleases, and expansins. Northern blot analysis of RNA isolated from air- and ethylene-treated fruit stored for 1, 3, and 6 d revealed an ethylene-dependent expression pattern of all corresponding genes. The data indicate that ethylene treatment of watermelon fruit results in a rapid up-regulation of oxidative and hydrolytic enzymes.
Keywords: Differential display; Gene expression; Watermelon; Watersoaking

Kerry R. Everett, Ian C. Hallett, Jonathan Rees-George, Robert W. Chynoweth, Henry A. Pak, Avocado lenticel damage: The cause and the effect on fruit quality, Postharvest Biology and Technology, Volume 48, Issue 3, June 2008, Pages 383-390, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.008.
(http://www.sciencedirect.com/science/article/B6TBJ-4PXNHG8-4/2/f7e7898c777bf3cab25049d05f180328)
Abstract:
Avocado fruit can develop small, 1-5 mm diameter brown spots immediately after harvest. These symptoms are typically more severe among fruit harvested following rain. The incidence of the brown spots increased significantly when fruit were artificially imbibed with water, but not when immersed in water. Morphological examination with the light and electron microscope showed there was a change in lenticels that was caused by water uptake. In unaffected fruit, large intercellular spaces were observed in cells below the lenticels, but when the fruit had taken up water, these cells became turgid and filled these spaces. Swollen cells associated with lenticels were more distended than other cells in the mesocarp, because the expansion of mesocarp cells was limited by adjacent cells. Swollen cells in the lenticels became brown more rapidly than other cells, probably because their turgidity made them more susceptible than other cells. Cells close to the surface were also more susceptible to discoloration than internal fruit cells. They were not prone to compression from adjacent cells towards the surface and were consequently more distended than internal cells. At harvest, prior to coolstorage, no fungal mycelium or spores were observed associated with lenticel damage symptoms. Surface-sterilised samples of lenticel damaged tissue failed to yield a fungal pathogen. In coolstorage, however, these fruit developed slightly sunken dark brown patches with irregular margins, referred to as measles, about 10-50 mm diameter The fungi Colletotrichum acutatum and Phomopsis sp. were isolated from such tissue in greater quantities than adjacent green tissue. Imbibation had no effect on measles development, but fruit jostled in a plastic crate to simulate damage that occurs at harvest developed more severe measles than fruit that were not damaged. There was no evidence that lenticel damage lead to measles but both symptoms were worsened by jostling.
Keywords: Avocado; Lenticel damage; Measles; Colletotrichum acutatum; Phomopsis

L. Khurnpoon, J. Siriphanich, J.M. Labavitch, Cell wall metabolism during durian fruit dehiscence, Postharvest Biology and Technology, Volume 48, Issue 3, June 2008, Pages 391-401, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.08.012.
(http://www.sciencedirect.com/science/article/B6TBJ-4R5G84B-2/2/d107b08a4b1bc93dc278ce30eec34773)
Abstract:
Changes in cell wall composition and enzyme activities were studied during durian fruit dehiscence. Water-soluble pectin concentrations remained constant for 2 days in both the husk and the dehiscence zone (DZ), and then increased in the DZ toward the end of storage. Chelator-soluble pectin was higher in the DZ at harvest and throughout storage. This pectin fraction increased steadily in both tissues. Na2CO3-soluble pectin content was about the same in the husk

and the DZ, but slightly decreased during the dehiscence process. Hemicellulose (1 and 4 M KOH-soluble fractions) slowly decreased in the husk and the DZ during storage. The molecular size distribution of the three pectin fractions shifted from a larger molecular size to a smaller size, during durian dehiscence. The DZ was found to contain smaller pectin molecules than the husk. There was no change in molecular size in the 1 M KOH fraction and only a minor change toward the smaller molecular size in the 4 M KOH fraction during the later period of durian dehiscence. Pectin methyl esterase activity, both in the husk and in the DZ, was the same at the beginning of storage. However, differences were observed by the time storage had ended. Polygalacturonase activity slowly increased in both tissues during 8 days of storage, with the activity always being higher in the DZ than in the husk, especially at late dehiscence. [beta]-1,4-Endoglucanase activity increased more in the DZ than in the husk during the dehiscence process. [beta]-Galactosidase activity increased during the first half of fruit ripening, and then declined. The results suggested that the durian dehiscence process mainly involved degradation of chelator-soluble pectin by polygalacturonase.
Keywords: Cell wall; Durian; Dehiscence; Hemicellulose; Pectin; Ripening

Lluis Palou, Josep-Anton Jacas, Alicia Marcilla, Miquel Alonso, Miguel Angel del Rio, Physico-chemical and sensory quality of `Clemenules' mandarins and survival of the Mediterranean fruit fly as affected by complementary cold and carbon dioxide quarantine treatments, Postharvest Biology and Technology, Volume 48, Issue 3, June 2008, Pages 443-450, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4PYMWPR-1/2/2a8ce6159c36b09a4a0dde8cd57b3609)
Abstract:
Cold-based quarantine treatments (exposure to 1.1-2.2 [degree sign]C for 14-18 d) against the Mediterranean fruit fly Ceratitis capitata (Wiedemann) (Diptera: Tephritidae) must be currently applied to Spanish citrus exports to pest-free markets such as the United States. Alternative or complementary treatments are needed because fruit quality of some cold sensitive cultivars can be adversely affected by these quarantine protocols. In this work, physico-chemical (rind color, firmness, and physiological disorders, soluble solids concentration, titratable acidity, maturity index, juice yield, and ethanol and acetaldehyde content) and sensory (sweetness, acidity, sensory maturity index, off-flavors, and mandarin-like flavor) fruit quality of `Clemenules' clementine mandarins and survival of C. capitata were assessed on fruit subjected to integrated quarantine treatments consisting of exposure to 1.5 [degree sign]C for 3, 6, 9, or 12 d followed by exposure for 20 h to a controlled atmosphere (CA) of 95% CO2 at 20 or 25 [degree sign]C. Complete insect mortality with no negative effects on fruit quality after 7 d at 20 [degree sign]C of shelf life was obtained on clementines first exposed to 1.5 [degree sign]C for 3 d and second treated with CA at 25 [degree sign]C. Therefore, this combination of treatments considerably reduced quarantine time and showed promise as a potential commercial quarantine treatment for Spanish mandarin exports.
Keywords: Ceratitis capitata; Clementines; Insecticidal controlled atmosphere; CO2; Cold quarantine; Citrus disinfestation; Integrated quarantine treatments

Daniel N. Sila, Thomas Duvetter, Ans De Roeck, Isabel Verlent, Chantal Smout, Graham K. Moates, Brian P. Hills, Keith K. Waldron, Marc Hendrickx, Ann Van Loey, Texture changes of processed fruits and vegetables: potential use of high-pressure processing, Trends in Food Science & Technology, Volume 19, Issue 6, NovelQ - High Pressure Processing, June 2008, Pages 309-319, ISSN 0924-2244, DOI: 10.1016/j.tifs.2007.12.007.
(http://www.sciencedirect.com/science/article/B6VHY-4RDS414-1/2/c4e1cca88c71fa99173637dbf499cb3b)
Abstract:

In processed fruits and vegetables, changes in texture are strongly related to transformations in cell wall polymers due to enzymatic and non-enzymatic reactions. A major challenge is how to use recent advances in processing technologies and to adjust raw materials, ingredients and processes to improve texture of processed plant based foods.
This review focuses on the plant cell wall structure and the processing dependent changes in plant cell walls with focus on enzymatic and non-enzymatic degradation of pectin. Stability as well as catalytic activity of two major plant endogenous pectin degrading enzymes, namely pectinmethylesterase and polygalacturonase, towards elevated pressure and temperature is reviewed. Finally, the effect of processing on texture of plant based foods and different approaches to improve the texture of processed plant based foods (i.e. preheating, phenolics, washing/dipping/infusion pretreatments, high-pressure pretreatments and genetic modification) are discussed.

Indrawati Oey, Martina Lille, Ann Van Loey, Marc Hendrickx, Effect of high-pressure processing on colour, texture and flavour of fruit- and vegetable-based food products: a review, Trends in Food Science & Technology, Volume 19, Issue 6, NovelQ - High Pressure Processing, June 2008, Pages 320-328, ISSN 0924-2244, DOI: 10.1016/j.tifs.2008.04.001.
(http://www.sciencedirect.com/science/article/B6VHY-4S80XFG-2/2/49e3dc3e0c858d96408b8e6d6a6d2011)
Abstract:
Colour, flavour and texture are important quality characteristics of fruits and vegetables and major factors affecting sensory perception and consumer acceptance of foods. Various processing methods are used not only to increase the edibility and palatability of fruits and vegetables but also to prolong their shelf life. High-pressure (HP) processing is an interesting alternative to traditional food processing and preservation methods due to its limited effects on covalent bonds resulting in minimal modifications in nutritional and sensory quality. This review focuses specifically on the effects of HP treatment on colour, flavour and texture of fruit- and vegetable-based foods and tries to elucidate the mechanisms behind the observed changes in quality attributes. Possible impacts of HP treatments at elevated temperatures on these sensory properties are also highlighted since the temperature regime used for research on high pressure (HP) has been extended to elevated temperatures in order to achieve spore inactivation (e.g. HP sterilization).

Serpil Tural, Ilkay Koca, Physico-chemical and antioxidant properties of cornelian cherry fruits (Cornus mas L.) grown in Turkey, Scientia Horticulturae, Volume 116, Issue 4, 20 May 2008, Pages 362-366, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.02.003.
(http://www.sciencedirect.com/science/article/B6TC3-4S38C3H-2/2/8b44f04f55e47cad595bf5641663fca3)
Abstract:
Cornus mas L. is a naturally growing dogwood species in Anatolia. In present study, physical, chemical and antioxidant properties of cornelian cherry fruits were studied. The fruit weight was in the range of 0.39-1.03 g, fruit length 14.24-22.20 mm, fruit width 9.59-13.21 mm, flesh/seed ratio 1.34 to 6.72. Hunter L values of the samples ranged between 10.82 and 19.69, and a value was between +6.25 and +15.59, and b value was between +3.46 and +6.64. In addition to the levels of dry matter, soluble solids, pH, total acidity, total sugar content, reduced sugar content, unreduced sugar content, ascorbic acid, total anthocyanin and total phenolics were within the range of 15.88-28.19%, 12.50-21.00%, 3.11-3.53, 1.10-2.53%, 76.80-154.00 g kg-1, 52.80-120.00 g kg-1, 0.00-32.30 g kg-1, 0.16-0.88 mg g-1, 1.12-2.92 mg g-1 and 2.81-5.79 mg g-1, respectively. On the other hand, ferric reducing antioxidant power (FRAP) and EC50 values were between 16.21 mmol g-1 and 94.43 mmol g-1, 0.29-0.69 mg mL-1. Anthocyanin extracts of the fruits were analysed by high-performance liquid chromatography (HPLC) with UV-vis detection. Pelargonidin 3-glucoside was the main pigment found in cornelian cherry fruits.

Keywords: Antioxidant activity; Anthocyanin profile; Cornelian cherry; EC50; FRAP

Gal Sapir, Raphael A. Stern, Sharoni Shafir, Martin Goldway, Full compatibility is superior to semi-compatibility for fruit set in Japanese plum (Prunus salicina Lindl.) cultivars, Scientia Horticulturae, Volume 116, Issue 4, 20 May 2008, Pages 394-398, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.02.018.
(http://www.sciencedirect.com/science/article/B6TC3-4S8TW9W-1/2/45c622846a4ea347d9c4a9f0c3c34995)
Abstract:
Japanese plum belongs to the Rosaceae, which carry the S-RNase-based gametophytic self-incompatibility system. Therefore, these plum cultivars depend on cross-pollination for setting fruit. However, cultivar combinations may be genetically semi- or fully compatible. In apples and pears cultivated in Israel, where conditions for pollination are usually unfavorable, it was demonstrated that yields may be correlated with compatibility levels of pollinators. In the present study fruit-set of semi- and fully compatible plum couples was determined for a wide range of cultivars, in unfavorable and favorable conditions. Full compatibility was found superior to semi-compatibility, in both unfavorable and favorable conditions for pollination. These findings should be taken into consideration in determining the orchard designs of cultivars.
Keywords: Japanese plum; Pollination; Self-incompatibility

Tao Dong, Renxue Xia, Mingyuan Wang, Zhiyan Xiao, Ping Liu, Changes in dietary fibre, polygalacturonase, cellulase of navel orange (Citrus sinensis (L.) Osbeck `Cara Cara') fruits under different storage conditions, Scientia Horticulturae, Volume 116, Issue 4, 20 May 2008, Pages 414-420, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.03.006.
(http://www.sciencedirect.com/science/article/B6TC3-4SB9F1Y-1/2/91cdfca1b0c0607c129144c18ba4a0bb)
Abstract:
The consumption of dietary fibre plays an important role in the prevention of diseases, such as constipation, haemorrhoids. Recently, chemical and physical properties of citrus fibres have been widely studied. In this paper, the polygalacturonase (PG) and cellulase (Cx) gene expression of Cara Cara (Citrus sinensis (L.) Osbeck) navel orange fruit stored on tree (ST) was compared with fruit stored in room (SR). The results showed that the mRNA expression levels of PG increased significantly in the fruits of ST, in contrast, the expression levels of Cx increased slightly only in peel of ST. Total pectin (TP) and protopectin of ST fruits pulp were higher than those of SR at every time point. The contents of insoluble dietary fibre (IDF), hemicellulose (HC), cellulose (CEL) and lignin of ST fruits were less than that in SR. However, in fruits from ST, a significant increase of soluble dietary fibre (SDF) and water soluble pectin (WSP) occurred, compared with fruits of SR. Our studies indicated that fruit stored on tree is quite useful for regulating the gene expression and controlling contents of dietary fibre on Cara Cara navel orange.
Keywords: Dietary fibre; Polygalacturonase (PG) and cellulase (Cx); Real time PCR; Storage on tree (ST); Storage in room (SR)

Lianzhen Wang, Meng Wang, Quanhong Li, Tongyi Cai, Weibo Jiang, Partial properties of an aspartic protease in bitter gourd (Momordica charantia L.) fruit and its activation by heating, Food Chemistry, Volume 108, Issue 2, 15 May 2008, Pages 496-502, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.10.085.
(http://www.sciencedirect.com/science/article/B6T6R-4R53WJ8-3/2/37fb4373d147207ee04c2898ef4d69a8)
Abstract:
Bitter gourd (BG fruit) is usually heated in hot water to reduce bitterness and improve flavour before being served. Protein extract from BG was analyzed for protease activity by gelatin-gel

electrophoresis. The study showed that the proteolytic activity in BG flesh was enhanced by heat-treatment at temperatures ranging from 50 [degree sign]C to 75 [degree sign]C. An aspartic protease (AP) was characterized by gel electrophoresis. The optimal AP activity was at pH 7; the pI of the AP was demonstrated to be 4.8; the protein molecular weight of the BG-AP was estimated to be 60 KD by SDS-PAGE. The AP was implicated in the proteolysis of the photosynthetic enzyme ribulose-1,5-bisphosphate carboxylase/oxygenase.
The AP was further purified and submitted for analysis of peptide mass fingerprint (PMF). The Mascot peptide mass fingerprint of the AP protein hit no existing protein (score > 60), and it proved to be a novel AP.
Keywords: Bitter gourd; Aspartic protease; Heat-treatment; Activation; SDS-gelatin-PAGE

C. Coria, W. Almiron, G. Valladares, C. Carpinella, F. Luduena, M. Defago, S. Palacios, Larvicide and oviposition deterrent effects of fruit and leaf extracts from Melia azedarach L. on Aedes aegypti (L.) (Diptera: Culicidae), Bioresource Technology, Volume 99, Issue 8, May 2008, Pages 3066-3070, ISSN 0960-8524, DOI: 10.1016/j.biortech.2007.06.012.
(http://www.sciencedirect.com/science/article/B6V24-4P9T9C5-5/2/f1983c2c82bb94a07f1916158b5f42f8)
Abstract:
Aedes aegypti (L.) (Diptera: Culicidae), the main urban vector of dengue, has developed resistance to various insecticides, making its control increasingly difficult. We explored the effects of Argentine Melia azedarach L. (Meliaceae) fruit and senescent leaf extracts on Ae. aegypti larval development and survival, by rearing cohorts of first instar mosquitoes in water with different extract concentrations. We also analysed oviposition deterrent activity in choice tests with extract-treated ovitraps. The leaf extract showed a strong larvicide activity, with all larvae dying before pupation, and significantly delayed development time. It strongly inhibited oviposition by Ae. aegypti females. The fruit extract showed much weaker effects. This first report of highly effective larvicidal, growth regulating and oviposition deterrent activity of a senescent leaf extract of M. azedarach against Ae. aegypti, suggests that such extract could represent a promising tool in the management of this mosquito pest.
Keywords: Melia azedarach; Larvicidal activity; Oviposition deterrent activity; Aedes aegypti

Flavio Andre Pavan, Ana Cristina Mazzocato, Yoshitaka Gushikem, Removal of methylene blue dye from aqueous solutions by adsorption using yellow passion fruit peel as adsorbent, Bioresource Technology, Volume 99, Issue 8, May 2008, Pages 3162-3165, ISSN 0960-8524, DOI: 10.1016/j.biortech.2007.05.067.
(http://www.sciencedirect.com/science/article/B6V24-4PCR1K8-1/2/03d3c702735503d59b42898cb85cdfc8)
Abstract:
The removal of color from aquatic systems caused by presence of synthetic dyes is extremely important from the environmental viewpoint because most of these dyes are toxic, mutagenic and carcinogenic. In this present study, the yellow passion fruit (Passiflora edulis Sims. f. flavicarpa Degener) peel a powdered solid waste, was tested as an alternative low-cost adsorbent for the removal of a basic dye, methylene blue (MB), from aqueous solutions. Adsorption of MB onto this natural adsorbent was studied by batch adsorption isotherms at room temperature. The effects of shaking time and pH on adsorption capacity were studied. An alkaline pH was favorable for the adsorption of MB. The contact time required to obtain the maximum adsorption was 56 h at 25 [degree sign]C. Yellow passion fruit peel may be used as an alternative adsorbent to remove MB from aqueous solutions.
Keywords: Low-cost natural adsorbent; Yellow passion fruit peel; Methylene blue; Aqueous solution; Batch technique

U.A. Rosa, K.G. Cheetancheri, C.J. Gliever, S.H. Lee, J. Thompson, D.C. Slaughter, An electro-mechanical limb shaker for fruit thinning, Computers and Electronics in Agriculture, Volume 61, Issue 2, May 2008, Pages 213-221, ISSN 0168-1699, DOI: 10.1016/j.compag.2007.11.008.
(http://www.sciencedirect.com/science/article/B6T5M-4RKDPHM-1/2/8bd9245b7f514addeb18754cd6897129)
Abstract:
Mechanizing the fruit thinning operation will result in considerable cost savings for growers. This investigation has been conducted to improve mechanical thinning by exciting individual branches at a precise frequency and duration to achieve a superior distribution of fruit remaining on the tree. A unique and precise electromagnetic limb shaker that requires no branch clamping has been developed and evaluated under field conditions. Finite element analysis was performed on simulated limbs with the top free and restrained using Abaqus(R) to evaluate solutions for improving fruit distribution and to explain field results. Extensive tests have been performed with this proposed limb shaker in nectarine, peach and prune orchards within Northern California. A force coupling manipulator allows our thinner to shake the branch without clamping to it, thus facilitating automation of the process. A powerful three-phase servo controlled linear motor drives a force coupler that shakes the tree branch. The size distribution of thinned fruit was determined for multiple shakes on the same limbs. This allowed quantification of the fruit thinning distribution. The innovative concept of holding the top of the limb avoided excessive removal of fruit from the tree top. High-speed video analysis enabled measurement of limb and fruit position as a function of time. Detachment accelerations were obtained in the video image plane. This precise limb shaker shows great potential for use in deciduous fruit orchards but further study is required in order to design a more automated prototype.
Keywords: Limb shaker; Mechanical thinning; Peaches; Prunes and nectarines

Sara Beirao-da-Costa, Ana Cardoso, Luisa Louro Martins, Jose Empis, Margarida Moldao-Martins, The effect of calcium dips combined with mild heating of whole kiwifruit for fruit slices quality maintenance, Food Chemistry, Volume 108, Issue 1, 1 May 2008, Pages 191-197, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.10.075.
(http://www.sciencedirect.com/science/article/B6T6R-4R2H936-1/2/a5d2e695ad61b0576dd25ad819caf180)
Abstract:
The effect of moderate heat treatment combined with calcium dips on the quality of minimally processed kiwifruit was studied. Whole fruits were treated for 25 min at 45 [degree sign]C by dipping in deionised water or CaCl2 solutions (1%, 2% and 3% (w/v)) and cooled to 4 [degree sign]C. Twenty-four hours later fruits were peeled, sanitized, cut into slices and packed. The firmness of kiwifruit slices' was subsequently evaluated during 8 days of storage. Calcium content, pectinmethylesterase activity and heat shock proteins accumulation were also investigated. Heat treatment conducted in water induced a firming effect and avoid softening of fruit slices while calcium dips had a marginal effect on this parameter. A calcium loss was observed due to dip treatment, but this effect was minimized when treatment was conducted in 3% CaCl2 solution. The firming effect provided is due to the activation of pectinmethylesterase and the presence of calcium in treatment solution reduces or inhibits enzyme activation. Under the tested conditions, no heat shock proteins de novo synthesis was detected.
Keywords: Kiwifruit; Mild heat treatments; Calcium; Pectinmethylesterase; Minimal processing

Yonghua Zheng, Zhenfeng Yang, Xuehong Chen, Effect of high oxygen atmospheres on fruit decay and quality in Chinese bayberries, strawberries and blueberries, Food Control, Volume 19, Issue 5, May 2008, Pages 470-474, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2007.05.011.
(http://www.sciencedirect.com/science/article/B6T6S-4NWCGSX-6/2/3971ac2016597532db4e9a375febeebf)

Abstract:
The effects of high oxygen atmospheres on postharvest decay and quality of Chinese bayberry (Myrica rubra Seib & Zucc. cv. Wumei), strawberry (Fragaria ananassa Duch. cv. Fengxiang) and blueberry (Vaccinium corymbosum L. cv. Duke) fruit were assessed. Freshly harvested Chinese bayberries, strawberries and blueberries were placed in jars continuously ventilated with air or with 40%, 60%, 80% or 100% O2 at 5 [degree sign]C for 9, 14 and 35 days. While the quality parameters of titratable acidity, total soluble solids and surface color measurements were only slightly affected by the superatmospheric O2 concentrations in all the three berries, treatments with 60-100% O2 significantly inhibited fruit decay. The severity of decay decreased with increasing O2 concentration. The 100% O2 treatment was the most effective in controlling fruit decay on all the three berries during storage at 5 [degree sign]C. When the berries were removed from the high oxygen atmospheres and held for an additional 2 days in air at 20 [degree sign]C, fruit treated with 60-100% O2 also exhibited significantly less decay rate, suggesting that high oxygen atmospheres had residual effect on decay control. The 40% O2 treatment was ineffective in controlling fruit decay on all the three berries. These data suggest that high oxygen atmospheres may provide a potential alternative for postharvest decay control on these berry fruit.
Keywords: Chinese bayberry; Strawberry; Blueberry; High oxygen; Decay control; Quality parameters

Hua-Chang Fang, Po-Tsang Lee, Pei-Jung Lu, Chien-Liang Chen, Tsu-Yuan Chang, Chih-Yang Hsu, Hsiao-Min Chung, Kang-Ju Chou, Mechanisms of star fruit-induced acute renal failure, Food and Chemical Toxicology, Volume 46, Issue 5, May 2008, Pages 1744-1752, ISSN 0278-6915, DOI: 10.1016/j.fct.2008.01.016.
(http://www.sciencedirect.com/science/article/B6T6P-4RM7N35-2/2/4c4dfde60200c961de7e286f32622e12)
Abstract:
We have previously discovered that star fruit can induce oliguric acute renal failure. To investigate the mechanisms of star fruit-associated acute oxalate nephropathy, the nephrotoxic effect of star fruit was examined in both cellular experiments and animal models. We evaluated renal function, pathological changes in kidney tissues and apoptotic effects using terminal deoxynucleotidyl transferase nick-end labeling (TUNEL) assay in four groups of rats - a control group (CG), fed with tap water (1); a star fruit group (SG), fed with star fruit juice naturally containing 0.2 M oxalate (2); and oxalate groups (OxG), fed with 0.2 M (3) or 0.4 M (4) oxalate solution. The effects of both star fruit juice and oxalate on MDCK cells were also analyzed by flow cytometry. We found that the mean creatinine clearance was significantly lower in the SG, 0.2 M OxG and 0.4 M OxG. Dose-dependent apoptotic effects were evident from the TUNEL assay, and flow cytometry analysis of treated MDCK cells showed dose- and time-dependent effects. Our findings suggest that star fruit juice produces acute renal injury, not only through the obstructive effect of calcium oxalate crystals, but also by inducing apoptosis of renal epithelial cells, which may be caused by the levels of oxalate in the fruit.
Keywords: Apoptosis; Star fruit; Oxalate; Acute renal failure

Xiaoli Liu, Mouming Zhao, Jinshui Wang, Bao Yang, Yueming Jiang, Antioxidant activity of methanolic extract of emblica fruit (Phyllanthus emblica L.) from six regions in China, Journal of Food Composition and Analysis, Volume 21, Issue 3, May 2008, Pages 219-228, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.10.001.
(http://www.sciencedirect.com/science/article/B6WJH-4R53SXM-1/2/9ab8027ca2923bd741fe3938676dc038)
Abstract:
The phenolic contents of methanolic extracts of emblica (Phyllanthus emblica L.) fruit from six regions in China were measured in this work. The antioxidant activities of these extracts were also

evaluated. Total phenolic content was ranged from 81.5 to 120.9 mg gallic acid equivalents (GAE)/g and the flavonoid content was varied from 20.3 to 38.7 mg quecetin equivalents (QE)/g, while proanthocyanidin content was ranged from 3.7 to 18.7 mg catechin equivalents (CE)/g. Among all the methanolic extracts analyzed, the Huizhou sample exhibited a significantly higher phenolic content than other samples ($P<0.05$). The antioxidant activities were evaluated by in vitro experiments using scavenging assays of 1,1-diphenyl-2-picrylhydrazyl (DPPH) radicals, hydroxyl radicals, and superoxide anion radicals, chelating ability of ferrous ion, reducing power, and inhibition capability of Fe (II)-induced lipid peroxidation, respectively. The Huizhou sample was found to have the strongest antioxidant activities in scavenging DPPH radicals, superoxide anion radicals, and had the highest reducing power, while the Chuxiong sample showed the best performance in chelating iron and inhibiting lipid peroxidation. Furthermore, the Chuxiong sample exhibited a stronger inhibition activity of the hydroxyl radicals compared with other samples. The high correlation coefficient was existed between the phenolic content and superoxide anion radical scavenging activity, but no significant correlation was found between the former and hydroxyl radical scavenging activity. Methanolic extracts of emblica fruit from some selected regions exhibited stronger antioxidant activities compared to those of the commercial compounds (quercetin and BHA). It might be considered as a potential plant source of antioxidants.
Keywords: Phyllanthus emblica; Emblica officinalis; Indian gooseberry; Amla berry; Total phenolic; Flavonoid; Proanthocyanidin; Antioxidant activity

Oruma Patthamakanokporn, Prapasri Puwastien, Anadi Nitithamyong, Prapaisri P. Sirichakwal, Changes of antioxidant activity and total phenolic compounds during storage of selected fruits, Journal of Food Composition and Analysis, Volume 21, Issue 3, May 2008, Pages 241-248, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.10.002.
(http://www.sciencedirect.com/science/article/B6WJH-4R5F1T6-1/2/dd24cee677ff648b1735e6b107fcacfb)
Abstract:
The antioxidant activity and total phenolic compounds in various fruits (common fruits--two varieties of mangoes (ripe and unripe), guava, papaya, mangosteen and banana; and two indigenous fruits--makiang and maluod) were investigated. Banana and papaya showed the lowest activity, and mangosteen, mango and guava exhibited high levels of antioxidant activity (oxygen radical absorbance capacity (ORAC), and ferric-reducing antioxidant power (FRAP)) as well as total phenolic compounds. The studied indigenous fruits (makiang and maluod) are high in both antioxidant activity (ORAC and FRAP) and total phenolic compounds. Three independent batches of selected fruits--guava (Psidium guajava), makiang (Cleistocalyx nervosum var paniala) and maluod (Elaeagnus iatifolia, Linn)--were used to determine the changes in antioxidant activity (AO) and total phenolic compounds (TP) during storage at -20 [degree sign]C for 3 months and at 5 [degree sign]C for 10 days. The ORAC-AO during storage at -20 [degree sign]C for 2 wk decreased significantly in homogenised guava (23%) and in whole fruits of maluod (62%), whereas that of makiang was constant. A continuous decrease in TP was found in homogenised guava throughout the 3-months storage period (69% retention) whereas constant levels were found in other fruits. At 5 [degree sign]C, a decrease in the ORAC-AO in the whole fruits of makiang (14%) and maloud (70%) was found after a 3-days storage, whereas a gradual increase in the activity (120-190%) was found in the whole fruit of guava throughout the storage period. Among the factors which can affect the levels of antioxidant activity and total phenolic compounds in fruits could be the species, size and texture of fruits, the prepared form of the samples and the conditions of storage (e.g. time, temperature). Preliminary studies on the effect of storage in individual types of fruits are suggested before making a sampling plan for systematic analyses of their antioxidant activity.
Keywords: Antioxidant activity; Total phenolic compounds; Fruits

Yenny P. Cardona, Carlos E. Oliveros, Diego F. Arias, Fernando Alvarez, Alfonso Devia, Epicarp characterization of coffee fruits by atomic force microscopy, Journal of Food Engineering, Volume 86, Issue 2, May 2008, Pages 167-171, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.09.031.
(http://www.sciencedirect.com/science/article/B6T8J-4PVPVH3-1/2/8ee15a3d60fa752b00948292480686e4)
Abstract:
The superficial characterization of epicarp of the coffee fruits was made in two states of development: mature and green. The roughness of the area, and also the line for the parameters of roughness average (Ra) and quadratic root average of the roughness (Rq), were found by means of atomic force microscopy (AFM). In addition, the densities and dimensions of the coffee cells were found. The Ra range of the mature fruit was found to be between 0.03 and 0.19 [mu]m, and for the green fruit it was between 0.23 and 0.38 [mu]m. The Rq range of the mature fruit was found to be between 0.05 and 0.24 [mu]m, and for the green fruit it was between 0.29 and 0.49 [mu]m. These values delimit ranges of roughness for each state of development analyzed, and there is a difference among them without appearing interpolation of the data. It was determined that the cells have ellipsoidal form with an average area of 194.62 [mu]m2, and the density average is 4.206 cell/mm2.
Keywords: Epicarp; Coffee fruits; Roughness; AFM

Jaime Gonzalez, Ana Ferrer, Rosa Oria, Maria L. Salvador, Determination of O2 and CO2 transmission rates through microperforated films for modified atmosphere packaging of fresh fruits and vegetables, Journal of Food Engineering, Volume 86, Issue 2, May 2008, Pages 194-201, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.09.023.
(http://www.sciencedirect.com/science/article/B6T8J-4PRYFR4-3/2/cc30ae2d74e4bcf29bf01fad254b5ef0)
Abstract:
Microperforated films (perforation diameter <200 [mu]m) are an option for achieving the appropriate gaseous composition in modified atmosphere packaging, especially for fresh-cut products. In this project, static techniques were used to experimentally measure the oxygen and carbon dioxide transmission rates of microperforated films. Twenty nine microperforations of different dimensions (from 40 x 30 [mu]m to 350 x 110 [mu]m) and thickness (from 29 to 57 [mu]m) were tested in the project. A potential equation was found to provide a good prediction of the dependence of the O2 and CO2 transmission rates on the perforation area. The data predicted by the equation was compared with those from five other bibliographic models. The empirical equation agrees, within the experimental range, with the modified Fick's law (considering the total diffusive pass length of a perforation as the sum of the perforation length and end correction term). The predictions of the proposed equation for thicker films and holes of larger dimensions (equivalent radius >3000 [mu]m) correspond to those of the empirical models.
Keywords: Microperforation; Permeability; Gas transfer; Modelling; MAP

P.J. Torley, J. de Boer, B.R. Bhandari, S. Kasapis, P. Shrinivas, B. Jiang, Application of the synthetic polymer approach to the glass transition of fruit leathers, Journal of Food Engineering, Volume 86, Issue 2, May 2008, Pages 243-250, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.10.008.
(http://www.sciencedirect.com/science/article/B6T8J-4PYJS6H-1/2/4089384f9019d3f30f424118b69dd9da)
Abstract:
A commercial fruit leather was analysed in an effort to document the application of the synthetic polymer approach to its vitrification properties. Techniques employed were dynamic mechanical thermal analysis on tension and modulated differential scanning calorimetry. The temperature and frequency dependence of Young's modulus were utilized in the construction of composite curves

of viscoelasticity that identified the rubbery plateau, glass transition region and glassy state. The painstaking investigation of viscoelasticity supported by the combined framework of WLF/free-volume theory was successful in identifying the mechanical Tg of the partially vitreous material at subzero temperatures. That was contrasted with the corresponding value obtained using calorimetry, and the nature of the discrepancy between the two estimates of Tg was discussed.
Keywords: Fruit leathers; Mechanical glass transition; Free volume theory

Mariana Munoz-Romo, Emilio A. Herrera, Thomas H. Kunz, Roosting behavior and group stability of the big fruit-eating bat Artibeus lituratus (Chiroptera: Phyllostomidae), Mammalian Biology - Zeitschrift fur Saugetierkunde, Volume 73, Issue 3, 1 May 2008, Pages 214-221, ISSN 1616-5047, DOI: 10.1016/j.mambio.2007.05.013.
(http://www.sciencedirect.com/science/article/B7GX2-4PC4KRW-1/2/545022b2ab80218e47eb701b59792785)
Abstract:
The roosting behavior of the big fruit-eating bat, Artibeus lituratus (Phyllostomidae, Stenodermatinae) in an Andean region of Venezuela is described. Sixty-four video recordings made at three separate foliage roosts during 1 year showed that group size varied between two and 14 individuals. One male was regularly observed roosting with more females than others, and this male was associated with the highest quality roost, defined here as the highest, most structurally stable, and least disturbed. Males invariably occupied exclusive roosts during the study, whereas females frequently moved among adjacent roosts. The high roost fidelity of males appears to be related to the defense of the highest quality roosts. Because females were observed roosting with each of the three males present at the study site, female groups were considered unstable. We suggest that shuttling movements of individuals may reflect a commonly observed adaptation of foliage roosting bats related to the avoidance of predators and/or parasites. The type of male-female association observed in A. lituratus is consistent with a resource defense polygyny hypothesis.
Keywords: Artibeus lituratus; Roosting behavior; Group stability; Roost fidelity; Venezuela

Seikou Nakamura, Masako Hongo, Sachiko Sugimoto, Hisashi Matsuda, Masayuki Yoshikawa, Steroidal saponins and pseudoalkaloid oligoglycoside from Brazilian natural medicine, 'fruta do lobo' (fruit of Solanum lycocarpum), Phytochemistry, Volume 69, Issue 7, May 2008, Pages 1565-1572, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2008.02.003.
(http://www.sciencedirect.com/science/article/B6TH7-4S32DK2-2/2/402b5a4f257c41c4d659c637e991b140)
Abstract:
Steroidal saponins, lyconosides Ia, Ib, II, III, and IV and a steroidal pseudoalkaloid oligoglycoside, lobofrutoside, were isolated from a Brazilian natural medicine, 'fruta do lobo' (the fruit of Solanum lycocarpum St. Hil.). The chemical structures of these compounds were elucidated on the basis of analysis of chemical and physicochemical evidence.
Keywords: Solanum lycocarpum; Solanaceae; Brazilian natural medicine; Steroidal saponin; Steroidal pseudoalkaloid oligoglycoside; Wolf-fruit; Lyconoside; Lobofrutoside

Hui-Chi Huang, Ming-Der Wu, Wei-Jern Tsai, Sin-Chung Liao, Chia-Ching Liaw, Li-Chuan Hsu, Yang-Chang Wu, Yao-Haur Kuo, Triterpenoid saponins from the fruits and galls of Sapindus mukorossi, Phytochemistry, Volume 69, Issue 7, May 2008, Pages 1609-1616, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2007.10.033.
(http://www.sciencedirect.com/science/article/B6TH7-4S1BX52-1/2/f404942c464b2858bf0fb6adadcffb4b)
Abstract:

Six saponins, sapinmusaponin K (1) [hederagenin-3-O-(3-O-acetyl-[alpha]-l-arabinopyranosyl)-(1 --> 3)-[alpha]-l-rhamnopyranosyl-(1 --> 2)-[alpha]-l-arabinopyranoside], sapinmusaponin L (2) [hederagenin-3-O-(4-O-acetyl-[alpha]-l-arabinopyranosyl)-(1 --> 3)-[alpha]-l-rhamnopyranosyl-(1 --> 2)-[alpha]-l-arabino-pyranoside], sapinmusaponin M (3) [hederagenin-3-O-(2,3-O-diacetyl-[beta]-d-xylopyranosyl)-(1 --> 3)-[alpha]-l-rhamnopyranosyl-(1 --> 2)-[alpha]-l-arabinopyranoside], sapinmusaponin N (4) [hederagenin-3-O-(2,4-O-diacetyl-[beta]-d-xylopyranosyl)-(1 --> 3)-[alpha]-l-rhamnopyranosyl-(1 --> 2)-[alpha]-l-arabinopyranoside], sapinmusaponin O (5) [3,7,20(S)-trihydroxydammar-24-ene-3-O-[alpha]-l-rhamnopyranosyl-(1 --> 2)-[beta]-d-glucopyranoside], and sapinmusaponin P (6) [3,7,20(R)-trihydroxydammar-24-ene-3-O-[alpha]-l-rhamnopyranosyl-(1 --> 2)-[beta]-d-glucopyranoside], along with seven known saponins (7-13), were isolated from fruits and the galls of Sapindus mukorossi. Their structures were elucidated by 1D and 2D NMR spectroscopic techniques and acid hydrolysis. Biological evaluation indicated that saponins 1-4 and 7-13 showed moderate cytotoxicity against several human tumor cell lines.
Keywords: Sapindus mukorossi; Sapindaceae; Oleanane-type saponins; Dammarane-type saponins; Cytotoxic activity

Clara Geromel, Lucia Pires Ferreira, Fabrice Davrieux, Bernard Guyot, Fabienne Ribeyre, Maria Brigida dos Santos Scholz, Luiz Filipe Protasio Pereira, Philippe Vaast, David Pot, Thierry Leroy, Armando Androcioli Filho, Luiz Gonzaga Esteves Vieira, Paulo Mazzafera, Pierre Marraccini, Effects of shade on the development and sugar metabolism of coffee (Coffea arabica L.) fruits, Plant Physiology and Biochemistry, Volume 46, Issues 5-6, May-June 2008, Pages 569-579, ISSN 0981-9428, DOI: 10.1016/j.plaphy.2008.02.006.
(http://www.sciencedirect.com/science/article/B6VRD-4S0203Y-2/2/120f41c98e2e763a2c2b1f670caeeb17)
Abstract:
Coffee fruits grown in shade are characterized by larger bean size than those grown under full-sun conditions. The present study assessed the effects of shade on bean characteristics and sugar metabolism by analyzing tissue development, sugar contents, activities of sucrose metabolizing enzymes and expression of sucrose synthase-encoding genes in fruits of coffee (Coffea arabica L.) plants submitted to full-sun (FS) and shade (SH) conditions. Evolution of tissue fresh weights measured in fruits collected regularly from flowering to maturation indicated that this increase is due to greater development of the perisperm tissue in the shade. The effects of light regime on sucrose and reducing sugar (glucose and fructose) contents were studied in fresh and dry coffee beans. Shade led to a significant reduction in sucrose content and to an increase in reducing sugars. In pericarp and perisperm tissues, higher activities of sucrose synthase (EC 2.4.1.13) and sucrose-phosphate synthase (SPS: EC 2.4.1.14) were detected at maturation in the shade compared with full sun. These two enzymes also had higher peaks of activities in developing endosperm under shade than in full sun. It was also noted that shade modified the expression of SUS-encoding genes in coffee beans; CaSUS2 gene transcripts levels were higher in SH than in FS. As no sucrose increase accompanied these changes, this suggests that sucrose metabolism was redirected to other metabolic pathways that need to be identified.
Keywords: Bean composition; Coffea arabica; Fruit development; Gene expression; Shade; Sucrose synthase; Sugar metabolism

D. Mark Hodges, Peter M.A. Toivonen, Quality of fresh-cut fruits and vegetables as affected by exposure to abiotic stress, Postharvest Biology and Technology, Volume 48, Issue 2, May 2008, Pages 155-162, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.10.016.
(http://www.sciencedirect.com/science/article/B6TBJ-4RB5GH3-1/2/74791ca0bc981bbb927620b41e3bbae3)
Abstract:

Abiotic stress potential has a significant impact on quality and nutritional status of fresh cut fruits and vegetables. However, very little work has been directed to defining and documenting the abiotic stresses that occur during fresh cut processing, packaging and storage. Many indicators can be used to infer impact of abiotic stress such as discolouration (e.g. browning of fresh-cut surfaces), increased respiration and ethylene evolution, loss of flavour and texture, weight loss, decline in levels of ascorbate, development of off-odours, membrane breakdown, and tissue softening. Using these indicators, a case is made from existing literature for the importance of abiotic stress in determining quality of fresh cut products. Impact of preharvest stress, genetic variation and stress response, injuries incurred after harvest, and storage regimes will be discussed in detail. From this literature review, it becomes clear that current understanding of abiotic stress levels and mechanisms is relatively sparse. Further research is required to better document this issue as well as to develop effective strategies to modulate stress responses such that quality and nutritive value of fresh cut fruits and vegetables can be improved.
Keywords: Abiotic stress; Fresh-cut; Horticulture; Preharvest; Postharvest; Storage

Mustafa Erkan, Shiow Y. Wang, Chien Y. Wang, Effect of UV treatment on antioxidant capacity, antioxidant enzyme activity and decay in strawberry fruit, Postharvest Biology and Technology, Volume 48, Issue 2, May 2008, Pages 163-171, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.028.
(http://www.sciencedirect.com/science/article/B6TBJ-4R5G84B-6/2/96c58d43bf96c7cb34af2a75fb467fcd)
Abstract:
The changes in antioxidant capacity, enzyme activity and decay development in strawberry fruit (Fragaria x ananassa Duch.) illuminated with different UV-C dosages were investigated. Three UV-C illumination durations and dosages, 1, 5 and 10 min, (0.43, 2.15 and 4.30 kJ m-2) tested promoted the antioxidant capacity and enzyme activities and significantly reduced the severity of decay during storage at 10 [degree sign]C compared to the control. UV-C illumination for 5 and 10 min showed the best results for enhancing antioxidant capacity expressed as oxygen radical absorbance capacity (ORAC) values after storage for 15 days among all the treatments. These treatments also enhanced the activities of antioxidant enzymes including glutathione peroxidase (GSH-POD), glutathione reductase (GR), superoxide dismutase (SOD), ascorbate peroxidase (AsA-POD), guaiacol peroxidase (G-POD), monodehydroascorbate reductase (MDAR), and dehydroascorbate reductase (DHAR). The nonenzyme components such as reduced glutathione (GSH) and oxidized glutathione (GSSG) also were increased by UV-C exposure. All UV-C dosages increased the phenolic content of strawberry fruits as well. Total anthocyanin content increased during storage in all treatments. However, UV-C illumination showed little effect on the anthocyanin accumulation. All UV-C dosages retarded the development of decay comparing to control treatment, but 5 and 10 min UV-C illumination gave the best decay inhibition.
Keywords: Strawberries; UV; Antioxidant capacity; Antioxidant enzyme activity; Decay

Baogang Wang, Jianhui Wang, Hao Liang, Jianyong Yi, Jingjing Zhang, Lin Lin, Yu Wu, Xiaoyuan Feng, Jiankang Cao, Weibo Jiang, Reduced chilling injury in mango fruit by 2,4-dichlorophenoxyacetic acid and the antioxidant response, Postharvest Biology and Technology, Volume 48, Issue 2, May 2008, Pages 172-181, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.10.005.
(http://www.sciencedirect.com/science/article/B6TBJ-4RGX2B0-1/2/ef03fd4a14dbb3deba5d025d8c920e13)
Abstract:
The aim of this study was to evaluate the effects of 2,4-dichlorophenoxyacetic acid (2,4-D) on chilling injury (CI) in mango fruit. 2,4-D treatment at 150 mg L-1 could significantly alleviate CI or disease incidence of mango fruit during 7 days storage at 4 [degree sign]C and an additional 14

days at 20 [degree sign]C ($P < 0.05$). Fruit quality, including increased soluble solids, soluble sugar, fruit firmness, and peel chlorophyll level, was strongly improved by 2,4-D treatment. These results indicate that 2,4-D could be used as an effective method to preserve the postharvest life of mango fruit.
Endogenous $H_2O_2$ levels in the fruit were increased by 2,4-D treatment and decreased by exogenous $H_2O_2$ treatment. The activities of catalase, superoxide dismutase, ascorbate peroxidase (APX) and glutathione reductase (GR) in the 2,4-D-treated fruit were much higher than those in control fruit. However, exogenous $H_2O_2$-treated fruit showed higher CI and lower activities of APX and GR. In addition, the results showed that 2,4-D treatment could significantly enhance levels of the endogenous ABA and GA3, and reduce IAA and zeatin riboside levels in the fruit. These results suggest that 2,4-D could regulate chilling resistance by changing the balance of endogenous hormones levels.
Keywords: 2,4-D; Chilling injury; Antioxidant enzymes; Endogenous hormones; Quality; Mango

Maria Soledad Gutierrez, Gustavo D. Trinchero, Ana Maria Cerri, Fernando Vilella, Gabriel O. Sozzi, Different responses of goldenberry fruit treated at four maturity stages with the ethylene antagonist 1-methylcyclopropene, Postharvest Biology and Technology, Volume 48, Issue 2, May 2008, Pages 199-205, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.10.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4R8KT32-1/2/d0fb80255c11129dbdc1b75bc4532dfa)
Abstract:
Goldenberries (Physalis peruviana L.) were harvested at four different maturity stages: immature green (IG), mature green (MG), yellow (Y) and orange (OR). Fruit were treated or not with 1-methylcyclopropene (1-MCP) at 25 [degree sign]C for 20 h and then kept at 20 [degree sign]C for 8 d. 1-MCP gas concentrations used were 0, 0.5 or 5 [mu]L L-1. Application of 1-MCP delayed the onset of the ethylene climacteric in IG and MG fruit in a dose-dependent fashion, and transiently decreased ethylene production in Y and OR fruit. 1-MCP application transitorily decreased the respiration rate in MG fruit and, to a lesser extent, in IG and Y fruit. In contrast, 1-MCP-treated OR fruit displayed higher respiration rates than control fruit throughout the experimental period. Fruit treated with 5 [mu]L L-1 1-MCP showed for 6 d average $CO_2$ production levels approximately 41% higher than those of control fruit, with a respiration rate up to 76% higher on day 4. The hue angle was higher in 1-MCP-treated Y goldenberries than in control fruit for 8 d but differences between MG treated and untreated fruit were recorded only at the end of the experiment. In contrast, no differences were detected in IG and OR fruit. 1-MCP-treated fruit were not consistently firmer than untreated fruit during storage. Also, 1-MCP had no effect on soluble solids or ascorbic acid contents. 1-MCP application did not prevent decay in OR fruit but reduced its incidence thus suggesting that it may influence pathogen infection and development in ripe goldenberries.
Keywords: Ascorbic acid; Color; Ethylene; Firmness; Goldenberry; 1-Methylcyclopropene; Respiration

Sun Tay Choi, Pavlos Tsouvaltzis, Chai Il Lim, Donald J. Huber, Suppression of ripening and induction of asynchronous ripening in tomato and avocado fruits subjected to complete or partial exposure to aqueous solutions of 1-methylcyclopropene, Postharvest Biology and Technology, Volume 48, Issue 2, May 2008, Pages 206-214, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.10.008.
(http://www.sciencedirect.com/science/article/B6TBJ-4R718GW-1/2/05d41b2b07c7a60f828a041fea012187)
Abstract:
This study was designed to determine the effects of aqueous 1-methylcyclopropene (1-MCP) formulation applied as a brief, topical dip on the ripening of early ripening-stage tomato (Solanum lycopersicum L. `Florida 47') and avocado (Persea americana Mill. `Hass') fruits. Tomato and

avocado fruits were subjected to either total or partial (approximately half of fruit surface) immersion in aqueous 625 [mu]g L-1 1-MCP for 1 min and stored at 20 [degree sign]C. Liquid-formulated 1-MCP strongly delayed ripening in both tomato and avocado fruit, and in tomato fruit exhibited efficacy comparable to that of gaseous 1-MCP (SmartFreshSM Quality System) applied at 500 nL L-1 for 9 h. Tomato fruit treated with liquid 1-MCP exhibited a strongly delayed ethylene climacteric, suppressed respiration, a reduction in the rate of softening, delayed and reduced accumulation of polygalacturonase activity and lycopene, and delayed changes in surface hue angle. Tomato fruit exposed to partial immersion for 1 min exhibited strong ripening asynchrony, with immersed and control fruit portions diverging significantly in all measured ripening parameters. The asynchronous ripening of partially immersed tomato fruit was observed independently of direct exposure of the stem-scar. Avocado fruit ripening was also delayed following a 1 min immersion in 625 [mu]g L-1 1-MCP though less striking ripening asynchrony was observed in response to partial immersion. The results demonstrate the efficacy of relatively brief exposures to liquid-formulated 1-MCP on fruit ripening and illustrate that these formulations, designed to facilitate field or preharvest exposure to 1-MCP, may have postharvest applications as well.
Keywords: Avocado; Ethylene; Firmness; Lycopene; 1-Methylcyclopropene; Polygalacturonase; Tomato

Jan Kuckenberg, Iryna Tartachnyk, Georg Noga, Evaluation of fluorescence and remission techniques for monitoring changes in peel chlorophyll and internal fruit characteristics in sunlit and shaded sides of apple fruit during shelf-life, Postharvest Biology and Technology, Volume 48, Issue 2, May 2008, Pages 231-241, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.10.013.
(http://www.sciencedirect.com/science/article/B6TBJ-4RFD69B-1/2/781352d75ef59eefbd01f5f39d75b5e7)
Abstract:
The objective of the present study was to assess the potential of laser-induced fluorescence (LIF) and light remission techniques for detection of senescence-induced changes in apple peel chlorophyll content and internal fruit quality characteristics under shelf-life conditions. Results obtained with `Jonagold' and `Golden Delicious' fruit indicate that fruit ground colour alterations due to chlorophyll breakdown can be successfully monitored by LIF and light remission techniques. Normalized difference vegetation index (NDVI) and LIF at 730 nm (F730) showed strongest correlations with chlorophyll content in the apple peel with r in the range of 0.87-0.93. The intensity of red pigmentation of apples could be estimated by a light remission normalized anthocyanin index (NAI). Since the occurrence of anthocyanin pigmentation was accompanied by increased concentration of underlying chlorophyll, red patches of `Jonagold' fruit displayed higher NDVI, F690 or F730 and lower F690/F730 values than those which were apparently green. The multipoint scanning mode of LIF provides information on fruit colour heterogeneity. Among internal fruit quality parameters, the strongest correlation with the apple peel chlorophyll content was found for fruit firmness. For green `Golden Delicious' fruit, there were no differences in the Pearson's coefficients calculated for the data from sunlit (r = 0.78), shaded (r = 0.77) or both sides (r = 0.77). For `Jonagold' fruit, in contrast, r calculated for the data from both fruit sides was lower (r = 0.65) compared to those from sunlit (r = 0.74) or shaded (r = 0.76) sides, due to the different chlorophyll content and same firmness values on the sunlit and shaded sides of fruit of this cultivar. The correlation coefficients between the non-destructively evaluated indices of apple peel chlorophyll content and the Streif fruit maturity index could be significantly improved in both cultivars by considering differences in pigment contents and flesh characteristics on the sunlit and shaded apple sides. Thus, the methods are ideal for sensitive and rapid monitoring of senescence-induced changes in peel chlorophyll and may enhance the accuracy of non-invasive external and internal fruit quality evaluation.
Keywords: Malus x domestica; Senescence; Anthocyanin; Peel; Lenticels; Post-harvest

Inga G. Azevedo, Jurandi G. Oliveira, Marcelo G. da Silva, Talita Pereira, Savio F. Correa, Helion Vargas, Arnoldo R. Facanha, P-type H+-ATPases activity, membrane integrity, and apoplastic pH during papaya fruit ripening, Postharvest Biology and Technology, Volume 48, Issue 2, May 2008, Pages 242-247, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.11.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4RDB8W3-1/2/aa6402031a3110dd63fc4ca6e3cb7b8b)
Abstract:
The P-type H+-ATPase activity and related apoplastic pH were analysed in papaya fruit (Carica papaya L. cv. Golden) at different stages of maturation. Postharvest ripening of papaya was characterized by ethylene emission, skin colouration, firmness, and titratable acidity (TA). The climacteric peak of ethylene production occurred on the 2nd day after harvest, along with a sharp decrease in ATP hydrolysis and a transient alkalization of the apoplast fluid. Such effects were consistent with progressive cell membrane deenergization occurring concomitantly with fruit softening and decrease of cell membrane integrity as manifest by electrolyte leakage. Nevertheless, it was possible to detect an expressive ATP-dependent H+ gradient 2 days after the climacteric suggesting the maintenance of cellular function even in the late stages of the fruit ripening. The data provide new insights into the physiology of ripening in papaya and how that P-type H+-ATPase activity can be used as a biochemical marker for postharvest analysis and management of climacteric fruit.
Keywords: Proton pumps; Ion homeostasis; Tropical fruits; Caricaceae family; Cell wall hydrolysis

Gene E. Lester, Robert A. Saftner, Marketable quality and phytonutrient concentrations of a novel hybrid muskmelon intended for the fresh-cut industry and its parental lines: Whole-fruit comparisons at harvest and following long-term storage at 1 or 5 [degree sign]C, Postharvest Biology and Technology, Volume 48, Issue 2, May 2008, Pages 248-253, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.10.009.
(http://www.sciencedirect.com/science/article/B6TBJ-4R8KT32-2/2/9b39fc2b06ddda6b3249ce4c709a616b)
Abstract:
Year-round demand for fresh-cut produce, such as muskmelon (Cucumis melo L. Reticulatus group) fruit, can include importation of whole-fruit from as far away as Chile, requiring expensive air shipments. Surface shipments would reduce these transportation expenses but would also require a longer shelf-life fruit than what is now commercially available to withstand the shipping/storage time frame of up to 5 weeks prior to fresh-cut processing. Current muskmelon cultivars have a fruit storage life of up to 2 weeks. In this 2-year study, we compared the marketable quality and phytonutrient attributes of a novel hybrid with its muskmelon parental lines (ultra-firm female x commercial muskmelon cultivar type male) up to 5 weeks at 1 or 5 [degree sign]C. At harvest whole hybrid fruit were larger (33-37% heavier) than its parental lines, and had an external firmness equal to its female parent. The external and internal firmnesses of the female parent were on average 4.5-fold and 3.6-fold firmer, respectively, than those of the male parent. Compared to its male parent, the internal tissue of hybrid fruit was relatively sweeter, more intensly orange, had a higher concentration of [beta]-carotene, had a seven-fold higher concentration of 5-methyltetrahydrofolate (folic acid), had fewer internal disorders, and reduced senescence. The aforemetioned tissue firmness of hybrid fruit would make it highly suitable to withstand surface shipments of up to 5 weeks; and the aforementioned quality characteristics would make it likely preferable to consumers both taste-wise and nutritionally as a fresh-cut product.
Keywords: Cucumis melo; Ascorbic acid; [beta]-Carotene; Color; Fruit firmness; 5-Methyltetrahydrofolate (folic acid); Malondialdehyde; Sugars; Sweetness

Hiroshi Fujii, Takehiko Shimada, Aiko Sugiyama, Tomoko Endo, Fumie Nishikawa, Michiharu Nakano, Yoshinori Ikoma, Tokuro Shimizu, Mitsuo Omura, Profiling gibberellin (GA3)-responsive genes in mature mandarin fruit using a citrus 22K oligoarray, Scientia Horticulturae, Volume 116, Issue 3, 1 May 2008, Pages 291-298, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.01.010.
(http://www.sciencedirect.com/science/article/B6TC3-4S38C3H-1/2/8585a662f6adca24d9ede45efeeecb53)
Abstract:
Gibberellin3 (GA3)-responsive genes were investigated with a citrus 22K oligoarray1 to further the understanding of transcriptional regulation by GA3 treatment in Satsuma mandarin fruit (Citrus unshiu Marc.). 213 GA3-responsive genes were identified that showed a 3-fold or greater expression change after 72 h GA3 treatment, compared to expression after 72 h air treatment. GA3 treatment induced expression of pathogenesis-related (PR) proteins and genes that function in photosynthesis, chloroplast biogenesis, resistance, defense and stress. Also, GA3 treatment reduced the transcription of several ethylene-inducible genes, such as carotenoid metabolic genes, which are associated with fruit ripening.
Contrasting effects between GA3 and ethylene were observed on photosynthesis and chloroplast biogenesis, chlorophyll metabolism, and carotenoid metabolism, indicating that the endogenous GA3 level might be important for the endogenous regulation of maturation and senescence in mature citrus fruit. It was also found that the GA response pathway was likely to take part in cross-talk with the pathogen-related pathway in mature citrus fruit.
Keywords: Microarray; Citrus; Gibberellin; Non-climacteric; Ripening

E. Lotze, J. Joubert, K.I. Theron, Evaluating pre-harvest foliar calcium applications to increase fruit calcium and reduce bitter pit in `Golden Delicious' apples, Scientia Horticulturae, Volume 116, Issue 3, 1 May 2008, Pages 299-304, ISSN 0304-4238, DOI: 10.1016/j.scienta.2008.01.006.
(http://www.sciencedirect.com/science/article/B6TC3-4S02DDG-1/2/e7ba3506066c3472643066fc6dbb91b3)
Abstract:
In all major apple producing countries, applications of foliar calcium (Ca) products to increase fruit Ca content and reduce the incidence of bitter pit in apples are used. Calcium nitrate (Ca(NO3)2), Calcimax and Ca acetate were applied, commencing at three different developmental stages (early, mid and late) of fruit growth. Late Ca(NO3)2 (80 days after full bloom (dafb)) applications increased the Ca content of fruit at harvest more than early (six dafb) and mid (40 dafb) applications. There was a trend towards an increase in bitter pit from early to late applications of Ca(NO3)2 and Calcimax, confirming previous results obtained when applying only Ca(NO3)2. In spite of the very low incidences of bitter pit during these seasons (less than 7%), significant differences between treatments were found between Ca(NO3)2 Mid and other treatments in 2004/2005, as well as Ca(NO3)2 and Calcimax Early and other treatments in 2005/2006. Ca acetate applications did not show any trends in fruit Ca content or bitter pit incidence when applied during the three stages. Thus, products may differ in efficiency of Ca absorption and effectiveness in decreasing bitter pit in fruit when applied during different developmental stages.
Keywords: Commercial application; Developmental stages; Mineral fruit analysis

O.R. Madibela, K.M. Kelemogile, Exposure of Melia azedarach fruits to Eimeria lowers oocyst output in yearling Tswana goats, Small Ruminant Research, Volume 76, Issue 3, May 2008, Pages 207-210, ISSN 0921-4488, DOI: 10.1016/j.smallrumres.2007.12.026.
(http://www.sciencedirect.com/science/article/B6TC5-4S02TDF-1/2/0edcbedc545865bc69465a2c6e9e7151)
Abstract:
This study assessed the effects of Melia azedarach fruits on oocyst output of goats naturally infected with Eimeria species. The nineteen 12-month-old male Tswana goats weighing 21.5 kg

were allocated to either a grass hay basal diets (control = 10) or to grass hay basal diet + M. azedarach fruits (treatment = 9). The animals were individually penned, given feed and clean water for 21 days. There was a significant ($P < 0.001$) difference in oocyst per gram (OPG) between the two groups in weeks 2 and 3. M. azedarach maintained an oocyst count of 6400 OPG throughout the study. In contrast, OPG of the control animals increased in the second week, reaching a peak of 33,000 OPG by week 3. There was no difference ($P > 0.05$) in body weight between the groups by week 2. The use of novel plants to control parasites in livestock opens opportunities for sustainable and less frequent use of anthelmintics.
Keywords: Melia azedarach; Eimeria species; Goats; Condensed tannins; Parasites

Yifei Wang, Yihong Bao, Danhong Shen, Wu Feng, Ting Yu, Jia Zhang, Xiao Dong Zheng, Biocontrol of Alternaria alternata on cherry tomato fruit by use of marine yeast Rhodosporidium paludigenum Fell & Tallman, International Journal of Food Microbiology, Volume 123, Issue 3, 30 April 2008, Pages 234-239, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2008.02.002.
(http://www.sciencedirect.com/science/article/B6T7K-4RV7Y69-2/2/b7ebd00c018506a96c9e495b1719ebbc)
Abstract:
The basidiomycetous yeast Rhodosporidium paludigenum Fell & Tallman isolated from the south of East China Sea was evaluated for its activity in reducing postharvest decay of cherry tomatoes caused by Alternaria alternata in vitro and in vivo tests. The results showed that washed cell suspension of R. paludigenum provided better control of A. alternata than any other treatment, while the autoclaved cell culture failed to provide protection against the pathogen. The concentration of antagonist had significant effect on biocontrol effectiveness in vivo: when the concentration of the washed yeast cell suspension was used at 1 x 109cells/ml, the percentage rate of black rot of cherry tomato fruit was only 37%, which was remarkably lower than that treated with water (the control) after 5days of incubation at 25[degree sign]C. Furthermore, a great biocontrol efficacy of R. paludigenum was observed when it was applied prior to inoculation with A. alternata: the longer the incubation time of R. paludigenum, the lower disease incidence would be. However, there was little efficacy when R. paludigenum was applied after A. alternata inoculation. In addition, on the wounds of cherry tomato, it was observed that R. paludigenum grew rapidly increasing 50-fold during the first 12h at 25[degree sign]C. To the best of our knowledge, this is a first report concerning that the marine yeast R. paludigenum could be used as a biocontrol agent of postharvest fungal disease.
Keywords: Cherry tomato; Biological control; Alternaria alternata; Rhodosporidium paludigenum Fell & Tallman; Marine yeast

Anna J. Keutgen, Elke Pawelzik, Quality and nutritional value of strawberry fruit under long term salt stress, Food Chemistry, Volume 107, Issue 4, 15 April 2008, Pages 1413-1420, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.09.071.
(http://www.sciencedirect.com/science/article/B6T6R-4PT0Y83-9/2/0a95afaa80e436da3485960a3c328426)
Abstract:
Modifications of fruit quality, in response to a long-term salt stress of four months, were studied in two strawberry cultivars differing in their sensitivity to salinity. The sensitive cv. Elsanta and the less sensitive cv. Korona were treated during two vegetation seasons with 0, 40 or 80 mmol NaCl/l in the nutrient solution. While mean fruit weight decreased, dry matter and contents of total soluble carbohydrates, as well as sweetness index of fruits, remained constant. Salt stress in both cultivars increased the antioxidant capacity, antioxidants pools (ascorbic acid, anthocyanins, superoxide dismutase) and selected minerals such as Na+, Cl-, K+, N, P and Zn2+, as well as lipid peroxidation. Furthermore, salt stress increased the contents of free and essential amino acids, especially in cv. Elsanta. The more tolerant cv. Korona was characterized by an increase of

reduced glutathione and a better fruit taste. In salt-stressed fruits of cv. Elsanta, taste was significantly impaired.
Keywords: Fragaria x ananassa; NaCl stress; Antioxidants; Mineral nutrients; Carbohydrates; Organic acids; Free amino acids; Genotype

Sonia M. Castro, Jorge A. Saraiva, Jose A. Lopes-da-Silva, Ivonne Delgadillo, Ann Van Loey, Chantal Smout, Marc Hendrickx, Effect of thermal blanching and of high pressure treatments on sweet green and red bell pepper fruits (Capsicum annuum L.), Food Chemistry, Volume 107, Issue 4, 15 April 2008, Pages 1436-1449, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.09.074.
(http://www.sciencedirect.com/science/article/B6T6R-4PT0Y83-J/2/ecf81eff6a33b27505a9882b8079d74b)
Abstract:
The effect of pressure treatments of 100 and 200 MPa (10 and 20 min) and of thermal blanching at 70 [degree sign]C, 80 [degree sign]C and 98 [degree sign]C (1 and 2.5 min), on sweet green and red bell peppers was compared. Pressure treated peppers showed a lower reduction on soluble protein and ascorbic acid contents. Red peppers presented even an increased content of ascorbic acid (15-20%), compared to the untreated peppers. Peroxidase and pectin methylesterase (whose activity was only quantifiable in green peppers) showed a higher stability to pressure treatments, particularly the latter enzyme, while polyphenol oxidase was inactivated to the same final level by the thermal blanching and pressure treatments. Pressure treatments resulted in comparable (in green pepper) to higher (in red pepper) microbial loads compared to blanching. Pressure treated green and red peppers presented similar to better firmness before and after tunnel freezing at -30 [degree sign]C, compared to thermally blanched peppers, particularly those blanched at 98 [degree sign]C. The results indicated that pressure treatments of 100 and 200 MPa can be used to produce frozen peppers with similar to better nutritional (soluble protein and ascorbic acid) and texture (firmness) characteristics, comparable activity of polyphenol oxidase and higher activity of pectin methylesterase, while pressure treated peppers show a higher level of peroxidase activity. It would be interesting to use higher pressures in future studies, as an attempt to cause a higher reduction on microbial load and on enzymatic activity.
Keywords: Bell pepper; Capsicum annuum; Pressure; Blanching; Freezing; Vitamin C; Texture; Enzymes

Foroogh Biglari, Abbas F.M. AlKarkhi, Azhar Mat Easa, Antioxidant activity and phenolic content of various date palm (Phoenix dactylifera) fruits from Iran, Food Chemistry, Volume 107, Issue 4, 15 April 2008, Pages 1636-1641, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.10.033.
(http://www.sciencedirect.com/science/article/B6T6R-4PX048F-3/2/031e62e615141e49eaba75a2f66ff55c)
Abstract:
Edible parts of date palm (Phoenix dactylifera) fruits (DPF) from Iran were analyzed for their antioxidant activities (AA) using Trolox equivalent antioxidant capacity (TEAC) method, 2,2'-azinobis (3-ethylbenzothiazoline-6-sulphonic acid) radical cation (ABTS+) assays and the ferric reducing/antioxidant power method (FRAP assay). The total phenolic content (TPC) and total flavonoid content (TFC) of the DPF were measured using Folin-Ciocalteau and aluminum chloride colorimetric methods, respectively. The samples used included four types of soft dates (SD) namely Honey date, Bam date, Jiroft date and Kabkab date; three types of semi-dry dates (SDD) namely Sahroon date, Piarom date and Zahedi date and one type of dry date (DD) which was Kharak date. The AA (ABTS assay) of the DPF were 22.83-41.17, 47.6-54.61 and 500.33 [mu]mol Trolox equivalents/100 g dry weights (dw) for SD, SDD and DD, respectively. The AA (FRAP assay) per 100 g dw sample were 11.65-20, 19.12-29.34 and 387.34 [mu]mol FRAP for SD, SDD and DD, respectively. The TPC ranged from 2.89 to 4.82, 4.37 to 6.64 and 141.35 mg gallic acid equivalents (GAE)/100 g dw, while TFC ranged from 1.62 to 3.07, 1.65 to 4.71 and 81.79 mg

catechin equivalents (CEQ)/100 g dw sample for SD, SDD and DD, respectively. Correlation analyses indicated that there was a linear relationship between AA and the TPC or TFC of DPF. This work demonstrates the potential of Iranian dates as antioxidant functional food ingredients.
Keywords: ABTS; Antioxidant activity; FRAP; Iranian date palm fruit; Total phenolic content and total flavonoid

D.P. Hughes, D.J.C. Kronauer, J.J. Boomsma, Extended Phenotype: Nematodes Turn Ants into Bird-Dispersed Fruits, Current Biology, Volume 18, Issue 7, 8 April 2008, Pages R294-R295, ISSN 0960-9822, DOI: 10.1016/j.cub.2008.02.001.
(http://www.sciencedirect.com/science/article/B6VRT-4S7B83M-G/2/3995aac9b7a3c61210676060e032cd0c)
Abstract: Summary
A recent study has discovered a novel extended phenotype of a nematode which alters its ant host to resemble ripe fruit. The infected ants are in turn eaten by frugivorous birds that disperse the nematode's eggs.

Cole Gilbert, L.P.S. Kuenen, Multimodal Integration: Visual Cues Help Odor-Seeking Fruit Flies, Current Biology, Volume 18, Issue 7, 8 April 2008, Pages R295-R297, ISSN 0960-9822, DOI: 10.1016/j.cub.2008.02.020.
(http://www.sciencedirect.com/science/article/B6VRT-4S7B83M-H/2/4dfa57346fee7a7798031cb5dab8de93)
Abstract: Summary
Olfactory stimuli are uniquely devoid of directional information, so that multimodal cues are typically required for their localization. A clever new experimental paradigm with flying Drosophila has shown that accurate heading into an odor plume requires panoramic visual cues.

Tiina Hovi-Pekkanen, Risto Tahvonen, Effects of interlighting on yield and external fruit quality in year-round cultivated cucumber, Scientia Horticulturae, Volume 116, Issue 2, 4 April 2008, Pages 152-161, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.11.010.
(http://www.sciencedirect.com/science/article/B6TC3-4RFD09S-2/2/3ef851357e25e80f900792d554614202)
Abstract:
The effects of interlighting and of the proportion of interlight on the yield and fruit quality of year-round cultivated cucumber (Cucumis sativus L. cv. Cumuli) were investigated for this study. Artificial lighting was provided by high pressure sodium (HPS) lamps and the lighting regimes included top lighting (TL), top + interlighting 24% (T + IL24) and top + interlighting 48% (T + IL48). In TL, all of the lamps were mounted above the canopy. In T + IL24 and T + IL48, top lamps covered 76 and 52% of the lighting, respectively, while 24 and 48% of the lighting came from interlighting lamps which were mounted vertically 1.3 m above the ground between the single plant rows. The outdoor daily light integral (DLI) varied greatly during the cultivation periods; the mean values were 36.8, 5.3 and 19.9 mol m-2 day-1 for the summer, autumn-winter and spring stands, respectively. Lighting regime affected both yield and external fruit quality. Interlighting increased first class yield and decreased unmarketable yield, both in weight and number. The increase in the annual first class yield in weight was 15% in the two T + IL regimes. Interlighting improved energy use efficiency in lighting, being for the whole year 120, 130 and 127 g total yield kW h-1 in TL, T + IL24 and T + IL48, respectively. Interlighting increased the fruit skin chlorophyll concentration in all seasons, but had only a minor effect on the fruit dry matter concentration. The mean total chlorophyll concentration in fruit skin was 70.8, 76.7 and 82.2 [mu]g cm-2 in TL, T + IL24 and T + IL48, respectively. In addition, interlighting extended the post-harvest shelf life of cucumber fruits in spring. Besides interlighting per se, also the higher proportion of interlight tended to further improve the fruit quality. For example, the fruit skin chlorophyll concentration increased along with

the higher proportion of interlighting. In general, the effects of lighting regime were more prominent in lower natural light conditions in winter and spring. It is concluded that interlighting is a recommendable lighting method in cucumber cultivation, especially in lower natural light conditions.
Keywords: Artificial lighting; Cucumis sativus; Chlorophyll concentration; Dry matter concentration; Keeping quality; Shelf life; Supplemental lighting

Satoshi Kasai, Hiroko Hayama, Yoshiki Kashimura, Satoshi Kudo, Yoshiaki Osanai, Relationship between fruit cracking and expression of the expansin gene MdEXPA3 in `Fuji' apples (Malus domestica Borkh.), Scientia Horticulturae, Volume 116, Issue 2, 4 April 2008, Pages 194-198, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.12.002.
(http://www.sciencedirect.com/science/article/B6TC3-4RR86VK-2/2/ec97fa2307ac0495c3d55ea5bcf628f8)
Abstract:
In `Fuji' apples, fruit cracking causes great economic loss. To understand its mechanisms, we analyzed the relationship between fruit cracking and the expression of an apple expansin gene (MdEXPA3) in pericarp and mesocarp during fruit growth. Fruit cracking is divided into two types; internal ring cracking (IRC) and stem-end splitting (SES). The former is an early symptom sometimes followed by the lattar. In this study, IRC mostly was observed during the phase of rapid fruit growth. MdEXPA3 transcripts appeared in the mesocarp at 30 days after full bloom (DAFB), reached a maximum at 95 DAFB and then decreased, thus paralleling the fruit growth rate. In contrast, the transcript level in the pericarp was below the detection limit until 50 DAFB, then increased until 109 DAFB to remain high until the end of observation. As IRC began to occur just before the increase of MdEXPA3 transcript levels in the pericarp, the differential expression in pericarp and mesocarp may be related to the initiation of IRC. Bagging reduced the incidence rate of both IRC and SES to one eighth without affecting fruit enlargement, and induced MdEXPA3 expression at earlier stage in the pericarp but not in mesocarp. These results suggested that induced accumulation of MdEXPA3 mRNA in pericarp reduced the susceptibility of fruit cracking. Thus, early symptoms of fruit cracking coincide with situations in which MdEXPA3 expression in the mesocarp exceeds that in the pericarp. In such situations, pericarp cells may be unable to follow the expansion of mesocarp cells due to insufficient levels of growth promoting expansins. If so, IRC appears as a consequence of the imbalance of expansin-dependent tissue growth rates.
Keywords: `Fuji' apples (Malus domestica Borkh.); Fruit cracking; Fruit growth; Pericarp; Expansin gene expression

Youssef Habibi, Laurent Heux, Mostafa Mahrouz, Michel R. Vignon, Morphological and structural study of seed pericarp of Opuntia ficus-indica prickly pear fruits, Carbohydrate Polymers, Volume 72, Issue 1, 3 April 2008, Pages 102-112, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2007.07.032.
(http://www.sciencedirect.com/science/article/B6TFD-4PB6VX7-1/2/2c4a68af48a21a4fb8c01c2d8358f176)
Abstract:
The morphological study of pericarp of Opuntia ficus-indica (OFI) seeds showed that the cells were mainly made up of spindle-shaped sclerenchyma fibers. The chemical composition of the pericarp revealed a significant amount of polysaccharides, with cellulose (35%) and xylan (27%). The structure of xylan and cellulose, both in isolated form and as a component of seed pericarp of OFI were studied by X-ray and CP/MAS 13C NMR spectroscopy. The supramolecular structure of xylan is very sensitive to the surrounding environment, in particular to the presence of water and of cellulose fibers. The cellulose fibers presented X-ray diagrams typical of secondary wall cellulose but they were sensitive toward NaOH since they started to be converted into cellulose II at a NaOH concentration as low as 8%. In seed pericarp, cellulose fibers interact with xylan polymers,

causing these to adopt a conformation different to the one observed for xylan both in dry or hydrated form, suggesting that xylans were probably present as composites with cellulose fibers.
Keywords: Cellulose; CP/MAS; Morphology; Opuntia ficus-indica; Seed; X-ray; Xylan

Yue LI, Tian-lai LI, Dan WANG, Correlation Between Endogenous Hormones of Stem Apices and Fruit Locule Numbers in Tomatoes During Floral Bud Differentiation Stages, Agricultural Sciences in China, Volume 7, Issue 4, April 2008, Pages 447-454, ISSN 1671-2927, DOI: 10.1016/S1671-2927(08)60088-7.
(http://www.sciencedirect.com/science/article/B82XG-4SM79T5-8/2/bbd6fe247106ef00271024ae9e90ef96)
Abstract:
The study was designed to elucidate the changes in the endogenous hormones of stem apices in tomatoes and the function of correlative endogenous hormones in tomatoes during floral bud differentiation stages. The tomato parents were crossed and reverse crossed by using two inbred lines of multi-locule (MLK1) and few-locule (FL1) with significant difference, and the relationship between endogenous hormones GA3, IAA, and ABA levels and ovary locule numbers of parents and progeny during floral bud differentiation initial stage, floral bud differentiation stage, sepal petal formation stage, carpel formation initial stage, and ovary locule complete formation stage was studied. GA3 levels in P1, P2, F1, and RF1 were consistent with locule numbers, and IAA and ABA levels were reverse to ovary locule numbers during the key stage. The correlation showed that, during sepal petal formation stage, the ovary locule numbers were positively correlated with GA3, GA3/IAA, and GA3/ABA, and were negatively correlated with IAA and ABA. It was speculated that increasing GA3 levels or decreasing IAA and ABA levels of stem apices in tomato might be able to enhance ovary locule numbers. The sepal petal formation stage was an important stage which regulated endogenous hormones in the ovary locule formation.
Keywords: tomato; endogenous hormones; locule numbers; correlation

Ningbo Cui, Taisheng Du, Shaozhong Kang, Fusheng Li, Jianhua Zhang, Mixia Wang, Zhijun Li, Regulated deficit irrigation improved fruit quality and water use efficiency of pear-jujube trees, Agricultural Water Management, Volume 95, Issue 4, April 2008, Pages 489-497, ISSN 0378-3774, DOI: 10.1016/j.agwat.2007.11.007.
(http://www.sciencedirect.com/science/article/B6T3X-4RS3TH8-1/2/153275a8b9c9329fb9295df2ee368674)
Abstract:
Regulated deficit irrigation (RDI) was applied on field-grown pear-jujube trees in 2005 and 2006 and its effects on crop water-consumption, yield and fruit quality were investigated. Treatments included severe, moderate and low water deficit treatments at bud burst to leafing, flowering to fruit set, fruit growth and fruit maturation stages. Different deficit irrigation levels at different growth stages had significant effects on the fruit yield and quality. Moderate and severe water deficits at bud burst to leafing and fruit maturation stages increased fruit yield by 13.2-31.9% and 9.7-17.5%, respectively. Fruit yield under low water deficit at fruit growth and fruit maturation stages was similar to that of full irrigation (FI) treatment. All water deficit treatments reduced water consumption by 5-18% and saved irrigation water by 13-25% when compared to the FI treatment. During the bud burst to leafing stage, moderate and severe water deficits did not have effect on the fruit quality, but significantly saved irrigation water and increased fruit yield. Low water deficit during the fruit growth stage and low, moderate and severe water deficits during the fruit maturation stage had no significant effect on the fruit weight and fruit volume but reduced fruit water content slightly, which led to much reduced rotten fruit percentage during the post-harvest storage period. Such water deficit treatments also shortened the fruit maturation period by 10-15 d and raised the market price of the fruit. Fruit quality shown as fruit firmness, soluble solid content, sugar/acid ratio and vitamin C (VC) content were all enhanced as a result of deficit irrigation. Our

results suggest that RDI should be adopted as a beneficial agricultural practice in the production of pear-jujube fruit.
Keywords: Fruit production; Fruit quality; Regulated deficit irrigation; Water use efficiency; Pear-jujube (Zizyphus jujube Mill.)

T.D. Avent, T.A.R. Price, N. Wedell, Age-based female preference in the fruit fly Drosophila pseudoobscura, Animal Behaviour, Volume 75, Issue 4, April 2008, Pages 1413-1421, ISSN 0003-3472, DOI: 10.1016/j.anbehav.2007.09.015.
(http://www.sciencedirect.com/science/article/B6W9W-4R7F47V-6/2/bafc0e286d0684bb177040f21ffdc346)
Abstract:
With respect to mate choice, females of many species discriminate between males on the basis of age. The adaptive significance of age-based mate choice is unclear, with various hypotheses making conflicting predictions. We examined the possibility of female preference in the fruit fly Drosophila pseudoobscura, a species where females gain no significant nutritional benefits from mating. Females were shown to prefer to mate with old males in two-male choice experiments and accepted old males faster than young males in single-male tests. Females mated to old males had a higher fecundity, possibly related to a transfer of more sperm and/or a larger volume of accessory gland proteins during the longer copulation durations experienced with old males, although these possibilities were not directly tested. Hence, females appear to derive direct benefits from preferring to mate with older males. In contrast, there was no evidence of mate preference for the sons of either old or young males when matched for age, indicating that the mating advantage of old males is not passed to their sons. These sets of experiments suggest that in D. pseudoobscura the benefit of age-based preference to females is increased fecundity due to greater investment per mating by older males.
Keywords: age; Drosophila pseudoobscura; ejaculate; female choice; indirect benefits; sperm

Justin A. Welbergen, Variation in twilight predicts the duration of the evening emergence of fruit bats from a mixed-species roost, Animal Behaviour, Volume 75, Issue 4, April 2008, Pages 1543-1550, ISSN 0003-3472, DOI: 10.1016/j.anbehav.2007.10.007.
(http://www.sciencedirect.com/science/article/B6W9W-4R8M0MF-2/2/54e9e25bba838754fe773373cd33e394)
Abstract:
This study investigated how variation in twilight duration affects the evening emergence of two species of fruit bat, the black flying-fox, Pteropus alecto, and the grey-headed flying-fox, Pteropus poliocephalus, from a mixed-species colony in New South Wales, Australia. Because there are threshold illuminances that accompany the onset and end of emergence activity, I predicted that the duration of the colonywide emergence should vary with twilight duration. Because the duration of twilight varies both with season and with latitude, emergence duration should vary correspondingly. As expected, emergence duration correlated with seasonal changes in twilight duration and was independent of meteorological and ecological variables. Furthermore, P. alecto showed a wider distribution of individual emergence times than P. poliocephalus, which corresponded with the different latitudinal distributions of the two species. This study shows that seasonal and latitudinal variation in activity timing in bats may merely be a by-product of the underlying circadian mechanism, which may confound studies that seek adaptive ecological explanations for inter- and intraspecific variation in the timing of activities around dawn and dusk.
Keywords: Chiroptera; emergence timing; fruit bats; latitudinal variation; Pteropus alecto; Pteropus poliocephalus; seasonal variation; twilight duration

Nilupa R. Amarasinghe, Lalith Jayasinghe, Noriyuki Hara, Yoshinori Fujimoto, Chemical constituents of the fruits of Artocarpus altilis, Biochemical Systematics and Ecology, Volume 36, Issue 4, April 2008, Pages 323-325, ISSN 0305-1978, DOI: 10.1016/j.bse.2007.09.007.
(http://www.sciencedirect.com/science/article/B6T4R-4R2GS2S-1/2/8db036b57425d9f7c6aa34f74f1c20b7)
Keywords: Artocarpus altilis; Moraceae; Stilbenes; Flavones; Prenylated flavonols; Benzofurans; Antifungal; Antioxidant

Alejandro Rodriguez, Luis Serrano, Ana Moral, Antonio Perez, Luis Jimenez, Use of high-boiling point organic solvents for pulping oil palm empty fruit bunches, Bioresource Technology, Volume 99, Issue 6, April 2008, Pages 1743-1749, ISSN 0960-8524, DOI: 10.1016/j.biortech.2007.03.050.
(http://www.sciencedirect.com/science/article/B6V24-4NRCRR9-5/2/0655fd7b914b73660fc22f11ec50c17c)
Abstract:
Oil palm empty fruit bunches were used as an alternative raw material to obtain cellulosic pulp. Pulping was done by using high-boiling point organic solvents of decreased polluting power relative to classical (Kraft, sulphite) solvents but affording operation at similar pressure levels.
The holocellulose, [alpha]-cellulose and lignin contents of oil palm empty fruit bunches (viz. 66.97%, 47.91% and 24.45%, respectively) are similar to those of some woody raw materials such as pine and eucalyptus, and various non-wood materials including olive tree prunings, wheat straw and sunflower stalks.
Pulping tests were conducted by using ethyleneglycol, diethyleneglycol, ethanolamine and diethanolamine under two different sets of operating conditions, namely: (a) a 70% solvent concentration, 170 [degree sign]C and 90 min; and (b) 80% solvent, 180 [degree sign]C and 150 min. The solid/liquid ratio was six in both cases. The amine solvents were found to provide pulp with better properties than did the glycol solvents. Ethanolamine pulp exhibited the best viscosity and drainage index (viz. 636 mL/g and 17 [degree sign]SR, respectively), and paper made from it the best breaking length (1709 m), stretch (1.95%), burst index (0.98 kN/g) and tear index (0.33 mNm2/g). Operating costs can be reduced by using milder conditions, which provide similar results. In any case, the amines are to be preferred to the glycols as solvents for this purpose.
Keywords: Non-wood; Empty fruit bunches; Organosolv pulp; Paper

Silke Schiewer, Santosh B. Patil, Pectin-rich fruit wastes as biosorbents for heavy metal removal: Equilibrium and kinetics, Bioresource Technology, Volume 99, Issue 6, April 2008, Pages 1896-1903, ISSN 0960-8524, DOI: 10.1016/j.biortech.2007.03.060.
(http://www.sciencedirect.com/science/article/B6V24-4NVK1RT-3/2/1170d7d826917fff3273471821301939)
Abstract:
Biosorption can be used as a cost effective and efficient technique for the removal of toxic heavy metals from wastewater. Waste materials from industries such as food processing and agriculture may act as biosorbents. This study investigates the removal of cadmium by fruit wastes (derived from several citrus fruits, apples and grapes). Citrus peels were identified as the most promising biosorbent due to high metal uptake in conjunction with physical stability. Uptake was rapid with equilibrium reached after 30-80 min depending on the particle size (0.18-0.9 mm). Sorption kinetics followed a second-order model. Sorption equilibrium isotherms could be described by the Langmuir model in some cases, whereas in others an S-shaped isotherm was observed, that did not follow the Langmuir isotherm model. The metal uptake increased with pH, with uptake capacities ranging between 0.5 and 0.9 meq/g of dry peel. Due to their low cost, good uptake capacity, and rapid kinetics, citrus peels are a promising biosorbent material warranting further study.
Keywords: Biosorption; Heavy metals; Citrus peels; Kinetics; Langmuir isotherm

Fatma Tosun, Cigdem Akyuz Kizilay, Kevser Erol, Fatma Sultan Kilic, Mine Kurkcuoglu, Kemal Husnu Can Baser, Anticonvulsant activity of furanocoumarins and the essential oil obtained from the fruits of Heracleum crenatifolium, Food Chemistry, Volume 107, Issue 3, 1 April 2008, Pages 990-993, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.08.085.
(http://www.sciencedirect.com/science/article/B6T6R-4PKXBWB-5/2/fee6edf25e1f21489adbead139b6cbe8)
Abstract:
The anticonvulsant activity of furanocoumarins, coumarin mixture and the essential oil obtained from the fruits of Heracleum crenatifolium was examined against maximal electroshock (MES)-induced seizures in mice. Bergapten showed significant anticonvulsant activity. The furanocoumarins isolated from the fruits of the plant were identified using thin-layer chromatography, melting points and spectroscopic methods (IR, MS, 1H NMR) as isobergapten (1), pimpinellin (2), bergapten (3), isopimpinellin (4), sphondin (5) and byak-angelicol (6). The essential oil content of the fruits were found as 5.5%. Twenty-two compounds representing 99.3% of the essential oil obtained from the fruits of H. crenatifolium were determined and the major components were identified as octanol and octyl acetate (3.1% and 88.4% respectively) by GC and GC-MS.
Keywords: Heracleum crenatifolium; Furanocoumarin; Essential oil; Anticonvulsant; MES

Joao C.M. Barreira, Isabel C.F.R. Ferreira, M. Beatriz P.P. Oliveira, Jose Alberto Pereira, Antioxidant activities of the extracts from chestnut flower, leaf, skins and fruit, Food Chemistry, Volume 107, Issue 3, 1 April 2008, Pages 1106-1113, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.09.030.
(http://www.sciencedirect.com/science/article/B6T6R-4PPF6FG-6/2/9fec7881757fc926edb00b8a1f56c3fb)
Abstract:
In this study, the antioxidant properties of chestnut (flowers, leaves, skins and fruits) extracts were evaluated through several biochemical assays: DPPH (2,2-diphenyl-1-picrylhydrazyl) radical-scavenging activity, reducing power, inhibition of [beta]-carotene bleaching, inhibition of oxidative hemolysis in erythrocytes, induced by 2,2'-azobis(2-amidinopropane)dihydrochloride (AAPH), and inhibition of lipid peroxidation in pig brain tissue through the formation of thiobarbituric acid-reactive substances (TBARS). These assays have been extensively studied as models for the peroxidative damage in biomembranes. The EC50 values were calculated for all the methods in order to evaluate the antioxidant efficiency of each chestnut extract. The phenol and flavonoid contents were also obtained. Chestnut skins revealed the best antioxidant properties, presenting much lower EC50 values, particularly for lipid peroxidation inhibition in the TBARS assay. Furthermore, the highest antioxidant contents (polyphenols and flavonoids) were found for these extracts.
Keywords: Chestnut extracts; Antioxidants; Scavenging effects; Peroxidation and hemolysis inhibition

S. Cortes-Aguado, N. Sanchez-Morito, F.J. Arrebola, A. Garrido Frenich, J.L. Martinez Vidal, Fast screening of pesticide residues in fruit juice by solid-phase microextraction and gas chromatography-mass spectrometry, Food Chemistry, Volume 107, Issue 3, 1 April 2008, Pages 1314-1325, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.09.033.
(http://www.sciencedirect.com/science/article/B6T6R-4PRYG84-1/2/c1d4eb12c392e11280da555cde60a390)
Abstract:
A new vanguard-rearguard analytical method for determining 54 pesticide residues in different fruit juices (natural and commercial orange, peach and pineapple juices were tested) is proposed. For

that, in a first step, a fast screening (vanguard) method is applied for detecting those samples containing pesticides at concentrations above a pre-established cut-off value. In a second step, those samples are re-analyzed by a conventional pesticide residue (rearguard) method that confirms the presence of the pesticides and quantifies them. The sample process is very simple, fast and semiautomatic and therefore, it reduces significantly the average time required per sample, increases precision and minimizing human mistakes. Only 1 mL of juice sample is required for analysis. Pesticides are quickly extracted with ethyl acetate in a test tube, transferred to a mixture water:acetone 9:1 (v/v), and isolated by solid-phase microextraction (SPME). The SPME screening method only requires 10 min of SPME extraction. The SPME confirming/quantifying method requires 55 min of SPME extraction. The instrumental determination is carried out by gas chromatography-mass spectrometry (GC-MS) using a full scan acquisition mode for the screening method (less than 17 min of chromatographic run) and a tandem mass spectrometry (MS/MS) acquisition mode for the quantifying/confirming method (less than 70 min of chromatographic run). The use of full scan MS and tandem MS for the detection increase significantly the certainty of the results. Also, the combination of a solvent and SPME extractions and GC-MS/MS offers a significant selectivity and sensitivity with a proven reduction of false positive and negative cases. The use of a vanguard-rearguard strategy can reduce the 50% of the total time required for determining routinely juices in a laboratory by a traditional strategy (identification, confirmation and quantitation of the pesticides in the samples by a conventional analytical method).
Keywords: Screening; Vanguard-rearguard method; Pesticides; Juice; Solid-phase microextraction; Gas chromatography-mass spectrometry

Massimiliano Zampini, Emma Wantling, Nicola Phillips, Charles Spence, Multisensory flavor perception: Assessing the influence of fruit acids and color cues on the perception of fruit-flavored beverages, Food Quality and Preference, Volume 19, Issue 3, April 2008, Pages 335-343, ISSN 0950-3293, DOI: 10.1016/j.foodqual.2007.11.001.
(http://www.sciencedirect.com/science/article/B6T6T-4R46693-1/2/416b67fc68edaf306670ddae713b2ca9)
Abstract:
We report a study designed to investigate the influence of fruit acids (in particular, citric and malic acid) on people's perception of the identity and the intensity of a variety of different fruit-flavored solutions. Participants had to identify the flavor of fruit-flavored drinks that were colored yellow, grey, orange, red, or else were presented as colorless solutions. The participants also rated the intensity of flavor, sweetness, and sourness of each solution using a Labelled Magnitude Scale (LMS). The participants identified the flavors of the beverages more accurately when citric and malic acids were added to the solutions, and/or when the solutions were colored appropriately. Moreover, the perception of flavor intensity was modulated by the presence of the fruit acids in the solutions.
Keywords: Flavor perception; Multisensory perception; Color; Citric and malic acid; Fruit-flavored beverages; Taster status

O.K. Owolarafe, M.O. Faborode, Micro-structural characterisation of palm fruit at sterilisation and digestion stages in relation to oil expression, Journal of Food Engineering, Volume 85, Issue 4, April 2008, Pages 598-605, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.08.024.
(http://www.sciencedirect.com/science/article/B6T8J-4PP770K-1/2/afebab60a2725f5ed2a040a74cb97532)
Abstract:
Micro-structural characterisation of palm fruit was carried out under different conditions of sterilization and digestion. Samples were sterilised at 30, 60 and 90 min, digested for 3, 5 and 10 min and subjected to micro-structural analysis under transmission electron microscope. The

analyses indicate increase in cell content disintegration and the possibility of oil release increase with increase in sterilisation time and digestion time. It is evident that the objective of reaching oil point quickly and hence achieving high oil yield can be met by different combinations of the processing operations and this would be useful in the optimisation of the palm oil extraction operations. Since melting of oil globule was observed to have commenced at sterilisation time as low as 30 min and that this was enhanced by increase in digestion time, it is being suggested that small scale processors should adopt 60 min sterilisation time and digestion time of 5 min to conserve energy and preserve the quality of product. A critical look has to be taken into sterilisation time in the large scale plants since they utilise pressurized sterilizer as they may have to reduce the sterilisation time based on the current study.
Keywords: Palm fruit; Microstructure; Processing operations; Oil expression; Oil yield; Optimisation

Eileen Vincent, Fruit, Vegetable, and Dairy Intake Predicts Nutritional Adequacy, Journal of the American Dietetic Association, Volume 108, Issue 4, April 2008, Pages 659-660, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.02.031.
(http://www.sciencedirect.com/science/article/B758G-4S5496J-M/2/6fc39859545664c1ae0695c1da4d09a7)

Christina D. Economos, Jennifer M. Sacheck, Kenneth Kwan Ho Chui, Laura Irizzary, Juliette Guillemont, Jessica J. Collins, Raymond R. Hyatt, School-Based Behavioral Assessment Tools Are Reliable and Valid for Measurement of Fruit and Vegetable Intake, Physical Activity, and Television Viewing in Young Children, Journal of the American Dietetic Association, Volume 108, Issue 4, April 2008, Pages 695-701, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.01.001.
(http://www.sciencedirect.com/science/article/B758G-4S5496J-T/2/17f59dbb999331b7f5f00dba2ebc6d46)
Abstract:
Interventions aiming to modify the dietary and physical activity behaviors of young children require precise and accurate measurement tools. As part of a larger community-based project, three school-based questionnaires were developed to assess (a) fruit and vegetable intake, (b) physical activity and television (TV) viewing, and (c) perceived parental support for diet and physical activity. Test-retest reliability was performed on all questionnaires and validity was measured for fruit and vegetable intake, physical activity, and TV viewing. Eighty-four school children (8.3+/-1.1 years) were studied. Test-retest reliability was performed by administering questionnaires twice, 1 to 2 hours apart. Validity of the fruit and vegetable questionnaire was measured by direct observation, while the physical activity and TV questionnaire was validated by a parent phone interview. All three questionnaires yielded excellent test-retest reliability ($P<0.001$). The majority of fruit and vegetable questions and the questions regarding specific physical activities and TV viewing were valid. Low validity scores were found for questions on watching TV during breakfast or dinner. These questionnaires are reliable and valid tools to assess fruit and vegetable intake, physical activity, and TV viewing behaviors in early elementary school-aged children. Methods for assessment of children's TV viewing during meals should be further investigated because of parent-child discrepancies.

Autar K. Mattoo, Avtar K. Handa, Higher polyamines restore and enhance metabolic memory in ripening fruit, Plant Science, Volume 174, Issue 4, April 2008, Pages 386-393, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2008.01.011.
(http://www.sciencedirect.com/science/article/B6TBH-4RRFN5B-1/2/f2f7cb703f06fb0c113ea4bcae6b4adb)
Abstract:
Polyamines are ubiquitous, biogenic amines that have been implicated in diverse cellular functions in most living organisms. Ever since spermine phosphate crystals were isolated over three

centuries ago, scientists have kept busy in unraveling the mystery behind biological roles of spermine and other known polyamines, viz., putrescine and spermidine. Although the pathway of polyamine biosynthesis has been elucidated, the molecular basis of their in vivo function is far from being understood. Molecular biology tools have provided a promising avenue in this direction, with success achieved in altering endogenous polyamines in plants by over-expression and knock-out of the genes responsible for polyamine biosynthesis. Such transgenic material has become a good genetic resource to learn about the biological effects of polyamines and their interaction with other signaling molecules. Interestingly, engineered accumulation of higher polyamines, spermidine and spermine, in tomato in a fruit-specific manner restored metabolic activity even at late developmental stages of fruit ripening, reviving cellular programs underlying N:C signaling, energy and glucose metabolism. Along with these, a wide array of genes regulating transcription, translation, signal transduction, chaperone activity, stress proteins, amino acid biosynthesis, ethylene biosynthesis and action, polyamine biosynthesis, isoprenoid pathway and flavonoid biosynthesis was activated. Based on various reports and our results, we suggest that polyamines act as `surrogate messengers' and nudge other signaling molecules, such as plant hormones and NO, to activate a vast genetic network to regulate growth, development and senescence.
Keywords: Spermidine; Spermine; Transcriptome; Metabolome; Fruit ripening; Nitrogen:carbon signaling

Peter M.A. Toivonen, David A. Brummell, Biochemical bases of appearance and texture changes in fresh-cut fruit and vegetables, Postharvest Biology and Technology, Volume 48, Issue 1, April 2008, Pages 1-14, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4PYJP7W-3/2/e1dedab5c3977910a807921390235b5e)
Abstract:
This review describes the biochemical bases for color and firmness changes in fruit and vegetable tissues, since appearance and texture are two of the most fundamental factors affecting the quality of fresh-cut products. The intent is to provide a level of understanding that can be used to underpin future research directions in order to resolve existing issues that limit fresh-cut quality and shelf life. The biochemical mechanisms for enzymatic browning mediated by polyphenol oxidase and phenol peroxidase are described, and the importance of limiting cellular damage during the processing of fresh-cut fruit and vegetable products is emphasized. Also described are two mechanisms of chlorophyll degradation involved in discoloration events in green tissues, and examples of coloring processes specific to particular crops (white blush in carrots, discoloration of Allium spp., secondary browning in apples). The loss of desirable texture in fresh-cut products is a major problem. In fruit this is largely due to a continuation of cell wall disassembly events that are a normal component of ripening, and which result in declining cell wall strength and reduced intercellular adhesion. In some species the process is exacerbated by wound-response ethylene. However, wounding, water loss and ripening-related turgor changes are also important contributors to textural deterioration. In fresh-cut vegetables, water loss and damage-induced lignification are common problems. The effects of factors such as maturity at harvest, processing conditions and various treatments to mitigate quality decline are discussed.
Keywords: Color; Texture; Pigments; Cell walls; Biochemical changes; Fruit; Vegetables

Yankun Peng, Renfu Lu, Analysis of spatially resolved hyperspectral scattering images for assessing apple fruit firmness and soluble solids content, Postharvest Biology and Technology, Volume 48, Issue 1, April 2008, Pages 52-62, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.019.
(http://www.sciencedirect.com/science/article/B6TBJ-4R2Y48B-1/2/5d76543a2809c7cefc796d971a285a17)
Abstract:

Hyperspectral scattering is a promising technique for nondestructive sensing of multiple quality attributes of apple fruit. This research evaluated and compared different mathematical models for describing the hyperspectral scattering profiles over the spectral region between 450 nm and 1000 nm in order to select an optimal model for predicting fruit firmness and soluble solids content (SSC) of `Golden Delicious' apples. Ten modified Lorentzian distribution functions of various forms were proposed to fit the spectral scattering profiles at individual wavelengths, each of which gave superior fitting to the data with the average correlation coefficient (r) being greater than 0.995. Mathematical equations were derived to correct the spectral scattering intensity and distance by taking into account the instrument response and individual apples' size. The 10 modified Lorentzian distribution functions were compared for predicting fruit firmness and SSC using multi-linear regression and cross-validation methods. The modified Lorentzian function with three parameters (representing scattering peak value, width and slope) gave good predictions of fruit firmness with r = 0.894 and the standard error of prediction (S.E.P.) of 6.14 N, and of SSC with r = 0.883 and S.E.P. = 0.73%. Twenty-one and 23 wavelengths were needed to obtain the best predictions of fruit firmness and SSC, respectively. This new function, coupled with the scattering profile correction methods, improved the hyperspectral scattering technique for measuring fruit quality.
Keywords: Fruit; Apples; Firmness; Soluble solids content; Near-infrared; Scattering; Hyperspectral imaging; Modified Lorentzian function

Marvin J. Pitts, Denny C. Davis, Ralph P. Cavalieri, Three-point bending: An alternative method to measure tensile properties in fruit and vegetables, Postharvest Biology and Technology, Volume 48, Issue 1, April 2008, Pages 63-69, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.025.
(http://www.sciencedirect.com/science/article/B6TBJ-4RTKXF1-4/2/40bcd0dc4450022c1fc6728a8ea62de1)
Abstract:
Tensile mechanical properties of fruit and vegetable tissue are likely to have a significant effect on fruit and vegetable quality evaluations. Very few studies have been made of tensile material properties because sample preparation for uniaxial tensile testing of fruit and vegetable tissue is difficult. Three-point bending is an alternative experimental method to measure tensile elastic modulus. In this study a derivation of bending theory was developed and used in conjunction with a three-point bending procedure using digital image-based analysis to locate the neutral axis of the material. Mechanics of materials theory and concepts were used to determine a relationship between the location of the neutral axis and the ratio of compressive elastic modulus to tensile elastic modulus. The procedure to locate the neutral axis and the derivation to determine the tensile elastic modulus were verified using a homogeneous cork-based material which exhibited distinctly different compressive and tensile properties. Tensile elastic modulus measured using the bending apparatus agreed closely (within 1%) to tensile elastic modulus measured using a uniaxial tension apparatus. This experimental method is well suited to measure tensile properties in many fruit and vegetables.
Keywords: Fruit; Tissue; Tensile; Material properties; Elastic modulus

G.A. Manganaris, A.R. Vicente, C.H. Crisosto, J.M. Labavitch, Cell wall modifications in chilling-injured plum fruit (Prunus salicina), Postharvest Biology and Technology, Volume 48, Issue 1, April 2008, Pages 77-83, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.017.
(http://www.sciencedirect.com/science/article/B6TBJ-4R2GRX4-7/2/44e71cdaa5bcb342c1bddeb75d2d743d)
Abstract:
The aim of this study was to analyze the changes in cell wall pectins in normally ripening (juicy) and in chilling-injured plum fruit (Prunus salicina cv. Fortune) showing mealiness. Total cell wall neutral sugars and uronic acids, solubilization and depolymerization of pectins in water-, CDTA-

and Na2CO3-soluble fractions of the cell wall (WSF, CSF and NSF, respectively), non-cellulosic neutral sugar compositions of these fractions, and the activities of the cell wall-degrading enzymes polygalacturonase (PG), pectin methylesterase (PME), 1,4-[beta]-d-glucanase/glucosidase and [beta]-galactosidase ([beta]-gal) were determined. No differences in the total content of pectin and neutral sugars between normally ripening and chilling-injured fruit were detected. However, the mealy plums presented a higher level of tightly bound pectin (NSF) and a lower proportion of loosely bound pectin (WSF) than the juicy controls. Lower pectin depolymerization and reduced solubilization of neutral sugars in the WSF and CSF were also detected in the chilling-injured tissues, confirming an alteration in the normal ripening-associated pattern of polyuronide disassembly. While no differences were found in the activities of PG, PME and 1,4-[beta]-d-glucanase/glucosidase between normally ripening and mealy fruit, the latter had reduced [beta]-gal activity. This might have led to differential solubilization of polymers with galactan side chains, but further studies are required to determine if there is a causal relationship between these events. Overall, results indicated that the development of chilling injury symptoms in `Fortune' plums is associated with abnormalities in cell wall metabolism, including a reduction in pectin solubilization and depolymerization and decreased ripening-associated modification of galactose-rich pectin polymers.
Keywords: Plum; Chilling injury; Internal breakdown; Mealiness; Gel breakdown; Cell wall

Wichitra Leelasuphakul, Punpen Hemmanee, Samerchai Chuenchitt, Growth inhibitory properties of Bacillus subtilis strains and their metabolites against the green mold pathogen (Penicillium digitatum Sacc.) of citrus fruit, Postharvest Biology and Technology, Volume 48, Issue 1, April 2008, Pages 113-121, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.024.
(http://www.sciencedirect.com/science/article/B6TBJ-4R8PNBD-1/2/9109048cd8ba76d2d0e07bf1550dc150)
Abstract:
Twenty three strains of Bacillus spp. screened from 205 Bacillus spp. isolated from soil, showed antagonistic activities in vitro towards the Penicillium digitatum pathogen, a cause of citrus fruit rot disease. Culture supernatants from nine strains caused >80% inhibition of P. digitatum growth when they were serially diluted to 1:32. Volatile compounds produced by these strains also caused 30-70% inhibition of fungal growth. An ethanol extract from a Bacillus subtilis 155 cell-free supernatant referred to as secondary metabolites (SMs) produced the best inhibitory effect on mycelial growth and spore germination of the fungus with EC50 values of 77.26 and 82.10 [mu]gm L-1, respectively. Inhibitory compounds, separated from the SMs by preparative thin-layer chromatography (CHCl3/MeOH/H2O: 65/25/4, v/v/v), had Rf values of 0.14, 0.28, 0.31, 0.49, and 0.64 with EC50 values of 95.73, 14.07, 15.19, 108.59, and 99.98 [mu]g mL-1, respectively. Protein precipitated with 80% saturated ammonium sulphate, from the culture supernatant, had an EC50 of 288 [mu]g mL-1. After native polyacrylamide gel electrophoresis of this protein the antifungal protein activity was detected only in the lowest band. Inoculation of a suspension of P. digitatum conidia (104 conidia mL-1) onto wounded citrus fruit induced disease symptoms at day 3 and decay at day 5. Inoculation with 20 [mu]L of a 108 CFU mL-1 B. subtilis endospore suspension 24 h prior to fungal spore inoculation decreased disease incidences by 86.7%, and disease symptoms were delayed by 6 days and decay symptoms to day 9. Addition of the SMs (10 mg mL-1), simultaneously with the fungus decreased disease incidence by 72.5%, delayed disease symptoms up to 5 days after inoculation, and no sign of decay was observed up to 9 days. The average lesion diameters observed from treatments with bacterial endospores, SMs and a control fungicide, imazalil were significantly different from the size of the wounds in the control set treated only with fungal conidia. B. subtilis 155 and its antibiotics are considered to be potent biological control agents to suppress growth of P. digitatum in the postharvest protection of citrus.
Keywords: Bacillus subtilis; Peniillium digitatum; Antifungal; Antibiotic; Citrus; Postharvest disease

Marc Lebrun, Anne Plotto, Kevin Goodner, Marie-Noelle Ducamp, Elizabeth Baldwin, Discrimination of mango fruit maturity by volatiles using the electronic nose and gas chromatography, Postharvest Biology and Technology, Volume 48, Issue 1, April 2008, Pages 122-131, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.010.
(http://www.sciencedirect.com/science/article/B6TBJ-4R2GRX4-4/2/683add9d45ae98e99751a3a11c1014e4)
Abstract:
Mango fruit (Mangifera indica L.), cv. `Cogshall', `Kent' and `Keitt' were harvested at different maturities (61-115 d past flowering and 80-307 average g fresh weight for `Cogshall') and at different sizes (364-1563 and 276-894 average g fresh weight for `Keitt' and `Kent', respectively). Immediately after harvest (green) or after 1 week of ripening at room temperature (ripe), fruit were homogenized or left intact and evaluated by electronic nose (enose) or by gas chromatography (GC) for aroma and other volatiles as well as for soluble solids and acids. Volatile data from the different harvest maturities and ripening stages were discriminated by using multivariate statistics (discriminant factor analysis). Both the enose and GC were able, in most cases, to separate fruit from different harvest maturities, especially for `Cogshall' mangoes, at both the green and ripe stages as well as discriminate green from ripe fruit and fruit from the different varieties within a maturity stage. Solids and acids data indicated that later harvest maturities resulted in sweeter fruit and later-harvested fruit had a different volatile profile from earlier-harvested fruit. Mango fruit volatiles may be useful as maturity markers to determine optimal harvest maturity for mango fruit that results in full quality upon ripening.
Keywords: Mango; Electronic nose; Aroma volatiles; Harvest maturity

M[feminine ordinal indicator] Teresa Sanchez-Ballesta, Lorenzo Zacarias, Antonio Granell, M[feminine ordinal indicator] Teresa Lafuente, [beta]-1,3-Glucanase gene expression as a molecular marker for postharvest physiological disorders in citrus fruit and its hormonal regulation, Postharvest Biology and Technology, Volume 48, Issue 1, April 2008, Pages 146-149, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.007.
(http://www.sciencedirect.com/science/article/B6TBJ-4R5G84B-4/2/4ce2f03e9fe3fb14d0cc966c6e7300ca)
Abstract:
The aim of this work was to understand whether a CrglcQ gene, encoding an acidic class III [beta]-1,3-glucanase isolated from citrus flavedo, may serve as a biochemical marker for the development of postharvest physiological disorders; and whether this gene is regulated by ethylene and abscisic acid (ABA). We have examined the changes in the accumulation of the CrGlcQ mRNA in the flavedo of `Navelate' oranges, a variety prone to develop brown non-depressed areas in response to chilling, and in the flavedo of its ABA-deficient mutant `Pinalate', a variety tolerant to chilling but very susceptible to non-chilling peel pitting, during fruit storage at chilling (2 [degree sign]C) and non-chilling temperatures (12 [degree sign]C). The levels of the CrGlcQ transcript increased transiently in fruit exposed to postharvest conditions favoring both chilling and non-chilling peel disorders, such an increase being evident even in the fruit of the ABA-deficient mutant `Pinalate' in which ABA does not increase in response to stress conditions. Such increases paralleled those in ethylene production and preceded the appearance of visible symptoms of damage. Moreover, we examined changes in gene expression in `Fortune' mandarins held under water stress conditions (20 [degree sign]C and 55-60% RH) that did not cause any peel damage, and found that the increase in ABA was not mirrored by the changes in CrglcQ mRNA accumulation. The results revealed that changes in CrglcQ gene expression are linked to the development of postharvest peel disorder, in spite of being induced by different environmental conditions, and indicated that this gene might be regulated by ethylene but not by the ABA.

Keywords: Abscisic acid; [beta]-1,3-Glucanase; Chilling; Citrus fruit; Low temperature; Ethylene; Non-chilling peel pitting; Rind staining; Water stress

K. Mummenhoff, G. Theissen, A. Muhlhausen, Tutti Frutti in Lepidium -- Comparative analysis of fruit dehiscence/indehiscence in Brassicaceae, South African Journal of Botany, Volume 74, Issue 2, April 2008, Pages 373-374, ISSN 0254-6299, DOI: 10.1016/j.sajb.2008.01.086.
(http://www.sciencedirect.com/science/article/B7XN9-4S807WN-2N/2/21715336155e898ce112744cd74239a0)

Hikmate Abriouel, Nabil Ben Omar, Antonio Cobo Molinos, Rosario Lucas Lopez, M Jose Grande, Pilar Martinez-Viedma, Elena Ortega, Magdalena Martinez Canamero, Antonio Galvez, Comparative analysis of genetic diversity and incidence of virulence factors and antibiotic resistance among enterococcal populations from raw fruit and vegetable foods, water and soil, and clinical samples, International Journal of Food Microbiology, Volume 123, Issues 1-2, 31 March 2008, Pages 38-49, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.11.067.
(http://www.sciencedirect.com/science/article/B6T7K-4R8NB5F-6/2/2fcdaef16f82827eef5e44a94ac1ca97)
Abstract:
A comparative study was carried out among enterococci isolated from fruits and vegetable foods, water and soil, and clinical samples. Results indicate strong differences in the numbers of enfterococcal species found in different environments as well as their abundance. While Enterococcus faecalis was clearly the predominant species in clinical samples, Enterococcus faecium predominated in vegetables, and it slightly outnumbered E. faecalis in water samples. Other species (Enterococcus hirae, Enterococcus mundtii, Enterococcus durans, Enterococcus gallinarum and Enterococcus casseliflavus) were found more frequently in vegetables, water, and specially in soil. Isolates from vegetable foods showed a lower incidence of antibiotic resistance compared to clinical isolates for most antimicrobials tested, especially erythromycin, tetracycline, chloramphenicol, ciprofloxacin, levofloxacin, gentamicin and streptomycin for E. faecalis, and quinupristin/dalfopristin, ampicillin, penicillin, ciprofloxacin, levofloxacin, rifampicin, choramphenicol, gentamicin and nitrofurantoin for E. faecium. E. faecium isolates from vegetable foods and water showed an average lower number of antibiotic resistance traits (2.95 and 3.09 traits for vegetable and water isolates, respectively) compared to clinical samples (7.5 traits). Multi-resistant strains were also frequent among clinical E. faecalis isolates (5.46 traits on average). None of E. faecalis or E. faecium isolates from vegetable foods, water and soil showed beta-haemolytic activity, while 25.64% of clinical E. faecalis did. A 51.28% of E. faecalis clinical isolates tested positive for the cylA, cylB, cylM set of genes, while some or all of these genes were missing in the rest of isolates. In clinical E. faecalis and E. faecium isolates, the genetic determinants for the enterococcal surface protein gene (esp), the collagen adhesin gene (ace) and the sex pheromone gene ccf (as well as cob in E. faecalis) showed a clearly higher incidence compared to isolates from other sources. E. faecalis isolates from vegetable foods and water had much lower average numbers of virulence genetic determinants per strain (4.23 and 4.0, respectively) compared to clinical isolates (8.71). Similarly, among E. faecium the lowest average number of traits per strain occurred in vegetable food isolates (1.72) followed by water (3.9) and clinical isolates (4.73). Length heterogeneity (LH)-PCR typing with espF-aceF-ccfF and espF-ccfF primers revealed genomic groups that clearly differentiated clinical isolates from those of vegetable foods, water and soil (except for two clinical isolates). The large differences found in the incidence of antibiotic resistance and virulence factors and in the genetic fingerprints determined by LH-PCR suggest a clear separation of hospital-adapted populations of enterococci from those found in open environments.
Keywords: Enterococci; Virulence; Antibiotic resistance; Vegetable foods; Water; Soil; Food safety

M. Abadias, J. Usall, M. Anguera, C. Solsona, I. Vinas, Microbiological quality of fresh, minimally-processed fruit and vegetables, and sprouts from retail establishments, International Journal of Food Microbiology, Volume 123, Issues 1-2, 31 March 2008, Pages 121-129, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.12.013.
(http://www.sciencedirect.com/science/article/B6T7K-4RPVHWW-2/2/8986e87b040e1842b3b3f28baef40756)
Abstract:
A survey of fresh and minimally-processed fruit and vegetables, and sprouts was conducted in several retail establishments in the Lleida area (Catalonia, Spain) during 2005-2006 to determine whether microbial contamination, and in particular potentially pathogenic bacteria, was present under these commodities. A total of 300 samples--including 21 ready-to-eat fruits, 28 whole fresh vegetables, 15 sprout samples and 237 ready-to-eat salads containing from one to six vegetables--were purchased from 4 supermarkets. They were tested for mesophilic and psychrotrophic aerobic counts, yeasts and moulds, lactic acid bacteria, Enterobacteriaceae, presumptive E. coli and Listeria monocytogenes counts as well as for the presence of Salmonella, E. coli O157:H7, Yersinia enterocolitica and thermotolerant Campylobacter.
Results for the fresh-cut vegetables that we analyzed showed that, in general, the highest microorganism counts were associated with grated carrot, arugula and spinach (7.8, 7.5 and 7.4 log cfu g- 1 of aerobic mesophilic microorganisms; 6.1, 5.8 and 5.2 log cfu g- 1 of yeast and moulds; 5.9, 4.0 and 5.1 log cfu g- 1 lactic acid bacteria and 6.2, 5.3 and 6.0 log cfu g- 1 of Enterobacteriaceae). The lowest counts were generally associated with fresh-cut endive and lettuce (6.2 and 6.3 log cfu g- 1 of aerobic mesophilic microorganisms; 4.4 and 4.6 log cfu g- 1 of yeast and moulds; 2.7 and 3.8 log cfu g- 1 lactic acid bacteria and 4.8 and 4.4 log cfu g- 1 of Enterobacteriaceae). Counts of psychrotrophic microorganisms were as high as those of mesophilic microorganisms. Microbiological counts for fresh-cut fruit were very low. Sprouts were highly contaminated with mesophilic (7.9 log cfu g- 1), psychrotrophic microorganisms (7.3 log cfu g- 1) and Enterobacteriaceae (7.2 log cfu g- 1) and showed a high incidence of E. coli (40% of samples). Of the samples analyzed, four (1.3%) were Salmonella positive and two (0.7%) harboured L. monocytogenes. None of the samples was positive for E. coli O157:H7, pathogenic Y. enterocolitica or thermotolerant Campylobacter.
Keywords: Incidence; Foodborne pathogens; Fresh-cut; Ready-to-eat; Salmonella; E. coli; L. monocytogenes; Campylobacter; Y. enterocolitica

Melinda J. Donnelly, Danielle M. Green, Linda J. Walters, Allelopathic effects of fruits of the Brazilian pepper Schinus terebinthifolius on growth, leaf production and biomass of seedlings of the red mangrove Rhizophora mangle and the black mangrove Avicennia germinans, Journal of Experimental Marine Biology and Ecology, Volume 357, Issue 2, 31 March 2008, Pages 149-156, ISSN 0022-0981, DOI: 10.1016/j.jembe.2008.01.009.
(http://www.sciencedirect.com/science/article/B6T8F-4S02897-1/2/21eda0ab4aa2e8ce6cbcd18c139404c5)
Abstract:
Exotic plant species can negatively affect native flora and fauna by changing the diversity and productivity of the system and altering successional processes. The novel weapons hypothesis has been suggested as one mechanism for invasion and spread of exotic plant species. It states that exotic species with 'new weapons', such as allelopathic chemicals, may have greater impacts on species in the invaded range without co-evolved defense strategies against the exotic chemicals. In Florida, one successful exotic species, Schinus terebinthifolius (Brazilian pepper), has invaded nearly every habitat throughout the state. Past studies have documented allelopathic properties of S. terebinthifolius negatively impacting the growth of native terrestrial flora. Here we document the effect of S. terebinthifolius for the first time on mangrove systems. We examined growth and survival of Rhizophora mangle (red mangrove) and Avicennia germinans (black

mangrove) seedlings when exposed to a range of densities of intact and crushed S. terebinthifolius fruits (0, 25, 50) at two different salinities (15, 30 ppt). We also documented the natural density of S. terebinthifolius fruits beneath the tree canopy after fruit production in mangrove habitat. Growth and biomass were significantly reduced in A. germinans when exposed to the highest density of intact S. terebinthifolius fruits growing in 30 ppt saltwater. Trials with intact fruits had no significant effects on R. mangle; however, crushed fruits significantly decreased growth, and leaf production. The ecological importance of the different effects of crushed and intact fruits is supported by field observations which found equal or greater numbers of crushed fruits compared to intact fruits beneath the tree canopy of female S. terebinthifolius. In addition, abiotic factors, such as salinity, may interact with allelopathic chemicals in natural systems and needs to be addressed when planning future allelopathic studies.
Keywords: Estuary; Exotic; Inhibition; Invasive species; Mangrove; Salt marsh

F.K. Akinnifesi, J. Mhango, G. Sileshi, T. Chilanga, Early growth and survival of three miombo woodland indigenous fruit tree species under fertilizer, manure and dry-season irrigation in southern Malawi, Forest Ecology and Management, Volume 255, Issues 3-4, 20 March 2008, Pages 546-557, ISSN 0378-1127, DOI: 10.1016/j.foreco.2007.09.025.
(http://www.sciencedirect.com/science/article/B6T6X-4PYJP8D-2/2/4dd621c9b17c6ebd0d7c3e63d66a74b4)
Abstract:
Although a large number of miombo tree species bear edible fruits which are important sources of vital nutrients and incomes to rural households, their conservation and cultivation remain challenging because of lack of information on their ecology and management. Therefore, the objective of this study was to evaluate the effects of fertilization, manure application and dry-season irrigation on the early growth and survival of the miombo fruit tree species, Uapaca kirkiana, Sclerocarya birrea and Vanguaria infausta with Mangifera indica as relative control. At 33 months after planting, growth and survival of U. kirkiana and S. birrea were lower in plots that received fertilizer, compost and irrigation compared with those that did not. The best growth and survival in U. kirkiana was obtained when irrigation was applied with neither fertilizer nor manure. The best growth in S. birrea was recorded where plants received irrigation without fertilizer and manure, while survival was highest when none of the treatments was applied. Growth and survival of V. infausta was not affected by manure application, but fertilizer and irrigation increased root collar diameter, leaf, shoot and branch numbers. At 33 months after planting, U. kirkiana and S. birrea had not reached reproductive maturity, while V. infausta and M. indica had started fruiting in the second year. It is concluded that fertilization, manure and irrigation do not increase early growth or survival of U. kirkiana and S. birrea contrary to the commonly held assumption about factors that affect growth and survival in this species. The poor response to fertilizer and dry-season irrigation could be attributed to either their adaptation to infertile soils and unimodal rainfall regimes in their natural stands or delayed response that could not have been observed in the short period of the study.
Keywords: Miombo woodland; Wild fruits; Cultivation; Soil amendment

Guido Flamini, Marianna Tebano, Pier Luigi Cioni, Composition of the essential oils from leafy parts of the shoots, flowers and fruits of Eryngium amethystinum from Amiata Mount (Tuscany, Italy), Food Chemistry, Volume 107, Issue 2, 15 March 2008, Pages 671-674, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.08.064.
(http://www.sciencedirect.com/science/article/B6T6R-4PJCYJM-5/2/74a2b5e44785f3f24190c627895df819)
Abstract:
The essential oils obtained from the leafy parts of the shoots, inflorescences and fruits of Eryngium amethystinum (Apiaceae) from Italy have been studied. The essential oil from the inflorescences

was characterised by methyl-derivatives of benzaldehyde (26.4%) and by some phenylpropanoids (3.0%) such as eugenol and (E)-methyl isoeugenol. The essential oil of leafy parts of the shoots showed a higher percentage of sesquiterpenes (31.3%) than monoterpenes (20.2%). The main differences between the two essential oils can be referred to [alpha]-pinene and germacrene D: the essential oil of the inflorescences contained much more [alpha]-pinene than the other one (25.6% vs. 11.8%), while the contrary is true for germacrene D (14.5% vs. 31.3%).
Keywords: Eryngium amethystinum L.; Apiaceae; Essential oil; Flowering aerial parts; Benzaldehyde methyl-derivatives; [alpha]-Pinene; Germacrene D

Mario J. Simirgiotis, Seiji Adachi, Satoshi To, Hui Yang, Kurt A. Reynertson, Margaret J. Basile, Roberto R. Gil, I. Bernard Weinstein, Edward J. Kennelly, Cytotoxic chalcones and antioxidants from the fruits of Syzygium samarangense (Wax Jambu), Food Chemistry, Volume 107, Issue 2, 15 March 2008, Pages 813-819, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.08.086.
(http://www.sciencedirect.com/science/article/B6T6R-4PKXBWB-6/2/8e87b75e9eb5bc12b48e36f95b4038bf)
Abstract:
Bioassay-guided fractionation of the methanolic extracts of the pulp and seeds of the fruits of Syzygium samarangense (Blume) Merr. and L.M. Perry led to the identification of four cytotoxic compounds and eight antioxidants on the basis of HPLC-PDA analysis, MS, and various NMR spectroscopic techniques. Three C-methylated chalcones, 2',4'-dihydroxy-3',5'-dimethyl-6'-methoxychalcone (1), 2',4'-dihydroxy-3'-methyl-6'-methoxychalcone (stercurensin, 2), and 2',4'-dihydroxy-6'-methoxychalcone (cardamonin, 3), were isolated and displayed cytotoxic activity (IC50 = 10, 35, and 35 [mu]M, respectively) against the SW-480 human colon cancer cell line. Also a number of known antioxidants were obtained including six quercetin glycosides: reynoutrin (4), hyperin (5), myricitrin (6), quercitrin (7), quercetin (9), and guaijaverin (10), one flavanone: (S)-pinocembrin (8), and two phenolic acids: gallic acid (11) and ellagic acid (12).
Keywords: Syzygium samarangense; Chalcones; Flavonoids; Cytotoxic activity; Antioxidants

Carlos L. Cespedes, Mohammed El-Hafidi, Natalia Pavon, Julio Alarcon, Antioxidant and cardioprotective activities of phenolic extracts from fruits of Chilean blackberry Aristotelia chilensis (Elaeocarpaceae), Maqui, Food Chemistry, Volume 107, Issue 2, 15 March 2008, Pages 820-829, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.08.092.
(http://www.sciencedirect.com/science/article/B6T6R-4PP2D16-3/2/a30d5b5833e5413fd2d2706c03f8527e)
Abstract:
The methanol extract from mature fruits of Aristotelia chilensis (Mol) Stuntz (Elaeocarpaceae) showed antioxidant activities and cardioprotective effects on acute ischemia/reperfusion performed in rat heart in vivo. This extract protected animals from heart damage by the incidence of reperfusion dysrythmias, and the no-recovery of sinus rhythm. On the other hand, the MeOH extract of the fruit was able to prevent these harmful events in the animal's heart by diminishing lipid oxidation and reducing the concentration of thiobarbituric acid reactive substances (TBARS), a lipid peroxidation index. In addition, MeOH extract of A. chilensis was evaluated for DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging, crocin radical scavenging, oxygen radical absorption capacity (ORAC), ferric reducing antioxidant power (FRAP), an estimation of lipid peroxidation in liposomes through the inhibition of formation of TBARS. MeOH extract was found to have IC50 of 1.62 ppm against DPPH and 2.51 ppm against TBARS, compared with the juice, whose IC50 was 12.1 ppm and 9.58 ppm against DPPH and TBARS formation, respectively. Antioxidant activities of MeOH extract were strongly correlated with total polyphenol content. Consistent with this finding, MeOH had the greatest ORAC and FRAP values as percentage of activity. These results show that these fruits could be useful as antioxidant, cardioprotective and nutraceutical sources.

Keywords: Tannins; Lignans; Flavonoids; Polyphenols; Antioxidant activity; Cardioprotective agent; Aristotelia chilensis; Elaeocarpaceae

T. Karuppudurai, K. Sripathi, N. Gopukumar, V. Elangovan, G. Arivarignan, Transition of nonharem male to harem male status in the short-nosed fruit bat Cynopterus sphinx, Mammalian Biology - Zeitschrift fur Saugetierkunde, Volume 73, Issue 2, 15 March 2008, Pages 138-146, ISSN 1616-5047, DOI: 10.1016/j.mambio.2007.02.006.
(http://www.sciencedirect.com/science/article/B7GX2-4P6MH0N-1/2/916094f7a46420cfc809e47d97a468a0)
Abstract:
The short-nosed fruit bat Cynopterus sphinx is known to exhibit resource defence polygyny as its primary mating strategy. Tent construction by harem males to recruit females represents a heavy investment of time and effort, which is not done by nonharem males. The previously unobserved mode of harem formation by the solitary males was studied using mark-recapture and radio-telemetry. In our observation, the solitary males roosting near to harems started recruiting females by occupying the tent abandoned by the harems. This result suggests that the transition of nonharem male to harem male status possibly by a previously unobserved mode and the female recruitment is associated with resource (roost). It implies that the solitary males are actively involving in female recruitment and also presumably mating.
Keywords: Cynopterus sphinx; Harem formation; Mating behaviour; Radio-telemetry; Resource defence polygyny

Ulrich Schurer, Thomas Rosner, Die Nachzucht des Roten Felsenhahns, Rupicola peruviana (Latham, 1790) und des Schildschmuckvogels, Querula purpurata (Muller, 1776) im Zoologischen Garten Wuppertal, Der Zoologische Garten, Volume 77, Issue 4, 14 March 2008, Pages 219-239, ISSN 0044-5169, DOI: 10.1016/j.zoolgart.2008.01.004.
(http://www.sciencedirect.com/science/article/B8JHX-4RWB13V-1/2/8309076141584f864148ce00b4cb1fc5)
Abstract: Zusammenfassung
Es wird uber Brut, kunstliche und naturliche Aufzucht von 5 mannlichen Roten Felsenhahnen (Rupicola peruviana) im Zoologischen Garten Wuppertal berichtet. Die Jugendentwicklung, insbesondere die Umfarbung von Gefieder, Iris und Schnabel wird beschrieben. Die Brutdauer war 26-28 Tage, die Nestlingszeit des von der Mutter aufgezogenen Jungvogels 42 Tage. Das Ausfarben mannlicher Jungvogel dauerte bei uns mit ca. 18 Monaten deutlich weniger lang als bei Del Hoyo et al. (2004) aus dem Freiland mit 3 Jahren angegeben. Au[ss]erdem wird uber die Zucht des Schildschmuckvogels (Querula purpurata) berichtet, die wahrscheinlich eine Welterstzucht ist. Das Gefieder des Nestlings wird beschrieben. Die Brutdauer beim Schildschmuckvogel war 25 Tage.
Incubation, handrearing and motherrearing of 5 male Andean Cocks of the Rock (Rupicola peruviana) in Wuppertal Zoo is described, in particular the development of the juvenile plumage to adulthood, and the change of colour of the beak and the iris of the eye. Incubation lasted 26-28 days. The mother-reared nestling fledged after 28 days. The young male Cock of the Rock attained full adult plumage at the age of 18 months, not at 3 years as Del Hoyo et al. (2004) describe from free-living Cocks of the Rock. A report on the supposed world's first breeding of the Purple-throated Fruitcrow (Querula purpurata) is given. The incubation period was 25 days.
Keywords: Andean Cock of the Rock; Rupicola peruviana; breeding; development; Purple-throated Fruitcrow; Querula purpurata; breeding

P. Boonkorkaew, S. Hikosaka, N. Sugiyama, Effect of pollination on cell division, cell enlargement, and endogenous hormones in fruit development in a gynoecious cucumber, Scientia Horticulturae,

Volume 116, Issue 1, 10 March 2008, Pages 1-7, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.10.027.
(http://www.sciencedirect.com/science/article/B6TC3-4RB5BRG-1/2/2d406ec43c341fb9b522143aa046c8d5)
Abstract:
To study the effect of pollination on fruit development in gynoecious and parthenocarpic cucumbers (Cucumis sativus L. cv. NK x AN8), the number of cells, cell size, mitotic index, histone H4 gene expression, and concentrations of endogenous cytokinins and auxin were compared in fruits that had developed from pollinated and non-pollinated flowers. Fresh weight was more in the pollinated group 4-12 days after anthesis (DAA) in both winter and spring, and 2-6 DAA in the summer. In winter, mitotic index increased from anthesis to 2 DAA and then decreased gradually in the pollinated group but immediately after anthesis in the non-pollinated group. Histone H4 gene in the pericarp zone was expressed more strongly during the period from pre-anthesis to 2 DAA in the pollinated group in summer. Concentrations of zeatin, isopentenyladenine, and indole-3-acetic acid (IAA) were higher in the non-pollinated group 2 and 4 DAA and peaked 4 DAA in spring whereas isopentenyladenine and IAA showed no distinct peaks in the pollinated group. These results are incompatible with the idea that pollination activates cell division by stimulating the synthesis of cytokinins and auxin in cucumber fruits.
Keywords: Cytokinin; Histone H4; Indole acetic acid; Mitotic index; Zeatin

S. Rajan, L.P. Yadava, Ram Kumar, S.K. Saxena, Direct and indirect effects of seed related characters on number of seed in guava (Psidium guajava L.) fruits, Scientia Horticulturae, Volume 116, Issue 1, 10 March 2008, Pages 47-51, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.10.024.
(http://www.sciencedirect.com/science/article/B6TC3-4RB5BRG-2/2/6bf5e912c61fbfbda824e1bdb372ce05)
Abstract:
Dessert quality of guava fruit is considerably reduced by high seed content. Number of seeds in guava is associated with different seed and fruit characters. Influence of different seed characters on number of seeds per fruit (NSPF) was studied by analysing character association and direct and indirect effects on NSPF and seed related traits for 68 genotypes of guava collected from diverse sources and conserved at National Active Germplasm Site, CISH, Lucknow. Seed related characters were studied at the colour break stage of the fruits using image analysis software for counting number of seeds. The data was subjected to path analysis to find out direct and indirect effects of different characters on number of seeds in the fruits. At genotypic and phenotypic levels, NSPF was significantly and positively associated with seed weight per fruit (SWPF), number of seeds 100 g-1 pulp (NSPHP) and fruit weight (FW). The genotypic (0.0029) and phenotypic (0.0563) residual values were fairly very low, which revealed that variables included in this study had significant contribution in determining NSPF. The NSPHP exhibited high positive direct effect on NSPF. The maximum direct response (P = 0.737, G = 1.004) of this component was attributed to the indirect positive effects of the SWPF and fruit:seed weight proportion (FSWP). SWPF also had a very high positive direct effect (P = 0.521, G = 0.694) on the NSPF. Correlation and path coefficient analysis revealed that SWPF, NSPHP and 100-seed weight (100SW) were deciding factors for realizing improvement for NSPF. The importance of small seeded genotypes in selection of less seeded varieties was emphasized.
Keywords: Guava; Psidium guajava L.; Seed; Fruit; Correlation; Direct and indirect effect

Wen-ping MA, Zhi-jing NI, He LI, Min CHEN, Changes of the Main Carotenoid Pigment Contents During the Drying Processes of the Different Harvest Stage Fruits of Lycium barbarum L, Agricultural Sciences in China, Volume 7, Issue 3, March 2008, Pages 363-369, ISSN 1671-2927, DOI: 10.1016/S1671-2927(08)60077-2.

(http://www.sciencedirect.com/science/article/B82XG-4SM1NR4-G/2/27c75aefd7cb4c75e6af1804d9248170)
Abstract:
The test analyzed the regularity of biosynthesis and degradation of the main functional components, such as zeaxanthin. [beta]-carotene, and esterified carotenoids in the fruit of Lycium barbarum L. in order to provide theoretical basis for improvement of processing condition, appearance quality, and preservation of carotenoids. RP-HPLC was adapted to assay the changes of the main carotenoids of the different harvested stage fruit during the drying processing. Quantification was realized using external standard with gradient elution. The results showed that zeaxanthin and [beta]-carotene contents in fruits increased dramatically, 2-22 times that of fresh fruits at the beginning of the drying period. In the middle of drying period, degradation occurred to a some extent, and the fall fruit degraded to a large extent. At the end of drying period, zeaxanthin and [beta]-carotene contents increased to a little extent until a balanced state is obtained. Zeaxanthin dipalmitate content had a total degradation to more than 40% at the beginning of the drying period, and increased a little at the middle period, then reached a balanced state finally. The total carotenoid content analysis showed that the summer fruit had higher carotenoid content than the fall fruit. The experiments demonstrated zeaxanthin and [beta]-carotene contents in fruits increased and zeaxanthin dipalmitate decreased during the drying process, which had an effect on the production appearance.
Keywords: Lycium barbarum L.; carotenoid; biosynthesis, degradation

Tom Baranowski, Mariam Missaghian, Kathy Watson, Alison Broadfoot, Karen Cullen, Theresa Nicklas, Jennifer Fisher, Sharon O'Donnell, Home fruit, juice, and vegetable pantry management and availability scales: A validation, Appetite, Volume 50, Issues 2-3, March-May 2008, Pages 266-277, ISSN 0195-6663, DOI: 10.1016/j.appet.2007.07.013.
(http://www.sciencedirect.com/science/article/B6WB2-4PJM9DH-1/2/68bca439e1a0b9d2ad27c424dbc74e17)
Abstract:
Home fruit, 100% juice, and vegetables (FJV) availability is related to increased FJV consumption by children. While FJV must be purchased for use in the home, no scales have been reported on home FJV pantry management practices. A scale for home FJV pantry management practices was generated from focus group discussions with diverse 162 food shoppers. A commonly used scale of home FJV availability was also assessed. A grocery store intercept survey recruited 171 food shoppers with children in front of supermarkets and grocery stores. Survey instruments were administered twice, separated by 6 weeks. Single dimensionality was observed for each scale. Item Response Theory parameter estimates revealed easily interpreted patterns in the sequence of items by difficulty of response. These scales are available to help better understand influences on family FJV purchase decisions.
Keywords: Pantry; Home availability; Fruit; Vegetables; Purchase; Validation; Reliability; Item response modeling

M. Barker, W. Lawrence, J. Woadden, S.R. Crozier, T.C. Skinner, Women of lower educational attainment have lower food involvement and eat less fruit and vegetables, Appetite, Volume 50, Issues 2-3, March-May 2008, Pages 464-468, ISSN 0195-6663, DOI: 10.1016/j.appet.2007.10.004.
(http://www.sciencedirect.com/science/article/B6WB2-4PXM64C-3/2/aca31b1e0201f181ca4da73140c0920c)
Abstract:
Women who leave school with few or no educational qualifications are less likely to have diets that meet current recommendations than women who attain more qualifications at school. We hypothesise that lower `food involvement', meaning that food has a lower level of importance in

their lives, explains the poorer quality diets of women of lower educational attainment. We administered Bell and Marshall [(2003). The construct of food involvement in behavioral research: Scale development and validation. Appetite, 40, 235-244.] Food Involvement scale to 242 women of varied educational attainment, of whom 127 were also asked how often they ate fruit and vegetables. Women's food involvement decreased with decreasing educational attainment. Forty-two percent of women who had no educational qualifications were in the lowest quarter of the food involvement score, compared with 12% of women with degrees. Women with lower scores on the food involvement scale also reported eating fruit and vegetables less often. The odds of eating fewer fruit and vegetables rose with lower educational attainment and with lower food involvement scores, suggesting that each has an independent effect. We have shown that the Food Involvement scale discriminates between women, is associated with other characteristics and predicts dietary quality. We now plan to use it in a larger, representative population of women of lower educational attainment to examine its role along with other psychological variables in determining dietary quality.
Keywords: Women; Education; Food involvement; Fruit and vegetables; Dietary quality

Xin-Geng Wang, Aime H. Bokonon-Ganta, Russell H. Messing, Intrinsic inter-specific competition in a guild of tephritid fruit fly parasitoids: Effect of co-evolutionary history on competitive superiority, Biological Control, Volume 44, Issue 3, March 2008, Pages 312-320, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2007.10.012.
(http://www.sciencedirect.com/science/article/B6WBP-4PYGVWF-7/2/d7a5a6ef815e54353b4dbbba5b5c5d83)
Abstract:
Tephritid fruit fly parasitoid guilds are dominated by solitary koinobiont species that attack different host stages, but most emerge as adults from host puparia. Previous studies suggest intrinsic competitive superiority by the egg-attacking parasitoid Fopius arisanus (Sonan) against all larval-attacking parasitoids in Hawaii. In this study, we tested the early-acting competitive superiority prediction in relation to the co-evolutionary history of competition between an egg-larval parasitoid (Fopius ceratitivorus Wharton), and each of three larval parasitoids [Psyttalia concolor (Szepligeti), Diachasmimorpha kraussii (Fullaway), and Diachasmimorpha longicaudata (Ashmead)]. F. ceratitivorus and P. concolor share a common origin (eastern Africa), while D. kraussii is an Australian species, and D. longicaudata is from Southeast Asia. The outcomes of intrinsic competition between the egg-attacking parasitoid and each of the three larval-attacking parasitoids within their common host, the Mediterranean fruit fly Ceratitis capitata (Wiedemann) were compared. F. ceratitivorus invariably eliminated the co-evolved P. concolor through physiological suppression of the later-attacking parasitoid's egg development, providing evidence that supports the early-acting-superiority hypothesis. However, F. ceratitivorus was unable to suppress development of the two non co-evolved larval parasitoids. Instead, the larvae of both later-acting parasitoid species physically killed F. ceratitivorus larvae inside the host. The results suggest that co-evolutionary history influences competitive superiority. The evolution of inter-specific competition and its implications for biological control are discussed.
Keywords: Co-evolution; Biological control; Competitive superiority; Inter-specific competition; Parasitoid; Physiological suppression

Silke Hein, Silvia Dorn, The parasitoid of a fruit moth caterpillar utilizes fruit components as nutrient source to increase its longevity and fertility, Biological Control, Volume 44, Issue 3, March 2008, Pages 341-348, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2007.10.013.
(http://www.sciencedirect.com/science/article/B6WBP-4PYGVWF-8/2/a6a5b12c0ddd31425438e4596db354bf)
Abstract:

Longevity and fecundity of female wasps are two decisive factors for the effectiveness of parasitoid species as biological control agents. Accessibility and suitability of nutrient sources determine parasitoid survival and reproduction. Host, nectar and honeydew feeding are frequent adult parasitoid behaviors to cover nutritional needs. Here we postulate that especially parasitoid species of endophytic herbivores might use plant tissue as a nutrient source that becomes accessible upon herbivory. We investigated the influence of plant consumption and host feeding on longevity and fecundity of Hyssopus pallidus, a gregarious ecto-parasitoid of caterpillars of the codling moth that feed inside apple fruits. Longevity of unmated and mated ovipositing female parasitoids was highest in treatments with fruit pulp. While longevity in this treatment was not significantly different from that with honey, it was significantly higher than in treatments without food, with water or with a host alone.
Reproduction was significantly increased by these sugar-rich nutrient sources compared to the control with a host alone. In contrast, host feeding did not yield any significant contribution to longevity and fecundity in a series of bioassays with different host-parasitoid ratios and with differently aged and sized hosts, compared to controls without food.
We conclude that in this synovigenic species host feeding does not contribute to longevity and fecundity, but females can increase survival and reproduction in the field relying solely on the plant tissue damaged by their host caterpillar.
Keywords: Hyssopus pallidus; Cydia spp.; Nutritional ecology; Host feeding; Food source; Fecundity; Longevity

David M. Crohn, Ben Faber, A. James Downer, Oleg Daugovish, Probabilities for survival of glassy-winged sharpshooter and olive fruit fly pests in urban yard waste piles, Bioresource Technology, Volume 99, Issue 5, March 2008, Pages 1425-1432, ISSN 0960-8524, DOI: 10.1016/j.biortech.2007.01.054.
(http://www.sciencedirect.com/science/article/B6V24-4NF2NF2-1/2/7a0cef3c40c0eb66879b351f39c500d7)
Abstract:
Glassy-winged sharpshooter (Homolodisca coagulate) and olive fruit fly (Bactrocera oleae) were introduced into unturned, chipped yard waste piles to evaluate their survival with time and depth within the piles. In all three trials, no pests lasted more than 14 d, and in no trial did pests survive more than 4 d at the 30 and 100 cm depths. No survivors were found after 14 d in any of the treatments at any depth. Neither of the pests survived 100 cm after 2 d. A mathematical model for describing pest survival probabilities is described. The model modifies time according to the Arrhenius equation in order to include heat effects on pest survival and can be used to determine exposure times necessary to eliminate these pests with a determined statistical probability. Model projections suggest that for conditions similar to this study, there is 99% confidence that all glassy-winged sharpshooter eggs would be eliminated from 1000 infected leaves in 6.1 d at 15 cm depth and in 4.8 d at 30 cm or below. Olive fruit fly larvae at these depths would require 4.8 and 4.1 d, respectively, for 1000 infected olive fruits. Projected elimination times at the surface were longer, 6.5 d for sharpshooter eggs and 14.3 d for fruit fly larvae.
Keywords: Glassy-winged sharpshooter; Olive fruit fly; Compost; Model; Survival

Arturo Baltazar, Jorge Isidro Aranda, Gustavo Gonzalez-Aguilar, Bayesian classification of ripening stages of tomato fruit using acoustic impact and colorimeter sensor data, Computers and Electronics in Agriculture, Volume 60, Issue 2, March 2008, Pages 113-121, ISSN 0168-1699, DOI: 10.1016/j.compag.2007.07.005.
(http://www.sciencedirect.com/science/article/B6T5M-4PKX5HM-1/2/86e295df25cc90ca2f72ea54c0af5d96)
Abstract:

In this work, the concept of data fusion is applied to nondestructive testing data for classification of fresh intact tomatoes based on their ripening stages. A Bayesian classifier considering a multivariate, three-class problem was incorporated for data fusion. Probability of error was estimated numerically for univariate and multivariate cases based on Bhattacharyya distance. Numerical results showed that multi-sensorial data fusion reduces the classification error considerably. The Bayesian classifier was tested on data of tomato fruits taken by the following nondestructive tests: colorimeter and acoustic impact. Results of Bayesian classifier agree with numerical estimations showing an 11% classification error in the multivariate (multi-sensor) case compared with a 48% obtained by the univariate case (single sensor).
Keywords: Bayesian classifier; Data fusion; Impact acoustic technique; Tomatoes; Ripening

Joe-Air Jiang, Hsiang-Yun Chang, Ke-Han Wu, Cheng-Shiou Ouyang, Man-Miao Yang, En-Cheng Yang, Tse-Wei Chen, Ta-Te Lin, An adaptive image segmentation algorithm for X-ray quarantine inspection of selected fruits, Computers and Electronics in Agriculture, Volume 60, Issue 2, March 2008, Pages 190-200, ISSN 0168-1699, DOI: 10.1016/j.compag.2007.08.006.
(http://www.sciencedirect.com/science/article/B6T5M-4PPWM5H-2/2/2e873d944ab5a27f33e71c93eda8e795)
Abstract:
Although X-ray scanners are commonly used in airports or customs for security inspection, practical application of X-ray imaging in quarantine inspection to prevent propagation of alien insect pests in imported fruits is still unavailable. The first step to identify insect infestation in fruit by X-ray imaging technique is image acquisition. This is followed by the image segmentation procedure, which can locate sites of infestation. Since the grey level of X-ray images depends on the density and thickness of the test samples, the relative contrast of infestation site to the intact region inside a typical fruit varies with its position. To accurately determine whether a fruit has signs of insect infestation, we have developed an adaptive image segmentation algorithm based on the local pixels intensities and unsupervised thresholding algorithm. This paper presents the detailed image processing procedure including the grid formation, local thresholding, threshold value interpolation, background removal, and morphological filtering for the determination of infestation sites of a fruit in X-ray image. The real-time image processing procedure was tested with X-ray images of several types of fruit such as citrus, peach, guava, etc. Additional tests and analyses were also performed using the developed algorithm on the X-ray images obtained with different image acquisition parameters.
Keywords: X-ray; Insect pest inspection; Quarantine; Image processing; Adaptive thresholding

R.G. Roberts, A.J. Sawyer, An updated pest risk assessment for spread of Erwinia amylovora and fire blight via commercial apple fruit, Crop Protection, Volume 27, Issues 3-5, March-May 2008, Pages 362-368, ISSN 0261-2194, DOI: 10.1016/j.cropro.2007.06.007.
(http://www.sciencedirect.com/science/article/B6T5T-4PCH43H-2/2/8a2f6fb2eb464885753c875e8358845f)
Abstract:
The phytosanitary risk associated with the movement of export-quality apple fruit to countries where fire blight does not occur is reassessed based upon additional data available since 1998 and clarification or correction of previously misinterpreted data present in the literature. The low epiphytic fitness of Erwinia amylovora (Ea) on apple fruit, the documented low incidence of viable Ea populations on mature apple fruit and the lack of a documented pathway by which susceptible host material could become infected from fruit-borne inoculum remain unchanged, and support the view that movement of Ea via commercial apple fruit is highly unlikely. With this new information, we updated a previously published model to re-estimate the likelihood of fire blight outbreaks in new areas because of commercial fruit shipment. This likelihood decreased in every scenario, and ranged from one outbreak in 5217 years to one in 753,144 years. By using the corrected and

newly published data and by making assumptions based upon documented pathogen biology, the model gives more robust statistical support to the opinion that the risk of importing Ea on commercial apple fruit and the concomitant risk of establishing new outbreaks of fire blight is so small as to be insignificant.
Keywords: Trade restriction; Quarantine; Phytosanitary; Long-range spread

Tommaso Ansaloni, Sara Pascual-Ruiz, Monica A. Hurtado, Josep A. Jacas, Can summer and fall vegetative growth regulate the incidence of Tetranychus urticae Koch on clementine fruit, Crop Protection, Volume 27, Issues 3-5, March-May 2008, Pages 459-464, ISSN 0261-2194, DOI: 10.1016/j.cropro.2007.07.016.
(http://www.sciencedirect.com/science/article/B6T5T-4PMT5C1-2/2/14f9c17ba479a0d26cba7c33b0d08ad5)
Abstract:
Fruit scarring caused by Tetranychus urticae is one of the main pest problems faced by Spanish clementine growers as it can downgrade the quality of the fruit completely. T. urticae infestations concentrate on fruit at the end of summer. This study assessed the influence of vegetative growth of clementine trees during summer and fall on the damage caused by T. urticae. Damage significantly increased in trees in which summer and fall flushes were mechanically removed. This indicates that summer and fall leaf growth is a key factor limiting mite damage on fruit. Cultural and crop protection practices which promote abundant normal summer and fall vegetative growth seem to be critical for minimizing the impact of T. urticae populations on fruit quality.
Keywords: Citrus; Phyllocnistis citrella; Citrus aphids; Mite movement

B.A. Jama, A.M. Mohamed, J. Mulatya, A.N. Njui, Comparing the 'Big Five': A framework for the sustainable management of indigenous fruit trees in the drylands of East and Central Africa, Ecological Indicators, Volume 8, Issue 2, Evaluating sustainable forest management - An international collection of empirical and applied research, March 2008, Pages 170-179, ISSN 1470-160X, DOI: 10.1016/j.ecolind.2006.11.009.
(http://www.sciencedirect.com/science/article/B6W87-4MV1H49-1/2/4b0a5d7d20666828888a480bc5f268a7)
Abstract:
There are many fruit trees that could be integrated into dryland farming systems in Sub-Saharan Africa to support income and nutritional security. Fruit contains almost all known vitamins and many essential minerals. Five important fruit species that are cross-regional include: Adansonia digitata, Tamarindus indica, Zizyphus mauritiana, Sclerocarya birrea, and Mangifera indica. While these species are well integrated in the Sahel region, besides mango, they are generally absent from smallholder farms in East and Central Africa. Fruits of the species in this region are mostly harvested unsustainably from the wild communal areas. Unlike the situation in the neighboring Southern Africa region, where S. birrea is utilized extensively in the wine industry, there is virtually no use for the tree in this region, largely because of limited knowledge. Z. mauritiana use is also limited because of low quality germplasm--the hard stone clings to the flesh. An analytical framework based on five factors (site requirements, genetic variability, propagation methods, nutritional properties and utilization, and commercial potential) is used to compare knowledge status and gaps on the species in the region. While this analysis reveals the existence of considerable knowledge between and within the species, lack of improved germplasm and markets emerge as two key constraints limiting their conservation through on-farm planting. Key research and development needs identified are: (a) fostering cross-collaboration and knowledge exchange with other regions where the species are fairly well utilized, and (b) developing criteria and indicators for monitoring impacts and increased investments on the 'Big Five' on livelihood of dryland communities and on biodiversity conservation.
Keywords: Nutrition; Germplasm; Agroforestry; Marketing; Livelihood; Conservation

Yi Chen, Ming-Yong Xie, Shao-Ping Nie, Chang Li, Yuan-Xing Wang, Purification, composition analysis and antioxidant activity of a polysaccharide from the fruiting bodies of Ganoderma atrum, Food Chemistry, Volume 107, Issue 1, 1 March 2008, Pages 231-241, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.08.021.
(http://www.sciencedirect.com/science/article/B6T6R-4PF1WKY-1/2/149002d7523f3fe63d7c5b7cf1ff5722)
Abstract:
A water-soluble protein-bound polysaccharide was extracted from the fruiting bodies of Ganoderma atrum and isolated by gel-filtration chromatography. Its primary structural features and molecular weight were characterized by infrared spectrometry, gas chromatography, size exclusion chromatography, amino acid analyzer and high-performance liquid chromatography (HPLC). The data obtained indicated that the glycoprotein contains 10.1% of protein and 17 general amino acids and it is rich in glutamic acid, asparagic acid, alanine, glycine, threonine, and serine. It was mainly composed of mannose, galactose and glucose in a molar ratio of 1:1.28:4.91, with an average molecular weight of about 1013 kDa. The existence of an O-glycosidic linkage in PSG-1 (polysaccharide1) was demonstrated by a [beta]-elimination reaction. The antioxidant activity of the purified polysaccharides was evaluated in vitro by 1,1-diphenyl-2-picryl-hydrazyl (DPPH) free radical scavenging assay, self-oxidation of 1,2,3-phentriol assay. Those various antioxidant activities were compared to standard antioxidants vitamin C and BHT. It was found that the scavenging effects of the purified polysaccharides increased with measuring concentration. The results indicated that the purified polysaccharides showed strong DPPH free radical and superoxide anion radical scavenging activities. This study suggested that the purified polysaccharides could potentially be used as natural antioxidants.
Keywords: Ganoderma atrum; Glycoprotein; Heteroglycan; Structure elucidation; Antioxidant activity

P.A. Marone, J.F. Borzelleca, D. Merkel, J.T. Heimbach, E. Kennepohl, Twenty eight-day dietary toxicity study of Luo Han fruit concentrate in Hsd:SD(R) rats, Food and Chemical Toxicology, Volume 46, Issue 3, March 2008, Pages 910-919, ISSN 0278-6915, DOI: 10.1016/j.fct.2007.10.013.
(http://www.sciencedirect.com/science/article/B6T6P-4PYYTY1-2/2/3d7aa9e71cd5b24b03798199df76f055)
Abstract:
A 28-day dietary study was conducted in Hsd:SD(R) rats to evaluate the safety of PureLo(R), a non-caloric powdered concentrate of the Chinese fruit Luo Han Guo, which derives its sweetening properties from triterpene glycosides called mogrosides. Groups of 20 rats (10/sex/group) were fed diets containing 0, 10,000, 30,000, or 100,000 ppm PureLo(R) for 28 days (OECD, Redbook 2000). PureLo was well tolerated and produced no significant adverse effects. Reduced body weight and body weight gain in high-dose animals of both sexes were related to sporadic reductions in food consumption; there were no overall differences in feed efficiency. Statistically significant changes in clinical chemistry (decreased bilirubin, increased total protein) and relative organ weights of liver, adrenals, ovaries and/or testes, and epididymides were not correlated with any histopathological findings and were not considered adverse. Although a few clinical and pathological findings suggest possible treatment-related effects, particularly in the high-dose group, these findings were transient, not dose-dependent, non-adverse, inconsistent, occurred only in one sex, and/or not supported by histopathological findings. Under the conditions of this study and based on the toxicological endpoints evaluated, the NOAEL for PureLo(R) was 100,000 ppm in the diet, the highest level tested, equivalent to 7.07 and 7.48 g/kg bw/day for male and female rats, respectively.
Keywords: Luo Han; Subchronic; Toxicity; Mogroside; Sweetener; PureLo(R)

Jing Wang, Xiujie Wang, Shu Jiang, Ping Lin, Jie Zhang, Yanrong Lu, Qi Wang, Zhujuan Xiong, Yaying Wu, Jingjing Ren, Hongliang Yang, Cytotoxicity of fig fruit latex against human cancer cells, Food and Chemical Toxicology, Volume 46, Issue 3, March 2008, Pages 1025-1033, ISSN 0278-6915, DOI: 10.1016/j.fct.2007.10.042.
(http://www.sciencedirect.com/science/article/B6T6P-4R335H0-2/2/3abfc40a6cbf7faf3ac5b7449aee6435)
Abstract:
Fig fruit latex (FFL) contains significant amounts of polyphenolic compounds and can serve as a source of antioxidants after human consumption. The purpose of this study is to confirm anticancer activity of FFL against human cancer cells and to further elucidate its mechanism of activity. Human glioblastoma, hepatocellular carcinoma, and normal liver cells were used for in vitro tests of FFL effects. Those tests included cytotoxicity, colony formation inhibition, Brdu incorporation, acridine orange/ethidium bromide (AO/EB) staining for apoptotic cells, cell cycle distribution through flow cytometry (FCM), and ADP-ribosyltransferase (NAD+; poly(ADP-ribose) polymerase)-like 1 (ADPERL1) mRNA expression through RT-PCR in response to FFL treatment. After FFL treatment, the proliferation, colony formation, and Brdu labeling indices of cancer cells decreased ($P < 0.05$), while the AO/EB stained apoptotic cells increased ($P < 0.05$). By FCM analysis, an increase of G0/G1 phase cell population and decrease of S and G2/M phase cells were observed ($P < 0.01$), while both ADPRTL1 mRNA expression and apoptotic indices increased ($P < 0.01$). The findings in these studies suggested that FFL exhibited potent cytotoxicity in some human cancer cells with little effect in normal cells at certain concentration. The mechanism for such effects might be associated with the inhibition of DNA synthesis, induction of apoptosis, and cell cycle arrest of cancer cells.
Keywords: Fig fruit latex; Human cancer cells; Growth inhibition; Apoptosis

J. Gomez-Sanchis, E. Molto, G. Camps-Valls, L. Gomez-Chova, N. Aleixos, J. Blasco, Automatic correction of the effects of the light source on spherical objects. An application to the analysis of hyperspectral images of citrus fruits, Journal of Food Engineering, Volume 85, Issue 2, March 2008, Pages 191-200, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.06.036.
(http://www.sciencedirect.com/science/article/B6T8J-4PCGRPF-2/2/c194dea9693258074fe007fb4d222721)
Abstract:
This study proposes a method for correcting the adverse effects produced by the curvature of spherical objects in acquiring images with a computer vision system. Its suitability has been illustrated in a specific case of citrus fruits. The images of this kind of fruit are darker in areas nearer the edge than in the centre, and this makes them more difficult to analyse. This methodology considers the fruit as being a Lambertian ellipsoidal surface and produces a 3D model of the fruit. By doing it becomes possible to calculate the part of the radiation that should really reach the camera and to make the intensity of the radiation uniform over the whole of the fruit surface captured by the camera, no matter what region is being sampled. Some tests have been carried out in order to prove that using the proposed correction methodology the reflectance in all the surface of the fruit is similar, minimising the differences from the central area to the peripheral areas. The methodology presented here has been tested using a hyperspectral computer vision system based on tunable liquid crystal filters and it has proved to be effective for minimising the adverse side effects produced by the curvature of the fruit on the intensity of the radiation captured by the camera. The experiments show that applying our method homogenises the grey level of the pixels belonging to the same class, regardless of the region of the fruit surface they are from; standard deviation is also reduced, which facilitates subsequent classification tasks.
Keywords: Lighting system; Mandarins; Fruit inspection; Hyperspectral; Machine vision; Image analysis

Johannes Overgaard, Ales Tomcala, Jesper G. Sorensen, Martin Holmstrup, Paul Henning Krogh, Petr Simek, Vladimir Kostal, Effects of acclimation temperature on thermal tolerance and membrane phospholipid composition in the fruit fly Drosophila melanogaster, Journal of Insect Physiology, Volume 54, Issue 3, March 2008, Pages 619-629, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2007.12.011.
(http://www.sciencedirect.com/science/article/B6T3F-4RH9519-1/2/42aec33f5f9c807db6a7bdf9c2a5e05a)
Abstract:
Adaptative responses of ectothermic organisms to thermal variation typically involve the reorganization of membrane glycerophospholipids (GPLs) to maintain membrane function. We investigated how acclimation at 15, 20 and 25 [degree sign]C during preimaginal development influences the thermal tolerance and the composition of membrane GPLs in adult Drosophila melanogaster. Long-term cold survival was significantly improved by low acclimation temperature. After 60 h at 0 [degree sign]C, more than 80% of the 15 [degree sign]C-acclimated flies survived while none of the 25 [degree sign]C-acclimated flies survived. Cold shock tolerance (1 h at subzero temperatures) was also slightly better in the cold acclimated flies. LT50 shifted down by ca 1.5 [degree sign]C in 15 [degree sign]C-acclimated flies in comparison to those acclimated at 25 [degree sign]C. In contrast, heat tolerance was not influenced by acclimation temperature. Low temperature acclimation was associated with the increase in proportion of ethanolamine (from 52.7% to 58.5% in 25 [degree sign]C-acclimated versus 15 [degree sign]C-acclimated flies, respectively) at the expense of choline in GPLs. Relatively small, but statistically significant changes in lipid molecular composition were observed with decreasing acclimation temperature. In particular, the proportions of glycerophosphoethanolamines with linoleic acid (18:2) at the sn-2 position increased. No overall change in the degree of fatty acid unsaturation was observed. Thus, cold tolerance but not heat tolerance was influenced by preimaginal acclimation temperature and correlated with the changes in GPL composition in membranes of adult D. melanogaster.
Keywords: Homeoviscous adaptation; Membrane phospholipid; PE; PC; Insect; Cold acclimation; Chilling injury

Sally Hilton, Doreen Winstanley, Biological characterization of an English granulovirus from the summer fruit tortrix moth, Adoxophyes orana, Journal of Invertebrate Pathology, Volume 97, Issue 3, March 2008, Pages 298-305, ISSN 0022-2011, DOI: 10.1016/j.jip.2007.09.011.
(http://www.sciencedirect.com/science/article/B6WJV-4PSK92S-1/2/0f5794f998d906369032b34f97565bf0)
Abstract:
Adoxophyes orana granulovirus (AdorGV) was isolated from overwintering larvae in an orchard in Kent, in the UK. The developmental time of each A. orana instar was determined by measuring the size of the head capsule. The susceptibility of the larvae to the English isolate of AdorGV was evaluated in laboratory bioassays using inoculation by microdroplet feeding and applied dose assays. A series of bioassays were performed to determine LD50 and ST50 values for first, fourth and fifth instar larvae. The median lethal doses ranged from 30 occlusion bodies in first instar to 1.36 x 106 in fifth instar. The median survival time decreased the later the larvae were infected and ranged from 37 days in first instar to 24 days in fifth instar. Approximately half of the infected larvae released a discharge rich in occlusion bodies from their posterior end prior to death. Approximately 85% of larvae attempted pupation and died as larva-pupa intermediates.
Keywords: Adoxophyes orana; Granulovirus; Summer fruit tortrix; Bioassay

Jennifer Karas Montez, Karl Eschbach, Country of Birth and Language Are Uniquely Associated with Intakes of Fat, Fiber, and Fruits and Vegetables among Mexican-American Women in the

United States, Journal of the American Dietetic Association, Volume 108, Issue 3, March 2008, Pages 473-480, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.12.008.
(http://www.sciencedirect.com/science/article/B758G-4RY6RKN-N/2/bc2f81cb7acea7161cfaa739ac3bf7ac)
Abstract: Objective
Previous research on the relationship between diet and acculturation among Hispanics has produced inconsistent results. This study examined the association between diet, country of birth, and a language acculturation scale among Mexican-American women.Design
The study used a cross-sectional design with data from the 2000 National Health Interview Survey and its Cancer Control Module. The module was administered to one adult per household and included 17 dietary intake questions.Subjects/setting
Subjects were 1,245 nonpregnant women of Mexican descent between 25 and 64 years of age residing in the United States who were interviewed in their homes.Statistical analysis performed
Least-squares regression with sampling weights and adjustment of standard errors for survey design effects was used to estimate the associations between country of birth, language acculturation, and percent energy from fat, intake of fiber, and intake of fruits and vegetables, with statistical control for age, education, and marital status.Results
In multivariate models, US-born women consumed fewer grams of fiber per day ([beta]=-2.44; P<0.01) and a larger percentage of energy from fat ([beta]=2.06; P<0.01) than Mexican-born women. Greater English language use was associated with decreased consumption of fiber (P<0.01), and a decline in fruit and vegetable intake with a greater decline for US-born (P<0.10).Conclusions
Acculturation is associated with several unfavorable dietary changes. Women who were born in the United States are at greater risk of declining dietary quality compared to Mexican-born women, and US-born English-speaking women have more unfavorable dietary profiles. Research and public health education concerning dietary intake should consider both country of birth and language.

O. Goni, M.I. Escribano, C. Merodio, Gelatinization and retrogradation of native starch from cherimoya fruit during ripening, using differential scanning calorimetry, LWT - Food Science and Technology, Volume 41, Issue 2, March 2008, Pages 303-310, ISSN 0023-6438, DOI: 10.1016/j.lwt.2007.03.009.
(http://www.sciencedirect.com/science/article/B6WMV-4NB2WVC-1/2/5bdb2e5a7fc1e68f18b64d7695d04c58)
Abstract:
The aim of this work was to determine the physicochemical characteristics of non-conventional starch from cherimoya fruit in order to suggest possible applications of these polymers in various food systems. The influence of the stage of ripening on thermal behaviour of cherimoya fruit starch was also analysed. Starch was visualized by cryo-SEM, and gelatinization and retrogradation properties were studied by differential scanning calorimetry (DSC). DSC was also used for accurate determination of the starch content of cherimoya dry matter. The calorimetric profile for cherimoya fruit starch showed a peak temperature (gelatinization) over a range from 63.7 to 65.2 [degree sign]C and enthalpy values between 14.8 and 15.9 J g-1 during ripening. Neither temperatures nor melting enthalpy of recrystallized amylopectin differed over the ripening period. The recrystallization rate, as measured by changes in melting enthalpy with time according to the Avrami model, showed a very slight retrograde tendency. It is suggested that these characteristics could be useful in products where good quality and long shelf-life are required.
Keywords: Cherimoya starch; Differential scanning calorimetry; Gelatinization; Ripening; Retrogradation

Teigo Asai, Noriyuki Hara, Sawa Kobayashi, Shiro Kohshima, Yoshinori Fujimoto, Geranylated flavanones from the secretion on the surface of the immature fruits of Paulownia tomentosa, Phytochemistry, Volume 69, Issue 5, March 2008, Pages 1234-1241, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2007.11.011.
(http://www.sciencedirect.com/science/article/B6TH7-4RWK083-1/2/95187ed3178ff576ced135b8bb806290)
Abstract:
Chemical investigation of the methanol extract of the viscous secretion on the surface of immature fruits of Paulownia tomentosa furnished nine geranylated flavanones, 6-geranyl-5,7-dihydroxy-3',4'-dimethoxyflavanone (1), 6-geranyl-3',5,7-trihydroxy-4'-methoxyflavanone (2), 6-geranyl-4',5,7-trihydroxy-3',5'-dimethoxyflavanone (3), 6-geranyl-4',5,5',7-tetrahydroxy-3'-methoxyflavanone (4), 6-geranyl-3,3',5,7-tetrahydroxy-4'-methoxyflavanone (5), 4',5,5',7-tetrahydroxy-6-[6-hydroxy-3,7-dimethyl-2(E),7-octadienyl]-3'-methoxyflavanone (6), 3,3',4',5,7-pentahydroxy-6-[6-hydroxy-3,7-dimethyl-2(E),7-octadienyl]flavanone (7), 3,3',4',5,7-pentahydroxy-6-[7-hydroxy-3,7-dimethyl-2(E)-octenyl]flavanone (8), and 3,4',5,5',7-pentahydroxy-3'-methoxy-6-(3-methyl-2-butenyl)flavanone (9), along with six known geranylated flavanones. Among these, compounds 4, 6-9 and the known 6-geranyl-3',4',5,7-tetraahydroxyflavanone (diplacone), 6-geranyl-3,3',4',5,7-pentahydroxyflavanone (diplacol) and 3',4',5,7-pentahydroxy-6-[7-hydroxy-3,7-dimethyl-2(E)-octenyl]flavanone showed potent radical scavenging effects towards DPPH radicals.
Keywords: Paulownia tomentosa; Scrophulariaceae; Flavanone; Flavanol; DPPH radical; Anti-oxidant activity

Danielle Goudeau, Sandra L. Uratsu, Kentaro Inoue, Francisco Goes daSilva, Anna Leslie, Doug Cook, Russell L. Reagan, Abhaya M. Dandekar, Tuning the orchestra: Selective gene regulation and orange fruit quality, Plant Science, Volume 174, Issue 3, March 2008, Pages 310-320, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2007.11.017.
(http://www.sciencedirect.com/science/article/B6TBH-4RC2RVJ-1/2/bba8e36c7a7b88342c8a6cb0a581f408)
Abstract:
Orange fruit quality is highly dependent on time-specific expression of developmental genes in peel tissues, especially those controlling physical structure and synthesis of pigments and aromatic secondary metabolites. Using a custom microarray platform, we examined expression of 366 genes of interest in peel pericarp and endocarp during three developmental stages of Washington Navel orange fruit (Citrus sinensis L. Osbeck). We examined in detail 28 of these genes that showed strong differential expression over time and across tissues. Genes putatively associated with metabolism of flavonoids, carotenoids, aroma compounds, and ascorbic acid were differentially expressed over time in specific tissues, while genes likely associated with disease resistance, photosynthesis, stress responses, and cell wall synthesis were differentially expressed over both tissue and time. Most highly differentially expressed transcripts within peel likely function to modify the cell wall architecture during growth and to develop color and aroma.
Keywords: Citrus; Genomics; Microarray; Expressed sequence tags; Peel; Fruit quality

Penelope Perkins-Veazie, Julie K. Collins, Luke Howard, Blueberry fruit response to postharvest application of ultraviolet radiation, Postharvest Biology and Technology, Volume 47, Issue 3, March 2008, Pages 280-285, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.08.002.
(http://www.sciencedirect.com/science/article/B6TBJ-4PMYXH5-3/2/831ed805b03e837060f86dd11fc05d8d)
Abstract:
Blueberries (Vaccinium corymbosum, cvs. Collins, Bluecrop) were exposed to ultraviolet light-C (UV-C) radiation treatments from 0 to 4 kJ/m2 prior to 7 days storage at 5 [degree sign]C plus 2 days at 20 [degree sign]C, 90% RH. Weight loss and firmness were not affected by light treatment.

Decay incidence from ripe rot (Colletotrichum acutatum, syn. C. gloeosporioides) on fruit was decreased by 10% with 1-4 kJ/m2 UV-C light treatments. Antioxidants as measured by total anthocyanin, total phenolics, and ferric reducing antioxidant power (FRAP) were higher in `Collins' fruit given 0 or 1 kJ/m2 UV-C compared to unstored fruit. In `Bluecrop', total anthocyanin content and FRAP values increased with treatment intensity, with highest values seen in fruit given 2 or 4 kJ/m2 UV-C, but no clear treatment effects were seen in total phenolic content. These results indicate that postharvest application of UV-C radiation can decrease decay caused by ripe rot in blueberries and may enhance antioxidant levels.
Keywords: UV-C; Phototreatment; Ripe rot; Anthracnose; Antioxidant; V. corymbosum

S.P. Singh, R.K. Pal, Controlled atmosphere storage of guava (Psidium guajava L.) fruit, Postharvest Biology and Technology, Volume 47, Issue 3, March 2008, Pages 296-306, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.08.009.
(http://www.sciencedirect.com/science/article/B6TBJ-4R2XCN5-1/2/fc003f0a2b6f399e1a6ede904772e9b8)
Abstract:
The effects of controlled atmospheres (CA) on respiration, ethylene production, firmness, weight loss, quality, chilling injury, and decay incidence of three commercially important cultivars of guava fruit were studied during storage in atmospheres containing 2.5, 5, 8, and 10 kPa O2 with 2.5, 5, and 10 kPa CO2 (balance N2) at 8 [degree sign]C, a temperature normally inducing chilling injury. Mature light green fruit of cultivars, `Lucknow-49', `Allahabad Safeda' and `Apple Colour', were stored for 30 days either in CA or normal air, and transferred to ambient conditions (25-28 [degree sign]C and 60-70% R.H.) for ripening. CA storage delayed and suppressed respiratory and ethylene peaks during ripening. A greater suppression of respiration and ethylene production was observed in fruit stored in low O2 (<=5 kPa) atmospheres compared to those stored in CA containing 8 or 10 kPa O2 levels. High CO2 (>5 kPa) was not beneficial, causing a reduction in ascorbic acid levels. CA storage was effective in reducing weight loss, and maintaining firmness of fruit. The changes in soluble solids content (SSC), titratable acidity (TA), ascorbic acid, and total phenols were retarded by CA, the extent of which was dependent upon cultivar and atmosphere composition. Higher amounts of fermentative metabolites, ethanol and acetaldehyde, accumulated in fruit held in atmospheres containing 2.5 kPa O2. Chilling injury and decay incidence were reduced during ripening of fruit stored in optimal atmospheres compared to air-stored fruit. In conclusion, guava cultivars, `Lucknow-49', `Allahabad Safeda', and `Apple Colour' may be stored for 30 days at low temperature (8 [degree sign]C) supplemented with 5 kPa O2 + 2.5 kPa CO2, 5 kPa O2 + 5 kPa CO2, and 8 kPa O2 + 5 kPa CO2, respectively.
Keywords: Respiration; Ethylene; Ethanol; Acetaldehyde; Quality; Decay

Naoki Yamauchi, Yukiko Tokuhara, Yoshihiro Ohyama, Masayoshi Shigyo, Inhibitory effect of sucrose laurate ester on degreening in Citrus nagato-yuzukichi fruit during storage, Postharvest Biology and Technology, Volume 47, Issue 3, March 2008, Pages 333-337, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.08.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4PXNHG8-3/2/7d66b2a3e49295788bb584c3d80299cd)
Abstract:
An inhibitory effect of sucrose laurate ester (SLE) on the degreening of Nagato-yuzukichi (Citrus nagato-yuzukichi hort. ex Y. Tanaka) fruit was determined. SLE treatment suppressed the degreening of the fruit during storage at 20 [degree sign]C more efficiently than the treatment with any other sucrose fatty acid ester, such as myristate, palmitate or stearate. SLE itself did not have an inhibitory effect on chlorophyllase and chlorophyll (Chl)-degrading peroxidase activities, but laurate, which was de-esterified from SLE, had a significant effect. Laurate inhibited both enzyme activities more effectively than any other fatty acid, such as caprylate, caprate, myristate, palmitate

or stearate. The fruit flavedo extract had an activity to decompose SLE to laurate and sucrose, and treatment of the fruit with laurate significantly suppressed degreening during storage at 20 [degree sign]C as well. These results indicate that the suppression of degreening in SLE-treated Nagato-yuzukichi fruit could be in part due to the formation of laurate from SLE by an esterase, such as a lipase, which is present in the flavedo, and the laurate formed might be involved effectively in the inhibition of Chl-degrading enzyme activities. Moreover, the suppression of degreening by SLE treatment could be due to the inhibition of degreening by laurate in addition to the coating effect of SLE.
Keywords: Chlorophyll degradation; Citrus nagato-yuzukichi; Degreening; Lauric acid; Sucrose laurate ester

Youn-Moon Park, Yong-Jae Lee, Induction of modified atmosphere-related browning disorders in `Fuyu' persimmon fruit, Postharvest Biology and Technology, Volume 47, Issue 3, March 2008, Pages 346-352, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.08.006.
(http://www.sciencedirect.com/science/article/B6TBJ-4R2GRX4-1/2/26637895c81147c01b398c95ca9e50e1)
Abstract:
Critical O2 levels which induce modified atmosphere-related browning disorders in `Fuyu' persimmon fruit were determined using controlled atmosphere (CA) storage at two different temperatures. Fruit were harvested at commercial maturity and stored for 4 months under different CA regimes and temperature. In the 2000-2001 season, O2 levels were adjusted to 0.5-0.75 or 0.1-0.3 kPa in combination with 5.0-7.5 and 10.0-12.5 kPa CO2, respectively, at 0 [degree sign]C. In the 2001-2002 season, two different O2 levels, 0.5 and 0.25 kPa O2, were combined with 9.0 kPa CO2 at -1.0 and 1.0 [degree sign]C. Incidence of the stylar-end-specific browning (SEB) disorder was almost 0 above the 0.50 kPa O2 level regardless of CO2 concentration, whereas it was noticeable at 0.40-0.50 kPa, indicating that inductive O2 levels for SEB are below 0.4 kPa. Other types of browning such as pitted specks (PS) and pitted blotch browning (PBB) all over the surface occurred at 0.50 kPa O2, and the incidence tended to increase at lower O2 levels. Effects of storage temperature on the incidence of browning disorders were not significant except that lower storage temperature enhanced post-storage development of flesh blotch browning. Incidence of SEB was closely related with internal ethanol content, while incidence of PBB did not show clear relationships with the ethanol contents. Tissue specificity of SEB seemed to be closely related to the accumulation of anaerobic metabolites in the stylar-end part of the fruit.
Keywords: Persimmon; Modified atmosphere; Controlled atmosphere; Physiological disorder; Anaerobiosis

Lilian Amorim, Marise C. Martins, Silvia A. Lourenco, Anita S.D. Gutierrez, Fabiana M. Abreu, Fabricio P. Goncalves, Stone fruit injuries and damage at the wholesale market of Sao Paulo, Brazil, Postharvest Biology and Technology, Volume 47, Issue 3, March 2008, Pages 353-357, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.07.005.
(http://www.sciencedirect.com/science/article/B6TBJ-4PKG5V6-2/2/db16bc3c2fcfd153825f5c8c44092c50)
Abstract:
Mechanical injuries and diseases in stone fruit are important causes for market rejection. The objectives of this research were to quantify and characterize the mechanical injuries and diseases in peaches, nectarines and plums at Sao Paulo's wholesale market, the largest in Brazil. Incidence of injuries was assessed weekly in 1% of the marketed fruit (2973 fruit/week), from September to December in 2003 and 2004. Mechanical injuries were the most frequent injuries in both years, ranging from 8.73% (plum) to 44.5% (nectarine) of injured fruit. There was a significant positive correlation between the incidence of postharvest mechanical injuries and postharvest diseases. Incidence of postharvest diseases varied from 2.5% to 6.6%. Cladosporium rot (Cladosporium sp.)

and brown rot (Monilinia fructicola) were the most frequent diseases, and were mostly detected in the apexes of nectarines and peaches. Aurora (peach), Sunraycer (nectarine) and Gulfblaze (plum) varieties were the most susceptible to injuries and diseases.
Keywords: Postharvest diseases; Prunus spp.; Damage

Andrew C. Allan, Roger P. Hellens, William A. Laing, MYB transcription factors that colour our fruit, Trends in Plant Science, Volume 13, Issue 3, March 2008, Pages 99-102, ISSN 1360-1385, DOI: 10.1016/j.tplants.2007.11.012.
(http://www.sciencedirect.com/science/article/B6TD1-4RV1JYC-1/2/70e6e321c0d3e2ac74cad590c3c67db4)
Abstract:
Anthocyanin concentration is a primary determinant of plant colour. Fruit anthocyanin biosynthesis is controlled by a distinct clade of R2R3 MYB transcription factors. In apple, three recent papers describe the discovery of MYB genes activating skin, flesh and foliage anthocyanic colour. These findings lead the way to new approaches in the breeding and biotechnological development of fruit with new colour patterns.

Ting Yu, Lianping Wang, Yun Yin, Yixi Wang, Xiaodong Zheng, Effect of chitin on the antagonistic activity of Cryptococcus laurentii against Penicillium expansum in pear fruit, International Journal of Food Microbiology, Volume 122, Issues 1-2, 29 February 2008, Pages 44-48, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.11.059.
(http://www.sciencedirect.com/science/article/B6T7K-4R7NPVT-G/2/93265359565147a2658b9a22f827683e)
Abstract:
This study was designed to evaluate the impact of chitin on the antagonistic activity of Cryptococcus laurentii against the postharvest blue mold rot caused by Penicillium expansum in pear fruit. The results showed that the antagonistic activity of C. laurentii obtained from the culture media of nutrient yeast dextrose broth (NYDB) amended with chitin at 0.5-1.0% was improved greatly compared with the case that without chitin. The addition of chitin to NYDB did not influence the growth of C. laurentii, however, its population was found to increase rapidly thereafter in pear fruit wounds compared to that harvested from NYDB without chitin. Moreover, the cell-free filtrate of the chitin-supplement culture media in which the yeast was incubated for 24 h emerged a direct antifungal activity against P. expansum in pear fruit wounds, with the associated high level of chitinase activity. These results suggested that the use of chitin may be an effective method to induce the antagonistic activity of C. laurentii. To our knowledge, this is the first report regarding the chitin could enhance the efficacy of postharvest biocontrol yeasts.
Keywords: Biocontrol; Blue mold; Chitin; Cryptococcus laurentii; Pear; Penicillium expansum; Postharvest

Maricruz Ramirez, Marco Vinicio Saenz, Alfonso Vargas, Mario Araya, Leaf pruning intensities at flowering of banana (Musa AAA, cv. Grande Naine) did not influence fruit green and yellow life and quality, Scientia Horticulturae, Volume 115, Issue 4, 21 February 2008, Pages 319-322, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.10.014.
(http://www.sciencedirect.com/science/article/B6TC3-4R8KTC3-1/2/755677173606eb330b640261b6cd87cb)
Abstract:
This study examined the effects of leaf pruning intensities at flowering on the green and yellow life and fruit quality of bananas (Musa AAA, cv. Grande Naine). The fruit from banana plants that retained 7, 9, 11 and 13 leaves after pruning were packed in carton boxes of 13.7 kg and stored in a cold room at 14 [degree sign]C for 21 days to simulate transportation conditions. During this period, eight visual evaluations of fruit peel colour were made. Next, fruits were induced to

commercial ripening using ethylene at 100 [mu]l/ml. Four evaluations (every 2 days) on fruit firmness, soluble solids, titratable acidity, fruit weight and peel colour were made to assess fruit yellow life. No interaction between evaluations and number of leaves retained was found for pulp firmness, soluble solid percentage, fruit acidity, fruit weight and maturation grade. The fruit green life and peel colour was similar for plants retaining different number of leaves. After the application of ethylene, there were no differences in fruit firmness ($P > 0.62$), percentage of soluble solids ($P > 0.24$) nor in the percentage of acidity ($P > 0.32$). No difference in fruit weight ($P > 0.07$) and ripening grade ($P > 0.17$) were observed among plants retaining different number of leaves. The results suggest that in tropical commercial banana plantations, producing for international markets, it is possible to defoliate the banana plants to seven leaves at flowering without causing a reduction on the green and yellow life and quality of fruit.
Keywords: Defoliation; Leaf pruning; Post harvest

S.K. Whale, Zora Singh, M.H. Behboudian, J. Janes, S.S. Dhaliwal, Fruit quality in `Cripp's Pink' apple, especially colour, as affected by preharvest sprays of aminoethoxyvinylglycine and ethephon, Scientia Horticulturae, Volume 115, Issue 4, 21 February 2008, Pages 342-351, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.10.015.
(http://www.sciencedirect.com/science/article/B6TC3-4R718NS-1/2/6be55549df8fc39f21c6668c86437b62)
Abstract:
`Cripp's Pink' apple grown in Western Australia often develops poor colour at commercial harvest resulting in economic losses. To determine if fruit colour could be improved without advancing ripening, `Cripp's Pink' apple fruit on trees were sprayed with aminoethoxyvinylglycine (AVG) alone, ethephon alone, or AVG followed by ethephon. The experiments were conducted at two different locations in Western Australia in 2002 and 2003. Fruit sprayed with AVG alone had retarded colour development at harvest. However, ethephon applied after AVG enhanced percent red blush, anthocyanin concentration and reduced chlorophyll concentration in the fruit skin in both locations. These fruit had similar colour to those treated with ethephon alone. Internal ethylene concentration and fruit firmness were unaffected by the different treatments in 2002. However, in 2003 AVG with or without ethephon reduced internal ethylene concentration and maintained firmness compared to ethephon alone. In conclusion, AVG treatment alone delayed colour development and ripening of `Cripp's Pink', while AVG application 5 weeks before harvest followed by an ethephon application 2 weeks later enhanced red colour at commercial harvest. This is, therefore, an effective tool for improving colour of `Cripp's Pink' apples at commercial harvest without adversely affecting other fruit quality attributes.
Keywords: Fruit colour; Storage; Anthocyanins; AVG; Ethylene; Apple; Flavonoids and phenolic compounds

Samuel M.C. Njoroge, Gregory L. Reighard, Thinning time during stage I and fruit spacing influences fruit size of `Contender' peach, Scientia Horticulturae, Volume 115, Issue 4, 21 February 2008, Pages 352-359, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.10.019.
(http://www.sciencedirect.com/science/article/B6TC3-4R8PNR6-2/2/609294cbe23f62cba1d1cead74e5c9a1)
Abstract:
Early peach thinning during stage I was done at 0, 10, 20, 30, and 40 days after full bloom (DAFB). At each thinning time, trees were hand-thinned to achieve different crop loads by spacing flowers or fruits 10, 15, or 25 cm along the shoot on whole tree canopies. In 2001 and 2002, fruit weight decreased quadratically with increasing time to hand-thin and increased linearly with increasing spacing. In both years, fruit diameter decreased linearly with increasing time to thin and increased linearly with increased fruit spacing. In both years, number of fruits harvested and yield per tree decreased linearly with increased spacing. Hand-thinning at 0 or 10 DAFB resulted in fewer fruit

and lower yield; therefore, thinning at 20 DAFB was better. The effect of time of thinning on soluble solids was not consistent. In both years spacing (i.e., crop load) did not affect soluble solids.
Keywords: Crop load; Days after full bloom; Prunus persica (L.) Batsch; Soluble solids

Oguzhan Caliskan, A. Aytekin Polat, Fruit characteristics of fig cultivars and genotypes grown in Turkey, Scientia Horticulturae, Volume 115, Issue 4, 21 February 2008, Pages 360-367, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.10.017.
(http://www.sciencedirect.com/science/article/B6TC3-4R8M9J3-1/2/4d62602da4727884e28e7100120c9b4d)
Abstract:
In this study, fruit quality characteristics of some cultivars and types of fig (Ficus carica L.) were determined in Dortyol, Hatay, Turkey, which has a Mediterranean climate. The main fig cultivars grown in Turkey (`Sarilop', `Bursa Siyahi', `Goklop', `Yediveren', `Yesilguz', `Morguz', `Sari Zeybek', and `Ufak Yesil') were evaluated along with 24 selections from a larger collection from the Mediterranean Region of Turkey. Several pomological characteristics of the genotypes were determined on 5-year-old trees during the 2001 and 2002 growing season. Averaged over the 2 years, fruit weight ranged between 22 and 52 g, total soluble solids content (TSS) ranged between 20.1 and 27.4%, and acidity ranged between 0.09 and 0.26%. `Bursa Siyahi', `Goklop', 31-IN-17, 31-IN-11 and 31-IN-09 produced the largest fruits in terms of fruit weight and dimensions. 31-IN-01, 31-IN-02, `Yesilguz', `Morguz' and `Ufak Yesil' had the highest TSS. `Yediveren', `Goklop', `Bursa Siyahi' and 31-IN-16 scored the highest in overall quality according to the weighted ranked method. Based on the results obtained `Yediveren', `Goklop' and 31-IN-16 could be alternatives to `Bursa Siyahi', currently the most favored fresh table fig cultivar. These alternatives appear to have potential for both local consumption and export markets. Our results also indicate extensive diversity among Turkish figs permitting marketing of a broad range of fresh fig traits.
Keywords: Ficus carica L.; Mediterranean climate; Table fig; Fruit quality; Cluster; Selection

Carlos Godoy, Gloria Monterubbianesi, Jorge Tognetti, Analysis of highbush blueberry (Vaccinium corymbosum L.) fruit growth with exponential mixed models, Scientia Horticulturae, Volume 115, Issue 4, 21 February 2008, Pages 368-376, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.10.018.
(http://www.sciencedirect.com/science/article/B6TC3-4R8PNR6-1/2/2153ca4ed001ec5d9344c13ff9906931)
Abstract:
Blueberry fruit growth commonly exhibits a double-sigmoid pattern. The goal of this work was to characterize and compare fruit growth of cultivars differing in ripening time using exponential non-linear mixed models. Mixed-effects five-parameter exponential (Gompertz I and II; logistic; monomolecular) models were fitted to fruit diameter data from 2 years and three cultivars grown in the field in a cool temperate environment. Gompertz II mixed model provided the best fit to fruit growth data and was used for further analysis. In later ripening cultivars `Cape Fear' and `Herbert', clear-cut double-sigmoid patterns were observed, absolute growth rate models exhibited two marked peaks, and relative growth rate showed an initial decreasing trend, and a subsequent peak. The earlier cv. `O'Neal' did not exhibit a defined double-sigmoid pattern. The time between relative extremes of absolute growth acceleration is proposed as an objective criterion for fixing stage boundaries within growth curves. Exponential mixed models accurately fitted blueberry growth patterns. These equations highlighted differences in fruit growth patterns between early and late ripening highbush blueberry cultivars.
Keywords: Vaccinium corymbosum; Fruit growth; Double-sigmoid; Exponential equation; Mixed model; Growth rate

Dan Jiang, She-Po Shi, Ji-Juan Cao, Qi-Pin Gao, Peng-Fei Tu, Triterpene saponins from the fruits of Akebia quinata, Biochemical Systematics and Ecology, Volume 36, Issue 2, February 2008, Pages 138-141, ISSN 0305-1978, DOI: 10.1016/j.bse.2007.06.004.
(http://www.sciencedirect.com/science/article/B6T4R-4PG2M0W-1/2/268868a9435929e7d64851c2e91669a2)
Keywords: Lardizabalaceae; Akebia quinata; Triterpene saponins; Coumarin

Armando Aguirre, Rodolfo Dirzo, Effects of fragmentation on pollinator abundance and fruit set of an abundant understory palm in a Mexican tropical forest, Biological Conservation, Volume 141, Issue 2, February 2008, Pages 375-384, ISSN 0006-3207, DOI: 10.1016/j.biocon.2007.09.014.
(http://www.sciencedirect.com/science/article/B6V5X-4RDC01K-1/2/a2dee3233b8f7add9b2b6600507bf40c)
Abstract:
Tropical forest fragmentation affects both biodiversity and plant reproductive success when small, isolated fragments sustain a reduced diversity or abundance of pollinators. Fragmentation-related effects have been poorly investigated in the case of palms, an important structural and functional component of tropical forests. We examined the relationships between fragment size and diversity and abundance of flower visitors, and palm reproduction, by quantifying the arthropod fauna associated to inflorescences of the palm Astrocaryum mexicanum, and its fruit set, in fragments of different size. The sample yielded a total of 228,772 arthropods (10 orders, 60 species). Coleoptera was the predominant group ([greater-or-equal, slanted]50% of the species), followed by Hymenoptera (20%), while the remaining (30%) was distributed among the other eight orders. We found a predominance of pollinating insects (Coleoptera-Nitidulidae), representing 85% of all visitors. Pollinator abundance was negatively affected by fragmentation, with a 4.2-fold average difference between small (<35 ha) and large (114-700 ha) fragments. However, fruit set was relatively high ([greater-or-equal, slanted]0.7) and not affected by fragmentation during three reproductive seasons. This could be explained because small fragments retained remarkably high numbers of pollinators (1191.4/inflorescence) and by the high abundance of palms (and flowers) in fragments. Further research is needed, however, to assess if fragmentation restricts pollinator movements to plants within the fragments, leading to a reduction in genetic variation of the progeny present in forest remnants.
Keywords: Astrocaryum; Coleoptera; Fragmentation; Los Tuxtlas; Palms; Pollination

Xujun Ye, Kenshi Sakai, Shin-ichi Asada, Akira Sasao, Application of narrow-band TBVI in estimating fruit yield in citrus, Biosystems Engineering, Volume 99, Issue 2, February 2008, Pages 179-189, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2007.09.016.
(http://www.sciencedirect.com/science/article/B6WXV-4R8M5D4-1/2/68953e715d3f28b2e9395fcb629da459)
Abstract:
Recently, the two-band vegetation index (TBVI) has been developed as an alternative to the conventional normalised difference vegetation index (NDVI) for assessing various agricultural crop characteristics. The potential of the narrow-band TBVI derived from airborne hyperspectral imagery to predict fruit yield in citrus was examined in this paper. Hyperspectral images in 72 visible and near-infrared (NIR) wavelength bands (from 407 to 898 nm) were acquired three times over a citrus orchard in Japan on May 26, June 21 and July 21, 2005 by an airborne imaging spectrometer for applications (AISA) Eagle system. Spectra for individual trees were obtained by averaging reflectance values of all pixels on each citrus canopy that was recognised from the acquired images. Narrow-band TBVI involving all possible two-band combinations of 72 channels was tested in terms of its potential to predict fruit yield on individual citrus trees. Multiple linear regression (MLR) models based on several significant wavelengths were also evaluated. Results indicate that the hyperspectral image obtained on May 26 demonstrated the highest correlation

with citrus yield. This suggests that canopy features at the fast vegetation growth stage provide more relevant information on the yield variability among individual trees. Moreover, the TBVI showed a greater potential than the simple combination of several significant wavelengths in providing an indication of fruit yield in citrus. Based on the hyperspectral image obtained on May 26, the TBVIs calculated for the red and NIR regions were significantly correlated with citrus yield, and the 'red edge' region showed a higher relevance than the red region in calculating the TBVI that has a higher correlation with citrus yield. The TBVI based on the 823 nm (NIR) and 728 nm (red edge) wavelengths was found to provide optimal citrus yield information (R2=0.5795, RRMSE=0.6636). Due to the significant effect of the alternate bearing mechanism on individual citrus trees, canopy size cannot be used as a single predictor for citrus yield (R2=0.4516, RRMSE=0.8298). However, by incorporating the TBVI and canopy size into the model, the prediction result was greatly improved (R2=0.6913, RRMSE=0.6071). This suggests that the yield on individual trees is determined by the combined effect of the TBVI and canopy size. This study demonstrates the potential of narrow-band TBVI derived from airborne hyperspectral imagery to predict the fruit yield in citrus. Yield estimates can provide valuable information for forecasting yields, planning harvest schedules and generating prescription maps for tree-specific application of alternate bearing control measures and other management practices.

Graham Seymour, Mervin Poole, Kenneth Manning, Graham J King, Genetics and epigenetics of fruit development and ripening, Current Opinion in Plant Biology, Volume 11, Issue 1, Growth and Development - Edited by Christian Hardtke and Keiko Torii, February 2008, Pages 58-63, ISSN 1369-5266, DOI: 10.1016/j.pbi.2007.09.003.
(http://www.sciencedirect.com/science/article/B6VS4-4R3BWH0-1/2/91b7e942e2c2b6ff3820e4db8430fcb3)
Abstract:
Fruits come in a vast variety of forms with both dry and fleshy types being essential components of the human diet. Elegant studies on the dry fruits of Arabidopsis have identified a suite of transcription factors involved in their development and dehiscence. Recent discoveries in tomato have revealed a hitherto unsuspected regulatory network involved in the developmental regulation of ripening in these fleshy fruits. Intriguingly it has become apparent that tomato shares some elements of its regulatory network in common with those involved in fruit development in Arabidopsis. Furthermore epigenetic variation has been shown to influence tomato ripening. These discoveries are likely to have a major impact on strategies for crop improvement in fruit bearing species.

Hua Wang, Xiang Dong Gao, Gao Chao Zhou, Lei Cai, Wen Bing Yao, In vitro and in vivo antioxidant activity of aqueous extract from Choerospondias axillaris fruit, Food Chemistry, Volume 106, Issue 3, 1 February 2008, Pages 888-895, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.05.068.
(http://www.sciencedirect.com/science/article/B6T6R-4NWCH44-3/2/901efea1db0aaa0d605f57de82824308)
Abstract:
In the present study, an aqueous extract from Choerospondias axillaries fruit was evaluated for its in vivo antioxidant activity, using the d-galactose induced mouse aging model, and for its in vitro scavenging effects on the superoxide anions, DPPH, H2O2, OH. The reducing power and Fe2+-chelating ability, as well as the inhibition of lipid peroxidation were also evaluated. The flavonoid and phenolic contents of the extract were determined. Pertaining to the in vivo activity, the intragastric administration of the extract inhibited d-galactose induced oxidative damage. Furthermore, in the in vitro assays, the extract showed a high antioxidant effect, especially scavenging of DPPH anions and its reducing power. The total content of phenolic and flavonoid compounds was 568 mg of gallic acid equivalents/g dry material and 2.09 mg of quercetin

equivalents/g dry material respectively. These results provide scientific support for the empirical use of C. axillaries fruit as a medicine for cardiovascular diseases.
Keywords: Choerospondias axillaris; Antioxidant activity; d-Galactose; Phenolic compounds; Flavonoid

Antonio Cilla, Jose M. Laparra, Amparo Alegria, Reyes Barbera, Rosaura Farre, Antioxidant effect derived from bioaccessible fractions of fruit beverages against H2O2-induced oxidative stress in Caco-2 cells, Food Chemistry, Volume 106, Issue 3, 1 February 2008, Pages 1180-1187, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.07.059.
(http://www.sciencedirect.com/science/article/B6T6R-4P96263-5/2/4f49de3e698ad9ce44f4c1658161b797)
Abstract:
This work evaluates the effect of bioaccessible fractions from fruit beverages against oxidative stress (OS) in Caco-2 cells. A fruit beverage (grape + orange + apricot) (with/without milk and/or iron/zinc) was subjected to in vitro gastrointestinal digestion, and bioaccessible fractions were incubated with Caco-2 cell cultures. Following preincubation, OS was induced with 5 mM H2O2. Intracellular reactive oxygen species (ROS), mitochondrial potential ([Delta][psi]m), mitochondrial metabolism (MTT test), intracellular reduced glutathione (GSH) and superoxide dismutase activity (SOD) were measured. The data evidenced viable cultures with increased mitochondrial metabolism and GSH-Rd activities, without alteration in SOD activity. Accordingly, more preserved mitochondrial integrity was also evidenced, allowing the action of antioxidant systems in preincubated cultures. Based on these data, we can conclude that a cytoprotective effect is derived from bioaccessible fractions of fruit beverages, though this effect failed to prevent intracellular ROS accumulation in Caco-2 cell cultures exposed to 5 mM H2O2.
Keywords: Oxidative stress; Caco-2; Fruit beverages; Milk; Minerals

Aikaterini Termentzi, Panagiotis Kefalas, Eugene Kokkalou, LC-DAD-MS (ESI+) analysis of the phenolic content of Sorbus domestica fruits in relation to their maturity stage, Food Chemistry, Volume 106, Issue 3, 1 February 2008, Pages 1234-1245, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.07.021.
(http://www.sciencedirect.com/science/article/B6T6R-4P718TH-1/2/4ad24c3747cccf05f984169c180c0f9a)
Abstract:
The aim of this study was the detailed qualitative and quantitative analysis of the phenolic content of several extracts and fractions of Sorbus domestica fruits. The analysis was realized by LC-DAD-MS (ESI+). Twenty-four different extracts and fractions of five different maturity stages of the fruit were analyzed for comparison reasons in order to determine the most beneficial for health type of consuming. Sixty-two different phenolics were identified. There were significant qualitative and quantitative differentiations in the phenolic content among the different types of the fruits. All categories were rich in benzoic, phenylpropanoic and cinnamoylquinic acids and derivatives. Unripe fruit categories were also rich in flavonoids, while well matured fruit categories had a low content of flavonoids. Fruit pulp, which was proved to be a strong antioxidant according to previous research work, contained very low amounts of both acids and flavonoids, but its phenolic content was highly qualitatively differentiated from the other categories.
Keywords: Sorbus domestica fruits; Five maturity stages; LC-DAD-MS (ESI+) analysis; Benzoic acids; Phenylpropanoic acids; Flavonoids

Qi Zhang, Qin Sun, Baishi Hu, Qing Shen, Gang Yang, Xiao Liang, Xiao Sun, Fengquan Liu, Development of a sensitive ELISA for the analysis of the organophosphorous insecticide fenthion in fruit samples, Food Chemistry, Volume 106, Issue 3, 1 February 2008, Pages 1278-1284, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.07.049.

(http://www.sciencedirect.com/science/article/B6T6R-4P940TK-4/2/d8bd1c65b7a078902a8408d4e807d4b2)
Abstract:
Two fenthion haptens, 4-(4-(dimethoxyphosphorothioyloxy)-2-methylphenylamino)-4-oxobutanoic acid (H1) and 6-(methoxy(4-(methylthio)phenoxy)phosphorothioylamino)hexanoic acid (H2), were synthesized. H1 was conjugated with bovine serum albumin (BSA) and H2 with ovalbumin (OVA) by the active ester method. Then H2-OVA conjugate was used as coating antigen, while H2-BSA conjugate was used to produce polyclonal antibodies. After optimization, an effective competitive indirect enzyme-linked immunosorbent assay (ELISA) for determination of fenthion was established with the new combination of antibody/antigen, I50 of which was 0.01 ng/ml, and there was only cross reactivity (CR) with fenitrothion (4.5%), and CRs with other tested pesticides were all below 0.1%. The recoveries obtained by standard fenthion addition to the different fruit samples such as grape, peach, pear and tomato were all from 79.8% to 106.0%. Therefore, the optimized ELISA may become a new convenient and satisfied analytical tool for monitoring fenthion residues in agricultural samples.
Keywords: Organophosphorus pesticide; Fenthion; Hapten; Antibody; ELISA

Vivian C.H. Wu, Xujian Qiu, Y.-H. Peggy Hsieh, Evaluation of Escherichia coli O157:H7 in apple juice with Cornus fruit (Cornus officinalis Sieb. et Zucc.) extract by conventional media and thin agar layer method, Food Microbiology, Volume 25, Issue 1, February 2008, Pages 190-195, ISSN 0740-0020, DOI: 10.1016/j.fm.2007.09.005.
(http://www.sciencedirect.com/science/article/B6WFP-4PPW71W-1/2/af94c77def698bf01cec98c0591c2334)
Abstract:
Escherichia coli O157:H7 survival in apple juice supplemented with Cornus fruit (Cornus officinalis Sieb. et Zucc.) extract was studied. Inoculated samples with or without Cornus fruit extract were kept at 21 and 7 [degree sign]C. Microbial analysis was conducted on days 0, 1, 3, 5, and 7. MacConkey sorbitol agar (MSA), tryptic soy agar (TSA), and thin agar layer (TAL) medium were used to compare the recovery of bacteria stressed under combination treatment. Influence of temperature, storage time, and Cornus fruit on survival of cells was evaluated. The most dramatic reduction of E. coli O157:H7 was observed in apple juice with Cornus fruit extract at 21 [degree sign]C. At 7 [degree sign]C, E. coli O157:H7 was reduced by 2.3 log cfu/ml in the apple juice with Cornus fruit extract compared to the control sample on day 7. TAL and TSA were more efficient than MSA. Cornus fruit extract can be used in combination with temperature and storage time controls to inactivate E. coli O157:H7 in apple juice. This study has shown that TAL is a viable method of recovering and differentiating injured microorganisms and apple juice supplemented with Cornus fruit has potential as a value-added beverage with antimicrobial effects and potential health benefits.
Keywords: Apple juice; Cornus fruit extract; Escherichia coli O157:H7; Thin agar layer method

R.P. Singh, G. Kaur, Hemolytic activity of aqueous extract of Livistona chinensis fruits, Food and Chemical Toxicology, Volume 46, Issue 2, February 2008, Pages 553-556, ISSN 0278-6915, DOI: 10.1016/j.fct.2007.08.037.
(http://www.sciencedirect.com/science/article/B6T6P-4PKFH72-1/2/882aa50dda573e3d8d87160971d89373)
Abstract:
Livistona chinensis is used as an anticancer agent in traditional Chinese medicine. In vitro, the extracts of fruits and seeds of L. chinensis are known to possess antiangiogenic and antiproliferative activities. Here we report the presence of phenolic compounds in L. chinensis fruits which show hemolytic activity. The hemolytic activity of phenolics is limited to an acid-precipitable fraction. Further, presence of proteins and lipids abrogated the hemolytic activity

indicating astringent and membrane damaging activities as mechanisms of hemolysis. In conclusion, the hemolytic activity of phenolics in L. chinensis fruits is due to astringent and membrane damaging activities.
Keywords: Livistona chinensis; Phenolic compounds; Hemolysis

Ju-Chun Hsu, Wen-Jer Wu, David S. Haymer, Hsiu-Ying Liao, Hai-Tung Feng, Alterations of the acetylcholinesterase enzyme in the oriental fruit fly Bactrocera dorsalis are correlated with resistance to the organophosphate insecticide fenitrothion, Insect Biochemistry and Molecular Biology, Volume 38, Issue 2, February 2008, Pages 146-154, ISSN 0965-1748, DOI: 10.1016/j.ibmb.2007.10.002.
(http://www.sciencedirect.com/science/article/B6T79-4PW5XHG-1/2/06c1149fc64c5928d462d46997ff191a)
Abstract:
Alterations of the structure and activity of the enzyme acetylcholinesterase (AChE) leading to resistance to organophosphate insecticides have been examined in the oriental fruit fly, Bactrocera dorsalis (Hendel), an economic pest of great economic importance in the Asia-Pacific region. We used affinity chromatography to purify AChE isoenzymes from heads of insects from lines showing the phenotypes of resistance and sensitivity to insecticide treatments. The AChE enzyme from a strain selected for resistance to the insecticide fenitrothion shows substantially lower catalytic efficiency for various substrates and 124-, 373- and 5810-fold less sensitivity to inhibition by paraoxon, eserine and fenitroxon, respectively, compared to that of the fenitrothion susceptible line. Using peptide mass fingerprinting, we also show how specific changes in the structure of the AChE enzymes in these lines relate to the resistant and sensitive alleles of the AChE (ace) gene characterized previously in this species (described in Hsu, J.-C., Haymer, D.S., Wu, W.-J., Feng, H.-T., 2006. Mutations in the acetylcholinesterase gene of Bactrocera dorsalis associated with resistance to organophosphorus insecticides. Insect Biochem. Mol. Biol. 36, 396-402). Polyclonal antibodies specific to the purified isoenzymes and real-time PCR were also used to show that both the amount of the isoenzyme present and the expression levels of the ace genes were not significantly different between the R and S lines, indicating that quantitative changes in gene expression were not significantly contributing to the resistance phenotype. Overall, our results support a direct causal relationship between the mutations previously identified in the ace gene of this species and qualitative alterations of the structure and function of the AChE enzyme as the basis for the resistance phenotype. Our results also provide a basis for further comparisons of insecticide resistance phenomena seen in closely related species, such as Bactrocera oleae, as well as in a wide range of more distantly related insect species.
Keywords: Fenitrothion; ace gene; Insecticide resistance; Enzyme kinetics; Bactrocera dorsalis

Shiu-Ling Chen, Shu-Mei Dai, Kuang-Hui Lu, Cheng Chang, Female-specific doublesex dsRNA interrupts yolk protein gene expression and reproductive ability in oriental fruit fly, Bactrocera dorsalis (Hendel), Insect Biochemistry and Molecular Biology, Volume 38, Issue 2, February 2008, Pages 155-165, ISSN 0965-1748, DOI: 10.1016/j.ibmb.2007.10.003.
(http://www.sciencedirect.com/science/article/B6T79-4PXDM05-1/2/ea76628b5850b303e3521cd4a03793c9)
Abstract:
A homologue of the doublesex gene (Bddsx) has been cloned from the oriental fruit fly, Bactrocera dorsalis (Hendel). Northern analysis indicates a differential expression of Bddsx in male and female flies, as reported for other dsx genes. A structural conservation of DNA binding domain/oligomerization domain 1 and oligomerization domain 2 suggests that the doublesex protein (BdDSX) of this fruit fly serves as a transcriptional factor for downstream sex-specific gene expression. The putative transformer/transformer-2 protein binding sequence in female-specific transcript suggests that a preserved alternative splicing process found in other flies mediates the

synthesis of Bddsx transcript. RNA interference (RNAi) data from adult abdominal dsRNA injection assays indicate that female-specific dsx dsRNA reduces specifically its own transcript, inhibits selectively expression of the yolk protein gene (Bdyp1), and delays ovary development. The number of matured eggs is significant reduced after RNAi treatment, but the sex ratio of offspring is not biased. Moreover, 27% of female progeny with RNAi show deformed ovipositor, but male flies are not affected. Although this is a transient treatment, the specific Bddsxf interference offers a promising and novel approach to oriental fruit fly control in the future.
Keywords: Doublesex gene; Bactrocera dorsalis (Hendel); Alternative splicing; RNA interference

Jin-Yuarn Lin, Ching-Yin Tang, Total phenolic contents in selected fruit and vegetable juices exhibit a positive correlation with interferon-[gamma], interleukin-5, and interleukin-2 secretions using primary mouse splenocytes, Journal of Food Composition and Analysis, Volume 21, Issue 1, February 2008, Pages 45-53, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.06.002.
(http://www.sciencedirect.com/science/article/B6WJH-4P29K9W-1/2/5b29cb77ce3e3f571f20b66778026f1a)
Abstract:
We hypothesized that some fruits and vegetables have an immuno-modulatory potential on T helper type 1 (Th1) and Th2 cytokine secretions. Therefore, Th1 cytokines including interleukin (IL)-2, and interferon (IFN)-[gamma], and Th2 cytokines including IL-4 and IL-5, produced by mouse splenocytes administrated with 13 selected fruits and vegetables were determined. The results showed that low dose (10 [mu]g/ml) administration with oriental plum, mulberry, peppers (including green, yellow, and red color varieties), ceylon spinach, and red onion significantly ($P<0.05$) increased IL-2 secretion. Administration with high dose (500 [mu]g/ml) strawberry significantly increased the secretion ratio of IFN-[gamma]/IL-5 (Th1/Th2). Further analysis showed that the stimulatory effects of selected fruits and vegetables on IL-2, IFN-[gamma], and IL-5 secretions demonstrated a significantly ($P<0.05$) positive correlation with the total phenolic (including flavonoid) content in the selected fruits and vegetables. The correlation coefficient (r) between total phenolic content (including flavonoid) and cytokine secretions varied in magnitude: IFN-[gamma]>IL-5>IL-2. The coefficients from total phenolic content were much greater than those from the total flavonoid content. The total phenolic and flavonoid contents of oriental plum, mulberry, green pepper, and red onion II showed a significantly positive correlation with the IFN-[gamma] secretion. This study suggests that in vitro supplementation with phenolic-rich fruits and vegetables might demonstrate an immuno-modulatory potential via the regulation of Th1/Th2 cytokine secretions, especially Th1 cytokines. The Th1/Th2 immuno-modulatory potentials of these selected fruits and vegetables will be important and useful for the future exploitation of food materials to develop a novel functional food.
Keywords: Strawberry; Fragaria ananassa; Mulberry; Morus alba; Ceylon spinach; Basella rubra L.; Interferon-[gamma]; Interleukin-2; Primary mouse splenocytes

Maria Jesus Oliveras Lopez, Marzia Innocenti, Francesca Ieri, Catia Giaccherini, Annalisa Romani, Nadia Mulinacci, HPLC/DAD/ESI/MS detection of lignans from Spanish and Italian Olea europaea L. fruits, Journal of Food Composition and Analysis, Volume 21, Issue 1, February 2008, Pages 62-70, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.04.012.
(http://www.sciencedirect.com/science/article/B6WJH-4P37JGD-1/2/7ddcae10666d89e2784f9c299eb326af)
Abstract:
The aim of the present study was to verify the distribution of lignans in pulp and stones of olive fruits. Analyses were carried out by HPLC/DAD/MS on four cultivars: Frantoio and Taggiasca from Italy, Arbequina and Picual from Spain. The main results can be summarized as follows: (a) lignans were demonstrated to be present in the stone; (b) acetoxypinoresinol, pinoresinol, previously detected in the respective extra virgin olive oils, and OH-pinoresinol were found in the

samples; (c) the total lignan content ranged between 0.1 and 0.29 mg/g of dried stone weight. These values agree with the average lignan content reported in literature for the respective extra virgin olive oils.
Keywords: Olive fruits; Acetoxypinoresinol; Stone; Italian and Spanish cvs; HPLC/DAD/MS; Lignan; Olive oil; Olive pit; Phytoestrogen

Jaime C. Pinero, C. Giovanni Galizia, Silvia Dorn, Synergistic behavioral responses of female oriental fruit moths (Lepidoptera:Tortricidae) to synthetic host plant-derived mixtures are mirrored by odor-evoked calcium activity in their antennal lobes, Journal of Insect Physiology, Volume 54, Issue 2, February 2008, Pages 333-343, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2007.10.002.
(http://www.sciencedirect.com/science/article/B6T3F-4PW05N7-1/2/0c6feadb4d3e9a62825bbf579b4b5ea2)
Abstract:
Attraction of many gravid female herbivore insects to suitable host plants is mediated largely by olfactory cues. Behaviorally, synergism among odor mixtures constituents underlies this attraction in some systems. Yet, the representation of synergistic odor-mixture effects is unknown in the antennal lobe, the first processing center for olfactory information in insect brains. Using both behavioral and physiological data we demonstrate that in the oriental fruit moth, Cydia (Grapholita) molesta, a minor constituent of a plant-derived synthetic mixture plays a key role in behavioral discrimination and in neural representation of mixtures. Behaviorally, minute amounts of benzonitrile added to an unattractive 4-compound mixture resulted in a bioactive 5-compound mixture that was as attractive to mated female moths as the natural blend. Physiologically, the bioactive benzonitrile-containing mixture elicited strong activation of one additional, new type of glomerulus that showed specific synergisms for this mixture. The specific pattern of activated glomeruli elicited by the addition of benzonitrile demonstrates a physiological correlate to the behaviorally observed synergism, and emphasizes the key role of a minor component of a complex mixture. While minor constituents of mixtures are often overlooked, they may, as conclusively documented here, be determinant for successful recognition and behavioral discrimination of suitable host plants by herbivore insects.
Keywords: Behavior; Calcium imaging; Antennal lobe; Olfactory glomeruli; Odor mixture; Synergism; Benzonitrile

Preethi Radhakrishnan, Phillip W. Taylor, Ability of male Queensland fruit flies to inhibit receptivity in multiple mates, and the associated recovery of accessory glands, Journal of Insect Physiology, Volume 54, Issue 2, February 2008, Pages 421-428, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2007.10.014.
(http://www.sciencedirect.com/science/article/B6T3F-4R335P1-1/2/fcbaa9d78ede9d8fa4f86718ff090d48)
Abstract:
Mating success of male insects is commonly determined by their ability to find and copulate with multiple females, but is also determined by their ability to transfer an effective ejaculate. In order to succeed in these tasks, males must first succeed in replenishing the necessary reproductive reserves between mating opportunities. We here investigate the ability of male Queensland fruit flies (`Q-fly') to recover from their first matings in time to both mate again the following day and to induce sexual inhibition in successive mates. We have previously found that accessory gland fluids (AGFs) transferred in the ejaculate of male Q-flies are directly responsible for induction of sexual inhibition in their mates. We here investigate changes in male accessory gland, testis and ejaculatory apodeme dimensions that are likely to reflect depletion and recovery of contents. We found no differences between virgin and previously mated males in their ability to obtain matings or to induce sexual inhibition in their mates, indicating a full recovery of the necessary reproductive reserves between mating opportunities. Whereas no changes were detected in testis or

ejaculatory apodeme size following mating, the recovery of male ability to inhibit female remating was closely reflected in the mesodermal accessory gland dimensions; these accessory glands greatly diminished in size (length and area) immediately after mating, with recovery commencing between 5.5 and 11 h after mating. The accessory glands then expanded to reach their original size in time to mate the following day and induce sexual inhibition in the next mate.
Keywords: Organ size; Remating; Accessory gland fluid; Copula duration

Young-Won Chin, Hyun-Ah Jung, Heebyung Chai, William J. Keller, A. Douglas Kinghorn, Xanthones with quinone reductase-inducing activity from the fruits of Garcinia mangostana (Mangosteen), Phytochemistry, Volume 69, Issue 3, February 2008, Pages 754-758, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2007.09.023.
(http://www.sciencedirect.com/science/article/B6TH7-4R2XCWF-2/2/805b81ef6ea2d608f48d5923dd62cd88)
Abstract:
Bioactivity-guided fractionation of a dichloromethane-soluble extract of Garcinia mangostana fruits has led to the isolation and identification of five compounds, including two xanthones, 1,2-dihydro-1,8,10-trihydroxy-2-(2-hydroxypropan-2-yl)-9-(3-methylbut-2-enyl)furo[3,2-a]xanthen-11-one (1) and 6-deoxy-7-demethylmangostanin (2), along with three known compounds, 1,3,7-trihydroxy-2,8-di-(3-methylbut-2-enyl)xanthone (3), mangostanin (4), and [alpha]-mangostin (5). The structures of compounds 1 and 2 were determined from analysis of their spectroscopic data. All isolated compounds in the present study together with eleven other compounds previously isolated from the pericarp of mangosteen, were tested in an in vitro quinone reductase-induction assay using murine hepatoma cells (Hepa 1c1c7) and an in vitro hydroxyl radical antioxidant assay. Of these, compounds 1-4 induced quinone reductase (concentration to double enzyme induction, 0.68-2.2 [mu]g/mL) in Hepa 1c1c7 cells and [gamma]-mangostin (6) exhibited hydroxyl radical-scavenging activity (IC50, 0.20 [mu]g/mL).
Keywords: Garcinia mangostana; Clusiaceae; 1,2-Dihydro-1,8,10-trihydroxy-2-(2-hydroxypropan-2-yl)-9-(3-methylbut-2-enyl)furo[3,2-a]xanthen-11-one; 2,3-Dihydro-4,7-dihydroxy-2-(2-hydroxypropan-2-yl)-6-(3-methylbut-2-enyl)furo[3,2-b]xanthen-5-one; (6-deoxy-7-demethylmangostanin); Quinone reductase induction; Hydroxyl radical-scavenging activity

Diderot Tchamo Noungoue, Cyril Antheaume, Mehdi Chaabi, Bruno Lenta Ndjakou, Silvere Ngouela, Annelise Lobstein, Etienne Tsamo, Anthraquinones from the fruits of Vismia laurentii, Phytochemistry, Volume 69, Issue 4, February 2008, Pages 1024-1028, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2007.10.026.
(http://www.sciencedirect.com/science/article/B6TH7-4RB5GM3-1/2/431b0ab6f02364733a01655151b726b8)
Abstract:
Phytochemical study of the fruits of Vismia laurentii resulted in the isolation of five structurally related compounds. Three of them are constituents, namely, laurentiquinone A (1) (methyl 1,6,8-trihydroxy-3-methyl-7-(3-methylbut-2-enyl)-9,10-dioxo-9,10-dihydroanthracene-2-carboxylate), laurentiquinone B (2) (methyl 5,7-dihydroxy-2,2,9-trimethyl-6,11-dioxo-6,11-dihydro-2H-anthra[2,3-b]pyran-8-carboxylate) and laurentiquinone C (3) (methyl 9-(ethanoyloxymethyl)-5,7-dihydroxy-2,2-dimethyl-6,11-dioxo-6,11-dihydro-2H-anthra[2,3-b]pyran-8-carboxylate) and two are known compounds, emodin (4) and isoxanthorin (5). Their structures were elucidated by spectroscopic means. Crude extracts of hexane and EtOAc showed anti-plasmodial activity against the W2 strain of Plasmodium falciparum.
Keywords: Vismia laurentii; Guttiferae; Anthraquinones; Fruits; Laurentiquinones A, B and C

Domingos P.F. Almeida, Donald J. Huber, In vivo pectin solubility in ripening and chill-injured tomato fruit, Plant Science, Volume 174, Issue 2, February 2008, Pages 174-182, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2007.11.001.
(http://www.sciencedirect.com/science/article/B6TBH-4R40SHH-2/2/68dac7c53d68e1fdf5a277075d75b4ea)
Abstract:
In vivo pectin solubility was examined in ripening and chill-injured tomato fruit with down-regulated polygalacturonase (PG, EC 3.2.1.15) activity and untransformed wild-type fruit by analyzing a pressure-extracted fluid of apoplastic origin. Pectin concentration in the apoplastic fluid increased threefold during ripening and was not affected by endogenous PG. In contrast, PG strongly affected pectin concentration in a bulk pericarp fluid obtained after tissue disruption. There was a 14-fold increase in bulk pectin levels during ripening of PG-antisense fruit and a 36-fold increase in wild-type. Pectins soluble in the apoplastic fluid decreased slightly during storage of fruit at 5 [degree sign]C for 14 days but increased considerably upon subsequent transfer to 15 [degree sign]C. Concentration of monomeric galactose in the apoplastic fluid increased during ripening from 41 to 67 [mu]g mL-1. Galactose levels were threefold to fourfold higher in the bulk than in the apoplastic fluid. Low-temperature storage caused a 50% reduction in the galactose present in the bulk fluid and a 20% reduction in apoplastic concentration of galactose. These results indicate that pectin dissolution in ripening tomato fruit is PG-independent even though the enzyme is catalytically active in ripe fruit. Low-temperature storage reduces in vivo pectin solubility, an effect that is reversed upon transfer to higher temperature following cold storage.
Keywords: Cell wall; Chilling injury; Lycopersicon esculentum; Neutral sugars; Polyuronide; Polygalacturonase

Natalia M. Villarreal, Hernan G. Rosli, Gustavo A. Martinez, P. Marcos Civello, Polygalacturonase activity and expression of related genes during ripening of strawberry cultivars with contrasting fruit firmness, Postharvest Biology and Technology, Volume 47, Issue 2, February 2008, Pages 141-150, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.06.011.
(http://www.sciencedirect.com/science/article/B6TBJ-4P8992W-1/2/44c2ec1fc4851ccaf2a26a2f8bafd537)
Abstract:
Fleshy fruits soften during ripening mainly as a consequence of the catabolism of cell wall components. In strawberry (Fragaria x ananassa Duch), the depolymerization and solubilization of pectins increase during ripening and contribute to fruit softening. In the present paper, we report the cloning and expression analysis of two polygalacturonase (PG) putative cDNAs: FaPG1 and T-PG. The former seems to be the same sequence of previously reported PG in strawberry, while T-PG cDNA has a deletion of 85 bp that cause a frame shift and would produce an inactive protein. Measurement of total PG activity and expression of FaPG1 and T-PG were performed in strawberry cultivars with contrasting softening rates. The softest cultivar (Toyonaka) showed the higher total PG activity in all ripening stages analyzed. The analysis by RT-PCR revealed that both genes express in the three cultivars, though the expression pattern was different. In the firmer cultivars (Selva and Camarosa) the expression of T-PG was considerably higher than the expression of FaPG1, while the opposite occurred in the softest cultivar (Toyonaka). Therefore, the higher PG activity detected in Toyonaka correlates with the enhanced expression of FaPG1 gene, while the low PG activity found in the firm cultivars correlates with a higher expression of T-PG, a gene that could encode a truncated protein without PG activity. The influence of auxins on both the expression of PG genes and the total PG activity during strawberry fruit ripening was also analyzed.
Keywords: Cell wall; Fragaria; Pectin; PG; Softening

W.J. Janisiewicz, I. Bastos Pereira, M.S. Almeida, D.P. Roberts, M. Wisniewski, E. Kurtenbach, Improved biocontrol of fruit decay fungi with Pichia pastoris recombinant strains expressing Psd1 antifungal peptide, Postharvest Biology and Technology, Volume 47, Issue 2, February 2008, Pages 218-225, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.06.010.
(http://www.sciencedirect.com/science/article/B6TBJ-4P8H884-2/2/d83fb5cef9889344729625dbb0e94f6a)
Abstract:
Future expansion of biological control of postharvest diseases will depend largely on improving its effectiveness under a broader range of conditions and expanding its activity to new commodities and new diseases. Plasmid pGAPZ[alpha]C/Psd1, a binary vector encoding the constitutive expression of the gene for the pea defensin Psd1, was used to transform the yeast Pichia pastoris, and transformed strains were evaluated for enhancing biocontrol potential by Psd1. Two P. pastoris strains, X-33 and GS115, were successfully transformed by electroporation and produced the active rPsd1 peptide. Nontransformed strain X-33 grew faster than strain GS115 in Golden Delicious apple wounds and was chosen as the host for plasmid pGAPZ[alpha]C/Psd1 in biocontrol tests. The severity and incidence of blue mold decay caused by Penicillium expansum were significantly reduced on apples treated with X-33(pGAPZ[alpha]C/Psd1/X-33) when compared to apples inoculated with this fungus alone or in combination with the nontransformed parental strain X-33, or the X-33(pGAPZ[alpha]C/X-33) recombinant containing the empty binary vector. Four selected transformants reduced decay in repeated studies, but were effective only when applied at a lower (6.3 x 105 CFU mL-1) cell concentration. This study demonstrates the potential of Psd1 for enhancing suppression of postharvest diseases. However, the full potential of the Psd1 defensin may be achieved after optimizing its expression and activity on the fruit.
Keywords: Postharvest decay; Blue mold; Biological control; Defensins

H.K. Mebatsion, P. Verboven, Q.T. Ho, B.E. Verlinden, B.M. Nicolai, Modelling fruit (micro)structures, why and how?, Trends in Food Science & Technology, Volume 19, Issue 2, February 2008, Pages 59-66, ISSN 0924-2244, DOI: 10.1016/j.tifs.2007.10.003.
(http://www.sciencedirect.com/science/article/B6VHY-4PX7B1W-1/2/b8f444796d90865089faf25d7081bb92)
Abstract:
The relationships between fruit structure and the material properties affecting fruit quality are not well understood to date. One reason is that the effect of fruit structure is difficult to investigate due to the presence of important structural features at all spatial scales. Multiscale modelling offers a framework in which the relevant transport processes are studied at microscopic scale and the resulting information is transferred to the global scale by homogenization procedures. In this respect, modelling the geometry at the smaller and larger scales is an essential aspect of study. This paper presents the advances that have been made on geometrical modelling of fruit at different scales.

Fernanda F. Simas, Philip A.J. Gorin, Ricardo Wagner, Guilherme L. Sassaki, Antonio Bonkerner, Marcello Iacomini, Comparison of structure of gum exudate polysaccharides from the trunk and fruit of the peach tree (Prunus persica), Carbohydrate Polymers, Volume 71, Issue 2, 24 January 2008, Pages 218-228, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2007.05.032.
(http://www.sciencedirect.com/science/article/B6TFD-4NWCGWX-2/2/7346347760e248908b5eb53b34b5cb98)
Abstract:
The peach tree (Prunus persica) produces gum exudates on its trunk and fruit. The former was extracted with water to give polysaccharide (PPN) and residual material was extracted with alkali giving structurally similar PPNA (NMR examination), which was formed in a slightly higher yield (42% compared with 37%). PPNA consisted of Ara, Xyl, Man, Gal, and uronic acids in a

36:7:2:42:13 molar ratio and was homogeneous on HSPEC with Mw 5.61(+/-0.22) x 106 g mol-1. Methylation analysis showed mainly nonreducing end- (20%), and 3-O- (6%) and 4-O-substituted Arap and/or 5-O-substituted Araf units (14%) and nonreducing end-units of Xylp (13%). The core Galp units were mainly 3,6-di-O- (19%) and 3,4,6-tri-O-substituted (14%). The 13C NMR spectrum of PPNA confirmed its complexity with 5 C-1 signals from [delta] 107.5-109.5 from [alpha]-l-Araf and a main one at [delta] 103.2 from the [beta]-d-Galp units. A controlled Smith degradation of PPNA gave 19% polymer (PPNAS), which was almost completely degraded, in a very low yield, to an inner core of PPNAS2 after a second cycle. This contained mainly [beta]-d-Galp units, that were nonreducing end- (25%), 3-O- (34%), and 2,3-di-O-substituted units (21%), with no evidence of 6-O-substitution. Partial hydrolysis of PPNAS with 0.1 M TFA at 100 [degree sign]C removed Araf units, to give polymeric PPNAS60 (20% yield), which had Gal as its major component (85%). Methylation analysis showed a branched structure mainly nonreducing end- (18%), 3-O- (15%), 6-O- (45%), and 3,6-di-O-substituted Galp units (9%): its 13C NMR spectrum had a C-1 main signal at [delta] 103.8 from [beta]-d-linked units. Under stronger hydrolysis conditions [beta]-d-GlcpA-(1 --> 6)-[alpha][beta]-d-Gal and [beta]-d-GlcpA-(1 --> 2)-[alpha][beta]-d-Man were formed. The fruit gum polysaccharide (PPNF) was homogeneous with Mw 6.43(+/-0.64) x 106 g mol-1 and according to 13C NMR and HMQC, and TOCSY H-1 correlations, showing few structural differences. These were not apparent on monosaccharide composition and methylation analyses, which only revealed quantitative variations.
Keywords: Peach tree; Prunus persica; Arabinogalactan; Gum exudates; Trunk; Fruit

Haibin Tong, Zhongyan Liang, Guiyun Wang, Structural characterization and hypoglycemic activity of a polysaccharide isolated from the fruit of Physalis alkekengi L., Carbohydrate Polymers, Volume 71, Issue 2, 24 January 2008, Pages 316-323, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2007.06.001.
(http://www.sciencedirect.com/science/article/B6TFD-4NXXMB1-3/2/b8319f1866efeaa598fad7acf3ead23c)
Abstract:
A water-soluble polysaccharide isolated with hot water from the fruit of Physalis alkekengi L. which is a traditional Chinese medicine herb was fractionated with different concentration of ethanol and purified by Sepharose CL-6B gel filtration chromatography. The structural characterization and hypoglycemic activity of the purified polysaccharide fraction (designated PPSB) were evaluated in this paper. PPSB (Mw = 27 kDa) is an acid heteropolysaccharide consisting of Ara, Gal, Glc and GalA in ratio of 2.6:3.6:2:1 and [alpha]-configuration. It has a backbone composed of (1-->5)-linked Ara, (1-->6)-linked Gal with three branches attached to O-3 of (1-->6)-linked Gal and terminated with either Gal or Gal and Glc, and all of Glc and the majority of GalA are distributed in branches. Pharmaceutical experiments showed PPSB administered orally in alloxan-induced diabetic mice can significantly reduce blood glucose levels and water intake, and increase the body weight of diabetic mice compared with alloxan-induced diabetic control group. The results suggest PPSB could be considered as a potential candidate for developing a new anti-diabetic agent.
Keywords: Physalis alkekengi L.; Polysaccharide; Structure analysis; Hypoglycemic activity

V. Mlambo, F.L. Mould, J.L.N. Sikosana, T. Smith, E. Owen, I. Mueller-Harvey, Chemical composition and in vitro fermentation of tannin-rich tree fruits, Animal Feed Science and Technology, Volume 140, Issues 3-4, 15 January 2008, Pages 402-417, ISSN 0377-8401, DOI: 10.1016/j.anifeedsci.2007.03.001.
(http://www.sciencedirect.com/science/article/B6T42-4NFXG9D-1/2/8b5049ec4599bb4d362983dd4bf2dc2e)
Abstract:
Dry and mature tree fruits are a potential source of protein for goats in the semi-arid areas of southern Africa, but their chemical composition and feeding value is largely unknown. This study

presents the chemical composition and in vitro fermentation of indehiscent whole fruits and separated seed and hull fractions from Acacia nilotica, Acacia erubescens, Acacia sieberiana, Acacia erioloba, Piliostigma thonningii and Dichrostachys cinerea trees. Results indicate that the N contents of whole fruits ranged between 13.5 g/kg DM (A. nilotica) and 27.1 g/kg DM (A. erubescens). Seeds had a higher N content than hulls for all tree species. A. nilotica, D. cinerea and P. thonningii fruits had high levels of extractable phenolics (758, 458 and 299 g/kg DM, respectively). Soluble phenolics (SPh) and ytterbium precipitable phenolics (YbPh) levels were negatively correlated to in vitro gas production but positively correlated to in vitro organic matter degradability (iOMD). Partition factors for whole fruits at 48 h ranged between 3.6 mg/ml for A. erioloba and 7.8 mg/ml for A. nilotica. Seeds of A. erioloba, A. erubescens and P. thonningii were consistently fermented more efficiently throughout the incubation period compared to their whole fruits or hulls. Estimating in vitro degradability of phenolic-rich substrates through filtration procedures can give erroneous results due to the loss of soluble phenolics, which are not necessarily degradable. The feeding value of fruits from D. cinerea and A. nilotica tree species may be reduced due to the presence of high levels of phenolics.
Keywords: Tree fruits; Protein supplements; Chemical composition; In vitro gas production; In vitro degradation; Partition factors

Xianghong Meng, Boqiang Li, Jia Liu, Shiping Tian, Physiological responses and quality attributes of table grape fruit to chitosan preharvest spray and postharvest coating during storage, Food Chemistry, Volume 106, Issue 2, 15 January 2008, Pages 501-508, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.06.012.
(http://www.sciencedirect.com/science/article/B6T6R-4P1G9SN-4/2/c29ea8c272c87964cd57bc5b7f41aa2a)
Abstract:
The effects of preharvest chitosan spray (PCS) or/and postharvest chitosan coating (PCC) treatments on the quality and physiological response of table grape fruit stored at 20 or 0 [degree sign]C was evaluated, respectively. PCS/PCC treatment showed the best control effect on decay. PCC or PCS/PCC treatment significantly decreased the weight loss of fruit stored at 20 [degree sign]C. Additionally, all chitosan treatments inhibited the increase in rate of soluble solid content to titratable acid in fruit, stored at 20 [degree sign]C, while enhancing the rate at 0 [degree sign]C and affecting the content of total phenolic compounds in the fruit. Furthermore, the activities of superoxide dismutase decreased in all chitosan treatments and PCS or/and PCC treatments also changed the activities of polyphenol oxidase, peroxidase and phenylalanine ammonia-lyase. The results indicated the beneficial effect of chitosan by preharvest spray and/or postharvest coating on fruit quality and resistance to fruit decay.
Keywords: Table grape (Vitis vinifera L., cv Jingxiu); Pre- and postharvest; Chitosan; Decay; Quality

Su-Feng Chang, Chiu-Lan Hsieh, Gow-Chin Yen, The protective effect of Opuntia dillenii Haw fruit against low-density lipoprotein peroxidation and its active compounds, Food Chemistry, Volume 106, Issue 2, 15 January 2008, Pages 569-575, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.06.017.
(http://www.sciencedirect.com/science/article/B6T6R-4P2S96B-H/2/78b06a9457aebd7523ab74484af35997)
Abstract:
The antioxidant activity and inhibitory effect of extracts from Opuntia dillenii Haw fruit (ODHF) and its active compounds on low-density lipoprotein (LDL) peroxidation were investigated. The results indicated that the antioxidant activity of methanolic extracts of ODHF in Trolox equivalent antioxidant capacity and oxygen-radical absorbance capacity assays were in the order of seed > peel > pulp. The lag time of conjugated diene formation in Cu2+-induced LDL oxidation was

increased by incubation of LDL with various methanolic extracts of ODHF. The methanolic extracts from seed, peel and pulp prolonged the lag time compared to control (154.1 min) to 514.8, 163.9 and 190.2 min, respectively, at a concentration of 10 [mu]g/ml. Among the extracts, seed extracts of ODHF (10 [mu]g/ml) possessed the highest inhibitory effect on the formation of thiobarbituric acid reactive substances and relative electrophoretic mobility. The results also demonstrated that seeds of ODHF contained the highest amounts of polyphenols and flavonoids (212.8 and 144.1 mg/100 g fresh seed, respectively), such as gallic acid, catechin, sinapinic acid, epicatechin, p-coumaric acid, quercetin and ferulic acid, but no betanin, isobetanin and ascorbic acid as determined by HPLC. However, the peel and pulp contained high amounts of betanin, isobetanin and ascorbic acid, but with lower contents of phenolics and flavonoids as compared to the seed. These findings suggest that phenolics and flavonoids may directly contribute to the antioxidant activity of the seeds of ODHF.
Keywords: Opuntia dillenii Haw fruit; Antioxidant activity; Low-density lipoprotein; Phenolics; Betanin

Bao Yang, Mouming Zhao, John Shi, Ning Yang, Yueming Jiang, Effect of ultrasonic treatment on the recovery and DPPH radical scavenging activity of polysaccharides from longan fruit pericarp, Food Chemistry, Volume 106, Issue 2, 15 January 2008, Pages 685-690, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.06.031.
(http://www.sciencedirect.com/science/article/B6T6R-4P2YWX5-G/2/8182901817f376fc7d4a4f7fba16080b)
Abstract:
Ultrasonic technique was employed to extract polysaccharides from longan fruit pericarp (PLFP). The optimal conditions for ultrasonic extraction of PLFP were determined by response surface methodology. Box-Behnken design was applied to evaluate the effects of three independent variables (ultrasonic power, time and temperature) on the recovery and 1,1'-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity of PLFP. The correlation analysis of two mathematical-regression models indicated that quadratic polynomial model could be employed to optimize the ultrasonic extraction of PLFP. From response surface plots, ultrasonic power, time and temperature exhibited independent and interactive effects on the extraction of PLFP. The DPPH radical scavenging activity of PLFP could be improved by application of various ultrasonic power, time and temperature, which was possible due to the degradation of polysaccharides to different extent. The optimal conditions to obtain the highest recovery and the strongest DPPH radical scavenging activity of PLFP were 120 W, 22 min and 60 [degree sign]C, as well as 241 W, 18 min and 51 [degree sign]C, respectively. Under these optimal conditions, the experimental values agreed with the predicted ones by analysis of variance. It indicated high fitness of two models used and the success of response surface methodology for optimizing PLFP extraction.
Keywords: Longan; Polysaccharide; Ultrasonic extraction; Response surface methodology; DPPH radical scavenging activity

Kaori Kikuchi, Ichiro Honda, Satoshi Matsuo, Machiko Fukuda, Takeo Saito, Stability of fruit set of newly selected parthenocarpic eggplant lines, Scientia Horticulturae, Volume 115, Issue 2, 7 January 2008, Pages 111-116, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.08.001.
(http://www.sciencedirect.com/science/article/B6TC3-4PS63XM-1/2/857efdea39530046d855f6a46f8cf2f5)
Abstract:
New parthenocarpic eggplant (Solanum melongena L.) lines (`AE-P' lines) with favorable fruit quality (according to Japanese preferences) were bred by hybridizing a parthenocarpic European cultivar (`Talina') with two Japanese cultivars (`Nakate Shinkuro' and `Nasu Chuukanbohon Nou 1'), which have high fruit set.

To clarify the effects of the parental genes on fruit set, development, and productivity in the progeny lines, we examined the progeny's characteristics by means of cultivation tests during different seasons and at different temperatures.
In the autumn-winter greenhouse test, all tested AE-P progeny showed higher total fruit set (including malformed fruit) than the `Talina2/1' line (a parthenocarpic double-haploid line of `Talina'), and higher production of normal fruit than the Japanese cultivar `Senryo Nigou'. Fruit set (normal fruit) was 100% in lines `AE-P03' and `AE-P10', and we selected `AE-P03' for further study. Under other cultivation conditions, the fruit set of `AE-P03' was at least as high as that of the Japanese lines, and `AE-P03' also had a higher rate of normal fruit production in early-summer tests under various conditions and in a winter test in a growth chamber. An emasculation study indicated that the high fruit set of the Japanese eggplant lines contributed to the improved fruit set of `AE-P03'. Thus, the combination of two genetic traits (the high fruit set of the Japanese cultivar and the parthenocarpy of `Talina2/1') appears to be necessary for breeding eggplant cultivars with improved ability to endure the stress imposed by unsuitable cultural conditions such as hot condition.
Keywords: Eggplant; Fruit development; Fruit set; Malformed fruit; Parthenocarpy; Temperature

Ashwin V. Paranjpe, Daniel J. Cantliffe, Peter J. Stoffella, Elizabeth M. Lamb, Charles A. Powell, Relationship of plant density to fruit yield of `Sweet Charlie' strawberry grown in a pine bark soilless medium in a high-roof passively ventilated greenhouse, Scientia Horticulturae, Volume 115, Issue 2, 7 January 2008, Pages 117-123, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.08.009.
(http://www.sciencedirect.com/science/article/B6TC3-4PRRHGS-1/2/ef1c9ce9776e87d673528d524a6b4496)
Abstract:
Eight plant densities (8.8, 9.5, 10.4, 11.4, 17.6, 19.1, 20.8, and 22.9 plants m-2) in 2001-2002 and 12 plant densities (8.8, 9.5, 10.4, 11.4, 12.7, 14.3, 17.6, 19.1, 20.8, 22.9, 25.4, and 28.6 plants m-2) in 2002-2003 were evaluated on growth and fruit yield of `Sweet Charlie' strawberry (Fragaria x ananassa Duch.) grown in a passively ventilated greenhouse. Plant densities were derived by varying within-row plant spacings (PS) (17.5 and 35 cm) with between row spacings (RS) (40, 45, 50, 55, 60 and 65 cm). Plants were grown in Polygal(R) `Hanging Bed-Pack' troughs filled with pine bark and fertigated with a complete nutrient solution. In 2001-2002, total marketable yield (g plant-1) or (no. fruit plant-1) were not influenced by RS. In 2002-2003, total marketable yield (g plant-1) or (no. fruit plant-1) were reduced at 40 cm RS, the narrowest RS used in the experiment. Early (November through January) and total marketable yields (g plant-1), crown diameter, and leaf number of plants grown at 35 cm PS were significantly greater than those of plants grown at 17.5 cm RS in both experiments. Total and early marketable yield (kg m-2) increased linearly as plant density (plants m-2) increased in both experiments. Winter strawberry production in a greenhouse using high plant densities and soilless substrates may be a viable alternative to open-field with methyl bromide fumigation production system.
Keywords: Fragaria x ananassa Duch.; Row spacing; Plant spacing; Plant population; Biological control

M. Gonzalez, J. Cuevas, Optimal crop load and positioning of fruit in cherimoya (Annona cherimola Mill.) trees, Scientia Horticulturae, Volume 115, Issue 2, 7 January 2008, Pages 129-134, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.08.002.
(http://www.sciencedirect.com/science/article/B6TC3-4PS63XM-2/2/fcde26502dbd93c7a74189240baa42ea)
Abstract:
Dichogamy and the lack of efficient pollinators in most producing countries make hand pollination of cherimoya unavoidable. In contrast to its high-cost, this technique allows growers to fix crop

load levels and fruit location within the tree canopy. Over three consecutive years we have studied the optimal fruit load for the cultivar `Fino de Jete' and checked the effects of the vigor of the fruit-bearing shoots and of the fruit position along the shoot on the resulting fruit set and quality. Our results show that yield in well-managed orchards fitted a logarithmic curve with a maximum close to 30 t ha-1 achieved by setting about 400 fruits per adult tree. No significant effects of crop load were detected on fruit size during the first 2 years; in the third year, however, trees with a lower yield produced heavier fruits. An upper limit of 0.22 kg (fresh fruit weight) cm-2 of trunk cross-sectional area is proposed if fruit quality is to be preserved. High yield during three consecutive years did not diminish tree growth. We found no consistent effects of shoot vigor on fruit set and quality. However, a gradient for heavier fruits was observed from the base to the apex of the bearing shoots.
Keywords: Cherimoya yield potential; Fruit quality; Seed index; Sink-source relationships

D. Ruiz, J. Egea, Analysis of the variability and correlations of floral biology factors affecting fruit set in apricot in a Mediterranean climate, Scientia Horticulturae, Volume 115, Issue 2, 7 January 2008, Pages 154-163, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.08.016.
(http://www.sciencedirect.com/science/article/B6TC3-4PXG7P6-2/2/ee0b8e6c99f9c6346e999f48384d1f87)
Abstract:
Floral biology factors which affect fruiting in apricot, such as flower bud production, flower production, flower bud drop, flowering time, percentage pollen germination, height difference between the stigma and the superior plane of the anthers, percentage of aborted pistils, autogamy level, fruit set and fruit production, have been studied for 3 consecutive years in 43 apricot cultivars and selections grown in a Mediterranean climate. An important genetic diversity has been found in the set of evaluated apricot genotypes and significant differences were found among them in all attributes studied. Significant year-by-year variation has been shown for flower bud production, flower bud drop, flowering time, autogamy level, fruit production and fruit set.
High correlation existed between some floral biology factors. Flower bud drop and pollen germination were correlated significantly with flowering time. Flower production influenced significantly fruit production, which was highly correlated with fruit set. Significant negative correlation was found between autogamy level and height difference between the stigma and the superior plane of the anthers. Significant negative correlation between percentage of flower bud drop and flower production was observed, while late-flowering genotypes with high chilling requirements showed higher percentages of flower bud drop than early-flowering genotypes.
Keywords: Floral biology factors; Prunus armeniaca L.; Genetic variation; Pollination; Fruit set

Niu Zhenming, Xu Xuefeng, Wang Yi, Li Tianzhong, Kong Jin, Han Zhenhai, Effects of leaf-applied potassium, gibberellin and source-sink ratio on potassium absorption and distribution in grape fruits, Scientia Horticulturae, Volume 115, Issue 2, 7 January 2008, Pages 164-167, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.08.012.
(http://www.sciencedirect.com/science/article/B6TC3-4PS5FHY-1/2/7f57c8a21f8dd13d461a3f45bd7eebe6)
Abstract:
Rb has similar characteristics as K, and is often used as a substitute of K due to either no suitable K isotope or having almost the same absorption and distribution traits by plants for both K and Rb. Thus, both 86Rb as a substitute of K and 3-year-old grapevines (Vitis vinifera L. x V. labrusca L. cv. Jingyou) as the plant materials were used in the experiment to explore potassium (K) absorption and distribution. After 86Rb was daubed on the leaves, much of it was absorbed into fruits, while small proportions were transported into grapevines and non-daubed leaves. Based on stages of fruit development, the distribution of 86Rb in fruits of bearing grapevines varied remarkably in the order: third stage (26.86%) > first stage (15.44%) > second stage (11.40%) >

veraision (9.06%). The absorption of 86Rb by fruits was also influenced by nutritional level, gibberellin (GA) application and source-sink ratio. Either 0.5 or 1% KCl significantly suppressed transportation of 86Rb from leaves to grape fruits. At full bloom, both 50 and 100 mg L-1 GA applications resulted in high 86Rb influx into fruits, but 50 mg L-1 GA had a stronger effect. More leaves resulted in less partitioning of 86Rb from treated leaves into grape fruits, while more of 86Rb from the treated leaf was translocated into fruits by reducing the total number of fruits.
Keywords: Grape; Distribution; Nutritional level; Source-sink ratio; Gibberellin; 86Rb

You-sheng WANG, Shi-ping TIAN, Interaction Between Cryptococcus laurentii, Monilinia fructicola, and Sweet Cherry Fruit at Different Temperatures, Agricultural Sciences in China, Volume 7, Issue 1, January 2008, Pages 48-57, ISSN 1671-2927, DOI: 10.1016/S1671-2927(08)60021-8.
(http://www.sciencedirect.com/science/article/B82XG-4RXTDD5-6/2/726043a7a2d5d536be6d3041aab55f09)
Abstract:
The present study was performed mainly to investigate the antagonist-pathogen-host interaction in wounds of the sweet cherry fruits. The antagonistic yeast Cryptococcus laurentii could significantly reduce the brown rot of the sweet cherry fruit caused by Monilinia fructicola at 25 and 1[degree sign]C. The populations of yeast increased faster in the presence of the pathogen initially, but then decreased rapidly. In the fruits inoculated with M. fructicola alone or combined with C. laurentii, an induction of lipid peroxidation as well as activities of the antioxidant enzymes, such as, superoxide dismutases (SOD), catalase (CAT), and peroxidase (POD), was observed. The isoenzyme pattern of polyphenol oxidase (PPO) changed greatly after the symptoms appeared, with new PPO isoforms being induced. By contrast, the induction of lipid peroxidation and activities of SOD, CAT, and POD were low, although no significant changes were found in the PPO isoenzyms in the fruits inoculated with antagonist C. laurentii alone. The inhibition of brown rot during the antagonist-pathogen-host interaction in wounds of the sweet cherry fruits was mainly on account of the stimulated growth of C. laurentii as well as the induction of antioxidant enzymes of the fruits by M. fructicola.
Keywords: Cryptococcus laurentii; Monilinia fructicola; sweet cherry; interaction

Osamu Nagasaki, Impact of the flower stalk-boring moth Neoschoenobia testacealis (Lepidoptera: Crambidae) and water-level fluctuations on the flower and fruit production of the yellow water lily Nuphar subintegerrima (Nymphaeaceae) in irrigation ponds of western Japan, Aquatic Botany, Volume 88, Issue 1, January 2008, Pages 27-31, ISSN 0304-3770, DOI: 10.1016/j.aquabot.2007.08.004.
(http://www.sciencedirect.com/science/article/B6T4F-4PJCYJ6-4/2/53a57c63a731920bfe26dd8a43c6a516)
Abstract:
The flower and fruit production of the yellow water lily Nuphar subintegerrima and the seasonal occurrence of the flower stalk-boring moth Neoschoenobia testacealis were surveyed in two irrigation ponds in western Japan. Water-level fluctuations at each pond were measured. Flowering was observed from late May to September, and fruiting from late May to October. The yellow water lily produced cumulative numbers of 189 and 181 flowers and 121 and 129 fruits in the two ponds' quadrats. The fruit setting rates at the two ponds were 0.64 and 0.71, and decreased in the summer. The percentage of bored flower stalks was 16 and 5%. Mature larvae bored flower stalks severely during the summer. Whenever the boring larvae attacked the flower stalks, the flower buds and flowers were aborted. There was a significant negative correlation between the fruit setting rate and the boring rate per month (number of bored flower stalks/number of all flower stalks). Whenever abruptly rising water levels (about 10 cm) submerged the flowers, the flowers were aborted too and could not set fruits. The percentages of non-setting fruit due to the rising water levels at the two ponds were 6 and 8%. Overall, our results indicated that flower

stalk boring was a more important factor than water-level fluctuation in the sexual reproduction of N. subintegerrima and that N. subintegerrima was well suited to small irrigation ponds.
Keywords: Flower and fruit production; Flower stalk borer; Irrigation pond; Nuphar subintegerrima; Water-level fluctuation

Yvonne Herrerias-Diego, Mauricio Quesada, Kathryn E. Stoner, Jorge A. Lobo, Yared Hernandez-Flores, Gumersindo Sanchez Montoya, Effect of forest fragmentation on fruit and seed predation of the tropical dry forest tree Ceiba aesculifolia, Biological Conservation, Volume 141, Issue 1, January 2008, Pages 241-248, ISSN 0006-3207, DOI: 10.1016/j.biocon.2007.09.017.
(http://www.sciencedirect.com/science/article/B6V5X-4R7CYXR-1/2/3e72cd8b309601d0dd7170ac69eacece)
Abstract:
Forests fragmentation reduces the density of natural plant populations forming patches of the remaining individuals. One of the biotic interactions that can be affected by forest fragmentation and is poorly studied is seed predation. We determined the effects of forest fragmentation on seed and fruit predation in Ceiba aesculifolia by comparing trees in continuous forest with trees in fragmented forest. We compared the following variables: (a) frequency of fruit predation by Collie's squirrel (Sciurus colliaei) in each habitat; (b) frequency of the cotton-staining bug seed predator (Dysdercus, Orden Hemiptera) in each habitat; (c) the effect of seed predation on germination frequency and time; and (d) the effect of different life stages of Dysdercus on seed viability. In continuous habitat, 100% of the trees presented fruits with squirrel predation while only 34% of trees in fragmented habitats presented fruit predation. In continuous forest 27% of the trees contained fruits with the seed predator Dysdercus, while only 2% of the trees in fragmented forest presented Dysdercus. The initial weight of damaged seeds was greater than seeds that were not damaged indicating that seed predators select heavier seeds to feed upon. Frequency of seed germination was affected by different life stages; pre-adults decreased germination significantly more than nymphs and adults. Seed predation significantly increased the time it took for germination to occur. Our study shows that forest fragmentation significantly affects predation patterns of squirrels and cotton-staining bugs. Reduction of natural seed predators in forest fragments may have long-term consequences on forest structure and diversity.
Keywords: Plant-animal interaction; Fruit predation; Seed predation; Forest fragmentation; Tropical trees; Dry forest

Sangvorn Kitthawee, Forced-contact mating: A technique for crossing experiments with the fruit fly parasitoid, Diachasmimorpha longicaudata (Ashmead) (Hymenoptera: Braconidae), Biological Control, Volume 44, Issue 1, January 2008, Pages 73-78, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2007.09.007.
(http://www.sciencedirect.com/science/article/B6WBP-4PPW72V-2/2/bef469a2885482b2c6a7f7c65021c45f)
Abstract:
In this paper, a new technique is described for successfully manipulating the mating of a braconid parasitoid (Hymenoptera: Braconidae) of tephritid fruit flies. This forced-contact-mating technique was first developed for cross-mating experiments to determine the inheritance of winglessness in Diachasmimorpha longicaudata (Ashmead). Since female D. longicaudata only result from fertilized eggs (unfertilized eggs become males), this mating technique has advantages in the mass production of females for biocontrol releases as well as in investigations on the inheritance of the wingless trait and studies of reproductive isolation among different populations of these parasitoids. Free-mated colonies were generally all winged and predominantly male. Wingless males occurred occasionally but wingless females were rare. Virgin, winged females were immobilized by chilling and placed in close contact with wingless males. Active wingless males readily mounted and mated with immobilized female. Progeny of these mated females were all

winged (~83% [male symbol] and 17% [female symbol]). When F1 females remained unmated they produced both winged and wingless males (~1:1 ratio) but when immobilized F1 females were back-crossed with wingless males, both winged and wingless females (~5:1 ratio) were produced in addition to winged and wingless males. The wingless character was thus determined to be controlled by a recessive gene. Crossing experiments between two different Thai populations of D. longicaudata provided evidence that these populations were reproductively isolated. Among free-mated pairs, some sperm transfer occurred but almost no female progeny were produced. Similarly, among forced-mated pairs, more than double the numbers of females had sperm transferred to their spermatheca, but few female progeny were still produced. This suggests that these two populations are reproductively isolated and are part of a closely related species complex.
Keywords: Diachasmimorpha longicaudata; Bactrocera correcta; Bactrocera dorsalis; Forced-mating technique; Wingless inheritance; Species complex; Biological control

Kent M. Daane, Karen R. Sime, Xin-geng Wang, Hannah Nadel, Marshall W. Johnson, Vaughn M. Walton, Alan Kirk, Charles H. Pickett, Psyttalia lounsburyi (Hymenoptera: Braconidae), potential biological control agent for the olive fruit fly in California, Biological Control, Volume 44, Issue 1, January 2008, Pages 79-89, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2007.08.010.
(http://www.sciencedirect.com/science/article/B6WBP-4PMJK1G-2/2/0fa11a7b9981ed3ecc0a81ada72d13d7)
Abstract:
The African parasitoid Psyttalia lounsburyi (Silvestri) was evaluated as part of a classical biological control program directed at the olive fruit fly, Bactrocera oleae (Rossi), in California, USA. Experimental assessment using three non-target species provided some evidence that P. lounsburyi restricts its host use to B. oleae. Female P. lounsburyi preferentially searched olives infested with mature third-instar B. oleae, over other non-target plants, but most offspring were reared from olives containing younger (second through young third instar) B. oleae larvae. Developmental time (egg to adult) and adult longevity were significantly affected by temperature and sex, with males tending to develop faster and females living longer, especially in the lower ranges of temperatures tested. The mean longevity of adult female P. lounsburyi was greatest when honey was available and lowest when they were provided water alone or nothing. The presence of hosts significantly decreased longevity. Females produced an average of 10.2 +/- 2.6 progeny during their lifetimes, which was lower than expected for a parasitoid adapted to B. oleae and may be a consequence of increased fruit size--the result of cultivation and selection--reducing parasitoid effectiveness on cultivated vs. wild fruit, as well as constraints on oviposition behavior imposed by experimental design. The results are discussed with respect to the use of P. lounsburyi as a biological control agent for olive fruit fly in California.
Keywords: Bactrocera oleae; Olea; Psyttalia lounsburyi; Biological control; Non-target assessment; Parasitoid biology

A. de Goes, R.B.O. Garrido, R.F. Reis, R.B. Baldassari, M.A. Soares, Evaluation of fungicide applications to sweet orange at different flowering stages for control of postbloom fruit drop caused by Colletotrichum acutatum, Crop Protection, Volume 27, Issue 1, January 2008, Pages 71-76, ISSN 0261-2194, DOI: 10.1016/j.cropro.2007.04.007.
(http://www.sciencedirect.com/science/article/B6T5T-4NXGS5D-1/2/71287f1c986e78877f0749dbd3cde754)
Abstract:
Postbloom fruit drop (PFD), caused by Colletotrichum acutatum, produces blossom blight, fruit abscission and persistent calyces. In groves of Pera-Rio and Natal sweet orange located in Santa Cruz do Rio Pardo and Rincao, Sao Paulo, Brazil, four experiments were carried out to evaluate the effectiveness of fungicides sprayed alone or as mixtures, at different flowering stages for the

control of PFD of citrus. The number of symptomatic flowers, the percentage of fruit set (FS), and the relationship between persistent calyces and total fruit weight per plant were evaluated. The fungicides carbendazim and folpet were sprayed at 0.50 ml and 1.25 g a.i. l-1 of water, respectively, were superior by all the criteria to the other treatments. Carbendazim and folpet fungicides performed best when they were applied at the green bud through hollow ball stages. Difenoconazole, independent of application timing, was less effective by all criteria used. Application of mancozeb at 1.60 g a.i. l-1 at the green bud stage followed by application of mancozeb in a tank mix with carbendazim or folpet at 1.0 ml and 1.25 g a.i. l-1, respectively, during green bud bloom and hollow ball stages were effective for disease control. Carbendazim combined with 0.25% KNO3, reduced the number of persistent calyces and increased fruit production significantly. Applications must be made between green bud and hollow ball stages for best control. Applications only at hollow ball or open flower stages did not provide effective disease control.
Keywords: Citrus sinensis; Blossom blight; Flowers

Santosh Sharma, Dilip Amritphale, Light environment in pre- and post-dehiscent fruits affects seed germination in Calotropis procera, Environmental and Experimental Botany, Volume 62, Issue 1, January 2008, Pages 45-53, ISSN 0098-8472, DOI: 10.1016/j.envexpbot.2007.07.004.
(http://www.sciencedirect.com/science/article/B6T66-4P7FSDV-1/2/c1b680d9c726705221577e6829584c73)
Abstract:
Fruits in Calotropis procera can be distinguished into five discrete but contiguous stages on the basis of diameter and seed color. Seeds from dehisced fruits at stage V germinated >80% on moist substratum in darkness. This was rather unexpected because the seeds developed and matured in an FR-enriched microenvironment (R:FR ratio ~0.3) of the chlorophyll-containing maternal tissue and displayed low-fluence response (LFR) mode of phytochrome action. In contrast to >80% dark-germinating seeds from dehisced fruits at stage V, about 50% seeds from undehisced fruits at that stage were dark germinating, whereas another 30% seeds required light for germination. The light-requiring fraction of the seed population did not only respond to a very low-fluence R and to a short FR pulse, but also lacked R-FR reversibility thereby indicating to a very low-fluence response (VLFR) mode of phytochrome action. The present study reporting VLFR to non-dormant seed state transition in C. procera suggested that the state of phytochrome and the subsequent seed germination response in dry-seeded species, besides being determined by the light environment immediately before maturation drying, might also be regulated by a post-dehiscence light signal.
Keywords: Calotropis procera; Chlorophyll; Fruit developmental stage; Low-fluence response; Phytochrome; R:FR ratio; Seed germination; Very low-fluence response

Robert Veberic, Mateja Colaric, Franci Stampar, Phenolic acids and flavonoids of fig fruit (Ficus carica L.) in the northern Mediterranean region, Food Chemistry, Volume 106, Issue 1, 1 January 2008, Pages 153-157, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.05.061.
(http://www.sciencedirect.com/science/article/B6T6R-4NWCH44-6/2/e82f55f72169af625761553df552023b)
Abstract:
Phenolics are an important constituent of fruit quality because of their contribution to the taste, colour and nutritional properties of fruit. We have tried to evaluate the phenolic profile of fig fruit, since only limited information on that topic is available in the literature. With the HPLC-PDA system, we have identified the following phenolics: gallic acid, chlorogenic acid, syringic acid, (+)-catechin, (-)-epicatechin and rutin. Phenolics were extracted from three different fig cultivars that are commonly grown in Slovenia's coastal region. These cultivars were `Skofjotka' (`Zuccherina') a white type fruit, `Crna petrovka' and `Miljska figa', both dark type fruit. The fruit from the first and

the second crop were collected and compared. In general, fruit from the second crop contained higher values of phenolics than fruit from the first crop. The analysed phenolics present at the highest content were rutin (up to 28.7 mg per 100 g FW), followed by (+)-catechin (up to 4.03 mg per 100 g FW), chlorogenic acid (up to 1.71 mg per 100 g FW), (-)-epicatechin (up to 0.97 mg per 100 g FW), gallic acid (up to 0.38 mg per 100 g FW) and, finally, syringic acid (up to 0.10 mg per 100 g FW). Both cultivars with dark fruit exhibited a higher total level of analysed phenolics, in comparison to the white fruit cultivar `Skofjotka'. The amounts measured are comparable to those of other fruits grown in this region. The amounts of rutin in particular are quite high and comparable to apples, for example. As a typical, seasonal fresh fruit, figs can be an important constituent of the regional diet.
Keywords: Fig; Phenolics; Seasonal changes; HPLC

F.A. Ayaz, O. Demir, H. Torun, Y. Kolcuoglu, A. Colak, Characterization of polyphenoloxidase (PPO) and total phenolic contents in medlar (Mespilus germanica L.) fruit during ripening and over ripening, Food Chemistry, Volume 106, Issue 1, 1 January 2008, Pages 291-298, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.05.096.
(http://www.sciencedirect.com/science/article/B6T6R-4NYD8WM-6/2/15008e9f0090a62f990146da437cc280)
Abstract:
Characterization of polyphenoloxidase (PPO) enzyme and determination of total phenolic concentrations during fruit ripening and over ripening in medlar (Mespilus germanica L.) were determined. During ripening, PPO substrate specificity, optimum pH and temperature, optimum enzyme and substrate concentrations were determined. Among the five mono- and di-phenolic substrates examined ((p-hydroxyphenyl) propionic acid, l-3,4-dihydroxyphenylalanine, catechol, 4-methylcatechol and tyrosine), 4-methylcatechol was selected as the best substrate for all ripening stages. A range of pH 3.0-9.0 was also tested and the highest enzyme activity was at pH 7.0 throughout ripening. The optimum temperature for each ripening stage was determined by measuring the enzyme activity at various temperatures over the range of 10-70 [degree sign]C with 10 [degree sign]C increments. The optimum temperatures were found to be 30, 20 and 30 [degree sign]C, respectively, for each ripening stage. Optimum enzyme and substrate concentrations were found to be 0.1 mg/ml and 40 mM, respectively. The Vmax and Km value of the reaction were determined during ripening and found to be 476 U/mg protein and 26 mM at 193 DAFB (days after full bloom) - stage 1, 256 U/mg protein and 12 mM at 207 DAFB - stage 2, 222 U/mg protein and 8 mM at 214 DAFB - stage 3. For all ripening stages sodium metabisulfite markedly inhibited PPO activity. For stage 1 of ripening, Cu2+, Hg2+ and Al3+, for stage 2, Cu2+ and Hg2+, and for stage 3, Cu2+, Hg2+, Al3+ and Ca2+ strongly inhibited diphenolase activity. Accordingly, it can be concluded that as medlar fruit ripen there is no significant changes in the optimum values of polyphenoloxidases, although their kinetic parametres change. As the fruit ripening progressed through ripe to over-ripe, in contrary to polyphenoloxidase activity, there was an apparent gradual decrease in total fruit phenolic concentrations, as determined by using the aqueous solvents and water extractions.
Keywords: Polyphenoloxidase; Mespilus germanica; Phenolics; Medlar; Enzyme; Ripening

Krzysztof Kusmierek, Edward Bald, Reduced and total glutathione and cysteine profiles of citrus fruit juices using liquid chromatography, Food Chemistry, Volume 106, Issue 1, 1 January 2008, Pages 340-344, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.05.043.
(http://www.sciencedirect.com/science/article/B6T6R-4NTRT7N-2/2/4cc0a21afe98ea33ae0c0437162beef8)
Abstract:
A liquid chromatography assay for the determination of different species of glutathione and cysteine in fruit juices is described. The method is based on derivatization of thiols with 2-chloro-1-

methylquinolinium tetrafluoroborate followed by chromatographic separation and UV-absorbance detection and quantitation. The method is linear in wide range of concentrations with a regression coefficient better than 0.99. The detection limits for glutathione and cysteine were 0.1 and 0.05 [mu]mol L-1, respectively. Analytical recovery and the imprecision for both analytes were in the ranges 99.1-101.3% and 2.0-9.0%, respectively. The method was successfully applied to analysis of orange and grapefruit juices for reduced and total glutathione and cysteine.
Keywords: Glutathione; Cysteine; Fruit juices; Liquid chromatography

Christina Kurz, Reinhold Carle, Andreas Schieber, Characterisation of cell wall polysaccharide profiles of apricots (Prunus armeniaca L.), peaches (Prunus persica L.), and pumpkins (Cucurbita sp.) for the evaluation of fruit product authenticity, Food Chemistry, Volume 106, Issue 1, 1 January 2008, Pages 421-430, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.05.078.
(http://www.sciencedirect.com/science/article/B6T6R-4NX8N1J-8/2/597c43dc12d78a31b9e0cbd69dd32837)
Abstract:
Cell wall polysaccharides were investigated for their suitability as markers for quality and authenticity control of fruit products. For this purpose, the alcohol-insoluble residue (AIR) from several cultivars of apricots and peaches of different harvest seasons, provenances, and stages of ripeness was extracted and subsequently fractionated into acid- and EDTA/alkali-soluble pectins, hemicellulose, and cellulose. Each fraction was analysed for its neutral sugar composition by gas chromatography. In addition, analyses were also carried out on several cultivars of pumpkins because of their potential for use in fraudulent admixtures. Within the respective fruit species, characteristic neutral sugar profiles of the AIR and its fractions were observed, which were found to be independent of the cultivar, harvest season, and provenance. The fruit specific saccharide composition may be used for the differentiation of fruit products devoid of carbohydrate-based hydrocolloids. Furthermore, the isolated hemicellulose may also allow the detection of admixtures of non-specified fruit in complex fruit products, such as jams, spreads, and fruit preparations.
Keywords: Apricot; Peach; Pumpkin; Authenticity; Cell wall composition; Monosaccharide composition; Fractional isolation

O. Acosta, F. Viquez, E. Cubero, Optimisation of low calorie mixed fruit jelly by response surface methodology, Food Quality and Preference, Volume 19, Issue 1, January 2008, Pages 79-85, ISSN 0950-3293, DOI: 10.1016/j.foodqual.2007.06.010.
(http://www.sciencedirect.com/science/article/B6T6T-4P47GFW-2/2/0d579fe086f6186ed20a66cf884a7175)
Abstract:
Response surface methodology (Box-Behnken design) was used to evaluate and model effects of three factors (sweetener, low methoxyl (LM) pectin and calcium content) at three levels each, on the overall acceptability of a tropical mixed fruit (pineapple, banana and passion fruit) jelly, determined by 100 consumers. Results showed that the model fit was significant ($p = 0.014$) and there was satisfactory correlation between actual and fitted values ($R2 = 0.940$ and adjusted $R2 = 0.832$). The model presented no significant lack of fit ($p = 0.253$). Calcium level had a significant effect on overall acceptability, but LM pectin and sweetener levels did not. The statistical model was used to optimise the factors' levels for highest acceptability, to obtain a jelly that provided less than 12 calories per serving, allowing the product to be labelled as 'low calorie'.
Keywords: Tropical fruits; Low calorie; Jelly; Response surface methodology; Consumer evaluation

Aurora Gomez-Rico, Giuseppe Fregapane, Maria Desamparados Salvador, Effect of cultivar and ripening on minor components in Spanish olive fruits and their corresponding virgin olive oils, Food

Research International, Volume 41, Issue 4, 2008, Pages 433-440, ISSN 0963-9969, DOI: 10.1016/j.foodres.2008.02.003.
(http://www.sciencedirect.com/science/article/B6T6V-4RY8SK4-5/2/82642f9fdbdd8eaebfabe84b6da09914)
Abstract:
Phenolics and volatiles are the compounds mainly responsible for the desirable flavour of extra virgin olive oils and therefore to a large extent determine the degree of consumer preference for this highly regarded product. The effect of both (i) the nature of the cultivar and (ii) the degree of ripening of the olive fruit on the biophenolic and volatile profiles of six different Spanish varieties (Arbequina, Cornicabra, Morisca, Picolimon, Picudo and Picual) and their corresponding virgin olive oils was determined in this study. A clear and statistically significant difference was observed for the oleuropein content, the main phenolic component found in the olive varieties studied. Demethyloleuropein was only found in the Arbequina variety and its content doubled during the ripening process. Verbascoside steadily increased throughout fruit maturation and cyanidin 3-O-rutinoside was the most abundant anthocyanin in all the varieties studied. Within the same cultivar a relationship between the oleosides content in the fruit and the presence of secoiridoids in the virgin olive oils was observed; however, the ratio between biophenols content in the olive fruit and in the virgin olive oil varied significantly for each of the cultivars studied (ranging from 2.3 for Picudo and 28 for Picolimon). The major volatile component was the C6 aldehyde fraction whose content varied greatly between the different varieties studied: E-2-hexenal content ranged from 20.5 mg of internal standard (4-methyl-2-pentanol) per kg of oil in the Arbequina variety to 3.1 mg/kg for Cornicabra; the amount of hexanal ranged from 1.75 mg/kg in Morisca to 0.70 mg/kg for Picual samples.
Keywords: Olive cultivar; Ripening; Virgin olive oil; Phenols; Volatiles

Claude P. Champagne, Nancy J. Gardner, Effect of storage in a fruit drink on subsequent survival of probiotic lactobacilli to gastro-intestinal stresses, Food Research International, Volume 41, Issue 5, 2008, Pages 539-543, ISSN 0963-9969, DOI: 10.1016/j.foodres.2008.03.003.
(http://www.sciencedirect.com/science/article/B6T6V-4S1C2N9-3/2/6f67f830bc459486fb93c95a0355f507)
Abstract:
Nine probiotic lactobacilli strains were evaluated for their ability to survive in a commercial fruit drink stored at 4 [degree sign]C for up to 80 days. The pH of the drink was 4.2, which enabled good stability of many cultures during storage. Lactobacillus rhamnosus seemed more stable than Lactobacillus acidophilus in this medium, but viability was still mostly strain dependent. Spectrophotometry studies showed that the cultures generally had higher growth rates as pH increased from 3.8 to 4.2. There was a correlation (P = 0.037) between stability during storage in the drink and the ability of the strains to grow at pH 4.2, but that the relationship was not strong (R2 = 0.49). Four strains were selected to study their resistance to simulated gastro-intestinal (GI) conditions. Fresh cultures were compared to those obtained after 35 days of storage at 4 [degree sign]C. Viability in presence of 0.3% bile salts or of pancreatic enzymes was not affected by previous refrigerated storage. However, the cultures which were tested after having been stored for 35 days at 4 [degree sign]C in the fruit drink had on the average 1.2 log higher viability losses than the fresh cultures when exposed to a 2 h incubation at pH 2.0 to simulate a gastric stress.
Keywords: Lactobacillus; pH; Fruit drink

Eliton Chivandi, Bruce C. Davidson, Kennedy H. Erlwanger, A comparison of the lipid and fatty acid profiles from the kernels of the fruit (nuts) of Ximenia caffra and Ricinodendron rautanenii from Zimbabwe, Industrial Crops and Products, Volume 27, Issue 1, January 2008, Pages 29-32, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2007.06.002.

(http://www.sciencedirect.com/science/article/B6T77-4PC4DX1-1/2/9eae92bf72f5929ce28f722595b99253)
Abstract:
The lipid profile of nuts from Ximenia caffra and Ricinodendron rautanenii was determined and compared. Although the total oil content of X. caffra and R. rautanenii nuts was similar (47.6 +/- 7.5% versus 53.3 +/- 13.7%), the fatty acid profiles differed significantly. X. caffra had a higher content ($p < 0.05$) of saturated fatty acids than R. rautanenii (20.19 +/- 1.07% versus 13.87 +/- 3.68%) and contained C22:0 and C24:0 which were lacking in R. rautanenii. Total monounsaturated fatty acids were higher in X. caffra than R. rautanenii (71.48 +/- 0.99% versus 36.66 +/- 1.95%). Oleic acid (C18:1n9) was the major monounsaturated fatty acid (MUFA) in X. caffra whereas erucic acid (C22:1n9), the major MUFA in R. rautanenii, was undetectable in X. caffra. R. rautanenii had a greater polyunsaturated fatty acid content than X. caffra which contained C18:3n3 ([alpha]-linolenic acid) and nervonic acid (24:1n9). X. caffra is potentially an important source of essential fatty acids.
Keywords: Ximenia caffra; Ricinodendron rautanenii; Nuts; Lipid profiles; Nervonic acid

S.L. Birla, S. Wang, J. Tang, Computer simulation of radio frequency heating of model fruit immersed in water, Journal of Food Engineering, Volume 84, Issue 2, January 2008, Pages 270-280, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.05.020.
(http://www.sciencedirect.com/science/article/B6T8J-4NTJGTY-1/2/90b51391461c6b6ca546a2bdccb7eac2)
Abstract:
This study investigated the effect of different factors on temperature distribution within a spherical object in a parallel plate radio frequency (RF) heating system. A finite element-computer simulation program - FEMLAB was used to solve the electromagnetic and Navier-Stoke equations for developing a model to study the effect of dielectric properties of a model fruit and its surrounding medium. The model fruit was prepared from 1% gellan gel for experimental validation of the simulation results. The results showed that spherically-shaped samples surrounded with air between RF electrodes and placed in the proximity of electrodes would not heat uniformly. Immersing the model fruit in water helped to reduce uneven heating within the model fruit, but created a new problem because the model fruits were found to heat unevenly at different horizontal positions. Horizontal and vertical model fruit positions with respect to electrodes significantly influenced the heating patterns inside the model fruit. The study suggested that movement and rotation of the spherical object is the only plausible solution for improving heating uniformity. The developed computer model can be further used for prediction of the heating pattern of fresh fruit as influenced by dielectric properties, size, shape, and surrounding media to design thermal treatments of specific commodities.
Keywords: Dielectric properties; RF heating; Heating pattern; Quarantine; Heating uniformity; Dielectric heating

Lucia Muggia, Martin Grube, Mauro Tretiach, A combined molecular and morphological approach to species delimitation in black-fruited, endolithic Caloplaca: high genetic and low morphological diversity, Mycological Research, Volume 112, Issue 1, January 2008, Pages 36-49, ISSN 0953-7562, DOI: 10.1016/j.mycres.2007.02.001.
(http://www.sciencedirect.com/science/article/B7XMR-4N1JRXT-1/2/70bed67994f47533fa4baf91312ebafd)
Abstract:
A revision based on the morphological and genetic analyses of 133 specimens of black-fruited, endolithic Caloplaca belonging to subgenus Pyrenodesmia is presented. The material was collected in 16 sites distributed along a transept from Gargano (Central Italy) to the southeastern Alps, from sea level to ca 1500 m. The nuclear ITS was sequenced for all the mycobionts and

selected representatives of photobionts. Except for the sorediate C. erodens, all species share the same algal lineage of Trebouxia as photobiont. The haplotype analysis of the mycobionts revealed an unexpected, high genetic heterogeneity. Three main morphotypic clusters were recognized among five species: C. albopruinosa (syn. C. agardhiana auct.), C. alociza, C. badioreagens, C. erodens, and C. variabilis. A phylogenetic analysis, including already available Caloplaca sequence data, revealed that these lichens form a monophyletic group within the genus. For each species, notes on ecology, distribution in Italy, and nomenclature are given.
Keywords: Haplotype; Phylogeny; Systematics; Trebouxia; Variability

Hai-ling Feng, Yu-xiong Zhong, Hui Xie, Jian-ye Chen, Jiang-guo Li, Wang-jin Lu, Differential expression and regulation of longan XET genes in relation to fruit growth, Plant Science, Volume 174, Issue 1, January 2008, Pages 32-37, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2007.09.008.
(http://www.sciencedirect.com/science/article/B6TBH-4PT2922-1/2/a4213ce69c921975456c7c2bac115d53)
Abstract:
Xyloglucan endotransglycosylase (XET) catalyses the transglycosylation of xyloglucan, the major hemicellulose polymer, which has been thought to mediate the cross-linking of cellulose microfibrils in cellular walls and proposed to be involved in the control of cell wall relaxation. To understand the relationship between longan fruit growth and XET gene expression patterns, three XET genes from fruit were identified and then their expression profiles in pericarp and aril tissues of fruit at different development stages were investigated. Three full-length cDNAs of 1077, 1093 and 1181 bp encoding XETs, named DlXET1, DlXET2 and DlXET3, respectively, were isolated from expanding fruit using RT-PCR and RACE-PCR (rapid amplification of cDNA ends) methods. Northern blotting analysis showed that three DlXET mRNAs exhibited different patterns during fruit growth and development. Accumulation of DlXET1 kept changeable during the fruit growth and development, Dl-XET2 mRNA accumulations in the pericarp and in the aril increased gradually following fruit growth during the whole fruit developmental stage. In addition, DlXET3 did not accumulate in the pericarp during the whole fruit development stage, but it could be detected in the aril of fruit during the rapid aril growth stage (63-74 DAA). These results indicated that DlXET2 was associated with growth of pericarp and aril in longan fruit, while DlXET1 was related to pericarp growth and DlXET3 was primarily responsible for aril growth. To further characterize the expressions of three XETs regulated by plant growth substances, [alpha]-naphthalene acetic acid (NAA) and thidiazuron (TDZ) were used to treat longan fruit at 21 DAA and 56 DAA when pericarp and aril grew rapidly respectively, it was found that treatment at 21 DAA, only TDZ increased the accumulation of DlXET2 mRNA at 12 h after treatment. However, both NAA and TDZ increased the accumulation of DlXET3 after 36 h treatment, although DlXET3 did not accumulate in the whole fruit. While, treatment at 56 DAA, both NAA and TDZ increased the accumulations of DlXETs in aril except DlXET3 in aril by NAA treatment. In addition, the expression patterns of the three XETs showed different tissue specificity. These results suggested that XET genes played a different role in longan fruit growth and showed different response to plant growth substances which existed difference at different growth stage.
Keywords: Longan fruit; XET; Expression; Growth; NAA; TDZ

Nikos Tzortzakis, Ian Singleton, Jeremy Barnes, Impact of low-level atmospheric ozone-enrichment on black spot and anthracnose rot of tomato fruit, Postharvest Biology and Technology, Volume 47, Issue 1, January 2008, Pages 1-9, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.06.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4PGPKV5-4/2/80a0ad62e17b6e481b4b9cc007dc713c)
Abstract:

Tomato fruit (Lycopersicon esculentum L.) were exposed to ozone concentrations between 0.005 (control) and 5.0 [mu]mol mol-1 up to 13 days at 13 [degree sign]C, prior to, or following, inoculation by Alternaria alternata or Colletotrichum coccodes (causes of black spot and anthracnose, respectively). Low-level atmospheric ozone-enrichment resulted in a modest, but statistically significant, reduction in fungal lesion development; higher concentrations of the gas resulting in greater effects. This finding implies concentration-specific impacts on fungal lesion development. A fluorescent lection assay revealed that the ozone-induced inhibition of visible lesion development was reflected in a similar reduction in fungal biomass below the fruit surface. Fungal spore production in vivo, was markedly reduced when fruit were stored in an ozone-enriched atmosphere. Higher concentrations/duration of exposure resulted in greater reduction in spore production, with considerable benefits resulting from exposure to low levels of ozone (i.e. below the 0.2 [mu]mol mol-1 European threshold used for the protection of human health). In vitro, effects of ozone on spore germination depended on concentration and duration of exposure. Studies performed on fungi exposed to ozone on Potato Dextrose Agar at 13 [degree sign]C and 95% relative humidity revealed no major effects on the growth of mycelia, implying the observed suppression of pathogen development was due in part to ozone-induced changes in fruit-pathogen interactions.
Keywords: Alternaria alternata; Colletotrichum coccodes; Lectin fluorescence assay; Ozone; Spoilage; Tomato fruit

Marie Therese Charles, Julien Mercier, Joseph Makhlouf, Joseph Arul, Physiological basis of UV-C-induced resistance to Botrytis cinerea in tomato fruit: I. Role of pre- and post-challenge accumulation of the phytoalexin-rishitin, Postharvest Biology and Technology, Volume 47, Issue 1, January 2008, Pages 10-20, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.05.013.
(http://www.sciencedirect.com/science/article/B6TBJ-4P5RKTB-8/2/c309e4b1e7b165e66c8db383d010656d)
Abstract:
The induction and maintenance of resistance to gray mold rot (Botrytis cinerea) in tomato fruit during storage, exposed to hormic dose of UV-C (3.7 kJ/m2) was studied. Treated fruit were more susceptible to disease immediately after treatment, but thereafter, they became gradually resistant and the resistance was maintained until the end of the storage period of 35 d. Pre-storage treatment of tomato with the hormic UV dose-induced synthesis and accumulation of rishitin. This accumulation was gradual and reached a maximum level (46.23 mg/kg) by 15 d after treatment before the rishitin level declined to 3.5 mg/kg at the end of storage. Inoculation of untreated fruit also induced rishitin accumulation but this response was much higher in UV-treated fruit. In both control and UV-treated fruit, the capacity to accumulate rishitin declined with ripening. There was a significant correlation between rishitin accumulation in UV-treated fruit both before and after inoculation and disease resistance. The enhanced disease susceptibility immediately after treatment is likely the result of transient but severe oxidative stress-induced by both UV and inoculation. Subsequent gradual resistance observed in treated fruit during the early period of storage could be attributed to the accumulation of rishitin both before and after inoculation. The level of rishitin present at the time of inoculation appears to be the primary factor in the expression of resistance while its accumulation after inoculation appears to play a reinforcing role in resistance. However, rishitin level cannot account for the observed prolonged resistance of UV-treated tomato to gray mold rot, and it is suggested that other induced defenses might also be involved.
Keywords: Host resistance; Gray mold; Lycopersicon esculentum; Disease control; Electron microscopy; UV light; Hormic dose; Hormesis; Pre-storage treatment

Marie Therese Charles, Joseph Makhlouf, Joseph Arul, Physiological basis of UV-C induced resistance to Botrytis cinerea in tomato fruit: II. Modification of fruit surface and changes in fungal

colonization, Postharvest Biology and Technology, Volume 47, Issue 1, January 2008, Pages 21-26, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.05.014.
(http://www.sciencedirect.com/science/article/B6TBJ-4P5RKTB-5/2/ed5fd5ec9a3305f610f1ef08873fcaa0)
Abstract:
Effect of pre-storage treatment with hormic dose of UV-light and ripening on the changes in topography and fine structure of postharvest tomato fruit during storage was studied by scanning electron microscopy (SEM). Both ripening and UV-treatment induced significant structural modifications in tomato fruit surface. Flattening of cellular mounds associated with normal ripening process was more intense with UV-treatment, and the fruit surface was also more wrinkled with treatment. The formation of an operculum over broken trichomes was a common feature of ripened control fruit, while this structure was incompletely formed in the treated fruit. Surface of senescent control fruit was characterized by the presence of an amorphous epicuticular wax, which was quasi-absent on UV-treated fruit. Surface colonization of UV-treated fruit by Botrytis cinerea was also different from untreated control. Colonization was sparse on the treated fruit, although direct cuticle penetration as well as penetration through damaged trichomes was observed in both cases. Fewer adhesion structures (appressoria) were observed on UV-treated fruit than on non-irradiated control, suggesting that structural modification of the epicuticular wax induced by UV may be a factor affecting the ability of B. cinerea to attach to the treated fruit surface. This study shows that UV-treatment causes alteration in the amount of epicuticular wax and its ultrastructural arrangement, presumably due to changes in its chemical composition. These changes could affect light reflectance characteristics of the fruit surface, and possibly increase transpiration loss leading to changes in fruit appearance. Another consequence of UV-induced physical and chemical modifications of tomato fruit surface could be an improved ability of the tissue to resist infection by B. cinerea. However, the reduced colonization of the UV-treated fruit by the pathogen cannot be attributed solely to changes in surface topography.
Keywords: Cuticular wax; Gray mold; UV-light; Hormesis; Lycopersicon esculentum; Postharvest; Pre-storage treatment; Scanning electron microscopy

Marie Therese Charles, Nicole Benhamou, Joseph Arul, Physiological basis of UV-C induced resistance to Botrytis cinerea in tomato fruit: III. Ultrastructural modifications and their impact on fungal colonization, Postharvest Biology and Technology, Volume 47, Issue 1, January 2008, Pages 27-40, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.05.015.
(http://www.sciencedirect.com/science/article/B6TBJ-4P5RKTB-9/2/ba62693672e1f12023fe29b9177bf2c7)
Abstract:
Treatment of postharvest tomato fruit with the hormic dose (3.7 kJ/m2) of UV-C, a dose shown optimal for inducing decay resistance, caused ultrastructural modifications of the pericarp. UV induced plasmolysis of the epicarp cells as well as some cell layers of the mesocarp. Collapse of these cells, resembling HR-like cell death, led to the formation of the cell wall stacking zone (CWSZ). Inoculation of untreated fruit with Botrytis cinerea resulted in rapid tissue colonization and maceration. In UV-treated fruit, fungal development was mainly restricted to the outer most part of the fruit and progression of the fungus toward the inner tissues appeared to have been hindered by the CWSZ. Cytochemical labeling for cellulose and pectin revealed that the CWSZ was less prone to degradation by cell-wall degrading enzymes secreted by the fungus. The apposition of a paramural deposit in the CWSZ upon UV treatment increased further after inoculation. The resistance of the cell wall to degradation and the increased paramural deposit points to biochemical reinforcement of the CWSZ. It is concluded that the CWSZ, through physical impedance of pathogen expansion, was of paramount importance in UV-induced resistance against B. cinerea in postharvest tomato fruit.

Keywords: Cell wall stacking zone (CWSZ); Cytochemical labeling; Gray mold; Lycopersicon esculentum; UV light; Hormesis; Host defense mechanisms; HR-like cell death; Physical barriers; Biochemical barriers; Postharvest; Pre-storage treatment; Transmission electron microscopy

Marie Therese Charles, Alain Goulet, Joseph Arul, Physiological basis of UV-C induced resistance to Botrytis cinerea in tomato fruit: IV. Biochemical modification of structural barriers, Postharvest Biology and Technology, Volume 47, Issue 1, January 2008, Pages 41-53, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.05.019.
(http://www.sciencedirect.com/science/article/B6TBJ-4PJD9MM-2/2/986e4d44c27ac882af88e0451d4a90b7)
Abstract:
The biochemical nature of cell wall modifications induced by UV-C in postharvest tomato fruit was investigated using histochemical techniques. UV-C treatment with hormic dose of 3.7 kJ/m2 stimulated the biosynthesis of phenolic compounds in the epicarp and mesocarp cells. Biochemical reinforcement of the cell wall through lignification and suberization was also induced. These responses, originating from the activation of the phenylpropanoid pathway were principally localized in the cell wall stacking zone induced by UV treatment and were set in place before inoculation by Botrytis cinerea. The intensity of these responses was significantly increased in UV-treated tissue in response to infection. These responses were also induced in the inoculated untreated fruit but they were either small (phenolics, lignification and suberization) or delayed (suberization).
Keywords: Lycopersicon esculentum; Host defense mechanisms; Biochemical barriers; UV-light; Hormic dose; Hormesis; Berberine fluorescence; Lignin; Maule test; Phenolic compounds; Prussian blue; Suberin

Veerle Van linden, Daniel Ndaka Sila, Thomas Duvetter, Josse De Baerdemaeker, Marc Hendrickx, Effect of mechanical impact-bruising on polygalacturonase and pectinmethylesterase activity and pectic cell wall components in tomato fruit, Postharvest Biology and Technology, Volume 47, Issue 1, January 2008, Pages 98-106, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.06.006.
(http://www.sciencedirect.com/science/article/B6TBJ-4PHJGR0-1/2/20d92c01faf9ed7ec021b83961aaf23d)
Abstract:
Tomato bruise damage is a common postharvest disorder that substantially reduces fruit quality. Due to lack of detailed knowledge about bruising mechanisms, effective bruise prevention is difficult. Bruises show local tissue softening in parallel with normal textural changes. Accordingly, the underlying processes at the molecular level were studied. Alterations of pectic cell wall components (degree of methylesterification, pectin solubility properties (fractionation), size exclusion of pectin extracts) and the related enzymes (pectinmethylesterase and polygalacturonase activities) were examined in mature green to red ripe tomatoes impacted at high energy. Results showed no substantial changes in PME and PG activity with bruising, although PG activity increased significantly with ripening. The degree of demethoxylation was slightly reduced in wounded tissue 3 h after impact-bruising. Bruising did not lead to significant changes in pectin solubility or degree of polymerisation within 3 h of impact. The idea of an accelerated tissue breakdown paralleling normal ripening-associated tissue softening and initiated by mechanical injury of the fruit, is suggested and might become more pronounced with longer incubation times post-impact. Changes to the xyloglucan network are also likely to be involved.
Keywords: Tomato; Lycopersicon esculentum Mill.; Impact bruise damage; Pectin; Polygalacturonase; Pectinmethylesterase; Size exclusion chromatography

Susana C.F. Pinheiro, Domingos P.F. Almeida, Modulation of tomato pericarp firmness through pH and calcium: Implications for the texture of fresh-cut fruit, Postharvest Biology and Technology, Volume 47, Issue 1, January 2008, Pages 119-125, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.06.002.
(http://www.sciencedirect.com/science/article/B6TBJ-4PJD9MM-4/2/efe96c3eb76062790bda85dfca010eb2)
Abstract:
The effect of pH and calcium on pericarp firmness and pectin solubility was investigated in tomato fruit (Lycopersicon esculentum Mill. `Tavira'). Pericarp disks were vacuum-infiltrated with 50 mM CaCl2 or with distilled water and incubated for 4 h in buffer solutions at pH 4.5 and 7.0, and subsequently stored at 2 [degree sign]C for 5 days. CaCl2 treatment had a significant effect on firmness retention in disks from turning and ripe fruit. Pericarp disks from mature-green fruit infiltrated with CaCl2 were firmer than untreated tissue after a 4 h incubation period, but the effect of calcium did not persist during storage at 2 [degree sign]C. pH had a significant effect on the firmness of pericarp disks excised from turning and ripe fruit, but not on mature-green tissue. Treatments at pH 7.0 caused a reduction of the softening rate in disks from turning and ripe fruit, but had no significant effect at the mature-green stage. Water-soluble pectins decreased significantly in mature-green and ripe pericarp tissue following treatment with CaCl2 at pH 7.0, suggesting that pH affects pectin dissolution. Firmness changes induced by pH and calcium after a 4 h incubation treatment were highly correlated with pectin dissolution. The results indicate that, besides calcium, pH contributes to textural changes in tomato fruit pericarp. Since wounding inflicted during processing and acidic solutions used to prevent enzymic browning and microbial growth are likely to acidify the apoplast of fresh-cut fruit, the ability to maintain an apoplastic pH near 7.0 can significantly contribute to enhanced firmness of fresh-cut fruit.
Keywords: Cell wall; Lycopersicon esculentum; Minimal processing; Pectin; Ripening; Texture

D.R. Rudell, J.P. Mattheis, Synergism exists between ethylene and methyl jasmonate in artificial light-induced pigment enhancement of `Fuji' apple fruit peel, Postharvest Biology and Technology, Volume 47, Issue 1, January 2008, Pages 136-140, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.05.021.
(http://www.sciencedirect.com/science/article/B6TBJ-4PHJMHP-2/2/047c57b685e2a99c2c8cebeac1a6384b)
Abstract:
The pigment content of detached `Fuji' apple peel was characterized in fruit exposed to ethylene and/or treated with methyl jasmonate (MJ), then irradiated with ultraviolet (UV)/white light. Peel pigments were analyzed using reversed-phase high-performance liquid chromatography coupled with scanning UV-vis absorbance detection. Treatment with MJ alone enhanced anthocyanin content, including idaein, the major anthocyanin in apple fruit. Anthocyanin content was further enhanced by treatment with MJ + ethylene. Treatment with the ethylene action inhibitor 1-MCP plus MJ reduced red coloration compared with MJ alone. Treatment with ethylene or 1-MCP alone, or ethylene + 1-MCP had no effect on anthocyanin accumulation. Production of hyperin, the major quercetin glycoside in peel tissue, was enhanced by MJ and inhibition of ethylene action with 1-MCP enhanced the impact of MJ. 1-MCP with or without MJ increased phloridzin content. Chlorogenic acid synthesis was enhanced following treatment with MJ and/or ethylene, however, treatment with 1-MCP alone or 1-MCP plus MJ resulted in reduced chlorogenic acid content. [beta]-Carotene synthesis increased following MJ plus ethylene, but was not enhanced by MJ or ethylene alone. The results indicate synergistic or additive responses between ethylene and MJ exists for regulation of apple peel pigment synthesis pathways.
Keywords: Malus sylvestris var. domestica; Color; Chlorophyll; Carotenoid; Light stress; 1-Methylcyclopropene; Ethylene; Methyl jasmonate

Luis F. Goulao, Cristina M. Oliveira, Cell wall modifications during fruit ripening: when a fruit is not the fruit, Trends in Food Science & Technology, Volume 19, Issue 1, January 2008, Pages 4-25, ISSN 0924-2244, DOI: 10.1016/j.tifs.2007.07.002.
(http://www.sciencedirect.com/science/article/B6VHY-4P77823-2/2/eaa62649a63e8305e9776cd80dc292b5)
Abstract:
Textural changes that lead to softening of fruits are accompanied by loss of neutral sugars, solubilisation and depolymerisation of the polysaccharides of the cell wall, and rearrangements of their associations, as the result of the combined action of several cell wall-modifying enzymes, acting in both pectic and hemicellulosic fractions. Recent studies on the structure of the plant cell wall have disclosed a large number and type of biochemical linkages between the components. Such linkages are potential targets for enzymatic action and draw attention to the putative involvement of several members of enzymes able to act and modify its structure in a developmental and coordinated way. Extensive work on fruit ripening has been done using tomato (Solanum lycopersicum [Lycopersicon esculentum Mill.]) as a plant model and the information concerning fruits other than model species is fragmented and incomplete. However, recent data from the literature had disclosed that differences exist between fruits, and even between cultivars of the same fruit species. These differences exist in the type and extent of the modification of the polysaccharides of the cell wall and in the expression and regulation of cell wall-modifying enzymes. In addition, genetic manipulation of cell wall-modifying genes re-opened the discussion about the real effect of these enzymes in the cell wall and their role in fruit softening. Moreover, the function of each enzyme has been proposed based on its homology with other annotated sequences, but, in most cases, confirmation of activity in planta and substrate specificity remains to be investigated. This aspect and recognized limitations of the in vitro enzymatic activity assays also need to be considered when discussing their role. This paper provides a critical review on the current knowledge concerning these differences and emphasises the need of using other species and more accurate methodologies to investigate general mechanisms and fruit specificities of softening among different fleshy fruits.

Yu QIAO, Bi-jun XIE, Yan ZHANG, Hai-yan ZHOU, Si-yi PAN, Study on Aroma Components in Fruit From Three Different Satsuma Mandarin Varieties, Agricultural Sciences in China, Volume 6, Issue 12, December 2007, Pages 1487-1493, ISSN 1671-2927, DOI: 10.1016/S1671-2927(08)60012-7.
(http://www.sciencedirect.com/science/article/B82XG-4RJBPV7-D/2/97a8aad4d0eff563796250fe814c1579)
Abstract:
Fruit aroma of Guoqing 1, Miyagawa Wase, and Owari from three different Satsuma mandarin varieties were investigated by headspace solid phase microextraction (HS-SPME) combined with GC-MS. The results showed that there were 73, 71, and 66 aroma components in the three varieties, and the total contents were 584.67, 505.29, and 494.63 [mu]g g-1, respectively. Total 29 constituents were common in the three varieties. It was also found that Guoqing 1, Miyagawa Wase, and Owari had 12, 5, and 2 unique components, respectively. The key aroma components were limonene, linalool, [gamma]-terpinene, [beta]-myrcene, [alpha]-pinene, and octanal in the three fruits. Guoqing 1 contained more key aroma compounds than Miyagawa Wase and Owari.
Keywords: Satsuma mandarins; fruit; volatile compounds; aroma

Chang-hong LIU, Ya-rong XUE, Yong-hang YE, Feng-feng YUAN, Jun-yan LIU, Jing-lei SHUANG, Extraction and Characterization of Antioxidant Compositions From Fermented Fruit Juice of Morinda citrifolia (Noni), Agricultural Sciences in China, Volume 6, Issue 12, December 2007, Pages 1494-1501, ISSN 1671-2927, DOI: 10.1016/S1671-2927(08)60013-9.

(http://www.sciencedirect.com/science/article/B82XG-4RJBPV7-F/2/f38a621f1cc5c80460268f87fe285504)
Abstract:
Extraction and characterization of antioxidative compositions from the extracts of fermented Xisha Noni (Morinda citrifolia L.) juice were studied. The antioxidative constituents of 184.6 g freeze-dried extracts of naturally fermented Xisha Noni juice were isolated successfully by petroleum ether, EtOAc and n-BuOH solvents, and the antioxidative effects were measured according to scavenging activity against hydroxyl generated in Fenton reaction system and superoxide anion radicals in pyrogallol autoxidation system. The EtOAc extract exhibited most significantly higher ($P < 0.01$) antioxidative activity than mannitol or vitamin C, while the petroleum ether and n-BuOH extracts showed lower activities compared to mannitol. Three antioxidant phenolic compounds, isoscopoletin, aesculetin and 3, 3', 4', 5, 7-pentahydroxyflavone (quercetin) were isolated from the EtOAc extract by several chromatography techniques for the first time. The results suggest that several compounds, in particular, the phenolic compounds, contribute separately or synergistically to the antioxidative activity of fermented Noni fruit juice.
Keywords: antioxidant activity; Morinda citrifolia L.; fermented fruit juice

Manjeet Chinnan, Y.H. Hui, Editor, Handbook of Fruits and Fruit Processing, Blackwell Publishing, Ames, IA, USA (2006) ISBN 0-8138-1981-4 697pp., US$219.99, Hardback., Agricultural Systems, Volume 95, Issues 1-3, December 2007, Pages 96-97, ISSN 0308-521X, DOI: 10.1016/j.agsy.2007.07.001.
(http://www.sciencedirect.com/science/article/B6T3W-4PDKB39-1/2/c7f2e14a18e1dcf4598966d53e4b8a3b)

Francisco R. Badenes-Perez, M. Tracy Johnson, Ecology and impact of Allorhogas sp. (Hymenoptera: Braconidae) and Apion sp. (Coleoptera: Curculionoidea) on fruits of Miconia calvescens DC (Melastomataceae) in Brazil, Biological Control, Volume 43, Issue 3, December 2007, Pages 317-322, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2007.08.007.
(http://www.sciencedirect.com/science/article/B6WBP-4PJM9JM-1/2/271b2c112d3d7a61cfec9a6f0573acfd)
Abstract:
Two fruit-feeding insects, a gall wasp, Allorhogas sp. (Hymenoptera: Braconidae), and a beetle, Apion sp. (Coleoptera: Curculionoidea), were evaluated in their native habitat in Brazil as potential biological control agents of Miconia calvescens DC (Melastomataceae). Allorhogas sp. occurred at two out of three field sites with native populations of M. calvescens, and Apion sp. occurred at all three sites. Both species exhibited aggregated distributions among M. calvescens trees sampled at each site. Allorhogas sp. infested 9.0% and 3.8% of fruits at each of two sites. The number of larvae and pupae of Allorhogas sp. and/or an unidentified parasitoid (Hymenopetera: Eulophidae: Tetrastichinae) ranged from one to five per infested fruit. Fruits infested with Allorhogas sp. were 20% larger and had 79% fewer seeds than healthy fruits. Although adults of Apion sp. were found on leaves and inflorescences of M. calvescens at all three sites, larvae and pupae were found in fruits at only one site, where a maximum of 1.4% of fruits were infested. Fruits infested by Apion sp. contained only one larva or pupa, and were 15% smaller and had 62% fewer seeds than healthy fruits. While a variety of apionids have been used for biological control in the past, this is the first time a braconid wasp has been considered for biological control of a weed.
Keywords: Miconia calvescens; Phytophagous gall wasp; Allorhogas; Apion; Weed management; Seed; Fruit size

A.F. Bollen, C.P. Riden, N.R. Cox, Agricultural supply system traceability, Part I: Role of packing procedures and effects of fruit mixing, Biosystems Engineering, Volume 98, Issue 4, December 2007, Pages 391-400, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2007.07.011.

(http://www.sciencedirect.com/science/article/B6WXV-4R2H1WS-1/2/a1f9711d319f9f6b27b937cfbf613eb0)
Abstract:
Traceability is becoming an integral component of modern agricultural supply chains. Higher-precision traceability and finer granularity of identifiable units of product offer the opportunity to add value to the conventional track and trace information in terms of improved feedback to producers and benefits to supply system efficiency.
The packhouse is the major transformer of identifiable units in a horticultural supply system and is the only source of information on these transformations. The major influences on the precision of traceability possible through a packhouse are mixing in the infeed system to the grader, mixing in the packing system and the splitting of fruit stream to different packing outlets.
A mixing model has been developed that is able to assign the probabilities of bin origin to individual fruit at the point they are packed into their final packs. In-feed mixing is essentially a mechanical process dependent on both packhouse design and operation. Simple design modification can significantly reduce fruit mixing and improve traceability. Packing lane mixing is a function of both mechanical design and operator factors.
Traceability is not a definitive judgement, but a variable and statistical management process with inherent uncertainty. The research suggests there is potential to implement high-precision and fine granularity traceability in the agricultural supply system.

L.H.E.S. Laboissiere, R. Deliza, A.M. Barros-Marcellini, A. Rosenthal, L.M.A.Q. Camargo, R.G. Junqueira, Effects of high hydrostatic pressure (HHP) on sensory characteristics of yellow passion fruit juice, Innovative Food Science & Emerging Technologies, Volume 8, Issue 4, High Pressure Processing Special Issue Section, December 2007, Pages 469-477, ISSN 1466-8564, DOI: 10.1016/j.ifset.2007.04.001.
(http://www.sciencedirect.com/science/article/B6W6D-4NF4F5D-1/2/07fe01e3f245bb4b9b756a99bfac0dac)
Abstract:
The aim of this study was to investigate the effects of high hydrostatic pressure on the sensory properties of passion fruit juice by quantitative descriptive analysis (QDA). The growing demand in Brazil for processed fruit pulp arouses juice industry interest to search for novel technologies with competitive advantages. High hydrostatic pressure (HHP) is an innovative technology which minimizes loss of sensory and nutritional quality, as compared to pasteurization, matching consumer demands for fresh-like foods. QDA and principal components analysis (PCA) results revealed high similarity among juice sensory attributes from in natura and pressurized samples both differing from commercial ones. Results suggest that HHP may be successfully used to preserve yellow passion fruit pulp, yielding a ready to drink juice with improved sensory quality, as compared to commercial juices available in the Brazilian market and evaluated in this study.Industrial relevance
The findings achieved in the study have important implication to the industry, because they demonstrated the positive effect of pressurization on the sensory properties of passion fruit juice. Pressurized juice should meet consumer's expectation and demand regarding a more natural, and free of cooked and artificial flavor attributes, yielding a product more similar to the freshly made one.
Keywords: Yellow passion fruit juice; High hydrostatic pressure; Quantitative descriptive analysis

G.A. Manganaris, I.F. Ilias, M. Vasilakakis, I. Mignani, The effect of hydrocooling on ripening related quality attributes and cell wall physicochemical properties of sweet cherry fruit (Prunus avium L.), International Journal of Refrigeration, Volume 30, Issue 8, December 2007, Pages 1386-1392, ISSN 0140-7007, DOI: 10.1016/j.ijrefrig.2007.04.001.

(http://www.sciencedirect.com/science/article/B6V4R-4NGKW53-1/2/a6e31554f01f441722b03c27463d71c2)
Abstract:
The aim of this study was to evaluate the effect of hydrocooling, as a precooling treatment, on ripening related parameters of two sweet cherry cultivars (Prunus avium L. cvs. `Tragana Edessis', `Mpakirtzeika') after 1-week cold storage (0 [degree sign]C, 95% R.H.). Results indicated that hydrocooling delayed the deterioration and senescence of cherry fruit, maintaining a higher quality, as indicated by reduced stem browning and surface shrivelling. In particular, hydrocooled `Tragana Edessis' fruit showed considerably less stem browning (14.6-29.6%), while the benefits of hydrocooling were less pronounced in `Mpakirtzeika' fruit. Other quality attributes, such as cracking, decay, external color and soluble solids content were not affected by hydrocooling. Furthermore cell wall properties, as indicated by uronic acid and neutral sugars content in cell wall material extracted from the cherry fruits, were slightly or not affected by the hydrocooling process. Overall, the present study showed that cherry fruit subjected to hydrocooling followed by 1 week's storage at 0 [degree sign]C and 95% R.H. retained their quality for a further 3 days at room temperature, but after 5 days at room temperature many of the fruit were of unacceptable quality.
Keywords: Cherry; Survey; Precooling; Ice water; Quality; Ripening; Evaporation; Physicochemical property; Cell; Cerise; Enquete; Prerefroidissement; Eau glacee; Qualite; Maturation; Propriete physico-chimique; Cellule

Marilyn S. Townsend, Lucia L. Kaiser, Brief Psychosocial Fruit and Vegetable Tool Is Sensitive for the US Department of Agriculture's Nutrition Education Programs, Journal of the American Dietetic Association, Volume 107, Issue 12, December 2007, Pages 2120-2124, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.09.015.
(http://www.sciencedirect.com/science/article/B758G-4R7N538-N/2/54da7bdbf64ef2db156adbef874107c5)
Abstract:
The usefulness of an evaluation instrument is dependent on its reliability, validity, and ability to capture change. The latter psychometric characteristic is particularly important, yet is often neglected. The purpose of this study was to assess the sensitivity of a psychosocial fruit and vegetable evaluation tool for use by two US Department of Agriculture community-based programs. As part of a prospective randomized controlled trial, a sample of limited-resource women (n=93), recruited from eight counties, provided dietary recalls, behavioral assessments, and psychosocial assessments. A randomly selected subsample was used for venipuncture (n=55). Sensitivity of the tool was estimated using serum carotenoids, selected micronutrients, fruit/vegetable servings, and fruit/vegetable behaviors. Controlling for energy intake at baseline and change in energy intake, the change scores for the tool were correlated with reported changes in fruit and vegetable behaviors (r=0.28, P=0.01), vitamin C (r=0.25, P=0.02), and the biomarker serum carotenoids (r=0.31, P=0.02). This systematic process yielded a moderately sensitive evaluation tool useful with a limited-resource audience participating in two US Department of Agriculture programs. This is the first study to estimate sensitivity of a psychosocial tool for a fruit and vegetable intervention.

P. Rai, G.C. Majumdar, S. DasGupta, S. De, Modeling of permeate flux of synthetic fruit juice and mosambi juice (Citrus sinensis (L.) Osbeck) in stirred continuous ultrafiltration, LWT - Food Science and Technology, Volume 40, Issue 10, December 2007, Pages 1765-1773, ISSN 0023-6438, DOI: 10.1016/j.lwt.2007.01.005.
(http://www.sciencedirect.com/science/article/B6WMV-4MY6GH1-2/2/f2f3d789e1f9a19a3efbe8dca8e437fb)
Abstract:

Ultrafiltration studies of synthetic sucrose and pectin mixture and enzymatically treated mosambi juice have been performed in a stirred continuous cell. A model based on gel layer theory is developed to predict the flux decline during filtration for both synthetic and actual juice. From the steady state flux data, the mass transfer coefficient is observed to vary with operating pressure only and a modified Sherwood number relationship is proposed for such a system. The permeate of the filtered juice contains almost all the nutritional values of the original juice with significant improvement in clarity.
Keywords: Ultrafiltration; Stirred cell; Mosambi juice; Mass transfer coefficient; Gel layer

Sabina Berne, Jure Pohleven, Iztok Vidic, Katja Rebolj, Franc Pohleven, Tom Turk, Peter Macek, Anton Sonnenberg, Kristina Sepcic, Ostreolysin enhances fruiting initiation in the oyster mushroom (Pleurotus ostreatus), Mycological Research, Volume 111, Issue 12, December 2007, Pages 1431-1436, ISSN 0953-7562, DOI: 10.1016/j.mycres.2007.09.005.
(http://www.sciencedirect.com/science/article/B7XMR-4PPF6HT-4/2/b3ad245c7832521b196dd25f437cbcfb)
Abstract:
Fruiting initiation in mushrooms can be triggered by a variety of environmental and biochemical stimuli, including substances of natural or synthetic origin. In this work ostreolysin, a cytolytic protein specifically expressed during the formation of primordia and fruit bodies of Pleurotus ostreatus, was applied to nutrient media inoculated with mycelium of P. ostreatus, and its effects on mycelial growth and fructification of the mushroom studied. The addition of ostreolysin slightly inhibited the growth of mycelium, but strongly induced the formation of primordia, which appeared 10 d earlier than in control plates supplemented with bovine serum albumin or with the dissolving buffer alone. Moreover, ostreolysin stimulated the subsequent development of primordia into fruit bodies. However, direct involvement of this protein in the sporulation of the mushroom is unlikely, as it was also detected in large amounts in the non-sporulating strain of P. ostreatus.
Keywords: Fruiting initiation; Ostreolysin; Pleurotus ostreatus

L. Pascual, J.M. Blanca, J. Canizares, F. Nuez, Analysis of gene expression during the fruit set of tomato: A comparative approach, Plant Science, Volume 173, Issue 6, December 2007, Pages 609-620, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2007.07.006.
(http://www.sciencedirect.com/science/article/B6TBH-4P940H9-1/2/391aacb6addcfe09a5ed545ae5c26325)
Abstract:
The study of tomato fruit set and early fruit development is of upmost importance due to their economic implications for crop production. Moreover, they are good subjects in the attempt to understand plant development control. In this work, we isolated more than 400 genes that are differentially expressed during these processes in tomato by using two complementary approaches: suppressive subtractive hybridization and genomic comparative analysis. We made a tomato flower library enriched in genes differentially expressed at 3 DPA when compared against anthesis. The library subtraction showed the high variability of genes and pathways implicated in this process. Using the AtGenExpress data from Arabidopsis, we detected 1879 genes differentially expressed during fruit set and early development. The expression of their orthologue tomato genes was tested by quantitative PCR, and more than 75% of the genes were also differentially expressed in tomato, meaning there is a conservation between these two species in spite of the significant differences in fruit morphology and development. We detected known and unknown fruit development genes and pathways, and this data will be a good source of information for future experiments about fruit set in tomato and Arabidopsis. We also showed that this transcriptomic comparative approach is very useful in identifying target genes of conserved processes in species where microarray facilities are not available, making the work with model species more profitable.

Keywords: Tomato; Arabidopsis; Fruit set; SSH; Microarray; Fruit development

Kablan Tano, Mathias K. Oule, Gilles Doyon, Robert W. Lencki, Joseph Arul, Comparative evaluation of the effect of storage temperature fluctuation on modified atmosphere packages of selected fruit and vegetables, Postharvest Biology and Technology, Volume 46, Issue 3, December 2007, Pages 212-221, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.05.008.
(http://www.sciencedirect.com/science/article/B6TBJ-4PGH4C3-1/2/73aca7e3811dd428472bee16edf83a7b)
Abstract:
Mushrooms (Agaricus Bisporus cv. U3 Sylvan 381), broccoli (Brassica oleracea L. cv. Acadi) and mature-green tomatoes (Lycopersicon esculentum cv. Trust) were packaged in Modified Atmosphere (MA) containers and steady-state atmospheres of 5% O2-10% CO2, 3% O2-8% CO2, and 5% O2-5% CO2 were maintained a 4, 3 and 13 [degree sign]C, respectively. The packages were then subjected to a sequence of temperature fluctuations ([Delta]T = 10 [degree sign]C) during 12, 30 and 35 days for mushrooms, broccoli and tomatoes respectively to simulate storage and transport conditions. Temperature, relative humidity and atmospheric composition were followed throughout storage and quality attributes were evaluated at the end of the storage period. Temperature fluctuations had a major impact on the composition of the package atmospheres and on product quality. CO2 concentrations increased rapidly, reaching maxima of 16%, 15.5% and 11% for mushrooms, broccoli and tomatoes, respectively. O2 concentrations decreased to less than 1.5% for the three products. The quality of the products stored under the temperature fluctuating regime was severely affected as indicated by extensive browning, loss of firmness, weight loss increase, the level of ethanol in the plant tissue, and infection due to physiological damage and excessive condensation, compared to products stored at constant temperature. It was clear that temperature fluctuation, even if it should occur only once, can seriously compromise the benefits of modified atmosphere packaging and safety of the packaged produce. Major problems caused by temperature fluctuation must therefore, be addressed to improve the usefulness and reliability of modified atmosphere packaging technology.
Keywords: Modified atmosphere; Packaging; Temperature fluctuation; Respiration; Permeability

Jiuxu Zhang, The potential of a new fungicide fludioxonil for stem-end rot and green mold control on Florida citrus fruit, Postharvest Biology and Technology, Volume 46, Issue 3, December 2007, Pages 262-270, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.05.016.
(http://www.sciencedirect.com/science/article/B6TBJ-4P5RKTB-6/2/80a7c862e146747051ca80c9d33015a5)
Abstract:
Fludioxonil is a newly registered and classified as reduced-risk fungicide by the US EPA for citrus fruit postharvest treatments. The efficacy of fludioxonil for the control of diplodia stem-end rot caused by Lasiodiplodia theobromae and green mold (Penicillium digitatum) on Florida citrus fruit was evaluated. The ED50 values of fludioxonil against L. theobromae and P. digitatum in potato dextrose agar were 0.012 and 0.020 mg/L, respectively. Application of fludioxonil at 250-1200 mg/L on oranges using a simulated commercial drench system before fruit ethylene degreening reduced diploda stem-end rot incidence by 75.7-88.6%, and fludioxonil at 500-1200 mg/L performed similarly to the commercial postharvest fungicide imazalil or thiabendazole (TBZ) at 1000 mg/L. Fludioxonil was compatible with chlorine in drench suspension as measured by the efficacy of fludioxonil for diplodia stem-end rot control. Fludioxonil also effectively reduced both diplodia stem-end rot and green mold when applied through a simulated commercial packingline system. Fludioxonil was more effective for diplodia stem-end rot control on non-ethylene-treated oranges than on ethylene-treated fruit. Fludioxonil was also effective for the control of TBZ-resistant P. digitatum isolates on oranges. An active suppression of P. digitatum sporulation by fludioxonil on citrus fruit was observed. However, fludioxonil showed a much less activity for P.

digitatum sporulation control compared to postharvest fungicide imazalil. The registration of fludioxonil has provided a new alternative, reduced-risk compound for citrus postharvest disease control and fungicide resistance management in Florida.
Keywords: Postharvest diseases; Postharvest decay control; Lasiodiplodia theobromae; Penicillium digitatum; Orange; Grapefruit; Tangerine

Loveness K. Nyanga, Martinus J.R. Nout, Tendekayi H. Gadaga, Bart Theelen, Teun Boekhout, Marcel H. Zwietering, Yeasts and lactic acid bacteria microbiota from masau (Ziziphus mauritiana) fruits and their fermented fruit pulp in Zimbabwe, International Journal of Food Microbiology, Volume 120, Issues 1-2, 20th International ICFMH Symposium on FOOD MICRO 2006, 30 November 2007, Pages 159-166, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.06.021.
(http://www.sciencedirect.com/science/article/B6T7K-4PGY4K2-1/2/cb5b7d441d0f23ffa3c9f725f0248126)
Abstract:
Masau are Zimbabwean wild fruits, which are usually eaten raw and/ or processed into products such as porridge, traditional cakes, mahewu and jam. Yeasts, yeast-like fungi, and lactic acid bacteria present on the unripe, ripe and dried fruits, and in the fermented masau fruits collected from Muzarabani district in Zimbabwe were isolated and identified using physiological and molecular methods. The predominant species were identified as Saccharomyces cerevisiae, Issatchenkia orientalis, Pichia fabianii and Aureobasidium pullulans. A. pullulans was the dominant species on the unripe fruits but was not isolated from the fermented fruit pulp. S. cerevisiae and I. orientalis were predominant in the fermented fruit pulp but were not detected in the unripe fruits. S. cerevisiae, I. orientalis, P. fabianii and S. fibuligera are fermentative yeasts and these might be used in the future development of starter cultures to produce better quality fermented products from masau fruit. Lactic acid bacteria were preliminary identified and the predominant strains found were Lactobacillus agilis and L. plantarum. Other species identified included L. bifermentans, L. minor, L. divergens, L. confusus, L. hilgardii, L. fructosus, L. fermentum and Streptococcus spp. Some of the strains of LAB could also potentially be used in a mixed-starter culture with yeasts and might contribute positively in the production of fermented masau fruit products.
Keywords: Masau fruits; Yeasts; Lactic acid bacteria; Starter cultures; Fermentation

P. Barracosa, J. Osorio, A. Cravador, Evaluation of fruit and seed diversity and characterization of carob (Ceratonia siliqua L.) cultivars in Algarve region, Scientia Horticulturae, Volume 114, Issue 4, 20 November 2007, Pages 250-257, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.06.024.
(http://www.sciencedirect.com/science/article/B6TC3-4PJD9WW-1/2/2de1437d11067c809e66eeaa7b248d7d)
Abstract:
The genetic diversity of 15 carob (Ceratonia siliqua L.) cultivars located in an experimental field from Algarve (Portugal) was evaluated over 7 years using 12 fruit and seed phenotypic characters, in order to characterize carob cultivars. The values of morphological traits obtained by cultivar were compared with those from other countries of the Mediterranean basin. Statistically significant differences were found between cultivars for all characters which were examined, what indicates a high genetic diversity. The relationship among these characters was analyzed by principal component analysis (PCA) resulting in the separation of these cultivars classed in four groups (clusters I-IV) and in four ungrouped cultivars. A three dimension of the model was found to be significant and explained 74.5% of the total variation, in which the first component accounting for 34.6% of the total variation is dominated by fruit characters, while the second component is dominated by seed characters. Cultivars plotted on the left-lower quadrant on the space determined by principal components 1 and 2 are characterized by fruits with high seed yield more appropriated for industrial rentability. The correlation analyses established by cultivar provided a

specific understanding about the way how fruit and seed characteristics correlate within each cultivar. This approach can be useful for the development of a breeding programme, aiming to increase the seed yield, seed thickness, individual and total seed weight by fruit, characteristics that are determinant to improve the industrial exploitation of carob.
Keywords: Carob; Cultivars; Morphological diversity; Principal component analysis; Correlation analysis

Raphael A. Stern, Moshe Flaishman, Steve Applebaum, Ruth Ben-Arie, Effect of synthetic auxins on fruit development of `Bing' cherry (Prunus avium L.), Scientia Horticulturae, Volume 114, Issue 4, 20 November 2007, Pages 275-280, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.07.010.
(http://www.sciencedirect.com/science/article/B6TC3-4PHJH1J-1/2/0ac1f82aba53748847a32b20fa2dcc11)
Abstract:
The main cherry cultivar grown in the warm climate of Israel, `Bing', produces relatively small fruit. Over three consecutive years (2003-2005), application of 50 mg l-1 2,4-dichlorophenoxypropionic acid [2,4-DP; as its butoxyethyl ester (Power(TM))], 10 mg l-1 3,5,6-trichloro-2-pyridyloxyacetic acid [3,5,6-TPA; as the free acid (Maxim(R))], or 25 mg l-1 2,4-dichlorophenoxyacetic acid (2,4-D) plus 30 mg l-1 naphthaleneacetic acid (NAA; 0.3% Amigo(TM)), at the beginning of pit-hardening when fruitlet diameter was ca. 13 mm caused appreciable and significant increases in fruit size and total yield, except when the crop load was heavy. Anatomical studies revealed that the main effect of these synthetic auxins was via direct stimulation of fruit cell enlargement. The above auxins had no negative effect on fruit quality, either at harvest or after 1 month of storage at 0 [degree sign]C, or on return yield in the following year.
Keywords: Auxins; Cherry; Fruit size; Prunus avium L.

Marc Saudreau, Herve Sinoquet, Olivier Santin, Andre Marquier, Boris Adam, Jean-Jacques Longuenesse, Lydie Guilioni, Michael Chelle, A 3D model for simulating the spatial and temporal distribution of temperature within ellipsoidal fruit, Agricultural and Forest Meteorology, Volume 147, Issues 1-2, 12 November 2007, Pages 1-15, ISSN 0168-1923, DOI: 10.1016/j.agrformet.2007.06.006.
(http://www.sciencedirect.com/science/article/B6V8W-4P898YW-2/2/87628fea5f0da8ebd8c69b25f094c424)
Abstract:
A physical model simulating the spatio-temporal distribution of temperature in an ellipsoidal fruit has been developed. It is based on the numerical resolution of the three-dimensional (3D) unsteady heat conduction equation with unsteady and non-homogeneous heat fluxes as boundary conditions. The numerical scheme and the physical models have been tested by comparing with an analytical solution for simple configurations. The model quality has been assessed by comparing model outputs to temperature measured with thermocouples at several locations in isolated peach and apple fruits. The root mean square error (RMSE) for temperature simulated at a 1 min time step was about 0.8 [degree sign]C. A sensitivity analysis showed that accurate estimations of the surface conductance to water vapor diffusion and of the thermal conductivity are necessary. The model has also been used for identifying the main microclimate variables governing temperature dynamics within fruits.
Keywords: Fruit; Temperature; Dynamics; Three-dimensional; Microclimate; Modeling

Xu ZHANG, Yuan-mao JIANG, Fu-tian PENG, Nai-bo HE, Yan-ju LI, Deng-chao ZHAO, Changes of Aroma Components in Hongdeng Sweet Cherry During Fruit Development, Agricultural Sciences in China, Volume 6, Issue 11, November 2007, Pages 1376-1382, ISSN 1671-2927, DOI: 10.1016/S1671-2927(07)60186-2.

(http://www.sciencedirect.com/science/article/B82XG-4R9B4F5-F/2/5fb2401cb6a7819832d3f98a74e1c687)
Abstract:
To study the changes of aroma components in sweet cherry during fruit development, the aroma components in sweet cherry fruit from the green stage, the color stage, the commercial stage, and the ripe stage were collected using head-space solid phase microextraction (HS-SPME), and were analyzed using a gas chromatograph-mass spectrophotometer (GC-MS). A total of 37 compounds were identified from the sample extracts. Aldehydes, alcohols, and esters were the major constituents. The aroma components behaved differently during the fruit developmental period. C6 aldehydes and aromatic aldehydes were the main aldehydes in the sweet cherry fruit. The contents of C6 aldehydes increased quickly to 84.16% in the color stage, then decreased as ripening proceeded, and then, the contents decreased to 59.20 and 55.58% at the commercial stage and the ripe stage, respectively. The aromatic aldehydes (benzaldehyde) increased as ripening proceeded, and the maximum was found at the ripe stage. Alcohols of sweet cherry fruit included C6 alcohols and aromatic alcohols. The content of (E)-2-hexen-1-o1 increased as ripening proceeded. The maximum was found at the commercial stage; alcohol was only found at the ripe stage. Ester components included ethyl acetate, butanoic acid ethyl ester, hexanoic acid ethyl ester, which increased as the fruit ripened. Hexanal, (E)-2-hexenal, benzaldehyde, (E)-2-hexen-1-01, ethyl acetate, and hexanoic acid ethyl ester were the characteristic aroma components of sweet cherry fruit. These aroma components started to form drastically at the color stage, and the main aroma was formed at the commercial stage, which then turned bad at the ripe stage because of the presence of alcohol. So the optimal harvest time of sweet cherry was at the commercial stage.
Keywords: sweet cherry; fruit development; aroma components; solid phase microextraction; GC-MS

Helen M. Hendy, Keith E. Williams, Thomas S. Camise, Sandra Alderman, Jonathan Ivy, Jessica Reed, Overweight and average-weight children equally responsive to 'Kids Choice Program' to increase fruit and vegetable consumption, Appetite, Volume 49, Issue 3, November 2007, Pages 683-686, ISSN 0195-6663, DOI: 10.1016/j.appet.2007.06.003.
(http://www.sciencedirect.com/science/article/B6WB2-4P2YWG5-2/2/88f0f1fccf42bb56fa8db42b86ad9c01)
Abstract:
Secondary analyses were conducted for children participating in the school-based Kids Choice Program [Hendy, H. M., Williams, K., & Camise, T. (2005). 'Kids Choice' school lunch program increases children's fruit and vegetable acceptance. Appetite, 45, 250-263.] to examine whether fruit and vegetable consumption and preference ratings by overweight and average-weight children within the original sample were equally responsive to the program. The Kids Choice Program produced increased fruit and vegetable consumption by both overweight and average-weight children that lasted throughout the month-long program, while avoiding 'over-justification' drops in later fruit and vegetable preference ratings. We believe that the Kids Choice Program shows promise for encouraging overweight children to improve nutrition and weight management behaviors while in their everyday peer environment.
Keywords: Child obesity; Overweight children; Fruit and vegetables; School lunch

Federico A. Gutierrez-Miceli, Jorge Santiago-Borraz, Joaquin Adolfo Montes Molina, Camerino Carlos Nafate, Miguel Abud-Archila, Maria Angela Oliva Llaven, Reiner Rincon-Rosales, Luc Dendooven, Vermicompost as a soil supplement to improve growth, yield and fruit quality of tomato (Lycopersicum esculentum), Bioresource Technology, Volume 98, Issue 15, November 2007, Pages 2781-2786, ISSN 0960-8524, DOI: 10.1016/j.biortech.2006.02.032.

(http://www.sciencedirect.com/science/article/B6V24-4ND70C4-1/2/08489b702166de014400b7c5b9d36311)
Abstract:
The effects of earthworm-processed sheep-manure (vermicompost) on the growth, productivity and chemical characteristics of tomatoes (Lycopersicum esculentum) (c.v. Rio Grande) were investigated in a greenhouse experiment. Five treatments were applied combining vermicompost and soil in proportions of 0:1, 1:1, 1:2, 1:3, 1:4 and 1:5 (v/v). Growth and yield parameters were measured 85 days and 100 days after transplanting. Addition of vermicompost increased plant heights significantly, but had no significant effect on the numbers of leaves or yields 85 days after transplanting. Yields of tomatoes were significantly greater when the relationship vermicompost:soil was 1:1, 1:2 or 1:3, 100 days after transplanting. Addition of sheep-manure vermicompost decreased soil pH, titratable acidity and increased soluble and insoluble solids, in tomato fruits compared to those harvested from plants cultivated in unamended soil. Sheep-manure vermicompost as a soil supplement increased tomato yields and soluble, insoluble solids and carbohydrate concentrations.
Keywords: Chemical composition; Fruit characteristics; Sheep manure; Tomato; Vermicompost; Soil supplement

Rongmin Yu, Wei Yang, Liyan Song, Chunyan Yan, Zhang Zhang, Yu Zhao, Structural characterization and antioxidant activity of a polysaccharide from the fruiting bodies of cultured Cordyceps militaris, Carbohydrate Polymers, Volume 70, Issue 4, 1 November 2007, Pages 430-436, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2007.05.005.
(http://www.sciencedirect.com/science/article/B6TFD-4NR18CX-4/2/7b5c3d334799175bfaef4a537bd74e2c)
Abstract:
The water-soluble crude polysaccharides were obtained from the fruiting bodies of cultured Cordyceps militaris by hot water extraction followed by ethanol precipitation. The polysaccharides were successively purified by chromatography on DEAE-cellulose-52 and Sephacryl S-100 HR columns, giving main three polysaccharide fractions termed P50-1, P70-1, and P70-2. Structural features of P70-1 were investigated by a combination of chemical and instrumental analysis, such as partial acid hydrolysis, methylation analysis, periodate oxidation - Smith degradation, GC-MS, 13C NMR, HPAEC-PAD, and FT-IR. The results indicated that P70-1 has a backbone of (1 --> 6)-linked [beta]-d-mannopyranosyl residues, which occasionally branches at O-3. The branches were mainly composed of (1 --> 4)-linked [alpha]-d-glucopyranosyl and (1 --> 6)-linked [beta]-d-galactopyranosyl residues, and terminated with [beta]-d-galactopyranosyl residues and [alpha]-d-glucopyranosyl residues. In the in vitro antioxidant assay, P70-1 was found to possess hydroxyl radical-scavenging activity with an IC50 value of 0.548 mg/ml.
Keywords: Cultured Cordyceps militaris; Fruiting bodies; Polysaccharide structure; HPAEC-PAD analysis; Antioxidant

Yan Wu, Steve W. Cui, Jian Tang, Qi Wang, Xiaohong Gu, Preparation, partial characterization and bioactivity of water-soluble polysaccharides from boat-fruited sterculia seeds, Carbohydrate Polymers, Volume 70, Issue 4, 1 November 2007, Pages 437-443, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2007.05.010.
(http://www.sciencedirect.com/science/article/B6TFD-4NRT3C5-1/2/94c7dcf189056d00c2efd84d460dbc45)
Abstract:
Crude water-soluble polysaccharides (SP) isolated from boat-fruited sterculia seeds by hot water extraction and ethanol precipitation were fractionated into a neutral polysaccharide (NSP) and an acidic one (ASP) by anion-exchange chromatography. The molecular weight, intrinsic viscosity and radius of gyration of NSP and ASP were determined by high performance size exclusion

chromatography (HPSEC). NSP was rich in glucose (85.86%), with small amounts of galactose, arabinose and xylose. Whereas ASP consisted mainly of galacturonic acid (40.13%) along with rhamnose, arabinose, galactose, and small amounts of xylose and glucose, indicating a pectin-like polysaccharide which was confirmed by FT-IR spectra. Bioactivity of NSP and ASP was tested using ear edema induced by dimethylbenzene and cotton pellet-induced granuloma tissue in murine models. The results showed ASP possessed a potent dose-dependent anti-inflammatory activity. The results from the current study provided a scientific basis for the traditional use of this plant as a medical remedy for its anti-inflammation effects.
Keywords: Boat-fruited sterculia seed; Polysaccharides; Preparation; Characterization; Anti-inflammatory activity

Zhaoli Meng, Yan Wei, Dunming Xu, Shuanghong Hao, Jiye Hu, Effect of 2-allylphenol against Botrytis cinerea Pers., and its residue in tomato fruit, Crop Protection, Volume 26, Issue 11, November 2007, Pages 1711-1715, ISSN 0261-2194, DOI: 10.1016/j.cropro.2007.02.007.
(http://www.sciencedirect.com/science/article/B6T5T-4NHD902-1/2/f1c33841dcc7f01ab9c0c7e935b927ad)
Abstract:
A new fungicide, 2-allylphenol, named Yinguo, which has been registered in China, was synthesized by simulating the natural antifungal chemical ginkgol. The formulation, Yinguo10% EC showed higher antifungal activity against Botrytis cinerea and Alternaria solani than the commercial fungicide, iprodione (50% WP) in vitro. Yinguo, at a dose of 800 mg kg-1 gave more than 85% and 90% control against gray mold on the leaf and fruit of tomato, respectively, in the greenhouse. The degradation rate and terminal residue levels in tomato fruit were determined with reverse phase high-performance liquid chromatography (HPLC) equipped with a ultraviolet (UV) detector. The half-life of 2-allylphenol in tomato fruit was about 6 d, and more than 82% of the initial deposit of 2-allylphenol had degraded in tomato fruit at harvest. The final residue levels in tomato fruit were less than 0.26 mg kg-1 following double application of the highest recommended dose.
Keywords: 2-allylphenol; Botrytis cinerea; Antifungal activity; Fungicide; Residue

Johann G. Zaller, Vermicompost in seedling potting media can affect germination, biomass allocation, yields and fruit quality of three tomato varieties, European Journal of Soil Biology, Volume 43, Supplement 1, November 2007, Pages S332-S336, ISSN 1164-5563, DOI: 10.1016/j.ejsobi.2007.08.020.
(http://www.sciencedirect.com/science/article/B6VR7-4PRHJ8B-9/2/40c45741d7546bb7de0b32e3a3f45008)
Abstract:
Commercial potting media often contain substantial amounts of peat that was mined from endangered bog and fen ecosystems. The main objectives of this study were to assess (1) whether the substitution of peat by vermicompost (VC) in potting substrate affects the emergence and biomass allocation of tomato seedlings (Lycopersicon esculentum Mill.) under greenhouse conditions and (2) whether VC amendments in seedling substrate affect tomato yields and fruit quality after plants were transplanted into equally fertilized field soil. Amended VC was produced of food and cotton waste in a windrow system by Eisenia fetida Sav. Vermicompost amendments significantly influenced, specifically for each tomato variety, emergence and biomass allocation (root:shoot ratio) of seedlings. Marketable yields of field tomatoes remained unaffected by VC amendments in seedling substrates. Peel firmness and glucose-fructose ratios of fruits were variety-specifically affected by VC amendments in seedling substrates. Results show that vermicompost could be an environmentally friendly substitute for peat in potting media with no detrimental effects on seedling performance and fruit quality.

Keywords: Earthworms; Peat moss replacement; Seedling husbandry; Soilless substrate; Solid organic wastes; Vermicompost

Xiaoping Liu, Jiye Wang, Ping Gou, Cungui Mao, Zeng-Rong Zhu, Hongye Li, In vitro inhibition of postharvest pathogens of fruit and control of gray mold of strawberry and green mold of citrus by aureobasidin A, International Journal of Food Microbiology, Volume 119, Issue 3, 1 November 2007, Pages 223-229, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.07.054.
(http://www.sciencedirect.com/science/article/B6T7K-4PCGRPS-2/2/09ec53b746b47fce1b6e92282dc71863)
Abstract:
Aureobasidin A (AbA), an antifungal cyclic depsipeptide antibiotic produced by Aureobasidium pullulans R106, has previously been shown to be effective against a wide range of fungi and protozoa. Here we report the inhibitory effects of AbA on spore germination, germ tuber elongation and hyphal growth of five pathogenic fungi including Penicillium digitatum, P. italicum, P. expansum, Botrytis cinerea and Monilinia fructicola, which are major pathogens causing postharvest diseases of a variety of fruits. AbA inhibited five pathogenic fungi by reducing conidial germination rates, delaying conidial germination initiation, restricting elongation of germ tuber and mycelium, as well as inducing abnormal alternations of morphology of germ tubes and hyphae of these fungi. The sensitivity of these fungi to AbA was pathogen species-dependent. P. digitatum was the most sensitive and M. fructicola the least. Importantly, AbA at 50 [mu]g/ml was effective in controlling the citrus green mold and in reducing the strawberry gray mold incidence and severity, caused by P. digitatum and B. cinerea, respectively, after artificial inoculation. AbA and/or its analogs, therefore, hold promise as relatively safe and promising fungicide candidates to control postharvest decays of fruits, because AbA targets the inositol phosphorylceramide (IPC) synthase, an enzyme essential for fungi but absent from mammals.
Keywords: Aureobasidin A (AbA); Antifungal activity; Postharvest fruits; Disease controlling

Diana Cassady, Karen M. Jetter, Jennifer Culp, Is Price a Barrier to Eating More Fruits and Vegetables for Low-Income Families?, Journal of the American Dietetic Association, Volume 107, Issue 11, November 2007, Pages 1909-1915, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.08.015.
(http://www.sciencedirect.com/science/article/B758G-4PXP0WM-2/2/d97db008a3eb4d4d67c900bc498cc41c)
Abstract: Objective
To determine if price is a barrier to fruit and vegetable consumption for low-income families by comparing the average cost of a market basket of fruits and vegetables from the Thrifty Food Plan and the Dietary Guidelines for Americans 2005 (2005 Dietary Guidelines), investigating variations in price by neighborhood income and by type of supermarket, and estimating the influence of a 2005 Dietary Guidelines fruit and vegetable basket on the food budget of a low-income family.Design
A market basket survey was conducted at 25 supermarkets across three time periods to allow for seasonal variation in produce prices.Setting
Stores were selected from census tracts with a variety of income levels in Sacramento, CA, and Los Angeles, CA.Main outcome measures
The average cost of a Thrifty Food Plan and 2005 Dietary Guidelines market basket for fruits and vegetables.Statistical analyses performed
Student t tests were used to compare the mean cost of market baskets.Results
The 2005 Dietary Guidelines market basket cost 4% less than the Thrifty Food Plan ($P<0.001$), and was significantly less expensive in low-income areas at $65 ($P<0.05$), and in bulk supermarkets at $59 ($P<0.05$). The 2005 Dietary Guidelines market basket would require a low-income family to devote 43% to 70% of their food budget to fruits and vegetables.Conclusions

Public policies should examine ways to make fruits and vegetables more affordable to low-income families.

Bart M. Nicolai, Katrien Beullens, Els Bobelyn, Ann Peirs, Wouter Saeys, Karen I. Theron, Jeroen Lammertyn, Nondestructive measurement of fruit and vegetable quality by means of NIR spectroscopy: A review, Postharvest Biology and Technology, Volume 46, Issue 2, November 2007, Pages 99-118, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.06.024.
(http://www.sciencedirect.com/science/article/B6TBJ-4PPFT71-1/2/0abcbae5eb21bf6bd810a3fdb08f249a)
Abstract:
An overview is given of near infrared (NIR) spectroscopy for use in measuring quality attributes of horticultural produce. Different spectrophotometer designs and measurement principles are compared, and novel techniques, such as time and spatially resolved spectroscopy for the estimation of light absorption and scattering properties of vegetable tissue, as well as NIR multi- and hyperspectral imaging techniques are reviewed. Special attention is paid to recent developments in portable systems. Chemometrics is an essential part of NIR spectroscopy, and the available preprocessing and regression techniques, including nonlinear ones, such as kernel-based methods, are discussed. Robustness issues due to orchard and species effects and fluctuating temperatures are addressed. The problem of calibration transfer from one spectrophotometer to another is introduced, as well as techniques for calibration transfer. Most applications of NIR spectroscopy have focussed on the nondestructive measurement of soluble solids content of fruit where typically a root mean square error of prediction of 1[degree sign] Brix can be achieved, but also other applications involving texture, dry matter, acidity or disorders of fruit and vegetables have been reported. Areas where more research is required are identified.
Keywords: NIR; Near infrared; Fruit; Reflectance; Interactance; Transmittance; Chemometrics; PLS; Nondestructive; Quality

Ravi Kesari, Prabodh Kumar Trivedi, Pravendra Nath, Ethylene-induced ripening in banana evokes expression of defense and stress related genes in fruit tissue, Postharvest Biology and Technology, Volume 46, Issue 2, November 2007, Pages 136-143, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.04.010.
(http://www.sciencedirect.com/science/article/B6TBJ-4P47V1R-1/2/41a59773b514385f159236e8441f9fd2)
Abstract:
Ripening marks several changes in physiological and biochemical attributes of fruit. Several hundred genes are recruited to express differentially during this process and their cumulative effect brings about ripening and softening in the fruit. Using suppression subtractive hybridization (SSH), we have been able to identify 37 EST-unigenes from banana which are expressed differentially during ripening. About 50% of these belong to processes such as stress, defense and detoxification. Besides these, we have also identified genes which are known to involve regulation of gene expression and other processes, although their expression has not been reported during fruit ripening. Expression of some of these genes was studied during ethylene-induced ripening with or without the ethylene action inhibitor, 1-methylcyclopropene (1-MCP), in fruit pulp and other tissues. Expression studies clearly suggest that most of these genes are ethylene-regulated and related to banana fruit ripening. It is concluded that ethylene-induced banana ripening evokes a stress-like response and several genes belonging to stress/defense are expressed in addition to genes related to ethylene biosynthesis, cell wall hydrolysis, secondary plant product biosynthesis, fatty acid biosynthesis, metabolite transport and transcription/translation machinery.
Keywords: 1-Methylcyclopropene; Ethylene; Fruit ripening; Musa acuminata; Stress and defense response; Suppression subtractive hybridization

A. Salvador, L. Arnal, C. Besada, V. Larrea, A. Quiles, I. Perez-Munuera, Physiological and structural changes during ripening and deastringency treatment of persimmon fruit cv. `Rojo Brillante', Postharvest Biology and Technology, Volume 46, Issue 2, November 2007, Pages 181-188, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.05.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4P5RKTB-3/2/431baeea42ef0e0d318e54264b302f99)
Abstract:
The aim of this study was to evaluate the changes in physicochemical properties together with the structural changes that occur during the period of harvesting `Rojo Brillante' persimmon fruit, and the effect of the deastringency treatment on these properties. Fruit were harvested at different stages of maturation and the treated to remove astringency (95% CO2 for 24 h at 20 [degree sign]C, 90% R.H.). Just after harvest and following the subsequent deastringency treatment, physiological and microstructural changes were evaluated. Measurements of external colour, flesh firmness, pectinmethylesterase and polygalacturonase activity, astringency level as soluble tannins and sensory evaluation, acetaldehyde production, total soluble solids, pH and ethylene production were made. Microstructural changes were evaluated by Cryo Scanning Electron Microscopy. Firmness loss during fruit maturity, concomitant with an increase in external colour, was related to changes in cell structure. Although `Rojo Brillante' fruit produce a small amount of ethylene during ripening, the change in ethylene production reflects the typical climacteric behaviour of this cultivar. The high concentrations of CO2 tested to eliminate astringency proved effective for all stages of maturity and are related to the reduction in soluble tannin content and with the appearance of insoluble material inside the vacuoles of some tannic cells.
Keywords: Persimmon; Firmness; Deastringency treatment; Maturity stage; Cryo-SEM

WangShu Zhang, Xian Li, XiaoXiao Wang, GuoYun Wang, JinTu Zheng, Don C. Abeysinghe, Ian B. Ferguson, KunSong Chen, Ethanol vapour treatment alleviates postharvest decay and maintains fruit quality in Chinese bayberry, Postharvest Biology and Technology, Volume 46, Issue 2, November 2007, Pages 195-198, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.05.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4PHSFC0-1/2/cf2dd571e0cd023eac709e6c265a0f63)
Abstract:
The effect of ethanol vapour treatment on controlling fruit decay was studied on Chinese bayberry (Myrica rubra Sieb. & Zucc.) stored at different temperatures over two seasons. Ethanol vapour at a concentration of 1000 [mu]L/L, generated from pre-saturated filter paper sheets using either a 10 mL/L ethanol stock solution at 20 [degree sign]C or a 40 mL/L ethanol stock solution at 0 [degree sign]C, proved to be the most effective for controlling postharvest decay of bayberry fruit. The ethanol treatment reduced the decay rate of fruit from 28.7 to 15.8% after 3 days storage at 20 [degree sign]C and from 27.8 to 16.6% after 5 days storage at 0 [degree sign]C and 1 day shelf-life at 20 [degree sign]C. The ethanol treatment did not have any deleterious effects on fruit quality, but resulted in an increase in the accumulation of anthocyanins in the fruit.
Keywords: Ethanol; Chinese bayberry; Fruit decay; Quality

G. Ozek, T. Ozek, G. Iscan, K.H.C. Baser, E. Hamzaoglu, A. Duran, Comparison of hydrodistillation and microdistillation methods for the analysis of fruit volatiles of Prangos pabularia Lindl., and evaluation of its antimicrobial activity, South African Journal of Botany, Volume 73, Issue 4, November 2007, Pages 563-569, ISSN 0254-6299, DOI: 10.1016/j.sajb.2007.05.002.
(http://www.sciencedirect.com/science/article/B7XN9-4NY4S0K-1W/2/cf76520f18e2c3c2f30bfaeba9fc2d97)
Abstract:
The volatile constituents of Prangos pabularia Lindl. fruits (Umbelliferae) were obtained by hydrodistillation (HD) and microdistillation (MD) techniques, and then analyzed by gas

chromatography (GC) and gas chromatography-mass spectrometry (GC/MS) methods. One hundred and twenty-eight compounds have been characterized representing 90.5% of hydrodistilled oil (HDO). In the microdistilled oil (MDO), 115 compounds constituting 93.0% of the oil were detected. [alpha]-Humulene (16.6% and 15.5%), bicyclogermacrene (16.1% and 7.9%), spathulenol (10.6% and 5.7%), germacrene D (5.7% and 2.9%) and [alpha]-pinene (4.2% and 23.9%) were found to be the major constituents of HDO and MDO, respectively. Antimicrobial activity of the oil was tested via microdilution broth technique. Escherichia coli, Pseudomonas aeruginosa, Proteus vulgaris, Salmonella typhimurium, Staphylococcus epidermidis, Methicillin-resistant Staphylococcus aureus, and Candida albicans were used as the test microorganisms.
Keywords: Antimicrobial activity; Essential oil; Hydrodistillation; Microdistillation; Prangos pabularia; Umbelliferae

Karen A. Kainer, Lucia H.O. Wadt, Christina L. Staudhammer, Explaining variation in Brazil nut fruit production, Forest Ecology and Management, Volume 250, Issue 3, 20 October 2007, Pages 244-255, ISSN 0378-1127, DOI: 10.1016/j.foreco.2007.05.024.
(http://www.sciencedirect.com/science/article/B6T6X-4P5RKVM-4/2/2d8a0170310f3e83c6fab09edc1f1568)
Abstract:
Brazil nut is widely recognized as the cornerstone of the Amazonian extractive economy. Tight linkages between Brazil nut production, regional income, and intact mature forests have thrust this species into focus as a key component of Amazonian conservation and income generation strategies. Nonetheless, a comprehensive synthesis of factors explaining Brazil nut fruit production variation is lacking. We aimed to address this knowledge gap, asking: (1) What are the rates and annual variation of Bertholletia excelsa fruit production at individual and population levels? (2) What factors explain B. excelsa production variation, focusing on spatial and temporal variables, diameter at breast height (dbh), crown attributes, liana loads, and soil attributes? and (3) Does liana cutting affect fruit production?
Our model explained 73% of the variability in fruit production by 140 trees over 5 years. Dbh alone explained >50%, and trees in the middle diameter range (100 cm <= dbh < 150 cm) produced best. Top-producing trees were loosely grouped spatially. Cation exchange capacity and P also explained production variation. The liana load variable was only weakly significant for explaining production variation, and there were no direct significant effects of liana cutting. Cutting, however, did improve crown forms--another highly significant model variable. This, coupled with a weakly significant interaction of liana cutting by year, suggests that liana cutting could improve production over time.
In any given year, approximately 25% of the trees produced 72% of the total population production. Annual variation of fruit production at the individual level was relatively high, and at the population level was extremely low, with annual production departing from average only in a year of delayed and reduced rainfall. These results coupled with low synchronicity of fruiting, confirm long-term observations of harvesters that Brazil nut populations exhibit relatively constant fruit production.
Results suggest that fruit productivity at the individual tree level could be increased, possibly through experimental liana cutting and/or P amendments. At the population level, Brazil nut collectors could potentially increase efficiency by concentrating collection efforts on consistently high producers and possible production 'hotspots'.
Keywords: Amazon; Bertholletia excelsa; Nut production; Liana; Non-timber forest product; NTFP; Nutrients; Seed production; Tropical forest

Rosa Aiello, Giuseppe Luigi Cirelli, Simona Consoli, Effects of reclaimed wastewater irrigation on soil and tomato fruits: A case study in Sicily (Italy), Agricultural Water Management, Volume 93, Issues 1-2, 16 October 2007, Pages 65-72, ISSN 0378-3774, DOI: 10.1016/j.agwat.2007.06.008.

(http://www.sciencedirect.com/science/article/B6T3X-4PCH49C-3/2/02af0b3181219a5a950b3b2de554d8d4)
Abstract:
The study aims to investigate the effects of reclaimed urban wastewater for irrigation on tomato fruit quality and hydrological soil behaviour. Tomato plants were drip and sub-drip irrigated under field conditions during the 2004 growing season in Eastern Sicily (Italy). Different drip and sub-drip laterals and filtering technologies were tested during the trial; the most suitable irrigation technology was identified by data processing including emission uniformity, flow reduction and filter performance computations. The hydraulic properties and microbial soil contamination were determined before and after wastewater application. Tomato crop production quality and microbial plant contamination were investigated during the trial. Wastewater application resulted in increased microbial contamination (Escherichia coli 3 x 103 MPN/100 mL; Faecal Streptococci 1.2 x 103 MPN/100 mL) on the soil surface. A disturbed layer of soil was observed characterized by reduced soil porosity and a consequent decrease in water retention and hydraulic conductivity. The negligible microbial contamination of fruit and washing solution (up to 40 MPN/100 mL) suggested that the treated wastewater can be used as a valid alternative for irrigation of tomatoes.
Keywords: Contamination; Irrigation; Row crop; Soil; Wastewater

J.H. Caamal-Velazquez, B.H. Chi-Manzanero, J.J. Canche-Yam, E. Castano, L.C. Rodriguez-Zapata, Low temperature induce differential expression genes in banana fruits, Scientia Horticulturae, Volume 114, Issue 2, 2 October 2007, Pages 83-89, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.05.017.
(http://www.sciencedirect.com/science/article/B6TC3-4P5RM4X-5/2/d7bfa933c4c1830578ae7ebc739a1e14)
Abstract:
Differential display was used to identify gene expression of banana fruit in response to low temperature stress. Banana fruits were kept at 10 [degree sign]C for 8 h and 60 differential expressed fragments in pulp and peel were obtained. These fragments had an average size of 200 pb or greater and Dot blotting hybridization as well as Northern blot corroborated specific expression of these differential expressed fragments. Among the several differentially expressed genes, we found genes involved in response to pathogen attack, wounding and a ripening-associated gene. We consider these genes to belong to a general pathway which is activated upon general stress signaling.
Keywords: Bananas; cDNA; Low temperature injury; Differential display; Musa acuminata

Tamara M. McGovern, Katherine Blankenhorn, Observation of fruit production by the seagrass Halodule wrightii in the northeastern Gulf of Mexico, Aquatic Botany, Volume 87, Issue 3, October 2007, Pages 247-250, ISSN 0304-3770, DOI: 10.1016/j.aquabot.2007.05.004.
(http://www.sciencedirect.com/science/article/B6T4F-4NYJ0YC-1/2/06e4462e1d80cd3f69a66da315aa42b7)
Abstract:
Halodule wrightii is a highly clonal, dioecious seagrass with a wide geographic range. Though sexual reproduction has been observed in other areas of its range, we report here the first documented case of fruit production in the northeastern Gulf of Mexico. We also report on seasonal patterns of growth and biomass allocation in this region and discuss the implications of even occasional sexual reproduction for the population dynamics of this species.
Keywords: Fruit; Growth; Gulf of Mexico; Halodule wrightii; Seagrass; Sexual reproduction

Dario Garcia-Medel, John Sivinski, Francisco Diaz-Fleischer, Ricardo Ramirez-Romero, Martin Aluja, Foraging behavior by six fruit fly parasitoids (Hymenoptera: Braconidae) released as single- or multiple-species cohorts in field cages: Influence of fruit location and host density, Biological

Control, Volume 43, Issue 1, October 2007, Pages 12-22, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2007.06.008.
(http://www.sciencedirect.com/science/article/B6WBP-4P4NPJB-1/2/ef16bd83e70dd5409b6ccdb63887aea8)
Abstract:
In Mexico, both native and exotic fruit fly parasitoids exhibit spatial and temporal overlaps in distribution. To better characterize the spatial component of foraging in the braconid portion of this guild, and to examine the effects of intra- and interspecific competition on resource partitioning, we conducted two field-cage experiments aimed at: (1) assessing the host-finding ability of parasitoids when single- or multiple-species cohorts were confronted with very low host-densities only at canopy level; (2) determining the height level preference (canopy vs. ground) for parasitoid foraging activity when single- or multiple-species cohorts were present and host density was high; (3) identifying candidate species for biological control programs using multiple-species releases. We studied two species exotic to Mexico, Diachasmimorpha longicaudata and D. tryoni, and four species native to Mexico, Doryctobracon areolatus, D. crawfordi, Opius hirtus, and Utetes anastrephae (all Braconidae, Opiinae). Parasitoids were allowed to forage for 8-h as single- or multiple-species cohorts in a room-sized cage containing potted trees with guavas artificially infested with Anastrepha ludens larvae and attached to the branches. When parasitoids were released as single-species cohorts into low host-density environments (fruit only at canopy level), D. longicaudata, D. tryoni and O. hirtus clearly distinguished uninfested from infested fruit and exerted the highest rates of parasitism with a significantly female-biased offspring sex ratio. When multiple-species cohorts were released, the same pattern was observed but, D. crawfordi and D. areolatus did not parasitize any larvae. In the case of the high host-density condition and with fruit at canopy and ground levels, when parasitoids were released in single-species cohorts, only D. crawfordi and D. longicaudata parasitized larvae at ground level. At canopy level, D. longicaudata, D. tryoni and D. crawfordi achieved the highest parasitism rates. When parasitoids were released as multiple-species cohorts, individuals of none of the species foraged at ground level, and in the canopy foraging activity and parasitism rates dropped dramatically in all species, except O. hirtus. Given the performance of O. hirtus, it should be considered a potential candidate to complement D. longicaudata in low-host density prevalence areas.
Keywords: Parasitoid foraging behavior; Competition; Niche breadth; Braconidae; Tephritidae; Anastrepha; Doryctobracon; Utetes; Opius; Diachasmimorpha

Bundit Jarimopas, Pramote Kuson, A young-coconut-fruit-opening machine, Biosystems Engineering, Volume 98, Issue 2, October 2007, Pages 185-191, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2007.06.008.
(http://www.sciencedirect.com/science/article/B6WXV-4PFFD27-1/2/1f416fad21fc4a11ab5a6fcc7d6f101f)
Abstract:
The purpose of this research was to design, construct, and evaluate a prototype machine for opening young coconut fruit. The design concept was that a trimmed coconut could be opened by causing a small sharp knife to gradually move and shear off a circular section of the husk and shell at the top of the rotating fruit. The prototype consisted of a fruit holder, a height control mechanism, a knife and its feed controller, and a power transmission system. In operation, the small stainless-steel knife slowly penetrates through the husk and shell of the turning fruit in a direction approximately perpendicular to its surface. The rotation of the fruit causes the husk and shell to be cut by the sharp edge of the knife, which results in the formation of a circular opening at the top of the fruit. In this study, the key design parameters and their operation settings were determined as follows: the angle between the knife and the rotating plane (horizontal) was 50[degree sign]; the angle between the knife cutting edge and the tangential line to the circular

opening was 50[degree sign]; the knife feeding speed was 50 mm/min; and the fruit rotation speed was 80 rpm.
Based on these design parameters, a commercial prototype was manufactured and tested. The prototype had the capacity to open an item of fruit at an average time of 30 s. A 58-mm-diameter opening was cut and a mean 0.2% of the juice was spilled, while the juice that remained contained 0.2 g of fine pieces of shell and husk. The mechanically opened coconuts were well received by consumers.

M. Silimela, L. Korsten, Evaluation of pre-harvest Bacillus licheniformis sprays to control mango fruit diseases, Crop Protection, Volume 26, Issue 10, October 2007, Pages 1474-1481, ISSN 0261-2194, DOI: 10.1016/j.cropro.2006.12.011.
(http://www.sciencedirect.com/science/article/B6T5T-4N08WVH-3/2/4cc630e867402a9a57d254e8e10e7d0c)
Abstract:
Bacillus licheniformis was evaluated as a pre-harvest spray treatment either on its own or alternated with copper oxychloride to control mango fruit diseases. Prior to initiating the spray trials, in vitro and in vivo studies were done to determine the effect of stickers, spreaders, a biostimulant and a copper fungicide on the biocontrol agent's ability to effectively attach to and colonise the mango leaf surface. Bioboost, Nufilm-P, Biofilm and Agral 90 did not affect antagonist growth in vitro. However, copper oxychloride and Supafilm inhibited the in vitro growth of B. licheniformis, more pronouncedly after 8 h. The in vivo study showed that stickers and spreaders did not improve the ability of B. licheniformis to attach to and colonise the leaf surface. Pre-harvest B. licheniformis applications alone and alternated with copper sprays applied at 3-weekly intervals from flowering until harvest controlled moderate levels of anthracnose, bacterial black spot and soft rot.
Keywords: Biocontrol; Antagonists; Anthracnose; Bacterial black spot; Soft rot

Nikos G. Tzortzakis, Methyl jasmonate-induced suppression of anthracnose rot in tomato fruit, Crop Protection, Volume 26, Issue 10, October 2007, Pages 1507-1513, ISSN 0261-2194, DOI: 10.1016/j.cropro.2006.12.014.
(http://www.sciencedirect.com/science/article/B6T5T-4N1SP62-1/2/32117252cd6bb56d050b57866a1689d1)
Abstract:
Anthracnose rot (Colletotrichum coccodes) development in vitro or in tomato fruit (Lycopersicon esculentum L.) was evaluated after treatment with methyl jasmonate (MJ; 44.8 [mu]l l-1) or chlorine (48 ml l-1) and storage at 12 [degree sign]C and 95% relative humidity during or following exposure to the volatiles. Fruit treated with MJ-vapours reduced fungal spore germination/production, but had no effect on fungal mycelium growth. Fruit lesion development accelerated after fruit exposure in pure (100% v/v) volatile vapours. However, sanitary dips of pre-treated fruit with MJ resulted in 20% suppression of fungal development in wound-inoculated fruit and storage in `ambient air'. The benefits associated with volatile-enrichment which was maintained in fruit pre-exposed to vapours, resulted in suppression in spore germination and spore production. However, studies performed on fungi raised on Potato Dextrose Agar revealed fewer direct effects of volatiles on fungal colony development and spore germination per se, implying that suppression of pathogen development was due in a large part to the impact of volatiles on fruit-pathogen interactions and/or `memory' effects on fruit tissue. Work is currently focussing on the mechanisms underlying the impact of volatiles on disease development. The results of this study indicate that volatiles may be considered as an alternative to the traditional post-harvest sanitizing techniques. Each commodity needs to be individually assessed, and the volatile concentration and sanitizing technique optimized, before the volatile treatment is used commercially.

Keywords: Tomato; Methyl jasmonate; Chlorine; Anthracnose; Memory effect; Fungal growth

Erl-Shyh Kao, Chau-Jong Wang, Wea-Lung Lin, Chia-Yih Chu, Tsui-Hwa Tseng, Effects of polyphenols derived from fruit of Crataegus pinnatifida on cell transformation, dermal edema and skin tumor formation by phorbol ester application, Food and Chemical Toxicology, Volume 45, Issue 10, October 2007, Pages 1795-1804, ISSN 0278-6915, DOI: 10.1016/j.fct.2007.03.016.
(http://www.sciencedirect.com/science/article/B6T6P-4NCR9F7-1/2/bb12269af7ea174b954bd6f8f9a6620d)
Abstract:
The dried fruits of Crataegus pinnatifida have been used traditionally as oriental medicine and local soft drink material recently. Previously, we demonstrated that C. pinnatifida exhibited anti-oxidation and anti-inflammatory potential. To clarify the active components in anti-transformation and anti-tumor promotion, we collected the polyphenol fraction (CF-TP) of hot-water extracts from dried fruits of C. pinnatifida for the following study. By anchorage-independent transformation assay, CF-TP significantly inhibited 12-O-tetradecanoylphorbol-13-acetate (TPA)-induced cell transformation in JB6 P+ cells. Moreover, we found that CF-TP inhibited the expression of osteopontin (OPN), a transformational marker, and the activation of NF-[kappa]B and AP-1 induced by TPA in JB6 P+ cells. In addition, we evaluated the effect of CF-TP on TPA application to ICR mouse skin with measurement of H2O2 production, myeloperoxidase (MPO) activity, edema formation, epidermal thickness and leukocyte infiltration. As a result, CF-TP significantly inhibited the generation of reactive oxygen species (ROS) and the phenomena of inflammation induced by TPA. It also suppressed the expression of COX-2 and iNOS, and the activation of ornithine decarboxylase (ODC). Furthermore, CF-TP inhibited benzo[a]pyrene (B[a]P)/TPA-induced skin tumor formation and decreased the incidence of tumor. These results indicate that CF-TP possesses potential as a cancer chemopreventive agent against tumor promotion.
Keywords: Crataegus pinnatifida; 12-O-Tetradecanoylphorbol-13-acetate; Skin tumor; Transformation; Osteopontin

A. Benzioni, M. Van Boven, S. Ramamoorthy, D. Mills, Dynamics of fruit growth, accumulation of wax esters, simmondsins, proteins and carbohydrates in jojoba, Industrial Crops and Products, Volume 26, Issue 3, October 2007, Pages 337-344, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2007.04.004.
(http://www.sciencedirect.com/science/article/B6T77-4NVSWVV-1/2/14c25447e3c858b9ca9f06b56ecb984e)
Abstract:
The aim of this study was to learn the developmental aspects and compositional changes during the development of jojoba [Simmondsia chinensis (Link) Schneider] fruit and seed. Three Israeli clones: Forti, Benzioni and Shiloh were used. By 50-60 days after pollination (DAP) the capsules had grown to attain their full dimensions. Only then did the embryos begin to rapidly gain weight and accumulate storage reserves. Seed growth followed a sigmoid pattern, reaching final weight by about 140 DAP. The appearance of wax bodies began at 55-65 DAP and wax deposition continued during the whole period of seed maturation, including late seed maturation. Protein concentration remained constant during the entire period of seed growth, increasing proportionately with seed weight. Sugar concentration was high at the beginning of the maturation period and declined throughout maturation. The sugar profile changed during maturation as the ratio of sucrose to reducing sugars increased several fold by 50-60 DAP, just as the embryos switched from the embryogenesis stage to maturation and began accumulating storage reserves.
Simmondsins were present at concentrations of 3-4% when sampling first began (47-55 DAP) but no ferulate was detected until 75-86 DAP. During maturation, simmondsins concentration rose gradually and by late maturation, when dehydration began, simmondsins concentration had increased considerably to concentrations of 9-15%.

Three developmental phases were identified: early embryogenesis lasting around 2 months from pollination, maturation with accumulation of storage reserves, and late maturation when simmondsins accumulate.
Keywords: Wax; Simmondsins; Fatty acids; Fatty alcohols; Wax bodies; Protein bodies; Seed development

R.K. Goyal, A.R.P. Kingsly, Pradeep Kumar, Himanshu Walia, Physical and mechanical properties of aonla fruits, Journal of Food Engineering, Volume 82, Issue 4, October 2007, Pages 595-599, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.03.019.
(http://www.sciencedirect.com/science/article/B6T8J-4N9P4F4-4/2/c31b12fd0ff4508722dec484be7b1381)
Abstract:
Physical properties such as length, diameter, size, sphericity, surface area, mass, volume and true density of three aonla cultivars viz., krishna, NA-7, chakaiya were determined. Effect of boiling of fruits in hot water on surface hardness, pulp firmness and toughness was also studied. The size, sphericity and surface area of fruits from cultivars NA-7 was lower than krishna and chakaiya fruits but the mass of NA-7 fruits was higher. The rolling resistance of chakaiya fruits was more than the other fruits in vertical orientation. In radial orientation, the rolling resistance of all the fruits ranged from 12[degree sign] to 28[degree sign]. The seed size and surface area of NA-7 and chakaiya fruits were higher but the seed sphericity was more in krishna cultivar fruits. The mechanical properties of the fruits show that the fruits of different cultivars are not homogenous and also the surface hardness, pulp firmness and toughness reduced when the time of boiling in hot water was increased.
Keywords: Aonla; Physical properties; Surface hardness; Pulp firmness; Toughness

Richard Splivallo, Simone Bossi, Massimo Maffei, Paola Bonfante, Discrimination of truffle fruiting body versus mycelial aromas by stir bar sorptive extraction, Phytochemistry, Volume 68, Issue 20, October 2007, Pages 2584-2598, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2007.03.030.
(http://www.sciencedirect.com/science/article/B6TH7-4NYSHBS-1/2/38d782a28fed66b664b07feb3188fae2)
Abstract:
Stir bar sorptive extraction (SBSE) was applied in head space mode (HS), coupled with GC/MS, to compare the aroma profile of three truffle species. A total of 119 volatile organic compounds (VOCs) were identified from the fruiting bodies, of which 70 were not yet described in truffles and 60 in fungi. VOCs profile showed a high intra- and inter-specific variability, with alcohols and sulfur compounds dominating the HS of Tuber borchii and, alcohols, aldehydes and aromatic compounds the HS of T. melanosporum and T. indicum. Despite these variations, eight VOCs markers could be identified allowing the discrimination of the three species. Additionally, T. borchii and T. melanosporum both distinguished themselves from T. indicum due to higher aroma content and larger variety of sulfur containing compounds. Mycelial VOCs production was also investigated under two cultural conditions and led to the identification of eight VOCs. On one side, seven of them were also detected in the fruiting body, confirming their mycelial origin. On the other side, the total absence of some class of compounds (i.e. sulfur) in the mycelium raises questions about their origins in the fruiting bodies and confirms deep metabolic changes between the reproductive (fruiting body) and vegetative (mycelium) stages.
Keywords: Truffle; Tuber borchii; T. melanosporum; T. indicum; Fruiting body; Mycelium; Volatile organic compounds; Stir bar sorptive extraction

M. Van Zeebroeck, V. Van linden, P. Darius, B. De Ketelaere, H. Ramon, E. Tijskens, The effect of fruit factors on the bruise susceptibility of apples, Postharvest Biology and Technology, Volume

46, Issue 1, October 2007, Pages 10-19, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.03.017.
(http://www.sciencedirect.com/science/article/B6TBJ-4P301WC-1/2/35715d23c48eb98d79171a7b816af090)
Abstract:
Bruise prediction models which are essential for the applicability of the discrete element method (DEM) to simulate bruise damage during fruit transport and handling are discussed. Bruise prediction models relate the contact force during impact, as calculated by DEM through contact force models, with the real bruise damage. Apart from DEM, bruise prediction models can provide useful information about the influence of fruit factors (e.g. ripeness) on bruise susceptibility, leading to recommendations for fruit handling. Regression models were built with impact energy or peak contact force as independent variables. Advantages and disadvantages of both models are discussed. Bruise prediction models were constructed for the apple cultivar `Jonagold', with impacts controlled by a pendulum. Multiple linear and nonlinear regression models were built to link fruit factors such as ripeness, acoustic stiffness, fruit temperature, radius of curvature and harvest date, with bruise damage. Bruise volume was used as a measure for apple bruising. Significant main effects and significant interactions between fruit factors were identified. Interactions between fruit factors (e.g. interaction between harvest date and stiffness), along with interactions between fruit factors and the degree of bruising, were identified. Most of the effects of those fruit factors on bruise damage could be explained by applying theoretical bruise models described in the literature.
Keywords: Bruise; Fruit; Apple; Mechanical damage; Modelling; Discrete element; Regression models

Ahmad S. Khan, Zora Singh, Nadeem A. Abbasi, Pre-storage putrescine application suppresses ethylene biosynthesis and retards fruit softening during low temperature storage in `Angelino' plum, Postharvest Biology and Technology, Volume 46, Issue 1, October 2007, Pages 36-46, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.03.018.
(http://www.sciencedirect.com/science/article/B6TBJ-4P2B40K-1/2/4f3eb82638ee09153b66beb1bcd6f7be)
Abstract:
To investigate the role of putrescine (PUT) in ethylene biosynthesis and fruit softening of plum (Prunus salicina Lindl. cv. Angelino), fruit on trees were sprayed 1 week before anticipated commercial harvest, or after harvest fruit were dipped in an aqueous solution containing different concentrations of PUT (0.0, 0.1, 1.0 and 2.0 mM), and `Tween 20' (0.01%) as a surfactant. Following PUT treatments fruit were stored at 0 +/- 1 [degree sign]C and 90 +/- 5% RH for 0, 3 and 6 weeks. Ethylene production, activities of 1-aminocyclopropane-1-carboxylic acid synthase (ACS) and 1-aminocyclopropane-1-carboxylic acid oxidase (ACO) enzymes, and 1-aminocyclopropane-1-carboxylic acid (ACC) content, fruit firmness and activities of fruit softening enzymes including exo-polygalacturonase (exo-PG), endo-polygalacturonase (endo-PG), pectin esterase (PE) and endo-1,4-[beta]-d-glucanase were estimated after 0, 3 and 6 weeks storage. Pre- and postharvest PUT application reduced ethylene production after 3 and 6 weeks of storage as compared to untreated fruit. Preharvest spray application of higher PUT concentrations substantially reduced ethylene production compared to lower PUT concentrations and postharvest PUT treatments. Activities of ACS enzymes and ACC contents during storage decreased with increased concentration of PUT applied irrespective of the methods of its application, both in skin and pulp tissues. Preharvest PUT-sprayed fruit exhibited lower ACO activities than postharvest PUT-treated skin and pulp tissues. The preharvest spray application of higher concentrations of PUT (2.0 and 1.0) significantly reduced the activities of fruit softening enzymes (exo-PG, endo-PG, PE and EGase) in skin and pulp tissues during storage. In conclusion, pre-storage application of PUT retarded plum fruit softening during low temperature storage through suppressed ethylene

biosynthesis and reduced activities of fruit softening enzymes such as PE, EGase, exo and endo-PG in skin and pulp tissues.
Keywords: ACS; ACO; ACC; Exo-PG; Endo-PG; PE; EGase; Enzymes

Y.Y. Voon, N. Sheikh Abdul Hamid, G. Rusul, A. Osman, S.Y. Quek, Volatile flavour compounds and sensory properties of minimally processed durian (Durio zibethinus cv. D24) fruit during storage at 4 [degree sign]C, Postharvest Biology and Technology, Volume 46, Issue 1, October 2007, Pages 76-85, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.04.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4PGPKV5-1/2/13ea1f4971daaa6f1924878ae3441dcc)
Abstract:
Flavour volatile compounds and sensory attributes in minimally processed durian (Durio zibethinus cv. D24) fruit stored at 4 [degree sign]C for 42 days were examined. The volatile compounds were extracted by solid-phase microextraction (SPME) and analysed by gas chromatography-time of flight mass spectrometry (GC-TOFMS). Forty compounds were identified, among which sulfur compounds, esters, and alcohols were found to be the major constituents. During storage of minimally processed durian at 4 [degree sign]C, decreases in levels of the majority of ester compounds were observed after 14 days of storage. All ester compounds decreased significantly ($P <= 0.05$) after 1 week of storage except for ethyl acetate that decreased after 2 weeks. Ethanethiol, 1-propanethiol, and both isomers of 3,5-dimethyl 1,2,4-trithiolane decreased significantly after 7 days of storage. Total sulfur content of fruit remained unchanged after 42 days of storage. Benzyl alcohol was produced after 4 weeks of storage and increased thereafter. Principal component analysis (PCA) applied to the data differentiated the fruit over the storage period based on 22 compounds exhibiting significant changes between samples and explained 86% of the total variance with two principal components. Quantitative descriptive analysis (QDA) was carried out using sixteen descriptors to describe the surface colour, odour, flavour and texture of fruit during storage. Fruit could be stored for 21 days, after which the green aroma became too intense and rendered the fruit unacceptable. Sulfur notes decreased gradually throughout storage while off odours developed on day 21 and increased to an unacceptable level on day 28 of storage. Sweet and fruity aroma correlated strongly with some ester and aldehyde compounds, while correlations between perceived sulphur aromas and sulphur compounds were poor. A green note and off-odours correlated well with benzyl alcohol and 1-hexanol.
Keywords: Durian; Minimally processed; Flavour; Sensory; Storage

L.I. Lindstrom, C.N. Pellegrini, L.F. Hernandez, Histological development of the sunflower fruit pericarp as affected by pre- and early post-anthesis canopy shading, Field Crops Research, Volume 103, Issue 3, 13 September 2007, Pages 229-238, ISSN 0378-4290, DOI: 10.1016/j.fcr.2007.06.005.
(http://www.sciencedirect.com/science/article/B6T6M-4P83D4T-1/2/bcebe6ba19a8235b0e91ecfad27790c2)
Abstract:
The dynamics of pericarp development compared to that of the embryo, as well as the effect of pre-anthesis and post-anthesis shading on pericarp histogenesis and dry weight dynamics of fruits from two sunflower (Helianthus annuus L.) hybrid cultivars along three capitulum positions, peripheral, mid and central were studied. During fruit formation, the cell division phase of the carpel takes place before anthesis. Eight days after anthesis the pericarp reached its final size, while its cell wall's sclerification was almost complete 13 days after anthesis. Pre-anthesis shading affected the carpel cell division period reducing (17-33%) the number of pericarp middle layer strata and increased the thickenings of the cell wall of the mid (19%) and central (33-63%) fruits. In central fruits, the dry weight accumulation period was reduced. In contrast, post-anthesis shading reduced both the cell wall thickness (16-64%) and the number (38-58%) of pericarp middle layer

sclerified strata of fruits in the three positions of the capitulum. In the mid and central fruits, the dry weight accumulation period extended 11-16 and 3-4 days, respectively, over those of the control. Both shading treatments produced thinner and lighter pericarps, but with different anatomical features that were associated with differences in the efficiency of use of the fruit for industrial oil extraction.
Keywords: Helianthus annuus L.; Fruit development; Pericarp; Shading; Sunflower

F. Khoshnam, A. Tabatabaeefar, M. Ghasemi Varnamkhasti, A. Borghei, Mass modeling of pomegranate (Punica granatum L.) fruit with some physical characteristics, Scientia Horticulturae, Volume 114, Issue 1, 11 September 2007, Pages 21-26, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.05.008.
(http://www.sciencedirect.com/science/article/B6TC3-4P59S1G-1/2/8c64d5e937597d90676cb78a3b718b9c)
Abstract:
Among physical characteristics, dimensions, mass, volume and projected areas are important parameters in sizing and grading systems. Fruits with the similar weight and uniform shape are desirable in terms of marketing value. Therefore, grading fruit based on weight reduces packing and handling costs and also provides suitable packing patterns. The different grading systems require different fruit sizing based on particular parameters. In this study pomegranate mass was predicted by applying different physical characteristics with linear and nonlinear models as three different classifications: (1) single or multiple variable regressions of pomegranate dimensional characteristics, (2) single or multiple variable regression of pomegranate projected areas and (3) estimating pomegranate mass based on its volume. The results showed that mass modeling of pomegranate based on minor diameter and three projected areas are the most appropriate models in the first and second classifications, respectively. In third classification, the highest determination coefficient was obtained for mass modeling based on the actual volume as R2 = 0.99 whereas corresponding values were 0.93 and 0.79 for assumed pomegranate shapes (oblate spheroid and ellipsoid), respectively. In economical and agronomical point of view, suitable grading system of pomegranate mass was ascertained based on minor diameter as nonlinear relation M = 0.06c2 - 4.11c + 143.56, R2 = 0.91.
Keywords: Pomegranate; Mass modeling; Physical characteristics; Grading; Packing; Saveh township

Mohammad Reza Zokaee Khosroshahi, Mahmood Esna-Ashari, Ahmad Ershadi, Effect of exogenous putrescine on post-harvest life of strawberry (Fragaria ananassa Duch.) fruit, cultivar Selva, Scientia Horticulturae, Volume 114, Issue 1, 11 September 2007, Pages 27-32, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.05.006.
(http://www.sciencedirect.com/science/article/B6TC3-4P2B45V-1/2/c4d1d1758f547b74cd50ce139d3464e5)
Abstract:
Effect of different concentrations of putrescine on post-harvest life of strawberry (Fragaria ananassa Duch.) fruit, cultivar Selva at 5 [degree sign]C was studied. Fruits were immerged in 0.3, 0.5, 1 and 2 mM putrescine as well as distilled water (control) for 5 min, then transferred into the fridge (5 [degree sign]C) together with untreated fruits (dry treatment). The rate of weight loss, ethylene production, flesh firmness, soluble solids content, titratable acidity and pH of fruits were determined 5, 9 and 13 days after the beginning of storage. Flesh firmness, appearance, color change and taste of fruits were also determined in the same intervals using a taste panel. Storage life of the strawberry fruits was significantly increased by the use of putrescine, so that the untreated and control fruits had 6 and 8 days storage life, respectively, while the immerged fruits in 1 and 2 mM putrescine were still suitable to be exposed in the market 12 and 14 days after the beginning of storage, respectively. No significant weight losses were observed in treated fruits

compared to controls and dry treatment at all determination times. Ethylene production was decreased significantly by the use of putrescine. Untreated fruits (dry treatment) had the highest rate of ethylene production and the lowest rate was occurred in 2 mM putrescine treatment at all determination times (5, 9 and 13 days after the beginning of storage). The use of putrescine also prevented the softening of fruit flesh during the storage and kept their firmness, so that, the 2 mM putrescine treatment caused the highest fruit firmness at all determination times. Distilled water treatment (control) had the lowest fruit firmness 5 and 9 days after storage, while this occurred for the dry treatment 13 days after storage. Soluble solids content, pH and titratable acidity of the fruits were not significantly affected by the use of putrescine, but the highest and lowest rate of titratable acidity were related to the 2 mM putrescine and dry treatment, respectively, at the three determination times. Overall, the quality of fruits was improved by the use of 2 mM putrescine in terms of properties evaluated by the taste panel.
Keywords: Strawberry; Putrescine; Post-harvest life

Francisco de Assis Alves Mourao Filho, Erick Espinoza-Nunez, Eduardo Sanches Stuchi, Edwin Moises Marcos Ortega, Plant growth, yield, and fruit quality of `Fallglo' and `Sunburst' mandarins on four rootstocks, Scientia Horticulturae, Volume 114, Issue 1, 11 September 2007, Pages 45-49, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.05.007.
(http://www.sciencedirect.com/science/article/B6TC3-4P2S2F7-1/2/e7aa1637482086cf18db90b02af4447b)
Abstract:
Vegetative growth, yield, and fruit quality of `Fallglo' and `Sunburst' mandarins on `Rangpur' lime, `Swingle' citrumelo, `Orlando' tangelo, and `Cleopatra' mandarin were evaluated under subtropical climate of Northern Sao Paulo State, Brazil, from 2000 through 2006 harvest seasons. `Fallglo' mandarin trees had the highest cumulative yield on `Rangpur' lime, and the smallest on `Swingle' citrumelo and `Orlando' tangelo. Plants of this cultivar had the highest yield efficiency on `Rangpur' lime, and the lowest on `Orlando' tangelo. `Sunburst' mandarin trees began to bear fruits later than `Fallglo' mandarin trees, with no differences in yield induced by the rootstocks. `Cleopatra' mandarin induced the most vigorous growth in `Fallglo' mandarin as compared to plants on `Swingle' citrumelo. On the other hand, the largest trees of `Sunburst' mandarin were registered on `Orlando' tangelo, and the smallest on `Rangpur' lime. `Sunburst' mandarin had higher alternate bearing than `Fallglo' regardless the rootstock. Fruit weight and juice content were not affected by the rootstock. These two mandarin scion cultivars may be considered adequate alternatives to produce good fruit quality for the fresh fruit market. `Cleopatra' mandarin and `Rangpur lime are suitable rootstocks for `Fallglo' mandarin, whereas all rootstocks evaluated are adequate for `Sunburst' mandarin.
Keywords: Citrus; Cultivar; Tree vigor

Elizabeth J. Rideout, Jean-Christophe Billeter, Stephen F. Goodwin, The Sex-Determination Genes fruitless and doublesex Specify a Neural Substrate Required for Courtship Song, Current Biology, Volume 17, Issue 17, 4 September 2007, Pages 1473-1478, ISSN 0960-9822, DOI: 10.1016/j.cub.2007.07.047.
(http://www.sciencedirect.com/science/article/B6VRT-4PGR3Y5-1/2/2f806ade98c487e3844b618e40338790)
Abstract: Summary
Courtship song is a critical component of male courtship behavior in Drosophila, making the female more receptive to copulation and communicating species-specific information [1], [2], [3], [4], [5] and [6]. Sex mosaic studies have shown that the sex of certain regions of the central nervous system (CNS) is critical to song production [7]. Our examination of one of these regions, the mesothoracic ganglion (Msg), revealed the coexpression of two sex-determination genes, fruitless (fru) and doublesex (dsx). Because both genes are involved in creating a sexually

dimorphic CNS [8] and [9] and are necessary for song production [10], [11], [12] and [13], we investigated the individual contributions of fru and dsx to the specification of a male CNS and song production. We show a novel requirement for dsx in specifying a sexually dimorphic population of fru-expressing neurons in the Msg. Moreover, by using females constitutively expressing the male-specific isoforms of fru (FruM), we show a critical requirement for the male isoform of dsx (DsxM), alongside FruM, in the specification of courtship song. Therefore, although FruM expression is sufficient for the performance of many male-specific behaviors [14], we have shown that without DsxM, the determination of a male-specific CNS and thus a full complement of male behaviors are not realized.
Keywords: SYSNEURO

Jose Ramon Arevalo, Juan Domingo Delgado, Jose Maria Fernandez-Palacios, Variation in fleshy fruit fall composition in an island laurel forest of the Canary Islands, Acta Oecologica, Volume 32, Issue 2, September-October 2007, Pages 152-160, ISSN 1146-609X, DOI: 10.1016/j.actao.2007.03.014.
(http://www.sciencedirect.com/science/article/B6VR3-4NNYG3S-3/2/56c0283f6526b7b108b93771241a3c14)
Abstract:
Spatial and temporal variations in fruit fall are critical in the structuring of plant populations and are important determinants of canopy composition. We analyzed fruit fall in two laurel forests, near Tenerife, Canary Islands, during one year to quantify temporal variation in fruit abundance and its relationship with canopy composition. There was some temporal synchrony among fruiting tree species in fruit fall phenology at the two study forests. Although the canopy composition of both sites differed significantly, the fruit fall composition did not show significant differences. In spite of that, some species showed differences in abundance between sites, with a greater biomass of Laurus azorica, Ilex perado and Myrica faya at Aguirre than at El Moquinal site. The temporal variation on fruit fall composition was low and it was not possible to infer seasonality in these laurel forests on the basis of fruit fall composition. The analysis revealed significant differences among sites, but not between species.
Our results suggest a potentially important role of frugivores (together with some differences among sites in forest structure) in the spatial fruit pattern. However, temporal patterns are not as clear and only two species showed synchrony in fruit production, which we related with an attenuated seasonality as can be extracted from the lack of differences in fruit production along the different seasons.
Keywords: Canopy composition; DCA; Forest dynamics; Fruiting phenology

Pranab Lal Pakrasi, Anjana Tiwari, Evidence of increased endometrial vascular permeability at the time of implantation in the short-nosed fruit bat, Cyanopterus sphinx, Animal Reproduction Science, Volume 101, Issues 1-2, September 2007, Pages 179-185, ISSN 0378-4320, DOI: 10.1016/j.anireprosci.2006.11.017.
(http://www.sciencedirect.com/science/article/B6T43-4MG5WBF-2/2/8bab93d9082ec70762faf407b436a974)
Abstract:
Early embryonic development and implantation were studied in tropical short-nosed fruit bat Cyanopterus sphinx. We report preimplantation development and embryo implantation. Different stages of cleavage were observed in embryo by direct microscopic examination of fresh embryos after retrieving them either from the oviduct or the uterus at different days, up to the day of implantation. Generally, the embryos enter the uterus at the 8-cell stage. Embryonic development continued without any delay and blastocyst were formed showing attachment to the uterine epithelium at the mesometrial side of the uterus. A distinct blue band was formed in the uterus. The site of blastocyst attachment was visualized as a blue band following intravenous injection of

pontamine blue. Implantation occurred 9 +/- 0.7 days after mating. This study reports that bat embryonic development can be studied like other laboratory animals and that this bat shows blue dye reaction, indicating the site and exact time of implantation. This blue dye reaction can be used to accurately find post-implantational delay. We prove conclusively that this species of tropical bat does not have any type of embryonic diapause.
Keywords: Bat; Preimplantation development; Implantation; Blue dye reaction

Arun Chanchaichaovivat, Pintip Ruenwongsa, Bhinyo Panijpan, Screening and identification of yeast strains from fruits and vegetables: Potential for biological control of postharvest chilli anthracnose (Colletotrichum capsici), Biological Control, Volume 42, Issue 3, September 2007, Pages 326-335, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2007.05.016.
(http://www.sciencedirect.com/science/article/B6WBP-4NXHC9K-2/2/5b3c7436fa0916a0d7be470698e902b5)
Abstract:
Yeasts antagonistic to Colletotrichum capsici were isolated from Thai fruits and vegetables. Four antagonists (R13, R6, ER1, and L2) were found that inhibited C. capsici growth with biocontrol efficacies of 93.3%, 83.1%, 76.6%, and 66.4%, respectively. Identification by 26S rDNA, and ITS region sequence together with physiological and morphological characteristics, showed them to be Pichia guilliermondii, Candida musae, Issatchenkia orientalis, and Candida quercitrusa, in order of their efficacy. P. guilliermondii strain R13 showed efficacy in reducing disease incidence on C. capsici infected chilli fruits to as low as 6.5%. Lower disease incidence was observed at lower storage temperature. The application of P. guilliermondii is more effective for preserving chilli fruits than conventional preservation with chlorinated water.
Keywords: Biocontrol; Antagonist; Yeast; Pichia guilliermondii; Colletotrichum capsici; Chilli fruits; Postharvest

Jean-Francois Debras, Audrey Dussaud, Rene Rieux, Thierry Dutoit, Recherche prospective sur le role << source >> des haies en production fruitiere integree. Le cas des perce-oreilles : Forficula auricularia L. et Forficula pubescens Gene, Comptes Rendus Biologies, Volume 330, Issue 9, September 2007, Pages 664-673, ISSN 1631-0691, DOI: 10.1016/j.crvi.2007.07.003.
(http://www.sciencedirect.com/science/article/B6X1F-4PDSYYB-1/2/2f4951bad2d4de777c13b28c5f16c552)
Abstract:
In pear tree, Forficula auricularia and Forficula pubescens are considered as active predators of the pest Cacopsylla pyri, since that their dispersal characteristics are of crucial importance for biological control. We studied their movement using capture-mark-release-recapture techniques. The aim of this study was to underline a hedge effect as source of beneficials spreading through the orchard. Our results show that movements are mainly linked to the C. pyri fluctuations with a food specialisation for the two species when co-occurring. To cite this article: J.-F. Debras et al., C. R. Biologies 330 (2007).
Keywords: Haies composites; Bordures de champ; Protection integree; Forficules; Cacopsylla pyri; Poirier; Mixed hedgerow; Field boundary; Integrated pest management; Forficulidae; Cacopsylla pyri; Pear tree; Dispersal

David E. Wedge, Barbara J. Smith, Joey P. Quebedeaux, Roysell J. Constantin, Fungicide management strategies for control of strawberry fruit rot diseases in Louisiana and Mississippi, Crop Protection, Volume 26, Issue 9, September 2007, Pages 1449-1458, ISSN 0261-2194, DOI: 10.1016/j.cropro.2006.12.007.
(http://www.sciencedirect.com/science/article/B6T5T-4MYMNP8-1/2/d642dda28362679e111beaa162985530)
Abstract:

Sixteen fungicide treatments were evaluated for control of strawberry fruit diseases in five fungicide studies conducted at Hammond, LA and Poplarville, MS during the 2002, 2003 and 2005 fruiting seasons. The most frequent fruit rots at harvest were anthracnose fruit rot caused by Colletotrichum acutatum, stem-end rot caused by Gnomonia comari, and Botrytis fruit rot caused by Botrytis cinerea. Fungicides from seven groups were shown to be effective for control of strawberry fruit rot diseases in these trials, and the commercial combination fungicides were often the most effective. In at least two trials when compared to the untreated control, total fruit rot was less on berries from the pyraclostrobin+boscalid, cyprodinil+fludioxonil, azoxystrobin, fenhexamid+captan, and captan treatments; anthracnose fruit rot was less on berries from the cyprodinil+fludioxonil and azoxystrobin treatments; and stem-end rot was less on berries from the cyprodinil+fludioxonil, pyraclostrobin+boscalid, captan, azoxystrobin, and pyraclostrobin treatments. While low in all trials, a significant reduction in Botrytis fruit rot incidence occurred in four trials. Berries from the cyprodinil+fludioxonil, fenhexamid, fenhexamid+captan, pyraclostrobin+boscalid, captan, pyrimethanil, and azoxystrobin treatments had the lowest incidence of Botrytis fruit rot. Efficacious fungicides from various FRAC groups will provide strawberry growers with more options for controlling diseases while managing fungicide resistance.
Keywords: Fragaria x ananassa; Colletotrichum acutatum; Gnomonia comari; Botrytis cinerea; Anthracnose fruit rot; Stem-end rot; Botrytis fruit rot; Pathogen resistance management

Y. Ioannides, M.S. Howarth, C. Raithatha, M. Defernez, E.K. Kemsley, A.C. Smith, Texture analysis of Red Delicious fruit: Towards multiple measurements on individual fruit, Food Quality and Preference, Volume 18, Issue 6, September 2007, Pages 825-833, ISSN 0950-3293, DOI: 10.1016/j.foodqual.2005.09.012.
(http://www.sciencedirect.com/science/article/B6T6T-4HJRRR8-1/2/94f168acaf48affc3c43b3179570e51b)
Abstract:
The sensory texture of Red Delicious apples was studied using single point and time-intensity (TI) methods together with penetrometers and in vivo techniques. Testing was performed in two trials on a per fruit basis, not with fruit batches. The standard penetrometer was significantly correlated ($p < 0.05$) to sensory hardness, juiciness, mealiness, crunchiness and degree of breakdown, but not to skin toughness. Facial muscle activity during chewing was collected with electromyography (EMG) together with spit outs for individuals. Parameters such as work done during chewing were extracted from the full EMG signals, and some were found to be related significantly ($p < 0.05$) to the penetrometer data and to sensory hardness. The aspect ratio of expectorated particles related significantly ($p < 0.05$) to sensory hardness and skin toughness.
Principal component analysis shows that 76% of the variance in the combined data set was explained by seven components in Trial 1 and 73% by six components in Trial 2. The first component in both trials was described, principally by hardness, mealiness and the penetrometer value. The second component was described by the EMG signal parameters in Trial 1, and the apple skin properties in Trial 2. Sensory terms hardness, mealiness, crunchiness and juiciness were inter-correlated which may indicate that the texture of Red Delicious apples is perceived as mainly one-dimensional.
Keywords: Sensory; Time-intensity assessments; Electromyography; Expectorated material; Penetrometers; Apples; Texture

I. Seres, I. Farkas, Determination of Air Flow Pattern During Solar Drying of Fruits Using a Low Range Air Speed Sensor, Food and Bioproducts Processing, Volume 85, Issue 3, September 2007, Pages 155-162, ISSN 0960-3085, DOI: 10.1205/fbp07035.
(http://www.sciencedirect.com/science/article/B8JGD-4S1T0R4-2/2/96acff1f302b1a62b2ebbb53ec4935e1)

Abstract:
The solar drying is an attractive drying method in a sense of low temperature dehydration process which is useful for the dry product quality and energy saving including the environmental issues. Moreover, it can be applied in small scale (family size farms) which is in accordance with the distributed resource approach of the sustainable development. In the course of the recent research numerous drying experiments were elaborated with the solar drying of biomaterials, mainly with fruits. Beside the measurements, the modelling of the drying process was also investigated. Special attempt was carried out developing a low range air speed sensor (for measuring natural ventilation during the solar drying process) which can be used with a usual data logging system. After choosing the working principle a one dimensional prototype of the sensor was developed and constructed. Based on the measurements the optimal setting of the sensor was determined. Additionally, the set-up of a two-dimensional sensor prototype is also presented, along with its first measurement results.
Keywords: solar energy; biomaterials; modelling; natural ventilation; measurement; sensor design

Lillian Barros, Paula Baptista, Isabel C.F.R. Ferreira, Effect of Lactarius piperatus fruiting body maturity stage on antioxidant activity measured by several biochemical assays, Food and Chemical Toxicology, Volume 45, Issue 9, September 2007, Pages 1731-1737, ISSN 0278-6915, DOI: 10.1016/j.fct.2007.03.006.
(http://www.sciencedirect.com/science/article/B6T6P-4N8M8BW-1/2/1cc90a212b791186de78d686de09a9a7)
Abstract:
The effects of fruiting body maturity on antioxidant activity and antioxidants production of the wild mushroom, Lactarius piperatus, were evaluated. Several biochemical assays were used to screen the antioxidant properties: reducing power, 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging capacity, inhibition of erythrocytes hemolysis mediated by peroxyl radicals and inhibition of lipid peroxidation using the [beta]-carotene linoleate model system. The amounts of phenols, flavonoids, ascorbic acid, [beta]-carotene and lycopene present in the immature, mature and degraded fruiting bodies were also determined. The highest antioxidant contents and the lowest EC50 values for antioxidant activity were obtained in the mature stage with immature spores.
Keywords: Wild mushroom; Fruiting body maturity; Antioxidant activity; Antioxidant components

Hua-Chang Fang, Chien-Liang Chen, Po-Tsang Lee, Chih-Yang Hsu, Ching-Jiunn Tseng, Pei-Jung Lu, Shung-Lon Lai, Hsiao-Min Chung, Kang-Ju Chou, The role of oxalate in star fruit neurotoxicity of five-sixths nephrectomized rats, Food and Chemical Toxicology, Volume 45, Issue 9, September 2007, Pages 1764-1769, ISSN 0278-6915, DOI: 10.1016/j.fct.2007.03.011.
(http://www.sciencedirect.com/science/article/B6T6P-4NB2WRG-4/2/411a7300818180b4b0b53ebfee0bf396)
Abstract:
To investigate the role of oxalate in star fruit neurotoxicity, rats were given star fruit or oxalate after a sham operation or modified five-sixths nephrectomy; namely, star fruit (SC) or oxalate (OxC) for sham-operated rats and star fruit (SNx), calcium gluconate treated star fruit juice (SCaNx), or oxalate (OxNx) for nephrectomized rats. After feedings, none of the rats in SC, OxC, and SCaNx groups developed movement disorders or died, while all rats in SNx group and OxNx group presented movement disorders and two rats in SNx group and four rats in OxNx group died within minute to hour after development of myoclonic jerk and/or tonic-clonic convulsion. The plasma oxalate levels rose significantly only in the SNx group and OxNx group that also presented clusters of generalized spike-waves in the electroencephalographic recordings. In conclusion, oxalate may play a key role in star fruit neurotoxicity in nephrectomized rats and probably in uremic patients.
Keywords: Star fruit; Oxalate; Renal failure; Neurotoxicity

Michael Netzel, Gabriele Netzel, Qingguo Tian, Steven Schwartz, Izabela Konczak, Native Australian fruits -- a novel source of antioxidants for food, Innovative Food Science & Emerging Technologies, Volume 8, Issue 3, 4th International Congress on Pigments in Food: Pigments in Food - A Challenge to Life Sciences, September 2007, Pages 339-346, ISSN 1466-8564, DOI: 10.1016/j.ifset.2007.03.007.
(http://www.sciencedirect.com/science/article/B6W6D-4NCSGPH-6/2/b363da7076a6b2f28879a0bb8431b36a)
Abstract:
Twelve native Australian fruits, finger lime (red and yellow), riberry, brush cherry, Cedar Bay cherry, muntries, Illawarra plum, Burdekin plum, Davidson's plum, Kakadu plum, Molucca raspberry and Tasmanian Pepper, were investigated for their antioxidant capacity and presence of phenolic compounds, anthocyanins and ascorbic acid. The radical scavenging activities of five of the evaluated fruits were significantly higher (3.1 to 5.2-fold in the TEAC assay and 1.2 to 4.2-fold in the PCL assay, respectively) than that of the control blueberry, cv. Biloxi. The total phenolics level (Folin-Ciocalteu assay) in six of the twelve fruits was 2.5 to 3.9-fold of that of blueberry. Kakadu plum was identified as the richest source of ascorbic acid (938-fold of that of control). A high correlation between total phenolics (but not anthocyanins) and antioxidant capacity was observed. The HPLC-DAD/ESI/MS-MS profiles revealed simple anthocyanin composition (one to four individual pigments) with cyanidin as the dominating type. Australian native fruits investigated in this study are shown to be a novel rich source of antioxidant compounds.Industrial relevance
The search for world unique food ingredients and flavors with enhanced health-beneficial properties is at present one of the key market trends. Botanicals from the regions linked to wellness and natural functionality with exotic fruits called 'superfruits', such as acai from Amazonia, are becoming a popular target of health-conscious consumers and industry managers. Sustainability and responsibility for the environment is another important reason which brings a commitment to ethical products. Utilization of local and seasonal fruits will not only enhance the variety of exotic fruits available on international market, but will contribute toward sustainable agriculture. Our research program addresses all these essential issues. In this manuscript we are describing for the first time twelve native Australian fruits as a rich source of antioxidants. We propose these exotic fruits to be considered as a potential source of bioactive phytochemicals for application in health promoting foods.
Keywords: Native Australian fruits; Antioxidant capacity; Total phenolics; Anthocyanins; Ascorbic acid

Veridiana Vera de Rosso, Adriana Z. Mercadante, Evaluation of colour and stability of anthocyanins from tropical fruits in an isotonic soft drink system, Innovative Food Science & Emerging Technologies, Volume 8, Issue 3, 4th International Congress on Pigments in Food: Pigments in Food - A Challenge to Life Sciences, September 2007, Pages 347-352, ISSN 1466-8564, DOI: 10.1016/j.ifset.2007.03.008.
(http://www.sciencedirect.com/science/article/B6W6D-4NCSGPH-8/2/5cad223ba91e71e315b0bbf9105647e9)
Abstract:
Due to the growing market of food products associated to good health, the colour changes and stability of anthocyanin extracts from acerola, containing high level of ascorbic acid, and from acai, rich in flavonoids, were evaluated in an isotonic soft drink like system and in buffer solution. The degradation of anthocyanins from both sources followed first-order kinetics in all the systems, under air, either in the presence or absence of light. Addition of sugars and salts had a negative effect on the anthocyanin stability, being the rate constant (kobs) values in isotonic soft drink system 6.0 x 10- 2 h- 1 for acerola and 7.3 x 10- 4 h- 1 for acai, both in the dark. In the presence of light, the anthocyanin degradation was 1.2 times faster for acerola and 1.6 times faster for acai

in soft drink isotonic systems, as compared to their respective buffer solutions. The highest stability observed in all acai systems was correlated to its high total flavonoid content and absence of ascorbic acid. The gradual degradation of red colour during storage of all systems was verified by the decrease of a* values, accompanied with decreased colour intensity (decrease in C* values) and tonality changes from red to yellow colour, as the h values increased during the experiment time.Industrial relevance
Functional foods and addition of bioactive compounds to processed foods and drinks are a worldwide growing market. Thus, the aim of this study was to evaluate the stability of added anthocyanins from acerola and acai to an isotonic soft drink system and to study the effect of fluorescent light, mimicking the supermarket conditions, in such systems. Since colour is of fundamental importance for the acceptance of a food by consumers, the colour fading that occurs in these systems was also verified.
Keywords: Acerola; Acai; Anthocyanin; Stability; Isotonic Beverage model system

Coralia Osorio, Martha Sofia Franco, Maria Paola Castano, Maria Lourdes Gonzalez-Miret, Francisco J. Heredia, Alicia Lucia Morales, Colour and flavour changes during osmotic dehydration of fruits, Innovative Food Science & Emerging Technologies, Volume 8, Issue 3, 4th International Congress on Pigments in Food: Pigments in Food - A Challenge to Life Sciences, September 2007, Pages 353-359, ISSN 1466-8564, DOI: 10.1016/j.ifset.2007.03.009.
(http://www.sciencedirect.com/science/article/B6W6D-4NCSGPH-9/2/bd2926de5fcc86f3885e059b70af72d6)
Keywords: Osmotic dehydration; Rubus glaucus; Solanum betaceum; Natural additives; Tristimulus colorimetry

Patricia Esquivel, Florian C. Stintzing, Reinhold Carle, Pigment pattern and expression of colour in fruits from different Hylocereus sp. genotypes, Innovative Food Science & Emerging Technologies, Volume 8, Issue 3, 4th International Congress on Pigments in Food: Pigments in Food - A Challenge to Life Sciences, September 2007, Pages 451-457, ISSN 1466-8564, DOI: 10.1016/j.ifset.2007.03.022.
(http://www.sciencedirect.com/science/article/B6W6D-4ND0RT0-C/2/4a73b8611c2079a2886973593c89bd10)
Abstract:
Pigment profiles, betalain contents, colour and pH-values were studied in fruits from five Hylocereus sp. genotypes originating from Costa Rica. Significant colour differences between fruit pulps from 'Nacional' and 'San Ignacio' were found for C*-values and 'Lisa' exhibited the most reddish tint h[degree sign]. Whereas highest betalain contents were registered in 'San Ignacio' and 'Orejona', lowest values were found in 'Nacional'. Additionally, pigment patterns of the genotypes were found to differ: While 'Lisa', 'Nacional' and 'Orejona' were characterised by a similar betalain pattern, 'Rosa' and 'San Ignacio' were significantly different offering a valuable tool for genotype comparison. Moreover, 'Rosa' showed the highest betanin and isobetanin contents, whereas phyllocactin and hylocerenin were predominant in 'San Ignacio'. Apart from the newly reported betalains neobetanin and gomphrenin I, indicaxanthin was the first betaxanthin so far detected in pitaya fruits.Industrial relevance
Natural substitutes for synthetic colourants are increasingly gaining importance on the global market. In particular, the so-called colouring foodstuffs representing aqueous or oily plant extracts extend their market share with red-coloured preparations being particularly requested. In this regard, pitaya fruits from the genotype Hylocereus have been proposed as promising colour sources, recently. To secure the authenticity of the plant material, a reliable differentiation of pitayas from different origins is required. In addition, Hylocereus fruits may differ in their colour quality and pigment content, the knowledge of which is crucial for the selection of appropriate plants for an emerging pitaya market.

Keywords: Hylocereus; Dragonfruit; Genotypes; Betalains; Colour; Betanin; Phyllocactin; Hylocerenin; Neobetanin; Gomphrenin I; Indicaxanthin

Young-Nam Kim, David W. Giraud, Judy A. Driskell, Tocopherol and carotenoid contents of selected Korean fruits and vegetables, Journal of Food Composition and Analysis, Volume 20, Issue 6, September 2007, Pages 458-465, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.02.001.
(http://www.sciencedirect.com/science/article/B6WJH-4N4J2YV-1/2/f91bca4a314550e2a53b50e7e45fee85)
Abstract:
The tocopherol ([alpha]-, [gamma]-, and [delta]-) and carotenoid ([alpha]-carotene, [beta]-carotene, [beta]-cryptoxanthin, lutein, zeaxanthin, and lycopene) contents of seven raw fruits and 14 raw or processed (cooked or fermented) vegetables commonly consumed by young children in Kwangju, Republic of Korea, were determined using reversed-phase HPLC. All samples were obtained from three different locations (households or local markets) in Kwangju during summer, 2005. All fruits and vegetables in this study had detectable quantities of [alpha]-tocopherol, while many had detectable quantities of [gamma]- and [delta]-tocopherols. [beta]-carotene was contained in all samples except cooked bracken. Except for sweet potato, all fruits and vegetables contained lutein. [beta]-cryptoxanthin and lycopene were not detected in any of the cooked vegetables in this study. Also, none of the fermented vegetables (kimchi) had detectable levels of zeaxanthin and lycopene. The findings of this study may be valuable for use in Korean and other food composition databases.
Keywords: Antioxidants; Tocopherols; Carotenoids; Fruits; Vegetables; Korean foods

Paivi Ekholm, Heli Reinivuo, Pirjo Mattila, Heikki Pakkala, Jani Koponen, Anu Happonen, Jarkko Hellstrom, Marja-Leena Ovaskainen, Changes in the mineral and trace element contents of cereals, fruits and vegetables in Finland, Journal of Food Composition and Analysis, Volume 20, Issue 6, September 2007, Pages 487-495, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.02.007.
(http://www.sciencedirect.com/science/article/B6WJH-4N61FT2-1/2/4cbe81d5bb43bf0856755894e610657b)
Abstract:
The contents of calcium, potassium, magnesium, phosphorous, aluminium, cobalt, copper, iron, manganese, nickel, selenium, zinc, cadmium and lead in cereal products, fruits and vegetables were analysed and the results were compared with those obtained 30 years previously in food samples from Finland. There were significant changes in the trace elements. In most cases trace elements contents are now lower than before. Only the selenium content of foods had clearly increased in Finland, through the use of selenium-supplemented fertilizers. There was a change in average mineral element content only for potassium, whose content was significantly lower than in the middle of the 1970s. We found that trace element density in vegetable foods has decreased over the past three decades. Per capita daily intakes of mineral elements in the 2000s were lower than in the 1970s, although the consumption of fruits and vegetables has increased since 1970s.
Keywords: Mineral element content; Trace element content; Cereal product; Fruits; Root vegetables; Vegetables; Berries; Intake

V. Raghu, Kalpana Platel, K. Srinivasan, Comparison of ascorbic acid content of Emblica officinalis fruits determined by different analytical methods, Journal of Food Composition and Analysis, Volume 20, Issue 6, September 2007, Pages 529-533, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.02.006.
(http://www.sciencedirect.com/science/article/B6WJH-4N5TN65-2/2/909afe461d666200cb95717275318c19)
Abstract:

Emblica fruits have long been endowed with many pharmacological properties, which are attributable to their rich vitamin C content. A recent report that Emblica fruits do not contain ascorbic acid, but contain two hydrolysable low molecular weight tannins with antioxidant attributes, thus challenging the long-standing belief that amla fruits owe their potential pharmacological activity to their vitamin C content. The present study examines the vitamin C content of Emblica fruits by employing a specific enzymatic method in addition to the liquid chromatographic and the conventional spectrophotometric procedures to assess the extent of over-estimation, if any. The specific enzymatic procedure employed here indicated that Emblica fruits do not totally lack vitamin C as claimed and nevertheless, the conventional colorimetric method over-estimates the same in these fruits. A similar determination of vitamin C content in a few other conventionally rich plant sources of this vitamin indicated that over-estimation of vitamin C by colorimetric method is also evident in guava fruits (Psidium guajava) and amaranth leaves (Amaranthus gangeticus), but the extent was lower than that in the Emblica fruits. Thus, the discrepancy in the reported value of this nutrient is not limited to Emblica fruits alone, but can be found in other plant systems also. This study also examined the extent of retention of this vitamin after drying of the Emblica fruits and evidenced that shade drying did not improve the same as compared to sun drying. However, the amount of vitamin C retained in the dried Emblica fruits is comparable to the amounts present in several other fresh fruits.
Keywords: Ascorbic acid; Emblica fruits; Enzymatic determination

Yankun Peng, Renfu Lu, Prediction of apple fruit firmness and soluble solids content using characteristics of multispectral scattering images, Journal of Food Engineering, Volume 82, Issue 2, September 2007, Pages 142-152, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.12.027.
(http://www.sciencedirect.com/science/article/B6T8J-4N0X5J3-6/2/68d51590c7be65dee2e3c64935e1bf7d)
Abstract:
Multispectral scattering is a promising technique for non-destructive sensing of multiple quality attributes of apple fruit. This research developed new, improved methods for processing and analyzing multispectral scattering profiles in order to design and build a better multispectral imaging system for real-time measurement of apple fruit firmness and soluble solids content. Spectral scattering images were obtained from Golden Delicious apples at four selected wavebands (680, 800, 900 and 950 nm) using a common-aperture multispectral imaging system. The scattering intensity and distance were corrected by incorporating the effect of individual apples' size. A new method of correcting scattering image profiles was proposed to minimize the effect of light source variation on the calculation of scattering function parameters. Modified Gompertz and Lorentzian functions with four parameters and their variants were evaluated and compared for predicting fruit firmness and soluble solids content using multi-linear regression and cross-validation methods. The modified Gompertz function had better prediction results with a correlation coefficient (r) of 0.896 and a standard error of prediction (SEP) of 6.50 N for firmness, and r = 0.816 and SEP = 0.92% for soluble solids content. This new function, coupled with the scattering profile correction methods, improved the multispectral scattering technique for measuring fruit quality.
Keywords: Fruit; Apples; Firmness; Soluble solids content; Multispectral imaging; Scattering; Modified Lorentzian function; Modified Gompertz function

Zhaoshen Qing, Baoping Ji, Manuela Zude, Predicting soluble solid content and firmness in apple fruit by means of laser light backscattering image analysis, Journal of Food Engineering, Volume 82, Issue 1, September 2007, Pages 58-67, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.01.016.
(http://www.sciencedirect.com/science/article/B6T8J-4N0HJ8Y-2/2/5104f14e247da7c7faeba170280c9012)

Abstract:
Laser-induced light backscattering imaging was studied regarding its potential for analyzing apple soluble solids content (SSC) and fruit flesh firmness. Images of the backscattering of light on the fruit surface were obtained from `Elstar' and `Pinova' apples using laser diodes emitting at five wavelength bands. Image processing algorithms were tested to correct for dissimilar equator and shape of fruit. Particularly the frequencies of gray scale intensities obtained for selected wavelengths were used for the first time to calibrate on the fruit firmness and SSC using partial least squares regression. Calibration with highest performance for predicting `Elstar' SSC was based on the corrected intensity frequency of raw data set with correlation coefficient of r = 0.89 and standard error of cross validation %SECV = 4.14. For evaluating `Elstar' flesh firmness, corrected frequency gave the highest r = 0.90, and %SECV = 5.49. An inter-cultivar test-set validation of the method resulted in SEP < 13% for SSC and firmness prediction.
Keywords: Apples; Firmness; SSC; Scattering; Imaging

Fabiano A.N. Fernandes, Sueli Rodrigues, Ultrasound as pre-treatment for drying of fruits: Dehydration of banana, Journal of Food Engineering, Volume 82, Issue 2, September 2007, Pages 261-267, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.02.032.
(http://www.sciencedirect.com/science/article/B6T8J-4N3WYCJ-C/2/64c9d9cc85975773fb0a251ff215092d)
Abstract:
Dehydration of fruits is an alternative to reduce post-harvest loss of fruits and also a process to produce dried fruits, which can be directly consumed or become part of foodstuffs like cakes, pastries and many others. The effect of ultrasonic pre-treatment prior to air-drying on dehydration of bananas (Musa ssp.) was investigated. The study allowed estimating the water diffusivity in the air-drying process for bananas submitted to ultrasound. Results showed that the water diffusivity increases after application of ultrasound and that the overall drying time was reduced by 11%, which represents an economy of energy since air-drying is energy cost intensive. During the ultrasonic treatment the bananas lost sugar, so the ultrasonic pre-treatment can be an interesting process to produce dried fruits with low sugar content. The use of ultrasound as a pre-treatment prior to air-drying was compared to the use of osmotic dehydration as a pre-treatment prior to air-drying. Results showed that the use of ultrasonic pre-treatment is interesting when large amounts of water needs to be removed from the fruit, case in which the combined processing time (pre-treatment and air-drying) is shorter.
Keywords: Musa ssp.; Banana; Drying; Ultrasound; Osmotic dehydration; Optimization

Stephanie S. Bauerfeind, Klaus Fischer, Steffi Hartstein, Susann Janowitz, Dominik Martin-Creuzburg, Effects of adult nutrition on female reproduction in a fruit-feeding butterfly: The role of fruit decay and dietary lipids, Journal of Insect Physiology, Volume 53, Issue 9, September 2007, Pages 964-973, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2007.01.013.
(http://www.sciencedirect.com/science/article/B6T3F-4NCSGXN-2/2/18af22482254d272ebc1053b97a97b3d)
Abstract:
It was generally believed that butterflies and other holometabolous insects rely primarily on reserves accumulated during the larval stage for reproduction. Recent studies, however, highlight the often fundamental importance of adult nutrition to realize the full reproductive potential. While the importance of carbohydrates is fairly well understood, the role of most other adult-derived substances is only partially resolved. We here focus on the effects of dietary lipids (cholesterol, polyunsaturated fatty acids) and fruit decay (dietary yeast, ethanol) on female reproduction in the tropical, fruit-feeding butterfly Bicyclus anynana (Nymphalidae). We found that banana-fed control females outperformed all other groups fed on sucrose-based diets. Lipids, yeast or ethanol added to a sugar solution did not yield a similarly high reproductive output compared to fruit-fed females.

Groups fed fresh or decaying banana showed no differences in reproductive performance. As we could not identify a single pivotal substance, we conclude that resource congruence (the use of nutrient types in a specified ratio) rather than any specific nutrient component is of key importance for maximum reproductive output. Further, dietary quality may affect egg hatching success in spite of no obvious effects on egg size and number. Thus, any implications about potential fitness effects of different diets need to consider egg (and hatchling) viability in addition to fecundity.
Keywords: Sterol; Polyunsaturated fatty acid; Yeast; Ethanol; Egg size

Natalie Diane Riediger, Shahin Shooshtari, Mohammed Hassan Moghadasian, The Influence of Sociodemographic Factors on Patterns of Fruit and Vegetable Consumption in Canadian Adolescents, Journal of the American Dietetic Association, Volume 107, Issue 9, September 2007, Pages 1511-1518, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.06.015.
(http://www.sciencedirect.com/science/article/B758G-4PHPPTY-H/2/84731c262ed392582ce39fa51619280d)
Abstract: Background
Poor dietary habits may increase risk for obesity and chronic diseases among Canadian adolescents.Objectives
The aims of the present study were to: (a) establish the patterns of fruit and vegetable intake by Canadian adolescents, and (b) identify the impact of sociodemographic factors--including age, household income, household education, ethnicity, living arrangement, and location--on the pattern of fruit and vegetable intake in this population.Design
This is a cross-sectional study using the data from the Canadian Community Health Survey, Cycle 2.1, Public Use File. The survey used questions similar to a food frequency questionnaire.Methods
Total fruit and vegetable intake of 18,524 Canadian adolescents (12 to 19 years old) was cross-tabulated between two age groups (12 to 14 years old [n=7,410] and 15 to 19 years old [n=11,114]) by sex, level of household education, total household income, ethnicity, living arrangement, and geographical location.Results
The data revealed that a 38.3% of Canadian adolescents in this study consumed fruits and vegetables five to 10 times per day; fewer older adolescents (15- to 19-year-olds) reported eating fruits and vegetables at that frequency as compared with the younger subgroup (12- to 14-year-olds) ($P<0.001$). Household education and income independently had a significant ($P<0.001$) positive impact on fruit and vegetable consumption. Females reported a significantly ($P<0.05$) higher frequency of intake than did males. Adolescents living in homes with only one parent reported a significantly ($P<0.005$) lower frequency of intake, as compared with adolescents living with two parents.Conclusions
These results may help to identify adolescent groups at risk for poor eating habits and support the implementation of programs to encourage higher fruit and vegetable intakes.

David L. Hawksworth, Scott laGreca, New bottles for old wine: fruit body types, phylogeny, and classification, Mycological Research, Volume 111, Issue 9, New Bottles for Old Wine, September 2007, Pages 999-1000, ISSN 0953-7562, DOI: 10.1016/j.mycres.2007.10.002.
(http://www.sciencedirect.com/science/article/B7XMR-4PW5XVY-1/2/bad227d67bf062f96ea6e66891665644)
Abstract:
Molecular phylogenetic studies have made it evident that similar fruit body types, formerly the cornerstone of the classification of ascomycete and basidiomycete fungi, including those that form lichens, are often a result of convergent evolution. This commentary provides an introduction to this special issue of Mycological Research, which is based on papers presented at a one-day joint meeting of the British Mycological Society and the Natural History Museum held in London on 3 December 2005. The nine papers included address this issue in relation to its impact on

classification, and also draw attention to the over-emphasis in fungal classification of ascus types and, in the case of lichen fungi, thallus form.
Keywords: Ascoma; Ascomycota; Basidiome; Basidiomycota; Carpophore; Convergence; Evolution

Martin Grube, David L. Hawksworth, Trouble with lichen: the re-evaluation and re-interpretation of thallus form and fruit body types in the molecular era, Mycological Research, Volume 111, Issue 9, New Bottles for Old Wine, September 2007, Pages 1116-1132, ISSN 0953-7562, DOI: 10.1016/j.mycres.2007.04.008.
(http://www.sciencedirect.com/science/article/B7XMR-4NR18PG-1/2/fd480a08853be58807b99ddfb9918adb)
Abstract:
Following discussions of the definition of the terms `lichen' and `thallus', the role of lichenization in the evolution of asco- and basidiomycetes, and divergence and convergence in fruit body types, the morphogenetic interpretation of types of thallus form in lichens is reviewed. Attention is drawn to the various morphogenetic hypotheses proposed to explain the lichen thallus, but it is concluded that it is best interpreted as a novel phenotype with no exact homologue. Similar ascomatal and thallus types are found in lichen-forming fungi of different orders and families, as now revealed by molecular phylogenetic studies. These are interpreted as examples of convergent evolution, strategies by which unrelated fungi either display captured algae to maximize photosynthetic opportunities, or to attach themselves to a substratum. Phenotypic evolution of fruit body and thallus types in the major orders and clades is summarized, and the thallus types known in each order are tabulated. An hypothesis relating the evolution of these structures to hygroscopic movements is proposed, and the critical position of lichens in developing an integrated approach to ascomycete evolution is emphasized.
Keywords: Ascomycota; Evolution; Lecanoromycetes; Molecular phylogenetics; Photobionts

Adebanjo A. Badejo, Seok T. Jeong, Nami Goto-Yamamoto, Muneharu Esaka, Cloning and expression of GDP-d-mannose pyrophosphorylase gene and ascorbic acid content of acerola (Malpighia glabra L.) fruit at ripening stages, Plant Physiology and Biochemistry, Volume 45, Issue 9, September 2007, Pages 665-672, ISSN 0981-9428, DOI: 10.1016/j.plaphy.2007.07.003.
(http://www.sciencedirect.com/science/article/B6VRD-4P8SJ7W-1/2/c6fc99346e09d13d7545253365293ab7)
Abstract:
Acerola (Malpighia glabra L.) is one of the richest natural sources of l-ascorbic acid (AsA; vitamin C). GDP-d-mannose pyrophosphorylase (GMP; EC 2.7.7.13) was found to play a major role in the proposed AsA biosynthetic pathway in plants, considering that Arabidopsis vtc1-1 mutant with point mutation in this gene has a highly reduced AsA content. GMP cDNA was isolated from acerola fruits, designated MgGMP, using rapid amplification of cDNA ends (RACE), and its expression was monitored during fruit ripening. The full-length cDNA was found to have an ORF of 1083 bp encoding a polypeptide of 361 amino acids. In silico analysis of the predicted amino acid sequence showed a pI of 6.45 and molecular mass of 39.7 kD. MgGMP showed over 80% amino acid sequence identity with other plant GMP homologues. The phylogenetic tree shows the close relation of MgGMP to the GMP of other plants as against those from parasite, yeasts and mammals. Southern analysis indicated that M. glabra contains not less than two copies of GMP genes. Northern blot analysis showed the transcript abundance of MgGMP in all the organs of acerola examined, with the fruit having the highest expression. The relative transcript abundance of MgGMP mRNA levels in the fruits changes as the ripening process progresses, with the unripe green fruits having the highest relative mRNA level, and the lowest was found in the fruits at advanced ripening stage. A strong correlation was also observed between the relative MgGMP mRNA levels and the AsA contents of acerola during fruit ripening.

Keywords: Acerola; Malpighia glabra; Ascorbic acid; Fruit ripening; GDP-d-mannose pyrophosphorylase

Hiroshi Fujii, Takehiko Shimada, Aiko Sugiyama, Fumie Nishikawa, Tomoko Endo, Michiharu Nakano, Yoshinori Ikoma, Tokurou Shimizu, Mitsuo Omura, Profiling ethylene-responsive genes in mature mandarin fruit using a citrus 22K oligoarray, Plant Science, Volume 173, Issue 3, September 2007, Pages 340-348, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2007.06.006.
(http://www.sciencedirect.com/science/article/B6TBH-4P2S8W4-2/2/e1af9979b1de3ef006eaa7af5647caaa)
Abstract:
A comprehensive transcriptome analysis using a citrus 22K oligoarray was performed to identify ethylene-responsive genes and gain an understanding of the transcriptional regulation by ethylene in mandarin fruit (Citrus unshiu Marc.). In the 72 h after ethylene treatment, 1493 genes were identified as ethylene-responsive with more than 3-fold expression change, and an interesting aspect of gene regulation by ethylene was observed, namely, that more than half of the ethylene-responsive genes were repressed. This aspect might suggest that ethylene demotes numerous biological processes and plays an important role in fruit ripening and senescence. Ethylene repressed the transcription of most genes involved in photosynthesis, chloroplast biogenesis, and sugar metabolism, while it induced the transcription of several genes related to resistance, defense, stress, amino acid synthesis, protein degradation, and secondary metabolism. In carotenoid metabolism, the sensitivity and responsive patterns to exogenous ethylene were significantly different among carotenoid biosynthesis genes. Ethylene might cause a change of their transcriptional balance and influence carotenoid composition of fruits. Besides, most of ethylene biosynthesis genes and its signal transduction components did not show any significant expression change (<2-fold) against exogenous ethylene treatment. A type II ethylene receptor (ETR2) showed higher sensitivity to exogenous ethylene than two other type I ethylene receptors (CsETR1 and CsERS1) in mature fruit, providing a new assumption that ETR2 might be associated with low ethylene sensitivity in mature fruit.
Keywords: Microarray; Citrus; Ethylene; Non-climacteric; Ripening

I. Alia-Tejacal, R. Villanueva-Arce, C. Pelayo-Zaldivar, M.T. Colinas-Leon, V. Lopez-Martinez, S. Bautista-Banos, Postharvest physiology and technology of sapote mamey fruit (Pouteria sapota (Jacq.) H.E. Moore & Stearn), Postharvest Biology and Technology, Volume 45, Issue 3, September 2007, Pages 285-297, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.024.
(http://www.sciencedirect.com/science/article/B6TBJ-4NSWV9P-1/2/852e2cd12b9b3ad17fbc827a78dfa0d6)
Abstract:
Sapote mamey is a tropical tree native from Mexico and Central America that shows potential as an alternative commercial crop for tropical and subtropical regions of the world. Its fruit is a good source of nutrients and it is highly appreciated in Mexico and countries of Central and South America because of its pleasant and sweet flavour and the bright deep orange-red colour of the pulp. A clear demand for the fruit exists in these countries and has been recently reported in other countries such as Australia, Israel, Philippines and Spain. This paper reviews information on postharvest biology and technology of sapote mamey fruit published by several authors in the past 60 years and presents experimental data obtained in the last 10 years by our research group. Topics deal with postharvest handling and physiology; changes of quality attributes during ripening such as colour, total soluble solids, firmness, water content, sugars and carotenoids; diseases, insects and disorders during storage; and responses to low temperatures. The effect of controlled and modified atmospheres on the postharvest life and quality of sapote mamey is also discussed. Other postharvest treatments and technologies that have been evaluated on this fruit are also revised, including the use of ethrel, the application of the ethylene action inhibitor 1-

methylcyclopropane and the effect of heat treatments for quarantine purposes and waxing to extend the storage life. Since the preservation and exchange of native material is essential for breeding studies and for making new improved varieties available for commercial production, the creation of a bank of germplasm is an idea also presented in the paper. We believe this review will serve as a useful reference for those studying and investigating postharvest aspects of sapote mamey fruit. Hopefully, it will also encourage future research to preserve the quality, minimize postharvest loses and increase the demand for this pleasant and exotic fruit.
Keywords: Ripening; Respiration rate; Ethylene production; Diseases; Pests; Chilling injury; Controlled and modified atmospheres; Germplasm bank

Nikos Tzortzakis, Anne Borland, Ian Singleton, Jeremy Barnes, Impact of atmospheric ozone-enrichment on quality-related attributes of tomato fruit, Postharvest Biology and Technology, Volume 45, Issue 3, September 2007, Pages 317-325, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.03.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4NS369M-1/2/ec32d9f0773fb57bcea5c487416398f8)
Abstract:
Tomato fruit (Lycopersicon esculentum L. cv. Carousel) were exposed to ozone concentrations ranging between 0.005 (controls) and 1.0 [mu]mol mol-1 at 13 [degree sign]C and 95% RH. Quality-related attributes and organoleptic characteristics were examined during and following ozone treatment. Levels of soluble sugars (glucose, fructose) were maintained in ozone-treated fruit following transfer to `clean air', and a transient increase in [beta]-carotene, lutein and lycopene content was observed in ozone-treated fruit, though the effect was not sustained. Ozone-enrichment also maintained fruit firmness in comparison with fruit stored in `clean air'. Ozone-treatment did not affect fruit weight loss, antioxidant status, CO2/H2O exchange, ethylene production or organic acid, vitamin C (pulp and seed) and total phenolic content. Panel trials (employing choice tests, based on both appearance and sensory evaluation) revealed an overwhelming preference for fruit subject to low-level ozone-enrichment (0.15 [mu]mol mol-1), with the effect persisting following packaging.
Keywords: Fruit storage; Preservation; Organoleptics; Sensory evaluation; Tomato

N. Kyu Kyu Win, P. Jitareerat, S. Kanlayanarat, S. Sangchote, Effects of cinnamon extract, chitosan coating, hot water treatment and their combinations on crown rot disease and quality of banana fruit, Postharvest Biology and Technology, Volume 45, Issue 3, September 2007, Pages 333-340, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.01.020.
(http://www.sciencedirect.com/science/article/B6TBJ-4NP3P2V-1/2/99c3f83b346edf4515435417e20545f1)
Abstract:
The antifungal activities of cinnamon extract (CE), piper extract (PE) and garlic extract (GE) were evaluated on banana crown rot fungi (Colletotrichum musae, Fusarium spp. and Lasiodiplodia theobromae) in vitro. The assay was conducted with extracts of CE, PE and GE with concentrations of 0, 0.1, 0.5, 1.0, 5.0, 10.0 and 0.75 g L-1 of carbendazim (CBZ) on potato dextrose agar at room temperature. CE completely inhibited conidial germination and mycelial growth of all fungi at 5.0 g L-1. PE totally suppressed mycelial growth of all fungi at 5.0 g L-1 and conidial germination at 10.0 g L-1 except for Fusarium spp. GE had no significant effects but low concentrations (0.1 and 0.5 g L-1) enhanced germ tube elongation of the three fungi. The ED50 values were higher for mycelial growth than for conidia except for Fusarium spp. Combined treatments were investigated on crown rot development in banana fruit (Musa AAA group `Kluai Hom thong'). Treatments included 5.0 g L-1 CE, 1% (w/v) chitosan solution, hot water treatment (HWT, 45 [degree sign]C for 20 min), CE plus chitosan, CE plus HWT and 0.75 g L-1 of CBZ, applied before and after inoculation of the fruit. Crown rot development was assessed during

storage at 13 [degree sign]C for 7 weeks. Disease development was least (25%) on CE treated fruit after inoculation compared to CBZ but was higher when CE was applied before inoculation. Chitosan significantly delayed ripening as in terms of peel color, firmness, soluble solids and disease severity. CE showed no negative effects on quality of fruit. CE plus HWT caused unacceptable peel browning.
Keywords: Banana; Cinnamon; Chitosan; Crown rot; Hot water treatment; Musa AAA group; Quality

Jorunn Borve, Mekjell Meland, Arne Stensvand, The effect of combining rain protective covering and fungicide sprays against fruit decay in sweet cherry, Crop Protection, Volume 26, Issue 8, August 2007, Pages 1226-1233, ISSN 0261-2194, DOI: 10.1016/j.cropro.2006.10.020.
(http://www.sciencedirect.com/science/article/B6T5T-4MHPH99-2/2/2c9655e006c8e40e3920b58ff9c446ec)
Abstract:
Combinations of covering and fungicide applications were tested on two sweet cherry cultivars; Van during two years (2001 and 2002) and Lapins three years (2001-2003). The following treatments were tested in 2001 and 2002: (i) covering during flowering and from 5 to 6 weeks prior to harvest and throughout harvest, no fungicides applied, (ii) as (i) but fungicides were applied once or twice between the two covering periods, (iii) covered 5 to 6 weeks prior to harvest and throughout harvest, fungicides applied two or three times prior to covering, and (iv) uncovered throughout the season, fungicides applied two or three times in the period from flowering towards harvest. In 2003, the trees were covered only from 5 to 6 weeks prior to harvest and throughout harvest. Both treatments that year received fungicide applications during flowering, but one of the treatments was left unsprayed during the green fruit period prior to covering. Every combination of covering and fungicide applications reduced total fruit decay at harvest significantly compared to a full fungicide programme and no covering. In three of four trials when the trees were covered during flowering and prior to harvest, and fungicide applications were omitted in the green fruit phase between the covering periods, no significant increase in fruit rot occurred compared to treatments where fungicides were applied. However, in one trial there was a significant increase in fruit rot by leaving out one fungicide spray during that intermittent period. Furthermore, if fungicides were only applied during flowering and not on green fruit before covering in 2003, a significant increase in fruit rot occurred. Thus, leaving out fungicide applications during that supposedly less susceptible green fruit period, increased the risk of acquiring fruit rot. Applying fungicides during the green fruit stage significantly reduced the amount of brown rot in four of five trials and anthracnose in one of five trials. No negative effect on fruit quality was found from the extended covering periods. It can be concluded that covering effectively replaced fungicide applications during flowering and prior to harvest.
Keywords: Anthracnose; Brown rot; Grey mould; Fruit quality; Prunus avium

Ana Paula Landi Librandi, Tais Nader Chrysostomo, Ana Elisa C.S. Azzolini, Carem Gledes Vargas Recchia, Sergio Akira Uyemura, Ana Isabel de Assis-Pandochi, Effect of the extract of the tamarind (Tamarindus indica) fruit on the complement system: Studies in vitro and in hamsters submitted to a cholesterol-enriched diet, Food and Chemical Toxicology, Volume 45, Issue 8, August 2007, Pages 1487-1495, ISSN 0278-6915, DOI: 10.1016/j.fct.2007.02.008.
(http://www.sciencedirect.com/science/article/B6T6P-4N2TS4R-4/2/753ccde4023004e858dbf9df5a155dda)
Abstract:
This work evaluated a crude hydroalcoholic extract (ExT) from the pulp of the tamarind (Tamarindus indica) fruit as a source of compounds active on the complement system (CS) in vitro. ExT, previously characterized by other authors, had time and concentration dependent effects on the lytic activity of the CS. The activity of 0.8 mg/mL of the extract on the classical/lectin

pathways (CP/LP) increased after 30 min of pre-incubation, while that of the alternative pathway (AP) decreased after 15 min at 1 mg/mL. Since the CS is a mediator of inflammation, studies were also made in vivo, taking advantage of a model of hypercholesterolemia in hamsters to investigate the role of CS in the phase preceding the inflammatory process of atherosclerosis. Hamsters submitted to a diet rich in cholesterol showed increased lytic activity of the CP/LP and AP after 45 days. The activity levels of C2 and factor B components on respectively, classical/lectin and alternative pathways of the CS also increased. Early events cooperating to trigger the process of atherosclerotic lesions are not completely understood, and these alterations of complement may participate in these events. When treatment with a diet rich in cholesterol was associated to the furnishing of ExT, evaluation of complement components and complement lytic activity showed values similar to those of the controls, showing that treatment with ExT blocked the increase of complement activity caused by the cholesterol-rich diet. By itself, ExT had no effect on the complement system in vivo. ExT activity on the CS may be of interest for therapy and research purposes.
Keywords: Tamarind fruit extract; Complement system; Hyperlipidemia; Hamsters

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P. Ohri-Vachaspati, Improving Fruits and Vegetable Intake Through a Community Foods Approach, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A85, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.217.
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R.A. Richins, N. Christensen, M. Isrealsen, C. Albrect, C. Washburn, Development, Evaluation, and Efficacy of a Heart Healthy Curriculum in Two Different Education Settings; Emphasizing Food Portioning and Cooking Skills, Increased Fruits, Vegetables, Whole Grains, Low-Fat Dairy and Exercise, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A94, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.254.
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(http://www.sciencedirect.com/science/article/B758G-4P8G9Y7-CW/2/90dff1ebad77545166fbeb538ac66b89)

B.L. Marsh, R.B. Swanson, J.G. Fischer, J. Wade, M. Johnson, A Pilot Study With Older Women: Taste and Smell Status Effects on the Success of a Fruit and Vegetable Nutrition Education Program, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA

FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A114, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.437. (http://www.sciencedirect.com/science/article/B758G-4P8G9Y7-FP/2/5c05fe6d34e91984b17e4be9b657e0d4)

C.I. Nindo, J.R. Powers, J. Tang, Influence of Refractance Window evaporation on quality of juices from small fruits, LWT - Food Science and Technology, Volume 40, Issue 6, August 2007, Pages 1000-1007, ISSN 0023-6438, DOI: 10.1016/j.lwt.2006.07.006. (http://www.sciencedirect.com/science/article/B6WMV-4KPPCPC-1/2/81804ea5c044881c48f978e6c74d9f25)
Abstract:
A new type of evaporator (Refractance Window(R) (RW) evaporator) has been developed that operates at atmospheric conditions and uses thermal energy from hot water to concentrate foods. The influence of product temperature and dissolved solids on vitamin C in blueberry juice and color of cranberry juice was evaluated in this new evaporation method in comparison with conventional falling film multi-effect evaporators. During RW evaporation, vitamin C in blueberry juice was reduced by 32% and 48% with product temperatures at 55.5 and 59.0 [degree sign]C, respectively. Concentration of the same juice from single strength to 65[degree sign]Brix in an industrial falling film evaporator operating at 68 [degree sign]C reduced vitamin C content by 70.1%. The color of cranberry juice, defined by the hue angle, was not significantly different between the concentrates from the RW and falling film evaporation methods. Further investigation is needed for complete insights into the mechanism for vitamin C loss in RW evaporation.
Keywords: Atmospheric evaporator; Blueberry and cranberry juice; Color; Ascorbic acid

De-Ming Jiang, Zhi-Hong Wu, Jing-Yi Zhao, Yue-Zhong Li, Fruiting and non-fruiting myxobacteria: A phylogenetic perspective of cultured and uncultured members of this group, Molecular Phylogenetics and Evolution, Volume 44, Issue 2, August 2007, Pages 545-552, ISSN 1055-7903, DOI: 10.1016/j.ympev.2007.04.004. (http://www.sciencedirect.com/science/article/B6WNH-4NJ20F8-2/2/14cd6089b336e933e65f2b5ea0d6cc41)
Abstract:
The diversity of myxobacteria present in campus garden soil was surveyed by both cultivation-based and cultivation-independent methods. Detailed phylogenetic analysis of cultured and uncultured myxobacteria 16S rRNA gene sequences revealed that many undescribed relatives of the myxobacteria exist in nature. Molecular systematic analyses also revealed that myxobacterial genera described to date on the basis of the morphology of multi-cellular fruiting bodies were mostly monophyletic. However, these known taxa comprised only in a small part of the sequences recovered directly from soil in a cultivation-independent approach, indicating that the group is much more diverse than previously thought. We propose that the myxobacteria exist in two forms: the fruiting and the non-fruiting types. Most of the uncultured myxobacteria may represent taxa which rarely form fruiting bodies, or may lack some or all of the developmental genes needed for fruiting body formation. In order to identify non-fruiting myxobacteria, new morphology-independent cultivation and isolation techniques need to be developed.
Keywords: Fruiting body formation; Myxobacteria; [delta]-Proteobacteria; Cultivation-independent survey; Cultured; Uncultured; Phylogeny

Matthijs J.M. Wagemaker, Daniel C. Eastwood, Jelle Welagen, Chris van der Drift, Mike S.M. Jetten, Kerry Burton, Leo J.L.D. Van Griensven, Huub J.M. Op den Camp, The role of ornithine aminotransferase in fruiting body formation of the mushroom Agaricus bisporus, Mycological Research, Volume 111, Issue 8, August 2007, Pages 909-918, ISSN 0953-7562, DOI: 10.1016/j.mycres.2007.05.012.

(http://www.sciencedirect.com/science/article/B7XMR-4NX8N3R-1/2/fa0611a4e4ea86635b66b16fae4d8dd2)
Abstract:
The complete oat gene and cDNA from the commercial mushroom, Agaricus bisporus, encoding ornithine aminotransferase (OAT) was characterized. The gene encodes a 466 amino acid protein and provides the first fully reported homobasidiomycete OAT protein sequence. The gene is interrupted by ten introns, and no mitochondrial targeting motif was present pointing to a cytoplasmic localization. The function of the gene was demonstrated by complementation of a Saccharomyces cerevisiae mutant unable to utilize ornithine as a sole source of nitrogen with an A. bisporus oat cDNA construct. Northern analysis of the oat gene together with the pruA gene (encoding [Delta]1-pyrroline-5-carboxylate dehydrogenase) showed that transcripts of both genes were lower during the first stages of fruiting body development. The higher expression of the oat gene in later stages of development, suggests the importance of ornithine metabolism for the redistribution of metabolites in the developing mushroom. Hplc analysis of all amino acids revealed that ornithine levels increased during fruiting body development whereas proline levels fell.
Keywords: Arginase; Nitrogen metabolism; P5C; Post-harvest; Proline; [Delta]1-pyrroline-5-carboxylate dehydrogenase; Urea

Zhizhen Zhang, Shiyou Li, Cytotoxic triterpenoid saponins from the fruits of Aesculus pavia L., Phytochemistry, Volume 68, Issue 15, August 2007, Pages 2075-2086, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2007.05.020.
(http://www.sciencedirect.com/science/article/B6TH7-4P2JD2M-2/2/24972ee7031b5cf0b49c1e25794b7721)
Abstract:
Continued chemical investigation on the fruits of North American Aesculus pavia L. resulted in the isolation and identification of 13 polyhydroxyoleanene pentacyclic triterpenoid saponins, named aesculiosides IIe-IIk (1-7), and IIIa-IIIf (8-13), together with 18 known compounds: aesculiosides Ia-Ie (14-18), IIa-IId (19-22), IVa-IVc (23-25), 3-O-[[beta]-d-galactopyranosyl(1 --> 2)]-[alpha]-l-arabinofuranosyl(1 --> 3)-[beta]-d-glucuronopyranosyl-21,22-O-diangeloyl-3[beta],15[alpha],16[alpha],21[beta],22[alpha],28-hexahydroxyolean-12-ene (26), 3-O-[[beta]-d-glucopyranosyl(1 --> 2)]-[alpha]-l-arabinofuranosyl(1 --> 3)-[beta]-d-glucuronopyranosyl-21,22-O-diangeloyl-3[beta],16[alpha],21[beta],22[alpha],24[beta],28-hexahydroxyolean-12-ene (27), 3-O-[[beta]-d-galactopyranosyl(1 --> 2)]-[alpha]-l-arabinofuranosyl(1 --> 3)-[beta]-d-glucuronopyranosyl-21,22-O-diangeloyl-3[beta],16[alpha],21[beta],22[alpha],28-pentahydroxyolean-12-ene (28), R1-barrigenol (29), scopolin (30), and 5-methoxyscopolin (31). The structures of these compounds were elucidated by spectroscopic and chemical analyses. Compounds 14-22 and 26-28 were tested in vitro for their activity against 59 cell lines from nine different human cancers including leukemia, non-small cell lung, colon, CNS, melanoma, ovarian, renal, prostate, and breast. It was found that compounds with two-acyl groups at C-21 and C-22 had cytotoxic activity for all cell lines tested with GI50 0.175-8.71 [mu]M, while compounds without acyl groups at C-21 and C-22 had weak or no cytotoxic activity. These results suggest that the acyl groups at C-21 and C-22 are essential for their activity.
Keywords: Aesculus pavia L.; Hippocastanaceae; Cytotoxic activity; Triterpenoid saponins; Aesculiosides

M. Van Zeebroeck, V. Van linden, P. Darius, B. De Ketelaere, H. Ramon, E. Tijskens, The effect of fruit properties on the bruise susceptibility of tomatoes, Postharvest Biology and Technology, Volume 45, Issue 2, August 2007, Pages 168-175, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.022.
(http://www.sciencedirect.com/science/article/B6TBJ-4NJP3MK-1/2/e06bf203062ca0d6b296178f68e420e3)

Abstract:
Bruise prediction models for tomatoes are discussed. These models can provide useful information about the influence of fruit properties (for example ripeness) on bruise susceptibility, leading to recommendations for fruit handling. Statistical models were constructed with impact energy or peak contact force as the main independent variable. Bruise prediction models were made for tomato cultivar `Tradiro'. The impacts were controlled by a pendulum. Multiple linear and nonlinear regression models were made to link fruit properties like ripeness, acoustic stiffness, fruit temperature, radius of curvature and location of impact (partition or compartment of tomato) with bruise damage. Because an objective method to measure the bruise size of tomatoes does not exist, absorbed energy was taken as a measure. Besides significant main effects significant interactions between fruit properties were also identified. Mutual interactions between fruit properties (for example interaction between radius of curvature and temperature) together with significant interactions between some fruit properties and the degree of bruising were noticed. Most of the effects of the fruit properties on bruise damage could be explained.
Keywords: Bruise; Fruit; Tomatoes; Mechanical damage; Fruit properties; Discrete element; Statistical models

Asha, Vidhu A. Sane, Aniruddha P. Sane, Pravendra Nath, Multiple forms of [alpha]-expansin genes are expressed during banana fruit ripening and development, Postharvest Biology and Technology, Volume 45, Issue 2, August 2007, Pages 184-192, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.03.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4NNPH4M-1/2/60c5d2ce8430b188ef0caa6aaa4ee8bf)
Abstract:
Fruit ripening and softening involve depolymerization of complex cell wall components. The complexity of fruit softening through involvement of several cell wall modifying genes has been well documented. More than one class of enzymes and proteins are involved in the process of softening and these may either act sequentially or synergistically. In this paper we provide further evidence of the complexity of fruit softening by demonstrating the simultaneous expression of multiple genes of the same family during softening. We report the identification of four [alpha]-expansin genes, MaEXPA2, MaEXPA3, MaEXPA4 and MaEXPA5 from banana fruit which express differentially during fruit development and ripening. The ORFs range from 750 to 774 bp in size. All four genes also possess two introns with variable sizes ranging from 75 to 343 nucleotides that are conserved in position. All the four genes were expressed during the course of ripening. Of these, MaEXPA2 was fruit specific and showed a strong ripening related and ethylene dependent expression in banana fruit. MaEXPA4 expressed both during fruit growth as well as ripening and might be related to expansion. MaEXPA3 and MaEXPA5 were also expressed in tissues other than fruit. It is concluded that expression of multiple expansin genes might be required for softening not only in dicot fruit such as pear, apple and strawberry but also in monocot fruit such as banana.
Keywords: Expansin; Expansin gene family; Banana; Softening; Ripening; Ethylene

Jacques F. Cajuste, Maria T. Lafuente, Ethylene-induced tolerance to non-chilling peel pitting as related to phenolic metabolism and lignin content in `Navelate' fruit, Postharvest Biology and Technology, Volume 45, Issue 2, August 2007, Pages 193-203, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.01.019.
(http://www.sciencedirect.com/science/article/B6TBJ-4NN1TFW-2/2/899d64fd3703c45ad4242040417cca60)
Abstract:
The involvement of phenylpropanoid metabolism in the beneficial effect of ethylene conditioning in reducing postharvest non-chilling peel pitting occurring in `Navelate' orange fruit has been

investigated. We examined changes in the activities of the enzymes phenylalanine ammonia-lyase (PAL; EC 4.3.1.5), soluble and ionically bound peroxidase (POD, EC 1.11.1.7) and on phenolic and lignin contents in the flavedo and albedo tissues of fruit stored in air at 22 [degree sign]C and constant high (90-95%) RH (control fruit), and in fruit conditioned for 4 days with 2 or 10 [mu]L L-1 ethylene at 22 [degree sign]C and 90-95% RH, and then transferred to air at the same temperature and RH. Non-chilling peel pitting was visible in control fruit after 7 days and sharply increased for up to 14 days, to remain nearly constant thereafter; while conditioning the fruit with both ethylene concentrations considerably reduced it. Soluble and cell wall-related POD activities decreased, and PAL transiently increased, in the albedo and flavedo of control fruit with the appearance of damage. Phenolic and lignin contents slightly increased in the flavedo, while in the albedo, which had a lower PAL activity than the flavedo, phenolic contents barely changed and lignin decreased. Thus, the activation of PAL in both tissues and the slight rise in lignin and phenols in the flavedo may reflect a demand for phenylpropanoid products to reduce non-chilling peel pitting. Furthermore, the decline in POD in both tissues and also the lack of the ability of the albedo to increase phenolic and lignin contents might be related to the low ability of air-treated `Navelate' fruit to overcome this physiological disorder. Fruit conditioned with 10 [mu]L L-1 ethylene maintained higher phenol and lignin levels up to 14 days and higher soluble and ionically bound POD levels up to 21 days in the flavedo, while applying 2 [mu]L L-1 ethylene was less effective. In the albedo, both ethylene concentrations activated soluble POD after transfer of fruit to air and PAL also, though to a lower extent than in the flavedo. Such an increase had a low impact on the phenolic content. Likewise, both ethylene treatments delayed the decline in lignin in the albedo, but the most important differences between control and ethylene-treated fruit occurred when peel damage was very evident in control fruit. The overall results indicate, therefore, that phenolic metabolism may be required for building protecting barriers that would help `Navelate' fruit to reduce non-chilling peel pitting, although additional defense mechanisms which would assist in reducing non-chilling peel pitting in `Navelate' fruit appear to be induced by ethylene pretreatment.

Keywords: Albedo; Citrus; Ethylene; Flavedo; Lignin; Phenylalanine ammonia-lyase (PAL); Rindstaining; Soluble and ionically bound peroxidase (POD); Total phenolics

Xiaodong Zheng, Ting Yu, Rongle Chen, Bin Huang, Vivian Chi-Hua Wu, Inhibiting Penicillium expansum infection on pear fruit by Cryptococcus laurentii and cytokinin, Postharvest Biology and Technology, Volume 45, Issue 2, August 2007, Pages 221-227, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.03.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4NJP9BB-2/2/79fd803482019830052e440a49f0c0f0)

Abstract:
The effectiveness of the cytokinin N6-benzyladenine (6-BA), alone or in combination with the biocontrol yeast Cryptococcus laurentii, in controlling blue mold on pear fruit was assessed. The application of 6-BA (500-2000 [mu]g mL-1) or C. laurentii was effective in reducing Penicillium expansum infection in pear fruit wounds, but its efficacy declined rapidly as the incubation time increased. Integrated application of C. laurentii and 6-BA at 500-2000 [mu]g mL-1, especially at the optimal concentration (1000 [mu]g mL-1), resulted in a more effective and stable inhibition of the mold rots than that of the 6-BA or C. laurentii alone. Treatments of pears with 6-BA at 1000 [mu]g mL-1, alone or with C. laurentii also led to an increase in catalase activity and an inhibition of the activities of both peroxidase and lipoxygenase as well as ethylene production. In addition, 6-BA from 20 to 2000 [mu]g mL-1 did not influence the population growth of C. laurentii in pear fruit wounds. These data suggested that a combination of 6-BA and C. laurentii could integrate the dual biological activities from 6-BA and C. laurentii and might be developed into a novel protection strategy for reduction of the blue mold rot of pear fruit.

Keywords: Catalase; Cryptococcus laurentii; Cytokinin; N6-Benzyladenine; Pear; Penicillium expansum; Postharvest; Senescence

Xiaolin Zheng, Shiping Tian, Michael J. Gidley, Hong Yue, Boqiang Li, Effects of exogenous oxalic acid on ripening and decay incidence in mango fruit during storage at room temperature, Postharvest Biology and Technology, Volume 45, Issue 2, August 2007, Pages 281-284, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.01.016.
(http://www.sciencedirect.com/science/article/B6TBJ-4NM5S5X-1/2/99eaf004046fa3d2f9a8b4d61bac6fa7)
Abstract:
Mango fruit (Mangifera indica L. cv. Zill) were dipped in 5 mM oxalic acid solution for 10 min at 25 [degree sign]C to investigate effects on ripening and decay incidence during storage at room temperature (25 [degree sign]C). The results showed that oxalic acid treatment delayed fruit ripening and reduced fruit decay incidence compared to the control. It was suggested that the physiological effect of oxalic acid in decreasing ethylene production was an important contributor to delaying the ripening process. Oxalic acid treatment might be a promising method for postharvest storage of mango fruit.
Keywords: Decay incidence; Mango fruit; Oxalic acid; Postharvest storage; Ripening

Valerie Gravel, Hani Antoun, Russell J. Tweddell, Growth stimulation and fruit yield improvement of greenhouse tomato plants by inoculation with Pseudomonas putida or Trichoderma atroviride: Possible role of indole acetic acid (IAA), Soil Biology and Biochemistry, Volume 39, Issue 8, August 2007, Pages 1968-1977, ISSN 0038-0717, DOI: 10.1016/j.soilbio.2007.02.015.
(http://www.sciencedirect.com/science/article/B6TC7-4NBRRJN-3/2/6807832233b621876eb988e3b5394365)
Abstract:
Five bacteria (Pseudomonas fluorescens, P. fluorescens subgroup G strain 2, P. marginalis, P. putida subgroup B strain 1 and P. syringae strain 1) and three fungi (Penicillium brevicompactum, P. solitum strain 1 and Trichoderma atroviride) were evaluated to determine their promoting effect on the growth of mature healthy tomato plants grown under hydroponic conditions. P. putida and T. atroviride were shown to improve fruit yields in rockwool and in organic medium. The production or degradation of indole acetic acid (IAA) by the two microorganisms was investigated as possible mechanisms for plant growth stimulation. Both P. putida and T. atroviride were shown to produce IAA. The production of IAA by the two microorganisms was stimulated in vitro by the addition of l-tryptophan, tryptamine and tryptophol (200 [mu]g ml-1) in the culture medium. P. putida and T. atroviride also increased the fresh weight of both the shoot and the roots of tomato seedlings grown in the presence of increasing concentrations of l-tryptophan (up to 0.75 mM). Both microorganisms showed partial degradation of IAA in vitro when grown in a minimal medium with or without sucrose. In addition, the capacity of these microorganisms to reduce the deleterious effect of exogenous IAA was investigated using tomato seedlings. The results showed that the roots of tomato seedlings grown in the presence of increasing concentrations of IAA (0-10 [mu]g ml-1) were significantly longer when seeds were previously treated with P. putida or T. atroviride. The reduction in the detrimental effect of IAA on root elongation could be associated with a reduced ethylene production resulting from a decrease of its precursor 1-aminocyclopropane-1-carboxylic acid (ACC) by microbial degradation of IAA in the rhizosphere and/or by ACC deaminase activity present in both microorganisms.
Keywords: Greenhouse tomato; Hydroponic; Plant growth-promoting microorganisms; Indole acetic acid; Plant growth-promotion; Fruit yields

Tiziana Pandolfini, Barbara Molesini, Angelo Spena, Molecular dissection of the role of auxin in fruit initiation, Trends in Plant Science, Volume 12, Issue 8, August 2007, Pages 327-329, ISSN 1360-1385, DOI: 10.1016/j.tplants.2007.06.011.
(http://www.sciencedirect.com/science/article/B6TD1-4P5RW3J-1/2/0edb71455a60bfd53316d2f2c757a0b9)
Abstract:
Fruit set and growth usually requires fertilization. Fruit set and development without fertilization is called parthenocarpy. Feeding auxin to virgin flowers induces fruit development without fertilization. Recent studies by Hua Wang et al. and Marc Goetz et al. have identified molecular events leading to fruit initiation in the absence of fertilization, showing that parthenocarpy can be achieved by altering different steps of the auxin signaling pathway. Thus, independent evidence indicates that auxin plays a key role in fruit initiation.

M. Arthur Selwyn, N. Parthasarathy, Fruiting phenology in a tropical dry evergreen forest on the Coromandel coast of India in relation to plant life-forms, physiognomic groups, dispersal modes, and climatic constraints, Flora - Morphology, Distribution, Functional Ecology of Plants, Volume 202, Issue 5, 30 July 2007, Pages 371-382, ISSN 0367-2530, DOI: 10.1016/j.flora.2007.04.001.
(http://www.sciencedirect.com/science/article/B7GX0-4NVCFRP-1/2/625a2fa99ec5295efeccf56c5966b0b8)
Abstract:
The fruiting phenology of 22 woody plant species belonging to 19 families was studied with respect to life-forms, physiognomic groups and dispersal modes, for 1 year at monthly intervals, in a tropical dry evergreen forest at Oorani (12[degree sign]11'N, 79[degree sign]57'E) on the Coromandel coast of India. At the community level, bimodal fruiting pattern prevailed, with a major peak in the dry season and a minor one in the early rainy season. An annual fruiting pattern was observed in many species and among the studied species fruiting lasted for 2-9 months. There was no significant difference in the frequency of species at three fruiting stages across the life-form categories and many species of upper and lower canopy trees and lianas were in the ripe fruiting phase during the late dry season. Plant physiognomic groups displayed distinct seasonality in fruiting pattern. The fruit maturation period was much longer for the wet season fruiting brevi-deciduous species than evergreen and deciduous species that fruited during the dry season. The variation in timing of fruiting behaviour among zoochorous species demonstrated less seasonality and zoochorous fruits were available throughout the year. Fruiting in anemochorous species peaked during the driest months and dryness favoured the dissemination of seeds. The fruiting patterns observed in the studied tropical dry evergreen forest across various plant traits were comparable with patterns recorded in other tropical seasonal forests.
Keywords: Climate; Dispersal modes; Fruiting phenology; Life-forms; Physiognomic groups; Tropical dry evergreen forest

Wei-Fu Kong, Jian-Ye Chen, Zhi-Xia Hou, Peng-Fei Wen, Ji-Cheng Zhan, Qiu-Hong Pan, Wei-Dong Huang, Activity and subcellular localization of glucose-6-phosphate dehydrogenase in peach fruits, Journal of Plant Physiology, Volume 164, Issue 7, 26 July 2007, Pages 934-944, ISSN 0176-1617, DOI: 10.1016/j.jplph.2006.06.001.
(http://www.sciencedirect.com/science/article/B7GJ7-4KJ74NK-8/2/495ffc92f0a95be426d11d78d37f344c)
Abstract: Summary
The subcellular distribution and activity of glucose-6-phosphate dehydrogenase (G6PDH, EC 1.1.1.49) were studied in developing peach (Prunus persica L. Batsch cv. Zaoyu) fruit. Fruit tissues were separated by differential centrifugation at 15,000g into plastidic and cytosolic fractions. There was no serious loss of enzyme activity (or activation) during the preparation of fractions. G6PDH activity was found in both the plastidic and cytosolic compartments. Moreover, DTT had no effect

on the plastidic G6PDH activities, that is, the redox regulatory mechanism did not play an important role in the peach fleshy tissue. Results from the immunogold electron-microscope localization revealed that G6PDH isoenzymes were mainly present in the cytosol, the secondary wall and plastids (chloroplasts and chromoplasts), but scarcely found in the starch granules or the cell wall. In addition to a decrease in fruit firmness, the G6PDH activity in the cytotolic and plastidic fractions increased, and anthocyanin started to accumulate during fruit maturation. These results suggest that G6PDH, by providing precursors for metabolic processes, might be associated with the red coloration that occurs in peach fruit.
Keywords: Glucose-6-phosphate dehydrogenase (G6PDH); Peach fruit; Plastid; Subcellular localization; Tissue fractionation

Miguel A. Rosales, Maria M. Rubio-Wilhelmi, Rosa Castellano, Nicolas Castilla, Juan M. Ruiz, Luis Romero, Sucrolytic activities in cherry tomato fruits in relation to temperature and solar radiation, Scientia Horticulturae, Volume 113, Issue 3, 20 July 2007, Pages 244-249, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.03.015.
(http://www.sciencedirect.com/science/article/B6TC3-4NK47DC-5/2/22420e949e16005abec88a85582b602b)
Abstract:
A study has been made concerning the influence of two environmental factors (temperature and solar radiation) on sugar content and sucrolytic activity in cherry tomato fruits during the crop cycle. For this, Solanum lycopersicum cv. Naomi plants were grown in an experimental greenhouse. Three fruit samples were taken over the entire production period: the first sampling at the beginning of harvest [85 days after transplanting (dat)], the second at mid-harvest (160 dat), and the third at the end of harvest (229 dat). The values for temperature and solar radiation peaked in the third sampling, coinciding with an increase in lipid peroxidation, without lowering yield with respect to previous samplings. Regarding the sugar content in the cherry tomatoes, our results showed that the increase in temperature and solar radiation diminished the sucrose content at 229 dat and raised the hexoses (glucose and fructose) as well as starch content, produced primarily by the enzyme sucrose synthase. On the contrary, the rest of the enzymes responsible for sucrose degradation, acid and neutral invertases, showed no notable changes in their activity at the end of the crop cycle. In short, our results suggest that the increase in sucrolytic activity, induced mainly by sucrose synthase under these conditions, contributes to the mechanisms of antioxidant defense by supplying precursors (glucose and fructose) of antioxidant compounds in order to restrict the massive accumulation of ROS and thereby avoid the appearance of cell necrosis and reduce yield losses.
Keywords: Abiotic stress; Fruit production; Invertase; Solanum lycopersicum; Sucrose synthase; Sugars

O. Al-Lahham, N.M. El Assi, M. Fayyad, Translocation of heavy metals to tomato (Solanum lycopersicom L.) fruit irrigated with treated wastewater, Scientia Horticulturae, Volume 113, Issue 3, 20 July 2007, Pages 250-254, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.03.017.
(http://www.sciencedirect.com/science/article/B6TC3-4NMCVBD-1/2/96eab97c0991f78ee0a6fa1b445996b2)
Abstract:
A field experiment was conducted to investigate the extent of translocation of heavy metals to tomato (Solanum lycopersicom L. cvs. 'GS12' and 'RS589956') fruit produced in an open field near to Abu-Nusiar Wastewater Treatment Plant, Amman-Jordan. Seedlings were planted during the seasons of 1999 and 2000 and furrow irrigated with different mixtures of potable water to treated wastewater {100%:0% (1:0, control); 25%:75% (1:3); 50%:50% (1:1); 0%:100% (0:1)}. Tomato fruit, soil and water were examine for heavy metals concentrations, and changes in the pH and electrical conductivity (EC) of the soil were tested. The obtained results revealed an increase in

the concentrations of Cu, Mn and Fe, in the soil correlated with high concentrations found in the wastewater. Additionally, an increase in the pH and EC in the soil was observed with increasing the proportions of wastewater. Results of tomato fruit analysis showed an increased concentration of Fe, Cu, Ni, Mn and Zn in the cultivar 'RS589956', whereas, an increased concentration of Mn and Zn were detected in the cultivar 'GS12', but no accumulation of Cd and Pb in both cultivars. The accumulation of heavy metals in fruit was below the Jordanian standard limits, thus, the use of treated wastewater in irrigation might be feasible.
Keywords: Heavy metals; Irrigation; Potable water; Solanum lycopersicom; Wastewater

M. Colaric, F. Stampar, M. Hudina, Content levels of various fruit metabolites in the `Conference' pear response to branch bending, Scientia Horticulturae, Volume 113, Issue 3, 20 July 2007, Pages 261-266, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.03.016.
(http://www.sciencedirect.com/science/article/B6TC3-4NJ26SJ-3/2/8f89ce8e3aa03916f6d9ffeab01fc113)
Abstract:
The response of `Conference' pear subjected to branch bending in the content levels of various metabolites in its fruit was investigated. The fruits in commercial maturity were sampled in 2004 and 2005 from branches bent in the late summer of 2003 (the summer treatment), from branches bent in the late spring of 2004 (the spring treatment) and from control branches. The content levels of carbohydrates, organic acids and phenolic compounds were compared among treatments in two successive years. The fruit revealed various responses in content levels of metabolites. In the first year after bending, no significant differences were found in the content of each carbohydrate, but in 2005 by far the highest content level of glucose and fructose and the lowest content level of sucrose were found in fruits from the control. The control fruit showed significantly higher content levels of malic acid and lower content levels of some phenolics (chlorogenic and vanillic acid) in the first year after bending, but in the next year the opposite reaction occurred--the control fruit had the lowest content level of malic acid and the highest content level of epicatechin, quercetin-3-d-galactoside and quercetin-3-[beta]-d-glucoside. The comparison of the two bending treatments alone in 2004 showed that the summer treatment often produced a slightly higher value of each phenolic in comparison to the spring treatment. However, in 2005 the significantly highest content of chlorogenic acid was in fruit from the spring treatment. Sorbitol, as well as citric acid, catechin and sinapic acid showed no clear tendency among treatments, neither in 2004 nor in 2005. It is suggested that these variations of `Conference' fruit subjected to different bending treatments could not be the result of bending alone, but that they could be indirectly affected by other physiological responses of the fruit tree. However, it seemed that variations are affected by the time of bending and by the year-to-year, and such responses can be attributed to the `Conference' genotype only.
Keywords: Pear; Pyrus communis; Branch bending; Fruits; Carbohydrates; Organic acids; Phenolic

M.T. Treeby, R.E. Henriod, K.B. Bevington, D.J. Milne, R. Storey, Irrigation management and rootstock effects on navel orange [Citrus sinensis (L.) Osbeck] fruit quality, Agricultural Water Management, Volume 91, Issues 1-3, 16 July 2007, Pages 24-32, ISSN 0378-3774, DOI: 10.1016/j.agwat.2007.04.002.
(http://www.sciencedirect.com/science/article/B6T3X-4NVCFW3-1/2/a2cd8788d6e3e7c29a4908c13a54791b)
Abstract:
Bellamy navel orange trees grafted on five rootstocks within an orchard in south-western NSW, Australia, were irrigated with low-level sprinklers using three irrigation strategies during the 1999/2000 and 2000/2001 seasons to determine the effects of deficit irrigation (DI) and partial rootzone drying (PRD) on fruit development and quality. Treatments were 10 ML ha-1 season-1 of

water applied on both sides of the tree at each irrigation event (control--C), 5.9 ML ha-1 season-1 also applied across the orchard floor (DI) and 5.5 ML ha-1 season-1 applied by alternately wetting each side of the tree during alternate irrigation events (PRD). Mean crop load based on the weight and number of fruit per canopy m2 decreased in the second season (from 7.5 kg and 43 fruit to 4.4 kg and 34 fruit m-2), across all irrigation treatments. Across seasons, trees on citrange and trifoliate orange rootstocks were most affected. Fruit size and fresh weight were significantly affected by water volume, but not irrigation strategy at Stage I/Stage II transition and colour break, with C fruit being 4% larger and weighing 10% more than the DI and PRD fruit. At maturity, fruit from the PRD treatment were the smallest and weighed the least, while fruit from the C were the largest and weighed the most. Total soluble solids and titratable acidity in juice at maturity were significantly higher in the DI and PRD fruit (average 14.4 [degree sign]Brix, 1.27 g L-1 titratable acidity) compared with C fruit (13.1 [degree sign]Brix, 1.12 g L-1 titratable acidity). Fruit rind thickness varied depending on rootstock and sampling time. Reduced water volumes were associated with thinner rinds at the end of the season and lower incidences of moderate and severe symptoms of albedo breakdown.
Keywords: Deficit irrigation; DI; Partial rootzone drying; PRD; Citrus; Yield; Fruit size; Albedo breakdown; Rootstocks

Bernardo E. Lechner, Edgardo Alberto, Optimal conditions for the fruit body production of natural occurring strains of Lentinus tigrinus, Bioresource Technology, Volume 98, Issue 9, July 2007, Pages 1866-1869, ISSN 0960-8524, DOI: 10.1016/j.biortech.2005.07.036.
(http://www.sciencedirect.com/science/article/B6V24-4MVDVFC-1/2/e7c3301521d0e40a7d84c52d0d45fcad)
Abstract:
Lentinus tigrinus is a species with a fleshy pileus, strong odor and agreeable taste. In order to determine the optimal conditions for the production of this species, three substrates based on Salix sp. sawdust, wheat straw and supplements were tested in 500 g dry weight bags at two different fruiting temperatures. Naturally occurring strains of this species were incubated at 30 [degree sign]C. Primordium initiation could be observed 11-16 days after induction conditions began. This species produced highest yields with biological efficiency (BE) of 62% with supplemented sawdust at 25 [degree sign]C. When bags were reduced to 100 g dry weight, spawning run time was reduced from 28 to 30 to 10 to 14 days and BE increased more than 100%. L. tigrinus is a promising species with possibilities for commercial production.
Keywords: Natural occurring species; Lentinus tigrinus; Mushroom cultivation; Wheat straw; Salix sawdust; Agricultural waste

Sule Isin, Ismet Yildirim, Fruit-growers' perceptions on the harmful effects of pesticides and their reflection on practices: The case of Kemalpasa, Turkey, Crop Protection, Volume 26, Issue 7, July 2007, Pages 917-922, ISSN 0261-2194, DOI: 10.1016/j.cropro.2006.08.006.
(http://www.sciencedirect.com/science/article/B6T5T-4M33VPN-6/2/e1fea65bdabe81d466bb1c9a376cd83a)
Abstract:
In this study, 61 randomly selected fruit-growers in a specific area of Turkey were interviewed to reveal their perceptions regarding the harmful effects of pesticides and whether these are reflected in their pesticide practices. After their perceptions of pesticides as harmful to the environment and human health were determined, their pesticide practices were investigated. Whether these perceptions and certain characteristics of the farmers had an impact on their practices was assessed using a logistic regression, assuming that producers who regard pesticides as slightly harmful or harmful to the environment and human health would be more sensitive in their practices. The analysis showed that behaviour adopted by farmers with regard to pesticide practices was influenced more by characteristics such as age, fruit-growing experience and

education. Thus the perception on the harmful effects of the pesticides is not fully reflected in practices and that attitudes and practices are inconsistent with each other. Various precautions need to be taken in order to bring about a consistency between the farmers' existing environmental awareness and their behaviour.
Keywords: Perceptions; Pesticide; Cherry; Peach; Raisin; Logistic regression; Turkey

Ya-Ling Hsu, Po-Lin Kuo, Chien-Yu Cho, Wen-Chiu Ni, Tz-Fei Tzeng, Lean-Teik Ng, Yueh-Hsiung Kuo, Chun-Ching Lin, Antrodia cinnamomea fruiting bodies extract suppresses the invasive potential of human liver cancer cell line PLC/PRF/5 through inhibition of nuclear factor [kappa]B pathway, Food and Chemical Toxicology, Volume 45, Issue 7, July 2007, Pages 1249-1257, ISSN 0278-6915, DOI: 10.1016/j.fct.2007.01.005.
(http://www.sciencedirect.com/science/article/B6T6P-4MV758G-1/2/48d6d963e22f6b3bf1b9efbc1fb86e61)
Abstract:
In this study, we first report the anti-invasive effect of ethylacetate extract from Antrodia cinnamomea (EAC) fruiting bodies in the human liver cancer cell line PLC/PRF/5. Treatment with EAC decreased the cancer invasion of PLC/PRF/5 cells in a dose-dependent manner. This effect was strongly associated with a concomitant decrease in either the level or activity of VEGF, MMP-2, MMP-9 and MT1-MMP, and an increase in the expression of TIMP-1 and TIMP-2. EAC inhibited constitutively activated and inducible NF-[kappa]B in both its DNA-binding activity and transcriptional activity. Furthermore, EAC also inhibited the TNF-[alpha]-activated NF-[kappa]B-dependent reporter gene expression of MMP-9 and VEGF, and the invasion of cancer cells. EAC also exhibited an inhibitory effect on angiogenesis in a Matrigel Plug Angiogenesis Assay. Further investigation revealed that EAC's inhibition of cancer cell growth and invasion was also evident in a nude mice model. Our results indicate that EAC inhibits the activation of NF-[kappa]B, and may provide a molecular basis for drug development using EAC as an anti-invasive agent in the prevention and treatment of cancer.
Keywords: Antrodia cinnamomea; Invasion; Liver cancer; MMPs; NF-[kappa]B

A.G. Liew Abdullah, N.M. Sulaiman, M.K. Aroua, M.J. Megat Mohd Noor, Response surface optimization of conditions for clarification of carambola fruit juice using a commercial enzyme, Journal of Food Engineering, Volume 81, Issue 1, July 2007, Pages 65-71, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.10.013.
(http://www.sciencedirect.com/science/article/B6T8J-4MG1NNB-3/2/c9b034afc238088c0a6ef84c49e10cf0)
Abstract:
Response surface methodology (RSM) was employed for simultaneous analysis of the effects of enzymatic treatment conditions of incubation time, incubation temperature and enzyme concentration on physical characteristics such as turbidity, clarity, viscosity, and color. In this study, a two-factor central composite design was used to establish the optimum conditions for the enzymatic treatment for clarification of carambola fruit juice. Carambola fruit juice was treated with pectinase enzyme at different incubation time (20-100 min), incubation temperature (30-50 [degree sign]C) and enzyme concentration (0.01-0.10 v/v%). These three variables were used as independent variables, whose effects on turbidity, clarity, viscosity and color were evaluated. Significant regression models describing the changes on turbidity, clarity, viscosity and color with respect to the independent variables were established with coefficient of determination, R2, greater than 0.70. The results indicated that the enzyme concentration was the most important factor affecting the characteristics of the carambola fruit juice as it exerted a significant influence on most of the dependent variables. The recommended enzymatic treatment condition from the study was at 0.10% enzyme concentration at 30 [degree sign]C for 20 min.
Keywords: Carambola juice; Enzymatic treatment; Optimization; Response surface methodology

G.P. Moreda, J. Ortiz-Canavate, F.J. Garcia-Ramos, M. Ruiz-Altisent, Effect of orientation on the fruit on-line size determination performed by an optical ring sensor, Journal of Food Engineering, Volume 81, Issue 2, July 2007, Pages 388-398, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.11.013.
(http://www.sciencedirect.com/science/article/B6T8J-4MT54YF-1/2/5b675dde949d0e8a1303abfbb0b4e924)
Abstract:
This work aims to report on the applicability of an optical ring sensor system to the on-line size determination of non-spherical fruits such as tomatoes and kiwifruits. The effect of both the controlled and random orientation of fruits on the reliability, i.e. accuracy and repeatability of measurements, was analyzed. Authors concluded that random orientation negatively affects the reliability of volume measurements due to the swinging movement of the fruit itself when crossing the optical ring sensor.
Keywords: Fruit; Grading; Orientation; Size; Sorting; Volume

Preethi Radhakrishnan, Phillip W. Taylor, Seminal fluids mediate sexual inhibition and short copula duration in mated female Queensland fruit flies, Journal of Insect Physiology, Volume 53, Issue 7, July 2007, Pages 741-745, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2006.10.009.
(http://www.sciencedirect.com/science/article/B6T3F-4M87423-1/2/fe68e599e5cb28bbce0f1a7797d88659)
Abstract:
Molecules in male seminal fluid transferred to female insects during mating can have potent effects on their subsequent sexual and reproductive behaviour. Like many other tephritids, female Queensland fruit flies (Bactrocera tryoni) typically have diminished sexual receptivity after their first mating. Also, copulations of females that do remate tend to be shorter than those of virgins. We here find that virgin females injected with small doses (0.1, 0.2 or 0.5 male equivalents) of extracts from the male reproductive tract accessory tissues, which consist of male accessory glands, ejaculatory apodeme and ejaculatory duct (AG/EA/ED), have diminished receptivity and short copula duration very similar to naturally mated females. In contrast, virgin females injected with saline or with high doses of AG/EA/ED (1 or 2 male equivalents) that likely exceed the range of natural variation retain the higher levels of sexual receptivity and longer copulations of un-injected virgins. We conclude that reduced sexual receptivity and shorter copulations of mated female Q-flies are mediated by products in the male seminal fluid derived from the male reproductive tract accessory tissues.
Keywords: Tephritidae; Seminal fluid; Remating inhibition; Copula duration

Qiang Xu, Xiaopeng Wen, Xiuxin Deng, Phylogenetic and evolutionary analysis of NBS-encoding genes in Rosaceae fruit crops, Molecular Phylogenetics and Evolution, Volume 44, Issue 1, July 2007, Pages 315-324, ISSN 1055-7903, DOI: 10.1016/j.ympev.2006.12.029.
(http://www.sciencedirect.com/science/article/B6WNH-4N14689-1/2/dc0f5e5afaa2db227f3d18c0a11407fe)
Abstract:
Phylogenetic relationships of the nucleotide binding site (NBS)-encoding resistance gene homologues (RGHs) among 12 species in five genera of Rosaceae fruit crops were evaluated. A total of 228 Rosaceous RGHs were deeply separated into two distinct clades, designated as TIR (sequences within this clade containing a Toll Interleukin-1 Receptor domain) and NonTIR (sequences lacking a TIR domain). Most Rosaceous RGH genes were phylogenetically distinct from Arabidopsis, Rice or Pine genes, except for a few Rosaceous members which grouped closely with Arabidopsis genes. Within Rosaceae, sequences from multiple species were often phylogenetically clustered together, forming heterogenous groups, however, apple- and chestnut

rose-specific groups really exist. Gene duplication followed by sequence divergence were proposed as the mode for the evolution of a large number of distantly or closely related RGH genes in Rosaceae, and this mode may play a role in the generation of new resistance specificity. Positively selected sites within NBS-coding region were detected and thus nucleotide variation within NBS domain may function in determining disease resistance specificity. This study also discusses the synteny of a genomic region that encompass powdery mildew resistance locus among Malus, Prunus and Rosa, which may have potential use for fruit tree disease breeding and important gene cloning.
Keywords: Disease resistance genes; Fruit crops; Molecular evolution; NBS; Rosaceae

Polly Campbell, Andrea S. Putnam, Caitlin Bonney, Rasit Bilgin, Juan Carlos Morales, Thomas H. Kunz, Luis A. Ruedas, Contrasting patterns of genetic differentiation between endemic and widespread species of fruit bats (Chiroptera: Pteropodidae) in Sulawesi, Indonesia, Molecular Phylogenetics and Evolution, Volume 44, Issue 1, July 2007, Pages 474-482, ISSN 1055-7903, DOI: 10.1016/j.ympev.2007.02.013.
(http://www.sciencedirect.com/science/article/B6WNH-4N3WYJX-2/2/f2f8def740c78df3362d877a5fd8cea5)

Simona De Marino, Fulvio Gala, Nicola Borbone, Franco Zollo, Sara Vitalini, Francesco Visioli, Maria Iorizzi, Phenolic glycosides from Foeniculum vulgare fruit and evaluation of antioxidative activity, Phytochemistry, Volume 68, Issue 13, Reports on Structure Elucidation, July 2007, Pages 1805-1812, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2007.03.029.
(http://www.sciencedirect.com/science/article/B6TH7-4NP9KGN-1/2/56a4b77dcd50a0cf9a2043b91b9cda48)
Abstract:
Two diglucoside stilbene trimers and a benzoisofuranone derivative were isolated from Foeniculum vulgare fruit together with nine known compounds. Their structures were elucidated by spectral methods including 1D, 2D NMR and MS and chemical methods. Antioxidant activity was tested using three methods: DPPH, total antioxidant capacity and assay of lipid peroxidation.
Keywords: Foeniculum vulgare; Apiaceae; Foeniculosides; Stilbene trimer diglucosides; Benzoisofuranone derivative; 2D NMR; Antioxidant activity

Sidsel Fiskaa Hagen, Grethe Iren A. Borge, Gunnar B. Bengtsson, Wolfgang Bilger, Arvid Berge, Karin Haffner, Knut Asbjorn Solhaug, Phenolic contents and other health and sensory related properties of apple fruit (Malus domestica Borkh., cv. Aroma): Effect of postharvest UV-B irradiation, Postharvest Biology and Technology, Volume 45, Issue 1, July 2007, Pages 1-10, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.02.002.
(http://www.sciencedirect.com/science/article/B6TBJ-4NBR8MN-1/2/4b1bf41eb39faa1448b3d36473062698)
Abstract:
The effects of postharvest irradiation with visible light and UV-B radiation on several health and sensory related properties, including antioxidant capacity (ORAC assay), phenolic compounds, total phenols, ascorbic acid, skin colour, soluble solids and titratable acidity, were measured in `Aroma' apples and the relationships between these properties were evaluated. The kinetics of flavonoid accumulation during irradiation were measured with a non-destructive method based on chlorophyll fluorescence. The response to irradiation was compared between peel and flesh of apples harvested from the inner (shade-grown) and outer (sun-exposed) canopy of the tree. The antioxidant capacity, the sum of phenols (HPLC) and the content of anthocyanins, quercetin glycosides, chlorogenic acid and ascorbic acid increased upon postharvest irradiation. The accumulation of flavonols started earlier and increased to a higher level than that of anthocyanins. A combination of visible light and UV-B radiation was the most effective irradiation treatment and

the response was greatest for the peel of the shade-grown apples. The apple flesh showed no response to any of the irradiation treatments. Postharvest irradiation improved the apple skin colour, but did not influence the level of soluble solids or titratable acidity in the apples. No visible damage or substantial weight loss was found in the apples after the irradiation treatments. The results suggest that postharvest irradiation can be utilised to improve the health value and colour appearance of apples without changing important taste-related parameters or causing damage to the fruit. Principal component analysis of the data showed that principal component 1 explained 72% of the total variation and was closely related to the skin colour, sum of the phenols, total phenols, the content of ascorbic acid and also the level of soluble solids and antioxidant capacity. Principal component 2 explained 12% of the total variation and was primarily related to titratable acidity. The antioxidant capacity in the peel was better correlated with the sum of the phenols ($r = 0.70$, $P < 0.001$) than with the content of ascorbic acid ($r = 0.54$, $P < 0.001$). The red to green colour values (a*) of the apple skin were closely correlated with the sum of the phenols ($r = 0.91$, $P < 0.001$) and ascorbic acid content ($r = 0.83$, $P < 0.001$) in the apple peel.
Keywords: Anthocyanins; Chlorophyll fluorescence; Flavonoids; l-Ascorbic acid; Vitamin C; Antioxidant capacity; ORAC; Polyphenols; Storage

E. Roth, A. Berna, K. Beullens, S. Yarramraju, J. Lammertyn, A. Schenk, B. Nicolai, Postharvest quality of integrated and organically produced apple fruit, Postharvest Biology and Technology, Volume 45, Issue 1, July 2007, Pages 11-19, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.01.006.
(http://www.sciencedirect.com/science/article/B6TBJ-4N6NHG1-1/2/a1490fce8e1674164e1268d66b82ca89)
Abstract:
Apple cv. `Jonagold' fruit were picked in three different regions of Belgium. In each region one organic and one integrated orchard with identical climatic and soil characteristics was sampled. Fruit were stored in air and under CA conditions (1% O2, 2.5% CO2) at 1 [degree sign]C for 6 months. The acoustic stiffness, firmness, soluble solids contents, acid and sugar contents, and the aroma profile were measured. Quality parameters were analysed right after harvest and storage. At both times an additional shelf-life experiment was carried out to simulate the conditions in the commercial chain.
The quality attributes of apples coming from different regions and different production systems did not differ significantly, neither at harvest nor after storage. There was a considerable softening during storage in air and shelf-life, but not under CA conditions. Immediately after harvest, high malic acid, quinic acid and sucrose contents were observed, while glucose and citric acid contents were higher after storage. The aroma profile changed during shelf-life, except for apples stored in air, which even immediately after storage already had an aroma profile comparable to that after shelf-life. The volatile responsible for the typical apple aroma (2-methylbutyl acetate) had the highest relative abundance after CA storage and subsequent shelf-life, followed by apples immediately after CA storage. The effect of storage conditions on the quality of the apples was in general much larger than that of the possible effects of the production system. Aroma profiles of air-stored and CA-apple converge during shelf-life conditions.
Keywords: Apple; Aroma; Integrated; Organic; Quality; Taste

Akira Tateishi, Hajime Shiba, Jun Ogihara, Katsunori Isobe, Kazunari Nomura, Keiichi Watanabe, Hiroaki Inoue, Differential expression and ethylene regulation of [beta]-galactosidase genes and isozymes isolated from avocado (Persea americana Mill.) fruit, Postharvest Biology and Technology, Volume 45, Issue 1, July 2007, Pages 56-65, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.01.009.
(http://www.sciencedirect.com/science/article/B6TBJ-4NB2SH7-2/2/12c7d927892705b2875c79fb83acbd07)

Abstract:
[beta]-Galactosidases (EC 3.2.1.23; [beta]-Gals) consist of several isoforms which have different activity levels against native and synthetic substrates and play an important role in cell wall metabolism during fruit growth and ripening. In this study, we isolated three new [beta]-Gal cDNA clones, PaGAL2, PaGAL3 and PaGAL4, from the fruit of ripening avocado in addition to the AV-GAL1 clone previously obtained. The expression patterns of these genes during fruit ripening were quite different. The AV-GAL1 transcript, which was solely found in the fruit, accumulated with fruit ripening. PaGAL2 transcript, which was detected in leaves, shoots, roots and fruit, showed a constant level throughout fruit ripening. The level of PaGAL3 transcript in control fruit, which was not detected in root but only in other tissues, increased markedly at 2 days after treatment (DAT) (air treatment) and dropped quickly at 4 DAT in fruit. The transcript was not detectable at 6 DAT and thereafter. The PaGAL4 transcript was detected in all tissues except for the fruit. In order to investigate the role of ethylene, on the regulation of [beta]-Gal expression, pre-ripe fruit were treated with either ethylene or its inhibitor 1-methylcyclopropene (1-MCP). Exogenous ethylene promoted AV-GAL1 expression but severely suppressed PaGAL3 expression. Ethylene also affected the activities of fractionated [beta]-Gal isozymes in a differential manner. Among the three isozymes, the increase in AV-GAL III activity with fruit softening were promoted by exogenous ethylene and delayed by 1-MCP. However, no apparent changes in the activities were observed in the other two isozymes. Based on the results obtained, it seems that AV-GAL1, which may encode AV-GAL III, is important for postharvest fruit softening while PaGAL2, PaGAL3 and PaGAL4 may be involved in galactose metabolism of cells or cell walls during development and ripening.
Keywords: Cell wall; Ethylene; Fruit softening; Galactose; 1-MCP

M. Moalemiyan, A. Vikram, A.C. Kushalappa, Detection and discrimination of two fungal diseases of mango (cv. Keitt) fruits based on volatile metabolite profiles using GC/MS, Postharvest Biology and Technology, Volume 45, Issue 1, July 2007, Pages 117-125, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.08.020.
(http://www.sciencedirect.com/science/article/B6TBJ-4N3GNT1-4/2/e26296dcac51680389c5c05e78393855)
Abstract:
Volatile organic compounds collected from the headspace of mango cv. Keitt inoculated with Lasiodiplodia theobromae (stem-end rot), Colletotrichum gloeosporioides (anthracnose), mock (as the first control) and non-wounded-non-inoculated mango (as the second control) were analyzed using GC/MS to investigate the feasibility of automatic detection and diagnosis of diseases of mango in stores. A total of 37 metabolites, relatively consistent in 8 replicates, were identified based on mass spectral match using NIST library. Several of these were specific to a disease/inoculation or when common to all treatments, they varied in their abundances. 1-Pentanol was specific to Lasiodiplodia-inoculated mangoes while thujol was detected only in Colletotrichum-inoculated mangoes. Discriminant analysis models based on normalized abundances of 35 consistent metabolites and normalized abundances of 150 mass ions correctly classified 67 and 75% of the observations, respectively, based on cross-validation. The study has shown for the first time that it is possible to detect and differentiate between anthracnose and stem-end rot diseases of mangoes (cv. Keitt) based on their volatile production patterns using GC/MS. The methods developed here have the potential applications to mango industry to detect and diagnose diseases of mango fruits, at relatively early stages of the disease progress, after validation under commercial conditions.
Keywords: Mangifera indica; Stem-end rot; Anthracnose; Keitt; GC/MS; Colletotrichum gloeosporioides; Lasiodiplodia theobromae; Discriminant analysis; Disease detection

Oscar Goni, Maite Munoz, Jesus Ruiz-Cabello, Maria I. Escribano, Carmen Merodio, Changes in water status of cherimoya fruit during ripening, Postharvest Biology and Technology, Volume 45, Issue 1, July 2007, Pages 147-150, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.01.005.
(http://www.sciencedirect.com/science/article/B6TBJ-4N6FNV3-1/2/4d0f3a0e523dc420535d83cb5a1fde92)
Abstract:
Changes in the state of water of cherimoya (Annona cherimola Mill.) fruit during ripening were monitored using differential scanning calorimetry (DSC) and magnetic resonance imaging (MRI) techniques. The stage of ripening was determined by analyzing the changes in titratable acidity, firmness and total soluble solids contents. Furthermore, quantitative measurements of solutes such as proline, sucrose, glucose and fructose were also studied. The significant increase in the transverse relaxation time (T2) values and the loss of flesh firmness during the initial stage of ripening are consistent with the sustained drop in the unfreezable water weight fraction according to the DSC data. The ripe stage of the fruit was marked by minimum longitudinal relaxation time (T1) values and a rapid upsurge in the unfreezable water weight fraction, greatly influenced by the osmotic adjustments prompted by the significant accumulation of soluble sugars, proline and carboxylates. Changes in structure and solute concentration associated with ripening can be analyzed simultaneously, determining fruit water status by DSC.
Keywords: Transverse and longitudinal relaxation times; Unfreezable water; Solutes; DSC; MRI; Cherimoya

Cheeranuch Saengpook, Saichol Ketsa, Wouter G. van Doorn, Effects of relative humidity on banana fruit drop, Postharvest Biology and Technology, Volume 45, Issue 1, July 2007, Pages 151-154, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.02.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4NCKJWJ-1/2/ae1941da8fab0eec2a6437ce2fd520ae)
Abstract:
Commercial ripening of banana fruit occurs at high relative humidity (RH), which prevents browning of damaged skin areas. In experiments with ripening at high RH (94 +/- 1%) the individual fruit (fingers) of `Sucrier' (Musa acuminata, AA Group) banana exhibited a high rate of drop. The falling off of the fingers is due to rupture of the peel at the pedicel. In contrast, if the fruit was held at low RH (68 +/- 3%) finger drop was absent. Water-soluble pectin in the peel at the rupture area was higher at high RH, indicating increased pectin degradation. However, the activities of polygalacturonase (PG) in the peel at the rupture zone were the same in both treatments. The activity of pectinmethylesterase (PME) was only slightly higher prior to rupture in the high RH treatment, whereas, that of pectate lyase (PL) was considerably higher. The lower rate of pectin degradation at low RH may explain, at least partially, why finger drop is inhibited. The decrease in pectin degradation was not accounted for by the measured PG activity, but could be partially accounted for by the measured PME and PL activities.
Keywords: Finger drop; Banana; Pectin hydrolysis; Polygalacturonase; Pectinmethylesterase; Pectase lyase

D. Rico, A.B. Martin-Diana, J.M. Barat, C. Barry-Ryan, Extending and measuring the quality of fresh-cut fruit and vegetables: a review, Trends in Food Science & Technology, Volume 18, Issue 7, July 2007, Pages 373-386, ISSN 0924-2244, DOI: 10.1016/j.tifs.2007.03.011.
(http://www.sciencedirect.com/science/article/B6VHY-4NFR53T-2/2/6213a488cbe13a4e395cd1dedf68c183)
Abstract:
The market sales of ready-to-use fresh vegetables have grown rapidly in recent decades as a result of changes in consumer attitudes, especially consumption of fresh-cut lettuce and carrot due to their use in prepared salads. Chlorine solutions have been widely used to sanitise fruit and

vegetables in the fresh-cut industry. However, the association of chlorine with the possible formation of carcinogenic chlorinated compounds in water has called into question the use of chlorine in food processing. There is a real need to find alternatives for preservation of fresh-cut fruit and vegetables in order to improve the efficacy of washing treatments. Alternatives or modified methods have been proposed, as antioxidants, irradiation, ozone, organics acids, modified atmosphere packaging, whey permeate, etc.; however, none have yet gained widespread acceptance by the industry. For this reason the development of alternatives and markers in order to measure the efficacy of these alternatives are needed.

Eric Dubois, Catherine Hennechart, Ghislaine Merle, Christian Burger, Nadia Hmila, Stephanie Ruelle, Sylvie Perelle, Virginie Ferre, Detection and quantification by real-time RT-PCR of hepatitis A virus from inoculated tap waters, salad vegetables, and soft fruits: Characterization of the method performances, International Journal of Food Microbiology, Volume 117, Issue 2, 30 June 2007, Pages 141-149, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.02.026.
(http://www.sciencedirect.com/science/article/B6T7K-4NCJCGX-3/2/2647af5957d26a2a3f301143240fc779)
Keywords: Real-time PCR; Enteric virus; Hepatitis A; Food; Water; Validation

Renhua Huang, Renxue Xia, Liming Hu, Yunmei Lu, Mingyuan Wang, Antioxidant activity and oxygen-scavenging system in orange pulp during fruit ripening and maturation, Scientia Horticulturae, Volume 113, Issue 2, 26 June 2007, Pages 166-172, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.03.010.
(http://www.sciencedirect.com/science/article/B6TC3-4NK47DC-1/2/6ea143534d00a518f93425e74a1fe6c9)
Abstract:
The antioxidant activity (ferric reducing/antioxidant power, FRAP) and oxygen-scavenging system of pulps during the fruit ripening and maturation were investigated in three cultivars of sweet orange (Citrus sinensis (L.) Osbeck). The highest FRAP values and activities of antioxidant enzymes and contents of nonenzymes were detected in `Red Flesh' navel orange. The activities of oxygen-scavenging enzymes, superoxide dismutase (SOD), catalase (CAT), guaiacol peroxidase (G-POD), decreased with ripening and maturation of fruit. Ascorbate peroxidase (AsA-POD) and dehydroascorbate reductase (DHAR) activities were also stably declined, whereas glutathione reductase (GR) activity and nonenzymes in the ascorbate-glutathione cycle displayed a single-peak pattern which paralleled the significant changes in FRAP values. In addition, the ratios of ascorbate/dehydroascorbate (AsA/DHAsA), reduced glutathione/oxidized glutathione (GSH/GSSG) were also decreased. Changes in the activities of antioxidant enzymes and the contents of nonenzymes during ripening indicated that the antioxidant system plays a fundamental role in the ripening of orange fruits.
Keywords: Antioxidant activity; Orange; Oxygen-scavenging enzymes; Ascorbate; Glutathione; Ripening and maturation

Vadamalai Elangovan, Elangovan Yuvana Satya Priya, Hanumanth Raghuram, Ganapathy Marimuthu, Wing morphology and flight development in the short-nosed fruit bat Cynopterus sphinx, Zoology, Volume 110, Issue 3, 25 June 2007, Pages 189-196, ISSN 0944-2006, DOI: 10.1016/j.zool.2007.02.001.
(http://www.sciencedirect.com/science/article/B7GJ0-4NH6N5N-1/2/77cac4a2fba134a5515009442b3fac8b)
Abstract:
Postnatal changes in wing morphology, flight development and aerodynamics were studied in captive free-flying short-nosed fruit bats, Cynopterus sphinx. Pups were reluctant to move until 25 days of age and started fluttering at the mean age of 40 days. The wingspan and wing area

increased linearly until 45 days of age by which time the young bats exhibited clumsy flight with gentle turns. At birth, C. sphinx had less-developed handwings compared to armwings; however, the handwing developed faster than the armwing during the postnatal period. Young bats achieved sustained flight at 55 days of age. Wing loading decreased linearly until 35 days of age and thereafter increased to a maximum of 12.82 N m-2 at 125 days of age. The logistic equation fitted the postnatal changes in wingspan and wing area better than the Gompertz and von Bertalanffy equations. The predicted minimum power speed (Vmp) and maximum range speed (Vmr) decreased until the onset of flight and thereafter the Vmp and Vmr increased linearly and approached 96.2% and 96.4%, respectively, of the speed of postpartum females at the age of 125 days. The requirement of minimum flight power (Pmp) and maximum range power (Pmr) increased until 85 days of age and thereafter stabilised. The minimum theoretical radius of banked turn (rmin) decreased until 35 days of age and thereafter increased linearly and attained 86.5% of the rmin of postpartum females at the age of 125 days.
Keywords: Flight performance; Wing loading; Growth curves; Logistic equation; Pteropodid bats

Rongcai Yuan, Effects of temperature on fruit thinning with ethephon in `Golden Delicious' apples, Scientia Horticulturae, Volume 113, Issue 1, 5 June 2007, Pages 8-12, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.01.005.
(http://www.sciencedirect.com/science/article/B6TC3-4N14DC1-2/2/d2d4cbfe38dc015eb2e5dcd277291c60)
Abstract:
The effect of temperature on the ability of 2-chloroethylphosphonic acid (ethephon), when applied at 20 mm stage of fruit development, to induce ethylene evolution of fruit and leaves and abscission of fruit and leaves was determined using 9-year-old root-bagged `Golden Delicious'/M.27 apple (Malus domestica Borkh.) trees in environment-controlled growth rooms. Ethephon at 400 [mu]L L-1 effectively thinned apples, and its thinning effect was not affected by increasing day/night temperature from 21.1/10 to 32.2/21.1 [degree sign]C. Fruit ethylene evolution was enhanced by application of ethephon. Peak fruit ethylene evolution occurred 1 day after application of ethephon when day/night temperature was 32.2/21.1 [degree sign]C whereas it occurred 2 days after application of ethephon at a day/night temperature of 21.1/10 or 26.7/15.6 [degree sign]C. Ethephon increased leaf ethylene evolution drastically but it did not induce leaf abscission regardless of temperature.
Keywords: Apples; Ethephon; Ethylene; Fruit abscission; Fruit thinning; Temperature

Hortencia Gabriela Mena-Violante, Victor Olalde-Portugal, Alteration of tomato fruit quality by root inoculation with plant growth-promoting rhizobacteria (PGPR): Bacillus subtilis BEB-13bs, Scientia Horticulturae, Volume 113, Issue 1, 5 June 2007, Pages 103-106, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.01.031.
(http://www.sciencedirect.com/science/article/B6TC3-4N7YH7F-2/2/8128ca2656c0d7d61ec54eb1b773d18b)
Abstract:
In this study the effect of inoculation of tomato (Lycopersicon esculentum Mill.) roots with plant growth-promoting rhizobacteria (PGPR) on yield and fruit quality was evaluated. The control treatment was non-inoculated (CTL) and the PGPR treatment was inoculated with Bacillus subtilis BEB-lSbs (BS13). Yield per plant and marketable yield, as well as fruit weight and length were increased by the BS13 treatment when compared to the CTL treatment. Texture of red fruits was also enhanced by the BS13 treatment compared to that in the CTL treatment. These results demonstrated that PGPR have positive effects on tomato fruit quality attributes, particularly on size and texture.
Keywords: Plant growth-promoting rhizobacteria; Bacillus; Quality; Texture; Tomato

Kunio Yamada, Takuya Kojima, Nancy Bantog, Tetsuji Shimoda, Hitoshi Mori, Katsuhiro Shiratake, Shohei Yamaki, Cloning of two isoforms of soluble acid invertase of Japanese pear and their expression during fruit development, Journal of Plant Physiology, Volume 164, Issue 6, 4 June 2007, Pages 746-755, ISSN 0176-1617, DOI: 10.1016/j.jplph.2006.05.007.
(http://www.sciencedirect.com/science/article/B7GJ7-4KJ74NK-1/2/4815349268a0bd50e6e5e550f56b1fea)
Abstract: Summary
Soluble acid invertase (S-AIV; EC 3.2.1.26) in Japanese pear fruit has an important role in accumulating hexoses during fruit enlargement and regulates the sucrose-to-hexose ratio in the vacuole. Full-length cDNA of PsS-AIV1 and PsS-AIV2 isoforms were cloned from Japanese pear fruit and their amino acid sequences share 40% identity; PsS-AIV1 was confirmed to code S-AIV isozyme purified previously. The roles of PsS-AIV1 and PsS-AIV2 genes throughout fruit development and in sugar composition were investigated by semi-quantitative reverse transcriptase-polymerase chain reaction (RT-PCR) analysis using specific primers of their transcripts. PsS-AIV1 transcript had a maximum level at 34 days after full bloom (DAFB) and decreased rapidly during fruit development; PsS-AIV2 transcript increased gradually during fruit growth from 34 DAFB, had its maximum level at 79 DAFB and remained high until 107 DAFB at active fruit enlargement. The activity of S-AIV was highest at 34 DAFB, decreased during fruit growth until 66 DAFB, remained almost the same during early fruit enlargement until 79 DAFB and then decreased again. Soluble sugars fructose and glucose began accumulating predominantly during fruit enlargement from 66 DAFB; sucrose began increasing rapidly during fruit maturation from 121 DAFB. High expression of PsS-AIV1 transcript and high enzyme activity in the young fruit stage seems to have an important role in supplying a lot of substrate for energy needed for cell division and growth by hydrolyzing sucrose to hexoses. Increasing PsS-AIV2 expression during fruit enlargement may lead to rapid cell expansion through increased osmotic pressure by accumulation of a large amount of hexose in the vacuole.
Keywords: Fruit growth; Gene expression; Invertase; Japanese pear; Sugar metabolism

Keng Hong Tan, Ritsuo Nishida, Zingerone in the floral synomone of Bulbophyllum baileyi (Orchidaceae) attracts Bactrocera fruit flies during pollination, Biochemical Systematics and Ecology, Volume 35, Issue 6, June 2007, Pages 334-341, ISSN 0305-1978, DOI: 10.1016/j.bse.2007.01.013.
(http://www.sciencedirect.com/science/article/B6T4R-4NB2SR0-3/2/dec7b250478c1aacd1681425009524ff)
Abstract:
Many orchids use specific volatile chemical(s) in floral fragrance to attract potential pollinators to locate and visit flowers in the tropical rain forests. Male fruit flies (Bactrocera species) are attracted to the `fruity odour' of Bulbophyllum baileyi. The floral chemical component responsible for this fruit fly attraction is zingerone, which also acts as a floral chemical reward during pollination. Zingerone (5 mg), absorbed into a filter and released via a portable-battery operated fan between 0900 and 1100 h, attracted 5-7 males of Bactrocera indonesiae in an orchard located in Kedah, Malaysia. In Penang island, the fruit fly species attracted are Bactrocera dorsalis (methyl eugenol-sensitive) and Bactrocera albistragata (raspberry ketone-sensitive). An attracted male fruit fly probes and feeds on floral petal or sepal before climbing on to the small see-saw lip (labellum). While on the lip and due to shifting of the fly's weight, the fly is toppled head first into the column cavity and simultaneously touches and consequently gets stuck to the sticky viscidium of pollinarium that still remained in the anther. It spends 23-46 min trying to free itself from being suspended from the floral column. Removal of pollinarium (pollinia, stipe and viscidium) is a long process. A male B. dorsalis that fed on a B. baileyi flower was found to sequester zingerol (a reduced form of zingerone) in the body, suggesting its role as sex pheromone to attract a female during courtship behaviour.

Keywords: Bactrocera fruit fly; Tephritidae; Bulbophyllum baileyi; Orchidaceae; Pollinarium removal; Pollination; Synomone; Zingerone; Zingerol

Jose Wilson P. Silva, Jose Mauricio S. Bento, Roberto A. Zucchi, Olfactory response of three parasitoid species (Hymenoptera: Braconidae) to volatiles of guavas infested or not with fruit fly larvae (Diptera: Tephritidae), Biological Control, Volume 41, Issue 3, June 2007, Pages 304-311, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2007.03.005.
(http://www.sciencedirect.com/science/article/B6WBP-4NC38V2-2/2/593a44cd6a5cc1bbf5b5be2490f20bba)
Abstract:
The olfactory responses of the native parasitoids Doryctobracon areolatus (Szepligeti) and Asobara anastrephae (Muesebeck) and of the exotic parasitoid Diachasmimorpha longicaudata (Ashmead) to guava (Psidium guajava L.) infested or not with fruit fly larvae were evaluated. D. areolatus and D. longicaudata females responded to the odors of uninfested rotting guavas, although D. areolatus was also attracted to fruits at the initial maturation (turning) stage. The females of these species recognized the volatiles of guavas containing Ceratitis capitata (Wied.) larvae. However, in bioassays involving fruits with larvae of different instars, D. longicaudata females were not able to separate between fruits containing C. capitata larvae at the initial instars and larvae at the third instar. In the evaluations of volatiles released by guavas containing C. capitata and Anastrepha fraterculus (Wied.) larvae, the D. longicaudata females were oriented toward the volatiles of fruits containing both host species, but differed significantly from volatiles of guavas containing C. capitata larvae. The D. areolatus females also showed responses to both species, although with a preference for volatiles of fruits containing A. fraterculus larvae. The A. anastrephae females were oriented toward the odors of fruits infested with both fruit fly species. In the shade house, D. longicaudata females were oriented to volatiles of rotting fruits containing larvae or not, but could not significantly differentiate between hosts. D. areolatus females were not attracted toward fruits on the ground in the shade house, regardless of host, suggesting that this parasitoid does not forage on fallen fruits.
Keywords: Doryctobracon areolatus; Diachasmimorpha longicaudata; Asobara anastrephae; Insect behavior; Allelochemicals; Fruit volatiles

Aime H. Bokonon-Ganta, Mohsen M. Ramadan, Russell H. Messing, Reproductive biology of Fopius ceratitivorus (Hymenoptera: Braconidae), an egg-larval parasitoid of the Mediterranean fruit fly, Ceratitis capitata (Diptera: Tephritidae), Biological Control, Volume 41, Issue 3, June 2007, Pages 361-367, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2007.02.011.
(http://www.sciencedirect.com/science/article/B6WBP-4N68NHN-2/2/ef1a8ba237e1ffff6fea1ce0724dc835)
Abstract:
The reproductive biology of Fopius ceratitivorus Wharton, a recently discovered African parasitoid, was studied in quarantine in Hawaii to facilitate its mass production for biological control of the Mediterranean fruit fly, Ceratitis capitata. Mean longevity of host-deprived and ovipositing females was 17.3 +/- 0.9 d and 16.2 +/- 0.5 d, respectively. Ovarian maturation peaked at 61.6 mature eggs per female on the fifth day after eclosion and declined thereafter. Mean number of offspring produced per day by mated females was 5.1 +/- 0.4, and realized fecundity expressed as total eggs deposited during the female's life time was 107.8 +/- 12.8. Females were more attracted, to and reproduced significantly more, in fruit substrates containing odors of adult flies and eggs rather than fruit substrates artificially inoculated with fly eggs. Our findings suggest that F. ceratitivorus is a promising new parasitoid for biological control of C. capitata in Hawaii.
Keywords: Biological control; Fopius ceratitivorus; Ceratitis capitata; Reproductive biology; Egg-larval parasitoid

P. Sirisomboon, P. Kitchaiya, T. Pholpho, W. Mahuttanyavanitch, Physical and mechanical properties of Jatropha curcas L. fruits, nuts and kernels, Biosystems Engineering, Volume 97, Issue 2, June 2007, Pages 201-207, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2007.02.011.
(http://www.sciencedirect.com/science/article/B6WXV-4NNPCHD-2/2/a14feb7ef376bc353eb460a5c598b249)
Abstract:
The post-harvest physical and mechanical properties of Jatropha curcas L. fruits, nuts and kernels were investigated and reported, and their application was also discussed. The physical properties studied include moisture content, 1000-unit mass, fruit part fraction, dimensions, geometric mean diameter, sphericity, bulk density, solid density, porosity, surface area, specific surface area, static friction coefficient on various surfaces and angle of repose. The mechanical properties were rupture force, deformation at rupture point, deformation ratio at rupture point, hardness and energy used for rupture (toughness). The hull of the fruit had very high moisture content compared to nut shell and kernel. The whole fruit contained 77.03% w.b. moisture content. The sphericity values indicated that fruit shape (0.95) is close to a sphere compared to nut (0.64) and kernel (0.68), both of which are close to an ellipsoid. Bulk densities of fruits, nuts and kernels were 0.47, 0.45 and 0.42 g/cm3, the corresponding solid densities were 0.95, 1.04 and 1.02 g/cm3, and the corresponding porosities were 50.53%, 56.73% and 58.82%, respectively. The surface area of fruit was larger than those of nut and kernel, by 5.88% and 10.24%, respectively. The static coefficient of friction and angle of repose of kernels on all surfaces studied (plywood, steel, and stainless steel) were the highest as the surface is viscous and hardness is less. Rupture force, hardness and toughness of fruit, nut and kernel were 135.39, 146.63 and 67.72 N; 30.58, 69.98 and 38.52 N/mm and 300.88, 124.44 and 51.61 N mm, respectively.

James J Giovannoni, Fruit ripening mutants yield insights into ripening control, Current Opinion in Plant Biology, Volume 10, Issue 3, Physiology and Metabolism - Edited by Clint Chapple and Malcolm M Campbell, June 2007, Pages 283-289, ISSN 1369-5266, DOI: 10.1016/j.pbi.2007.04.008.
(http://www.sciencedirect.com/science/article/B6VS4-4NHD9DX-1/2/c684a760034edffc653fd1f452bd72ba)
Abstract:
Fruit ripening is a developmental process that is exclusive to plants whereby mature seed-bearing organs undergo physiological and metabolic changes that promote seed dispersal. Molecular investigations into ripening control mechanisms have been aided by the recent cloning of tomato ripening genes that were previously known only through mutation. Advances in the genomics of tomato have provided genetic and molecular tools that have facilitated the positional and candidate-gene-based cloning of several key ripening genes. These discoveries have created new inroads into understanding of the primary ripening control mechanisms, including transcription factors such as those encoded by the RIPENING-INHIBITOR (RIN) MADS-box and COLOURLESS NON-RIPENING (CNR) SPB-box genes, which are necessary for the progression of virtually all ripening processes. They have also facilitated the elucidation of downstream signal transduction components that impact the hormonal and environmental stimuli that coordinate and modulate ripening phenotypes.

Michelle Walker, Carol A. Phillips, The growth of Propionibacterium cyclohexanicum in fruit juices and its survival following elevated temperature treatments, Food Microbiology, Volume 24, Issue 4, June 2007, Pages 313-318, ISSN 0740-0020, DOI: 10.1016/j.fm.2006.08.002.
(http://www.sciencedirect.com/science/article/B6WFP-4M2XFC8-1/2/c1ff92f0cfee5cfcf098d30a2dc00d4e)
Abstract:

This study investigated the growth of Propionibacterium cyclohexanicum in orange juice over a temperature range from 4 to 40 [degree sign]C and its ability to multiply in tomato, grapefruit, apple, pineapple and cranberry juices at 30 and 35 [degree sign]C. Survival after 10 min exposure to 50, 60, 70, 80, 85, 90 and 95 [degree sign]C in culture medium and in orange juice was also assessed.
In orange juice the organism was able to multiply by 2 logs at temperatures from 4 to 35 [degree sign]C and survived for up to 52 days. However, at 40 [degree sign]C viable counts were reduced after 6 days and no viable cells isolated after 17 days. The optimum growth temperature in orange juice over 6 days was 25 [degree sign]C but over 4 days it was 35 [degree sign]C.
The growth of P. cyclohexanicum was monitored in tomato, grapefruit, cranberry, pineapple and apple juices at 30 and 35 [degree sign]C over 29 days. Cranberry, grapefruit and apple juice did not support the growth of P. cyclohexanicum. At 30 [degree sign]C no viable cells were detected after 8 days in cranberry juice or after 22 days in grapefruit juice while at 35 [degree sign]C no viable cells were detected after 5 and 15 days, respectively. However, in apple juice, although a 5 log reduction occurred, viable cells could be detected after 29 days. P. cyclohexanicum was able to multiply in both tomato and pineapple juices. In tomato juice, there was a 2 log increase in viable counts after 8 days at 30 [degree sign]C but no increase at 35 [degree sign]C, while in pineapple juice there was a 1 log increase in numbers over 29 days with no significant difference between numbers of viable cells present at 30 and 35 [degree sign]C.
The organism survived at 50 [degree sign]C for 10 min in culture medium without a significant loss of viability while similar treatment at 60, 70 and 80 [degree sign]C resulted in approximately a 3-4 log reduction, with no viable cells detected after treatment at 85 or 90 or 95 [degree sign]C but, when pre-treated at intermediate temperatures before exposure to higher temperatures, some cells survived. However, in orange juice a proportion of cells survived at 95 [degree sign]C for 10 min without pre-treatment and there was no significant difference between numbers surviving with and without pre-treatment.
The results from this study demonstrate that P. cyclohexanicum is able to grow in a number of juices, other than orange juice, and able to survive a number of high temperature procedures. Therefore, if initially present in the raw materials P. cyclohexanicum might survive the pasteurization procedures used in the fruit juice industry, contaminate and consequently spoil the final product.
Keywords: Propionibacteria; P. cyclohexanicum; Spoilage; Fruit juices; Temperature; Survival

Vivien M. Sheehan, P. Ross, Gerald F. Fitzgerald, Assessing the acid tolerance and the technological robustness of probiotic cultures for fortification in fruit juices, Innovative Food Science & Emerging Technologies, Volume 8, Issue 2, June 2007, Pages 279-284, ISSN 1466-8564, DOI: 10.1016/j.ifset.2007.01.007.
(http://www.sciencedirect.com/science/article/B6W6D-4N2071B-1/2/7ab1346f7781744b556e403908afaafd)
Abstract:
The suitability of probiotic cultures as fruit juice supplements was examined by assessing their acid tolerance and technological robustness. Survival of Lactobacillus and Bifidobacterium strains in orange juice (OJ), pineapple juice (PJ) and cranberry juice (CJ) was monitored. Results revealed that extensive differences exist among probiotic strains regarding their acid resistance. All of the strains screened survived for longer in OJ and PJ compared to CJ. L. casei DN-114 001, L. rhamnosus GG and L. paracasei NFBC43338 displayed the greatest robustness surviving at levels above 107 cfu ml- 1 in OJ and above 106 cfu ml- 1 in PJ for at least 12 weeks. Probiotic tolerance to thermal and non-thermal processing was studied to determine the feasibility of their addition to OJ prior to pasteurisation. OJ fortified with probiotic cultures was subjected thermal pasteurisation at 76 [degree sign]C for 30 s and 90 [degree sign]C for 1 min in addition to a high pressure treatment of 400 MPa for 5 min. Results indicated no strain was capable of withstanding

treatments necessary to achieve a stable juice at levels > 106 cfu ml- 1. The outcome of the overall study points to L. rhamnosus GG, L. casei DN-114 001 and L. paracasei NFBC43338 as having promising potential for exploitation as functional supplements in fruit juices due to their impressive tolerance in acidic environments; however, fortification post processing is recommended.Industrial relevance
The ability of health-promoting cultures to survive for at least 12 weeks in orange juice and pineapple juice at commercially critical levels renders them suitable strains for exploitation. Their inclusion may enhance the market potential of these already successful beverages.
Keywords: Orange juice; Pineapple juice; Cranberry juice; Thermal pasteurisation; High-pressure

R. Maceiras, E. Alvarez, M.A. Cancela, Rheological properties of fruit purees: Effect of cooking, Journal of Food Engineering, Volume 80, Issue 3, June 2007, Pages 763-769, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.06.028.
(http://www.sciencedirect.com/science/article/B6T8J-4KWTF5S-1/2/85c429c5a11218b0098e011917f8e89e)
Abstract:
The rheological behaviour of different fruits (raspberry, strawberry, peach and prune), fresh or cooked, was determined using a rotational viscosimeter which allowed experiments to be conducted at different temperatures. The experiments were carried out at temperatures ranging from 20 to 40 [degree sign]C. The shear rate values ranged from 17.8 to 445 s-1. The results were analysed by employing two different rheological models; Ostwald Waele and Herschel-Bulkley, and both of them fitted reasonably well the experimental data at all temperatures (R2 > 0.998). Linear models were proposed to correlate the rheological parameters and temperature. The experimental measurements showed that the fruit purees studied have a non-newtonian behaviour and the apparent viscosity is influenced by the cooking.
Keywords: Apparent viscosity; Fruit purees; Rheological parameters

Arturo Baltazar, Javier Espina-Lucero, Isidro Ramos-Torres, Gustavo Gonzalez-Aguilar, Effect of methyl jasmonate on properties of intact tomato fruit monitored with destructive and nondestructive tests, Journal of Food Engineering, Volume 80, Issue 4, June 2007, Pages 1086-1095, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.09.001.
(http://www.sciencedirect.com/science/article/B6T8J-4M7K9H8-3/2/49e69734e6bc186e16b4c52ea4840855)
Abstract:
In this work, the effect of temperature, surface treatment and storage time on micromechanical, physical and biochemical properties of intact tomato samples during ripening using destructive and nondestructive tests was studied. The relation between firmness testing and the ripening process of fresh tomato cultivars treated with Methyl jasmonate (MeJA) 220 [mu]L/L was analyzed. Determinations of firmness with nondestructive acoustic impact and destructive puncture Magness-Taylor tests were compared. It was found that the Magness-Taylor test carried out on whole tomatoes are mainly sensitive to turgor reduction while the acoustic impact test was found to be mostly related to the global firmness variation and to the ripening of tomatoes. The firmness data was correlated with color changes (L*, a*/b* and hue angle) and CO2 and C2H4 emissions. The results indicate that MeJA treatment has minimal effects on the ripening process of intact tomatoes. However, from nondestructive measurements, MeJA was found to have the effect of reducing the variation of properties among samples, especially in those stored at 10 [degree sign]C.
Keywords: Impact acoustic technique; Firmness; Tomatoes; Ripening

Clifton Gray, Leslie A. Lytle, Cheryl Perry, Mary Story, Gretchen Taylor, Donald Bishop, Fruits and Vegetables Taken Can Serve as a Proxy Measure for Amounts Eaten in a School Lunch, Journal

of the American Dietetic Association, Volume 107, Issue 6, June 2007, Pages 1019-1023, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.03.001.
(http://www.sciencedirect.com/science/article/B758G-4NT2RT8-W/2/4c9eda4ed81de66b591bded512a232db)
Abstract:
This study tests the hypothesis that fruits and vegetables taken on students' lunch trays are usable proxies for fruits and vegetables eaten, and that the proxy is useful with children in the youngest school grade (ie, grade 1; ages 6 to 8 years). A total of 1,168 randomly selected students in grade 1 and grade 3 (ages 8 to 10 years) in 26 schools in the Twin Cities, MN, metropolitan area were observed before and after an intervention that was applied to 13 randomly selected schools. Trained observers recorded food quantities on a child's tray and measured food consumed during the meal. Correlations between amounts of fruits and vegetables taken and eaten ranged from 0.74 to 0.96. The median correlation in grade 1 was the same, 0.82, as in the combined sample. Food taken and food eaten as alternative response variables resulted in the same conclusions about the effects of intervention. The hypothesis is strengthened that food taken can be used as a proxy for consumption in future nutrition education research.

David J. Millar, Marianne Long, Georgina Donovan, Paul D. Fraser, Alain-Michel Boudet, Saida Danoun, Peter M. Bramley, G. Paul Bolwell, Introduction of sense constructs of cinnamate 4-hydroxylase (CYP73A24) in transgenic tomato plants shows opposite effects on flux into stem lignin and fruit flavonoids, Phytochemistry, Volume 68, Issue 11, June 2007, Pages 1497-1509, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2007.03.018.
(http://www.sciencedirect.com/science/article/B6TH7-4NRMD96-1/2/99e70a1dfc01a7ff8c55f63fdd7da83c)
Abstract:
Understanding regulation of phenolic metabolism underpins attempts to engineer plants for diverse properties such as increased levels of antioxidant flavonoids for dietary improvements or reduction of lignin for improvements to fibre resources for industrial use. Previous attempts to alter phenolic metabolism at the level of the second enzyme of the pathway, cinnamate 4-hydroxylase have employed antisense expression of heterologous sequences in tobacco. The present study describes the consequences of homologous sense expression of tomato CYP73A24 on the lignin content of stems and the flavonoid content of fruits. An extensive number of lines were produced and displayed four developmental variants besides a normal phenotype. These aberrant phenotypes were classified as dwarf plants, plants with distorted (curly) leaves, plants with long internodes and plants with thickened waxy leaves. Nevertheless, some of the lines showed the desired increase in the level of rutin and naringenin in fruit in a normal phenotype background. However this could not be correlated directly to increased levels of PAL and C4H expression as other lines showed less accumulation, although all lines tested showed increases in leaf chlorogenic acid which is typical of Solanaceous plants when engineered in the phenylpropanoid pathway. Almost all transgenic lines analysed showed a considerable reduction in stem lignin and in the lines that were specifically examined, this was correlated with partial sense suppression of C4H. Although not the primary purpose of the study, these reductions in lignin were amongst the greatest seen in plants modified for lignin by manipulation of structural genes. The lignin showed higher syringyl to coniferyl monomeric content contrary to that previously seen in tobacco engineered for downregulation of cinnamate 4-hydroxylase. These outcomes are consistent with placing CYP73A24 more in the lignin pathway and having a role in flux control, while more complex regulatory processes are likely to be involved in flavonoid and chlorogenic acid accumulation.
Keywords: Lycopersicon esculentum; Solanaceae; Tomato; Flavonoids; Lignin; Cinnamate 4-hydroxylase; Sense expression; Carotenoids

Andrew J. Simkin, Joel Gaffe, Jean-Pierre Alcaraz, Jean-Pierre Carde, Peter M. Bramley, Paul D. Fraser, Marcel Kuntz, Fibrillin influence on plastid ultrastructure and pigment content in tomato fruit, Phytochemistry, Volume 68, Issue 11, June 2007, Pages 1545-1556, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2007.03.014.
(http://www.sciencedirect.com/science/article/B6TH7-4NKB1YK-2/2/8aac3cf0ae7886a41f3d0c6da8d15121)
Abstract:
The protein termed fibrillin is involved in the formation of lipoprotein structures, such as plastoglobules and fibrils in certain chromoplast types, which have been implicated in the over-production of pigments due to a sink effect. In order to examine its effect in differentiating chromoplasts of a non-fibrillar type, the pepper fibrillin gene was expressed in tomato fruit. Both the transcript and protein were found to accumulate during tomato fruit ripening from an early mature green stage. However, formation of carotenoid deposition structures in tomato chromoplasts, such as fibrils, was not observed. Nevertheless, a two-fold increase in carotenoid content and associated carotenoid derived flavour volatiles (6-methyl-5-hepten-2-one, geranylacetone, [beta]-ionone and [beta]-cyclocitral) was observed. An unexpected phenotypic observation in the transgenic fruit was the delayed loss of thylakoids in differentiating chromoplasts, leading to the transient formation of plastids exhibiting a typical chromoplastic zone adjacent to a protected chloroplastic zone with preserved thylakoids. An in vitro assay has been developed to monitor fibrillin activity on thylakoids: data were obtained suggesting a membrane protection role for fibrillin, more specifically against moderate uncoupling effects.
Keywords: Chloroplast; Chromoplast; Fruit ripening; Lycopersicon esculentum; Membrane pore; Thylakoid integrity

Domingos P.F. Almeida, Donald J. Huber, Polygalacturonase-mediated dissolution and depolymerization of pectins in solutions mimicking the pH and mineral composition of tomato fruit apoplast, Plant Science, Volume 172, Issue 6, June 2007, Pages 1087-1094, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2007.03.008.
(http://www.sciencedirect.com/science/article/B6TBH-4NBBYKR-1/2/32de5f08694b2b86afc8d17d6e4f2400)
Abstract:
The effects of polygalacturonase (PG) on pectin dissolution and depolymerization were examined in cell walls from mature-green tomato fruit incubated in a conventional (C) buffer (30 mM sodium acetate, 150 mM NaCl, pH 4.5) and in buffers mimicking the apoplastic solution of mature-green (MG) and ripe fruit (R). Pectin dissolution from cell walls was much higher in C-buffer than in MG- or R-buffers. Buffered phenol inactivated cell walls incubated in C-buffer released 4.9 [mu]g mg-1 pectin, which increased to 86.4 [mu]g mg-1 when PG was added. In the R-buffer, PG increased the pectin dissolution from inactive cell walls from 0.5 to 18.3 [mu]g mg-1. However, when the assay was conducted in buffer mimicking mature-green fruits, added PG did not increase pectin dissolution. The release of uronic acids from active cell walls in C-buffer and R-buffer was consistently lower than that from inactive walls due to the activity of pectinmethylesterase. Gel filtration profiles of CDTA-soluble pectins extracted from cell walls previously incubated in C-buffer or R-buffer with PG reveal that the enzyme is capable of hydrolyzing insoluble, ionically bound, pectins. These data support the idea that pH and mineral composition of the fruit apoplast provide a means for biochemical regulation of cell wall metabolism.
Keywords: Calcium; Cell wall; Lycopersicon esculentum; Pectinmethylesterase; Polyuronides; Polygalacturonase

Jin Huan Pang, Biao Ma, Hyeon-Jin Sun, Guinevere I. Ortiz, Shunsuke Imanishi, Sumiko Sugaya, Hiroshi Gemma, Hiroshi Ezura, Identification and characterization of ethylene receptor homologs expressed during fruit development and ripening in persimmon (Diospyros kaki Thumb.),

Postharvest Biology and Technology, Volume 44, Issue 3, June 2007, Pages 195-203, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.017.
(http://www.sciencedirect.com/science/article/B6TBJ-4N094BG-1/2/4ef3e87c80cc69197ca5392714d5678e)
Abstract:
Persimmon (Diospyros kaki Thumb.) is an atypical climacteric fruit that produces a small amount of ethylene during ripening, whereas it exhibits a climacteric-like increase in ethylene production in detached young fruit. To better understand the regulatory role of ethylene in fruit ripening, we isolated three full-length persimmon cDNAs homologous to Arabidopsis ethylene receptor genes ERS1, ETR1, and ETR2, designated as DkERS1, DkETR1, and DkETR2, respectively, and examined their expression during fruit development and ripening. DkETR1 mRNA expression remained at a basal level throughout all stages examined and was not affected by ethylene treatment. In contrast, expression of DkERS1 and DkETR2 mRNAs was correlated with ethylene production during fruit development and ripening and was enhanced after ethylene treatment. Because the abundance of the DkERS1 transcript was far higher than those of the other two genes, we further examined DkERS1 expression at the protein level. Western blot analysis using anti-DkERS1 antibody showed that expression of DkERS1 protein decreased gradually towards maturation and reached the lowest level at the ripening stage. Possible roles of the ethylene receptors in regulating fruit development and ripening are discussed.
Keywords: Ethylene receptor; Fruit ripening; Gene cloning; Persimmon

Paul A. Wiersma, Huayuan Zhang, Changwen Lu, Anita Quail, Peter M.A. Toivonen, Survey of the expression of genes for ethylene synthesis and perception during maturation and ripening of `Sunrise' and `Golden Delicious' apple fruit, Postharvest Biology and Technology, Volume 44, Issue 3, June 2007, Pages 204-211, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.016.
(http://www.sciencedirect.com/science/article/B6TBJ-4MWXT7X-B/2/18c2a6c24e1011750312d4facd4e3790)
Abstract:
Ethylene is important in the ripening of apple fruit and different cultivars of apple show very different ripening patterns. The patterns of expression of the currently known genes for ethylene synthesis and perception in apple were examined for the summer apple, `Sunrise' (SR), and the later season `Golden Delicious' (GD). Comparisons were made during the last 4 weeks of maturation on the tree and after post-harvest ripening using reverse transcriptase quantitative PCR. Increases in gene expression for ACC synthase 1 (ACS1) and ACC Oxidase 1 (ACO1) were 1000- and 10,000-fold, respectively, for both cultivars confirming the importance of these genes in the climacteric ethylene burst. ACS1 levels remained below detection level until the ripening stage. Additional apple genes for ACS and ACO did not appear to contribute to this ripening-associated ethylene. ACS3 gene expression in both cultivars increased 100-fold during maturation and reached near maximum levels a full week before commercial harvest. Unique DNA sequences for apple ethylene receptors ETR2 and ETR5 and ethylene control element CTR1 were determined. Expression of four ethylene receptors (ETR1, 2, 5 and ERS1) and two control elements, CTR1 and EIN2, were evaluated. Only small changes (less than 5-fold) were observed for these perception elements. Splice variants of CTR1 did not appear to be differentially expressed in these tissues. Genes for ACO3 and ERS1 (in GD) responded in a fashion consistent with feedback inhibition of ethylene production in ripening tissue. Differences between the cultivars included a more gradual increase for ACO1 in GD, an increase in ERS1 for GD upon ripening that was not seen in SR, and a larger decrease in expression of CTR1 for GD compared with SR.
Keywords: Malus x domestica Borkh.; Quantitative PCR; Ethylene receptor genes

Nnadozie C. Oraguzie, Richard K. Volz, Claire J. Whitworth, Heather C.M. Bassett, Alistair J. Hall, Susan E. Gardiner, Influence of Md-ACS1 allelotype and harvest season within an apple

germplasm collection on fruit softening during cold air storage, Postharvest Biology and Technology, Volume 44, Issue 3, June 2007, Pages 212-219, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.013.
(http://www.sciencedirect.com/science/article/B6TBJ-4MWXT7X-D/2/1696737406c61dd24aa1f768ee3e0164)
Abstract:
Previous studies have demonstrated a relationship between Md-ACS1 allelotype and apple fruit softening at ambient temperatures. The present study was undertaken to further examine the influence of this allelotype (-1/1, -1/2 or -2/2) and its interaction with harvest season (early or late) on changes in internal ethylene concentrations (IEC) and fruit softening during cold air storage. This was carried out by describing natural differences found among old apple cultivars/species and modern commercial cultivars. For late maturing cultivars, Md-ACS1-1/1 was firmer at harvest than Md-ACS1-2/2 with the heterozygote intermediate. However harvest firmness showed no differences among for the early season Md-ACS1 allelotypes. The Md-ACS1-2/2 allelotype had a slower rate of postharvest IEC increase and flesh softening compared with Md-ACS1-1/1 and -1/2 allelotypes, and late maturing cultivars had a slower rate of fruit softening than early maturing cultivars, which was independent of postharvest IEC. All three late season allelotypes and early season Md-ACS1-2/2 were firmer after storage than early season Md-ACS1-1/1 and -1/2 allelotypes, reflecting differences in both harvest firmness and softening rates. While cultivar variation in final firmness could be explained partially through Md-ACS1-mediated postharvest ethylene increases and subsequent softening, much more variation was accounted for by their differences in harvest firmness. These results are discussed in relation to strategies for breeding cultivars with superior flesh textures that are maintained during storage.
Keywords: Apple population; Postharvest firmness; Softening curves; Storage potential

Miki Yamane, Daigo Abe, Sayaka Yasui, Naoki Yokotani, Wataru Kimata, Koichiro Ushijima, Ryohei Nakano, Yasutaka Kubo, Akitsugu Inaba, Differential expression of ethylene biosynthetic genes in climacteric and non-climacteric Chinese pear fruit, Postharvest Biology and Technology, Volume 44, Issue 3, June 2007, Pages 220-227, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.010.
(http://www.sciencedirect.com/science/article/B6TBJ-4MYF63G-2/2/47ade88853b72db3cdec8e77ff77a36d)
Abstract:
We investigated the differences in capability to produce ripening-associated ethylene between climacteric (`Yali', `Xinqingli', and `Zhuzuili') and non-climacteric (`Hongli', `Yuanbali', and `Hongxiaoli') Chinese pear (Pyrus bretschneideri Rehder) fruit varieties. Three ACS (PbACS1, PbACS2, and PbACS3), two ACO (PbACO1 and PbACO2), and three MADS-box (PbMADS1, PbMADS2, and PbMADS3) genes were cloned from ripening fruit. Fruit were harvested at the mature stage and treated with 5000 [mu]L L-1 propylene for 4 days. Ethylene production was induced by propylene in the climacteric but not in non-climacteric type fruit. In the ripening climacteric fruit, PbACS1 and PbACO1 transcript accumulation accompanied ethylene production but the accumulation of other ACS and ACO mRNAs was not detected. In `Yali' fruit, 1-MCP exposure prior to propylene treatment completely inhibited the expression of these genes, while exposure after the commencement of ethylene production weakened their expression. Transcripts of PbACO1 accumulated in response to propylene treatment even in non-climacteric fruit but this accumulation was eliminated after the termination of propylene treatment. In response to wounding, transcripts of PbACS2, PbACS3, and PbACO2 genes accumulated in both climacteric and non-climacteric fruit, but accumulation of PbACS1 and PbACO1 mRNAs was not detected. In the Southern analysis of PbACS1, HindIII digests of genomic DNA showed 8.3, 3.5 and 2.9 kb bands. The 2.9 kb band was detected only in climacteric varieties while the 3.5 kb band was detected in both climacteric and non-climacteric varieties except in `Yali'. These results suggest

that Chinese pears may have two copies of the ACS1 gene, in which PbACS1A could be linked to the varietal differences in the capability to produce ripening-associated ethylene. There was no correlation between the expression patterns of the three MADS-box genes cloned and the differences in ripening-associated ethylene production among the Chinese pear varieties.
Keywords: Ethylene; Fruit ripening; 1-MCP; Pyrus bretschneideri; Wounding; MADS-box gene

Constantino Valero, Carlos H. Crisosto, David Slaughter, Relationship between nondestructive firmness measurements and commercially important ripening fruit stages for peaches, nectarines and plums, Postharvest Biology and Technology, Volume 44, Issue 3, June 2007, Pages 248-253, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.014.
(http://www.sciencedirect.com/science/article/B6TBJ-4MWXT7X-F/2/9208376c681e63e8dff50e9e5c08d0b3)
Abstract:
Fruit firmness measurement is a good way to monitor fruit softening and to predict bruising damage during harvest and postharvest handling. Ripening protocols traditionally utilize a destructive penetrometer-type fruit firmness measure to monitor ripening. Until recently, methods of assessing fruit texture properties nondestructively were not commercially available. The nondestructive Sinclair iQ(TM) firmness tester was investigated to monitor ripening and predict bruising susceptibility in stone fruit. This work was carried out on four peach, three plum, and five nectarine cultivars over two seasons. The correlations between destructive and nondestructive firmness measurements were significant (p-value = 0.0001), although too low for commercial applications as they varied from r2 = 0.60-0.71 according to fruit type. Using a different approach, the relationship between destructive and nondestructive firmness measures was characterized in terms of segregating these fruit according to their stages of ripening. This was done by using discriminant analysis (66-90% agreement in ripeness stage classification was observed in validation tests). Discriminant analysis consistently segregated nondestructive firmness measured fruit into commercially important classes ('ready to eat', 'ready to buy', 'mature and immature'). These represented key ripening stages with different bruising potentials and consumer acceptance. This work points out the importance to relate nondestructive measurements directly to important commercial physiological stages rather than to correlate them with the current standard penetrometer values. Thus, destructive and nondestructive firmness measurements can be directly used to identify the stage of ripeness and potential susceptibility to bruising during postharvest changes. Further work is recommended to evaluate the performance of this nondestructive sensor in segregating fruit according to their stage of ripeness under packinghouse or processing plant conditions.
Keywords: Impact firmness sensor; Sinclair iQ(TM) firmness tester; Discriminant analysis; Critical bruising thresholds; 'Ready to eat'; 'Ready to buy'

Muharrem Ergun, Jiwon Jeong, Donald J. Huber, Daniel J. Cantliffe, Physiology of fresh-cut `Galia' (Cucumis melo var. reticulatus) from ripe fruit treated with 1-methylcyclopropene, Postharvest Biology and Technology, Volume 44, Issue 3, June 2007, Pages 286-292, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.08.019.
(http://www.sciencedirect.com/science/article/B6TBJ-4MY0TSW-5/2/0c512c4f08f09cfdeb34cd53ca58cdc4)
Abstract:
`Galia' (Cucumis melo var. reticulatus L. Naud. cv. Galia) fruit were harvested at the three-quarter slip stage and treated with 1 [mu]L L-1 1-methylcyclopropene (1-MCP) at 20 [degree sign]C for 24 h. The fruit were processed and stored as fresh-cut cubes and intact fruit for 10 d at 5 [degree sign]C. Ethylene production of fresh-cut cubes was approximately 4-5-fold higher than intact fruit at day 1. Afterward, the ethylene production of fresh-cut cubes declined significantly whereas that of intact fruit remained relatively constant at about 0.69-1.04 ng kg-1 s-1. 1-MCP delayed

mesocarp softening in both fresh-cut and intact fruit and the symptoms of watersoaking in fresh-cut fruit. Continuously stored fresh-cut cubes and cubes derived from intact fruit not treated with the ethylene antagonist softened 27% and 25.6%, respectively, during 10 d storage at 5 [degree sign]C while cubes derived from 1-MCP-treated fruit softened 9% and 17%, respectively. Fresh-cut tissue from 1-MCP-treated fruit exhibited slightly reduced populations of both total aerobic organisms and Enterobacterium, although the differences did not appear to be sufficient to explain the differences in keeping quality between 1-MCP-treated and control fruit. Based primarily on firmness retention and reduced watersoaking, 1-MCP treatment deferred loss of physical deterioration of fresh-cut `Galia' cubes at 5 [degree sign]C by 2-3 d compared with controls.
Keywords: Cucumis melo; Ethylene; Fresh-cut; Microbial growth; Ripening; Softening; Watersoaking

Jia Liu, Shiping Tian, Xianghong Meng, Yong Xu, Effects of chitosan on control of postharvest diseases and physiological responses of tomato fruit, Postharvest Biology and Technology, Volume 44, Issue 3, June 2007, Pages 300-306, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.019.
(http://www.sciencedirect.com/science/article/B6TBJ-4N2M6FF-1/2/df74cf883020a3455a4878354a95cb77)
Abstract:
The effects of chitosan on gray mould and blue mould caused by Botrytis cinerea and Penicillium expansum in tomato fruit stored at 25 and 2 [degree sign]C, respectively, were investigated. Chitosan provided an effective control of both diseases of tomato fruit stored at 25 and 2 [degree sign]C. Chitosan strongly inhibited spore germination, germ tube elongation, and mycelial growth of B. cinerea and P. expansum in vitro, and damaged the plasma membranes of spores of both pathogens. Chitosan treatment induced a significant increase in the activities of polyphenoloxidase (PPO), peroxidase (POD), and enhanced the content of phenolic compounds in tomato fruit. These findings suggest that the effects of chitosan on gray mould and blue mould in tomato fruit may be associated with the direct fungitoxic property against the pathogens, and the elicitation of biochemical defense responses in fruit.
Keywords: Chitosan; Tomato fruit; Botrytis cinerea; Penicillium expansum

Rachel L. Amos, Sensory properties of fruit skins, Postharvest Biology and Technology, Volume 44, Issue 3, June 2007, Pages 307-311, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.007.
(http://www.sciencedirect.com/science/article/B6TBJ-4N14D4S-1/2/b92cce8d21cb120daa42608f8292b342)
Abstract:
The sensory characteristics of fruit skins were determined for a range of produce including large fruit (apples, pears, and tomatoes) and small fruit (grapes, strawberries, blueberries, and cherry tomatoes). These results provided a context within which to study the sensory properties of skins from novel kiwifruit (Actinidia). The kiwifruit skins ranged from the edible skins of grape-sized Actinidia arguta through to the brown hairy toughened skin of A. delisiosa, which is usually considered inedible. Generally, the removal of the peel resulted in a significant decrease in chewing force, bite firmness and bitterness. As expected, the peel on its own was generally perceived as requiring more chewing force, and was bitterer than peeled fruit. Conversely, the peel was significantly less sweet than either the peeled or unpeeled fruit. The effect of the peel on the eating experience is largely influenced by the size of the fruit.
Keywords: Fruit Skins; Trained panels; Convenience

Ting Yu, Jishuang Chen, Rongle Chen, Bin Huang, Donghong Liu, Xiaodong Zheng, Biocontrol of blue and gray mold diseases of pear fruit by integration of antagonistic yeast with salicylic acid,

International Journal of Food Microbiology, Volume 116, Issue 3, 30 May 2007, Pages 339-345, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.02.005.
(http://www.sciencedirect.com/science/article/B6T7K-4N5CX4H-4/2/2104dea9979dfc9dfccd13ed21c622e2)
Abstract:
This study was conducted to evaluate the efficacy of the biocontrol yeast Cryptococcus laurentii and salicylic acid (SA) in suppressing the blue and gray mould rots in pear fruit and to explore possible mode of action involved. Our results showed that the combined treatment of pear fruit with C. laurentii with SA at 100 [mu]g ml- 1 resulted in a remarkably improved control of Penicillium expansum and Botrytis cinerea infections, including the pre-inoculated P. expansum, in comparison with the application of C. laurentii or SA alone. The biocontrol yeast C. laurentii proliferated rapidly within the first 24 h of incubation in pear fruit wounds. Although SA at 100 [mu]g ml- 1 neither affected the population growth of C. laurentii nor directly inhibited the blue mold when the inoculation concentrations of P. expansum were above 5 x 102 spore per ml in vivo, it induced the fruit resistance to the blue and gray mold rots when the time interval between SA treatment and pathogens inoculation was more than 48 h, being associated with a rapid and strong activation of the peroxidase activity in pear fruit. Thus we assume that SA may be regarded as a secondary defense line in a combination of C. laurentii and SA, which could reinforce the biocontrol efficacy of C. laurentii by induction of the fruit natural resistance.
Keywords: Biological control; Cryptococcus laurentii; Induced resistance; Pear fruit; Postharvest; Salicylic acid; Yeast antagonist

S.L. Jagadeesh, B.S. Reddy, N. Basavaraj, G.S.K. Swamy, Kirankumar Gorbal, Laxminarayan Hegde, G.S.V. Raghavan, S.T. Kajjidoni, Inter tree variability for fruit quality in jackfruit selections of Western Ghats of India, Scientia Horticulturae, Volume 112, Issue 4, 14 May 2007, Pages 382-387, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.01.016.
(http://www.sciencedirect.com/science/article/B6TC3-4N6FVH7-1/2/f8347f14c35d70616498e31db772f0d0)
Abstract:
Ninety-five jackfruit types selected from Western Ghats of India, which is the centre of origin for the species, were analyzed using Mahalanobis D2 technique to determine the degree of divergence present among the selections. The studies revealed that majority of selections (91), irrespective of their ecogeographic area, were grouped in one cluster and the remaining 4 types were solitary with one selection in each cluster. Inter cluster distance was maximum between clusters D and E (525.8) and minimum inter cluster divergence was observed between clusters B and C (106.1). Cluster means for all economically important characters were not found to be highest in any one cluster indicating the vast diversity on account of indigenous and cross-pollinated nature of the crop. The maximum relative contribution to the total divergence was by number of seeds per fruit and TSS:Acid ratio indicating the ample amount of variability in these traits and hence the selection process for crop improvement in jackfruit should deem these characters.
Keywords: Artocarpus; Jackfruit; Western Ghats; Variability; D2 Analysis; Cluster distance

Yong Seub Shin, So Deuk Park, Jwoo Hwan Kim, Influence of pollination methods on fruit development and sugar contents of oriental melon (Cucumis melo L. cv. Sagyejeol-Ggul), Scientia Horticulturae, Volume 112, Issue 4, 14 May 2007, Pages 388-392, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.01.025.
(http://www.sciencedirect.com/science/article/B6TC3-4N3P9M9-1/2/967acc3c3051e96a6a5ee1ab4d004e45)
Abstract:

This study was conducted at the Seongju Fruit Vegetable Experiment Station for 2 years, 2002-2003 to investigate the effect of pollination methods on development and sugar content of oriental melon fruits. Oriental melon fruit was pollinated by honeybees (Apis indica) and bumblebees (Bombus ignitus) and fruit setting growth regulators was used as a control treatment. Fruits pollinated by honeybees and bumblebees has lesser length and width of fruit compared to the control. Pollinated by bumblebees increased hardness and soluble solids of fruits by 27% and 4-5% and that of honeybees increased hardness and soluble solids of fruits by 12% and 5-10% compared to the control, respectively. Fermented fruit ratio (%) of oriental melon fruit pollinated by honeybees, bumblebees, and growth regulator was 6.7%, 9.1%, and 28.1%, respectively. Glucose, fructose and sucrose contents of fruits by HPLC (high performance liquid chromatography) were very low throughout the ripening stage, but abruptly increased at harvesting stage. In fructose content of fruits, pollination of bumblebees and honeybees was higher by 9% and by 13% than those of control, respectively. The amount of total sugar content in fully ripen fruits of oriental melon was not different between the treatments ($P > 0.05$). Total sugar content (%) of fruits pollinated by bumblebees was slowly decreased until 15 days after storage compared to that of other treatment. For the low fermented fruit ratio (%) and slowly reduced total sugar content at storage of fruits, the pollination of bees was more useful than fruit setting growth regulators in early cultivation of oriental melon under plastic houses. The economic analysis according to the pollination method will be needed in the near future.
Keywords: Fruit development; Oriental melon; Pollination; Sugar content

Merijn M. Bos, Ingolf Steffan-Dewenter, Teja Tscharntke, Shade tree management affects fruit abortion, insect pests and pathogens of cacao, Agriculture, Ecosystems & Environment, Volume 120, Issues 2-4, May 2007, Pages 201-205, ISSN 0167-8809, DOI: 10.1016/j.agee.2006.09.004.
(http://www.sciencedirect.com/science/article/B6T3Y-4M93P02-1/2/94b53d171a37d00424bb544a61dbed76)
Abstract:
The mortality of cacao fruits caused by early fruit abortion or insect and pathogen attacks was investigated in differently managed agroforestry systems in Central Sulawesi, Indonesia. Nine agroforestry systems shaded by three different types of tree stands were selected, which represented a decrease in structural heterogeneity: forest remnants, diverse planted trees and one or two species of planted leguminose trees. After standardized manual cross-pollination, the development of 600 fruits on 54 trees (6 trees per agroforest) was followed during 18 weeks of fruit development. In total, 432 of all fruits were lost before maturity, which seriously undermined yields. The proportion of harvested fruits per tree (overall average: 27 +/- 4%) was not affected by canopy type. Although shade cover did not have a significant effect, losses due to fruit abortion were most likely under forest shade, where nitrogen-fixing leguminose shade trees were absent. Fruit losses due to pathogenic infections and insect attacks increased with the homogenization of the agroforests, supporting the hypothesis that agricultural homogenization increases risks of pest outbreaks. In conclusion, shade management may be improved to increase yields from cacao using highly diversified natural shade agroforestry systems.
Keywords: Flower-fruit ratio; Helopeltis; Herbivory; Indonesia; Pollination; Phytophthora; Cacao yield

Lesley Larsen, Stephen D. Lorimer, Nigel B. Perry, Contrasting chemistry of fruits and leaves of two Pseudowintera species: Sesquiterpene dialdehyde cinnamates and prenylated flavonoids, Biochemical Systematics and Ecology, Volume 35, Issue 5, May 2007, Pages 286-292, ISSN 0305-1978, DOI: 10.1016/j.bse.2006.11.001.
(http://www.sciencedirect.com/science/article/B6T4R-4MNRN59-1/2/10bc43a2b205d3b9a1316ea1393bd998)
Abstract:

Two new sesquiterpene dialdehydes, cinnamate 7 and coumarate 8, were isolated from the fruits of Pseudowintera colorata. The known sesquiterpene dialdehydes polygodial 1 and 9-deoxymuzigadial 2 were also found in these fruits, at 5% w/w compared to 0.5% in the leaves. Fruits of Pseudowintera axillaris contained no sesquiterpene dialdehyde cinnamates, even though these are present in the leaves, but did contain prenylated flavanones 11-13. Compounds 7 and 8 are further examples of the rare sesquiterpene dialdehyde cinnamate combination, found exclusively in the family Winteraceae. This is the first report of the uncommon prenylated flavanones in Winteraceae.
Keywords: Pseudowintera colorata; Pseudowintera axillaris; Winteraceae; Sesquiterpenes; Dialdehydes; Cinnamates; Flavanones

J.M. Stonehouse, J.D. Mumford, A. Verghese, R.P. Shukla, S. Satpathy, H.S. Singh, T. Jiji, J. Thomas, Z.P. Patel, R.C. Jhala, R.K. Patel, A. Manzar, T.M. Shivalingaswamy, A.K. Mohantha, B. Nair, C.V. Vidya, V.S. Jagadale, D.B. Sisodiya, B.K Joshi, Village-level area-wide fruit fly suppression in India: Bait application and male annihilation at village level and farm level, Crop Protection, Volume 26, Issue 5, May 2007, Pages 788-793, ISSN 0261-2194, DOI: 10.1016/j.cropro.2006.07.008.
(http://www.sciencedirect.com/science/article/B6T5T-4M3RNVW-1/2/53c4ecdef9b9b186cbab3e267eec16de)
Abstract:
Pest fruit flies (Diptera: Tephritidae) may be managed more efficiently at village level than at farm level, particularly as two management methods--bait application technique (BAT) and male annihilation technique (MAT)--rely on attractants which have less effect on flies whose needs have been met (fed males and females in the case of BAT, mated females in the case of MAT), and so 'satiated immigrants' may be unaffected by controls and invade treated areas. This study compared and evaluated these controls against fruit flies used at the levels of the farm and of the village (taken to be 1 km2) at a variety of sites. Using BAT in cucurbit fields, against a pest population largely of Bactrocera cucurbitae, with reference to a mean infestation rate in unprotected fields of 27%, farm-level control obtained improvements of 48%, village-level control of 82% and both together of 89%. Using MAT in fruit orchards, against a guild of fly pests largely responsive to methyl eugenol lures, with reference to a mean infestation rate in unprotected orchards of 13%, farm-level control obtained improvements of 71%, village-level control of 96% and both together of 99%. Statistical analysis found no interaction between farm-level and village-level control when both were used, which suggests that individual farmers still have an incentive to apply farm-level controls, whether or not their neighbours are doing so, and thus to participate in cooperative control without reference to participation by neighbours.
Keywords: Fruit flies; India; Area-wide control; Bait application; Male annihilation

Margarita Parra, Alfonso Albacete, Cristina Martinez-Andujar, Francisco Perez-Alfocea, Increasing plant vigour and tomato fruit yield under salinity by inducing plant adaptation at the earliest seedling stage, Environmental and Experimental Botany, Volume 60, Issue 1, May 2007, Pages 77-85, ISSN 0098-8472, DOI: 10.1016/j.envexpbot.2006.06.005.
(http://www.sciencedirect.com/science/article/B6T66-4KJ74YD-1/2/82d2b197bbe651b840eb97ee1c33601a)
Abstract:
In order to reduce the negative effect of salinity on fruit yield, 5-day-old tomato seedlings (Lycopersicon esculentum) were haloconditioned by complete immersion in osmotic/saline solutions composed of PEG (-0.5, -0.75, -1 MPa), with or without 10 mM NaCl, for 1, 3, 5 and 8 days. Under moderate salinity (7.5 dS m-1), the pre-adapted plants produced 23% more shoot biomass and fruit yield than the non-adapted plants. In addition to the induced vigour, the improved tolerance in most pre-treatments was related to lower Na+ and Cl- concentrations in the

leaves and increases in leaf K+ contents and K+/Na+ ratio, but the contrary was also observed. Overall, the most effective haloconditioning treatment seems to be the application of -0.75 MPa for 3 days. During the experiment in greenhouse, some vigorous haloconditioned plants were propagated through adventitious apex culture and evaluated under salinity in a short-term experiment. The results suggested that the induced salt tolerance was not horizontally transmitted, indicating that (i) the individuals chosen were not genetically more vigorous, but (ii) it is likely that they responded better to the induced adaptation, and (iii) this adaptation is probably mediated by epigenetic changes taking place in the roots.
Keywords: Adaptation to salinity; Haloconditioning; Horizontal transmission; Ionic regulation; Lycopersicon esculentum; NaCl; Plant vigour; Polyethylene glycol; Potassium selectivity

J. Boateng, M. Verghese, L. Shackelford, L.T. Walker, J. Khatiwada, S. Ogutu, D.S. Williams, J. Jones, M. Guyton, D. Asiamah, F. Henderson, L. Grant, M. DeBruce, A. Johnson, S. Washington, C.B. Chawan, Selected fruits reduce azoxymethane (AOM)-induced aberrant crypt foci (ACF) in Fisher 344 male rats, Food and Chemical Toxicology, Volume 45, Issue 5, May 2007, Pages 725-732, ISSN 0278-6915, DOI: 10.1016/j.fct.2006.10.019.
(http://www.sciencedirect.com/science/article/B6T6P-4M9RKM3-1/2/a797e9ed6e2fb9978d9369400d3d52bf)
Abstract:
Phytochemicals contribute to the vibrant colors of fruits and it is suggested that the darker the fruit the higher the antioxidative or anticarcinogenic properties. In this study we investigated the possible effects of blueberries (BLU), blackberries (BLK), plums (PLM), mangoes (MAN), pomegranate juice (POJ), watermelon juice (WMJ) and cranberry juice (CBJ) on azoxymethane (AOM)-induced aberrant crypt foci (ACF) in Fisher 344 male rats.
Forty-eight male Fisher 344 rats were randomly assigned to eight groups (n = 6). The groups were fed AIN-93G as a control (C) diet, the rats fed fruits received AIN-93G + 5% fruits and the groups that were given fruits juices received 20% fruit juice instead of water. The rats received subcutaneous injections of AOM at 16 mg/kg body weight at seventh and eighth weeks of age. At 17th week of age, the rats were killed by CO2 asphyxiation.
Total ACF numbers (mean +/- SEM) in the rats fed CON, BLU, BLK, PLM, MNG, POJ, WMJ and CBJ were 171.67 +/- 5.6, 11.33 +/- 2.85, 24.0 +/- 0.58, 33.67 +/- 0.89, 28.67 +/- 1.33, 15.67 +/- 1.86, 24.33 +/- 3.92 and 39.0 +/- 15.31. Total glutathione-S-transferase (GST) activity ([mu]mol/mg) in the liver of the rats fed fruits (except BLK) and fruit juices were significantly ($p < 0.05$) higher in the rats fed fruits and fruit juices compared with the control.
Our findings suggest that among the fruits and fruit juices, BLU and POJ contributed to significant ($P < 0.05$) reductions in the formation of AOM-induced ACF.
Keywords: Selected fruits; Phytochemicals; Azoxymethane (AOM); Aberrant crypt foci (ACF); Glutathione-S-transferase (GST)

Mustafa Cemek, Levent Akkaya, Yavuz O. Birdane, Kamil Seyrek, Sait Bulut, Muhsin Konuk, Nitrate and nitrite levels in fruity and natural mineral waters marketed in western Turkey, Journal of Food Composition and Analysis, Volume 20, Issues 3-4, The essential balance: Risks and benefits in food safety and quality, May 2007, Pages 236-240, ISSN 0889-1575, DOI: 10.1016/j.jfca.2006.12.003.
(http://www.sciencedirect.com/science/article/B6WJH-4MNYYWW-1/2/fd05377d025daa4b5ba5a226cc99ceda)
Abstract:
Nitrate and nitrite levels in our natural water supplies are important indicators of water quality. The increasing levels of nitrate and nitrite concentrations are becoming an important problem for public health. Nitrates are of great toxicological concern as they are involved in the origin of nitrites and nitrosamines and the development of metahaemoglobinaemia in infants. The aim of this study was

to determine the levels of nitrate and nitrite in commonly consumed mineral water samples in the Afyonkarahisar region of western Turkey. Thirteen brands of domestic fruity and natural mineral waters were analyzed to determine nitrate and nitrite levels. Measurement of the color intensity was carried out using a photometry at 540 nm and comparing it to standard nitrate and nitrite solutions. Average nitrate concentrations of 3.093+/-1.53 mg/L (range 1.02-7.50 mg/L) for fruity, and 3.990+/-2.46 mg/L (range 1.09-13.20 mg/L) for natural mineral waters, were detected. Regarding nitrite, average concentrations were 0.020+/-0.007 mg/L (range 0.009-0.049 mg/L) for fruity and 0.026+/-0.008 mg/L (range 0.008-0.087 mg/L) for natural mineral waters. According to the results of the present study, nitrate and nitrite levels in the fruity and natural mineral waters were not found in concentrations considered to be hazardous in terms of public health.
Keywords: Nitrate; Nitrite; Fruity mineral waters; Natural mineral waters; Food safety and quality; Drinking water

G.K. Jayaprakasha, P.S. Negi, B.S. Jena, L. Jagan Mohan Rao, Antioxidant and antimutagenic activities of Cinnamomum zeylanicum fruit extracts, Journal of Food Composition and Analysis, Volume 20, Issues 3-4, The essential balance: Risks and benefits in food safety and quality, May 2007, Pages 330-336, ISSN 0889-1575, DOI: 10.1016/j.jfca.2006.07.006.
(http://www.sciencedirect.com/science/article/B6WJH-4MR1P49-1/2/0c4e7bfc426efc501f1e123b585e279a)
Abstract:
Recently, a number of studies on the health benefits associated with natural compounds have been demonstrated. Phenolics in fruits, vegetables, herbs and spices possess potent antioxidant, anti-inflammatory, antimutagenic and anticarcinogenic activities. In the present study, the dried fruits of cinnamon were extracted with ethyl acetate, acetone, methanol and water using a Soxhlet extractor. The total phenolics content of the extracts as determined by Folin-Ciocalteu method were found to be the highest in water extract (44.5%) and the lowest in ethyl acetate (14.4%). The antioxidant activity (AA) of the extracts was evaluated through in vitro model systems such as [beta]-carotene-linoleate, and 1,1-diphenyl-2-picryl hydrazyl (DPPH); the antimutagenicity of these extracts was also assayed against the mutagenicity of sodium azide by Ames test using tester strain of Salmonella typhimurium (TA100) at different concentrations. In both the model systems, the AA of the extracts was found in the order of water>methanol>acetone>ethyl acetate. All the extracts decreased sodium azide mutagenicity in S. typhimurium strain (TA100). At 5000 [mu]g/plate all the extracts showed strong antimutagenicity. The antimutagenicity of water extract was followed by acetone, methanol and ethyl acetate. The results of the present study indicate that under-utilized and unconventional part of cinnamon is a good source of antioxidant and antimutagenic phenolics.
Keywords: Cinnamomum zeylanicum; Fruits; Total phenolics; Antioxidant activity; [beta]-carotene-linoleate; And 1; 1-diphenyl-2-picryl hydrazyl; Ames test

C. Acevedo, E. Sanchez, M.E. Young, Heat and mass transfer coefficients for natural convection in fruit packages, Journal of Food Engineering, Volume 80, Issue 2, May 2007, Pages 655-661, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.07.001.
(http://www.sciencedirect.com/science/article/B6T8J-4KV3XG8-1/2/cf867c3ee7f6f9e38f9433618f106678)
Abstract:
The table grape exporting industry faces two major problems associated with long distance refrigerated transportation: damage due to mold growth and unexpected temperature rise, that accelerate mold proliferation and causes water loss in the fruit. To overcome mold growth, a usual practice points toward the use of gas generators.
Thermal damage due to refrigeration brake down could be predicted with the help of heat transfer correlations that apply to this specific situation. These correlations, extended to mass transfer

prediction by using Nusselt and Sherwood number analogy for heat and mass transfer, allows the evaluation of the behavior of gas generators.
In our work, a new heat transfer correlation [Nu = 1.5(GrPr)1/4] was proposed to predict the heat transfer coefficient inside the carton used in grape transport to allow estimation of internal temperature change during transportation.
Making use of the heat and mass transfer analogy, the correlation was extended in order to estimate the mass lost in a vapor generator loaded with methyl jasmonate [Sh = 1.5(GrmSc)1/4]. The lost of this volatile compound was measurement with GC/MS. The proposed correlation was experimentally validated for different carton sizes across the temperature range 0-25 [degree sign]C.
Keywords: Heat transfer; Mass transfer; Grape package; Natural convection; GC/MS; Methyl jasmonate

Wen-Yen Wu, Yu-Po Chen, En-Cheng Yang, Chromatic cues to trap the oriental fruit fly, Bactrocera dorsalis, Journal of Insect Physiology, Volume 53, Issue 5, May 2007, Pages 509-516, ISSN 0022-1910, DOI: 10.1016/j.jinsphys.2007.02.003.
(http://www.sciencedirect.com/science/article/B6T3F-4N3WYTH-1/2/73abe80cd8ebda2468d2be5bc6d34b65)
Abstract:
Various colors have been used as visual cues to trap insect pests. For example, yellow traps for monitoring and control of the oriental fruit fly (Bactrocera dorsalis) have been in use for a very long time. However, the chromatic cue of using color traps has never been meticulously investigated. In this study, the spectral sensitivities of the photoreceptors in the compound eyes of B. dorsalis were measured intracellularly, and the theory of receptor quantum catch was applied to study the chromatic cue of fly attracting. Responses to five wavelength categories with peak wavelengths of 370, 380, 490, and 510 nm, and one with dual peaks at 350 and 490 nm were recorded. Based on spectral sensitivities, six colored papers were chosen to test the color preference of the fly, and an additional UV preference test was done to confirm the effect of the UV stimuli. It was concluded that UV and green stimuli (spectra: 300-380 nm and 500-570 nm) would enhance the attractiveness of a colored paper to the oriental fruit fly, and blue stimuli (380-500 nm) would diminish the attractiveness.
Keywords: Spectral sensitivity; Color preference; Oriental fruit fly; Bactrocera dorsalis

Nely Vergara-Valencia, Eliana Granados-Perez, Edith Agama-Acevedo, Juscelino Tovar, Jenny Ruales, Luis A. Bello-Perez, Fibre concentrate from mango fruit: Characterization, associated antioxidant capacity and application as a bakery product ingredient, LWT - Food Science and Technology, Volume 40, Issue 4, May 2007, Pages 722-729, ISSN 0023-6438, DOI: 10.1016/j.lwt.2006.02.028.
(http://www.sciencedirect.com/science/article/B6WMV-4JRVBHR-2/2/5a76edf047d56529c5b156f24113f2a9)
Abstract:
Mango is a still underutilized fruit from tropical regions. The aim of this work was to characterize a mango dietary fibre concentrate (MDF) with antioxidant capacity, using the unripe fruit. MDF was obtained and its chemical composition, soluble (SDF) and insoluble dietary fibre (IDF), extractable polyphenols, water- and oil-holding capacities and anti-radical efficiency, were evaluated. MDF showed low lipid and high starch contents and balanced SDF/IDF levels, which is important for the functionality of fibre in the human diet. MDF exhibited adequate water-holding capacity, similar to other fruit fibres, but had a low oil-holding capacity. Bakery products prepared with MDF conserved the balance of SDF and IDF and most of its anti-radical efficiency. In vitro starch digestibility tests of MDF bakery products indicated a low predicted glycemic index. MDF might be

an alternative for development of products with balanced DF components and low glycemic response, aimed to people with special carbohydrate/energy requirements.
Keywords: Mango; Dietary fibre; Glycemic index; Bakery products; Antioxidant capacity; Chemical composition

D. Mbeguie-A-Mbeguie, O. Hubert, X. Sabau, M. Chillet, B. Fils-Lycaon, F.-C. Baurens, Use of suppression subtractive hybridization approach to identify genes differentially expressed during early banana fruit development undergoing changes in ethylene responsiveness, Plant Science, Volume 172, Issue 5, May 2007, Pages 1025-1036, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2007.02.007.
(http://www.sciencedirect.com/science/article/B6TBH-4N2KT72-3/2/1719d02b369da69d2f1ff34dfad1987e)
Abstract:
Little is known about the early green developmental stage of banana fruit before the commercial harvesting stage. In this study, we demonstrate that banana fruit (cv Cavendish) grown under our pedoclimatical conditions undergoes changes in ethylene responsiveness between 40 (immature fruit unable to respond to ethylene), 60 and 90 DAF (days after flowering; early and late mature fruit able to respond to ethylene, respectively). Further, we have combined subtractive suppression hybridization (SSH) and macro-array hybridization to construct four different SSH libraries comprising a total of 3072 clones and identify 876 clones that are differentially expressed during fruit ripening. Some of these positive clones were partially sequenced to generate ESTs. Sequence analysis revealed that 163 clones on 177 (92%) presented a high similarity with different genes in the database and were related to various plant mechanisms. Northern blot analysis and real-time quantitative PCR conducted on 24 selected clones showed that the subtraction worked properly and led to get more insights into the early green developmental stages of banana. These genes will contribute to increase pools of public EST collections of banana for identification of candidate genes and the providing of molecular markers usable to improve banana fruit quality throughout conventional breeding or biotechnology approaches.
Keywords: Banana; Ripening; Gene expression; Quality; SSH

Ayako Ikegami, Sai Eguchi, Akira Kitajima, Kentaro Inoue, Keizo Yonemori, Identification of genes involved in proanthocyanidin biosynthesis of persimmon (Diospyros kaki) fruit, Plant Science, Volume 172, Issue 5, May 2007, Pages 1037-1047, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2007.02.010.
(http://www.sciencedirect.com/science/article/B6TBH-4N3GF9M-1/2/3d3afc52af9d625628595a4b248bbf3d)
Abstract:
Persimmon fruit accumulate high-molecular weight proanthocyanidins in `tannin cells' during their development. Enclosing young persimmon fruit on tree in an ethanol-containing polyethylene bag causes insolubilization of these proanthocyanidins. We examined the effect of this treatment on de novo synthesis of proanthocyanidins. First, we found by RNA blotting that the expression of genes encoding enzymes involved in flavonoid biosynthesis, namely, phenylalanine ammonia-lyase, chalcone synthase, and dihydroflavonol reductase, was down-regulated by the ethanol treatment. Second, we performed suppression subtractive hybridization (SSH) to identify additional genes whose expressions were differentially regulated during the treatment. In addition to six genes for flavonoid biosynthetic enzymes, a gene encoding the key enzyme in proanthocyanidin biosynthesis, anthocyanidin reductase (ANR), and the one for serine carboxypeptidase-like (SCPL) protein were found differentially expressed in astringent and astringency-removed fruit by SSH. These results were confirmed by RNA blottings. We also cloned full-length coding sequences for ANR and SCPL for the first time from persimmon fruit. The present data show that ethanol treatment not only causes direct insolubilization of proanthocyanidins, but also affects the

regulation of proanthocyanidin synthesis at the transcriptional level. Our work also demonstrates that persimmon fruit can serve as a profitable material to study proanthocyanidin accumulation at molecular level.
Keywords: Anthocyanidin reductase; Condensed tannin; Ethanol treatment; Persimmon; Serine carboxypeptidase-like protein; Suppression subtractive hybridization

Ana Paula Agizzio, Maura Da Cunha, Andre O. Carvalho, Marco Antonio Oliveira, Suzanna F.F. Ribeiro, Valdirene M. Gomes, Erratum to 'The antifungal properties of a 2S albumin-homologous protein from passion fruit seeds involve plasma membrane permeabilization and ultrastructural alterations in yeast cells' [Plant Science 171 (2006) 523-530], Plant Science, Volume 172, Issue 5, May 2007, Page 1060, ISSN 0168-9452, DOI: 10.1016/j.plantsci.2006.06.020.
(http://www.sciencedirect.com/science/article/B6TBH-4MY0S12-1/2/f7a120a24e0b781aabde733cdefce373)

Hector G. Nunez-Palenius, Donald J. Huber, Harry J. Klee, Daniel J. Cantliffe, Fruit ripening characteristics in a transgenic `Galia' male parental muskmelon (Cucumis melo L. var. reticulatus Ser.) line, Postharvest Biology and Technology, Volume 44, Issue 2, May 2007, Pages 95-100, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.011.
(http://www.sciencedirect.com/science/article/B6TBJ-4MWXT7X-5/2/9ed49db4a52233c1177f37d3d06ef4e0)
Abstract:
`Galia' is a high-quality muskmelon cultivar that is grown in greenhouses or tunnels to maximize fruit quality and yield. `Galia' has a short shelf life of 2-3 weeks due to rapid fruit softening. In vitro regeneration and transformation of `Galia' melon parental lines with antisense technology, targeting enzymes involved in the ethylene biosynthesis pathway, is a feasible strategy that can be used to increase its fruit shelf-life. In this study, the male parental line of `Galia' muskmelon was transformed with two different constructs: one plasmid was bearing the uidA (GUS) reporter gene and another the ACC oxidase gene (CMACO-1) in antisense orientation. Transgenic ACC oxidase antisense (TGM-AS), azygous (PCR negative), transgenic GUS (TGM-GUS) and wild type (WT) fruit, from plants grown in the greenhouse, were harvested at zero-, half-, and full-slip developmental stages. Fruit firmness of full-slip TGM-AS was almost twice that of wild type, azygous and TGM-GUS. Ethylene production and ACC oxidase in half-slip wild type, azygous and TGM-GUS fruit were greater than those from TGM-AS fruit. TGM-AS `Galia' male parental melon fruit exhibited delayed softening compared to wild type fruit.
Keywords: `Galia'; Melon; Ethylene; ACC oxidase antisense; GUS; Fruit quality; Soluble sugars; Firmness

Robert A. Spotts, Peter L. Sholberg, Paul Randall, Maryna Serdani, Paul M. Chen, Effects of 1-MCP and hexanal on decay of d'Anjou pear fruit in long-term cold storage, Postharvest Biology and Technology, Volume 44, Issue 2, May 2007, Pages 101-106, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4MWXT7X-6/2/511c77d7363f85bdf1e7f0d1c3546e65)
Abstract:
The objectives of this study were to examine the effect of several rates of 1-MCP from 10 to 100 nL L-1 on stem end decay caused by Botrytis cinerea and to evaluate the effects of prestorage treatment with 1-MCP, hexanal, and 1-MCP + hexanal on decay of d'Anjou pear (Pyrus communis L.) fruit in long-term cold storage. 1-MCP at 300 nL L-1 reduced bull's-eye rot and Phacidiopycnis rot. Stem end gray mold also was reduced by 1-MCP at 300 nL L-1, and reduction at rates from 10 to 100 nL L-1 was significant in one of two trials. Snow-mold rot was reduced by 1-MCP at 30 nL L-1. Hexanal alone reduced snow mold but increased blue mold caused by Penicillium expansum.

The combination of 1-MCP and hexanal affected decay similar to 1-MCP. However, hexanal in combination with 1-MCP negated the effect of 30 nL L-1 1-MCP on firmness but did not counteract the effect of 300 nL L-1 1-MCP. Thus, a combination of 1-MCP and hexanal at optimized rates may reduce storage decay, control superficial scald, and allow normal ripening of d'Anjou pear fruit.
Keywords: 1-Methylcyclopropene; Postharvest decay; Pyrus communis; Botrytis cinerea; Penicillium expansum; Coprinus psychromorbidus; Phacidiopycnis piri; Neofabraea

Maria Roca, Beatriz Gandul-Rojas, M Isabel Minguez-Mosquera, Varietal differences in catabolic intermediates of chlorophylls in Olea europaea (L.) fruit cvs. Arbequina and Blanqueta, Postharvest Biology and Technology, Volume 44, Issue 2, May 2007, Pages 150-156, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4MY0TSW-3/2/58e715cfd0bf1ad3e10548945b16751c)
Abstract:
A comparative study of the chlorophyll catabolism in fruit of Olea europaea, cvs. Arbequina and Blanqueta during the ripening, has demonstrated a temporal disparity in chlorophyll disappearance between varieties. In `Blanqueta' fruit, the early cleavage of the macro-ring of the chlorophyll molecule implies a fast loss of chlorophylls before the synthesis of anthocyanins. The displacement in the time of this process agrees in each variety with the maximum levels of in vivo chlorophyllide and chlorophyllase activity (EC 3.1.1.14). The temporary difference in the activation of chlorophyllase and the rest of enzymes implied in the pheophorbide a oxygenase pathway is responsible for the step to colorless products. In addition, the different involvement of minor oxidized chlorophylls in the varieties implies a different participation of chlorophyll catabolic oxidatives enzymes. The greater oxidative activity in the fruit of the `Blanqueta' variety can indirectly have an influence on the lower oxidative stability of corresponding oils.
Keywords: Arbequina; Blanqueta; Chlorophyll catabolism; Olea europaea (L.); Olive fruits; Variety

Yasar Karakurt, Donald J. Huber, Characterization of wound-regulated cDNAs and their expression in fresh-cut and intact papaya fruit during low-temperature storage, Postharvest Biology and Technology, Volume 44, Issue 2, May 2007, Pages 179-183, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.12.002.
(http://www.sciencedirect.com/science/article/B6TBJ-4MWXT7X-4/2/d4608bfb63a174f8a5b59b75c6eb471e)
Abstract:
Fresh-cut papaya fruit undergo rapid tissue deterioration during storage. A comparative gene expression study was conducted to isolate genes differentially expressed upon fresh-cut processing by means of mRNA differential display RT-PCR. Differential display analysis was performed on intact and fresh-cut papaya fruit stored in parallel for 12 h at 5 [degree sign]C with three different one-base-anchored oligo dT and eight arbitrary primers. Confirmation of true positive bands was performed by northern blotting. Fourteen differentially expressed cDNAs ranging from 154 to 777 bp were cloned, sequenced and compared to GenBank sequences. The partial cDNAs showed significant homologies to signaling pathway genes, membrane proteins, cell-wall enzymes, proteases, ethylene biosynthetic enzymes, and enzymes involved in plant defense responses. Northern blot analysis with probes of each of the partial clones revealed that most of the genes corresponding to partial cDNAs were expressed in a fresh-cut dependent manner during 8 days storage. The transcripts for PC18-5, PA19-3 and PC17 were not detectable on northern blots. The results suggest that fresh-cut processing induces the expression of proteins involved in membrane degradation, free radical generation, and enzymes involved in global stress responses.
Keywords: cDNA cloning; Differential display; Fresh-cut; Papaya fruit

S.M. Romero, A. Patriarca, V. Fernandez Pinto, G. Vaamonde, Effect of water activity and temperature on growth of ochratoxigenic strains of Aspergillus carbonarius isolated from Argentinean dried vine fruits, International Journal of Food Microbiology, Volume 115, Issue 2, 30 April 2007, Pages 140-143, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2006.10.014.
(http://www.sciencedirect.com/science/article/B6T7K-4MJBTD5-1/2/e5501c3cdcc21f7c10196480f21a036c)
Abstract:
Aspergillus carbonarius is an ochratoxin A (OTA) producing fungus, predominantly responsible for the production of this mycotoxin in grapes, wine and dried vine fruits. The objective of this study was to determine the in vitro effects of water activity (aw, 0.80-0.95) and temperature (15-35 [degree sign]C) on lag phase extension and radial growth rate of a cocktail inoculum of four strains of A. carbonarius. The maximum growth rate was observed at 0.95 aw and 30 [degree sign]C (17.46 mm day- 1). In general, growth rates increased with the increment of aw. No growth was observed at aw below 0.85. For all aw levels tested the highest growth rate was detected at 30 [degree sign]C. At 15 [degree sign]C growth only occurred at the higher aw levels evaluated (0.925 and 0.95) at a growth rate of 3.82 and 5.57 mm day- 1 respectively. The shortest lag phase (0.26 days) was found at 0.925 aw and 35 [degree sign]C. At marginal conditions of aw and temperature the lag phases increased, being the highest registered at 20 [degree sign]C and 0.89 aw (33.7 days). The pattern of effects of environmental factors on growth was similar among Argentinean A. carbonarius strains and those from several European countries, Israel and Australia.
Keywords: Aspergillus carbonarius; Water activity; Temperature; Growth

Sergio D. Lannes, Fernando L. Finger, Adilson R. Schuelter, Vicente W.D. Casali, Growth and quality of Brazilian accessions of Capsicum chinense fruits, Scientia Horticulturae, Volume 112, Issue 3, 23 April 2007, Pages 266-270, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.12.029.
(http://www.sciencedirect.com/science/article/B6TC3-4MV1H70-5/2/a28041baf16de26a7910b7a2dc1b1737)
Abstract:
Total fresh and dry weight of Capsicum chinense fruit accessions were inversely correlated with accumulation of dry matter, and fruits with a higher percentage of dry matter accumulated proportionally more total soluble solids. Based on regression analysis, a 1% increase in fruit dry weight was associated with a 0.28% improvement in total soluble content, up to a maximum total soluble solid content of 10.25%. Regardless of shape, larger fruits had thicker pericarps, and were therefore more suitable for open air fresh markets. Smaller fruits had thinner pericarps and higher concentrations of total soluble solids and were more appropriate for dehydration and paprika production. Dry fruits with color intensities greater than 200 ASTA units, as required for paprika production, were found in 18.4% of the analyzed accessions. A large number of accessions, close to 27%, had total capsaicinoid concentrations less than or equal to 1.9 mg g-1 dry weight, and can be considered as sweet or light pungent fruits. A small percentage of accessions (2.5%) were classified as extremely hot fruits.
Keywords: Dry matter; Total soluble solids; Color intensity; Capsaicinoids

Takuya Ban, Mihoko Kugishima, Tsuneo Ogata, Shuji Shiozaki, Shosaku Horiuchi, Hisafumi Ueda, Effect of ethephon (2-chloroethylphosphonic acid) on the fruit ripening characters of rabbiteye blueberry, Scientia Horticulturae, Volume 112, Issue 3, 23 April 2007, Pages 278-281, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.12.027.
(http://www.sciencedirect.com/science/article/B6TC3-4MS9K5M-5/2/57861247a3c77ae5fd6f03f2341fab84)
Abstract:

Effect of ethephon (2-chloroethylphosphonic acid) application on rabbiteye blueberry fruit quality during the growth period was investigated. Ethephon treatment stimulated the decrement of titratable acidity, anthocyanin accumulation and fruit softening 4 days after treatment and the promoting effects continued through the investigation period. The ripening promotion effect of ethephon on total soluble solids content was observed only 8 days after treatment. Ethephon treatment did not affect the fruit enlargement during the investigation period. From these results, it is concluded that ethephon application for rabbiteye blueberry promote the fruit ripening, but the stimulatory effects of ethephon on fruit ripening were different in degree on each ripening characters.
Keywords: Anthocyanin; Ethephon; Fruit ripening; Rabbiteye blueberry

Hsiao-hua Pan, Zen-hong Shu, Temperature affects color and quality characteristics of `Pink' wax apple fruit discs, Scientia Horticulturae, Volume 112, Issue 3, 23 April 2007, Pages 290-296, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.12.046.
(http://www.sciencedirect.com/science/article/B6TC3-4MV1H70-4/2/1c69391e0db1e4dbc58b85ebc88db893)
Abstract:
Red color plays a very important role when wax apple fruits are purchased. Temperature is one of the key factors among those influencing red color development. We evaluated the effects of temperature on color formation and other quality characteristics of `Pink' wax apple fruit discs by using constant, slow-increase, fast-increase, transient shifting to high temperature, shifting to high temperature for different length of time and different day/night temperature regimes. The results show temperature has pronounced effects on quality attributes of wax apple fruit discs. Anthocyanin and total soluble solid (TSS) were greatest in the 20 [degree sign]C treated discs under constant temperatures. In the slow-increase and fast-increase treatments, quality attributes in disc were better in treatments with a final temperature of 25 [degree sign]C than of 30 [degree sign]C. The concentration of soluble sugars (SS), starch, total phenolic compounds (TPC), free amino acids (FAA) and soluble protein (SP) all decreased with increasing temperature. Transient shifting to high temperature of 30 [degree sign]C for 1-day had no effect on pigmentation but treatment periods from 3- to 5-days had a substantial adverse effect. At 30 [degree sign]C for 5-days, exposed discs had the lightest weight and shortest diameter as well. Both SS and TPC decreased in the 3- and 5-day treatments. When temperature was shifted from 20 to 30 [degree sign]C for 2 to 11 days, the widest and heaviest discs were found in the 5-day treatment. Anthocyanin and TSS concentration decreased following increased length of exposure to high temperature. Pigmentation of discs exposed to high temperature treatment was worse than in uncultured controls. Both protein and FAA concentrations decreased after culture. Among the 5 different day/night temperature combinations, discs under 25/20 [degree sign]C had the highest anthocyanin and TSS concentrations, while those under 30/15 [degree sign]C had the worst.
Keywords: Temperature; Wax apple; Fruit; Color; Quality

Parson Saradhuldhat, Robert E. Paull, Pineapple organic acid metabolism and accumulation during fruit development, Scientia Horticulturae, Volume 112, Issue 3, 23 April 2007, Pages 297-303, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.12.031.
(http://www.sciencedirect.com/science/article/B6TC3-4MS9K5M-6/2/aa79af940a7ee56ba8bb3cb951663b81)
Abstract:
Developmental changes in pineapple (Ananas Comosus (L.) Merrill) fruit acidity was determined for a `Smooth Cayenne' high acid clone PRI#36-21 and a low acid clone PRI#63-555. The high acid clone gradually increased in fruit acidity from 1.4 meq/100 ml 6 weeks from flowering, and peaked a week before harvest at ca 10 meq/100 ml. In contrast, the low acid clone increased in acidity 6 to 8 weeks after flowering, peaked 15 weeks after flowering at ca. 9 meq per/100 ml and

then sharply declined in 2 weeks to 6 meq/100 ml. The increased in total soluble solids (TSS) of the low acid clone began 6 weeks after flowering and for the high acid clone at 12 weeks after flowering. The increase in titratable fruit acidity (TA) paralleled the changes in the citric acid content of both clones. Citric acid content increased from less than 1 mg/g at 6 weeks after flowering to 6 to 7 mg/g, 9 weeks later. The malic acid concentration in both clones varied between 3 and 5 mg/g and showed no marked changes just before harvest. The developmental changes in fruit potassium were significantly correlated with fruit acidity and fruit total soluble solids in both the high and low acid clones. Developmental changes in acid-related enzymatic activities showed an increase in citrate synthase (EC 4.1.3.7) activity that occurred a week before harvest, coincided with the peak in citric acid in the high acid clone. An increase in aconitase (ACO, EC 4.2.1.3) activity was observed just before harvest as the decline in acidity occurred in the low acid clone. The activities of phosphoenolpyruvate carboxylase (PEPC, EC 4.1.1.31), malate dehydrogenase (MDH, EC 1.1.1.37) and malic enzyme (ME, EC 1.1.1.40) did not parallel any changes in fruit acidity. The results indicated that the change in pineapple fruit acidity during development was due to changes in citric acid content. The major difference in acid accumulation occurred in the low acid clone just before harvest when acidity declined by one-third. The activities of citrate synthase and aconitase possibly played a major role in pineapple fruit acidity changes.
Keywords: Ananas comosus; Fruit acidity; Total soluble solids; Potassium; Citrate synthase; Aconitase; Citrate; Malate

Raphael A. Stern, Moshe Flaishman, Ruth Ben-Arie, Effect of synthetic auxins on fruit size of five cultivars of Japanese plum (Prunus salicina Lindl.), Scientia Horticulturae, Volume 112, Issue 3, 23 April 2007, Pages 304-309, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.12.032.
(http://www.sciencedirect.com/science/article/B6TC3-4MS9K5M-7/2/b3ae54be471359b3f7faa68f679150a2)
Abstract:
Most of the Japanese plum (Prunus salicina) cultivars grown in Israel produce relatively small fruit. Application of 2 l solution tree-1 of 25 mg l-1 2,4-dichlorophenoxypropionic acid (2,4-DP) as butoxyethyl ester (Power(TM)), 15 mg l-1 3,5,6-trichloro-2-pyridyloxyacetic acid (3,5,6-TPA) as free acid (Maxim(R)), or 25 mg l-1 2,4-dichlorophenoxyacetic acid (2,4-D) + 30 mg l-1 naphthaleneacetic acid (NAA) (0.3% Amigo(TM)) at the beginning of pit-hardening, when fruitlet diameter was ca. 22 mm, caused an appreciable and significant increase in fruit size. The yield of large fruit per cv.: `Kesselmen' (100% increase), `Songold' (100%), `Black Diamond' (800%), `Royal Diamond' (160%) and `Royal Zee' (100%). As a result, the total yield of all five cultivars was also increased dramatically. Anatomical studies with `Songold' revealed that the main effect of these synthetic auxins was via direct stimulation of fruit cell enlargement. The above auxins had no negative effect either on fruit quality at harvest (and after 1 week in shelf-life), or on return yield in the following year.
Keywords: Auxins; Plum; Fruit size; Prunus salicina Lindl.

Tiago Pedreira dos Santos, Carlos M. Lopes, M. Lucilia Rodrigues, Claudia R. de Souza, Jorge M. Ricardo-da-Silva, Joao P. Maroco, Joao S. Pereira, M. Manuela Chaves, Effects of deficit irrigation strategies on cluster microclimate for improving fruit composition of Moscatel field-grown grapevines, Scientia Horticulturae, Volume 112, Issue 3, 23 April 2007, Pages 321-330, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.01.006.
(http://www.sciencedirect.com/science/article/B6TC3-4N0XNTB-1/2/6fc78e09a8595f3cc0cc2f5eab8e29e7)
Abstract:
The grapevine plays a very important role in the economic, social and cultural sectors of many regions; however vineyards are often grown in regions under stressful conditions and thus they are vulnerable to climate change. The objective of this research was to investigate the effect of partial

root-zone drying (PRD) irrigation on vine water relations, vegetative growth, plant microclimate, berry composition and yield components, compared to conventional deficit irrigation (DI, 50% ETc), full irrigation (FI, 100% of ETc) and non-irrigated vines (NI). The study was undertaken in mature `Moscatel' grapevines (Vitis vinifera L.) grown in Pegoes, South of Portugal. Compared to the other irrigated treatments, PRD vines showed a better microclimate at the cluster zone with higher incident photosynthetic photon flux density (PPFD). Within the more open canopies of NI and PRD treatments, berry temperatures were higher than those of denser ones (DI and FI). Compared to the conventional irrigation technique the better microclimate observed in PRD vines was a consequence of a reduction in vine growth, where lower values of leaf layer number, leaf area, canopy wideness, water shoots and shoot weight were observed. In PRD vines we observed a tendency to a development of a deeper root system, while DI and FI showed a more homogeneous root distribution throughout the different soil layers. PRD showed an improvement in berry quality with higher values of flavour precursors, and total phenols concentration without any significant yield reduction compared to DI and FI.
Keywords: Berry temperature; Canopy microclimate; Fruit quality; Partial rootzone drying; Roots; Vitis vinifera L.

Zong-li HU, Xu-qing CHEN, Guo-ping CHEN, Li-juan LU, Grierson Donald, The Influence of Co-Suppressing Tomato 1-Aminocyclopropane-1-Carboxylic Acid Oxidase I on the Expression of Fruit Ripening-Related and Pathogenesis-Related Protein Genes, Agricultural Sciences in China, Volume 6, Issue 4, April 2007, Pages 406-413, ISSN 1671-2927, DOI: 10.1016/S1671-2927(07)60063-7.
(http://www.sciencedirect.com/science/article/B82XG-4NKBGKG-4/2/7f7d3f4012ddf1ba60dd7ba6636b43dd)
Abstract:
The purpose of this study is to explore the influence of co-suppressing tomato ACC oxidase I on the expression of fruit ripening-related and pathogenesis-related protein genes, and on the biosynthesis of endogenous ethylene and storage ability of fruits. Specific fragments of several fruit ripening-related and pathogenesis-related protein genes from tomato (Lycopersicon esculentum) were cloned, such as the 1-aminocyclopropane-1-carboxylic acid oxidase 1 gene (LeACO1), 1-aminocyclopropane-1-carboxylic acid oxidase 3 gene (LeACO3), EIN3-binding F-box 1 gene (LeEBF1), pathogenesis-related protein 1 gene (LePR1), pathogenesis-related protein 5 gene (LePR5), and pathogenesis-related protein osmotin precursor gene (LeNP24) by PCR or RT-PCR. Then these specific DNA fragments were used as probes to hybridize with the total RNAs extracted from the wild type tomato Ailsa Craig (AC++) and the LeACO1 co-suppression tomatoes (V1187 and T4B), respectively. At the same time, ethylene production measurement and storage experiment of tomato fruits were carried out. The hybridization results indicated that the expression of fruit ripening-related genes such as LeACO3 and LeEBF1, and pathogenesis-related protein genes such as LePR1, LePR5, and LeNP24, were reduced sharply, and the ethylene production in the fruits, wounded leaves decreased and the storage time of ripening fruits was prolonged, when the expression of LeACO1 gene in the transgenic tomato was suppressed. In the co-suppression tomatoes, the expression of fruit ripening-related and pathogenesis-related protein genes were restrained at different degrees, the biosynthesis of endogenous ethylene decreased and the storage ability of tomato fruits increased.
Keywords: co-suppression; LeACO1; fruit ripening; pathogenesis-related protein genes

V. Nallathambi Gunaseelan, Regression models of ultimate methane yields of fruits and vegetable solid wastes, sorghum and napiergrass on chemical composition, Bioresource Technology, Volume 98, Issue 6, April 2007, Pages 1270-1277, ISSN 0960-8524, DOI: 10.1016/j.biortech.2006.05.014.

(http://www.sciencedirect.com/science/article/B6V24-4KCRS9F-3/2/b2d03790bc8399d83b879d7b244af490)
Abstract:
Several fractions of fruits and vegetable solid wastes (FVSW), sorghum and napiergrass were analyzed for total solids (TS), volatile solids (VS), total organic carbon, total kjeldahl nitrogen, total soluble carbohydrate, extractable protein, acid-detergent fiber (ADF), lignin, cellulose and ash contents. Their ultimate methane yields (Bo) were determined using the biochemical methane potential (BMP) assay. A series of simple and multiple regression models relating the Bo to the various substrate constituents were generated and evaluated using computer statistical software, Statistical Package for Social Sciences (SPSS). The results of simple regression analyses revealed that, only weak relationship existed between the individual components such as carbohydrate, protein, ADF, lignin and cellulose versus Bo. A regression of Bo versus combination of two variables as a single independent variable such as carbohydrate/ADF and carbohydrate + protein/ADF also showed that the relationship is not strong. Thus it does not appear possible to relate the Bo of FVSW, sorghum and napiergrass with single compositional characteristics. The results of multiple regression analyses showed promise and the relationship appeared to be good. When ADF and lignin/ADF were used as independent variables, the percentage of variation accounted for by the model is low for FVSW (r2 = 0.665) and sorghum and napiergrass (r2 = 0.746). Addition of nitrogen, ash and total soluble carbohydrate data to the model had a significantly higher effect on prediction of Bo of these wastes with the r2 values ranging from 0.9 to 0.99. More than 90% of variation in Bo of FVSW could be accounted for by the models when the variables carbohydrate, lignin, lignin/ADF, nitrogen and ash (r2 = 0.904), carbohydrate, ADF, lignin/ADF, nitrogen and ash (r2 = 0.90) and carbohydrate/ADF, lignin/ADF, lignin and ash (r2 = 0.901) were used. All the models have low standard error values, which indicate the amount of spread is less. Thus, considering only the higher r2 values, six models are proposed for predicting the Bo based on FVSW data and sorghum and napiergrass data. It would be more convenient if Bo could be predicted by analyzing the chemical composition of the substrate rather than performing the long-term batch fermentation. To test the validity of the regression models, chemical constituents of FVSW that were not included in the regression analyses were determined and their experimental Bo were determined by BMP assay. All the six models were used to predict the Bo from the chemical constituents of these FVSW. It was found that most of the predicted values were within 20% of the experimental Bo in models 1, 3 and 6. Since models 3 and 6 used the same variables namely, total soluble carbohydrate, ADF, lignin/ADF, nitrogen and ash, Bo can be predicted from these five chemical constituents which accounts for more than 90% of the variation in Bo (r2 > 90).
Keywords: Fruit wastes; Vegetable wastes; Sorghum; Napiergrass; Standard biomass; Biochemical methane potential assay; Multiple regression models; Ultimate methane yield; Predicting Bo

G.V.P. Reddy, Z.T. Cruz, R. Muniappan, Attraction of fruit-piercing moth Eudocima phalonia (Lepidoptera: Noctuidae) to different fruit baits, Crop Protection, Volume 26, Issue 4, April 2007, Pages 664-667, ISSN 0261-2194, DOI: 10.1016/j.cropro.2006.06.004.
(http://www.sciencedirect.com/science/article/B6T5T-4KJ0SFN-1/2/50fc9fd95ff829c723e963d2c7302737)
Abstract:
The adult fruit-piercing moth, Eudocima (fullonia) phalonia (L.) comb. (Lepidoptera: Noctuidae) is a major pest of citrus and numerous other commercial fruit crops. Application of insecticides is undesirable particularly at harvest time in fruit crops. Here we report on the attraction of E. phalonia to different fruit baits. E. phalonia was significantly attracted to feed more on fruit puree with Agar and Phytogel than on fruit puree with Agarose. Of the 15 fruit baits tested, moths preferred to feed on banana baits more than on any other, followed by guava and orange, which

were significantly more attractive than kiwi, apple, pineapple, pear, papaya, mango, grapefruit, tomato or green grape. Star fruit, plum and sour sop fruit baits were the least attractive and were no more attractive than water control treatments. The present study identifies valuable attractants which may be used as part of a lure and kill strategy for this important pest and also form a foundation upon which future bioassay-driven fractionation and chemical structure elucidation can be developed.
Keywords: Eudocima phalonia; Lepidoptera; Noctuidae; Attract; Feeding; Fruit baits

Deborah P. Rondanini, Roxana Savin, Antonio J. Hall, Estimation of physiological maturity in sunflower as a function of fruit water concentration, European Journal of Agronomy, Volume 26, Issue 3, April 2007, Pages 295-309, ISSN 1161-0301, DOI: 10.1016/j.eja.2006.11.001.
(http://www.sciencedirect.com/science/article/B6T67-4MKV2TV-1/2/aa6191895cf3a9ec65d5b99cafe8147f)
Abstract:
Visual methods are commonly used to estimate physiological maturity (PM) in sunflower crops. These methods, while simple and less laborious than following grain dry weight dynamics, are subjective and results can be affected by environmental conditions. The objective of the present work was to study the relationship between the dynamics of dry matter and water concentration (WC) of sunflower fruits, with the aim of identifying the timing of physiological maturity on the basis of fruit WC. The effects of brief periods of high temperature stress (lasting 4 or 6 days) during grain-filling were also explored. Eight different sunflower genotypes (inbred lines and hybrids) were studied in four separate experiments conducted under different growth conditions (greenhouse and field) and contrasting dates of sowing (autumn, spring and summer), generating a broad range of grain-filling durations (28-41 days) and final fruit weight (30-105 mg fruit-1). In these experiments the evolution of fruit fresh and dry weights were followed in fruit from the peripheral and intermediate positions on the capitulum from anthesis to harvest maturity. Tri-linear functions were fitted to the relative (to final) fruit dry weight (RFDW) to fruit WC relationships (R2 from 0.94 to 0.99). Across experiments, genotypes and fruit positions on the capitulum, PM in non-stressed plants was attained when fruits exhibited 38% WC. This model was validated against independent data, successfully simulating the dynamics of fruit dry weight based on fruit WC ($r = 0.99$; $P < 0.001$). Verifications against published data generated by other authors also proved satisfactory. High temperature stress that caused a shortening of grain-filling and reductions in final fruit weight >20% with respect to controls, raised fruit WC at PM to ca. 50%. Simulations were performed to explore the effects of variations in timing of anthesis that occur between positions on the capitulum and among plants in a crop on fruit WC at maximum yield. At a crop level, 38% WC in these simulations corresponded to grain yield >95% of the maximum attainable when harvest was delayed until last growing fruits reached 38% WC. Simulations also showed that in crops exposed to high temperature during grain-filling, there would be no risk of shortfall with respect to potential yield using 38% WC as an indicator of PM. We conclude that this simple, fast and non-subjective method based on fruit WC would be useful to determine PM in sunflower.
Keywords: Sunflower; Helianthus annuus; Physiological maturity; Grain moisture; Grain water concentration; Grain growth; High temperature stress

Ximing Sun, Ray Collins, The application of fuzzy logic in measuring consumption values: Using data of Chinese consumers buying imported fruit, Food Quality and Preference, Volume 18, Issue 3, April 2007, Pages 576-584, ISSN 0950-3293, DOI: 10.1016/j.foodqual.2006.08.001.
(http://www.sciencedirect.com/science/article/B6T6T-4M64558-1/2/9f0b6b6d7dd78056e72683813cda3272)
Abstract:
The conventional approach used to examine consumption values of consumers for a given product category is the Means-End Chain (MEC) approach. The MEC retrieves values through

establishing links between product attributes and consumption values by an interviewing technique called laddering. The laddering technique is a qualitative approach with limited ability to deal with segments of consumers who hold multiple consumption values. In this research fuzzy logic theory is applied in conjunction with laddering to measure the consumption values of Chinese consumers purchasing imported fruit. Results demonstrate that fuzzy logic is not only an effective approach to quantifying the consumption values that consumers pursue in a give context, but also, when consumers hold multiple values of unequal weights, it can reveal how consumption values are mingled.
Keywords: Consumption values; Fuzzy logic; Laddering technique; Economics; Chinese consumers; Imported fruit

B. Jarimopas, S. Toomsaengtong, C. Inprasit, Design and testing of a mangosteen fruit sizing machine, Journal of Food Engineering, Volume 79, Issue 3, April 2007, Pages 745-751, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.01.083.
(http://www.sciencedirect.com/science/article/B6T8J-4JS2058-1/2/e3791e8b98f9ed4779cf2c9a1964db29)
Abstract:
This research concerns the development of a rotating disk mangosteen sizing machine for fruit growers and small entrepreneurs. The methodology comprised design, construction, testing, and engineering and economic evaluation of a laboratory prototype machine. The basis of design is characterized by a rotating conical-shape disk and a metering board with gaps of increasing size arranged along the periphery of the disk. Mangosteens are fed onto one section of the rotating disk and the combined centrifugal and gravitational force moves the fruit toward the periphery until contact with the metering board is attained. The tangential force then rolls the fruit along the metering board, where they are sized and allowed to drop through gaps according to their dimensions. Design parameters included disk diameter, disk speed and type of metering gap. Testing of the laboratory prototype was statistically factorial in completely randomized design, featuring two control factors (namely, metering gap type and disk speed) and three performance evaluation parameters: mean contamination ratio , sizing efficiency (Ew), and throughput capacity (Q). Results showed that the rotating disk speed and metering gap type significantly affected , Ew, and Q at 5% significance level. The most efficient configuration was a rotating disk speed of 21 rpm using a step-type metering gap, resulting in , Ew = 84.7% and Q = 1076.6 kg/h. A factory prototype of the same scale was developed with reference to the optimum design parameters of the laboratory model. The factory model, which contained a 400 mm feed opening and a 600 mm diameter disk, was tested with 650 kg, mixed size, newly harvested mangosteens. Performance testing of the factory prototype showed that minimal fruit damage (0.48%) occurred at and Q = 1026 kg/h. The machine under review showed better performance than currently existing commercial models and the sized mangosteens were well accepted by fruit wholesalers. An engineering economic analysis showed that the break even point and pay back period for the factory model would be 46,020 kg/yr and months, respectively.
Keywords: Mangosteen; Sizing

B. Jarimopas, N. Ruttanadat, Development of a young coconut fruit trimming machine, Journal of Food Engineering, Volume 79, Issue 3, April 2007, Pages 752-757, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.01.082.
(http://www.sciencedirect.com/science/article/B6T8J-4JXY3HG-1/2/f7753740bed455ba8bf85821c4f34091)
Abstract:
A project was initiated to design, construct, test, and evaluate a prototype young coconut trimming machine. The purpose of the design was to trim most of the outer husk so that the coconut looked attractive and could easily be cut open. The prototype was based on the lathe cutting machine

mechanism and was composed of a lathe machine with a body-trimming knife, a shoulder-trimming knife, a base cutting knife, and clamping mechanisms. In operation, the body knife first pared the midsection of the fruit. Following this, the shoulder-knife trimmed the top to form a conical shape, and finally the base cutting knife sliced the bottom of the fruit to form a flat underside. In this study, the key design parameters and their optimum settings were determined. The angle between the cutting edge of the body knife and the Y-axis perpendicular to the rotating axis of the fruit (X-axis) was 76[degree sign]; the angle between the cutting edge of the shoulder-knife and the X-axis was 56[degree sign]; and the knife angle between the knife and the XY-plane was 61[degree sign]. The rotating speed of the fruit - which was newly harvested - was 300 rpm. Based on these design parameters, a commercial prototype was manufactured and tested. This prototype has the capacity to trim 21 fruit/h, with the finished product on average containing 1.1% of untrimmed green area and 0.2% of fibrous area. The trimmed fruit were accepted by fruit traders and exporters.
Keywords: Coconut; Trimming

C.M. Marani, M.E. Agnelli, R.H. Mascheroni, Osmo-frozen fruits: mass transfer and quality evaluation, Journal of Food Engineering, Volume 79, Issue 4, April 2007, Pages 1122-1130, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.03.022.
(http://www.sciencedirect.com/science/article/B6T8J-4JRT32V-2/2/b7e56197b98d7d84b68696ae3825a203)
Abstract:
The quality of osmofrozen pears, kiwis, strawberries and apples was studied through measurements of colour, drip-loss and texture after each step of the combined process, that is, after osmotic dehydration for different periods of time and after freezing in a conventional air-blast tunnel at -40 [degree sign]C. The results were compared to those obtained for fresh products. The effect of the osmotic solution on the whole process has also been investigated using different osmotic solutions (sucrose, glucose and corn syrup mixtures). The evolution of mass transfer was measured through the variation in time of weight loss and the solid gain. The osmotic dehydration prior to freezing demonstrated to be useful for limiting drip loss and, in some cases, to decrease colour change and improve texture. The choice of the dehydrating agent and the usefulness of the pre-treatment depend on the application intended for the final product.

Claudio P. Ribeiro Jr., Cristiano P. Borges, Paulo L.C. Lage, Sparger effects during the concentration of synthetic fruit juices by direct-contact evaporation, Journal of Food Engineering, Volume 79, Issue 3, April 2007, Pages 979-988, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.03.019.
(http://www.sciencedirect.com/science/article/B6T8J-4JT836T-4/2/62dacd9d2451fff4bb08facd2b70595f)
Abstract:
The influence of the orifice diameter of the sparger on the performance of a direct-contact evaporator applied in the concentration of synthetic fruit juices was addressed. Experiments were conducted in a bench scale unit using water, a sucrose solution (11.2 wt.%) and an ethyl acetate (1.0 g/L)/sucrose (11.2 wt.%) solution as continuous phases with either a perforated or a porous plate as sparger. Heated air was employed as the dispersed phase and three gas superficial velocities (2.2 [less-than-or-equals, slant] uG [less-than-or-equals, slant] 6.6 cm/s) were tested. For an operating pressure slightly higher than 101 kPa, evaporation always took place at temperatures below 67 [degree sign]C. Both solutes were observed to inhibit bubble coalescence and, consequently, the sparger type drastically influenced the interfacial area in the unit during the concentration of the synthetic juices. However, the evaporation rate remained unchanged, regardless of the sparger type and the continuous phase composition, indicating a heat-limited

operation. Thus, it could be concluded that a perforated plate sparger is best suited for this application.
Keywords: Juice concentration; Bubble column; Direct contact evaporation; Gas hold-up; Size measurement

Nizakat Bibi, Amal Badshah Khattak, Zahid Mehmood, Quality improvement and shelf life extension of persimmon fruit (Diospyros kaki), Journal of Food Engineering, Volume 79, Issue 4, April 2007, Pages 1359-1363, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.04.016.
(http://www.sciencedirect.com/science/article/B6T8J-4JW7FG7-7/2/fee11419b582329ca02d412dd2512eb0)
Abstract:
Persimmon (Diospyros kaki) is an important fruit in Japan, China, Europe and Italy and is also gaining popularity in the Mediterranean countries. It is normally marketed as fresh fruit, but processing of this fruit is of great interest due to its important biologically active compounds (different types of carotenoids and vitamin C) and astringency associated with unripe hard fruit. As a result of encouragement from a series of previous experiments, the present work of treating persimmon with nitrogen and carbon dioxide gas atmosphere for 48 h followed by storage at ambient conditions (20-25 [degree sign]C) for three weeks was conducted for removing astringency, improving quality and extending shelf life for export purpose. On the 1st day after 48 h treatment total phenols varied from 1.41% (nitrogen treated samples) to 1.93% (control), leucoanthocyanidine content ranged from 6.58 (nitrogen atmosphere) to 8.58 [Delta]A550/g (control) and procyanidine content from 4.08 (nitrogen atmosphere) to 6.46 [Delta]A550/g (control). There was no effect of treatments on weight loss, however, it increased as the storage time increased. Both treatments of nitrogen and carbon dioxide maintained well the texture, nutritional and sensory qualities after three weeks storage period. It was further observed that nitrogen treated fruits got maximum score (7.5) for appearance and carbon dioxide treated fruits for flavor (7.5).
Keywords: Deastringency; Persimmon; Carbon dioxide gas; Nitrogen and shelf life

A. Sessiz, R. Esgici, S. Kizil, Moisture-dependent physical properties of caper (Capparis ssp.) fruit, Journal of Food Engineering, Volume 79, Issue 4, April 2007, Pages 1426-1431, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.04.033.
(http://www.sciencedirect.com/science/article/B6T8J-4JWDY22-3/2/dd0c448ccf44fac0ad75f567fd8fb293)
Abstract:
This study was carried out to determine the effect of moisture content on some physical properties of caper (Capparis ssp.) fruit. Four levels of moisture content ranging from 71.85% to 82.93% w.b. were considered in this study. The fruit length increased from 8.50 to 8.96 mm, width from 7.54 to 8.23 mm, its thickness from 5.67 to 6.90 mm, the geometric mean diameter from 7.13 to 7.96 mm, the sphericity from 0.83 to 0.89, the surface area from 1.59 to 2.00 cm2, the one thousand fruit volume from 156 to 391 cm3 and thousand of fruits mass from 143 to 273 g, increased, while the true density decreased from 916.66 to 598.2 kg m-3, bulk density increased from 394.30 to 424.69 kg m-3, the porosity decreased from 56.98% to 39.17% and the angle of repose increased from 14.84[degree sign] to 18.05[degree sign]. The coefficients of static and kinetic friction slightly decreased with the increases in moisture content for all the materials. The highest static and kinetic coefficient of friction were observed on plywood surface, followed by metal sheet, galvanized steel sheet, and rubber materials. This is due to the properties of friction surfaces. This trend may be due to the smoother and more polished surface of galvanized steel and rubber materials compared to metal steel and plywood. The fruits stick more to the friction surfaces as water content decreases.
Keywords: Caper; Physical properties; Coefficients of static and kinetic friction

Alison Gustafson, David Cavallo, Amy Paxton, Linking Homegrown and Locally Produced Fruits and Vegetables to Improving Access and Intake in Communities through Policy and Environmental Change, Journal of the American Dietetic Association, Volume 107, Issue 4, April 2007, Pages 584-585, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.02.023.
(http://www.sciencedirect.com/science/article/B758G-4NB7HBK-J/2/b1cea57c0764809766d47a0e5c4b30b7)

Jessica D. McAleese, Linda L. Rankin, Garden-Based Nutrition Education Affects Fruit and Vegetable Consumption in Sixth-Grade Adolescents, Journal of the American Dietetic Association, Volume 107, Issue 4, April 2007, Pages 662-665, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.01.015.
(http://www.sciencedirect.com/science/article/B758G-4NB7HBK-Y/2/07b994c0d4d3eed08530c9e30f741e9f)
Abstract:
Schoolyard gardens are emerging as a nutrition education tool in academic settings. The purpose of this study was to investigate the effects of garden-based nutrition education on adolescents' fruit and vegetable consumption using a nonequivalent control group design. Sixth-grade students (n=99) at three different elementary schools made up a control and two treatment groups. Students in the treatment groups participated in a 12-week nutrition education program, and one treatment group also participated in garden-based activities. Students in all three groups completed three 24-hour food-recall workbooks before and after the intervention. A repeated-measures analysis of variance showed that adolescents who participated in the garden-based nutrition intervention increased their servings of fruits and vegetables more than students in the two other groups. Significant increases were also found in vitamin A, vitamin C, and fiber intake. Although further research is needed, the results of this study seem to indicate the efficacy of using garden-based nutrition education to increase adolescents' consumption of fruits and vegetables.

Marian L. Neuhouser, Beti Thompson, Gloria Coronado, Teri Martinez, Pingping Qu, A Household Food Inventory Is Not a Good Measure of Fruit and Vegetable Intake among Ethnically Diverse Rural Women, Journal of the American Dietetic Association, Volume 107, Issue 4, April 2007, Pages 672-677, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.01.013.
(http://www.sciencedirect.com/science/article/B758G-4NB7HBK-11/2/d963801e98649f30d1d2b90669831737)
Abstract:
Environmental measures of food availability are surrogates of consumption. Such measures may be useful among populations for whom standard dietary assessment is difficult. The objective of this cross-sectional study was to test whether a measure of the household dietary environment would perform as well as or better than a standard fruit and vegetable assessment among ethnically diverse rural women. Participants were 154 non-Hispanic white, 157 Hispanic, and 102 Native American adult women residing in rural Washington state. Participants completed an interviewer-administered household inventory of fruits and vegetables and a standard measure of fruit and vegetable intake used in the 5 A Day for Better Health Program. Pearson correlation coefficients assessed the validity of the measures against biomarkers of fruit and vegetable consumption (serum carotenoids). Pearson correlations were poor to modest between the household inventory and serum carotenoids (r=0.06 to 0.22) and between the 5 A Day responses and serum carotenoids (r=-0.08 to 0.17). There were no differences by ethnic group; both short tools performed poorly compared with the biomarkers across Hispanic, non-Hispanic white, and Native-American participants. In conclusion, both the household inventory and the popular 5 A Day measure were poor indicators of fruit and vegetable intake in this sample of ethnically diverse rural women.

Analia Concellon, Maria C. Anon, Alicia R. Chaves, Effect of low temperature storage on physical and physiological characteristics of eggplant fruit (Solanum melongena L.), LWT - Food Science and Technology, Volume 40, Issue 3, April 2007, Pages 389-396, ISSN 0023-6438, DOI: 10.1016/j.lwt.2006.02.004.
(http://www.sciencedirect.com/science/article/B6WMV-4JHMT02-1/2/3a8f6e70b8c8e6f6a19274bce05e84ba)
Abstract:
Eggplant (Solanum melongena L.) is a perishable and chilling-sensitive tropical fruit. The chilling injury (CI) symptoms as well as some physical and physiological implications were studied in eggplants Money Maker No. 2 stored at 0 and 10 [degree sign]C for 15 days. Eggplants stored at 10 [degree sign]C were not damaged by temperature, whereas fruit stored at 0 [degree sign]C suffered CI. Eggplant stored at 0 [degree sign]C exhibited a decrease in L0 (lightness) and [Delta]L (oxidation potential), increase of pH and electrolyte leakage after CI symptoms are manifested. At this temperature, flesh tissue revealed ultrastructural damage. On the other hand, skin from upper fruit section showed more lightness, reddish colouration, and lower content of anthocyanins than the central fruit section at harvest and over the entire storage period at 0 [degree sign]C. In fruit stored at this temperature and in upper section, changes of anthocyanin content with time were closely proportional to the Chroma evolution (lower content of anthocyanin, lower saturation of colour).
Keywords: Eggplant; Chilling injury; Electrolyte leakage; Superficial colour; Anthocyanins; SEM; TEM; Ultrastructural changes

Zhong Qiuping, Xia Wenshui, Effect of 1-methylcyclopropene and/or chitosan coating treatments on storage life and quality maintenance of Indian jujube fruit, LWT - Food Science and Technology, Volume 40, Issue 3, April 2007, Pages 404-411, ISSN 0023-6438, DOI: 10.1016/j.lwt.2006.01.003.
(http://www.sciencedirect.com/science/article/B6WMV-4JF998R-1/2/126ff7f19f099ccc1f040c4bc118d470)
Abstract:
Indian jujube (Ziziphphus mauritina, cv. `Cuimi') fruits were harvested at stage of mature-green and then treated with 1-methylcyclopropene (1-MCP) at two doses (0 and 600 nl l-1) for 12 h at room temperature. Half of the fruits were coated with 1.5 g/100 ml of chitosan (CTS) solution after 1-MCP treatment and subsequently stored at room temperature and 80-90% relative humidity (RH). Results indicated that 600 nl l-1 of 1-MCP, 1.5 g/100 ml of CTS or their combination were effective in terms of senescence inhibition during storage and compared to control, the storage life was extended by 7, 5 and 8 d, respectively. Fruits treated with the combination of 1-MCP and CTS coating showed better retention of chlorophyll content, total soluble solids, ascorbic acid and fruit firmness, delayed climacteric ethylene evolution and respiration rate, reduced stem-end rots incidence, decreased PG and LOX activities than those with other treatments. Coating alone reduced weight loss and stem-end rots incidence. It delayed the declining firmness and the onset of climacteric ethylene production and respiration rate, but did not influence the peak levels of ethylene and respiration rates. The treatment with only 1-MCP delayed the degreening process and suppressed PG and LOX activities through 10 d at room temperature. The results showed that the treatment with the combination of 1-MCP and CTS coating improved greatly the storage life extension and quality maintenance of Indian jujube fruit at room temperature storage.
Keywords: Indian jujube fruit; 1-Methylcyclopropene; Chitosan; Coating; Storage life; Quality maintenance

Catherine M.G.C. Renard, Nathalie Dupont, Pascale Guillermin, Concentrations and characteristics of procyanidins and other phenolics in apples during fruit growth, Phytochemistry,

Volume 68, Issue 8, April 2007, Pages 1128-1138, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2007.02.012.
(http://www.sciencedirect.com/science/article/B6TH7-4ND7102-1/2/e8f0849ced875e64805252fe20df3dfd)
Abstract:
Apples (Malus domestica Borkh.) of two table and two cider cultivars were collected during fruit growth and maturation from the end of cell proliferation. Concentrations of flavonoids (flavan-3-ols, dihydrochalcones and flavonols) in the fruit flesh decreased sharply between circa 35 and circa 100 days after flowering. For hydroxycinnamic acids, the decrease appeared slower. In a second experiments apples of the cider cultivars Kermerrien and Avrolles were sampled every 2 weeks from 40 days after flowering to overripeness for a detailed characterisation of polyphenol accumulation kinetics in the fruit flesh. Most polyphenol synthesis had occurred at 40 days after full bloom, though it persisted at a low (Kermerrien) to very low (Avrolles) level during all the fruit growth. All qualitative characteristics of the polyphenols were remarkably stable. The degree of polymerisation of the procyanidins increased slightly in Avrolles and decreased in Kermerrien. This was accompanied by a relative increase in procyanidin B2, while size-exclusion chromatography of Kermerrien polyphenol extracts showed the disappearance of a highly polymerised fraction.
Keywords: Malus domestica Borkh.; Flavonoid; Condensed tannins; Molecular weight; Catechin; Dihydrochalcone; Hydroxycinnamic acid

Stefanie Peschel, Rochus Franke, Lukas Schreiber, Moritz Knoche, Composition of the cuticle of developing sweet cherry fruit, Phytochemistry, Volume 68, Issue 7, April 2007, Pages 1017-1025, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2007.01.008.
(http://www.sciencedirect.com/science/article/B6TH7-4N5175F-2/2/33054128dac9ae79f18d2cc93240d3ef)
Abstract:
The composition of wax and cutin from developing sweet cherry (Prunus avium) fruit was studied by GC-MS between 22 and 85 days after full bloom (DAFB). In this and our previous study, fruit mass and surface area increased in a sigmoidal pattern with time, but mass of the cuticular membrane (CM) per unit fruit surface area decreased. On a whole fruit basis, mass of CM increased up to 36 DAFB and remained constant thereafter. At maturity, triterpenes, alkanes and alcohols accounted for 75.6%, 19.1% and 1.2% of total wax, respectively. The most abundant constituents were the triterpenes ursolic (60.0%) and oleanolic acid (7.5%), the alkanes nonacosane (13.0%) and heptacosane (3.0%), and the secondary alcohol nonacosan-10-ol (1.1%). In developing fruit triterpenes per unit area decreased, but alkanes and alcohols remained essentially constant. The cutin fraction of mature fruit consisted of mostly C16 (69.5%) and, to a lower extent, C18 monomers (19.4%) comprising alkanoic, [omega]-hydroxyacids, [alpha],[omega]-dicarboxylic and midchain hydroxylated acids. The most abundant constituents were 9(10),16-dihydroxy-hexadecanoic acid (53.6%) and 9,10,18-trihydroxy-octadecanoic acid (7.8%). Amounts of C16 and C18 monomers per unit area decreased in developing fruit, but remained approximately constant on a whole fruit basis. Within both classes of monomers, opposing changes occurred. Amounts of hexadecandioic, 16-hydroxy-hexadecanoic, 9(10)-hydroxy-hexadecane-1,16-dioic and 9,10-epoxy-octadecane-1,18-dioic acids increased, but 9,10,18-trihydroxy-octadecanoic and 9,10,18-trihydroxy-octadecenoic acids decreased. There were no qualitative and minor quantitative differences in wax and cutin composition between cultivars at maturity. Our data indicate that deposition of some constituents of wax and cutin ceased during early fruit development.
Keywords: Prunus avium; Rosaceae; Sweet cherry fruit; GC-MS; Cuticle; Wax; Cutin; Triterpenes

Yong Wang, Jian-Ye Chen, Yue-Ming Jiang, Wang-Jin Lu, Cloning and expression analysis of phenylalanine ammonia-lyase in relation to chilling tolerance in harvested banana fruit,

Postharvest Biology and Technology, Volume 44, Issue 1, April 2007, Pages 34-41, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.11.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4MY0TSW-2/2/3102d60f5c1cc3ebb5e5e307e51381fe)
Abstract:
Bananas are highly susceptible to chilling injury (CI) and phenylalanine ammonia-lyase (PAL), as a key enzyme involved in plant phenylpropanoid metabolism, has been associated with low temperature stress in plant tissues. However, little is known about the role of PAL (including PAL activity, gene and protein expression) in postharvest chilling tolerance of banana fruit. Two partial cDNAs sequences (MaPAL1 and MaPAL2) with about 760 bp were cloned from banana pulp by RT-PCR. Western and northern hybridizations were used to investigate expression of PAL protein and PAL genes in fruit stored for 10 days at 7 [degree sign]C (chilling temperature) and then transferred to 22 [degree sign]C (room temperature). The effects of propylene (a functional ethylene analog) on their expression in relation to CI were also examined. Northern and western blot analyses revealed that mRNA transcripts of MaPAL1 and MaPAL2 and PAL protein levels in banana fruit during storage increased, reaching a peak at about day 8, and finally decreased at chilling temperature. Prior to low temperature storage, pretreatment with propylene could alleviate CI and enhance PAL activity, protein amount and mRNA transcripts of MaPAL1 and MaPAL2. Moreover, changes in PAL activity, protein amount and accumulation of MaPAL1 and MaPAL2 exhibited almost the same patterns. The results suggest that the induction of PAL in banana fruit during low temperature storage is regulated at transcriptional and translational levels, and is related to reduction in CI symptoms.
Keywords: Banana; Chilling injury; PAL; Ethylene; Activity; Expression

Linchun Mao, Huaqing Pang, Guoze Wang, Chenggang Zhu, Phospholipase D and lipoxygenase activity of cucumber fruit in response to chilling stress, Postharvest Biology and Technology, Volume 44, Issue 1, April 2007, Pages 42-47, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.11.009.
(http://www.sciencedirect.com/science/article/B6TBJ-4MNYJT6-1/2/e5f28aec2baa83274bbb835f07657c62)
Abstract:
Harvested cucumber (Cucumis sativus L. cv. Jinyou-1) fruit were placed at 37 [degree sign]C (heat treatment) or at 20 [degree sign]C (control) for 24 h prior to storage at 2 [degree sign]C. In order to determine the responses of phospholipase D (PLD) and lipoxygenase (LOX) to chilling stress, their activities and the expression pattern of the PLD gene in cucumber fruit were measured during storage. Chilling injury assessed as electrolyte leakage and malondialdehyde (MDA) content was alleviated by heat treatment. Heated fruit showed reduced activities of LOX and PLD with suppressed expression of PLD mRNA compared with control fruit over the storage. The data indicate that PLD and LOX may be the major lipid-degradative enzymes involved in the induction of chilling injury in cucumber fruit. Our results suggest that PLD and LOX might be associated with the initiation of chilling injury by involvement in membrane deterioration.
Keywords: Cucumber; Chilling injury; Phospholipases D; Lipoxygenase

Clara Ribeiro, Antonio A. Vicente, Jose A. Teixeira, Candida Miranda, Optimization of edible coating composition to retard strawberry fruit senescence, Postharvest Biology and Technology, Volume 44, Issue 1, April 2007, Pages 63-70, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.11.015.
(http://www.sciencedirect.com/science/article/B6TBJ-4N1SP8F-1/2/e19f9b2503fe548f8fab261900468c9a)
Abstract:

The ability of polysaccharide-based (starch, carrageenan and chitosan) coatings to extend the shelf-life of strawberry fruit (Fragaria ananassa) were studied, mainly for industrial applications. The coatings and strawberries were characterized in terms of their physical properties (superficial properties, wettability, oxygen permeability) in order to optimize coating composition. The optimized coatings were then applied to the fruit both in the laboratory and in the field and their effects on relevant quality parameters assessed. The superficial tension of the strawberry was 28.94 mN/m, and its polar and dispersive components were 5.95 and 22.99 mN/m, respectively. The critical superficial tension of the strawberry, obtained from a Zisman plot, was 18.84 mN/m. For each polysaccharide-based coating the best wettability was obtained for compositions: 2% starch and 2% sorbitol; 0.3% carrageenan, 0.75% glycerol and 0.02% Tween 80; 1% chitosan and 0.1% Tween 80. The oxygen permeability of carrageenan films was approximately 40% of that obtained with starch films. The addition of calcium to the starch film-forming solution produced an increase in the film thickness; nevertheless no significant differences in oxygen permeability were obtained between films with and without calcium. The effects of application of these coatings to fresh strawberries were assessed by determining color change, firmness, weight loss, soluble solids and microbiological growth over 6 days. No significant colour differences were found, and the minimum firmness loss was obtained in strawberries coated with carrageenan and calcium chloride. The minimum loss of mass was obtained for fruit with chitosan and carrageenan coatings both with calcium chloride. The addition of 1% di-hydrated calcium chloride to the coatings reduced the microbial growth rate on the fruit. The minimum rate of microbial growth was obtained for strawberries coated with chitosan and calcium chloride. The industrial application of calcium-enriched carrageenan coating on fresh strawberries resulted in a decrease in firmness loss when compared to non-coated fruit.
Keywords: Edible coatings; Strawberry shelf-life; Oxygen permeability; Wettability of edible coatings

Robert Saftner, Yaguang Luo, James McEvoy, Judith A. Abbott, Bryan Vinyard, Quality characteristics of fresh-cut watermelon slices from non-treated and 1-methylcyclopropene- and/or ethylene-treated whole fruit, Postharvest Biology and Technology, Volume 44, Issue 1, April 2007, Pages 71-79, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.11.002.
(http://www.sciencedirect.com/science/article/B6TBJ-4MJBTJV-1/2/868146695af1bfc603b2d95ab2d44a9d)
Abstract:
Maintaining the postharvest quality of fresh-cut fruit after processing and throughout distribution and marketing is a major challenge facing the fresh-cut fruit industry. Analytical quality characteristics of packaged fresh-cut watermelon slices from non-treated and 1-methylcyclopropene (1-MCP)- and/or ethylene-treated whole fruit were investigated. Freshly harvested seedless watermelon (`Sugar Heart') were stored 7-14 days in air before exposure to 0, 0.5 or 1.0 [mu]L L-1 1-MCP for 18 h followed by 5 days exposure to 0 or 10 [mu]L L-1 ethylene, all at 20 [degree sign]C. Following treatment, fruit were processed into wedge-shaped slices, packaged into rigid trays sealed with a high oxygen transmission rate film overlap and stored 1, 6 or 12 days at 5 [degree sign]C. During storage, fresh-cut watermelon slices from non-treated and 1-MCP- and 1-MCP + ethylene-treated whole fruit maintained similar respiration rates and internal atmospheres of CO2 and O2 and were of similar quality with total aromatic volatile concentrations decreasing and puncture firmness, soluble solids content (SSC), cut surface pH and color remaining relatively stable. In contrast, fresh-cut slices from fruit treated with ethylene alone had higher respiration rates and modified package atmospheres containing more CO2 and O2; lower firmness, SSC and chromaticity values; higher pH and an altered volatile profile compared to those of slices from non-treated and 1-MCP- and 1-MCP + ethylene-treated fruit. The 22 most abundant volatiles were various aldehydes, alcohols and ketones. During storage, many individual volatiles decreased in concentration but some increased including (Z)-6-nonen-1-ol, a volatile having a

pumpkin-like aroma. The results indicated that low dosage 1-MCP treatments prior to ethylene exposure of whole watermelons prevented ethylene-mediated quality deterioration in fresh-cut slices stored under modified atmosphere conditions at 5 [degree sign]C.
Keywords: Citrullus lanatus; Ethylene; 1-Methylcyclopropene; Quality; Respiration rates; Volatiles

Mei (Rebecca) Liu, Ben-Erik Van Wyk, Patricia M. Tilney, Irregular vittae and druse crystals in Steganotaenia fruits support a taxonomic affinity with the subfamily Saniculoideae (Apiaceae), South African Journal of Botany, Volume 73, Issue 2, April 2007, Pages 252-255, ISSN 0254-6299, DOI: 10.1016/j.sajb.2006.10.003.
(http://www.sciencedirect.com/science/article/B7XN9-4MHPNNK-1/2/4c3e5357ac6714c8cd4161f24e6e80f7)
Abstract:
The three-dimensional structure of the vittae and crystals of Steganotaenia araliacea was studied for the first time to allow a rigorous comparison with members of the subfamily Saniculoideae, where these two characters are of diagnostic value. The irregular vittae were found to be branching and anastomosing and druse crystals dispersed in the mesocarp. Both these states are predominant in the Saniculoideae but very rare in Apioideae. In the subfamily Apioideae, regular vittae (vallecular and commissural, or cyclic) are present and druse crystals, if present, occur in the commissural side only. The absence of regular vittae and the presence of irregular vittae and dispersed druse crystals further support the exclusion of Steganotaenia from the subfamily Apioideae but support its hypothesized relation to the Saniculoideae, where large rib ducts combined with irregular vittae (branching or anastomosing) and dispersed druse crystals are typical. This study has led to a better understanding of the taxonomic value of irregular vittae and crystals.
Keywords: Apiaceae; Fruit anatomy; Steganotaenia araliacea; Vittae; Umbelliferae

W.J. Steyn, A review of anthocyanin functions in fruits, South African Journal of Botany, Volume 73, Issue 2, April 2007, Page 314, ISSN 0254-6299, DOI: 10.1016/j.sajb.2007.02.122.
(http://www.sciencedirect.com/science/article/B7XN9-4NBRG1G-46/2/5dcff093e77b7909cb157b406a69a012)

A.B. Martin-Diana, D. Rico, J.M. Frias, J.M. Barat, G.T.M. Henehan, C. Barry-Ryan, Calcium for extending the shelf life of fresh whole and minimally processed fruits and vegetables: a review, Trends in Food Science & Technology, Volume 18, Issue 4, April 2007, Pages 210-218, ISSN 0924-2244, DOI: 10.1016/j.tifs.2006.11.027.
(http://www.sciencedirect.com/science/article/B6VHY-4MNYYWG-2/2/400efaa516f4cef7b38092787ca95bd4)
Abstract:
The preservation of quality of fresh products is relevant for the industry due to its economic impact. This paper presents a comprehensive review of the use of different sources of calcium to preserve fresh fruits and vegetables in order to extend the shelf life and enhance the nutritional value. Emphasis is on discussing about the best sources of calcium, concentration, temperature and method of application, suitability of the commodities; and some hints for the cost/benefit analysis are presented.

M.S. Aujla, H.S. Thind, G.S. Buttar, Fruit yield and water use efficiency of eggplant (Solanum melongema L.) as influenced by different quantities of nitrogen and water applied through drip and furrow irrigation, Scientia Horticulturae, Volume 112, Issue 2, 26 March 2007, Pages 142-148, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.12.020.
(http://www.sciencedirect.com/science/article/B6TC3-4MRND13-6/2/df94052d88c9519d2cfc1e7a1592f30b)

Abstract:
Elucidation of the effects of different quantities of nitrogen (N) and water applied through drip and furrow irrigation on fruit yield and water use efficiency (WUE) in eggplant is essential for formulating proper management practices for sustainable production. The present investigation was undertaken to evaluate the independent and interactive effects of four levels of N and different quantities of water applied through drip as well as furrow irrigation on eggplant fruit yield, agronomic efficiency of N and WUE. In the present field investigation, ridge planting with each furrow and alternate furrow irrigation were compared with drip irrigation at three levels of water: 100%, 75% and 50% of each furrow irrigation (designated as D1.0, D0.75 and D0.5). The four levels of N studied were 90, 120, 150 and 180 kg N ha-1 (designated as N90, N120, N150 and N180). The eggplant hybrid BH-1 was transplanted on August 5, 2004 at the spacing of 60 cm x 45 cm.
The results revealed that fruit yield increased significantly with increasing N level up to N150 in each furrow as well as in alternate furrow irrigation although yield was significantly higher in each furrow irrigation. The highest yield under drip was obtained under D0.75 at N120, which was 23% higher and obtained with the saving of 25% water and 30 kg N ha-1 as compared with maximum yield obtained at each furrow irrigation at N150. The application of 50% water through drip can produce 4% higher yield as compared with each furrow irrigation at N150. The increase in fruit yield was the result of an increase in the number of fruits per plant (R2 = 0.80). In furrow irrigation, the WUE was 89.9 kg ha-1 mm-1 in alternate furrow as compared to 73.3 kg ha-1 mm-1 in each furrow irrigation at N150, where these treatments produced the highest quantities of fruit yield. The WUE at D0.75, which produced the highest fruit yield, was 109.9 kg ha-1 mm-1 at N120 but this increased to 119.9 kg ha-1 mm-1 in D0.5 at N150. The agronomic efficiency of N (AN) increased from 554 to 758 kg fruit per kg of N applied at N120 when water and N were applied through drip irrigation as compared to each furrow irrigation. These results suggest that determining different quantities of water through drip at different levels of N is essential to optimizing combinations to exploit the beneficial effects of drip irrigation and to obtain maximum yield accompanied by highest WUE and AEN.
Keywords: AEN; Brinjal; Drip irrigation; Eggplant; Furrow irrigation; Nitrogen; WUE

Johann G. Zaller, Vermicompost as a substitute for peat in potting media: Effects on germination, biomass allocation, yields and fruit quality of three tomato varieties, Scientia Horticulturae, Volume 112, Issue 2, 26 March 2007, Pages 191-199, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.12.023.
(http://www.sciencedirect.com/science/article/B6TC3-4MS9K5M-4/2/7297f2e23716908b6b4caf057c7a1662)
Abstract:
Commercial potting media often contain substantial amounts of peat that was mined from endangered bog and fen ecosystems. The main objectives of this study were to assess (1) whether the amendment of 0, 20, 40, 60, 80 and 100% (v/v) of vermicompost (VC) to a fertilized commercial peat potting substrate has effects on the emergence, growth and biomass allocation of tomato seedlings (Lycopersicon esculentum Mill.) under greenhouse conditions, (2) whether possible impacts on seedlings can affect tomato yields and fruit quality even when transplanted into equally fertilized field soil, and (3) whether effects are consistent among different tomato varieties. Amended VC was produced in a windrow system of food and cotton waste mainly by earthworms Eisenia fetida Sav. Vermicompost amendments significantly influenced, specifically for each tomato variety, emergence and elongation of seedlings. Biomass allocation (root:shoot ratio) was affected by VC amendments for two varieties in seedling stage and one field-grown tomato variety. Marketable and total yields of field tomatoes were not affected by VC amendments used for seedling husbandry. However, morphological (circumference, dry matter content, peel firmness) and chemical fruit parameters (contents of C, N, P, K, Ca, Mg, l-ascorbic acid, glucose,

fructose) were significantly affected by VC amendments in seedling substrates; these effects again were specific for each tomato variety. Overall, vermicompost could be an environmentally friendly substitute for peat in potting media with similar or beneficial effects on seedling performance and fruit quality. However, at least for tomatoes, variety-specific responses should be considered when giving recommendations on the optimum proportion of vermicompost amendment to horticultural potting substrate.
Keywords: Soilless substrate; Peat moss replacement; Seedling husbandry; Earthworms; Solid organic wastes; Vermicompost

Tomoko Endo, Takehiko Shimada, Hiroshi Fujii, Takaya Moriguchi, Mitsuo Omura, Promoter analysis of a type 3 metallothionein-like gene abundant in Satsuma mandarin (Citrus unshiu Marc.) fruit, Scientia Horticulturae, Volume 112, Issue 2, 26 March 2007, Pages 207-214, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.12.042.
(http://www.sciencedirect.com/science/article/B6TC3-4MW90FM-2/2/0f907ce1f915e81e510c12d0f0dd462b)
Abstract:
The genomic region of a type 3 metallothionein (MT3)-like gene (CitMT45) with extensive expression in citrus fruit was isolated from Citrus unshiu Marc. and its promoter activity was analyzed using particle bombardment. A genomic library was screened with CitMT45 cDNA as a probe, and approximately 9.5 kb genomic fragments were obtained. The nucleotide sequence showed that the genomic CitMT45 consists of 3 exons and 2 introns, similar to other plant MT-like genes. Interestingly, the proximal 5' flanking region had no canonical TATA-box or several cis-regulatory elements of G-box, MRE and ERE motifs common to plant MT-like genes. Lack of the MRE motif in the promoter region is in agreement with no response of CitMT45 to metal treatment, suggesting that CitMT45 might play other biological roles during fruit development rather than detoxification.
Two promoters of proximal 190 bp region (PMT45C) and 4.2 kb full region (PMT45L) were fused to the uidA gene and directly incorporated into Citrus tissues using particle bombardment. The PMT45C promoter is sufficient to direct GUS expression in all tested organs and the upstream region from this proximal 190 bp sequence should have cis-elements that act as enhancers in citrus juice sacs. Moreover, a fluorometric GUS analysis of transgenic Arabidopsis indicated that the PMT45L promoter conferred quantitatively preferential expression in siliques. These results might indicate that the cis-elements required for preferential expression in citrus fruits are functionally conserved in heterologous Arabidopsis plants. Thus, it was demonstrated that the PMT45L promoter could be used for manipulation of fruit quality by genetic engineering in Citrus and Arabidopsis.
Keywords: Promoter; Metallothionein (MT); Citrus; Fruit; Particle bombardment

Rajbir Singh, R.R. Sharma, S.K. Tyagi, Pre-harvest foliar application of calcium and boron influences physiological disorders, fruit yield and quality of strawberry (Fragaria x ananassa Duch.), Scientia Horticulturae, Volume 112, Issue 2, 26 March 2007, Pages 215-220, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.12.019.
(http://www.sciencedirect.com/science/article/B6TC3-4MVN0BG-2/2/0f9c490153f52a8e51707a52d29c5556)
Abstract:
Studies were conducted in `Chandler' strawberry to determine if pre-harvest foliar application of Ca, B or their combination influences physiological disorders, fruit yield and quality or not. For this, treatments consisted of (i) five sprays of calcium as CaCl2 (first spray was performed at the petal fall stage and later at 7 days interval), (ii) three sprays of boron as boric acid (first spray at the beginning of flowering and later at 15 day interval), (iii) combination of (i) and (ii), and (iv) plants sprayed with water served as the control. Results indicated that fruit harvested from plants, which

were sprayed either with Ca or Ca + B had significantly lesser incidence of albinism (6.7 and 6.5%), and grey mould (1.3 and 1.2%) than those harvested from plants sprayed either with B alone or in control. Although, B alone could not influence the incidence of albinism and grey mould, but it reduced fruit malformation (3.4 and 3.1%) significantly. Further, Ca, B or their combination had not influenced the individual berry weight, but marketable fruit yield differed significantly. The lowest marketable fruit yield (149.3 g/plant) was recorded in plants under control, and the highest (179.2 g/plant) in plants sprayed with Ca + B. Similarly, such fruit were firmer; had lower TSS, higher acidity and ascorbic acid content at harvest than those in control. Similarly, such fruit after 5 days storage were firmer and brighter, and have significantly lower TSS (7.9 and 7.8%); higher ascorbic acid content (43.7 and 45.0 mg/100 g pulp) and acidity (1.08 and 1.07%) than those in control or those receiving B alone. Incidence of grey mould was significantly lesser in fruit, which received Ca (2.2%) or Ca + B (1.9%) than those, which received either B (8.1%) alone or those in control (8.4%). Our studies indicated that pre-harvest foliar application of Ca + B is quite useful for reducing the incidence of disorders and getting higher marketable yield in `Chandler' strawberry.
Keywords: Albinism; Boron; Calcium; Fruit yield; Gray mould; Malformation; Strawberry

W. Spreer, M. Nagle, S. Neidhart, R. Carle, S. Ongprasert, J. Muller, Effect of regulated deficit irrigation and partial rootzone drying on the quality of mango fruits (Mangifera indica L., cv. `Chok Anan'), Agricultural Water Management, Volume 88, Issues 1-3, 16 March 2007, Pages 173-180, ISSN 0378-3774, DOI: 10.1016/j.agwat.2006.10.012.
(http://www.sciencedirect.com/science/article/B6T3X-4MFJTC3-1/2/819c4964c34e835ae2fa92edc02cc901)
Abstract:
Mango is a crop of major economic importance in Thailand, produced during the dry season when irrigation is necessary to ensure stable yields of high quality. As local water resources are increasingly scarce, more efficient water usage in agriculture is important. Deficit irrigation has frequently been shown to increase water use efficiency of many agricultural crops. In this study, regulated deficit irrigation (RDI) and partial rootzone drying (PRD) were evaluated for their effect on yield and quality of `Chok Anan' mango fruits over two seasons (2004 and 2005). A control group of trees was irrigated with 268.7 mm (2004) and 231.2 mm (2005), whereas RDI and PRD received only 137.5 and 131.2 mm in 2004 and 150.0 mm and 125.0 mm in 2005, respectively. One group of trees was not irrigated. On-tree development, harvest and post-harvest analyses were conducted. Results showed that yields were reduced in deficit irrigation treatments as compared to the fully irrigated control. However, development and post-harvest quality of fruits grown under deficit irrigation were not adversely influenced. Under PRD in particular, fruit size was increased and fruits had a higher fraction of edible parts as compared to all other treatments. In conclusion, in areas where water is a limiting factor for production PRD may be the key for a sustainable increase in mango production.
Keywords: Drought stress; Fruit size distribution; Post-harvest ripening; Sugar content; Maturation

C. Miranda, T. Girard, P.E. Lauri, Random sample estimates of tree mean for fruit size and colour in apple, Scientia Horticulturae, Volume 112, Issue 1, 12 March 2007, Pages 33-41, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.12.006.
(http://www.sciencedirect.com/science/article/B6TC3-4MS9R8V-3/2/65b5e13a7bcb9fcd7d3cd7ee08e2b92d)
Abstract:
Data obtained in 2005 from thinning experiments with `Ariane' and `Pitchounette' apples (Malus x domestica L. Borkh.) were used to estimate tree mean fruit diameter (MD), weight (MW) and proportion of red overcolour (MC) using random samples. Twenty fruit per tree were taken from the boxes containing the fruit harvested at each picking. To avoid taking only fruit in the upper

layers of the boxes, fruit from each tree were spread out on a table beforehand. The estimated values were compared with the true MD, MW or MC calculated from each picking and from the entire crop. Statistical techniques were used to assess agreement between the values obtained with estimation methods and the true values. Estimates obtained from a sample averaging ~15-20% of total crop may range from 2 to 3% of the true mean diameter, and from 6.0 to 8.5% of the true mean weight. Estimates for MC obtained from the same samples may range from 10 to 25% of the true mean overcolour. The error margin associated with estimating fruit diameter and weight from the sampling method employed in this study seems to be small enough to consider it reasonably adequate to detect treatment differences that would be considered biologically or economically significant. Blind sampling and colour determination through image analysis are suggested as a means to obtain unbiased and objective data for fruit colour determinations.
Keywords: Malus x domestica; Sampling; True mean; Fruit size; Colour

I.E. Cota, R. Troncoso-Rojas, R. Sotelo-Mundo, A. Sanchez-Estrada, M.E. Tiznado-Hernandez, Chitinase and [beta]-1,3-glucanase enzymatic activities in response to infection by Alternaria alternata evaluated in two stages of development in different tomato fruit varieties, Scientia Horticulturae, Volume 112, Issue 1, 12 March 2007, Pages 42-50, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.12.005.
(http://www.sciencedirect.com/science/article/B6TC3-4MRND13-3/2/e12fce9e0806d9db446c8c90d034fd60)
Abstract:
Chitinase (ChA) and [beta]-1,3-glucanase (GA) activity had been related with plant defense mechanism against pathogen attack in vegetative tissues. Scarce information is available about the behavior of these enzymes in response to different stages of development and fungi infection in fruits. The changes in ChA and GA activities in response to Alternaria alternata infection were evaluated in mature green (MG) and red ripe (RR) developmental stages of Sunpride, Geronimo and Charleston varieties of tomato fruit. Tomato fruits were inoculated with a conidial suspension of A. alternata and stored for 10 days at 25 [degree sign]C and 90-92 H.R.%. The degree of fruit infection was measured by a hedonic scale every 2 days. ChA activity was determined fluorometrically by quantifying the release of 4-methylumbelliferyll (4-MU) from 4-methylumbelliferyll [beta]-d-N,N'N''-triacetylchitotrioside, and GA activity was measured quantifying the release of glucose from [beta]-1,3-glucan (laminarin) by HPLC. Tomato fruit in RR stage was more susceptible to fungi infection than MG stages. Geronimo was the most resistant variety, whereas Sunpride was the most susceptible for both stages of development (MG and RR). Higher levels of ChA and GA activities were observed for mature green stage in Charleston variety at the end of the storage period. An induction in ChA and GA in response to infection by A. alternata was observed in all varieties. Particularly high levels of ChA were found for inoculated Geronimo in RR stage and inoculated Charleston in MG stage which correlated with low levels of fungi infection. Higher levels of GA induction in response to fungi infection were recorded for Sunpride variety in RR stage, whereas no substantial induction was observed for Geronimo and Charleston varieties at the same stage of development. This GA induction correlated negatively with the resistance showed by the different varieties to fungi infection. We concluded that chitinase and [beta]-1,3-glucanase induction are part of the tomato fruit defense mechanism against A. alternata infection with a different behavior depending upon stage of development and variety.
Keywords: Chitinase; [beta]-1,3-Glucanase; Alternaria alternata; Ripening; Varieties; Tomato fruit

Evelien Reinaerts, Jascha de Nooijer, Math Candel, Nanne de Vries, Explaining school children's fruit and vegetable consumption: The contributions of availability, accessibility, exposure, parental consumption and habit in addition to psychosocial factors, Appetite, Volume 48, Issue 2, March 2007, Pages 248-258, ISSN 0195-6663, DOI: 10.1016/j.appet.2006.09.007.

(http://www.sciencedirect.com/science/article/B6WB2-4MBT1HN-1/2/c0b320760106afd17ace3f093590bf14)
Abstract:
We studied the contributions of parental fruit and vegetable (F&V) consumption, availability and accessibility of F&V in the home, exposure to F&V, and habit, in addition to psychosocial factors, in explaining F&V consumption in 4-12-year-old children. Furthermore, we looked for effect modification by ethnicity and gender. Children's parents (n=1739) completed a questionnaire assessing psychosocial and additional factors regarding their children's F&V consumption. Consumption was assessed by a food-frequency questionnaire. The model explained the children's F&V consumption better when the additional factors were included (R2=.49 and R2=.50 for fruit consumption, and R2=.33 and R2=.33 for vegetable consumption). Stepwise multi-level regression analyses revealed that habit was the most influential correlate of F&V consumption. It is concluded that nutrition education interventions aimed at stimulating F&V consumption among children should take into account that the consumption of fruit and that of vegetables are clearly different behaviors, with different influencing factors for boys and girls and children of native or non-native background. Furthermore, interventions to increase F&V consumption should include strategies aimed at making these behaviors habitual.
Keywords: Fruit and vegetable intake; School children; Psychosocial factors; Parental consumption; Availability; Accessibility; Exposure; Habit

Patricia I. Gonzalez, Pablo Montoya, Gabriela Perez-Lachaud, Jorge Cancino, Pablo Liedo, Superparasitism in mass reared Diachasmimorpha longicaudata (Ashmead) (Hymenoptera: Braconidae), a parasitoid of fruit flies (Diptera: Tephritidae), Biological Control, Volume 40, Issue 3, March 2007, Pages 320-326, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2006.11.009.
(http://www.sciencedirect.com/science/article/B6WBP-4MH299T-1/2/cae3875402f2038386fbe9881454a237)
Abstract:
Superparasitism frequency and its effects on the quality of mass-reared Diachasmimorpha longicaudata (Ashmead) parasitoids were investigated under laboratory conditions. Percentage of adult emergence, sex ratio, survival, fecundity and flight ability of adult parasitoids that emerged from Anastrepha ludens (Loew) pupae with different levels of superparasitism were determined. A high prevalence of superparasitism was observed. The number of scars per pupa, produced by insertion of the parasitoid ovipositor, ranged from 1 to 30, with an average (+/-SD) of 8.3 +/- 6.2. Adult parasitoid emergence decreased as the level of superparasitism increased. However, the fraction of females rose with increasing superparasitism and the flight ability was lower in adults emerging from pupae with only one scar, compared with adults emerging from superparasitized hosts. Female longevity and fecundity were not affected by superparasitism. Our results support the hypothesis that superparasitism in D. longicaudata might be adaptive, since adults emerging from hosts with moderate levels of superparasitism showed the highest percentage of emergence and there were no significant differences in the other quality control parameters tested. Our findings are relevant to the mass rearing process, where the ratio of hosts to parasitoids can be optimized as well as the distribution of eggs deposited in host larvae. This contributes to efficient mass rearing methods for augmentative biological control programs.
Keywords: Anastrepha ludens; Diachasmimorpha longicaudata; Mass-rearing superparasitism; Oviposition

Jiregna Gindaba, Stephanie J.E. Wand, Do fruit sunburn control measures affect leaf photosynthetic rate and stomatal conductance in `Royal Gala' apple?, Environmental and Experimental Botany, Volume 59, Issue 2, March 2007, Pages 160-165, ISSN 0098-8472, DOI: 10.1016/j.envexpbot.2005.11.001.

(http://www.sciencedirect.com/science/article/B6T66-4J2KXVS-1/2/c53e89dc16f41d4b1b183e01418d899d)
Abstract:
A field study was conducted on a 5-year-old orchard of `Royal Gala' apple (Malus domestica Borkh.) in Stellenbosch, South Africa, to investigate whether the measures employed to control sunburn in fruit, viz., evaporative cooling, Surround WP and 20% black shade net affect leaf photosynthetic gas exchange attributes in comparison to untreated control during the 2003/2004 season. Shade net significantly reduced midday leaf net photosynthetic rate (A) compared to evaporative cooling. Furthermore, shade net and Surround WP significantly reduced midday leaf stomatal conductance (gs) compared to evaporative cooling and control. Evaporative cooling increased light saturated photosynthetic rate by 27 and 24% compared to shade net and Surround WP, respectively. Light compensation point and dark respiration of shaded leaves were about a third of the other treatments and about 50% less than the control leaves, respectively. Shade net down-regulated photosynthetic capacity of the leaves as evidenced by lower maximum rate of carboxylation and light saturated rate of electron transport compared to control leaves. Sunburn control treatments reduced day respiration by 60-70% compared to the control. Response of A and gs to increasing temperature showed only slight increase in both A and gs with increasing temperature from 20 to 30 [degree sign]C. A declined at 35 [degree sign]C in Surround WP and shade net leaves while it declined at 40 [degree sign]C in evaporatively cooled and control leaves. Evaporative cooling and control had higher gs than shade net and Surround WP at all leaf temperatures. In conclusion, shade net down-regulated photosynthetic reactions and Surround WP and shade net reduced leaf gs and increased the vulnerability of leaf A and gs to high temperature compared to evaporative cooling and control.
Keywords: Evaporative cooling; Surround WP; Leaf temperature; Photosynthetic rate; Shade net; Stomatal conductance

Ben L.M.M. Leroy, Lydia Bommele, Dirk Reheul, Maurice Moens, Stefaan De Neve, The application of vegetable, fruit and garden waste (VFG) compost in addition to cattle slurry in a silage maize monoculture: Effects on soil fauna and yield, European Journal of Soil Biology, Volume 43, Issue 2, March-April 2007, Pages 91-100, ISSN 1164-5563, DOI: 10.1016/j.ejsobi.2006.10.005.
(http://www.sciencedirect.com/science/article/B6VR7-4MFCP3S-1/2/128df93e0258510da7644e92bc016254)
Abstract:
In Flanders, vegetable, fruit and garden (VFG) wastes are collected selectively and composted. We studied the effects of the combined application of three different doses of VFG compost and cattle slurry during 7 years on maize dry matter yields and three soil faunal groups: nematodes, micro-arthropods (springtails and mites) and earthworms. Combined application of VFG compost and slurry resulted in the highest yields. Initially, there was a clear yield depression on plots amended with compost in contrast to an upward trend in the last application years, proving a significant residual N effect from cumulative compost applications. The plant parasitic nematodes Pratylenchus sp. and the Tylenchidae were less abundant on plots receiving organic amendments, while the population of the bacteriophagous Rhabditidae was higher on these plots. Adding organic amendments resulted in increased numbers of micro-arthropods, springtails as well as mites. Earthworms were significantly more abundant when organic amendments were applied. The VFG compost had a larger overall positive effect on the three soil faunal groups than cattle slurry.
Keywords: VFG compost; Cattle slurry; Nematodes; Springtails; Mites; Earthworms; Yield

Alice B. Nongonierma, Philippe Cayot, Mark Springett, Jean-Luc Le Quere, Remy Cachon, Andree Voilley, Transfers of small analytes in a multiphasic stirred fruit yoghurt model, Food Hydrocolloids,

Volume 21, Issue 2, March 2007, Pages 287-296, ISSN 0268-005X, DOI: 10.1016/j.foodhyd.2006.04.007.
(http://www.sciencedirect.com/science/article/B6VP9-4JWDY4F-3/2/23c4c05ee3f17e037b3b0b55fcd2d639)
Abstract:
The transfer of small analytes in a multiphasic stirred fruit yoghurt model, made of a pectin gel aimed to mimic fruit pieces and of a dairy gel done with milk acidified by glucono-[delta]-lactone hydrolysis, have been studied. The concentration gradients between the pectin gel and the dairy gel were the driving force for the migration of small analytes (i.e. water, protons and colorants). Water migrated from the dairy to the pectin gel, causing modifications in the water content of both gels and an equilibration of their water activity at 0.938+/-0.003. Inversely, protons migrated from the pectin to the dairy gel. These changes in composition of both gels being likely to have induced structure modifications. Migration of relatively small molar mass colorants did not depend on steric considerations, but rather on their charge and structure. In both gels, most of the colorants studied were charged at the equilibrium pH 4.1. This charge was linked to their diffusivity in the pectin gel. Negatively charged colorants were thought to be affected by the attractive electrostatic forces between the pectin carboxylic groups and Ca2+, causing a decrease in their diffusivity. Transfer of colorants in the dairy gel were affected by electrostatic interactions with milk proteins and ions or by hydrophobic interactions with milk proteins and fat.
Keywords: Diffusion; Colorants; Protons; Water; Coupled transfers; Dairy gel; Pectin gel

E. Apostolidis, Y.-I. Kwon, K. Shetty, Inhibitory potential of herb, fruit, and fungal-enriched cheese against key enzymes linked to type 2 diabetes and hypertension, Innovative Food Science & Emerging Technologies, Volume 8, Issue 1, March 2007, Pages 46-54, ISSN 1466-8564, DOI: 10.1016/j.ifset.2006.06.001.
(http://www.sciencedirect.com/science/article/B6W6D-4KNKBYK-2/2/3de495b6e2cbcb2fa06f3e8fb376e9e2)
Abstract:
In the current study, three different types of cheese, cheddar, feta, and Roquefort, were screened to determine the variations in phenolic-linked antioxidant activity and the potential to inhibit key enzymes relevant to type 2 diabetes and related hypertension. The cheese samples were assayed for total phenolic content, related antioxidant activity, and inhibition of [alpha]-glucosidase, pancreatic [alpha]-amylase inhibitory activity, and the angiotensin-converting enzyme (ACE)-I inhibitory activity. The three fungal-enriched Roquefort cheese samples had the highest total phenolic content. The phenolic content in the herb cheese was slightly but not significantly higher compared to plain cheese. Roquefort cheese samples had the highest antioxidant-linked DPPH (free radical) scavenging activity and as expected DPPH radical scavenging activity was higher in the herb cheese compared to plain cheese. All samples had some [alpha]-glucosidase and [alpha]-amylase inhibitory activities, with cranberry-enriched cheese having the highest activities. However, no correlation to soluble phenolic content was observed. All the cheese samples had very high anti-ACE-I inhibitory activity, indicating no correlation to phenolic content and activity was even high in 10x diluted samples. The highest ACE-I inhibitory activity was observed in plain and herb-enriched cheddar cheese as well as cranberry-enriched cheese. These studies indicate that cranberry-enriched cheese had the best potential for inhibition of [alpha]-glucosidase and [alpha]-amylase relevant for type 2 diabetes management, whereas any cheese product had potential for ACE-I inhibition linked to hypertension management, indicating likely the role of other factors such as peptides from cheese fermentation.Industrial relevance
This research is focused on screening of different types of commercial plain, herbal, fruit, and fungal-enriched to provide a strong biochemical rationale for further design of functional cheese products for anti-type 2 diabetic and relevant hypertension management. A better understanding of

these functional attributes provides a strong biochemical rationale for design in vivo and clinical studies from which right design of functional food can be established.
Keywords: Phenolic phytochemicals; Antioxidants; [alpha]-Amylase inhibition; [alpha]-Glucosidase inhibition; Angiotensin-converting enzyme inhibitor; Type 2 diabetes; Hypertension; Cheddar cheese; Feta cheese; Herb-enriched cheese; Cranberry-enriched cheese; Roquefort cheese

H.P. Vasantha Rupasinghe, Steve Clegg, Total antioxidant capacity, total phenolic content, mineral elements, and histamine concentrations in wines of different fruit sources, Journal of Food Composition and Analysis, Volume 20, Issue 2, March 2007, Pages 133-137, ISSN 0889-1575, DOI: 10.1016/j.jfca.2006.06.008.
(http://www.sciencedirect.com/science/article/B6WJH-4KV2RM8-3/2/d4a12c73f1d758f81473c23d5e7429a1)
Abstract:
The objective of the study was to determine basic health-related constituents, total antioxidant capacity (TAC) using the ferric reducing ability of plasma (FRAP) assay, total phenolic content (TPC), mineral elements and histamines present in ten categories of fruit wines and to compare them with traditional wines. Among the wines of different fruit sources, TAC ranged from 219 to 2447 mg ascorbic acid equivalents/L. TAC and TPC are the highest in red (Cabernet) wine and elderberry, blueberry and black currant wines; moderate in cherry, raspberry, cranberry and plum wines; and the lowest in apple, peach, icewine (from grapes), white (Chardonnay) and pear wines. The two measurements, TAC and TPC, had a positive and strong correlation (r2=0.97). Among the 16 elements analyzed, potassium was the most abundant element distributed throughout all categories of wines. Calcium concentration was the highest in cranberry wines. The grape wines (red and white wines and icewine) and elderberry wine contained the highest concentration of magnesium. Iron, manganese and zinc were the predominant minor elemental constituents. Red wine (Cabernet) had a significantly higher concentration (11.1 mg/L) of biogenic amine histamine than did any of the fruit wines, white wines or icewine.
Keywords: Fruit wines; Antioxidants; Phenolics; Histamine; Minerals; FRAP; Food safety

A.R.P. Kingsly, H.R. Meena, R.K. Jain, D.B. Singh, Shrinkage of ber (Zizyphus mauritian L.) fruits during sun drying, Journal of Food Engineering, Volume 79, Issue 1, March 2007, Pages 6-10, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.01.019.
(http://www.sciencedirect.com/science/article/B6T8J-4JCBKCX-2/2/65546b86c44a86945673e2097ec41d1c)
Abstract:
Shrinkage during drying plays an important role in determining the quality of the dried product. This work presents an experimental study on shrinkage of ber fruits during sun drying. The effect of loss of moisture content from the fruits on the linear dimensions, size and volumetric ratio were studied. The experimental data was also validated with some models proposed by different authors, to predict the change in relative dimensions. It was observed that the shrinkage has occurred in relation with the amount of removal of moisture from the fruits. It was also found that, the transition moisture of ber fruits was 47% (dry basis) after which the shrinkage stopped.
Keywords: Ber; Shrinkage; Transition moisture

O.K. Owolarafe, T.M. Olabige, M.O. Faborode, Macro-structural characterisation of palm fruit at different processing conditions, Journal of Food Engineering, Volume 79, Issue 1, March 2007, Pages 31-36, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.01.024.
(http://www.sciencedirect.com/science/article/B6T8J-4JCCFW0-6/2/517cd115139f0f7ae12123fc3b2675ae)
Abstract:

Characterisation of palm fruit was undertaken by determining some macro-structural (physical and mechanical) properties of palm fruit (tenera variety) at different processing conditions, such as sterilisation time and duration of digestion. The true density of fruit sterilised for 0 to 90 min from 996 to 987 kg/m3while the bulk density decreased from 611 to 577 kg/m3. The density ratio decreased from 61.5 to 58.5 while the porosity increased from 38.6 to 41.5%.
For the sterilised and digested fruit, the true density increased from 806 to 913 kg/m3 with increase in sterilisation time from 30 to 90 min and duration of digestion from 5 to 15 min. The bulk density also increased from 538 to 688 kg/m3 within the same range of sterilisation and digestion. The fracture resistance and fruit bruising pressure of the palm fruit decreased from 1446 to 318 N and 2.34 N/mm2 to 0.79 N/mm2, respectively, when the fruit was sterilised for 0 to 90 min. These results will inform the modelling of the fruit sterilisation and digestion operations for optimisation of the overall palm oil extraction process.
Keywords: Oilpalm fruit; Macrostructure; Processing-conditions; Opitimisation; Extraction-efficiency; Oil quality

Cevat Aydin, M. Musa Ozcan, Determination of nutritional and physical properties of myrtle (Myrtus communis L.) fruits growing wild in Turkey, Journal of Food Engineering, Volume 79, Issue 2, March 2007, Pages 453-458, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.02.008.
(http://www.sciencedirect.com/science/article/B6T8J-4JP9FMP-2/2/2c9208d14a2d8cdbb90a16d3a2dcde62)
Abstract:
In this study, some nutritional and physical properties of myrtle fruits (Myrtus communis L.) growing wild in Mersin region were determined. Nutritional properties such as protein, oil, fibre, reducing sugar, tannin, ash and water-soluble extract and physical properties such as dimensions, weight, thickness, geometric mean diameter, sphericity, bulk density, porosity, projected area, 100 fruit weight, terminal velocity and the rupture strength of myrtle fruits used in the experiment were established. The crude oil, crude protein, crude fibre, crude energy, reducing sugar, tannin, ash, water-soluble extract and essential oil values of fruit were determined as 2.37%, 4.17%, 17.41%, 11.21 kcal/g, 8.64%, 76.11 mg/100 g, 0.725%, 52.94% and 0.01%, respectively. Some physical properties of myrtle fruits were evaluated as functions of moisture content. The average length, width, thickness, the geometric mean diameter of myrtle fruits were 13.75 mm, 8.11 mm, 7.57 mm, 10.53 mm at a moisture content of 8.32% d.b., respectively.
Keywords: Myrtle; Myrtaceae; Physical and chemical properties; Essential oil

Gikuru Mwithiga, Michael Inzoberi Mukolwe, Douglas Shitanda, Paul Nyota Karanja, Evaluation of the effect of ripening on the sensory quality and properties of tamarillo (Cyphomandra betaceae) fruits, Journal of Food Engineering, Volume 79, Issue 1, March 2007, Pages 117-123, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.01.035.
(http://www.sciencedirect.com/science/article/B6T8J-4JDMTHF-5/2/e96e33f92532bd83d40430717de6caed)
Abstract:
Tamarillo (Cyphomandra betaceae) fruits were sourced from a single farmer from the Central province of Kenya soon after harvesting. The fruits were then cleaned and sorted in order to remove all immature and damaged fruits. The resulting fruits were by visual inspection divided into eleven groups or ripeness scales depending on the degree of ripening and then subjected to a sensory evaluation for taste and colour using an untrained panel of 10 people. Objective measurements of firmness, colour, juice yield, pH and total soluble solids were also done for all the eleven ripeness groups.
The sensory score for both taste and colour increased with the degree of ripeness to reach a maximum at the ripeness scale of between 7 and 9, respectively, and thereafter decreased with further ripening. There was a remarkable change in the fruit pulp colour with L* and b* decreasing

with increase in ripeness from 64.6 to 36.1 and 40.8 to 13.2, respectively, while a* values increased from -4.3 to 8.5. Changes in fruit surface colour were well pronounced and decreased from 46.3 to 22.1 and 28.3 to 4.9 for L* and b*, respectively, while a* increased from -4.9 to 28.3. There was progressive increase in juice yield (10.6-26.0%), total soluble solids (9.4-10.9) and pH (3.35-3.85) with increase in degree of ripeness. However, the firmness decreased from 115.5 to 71.6 N with increase in degree of ripeness. There was a linear relationship between the colour lightness coordinates for peel and pulp with an R2 value of 0.989 indicating that fruit surface L* values are good indicators of internal quality.
Keywords: Tamarillo fruits; Ripening; Sensory quality; Objective measurement; Fruit properties

R. Sesmero, M.A. Quesada, J.A. Mercado, Antisense inhibition of pectate lyase gene expression in strawberry fruit: Characteristics of fruits processed into jam, Journal of Food Engineering, Volume 79, Issue 1, March 2007, Pages 194-199, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.01.044.
(http://www.sciencedirect.com/science/article/B6T8J-4JF8H1G-7/2/5ea3fb3b6c623ef95bbf9730cff15390)
Abstract:
We have analyzed several quality parameters of strawberry jam prepared from transgenic fruits with reduced expression of a pectate lyase gene. Two independent lines showing a reduction in pectate lyase mRNA transcript level of 90% (Apel 14) and 99% (Apel 23) have been studied. At harvest, ripen fruits from these two lines were significantly firmer than control. Soluble solid content was similar in all genotypes. Control and transgenic fruits were processed into jam and the textural properties of jam berries and medium were analyzed separately using a back extrusion test. Transgenic fruits resisted the cooking process better than control, as reflected by the higher weight of berries in these jams. The back extrusion test of jam berries showed that cooked fruits from both transgenic lines were firmer than control, and the firmness values correlated positively with the degree of pectate lyase silencing. By contrast, jam mediums of these lines were similar in firmness but slightly less viscous than control. Overall, the results obtained indicate that inhibition of pectate lyase gene expression can improve several quality traits of strawberry jam, such as texture and content of whole berries.
Keywords: Fragaria x ananassa; Pectin; Transgenic plants; Fruit softening; Fruit processing

M.A. Del Nobile, F. Licciardello, C. Scrocco, G. Muratore, M. Zappa, Design of plastic packages for minimally processed fruits, Journal of Food Engineering, Volume 79, Issue 1, March 2007, Pages 217-224, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.01.062.
(http://www.sciencedirect.com/science/article/B6T8J-4JKJSV4-1/2/5817df007baa067f30115803a6b538e5)
Abstract:
In this work the possibility of using a simple mathematical model for designing plastic film for fresh processed fruits packaging is addressed. The study was conducted by packaging three different fresh processed fruits: prickly pear, banana and kiwifruit; with two different commercially available films: a laminated PE/aluminum/PET film, and a co-extruded polyolefinic film, and storing the packages at 5 [degree sign]C. The package headspace composition, in terms of oxygen and carbon dioxide concentration, was monitored for a period ranging between 4 and 12 days, depending on film type. A simple mathematical model was used for describing and predicting the respiration behavior of packed fresh processed fruits during storage. Results showed that despite its simplicity the proposed model satisfactorily describes and predicts the respiration behavior of investigated fresh processed fruits. It was also found that the predictive ability of the proposed model depends on both the permeability of the package and the fresh processed fruit packed. Packaging optimization was performed taking the film thickness as variable. Results suggest that the optimal film thickness strongly depends on packed fruits.

Keywords: Fresh processed fruit; Modeling; Packaging design; Shelf life

M.R. Ochoa, A.G. Kesseler, B.N. Pirone, C.A. Marquez, A. De Michelis, Analysis of shrinkage phenomenon of whole sweet cherry fruits (Prunus avium) during convective dehydration with very simple models, Journal of Food Engineering, Volume 79, Issue 2, March 2007, Pages 657-661, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.02.025.
(http://www.sciencedirect.com/science/article/B6T8J-4JMVHD8-2/2/b2ac93dfad3614601c2864109f95b902)
Abstract:
Whole sweet cherry fruits were dehydrated in heated air at temperatures of 55, 60, 65, 70, 75, and 80 [degree sign]C, air velocities of 0.1, 1, 2, 3, and 5 m/s, and air relative humidities of 5% and 50%. Volume changes were evaluated by picnometric techniques and with geometric measurements by micrometer and superficial area from geometric measurements. It was observed that, volume and area changes do not depend on dehydration operating variables. A linear relationship was found between the dimensionless volume change and the moisture content of the partially dehydrated fruits. The area depended on moisture according to a third grade polynomial.
Keywords: Drying fruit; Experimental and predictions; Volume and superficial area changes

Kolawole O. Falade, Emmanuel S. Abbo, Air-drying and rehydration characteristics of date palm (Phoenix dactylifera L.) fruits, Journal of Food Engineering, Volume 79, Issue 2, March 2007, Pages 724-730, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.01.081.
(http://www.sciencedirect.com/science/article/B6T8J-4K07FF6-4/2/71da9082028062822900f750d41f70cb)
Abstract:
The influence of variety and drying temperature range of 50-80 [degree sign]C on air-drying pattern of date palm fruits were investigated. Results indicated that drying took place in the falling rate period. Moreover, the effect of variety and rehydration temperature range of 15-45 [degree sign]C, maintaining a fruit : water ratio of 1:25 w/w were also investigated. Moisture transfer during air-drying and rehydration were described by applying the Fick's diffusion model, and the effective diffusivities and activation energies were calculated. Arrhenius relation with activation energy range of 35.17-44.02 and 30.29-40.29 kJ/mol expressed the effect of temperature on the diffusivities during air-drying and rehydration, respectively.
Keywords: Date palm fruit; Air-drying; Rehydration; Effective moisture diffusivity; Activation energy

Maria A. Vivar-Vera, Juan A. Salazar-Montoya, Graciano Calva-Calva, Emma G. Ramos-Ramirez, Extraction, thermal stability and kinetic behavior of pectinmethylesterase from hawthorn (Crataegus pubescens) fruit, LWT - Food Science and Technology, Volume 40, Issue 2, March 2007, Pages 278-284, ISSN 0023-6438, DOI: 10.1016/j.lwt.2005.10.005.
(http://www.sciencedirect.com/science/article/B6WMV-4HNSGHK-1/2/fca8b7b2cd31771f46cb7844d5917eb2)
Abstract:
Pectinmethylesterase (PME) extracted from hawthorn (Crataegus pubescens) fruit was evaluated for its thermal stability and kinetic behavior. The enzyme extraction process was established after studying different NaCl concentrations (0.5-3.0 moles/L). A maximum PME extraction of 51.61 units/mg protein was obtained using 2 moles/L NaCl. Kinetic parameters (Km and Vmax) were determined using a commercial citrus pectin and C. pubescens pectin as substrates. The effects of NaCl concentration, pH and temperature on PME activity were investigated. PME showed higher affinity for C. pubescens pectin (Km and Vmax of 2.84 mg/mL protein, and 64.10 units/mg protein, respectively) than for citrus pectin. C. pubescens PME extract showed maximum activity at 0.4 moles/L NaCl, pH 7.5, and 55 [degree sign]C. The Ea and Q10 for thermal activation were 36.27 kJ/mol and 2.01 (20-30 [degree sign]C), respectively. About 50% of the activity still remained after

heating for 25 min at 60 [degree sign]C, and it was completely inactivated by incubation at 80 [degree sign]C for 10 min. The Q10 and Ea values for thermal inactivation reaction were 20.06 (70-80 [degree sign]C) and 146.16 kJ/mol, respectively. These results provide useful information about the factors that affect the activity of C. pubescens PME, and might be used as a starting point for texture control during post-harvest handling and processing of this fruit.
Keywords: Pectinmethylesterase; Crataegus pubescens; Thermal stability; Kinetic behavior; Hawthorn pectin extraction

Zisheng Luo, Effect of 1-methylcyclopropene on ripening of postharvest persimmon (Diospyros kaki L.) fruit, LWT - Food Science and Technology, Volume 40, Issue 2, March 2007, Pages 285-291, ISSN 0023-6438, DOI: 10.1016/j.lwt.2005.10.010.
(http://www.sciencedirect.com/science/article/B6WMV-4HR76T9-1/2/a8078f26eea6185e80168b25b31157d3)
Abstract:
Postharvest persimmon fruit (Diospyros kaki L. cv. Qiandaowuhe) was stored at 20 [degree sign]C after being exposed to 3 [mu]l l-1 1-methylcyclopropene (1-MCP) for 6 h or not (control). Several parameters (firmness, respiration and ethylene production, pectic substances and cell wall hydrolysis enzymes activities) were examined to determine the efficacy of 1-MCP treatment in delaying persimmon fruit ripening. Results showed that `Qiandaowuhe' persimmon fruit displayed a typical climacteric pattern of respiration and ethylene production. Peak CO2 production and ethylene production was observed on the fourth day. Fruit softening was accompanied by a progressive increase in water-soluble pectic substances (WSP) and a progressive decrease in chelator-soluble pectic substances (CSP) and alkali-soluble pectic substances (ASP). The activities of pectinmethylesterase (PME) and polygalacturonase (PG) started increasing sharply and reached a maximal value on days 4 and 6, respectively, and then decreased slowly. 1-MCP treatment delayed the onset of climacteric ethylene production and respiration in persimmon fruit, and also significantly retarded the activities of PME and PG during ripening at 20 [degree sign]C. Consistent with the activity trends of cell wall hydrolysis enzymes, 1-MCP treatment also delayed the depolymerization of CSP and ASP and reduced the increase of WSP compared with the control fruit. Thus, application of 1-MCP can greatly extend the postharvest life of `Qiandaowuhe' persimmon fruit.
Keywords: Persimmon fruit; 1-Methylcyclopropene; Ripening; Pectic substance; Pectinmethylesterase; Polygalacturonase

Jeanne D. Mihail, Johann N. Bruhn, Pierluigi Bonello, Spatial and temporal patterns of morel fruiting, Mycological Research, Volume 111, Issue 3, March 2007, Pages 339-346, ISSN 0953-7562, DOI: 10.1016/j.mycres.2007.01.007.
(http://www.sciencedirect.com/science/article/B7XMR-4MWGFN9-2/2/6fff2db669514fff65d29f49cecf5510)
Abstract:
The biotic and abiotic factors conditioning morel fruit body production are incompletely known. We examined spatial and temporal patterns of Morchella esculenta fruiting over five years in a wooded site in Missouri, USA. Fruiting onset was inversely correlated with spring air and soil temperatures, whereas abundance was positively correlated with rain events (>10 mm) during the 30 d preceding fruiting. The two years with the greatest fruiting had the shortest fruiting seasons (6-7 d). Fruiting season length was positively correlated with soil warming, suggesting that a narrow range of optimum soil temperatures favour the explosive production of fruit bodies. All woody stems of at least 1 cm diam were mapped and stem diameter and crown condition were noted. Morel fruit bodies were significantly closer to stems of Carya spp., Tilia americana and Ulmus americana than predicted by the frequencies of these woody species or their contribution to the total basal area on the site. Although intra-annual clustering of fruit bodies was often observed, inter-annual clustering

was not. The spatial pattern of M. esculenta fruiting appears to be associated with vegetation pattern, whereas the onset and abundance of fruiting are determined by the interaction of spring temperatures with availability of supporting precipitation.
Keywords: Carya; Morchella; Soil temperature; Tilia; Ulmus

Jiau-Ching Ho, Chiu-Ming Chen, Lie-Ching Row, Oleanane-type triterpenes from the flowers, pith, leaves, and fruit of Tetrapanax papyriferus, Phytochemistry, Volume 68, Issue 5, Reports on Structure Elucidation, March 2007, Pages 631-635, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2006.10.007.
(http://www.sciencedirect.com/science/article/B6TH7-4N0PFXY-1/2/7e3feaae397eb449adbca73d1c8854fc)
Abstract:
Four oleanane-type triterpenes, 3[alpha],21[beta],22[alpha]-trihydroxy-11,13(18)-oleanadien-28-oic acid (1), 3-epi-papyriogenin C (2), 21-O-acetyl-21-hydroxy-3-oxo-11,13(18)-oleanadien-28-oic acid (3) and 3[beta]-hydroxy-21-oxo-11,13(18)-oleanadien-28-oic acid methyl ester (4), together with four known triterpenes, were isolated from Tetrapanax papyriferus (Hook) K. Koch. Papyriogenin A (8) exhibited anti-HIV activity and low cytotoxicity in acutely infected H9 lymphocytes. Their structures were determined by analysis of spectroscopic data, including by 1D and 2D NMR.
Keywords: Tetrapanax papyriferus; Araliaceae; Oleanane-type triterpene

Mun-Chual Rho, Seung Woong Lee, Hye Ran Park, Jung-Ho Choi, Ji Yun Kang, Koanhoi Kim, Hyun Sun Lee, Young Kook Kim, ACAT inhibition of alkamides identified in the fruits of Piper nigrum, Phytochemistry, Volume 68, Issue 6, March 2007, Pages 899-903, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2006.11.025.
(http://www.sciencedirect.com/science/article/B6TH7-4MMP2KP-2/2/7c3d77e0f5cf169903d54ffe827dc975)
Abstract:
In this study, via a bioactivity-guided fractionation of MeOH extracts of the fruits of Piper nigrum, alkamide (5) and five previously-identified alkamides were isolated. Their structures were elucidated via spectroscopic analysis (1H, 13C NMR and ESI-MS), as follows: retrofractamide A (1), pipercide (2), piperchabamide D (3), pellitorin (4), dehydroretrofractamide C (5) and dehydropipernonaline (6). The IC50 values determined for the compounds were 24.5 (1), 3.7 (2), 13.5 (3), 40.5 (4), 60 (5) and 90 [mu]M (6), according to the results of an ACAT enzyme assay system using rat liver microsomes. These compounds all inhibited cholesterol esterification in HepG2 cells.
Keywords: Piper nigum L.; Piperaceae; Alkamides; Acyl CoA: cholesterol acyltransferase (ACAT); Atherosclerosis; HepG2 cells; Cellular cholesterol esterification

Ahmad S. Khan, Zora Singh, 1-MCP regulates ethylene biosynthesis and fruit softening during ripening of `Tegan Blue' plum, Postharvest Biology and Technology, Volume 43, Issue 3, March 2007, Pages 298-306, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.10.005.
(http://www.sciencedirect.com/science/article/B6TBJ-4MT5554-1/2/777ad8fb66de2e4f910897bc7f7219c9)
Abstract:
To investigate the effects of postharvest application of 1-MCP on ethylene production and fruit softening, activities of ethylene biosynthesis and fruit softening enzymes were measured during postharvest ripening of plum (Prunus salicina Lindl. cv. Tegan Blue) fruit after being exposed to 1-MCP (0, 0.5, 1.0 or 2.0 [mu]L L-1) at 20 +/- 1 [degree sign]C for 24 h. Following the treatments, fruit were allowed to ripen at ambient temperature (20 +/- 1 [degree sign]C), and ethylene production in fruit, activities of ACS and ACO, ACC content and fruit softening enzymes (PE, EGase, exo-PG and endo-PG) in fruit skin and pulp were recorded at different intervals.

Postharvest application of 1-MCP significantly delayed and suppressed the climacteric ethylene production with reduction in the activities of ethylene biosynthesis enzymes (ACS, ACO) and ACC content, and fruit softening enzymes (PE, EGase, exo-PG and endo-PG) in the skin as well as in pulp tissues. The reduction was more pronounced with increased concentrations of 1-MCP. 1-MCP treated fruit showed different rates of fruit softening and activities of ethylene biosynthesis enzymes in the skin and pulp tissues which warrant further investigation on regulation of gene expression related to these enzymes with the inhibitory effect of 1-MCP.
Keywords: ACC; ACO; ACS; EGase; Ethylene; Enzyme; 1-MCP; Prunus salicina Lindl.; PE; Exo-PG; Endo-PG; Softening

A. Lai, E. Santangelo, G.P. Soressi, R. Fantoni, Analysis of the main secondary metabolites produced in tomato (Lycopersicon esculentum, Mill.) epicarp tissue during fruit ripening using fluorescence techniques, Postharvest Biology and Technology, Volume 43, Issue 3, March 2007, Pages 335-342, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.09.016.
(http://www.sciencedirect.com/science/article/B6TBJ-4MP5KNT-1/2/463fed1b4ccc354b859cd168fdab259f)
Abstract:
Tomato (Lycopersicon esculentum L.) fruit are an important source of antioxidant (mainly pigment) compounds, as well as lycopene, [beta]-carotene, ascorbic acid and polyphenols. Differentiation of the final product in the market requires an accurate evaluation of these value-adding compounds. Because of this, we have undertaken a comparison of the spectral characterisation of the tomato fruit surface pigments from the immature to over-ripe stage, using spectroscopy techniques based on visible fluorescence emission upon excitation in the same or ultraviolet spectral regions. The aim was to verify the spectral band for optimal conditions for fruit harvesting using non-destructive techniques. The pattern of pigment composition changed markedly during ripening and showed progressive disappearance of chlorophyll with a concomitant increase in carotenoids until the fully ripe stage. The main fluorescence spectral features belonging to anthocyanins, flavonoids, carotenoids and chlorophyll a after excitation of skin tomato pigments at different laser wavelengths was identified. In comparing, the fluorescence spectral ratios at the excitation wavelength [lambda]exc = 266 nm, significant differences were obtained for the spectral ratios of chlorophyll/flavonoids and carotenoids/chlorophyll. Positive correlation coefficients were found for the carotenoids/flavonoids (0.780) ratios and negative ones for the carotenoids/chlorophyll ratios (-0.513).
Analysis of fluorescence resulted in determination of the most useful laser radiation for remote non-invasive measurements with laser-induced fluoresence (LIF): for the ripening stage, [lambda]exc = 266 nm was the optimal laser wavelength, since the induced fluorescence spectra obtained appeared to differ with the physiological stage of the fruit.
Keywords: Lycopersicon esculentum; Fruit ripening; Skin pigments; Laser-induced fluorescence

M.L. De la Hera, P. Romero, E. Gomez-Plaza, A. Martinez, Is partial root-zone drying an effective irrigation technique to improve water use efficiency and fruit quality in field-grown wine grapes under semiarid conditions?, Agricultural Water Management, Volume 87, Issue 3, 16 February 2007, Pages 261-274, ISSN 0378-3774, DOI: 10.1016/j.agwat.2006.08.001.
(http://www.sciencedirect.com/science/article/B6T3X-4KXF2V3-3/2/e4d21ec179dbf01a628dcc87683d778a)
Abstract:
We investigated the effects of partial root-zone drying (PRD) applied at different periods on leaf water relations, vegetative development, fruit yield, must and wine quality in wine grapes (Vitis vinifera L. cv. Monastrell) during a 3-year field experiment in order to determine the importance of the timing of PRD application on physiological and agronomical vine response under semiarid conditions. Two irrigation treatments were applied: conventional drip irrigation (CI) and PRD. Both

treatments received the same annual water quantity. Each year the PRD treatment was applied at different periods of the growth cycle. In 1999 PRD was applied from veraison to harvest (end July-early September); in 2000 from fruit set to harvest (mid June-early September); and in 2001 PRD from budburst to harvest (mid April-early September). Leaf water relations and gas exchange during the experimental period were not significantly affected by PRD treatment. In 1999 and 2000 there was no significant treatment effect on vegetative development, yield or fruit quality. However, in 2001 (when PRD was applied from budburst to harvest), reproductive and vegetative development was clearly altered in PRD vines. Fruit set percentage and vegetative development (shoot length, pruning weight and primary and lateral leaf area) were significantly increased in PRD vines compared to CI. This resulted in both higher yield (kg per vine) (43%) and water use efficiency (40%) compared to CI vines. Berry number per cluster and cluster weight were also significantly increased in PRD vines. Notwithstanding higher yield in PRD vines and a similar berry size, the must and wine quality was not significantly altered, indicating a higher synthesis and accumulation of photoassimilates and metabolites in the berries of PRD vines. We conclude that there was an positive effect on vegetative and reproductive growth when long-term PRD was applied from the beginning of growing season (budburst), suggesting that early onset of PRD is desirable to intensify PRD response under these semiarid conditions. Nevertheless from these results we need to further investigate the long- and short-term effects of PRD, with moderate water amounts, on vegetative and reproductive development such as flowering and fruit set processes in wine grapes.

Keywords: Leaf water relations; PRD; Vegetative development; Vitis vinifera L.; Yield; Water management; Wine quality

Rafet Aslantas, Ramazan Cakmakci, Fikrettin Sahin, Effect of plant growth promoting rhizobacteria on young apple tree growth and fruit yield under orchard conditions, Scientia Horticulturae, Volume 111, Issue 4, 16 February 2007, Pages 371-377, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.12.016.
(http://www.sciencedirect.com/science/article/B6TC3-4MRND13-4/2/15e3e9da9d7a65d72f75a0267e0617ae)

Abstract:
The effects of rootstocks (M9 and MM 106), cultivars (Granny Smith and Stark Spur Golden) and growth promoting rhizobacteria (OSU-142, OSU-7, BA-8 and M-3) on the tree growth and yield at apple (Malus domestica Borkh) trees were studied in a clay loam soil in the eastern Anatolia region of Turkey in 2002-2004. Plant growth promoting rhizobacteria (PGPR) were capable of producing indole acetic acid (IAA) and cytokinin, but three of them (OSU-7, BA-8 and M-3) were also able to dissolve phosphate. Maximum shoot number of apple trees was found after inoculation with BA-8 followed by OSU-7 and M-3. All the inoculated PGPR strains contributed to the increase in fruit yield of apple when compared to control but it was strongly depended on rootstocks, cultivars and treatments. Plant growth responses were variable and dependent on bacterial strains, rootstock and cultivar and growth parameters evaluated of young apple trees. Newly planted apple trees inoculated with OSU-142, OSU-7, BA-8 and M-3 PGPR increased average shoot length by 59.2, 18.3, 7.0 and 14.3% relative to the control and fruit yield by 116.4, 88.2, 137.5 and 73.7%, respectively. Bacterial inoculation increased shoot diameter from 7.0 to 16.3% when compared to control. The production of plant growth hormones has been suggested as one of the mechanisms by which PGPRs stimulate young apple sapling growth. The growth-promoting effect appears to be direct, with possible involvement of the plant growth regulators indole-3-acetic acid and cytokinin. In view of environmental pollution due to excessive use of fertilizers and high costs of the production of fertilizers, PGPR strains tested in our study have potential to be used for the sustainable and environmentally benign horticultural production.

Keywords: IAA; Cytokinin; Plant growth promoting rhizobacteria; Apple trees; Tree growth; Fruit yield

Carsten Eichberg, Christian Storm, Angelika Schwabe, Endozoochorous dispersal, seedling emergence and fruiting success in disturbed and undisturbed successional stages of sheep-grazed inland sand ecosystems, Flora - Morphology, Distribution, Functional Ecology of Plants, Volume 202, Issue 1, 15 February 2007, Pages 3-26, ISSN 0367-2530, DOI: 10.1016/j.flora.2006.01.004.
(http://www.sciencedirect.com/science/article/B7GX0-4MR1JYS-1/2/b76a9f0d08cfaadbc5d6554ba0de44d9)
Abstract:
This study examines the seedling emergence and fruiting success of plant species endozoochorously dispersed by sheep in a field experiment in a Koelerion glaucae area. We designed a factorial experiment (faeces/soil disturbance/successional stage/year) that mimics sheep-mediated microsites and analysed all occurring vascular plant species from September 2002-December 2004. The faeces samples were collected in the same ecosystem and additionally analysed in a common-garden experiment (seedling emergence potential). According to the latter, 28 vascular plant taxa were identified (on average 124 seedlings per 100 g air-dry sheep faeces). In the field, 15 species emerged directly out of faeces, only five of which were able to set seeds (the threatened species Medicago minima, Phleum arenarium, Silene conica, Vicia lathyroides and the non-threatened Vulpia myuros). Graminoid competitors were not able to set seedlings in the field but did so in the common-garden experiment (mainly Carex hirta). The total numbers of seedlings emerging out of faeces (5% of the potential) and reaching fruit ripeness (0.4%) were very low.
In the stage of seedling emergence, ten of 42 species were significantly influenced by faeces, 11 species by disturbance and two species by an interaction of the two treatment factors (Bromus tectorum, Saxifraga tridactylites). In the fruiting stage, two species profited by faeces (Bromus tectorum, Vulpia myuros) and two species by disturbance (Erophila verna, Corynephorus canescens). Overall, the density and diversity of fruiting individuals were significantly influenced by both treatment factors. The faeces factor showed a strong dependence on year (increasing effect on both dependent variables in the first year, decreasing effect in the second year). The disturbance factor is dependent particularly on successional stage (increasing effect especially in the later successional stage).
Our study revealed the paradox that threatened species with low nutrient demands are the most successful direct colonisers of sheep-faeces deposits. For them to reach the fruiting stage is rare but is of importance if new habitats are to be made accessible.
Keywords: Common-garden experiment; Generative reproduction; Graminoid competitors; Seedling recruitment; Sheep-generated gaps; Stress-tolerant ruderals: S-R

M.S. Hernandez, O. Martinez, J.P. Fernandez-Trujillo, Behavior of araza (Eugenia stipitata Mc Vaugh) fruit quality traits during growth, development and ripening, Scientia Horticulturae, Volume 111, Issue 3, 5 February 2007, Pages 220-227, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.10.029.
(http://www.sciencedirect.com/science/article/B6TC3-4MGVJD3-3/2/6fb809000092818f5d4023e6d2f66140)
Abstract:
The period between fruit set and full ripening of araza fruit grown in the Colombian Amazonia was 55 +/- 5 days. Three stages of a sigmoidal growth were identified and longitudinal and equatorial traits fitted a logistic model better than three-degree polynomial models. Fruit growth clearly exhibited three different physiological stages, identified as follows: S1, involving cellular division during the first 14 days; S2, maximum fruit growth, during which cellular expansion took place (up to day 50), and a final S3 state of 5 days to reach physiological maturity. After this time, the fruit can be harvested with a dull green coloration. Parenchyma was the principal fruit tissue, and no

support tissues (sclerenchyma or collenchyma) were evident. The respiratory pattern of araza fruit was climacteric, with maximum respiration rates of around 200 mg CO2 kg-1 h-1, preceded by a peak of ethylene production (20 [mu]L C4H4 kg-1 h-1), a change in skin color from green to yellow, a total soluble solids value of 5[degree sign]Brix, an increase in the sucrose and fructose content up to 2.8 [mu]mol g-1, a pH which increased to 3 units, and a decrease in titratable acidity to 400 mmol H+ L1-. Malic acid was the main organic acid in the edible pulp and ascorbic acid was present in a concentration of 17.8 [mu]mol g-1. Skin color (as measured by hue angle) combined with titratable acidity and fruit firmness can be recommended as harvest indices for araza fruit.
Keywords: Acidity; Sugars; Ethylene production; Respiration rate; Harvest index; Fruit anatomy; Fruit growth modeling

T. Thomidis, C. Tsipouridis, V. Darara, Seasonal variation of nutrient elements in peach fruits (cv. May Crest) and its correlation with development of Brown rot (Monilinia laxa), Scientia Horticulturae, Volume 111, Issue 3, 5 February 2007, Pages 300-303, ISSN 0304-4238, DOI: 10.1016/j.scienta.2006.10.031.
(http://www.sciencedirect.com/science/article/B6TC3-4MGVJD3-4/2/fb958d4a880505e2e177125ba3c25d5e)
Abstract:
In this study, the seasonal variation of nutrient elements in peach fruits (cv. May Crest) was examined. Generally, peach nutrients content was highest in the first stages of fruit formation (April) and gradually reduced by developing of fruit. The susceptibility of peaches at different growth stages to Monilinia laxa was also investigated. Fruits were susceptible to M. laxa only at harvesting time, namely later from the date in which fruit nutrients content was the lowest showing no correlation with seasonal variation of nutrient elements in peach flesh.
Keywords: Monilinia laxa; Nutrients; Peach; Seasonal variation