Komoditas : KOPI

Record 1
AU: Santa-Cecilia,-L.V.C.; Reis,-P.R.; Souza,-J.C.
TI: About the nomenclature of coffee mealybug species in Minas Gerais and Espirito Santo States, Brazil.
OT: Sobre a nomenclatura das especies de cochonilhas-farinhentas do cafeeiro nos estados de Minas Gerais e Espirito Santo.
SO: Neotrop-entomol. Londrina, PR : Entomological Society of Brazil, 2001-. Apr/June 2002. v. 31 (2) p. 333-334.
LA: Portuguese; Summary in: English
DE: coffea-arabica. coffee-. dysmicoccus-. planococcus-. insect-pests. new-geographic-records. geographical-distribution. taxonomy-. roots-. nomenclature-. planococcus-citri. pseudococcus-. synonyms-. fauna-. surveys-. minas-gerais. espirito-santo.
AB: Root coffee (Coffea arabica L.) mealybugs (Hemiptera: Pseudococcidae) collected in Boa Esperanca, southern Minas Gerais State, were identified as Dysmicoccus texensis (Tinsley) (= bispinosus Beardsley) and these from aerial part collected in Castelo, State of the Espirito Santo, as Planococcus minor (Maskell). However, Brazilian literature mentions other mealybug species of coffee tree as Pseudococcus cryptus Hempel in roots and Planococcus citri (Risso) in the aerial part. Therefore, more than one mealybug species may be occurring in the roots as in aerial part of coffee trees, and the survey and taxonomic studies are necessary before setting a control program, specially biological control.

Record 2
AU: Fragoso,-D.B.; Jusselino-Filho,-P.; Pallini-Filho,-A.; Badji,-C.A.
TI: Action of organophosphate insecticides used to control Leucoptera coffeella (Guerin-Meneville) (Lepidotera: Lyonetiidae) on the predator mite Iphiseiodes zuluagai Denmark & Muma (Acari: Phytoseiidae).
OT: Acao de inseticidas organofosforados utilizados no controle de Leucoptera coffeella (Guerin-Meneville) (Lepidoptera: Lyonetiidae) sobre o acaro predador Iphiseiodes zuluagai Denmark & Muma (Acari: Phytoseiidae).
SO: Neotrop-entomol. Londrina, PR : Entomological Society of Brazil, 2001-. July/Sept 2002. v. 31 (3) p. 463-467.
LA: Portuguese; Summary in: English
DE: coffea-arabica. coffee-. plantation-crops. perileucoptera-coffeella. insect-pests. phytoseiidae-. predatory-mites. biological-control-agents. toxicity-. insect-control. organothiophosphate-insecticides. chlorpyrifos-. disulfoton-. ethion-. parathion-methyl-. pesticidal-action. chemical-control. biological-control. integrated-control. oligonychus-. brevipalpus-phoenicis. prey-. mite-control. female-animals. nontarget-organisms. application-rates. minas-gerais.
AB: Chemical control has been preferentially used to suppress pests by farmers mainly due to low price of the products and immediate action on target organisms. However, wide action range of the compounds, undesirable effects on non target organisms and the contamination of the environment are among the disadvantages of this method of control. This study evaluated the action of the insecticides chlorpyrifos, disulfoton, ethion and methyl-parathion, normally used to control the coffee leaf-miner, Leucoptera coffeella (Guerin-Meneville), on the predaceous mite Iphiseiodes zuluagai Denmark & Muma, a control agent of the phytophagous mites Oligonychus ilicis (McGregor) and Brevipalpus phoenicis (Geijskes) in coffee plantation. Discriminatory concentrations (LC(99)), established on the 3rd instar of L. coffeella, by means of the method of dry insecticide residues impregnated in filter paper, were used to verify the selectivity of the insecticides on the predaceous mite. The insecticide chlorpyrifos caused 100% of mortality in I. zuluagai. Ethion and methyl-parathion showed mortality of 34% and 19%, respectively. Disulfoton presented the highest selectivity for the mite, with no lethal action on the predator. The

different effects found on the insecticides' action show that it is possible to use the selective insecticides in coffee plantation to preserve populations of I. zuluagai, thus favouring the biological control on phytophagous mite.

Record 3
AU: Hirose,-E.; Neves,-P.M.O.J.
TI: Technique for rearing and maintenance of the coffee berry borer, Hypothenemus hampei (Ferrari) (Coleoptera: Scolytidae).
OT: Tecnica para criacao e Manutencao da Broca-do-Cafe, Hypothenemus hampei (Ferrari) (Coleoptera: Scolytidae), em Laboratorio.
SO: Neotrop-entomol. Londrina, PR : Entomological Society of Brazil, 2001-. Jan/Mar 2002. v. 31 (1) p. 161-164.
LA: Portuguese; Summary in: English
DE: coffea-arabica. coffee-. hypothenemus-hampei. insect-pests. mass-rearing. laboratory-rearing. bioassays-. entomogenous-fungi. brazil-.
AB: A laboratory rearing technique of Hypothenemus hampei (Ferrari) on natural diet, with fast and easy maintenance and reduced mechanical damage to insects was developed. The technique is suitable for producing insects to be used on bioassays for entomopathogenic fungi selection, because no antibiotics are added to the diet. The rearing containers are made with PVC tubes (diameter 10 cm x 25 cm length) and PVC caps; a nylon mesh (3 mm) is adapted to the lower part of the container to facilitate the collection of insects. From 350 to 400 ripe and bored coffee fruits should be put in each container. Every 48h, 30-120 insects/container can be collected and used in bioassays or the rearing maintenance. This technique allows obtaining great number of borers in natural diet, with low manipulation and high productivity.

Record 4
AU: Nair,-J.R.; Singh,-G.; Sekar,-V.
TI: Isolation and characterization of a novel Bacillus strain from coffee phyllosphere showing antifungal activity.
SO: J-appl-microbiol. Oxford, U.K. : Blackwell Science Ltd. 2002. v. 93 (5) p. 772-780.
LA: English
DE: bacillus-. phylogeny-. nucleotide-sequences. antifungal-properties. coffea-canephora. karnataka-.
ID: bacillus-mojavensis. molecular-sequence-data.
CC: F821; F831
AB: Aims: The isolation and characterization of a novel coffee-associated Bacillus mojavensis strain, designated as strain AB1, and its survival on the coffee phyllosphere. Methods and Results: A pair of 16S rDNA primers was designed to amplify a highly variable region within the 16S rDNA gene of Bacillus spp., with the purpose of identifying the AB1 isolate through PCR and sequence analysis. By this method, AB1 was identified as a strain of B. mojavensis. Bioassays were carried out to characterize the broad spectrum antifungal activity of AB1. Plant colonization studies revealed that AB1 could colonize the coffee phyllosphere better than Bacillus thuringiensis. Conclusions: These studies suggest that AB1 could be a new strain of B. mojavensis. AB1 is also shown to have antifungal activity against a wide spectrum of pathogenic fungi. The antifungal metabolite of AB1 has been partially characterized as a thermostable, protease- and alkali-resistant substance that is secreted into the surrounding medium. Significance and Impact of the Study: As far as is known, this is the first strain of B. mojavensis which has been identified as inhabiting the coffee phyllosphere. The study highlights the potential use of AB1 as an antifungal agent in the coffee crop and as a delivery agent of the insecticidal toxin of B. thuringiensis to the coffee phyllosphere. The 16S rRNA identification strategy discussed could also be used in the identification of other new Bacillus strains.

Record 5
AU: Howard,-R.W.; Perez-Lachaud,-G.

TI: Cuticular hydrocarbons of the ectoparasitic wasp Cephalonomia hyalinipennis (Hymenoptera: Bethylidae) and its alternative host, the stored product pest Caulophilus oryzae (Coleoptera: Curculionidae).
SO: Arch-insect-biochem-physiol. New York, N.Y. : Wiley-Liss. June 2002. v. 50 (2) p. 75-84.
LA: English
DE: cephalonomia-. curculionidae-. hypothenemus-hampei. parasitoids-. parasites-of-insect-pests. animal-cuticle. chemical-composition. hydrocarbons-. age-differences. sex-differences. species-differences. mating-. host-parasite-relationships. alternative-hosts. chemical-ecology. stored-products-pests.
AB: Cuticular hydrocarbons of an ectoparasitic wasp attacking two beetle hosts have been identified and examined for the influence of age, gender, mating status, and host on hydrocarbon composition. The 37 wasp hydrocarbons identified consisted of a series of n-alkanes (C16 to C33), 3-, 5-, 9-, 10-, 11-, and 12-methyl alkanes and a series of Z-7 and Z-9 monoenes (C23:1 to C27:1). One C25:2 diene was found. No effects of hydrocarbon composition as a function of age, gender, or mating status were found for the wasps. Wasps reared on Hypothenemus hampei, however, had 12/37 significant abundance differences to those reared on Caulophilus oryzae, although all but one of these differences were for components in less than 2% relative abundance. The C25:2 diene from wasps reared on H. hampei was present in about 10% whereas from wasps reared on C. oryzae it was present in about 2%. The hydrocarbons of one host for this wasp, the coffee berry borer (Coleoptera: Scolytidae), have been previously reported [Howard and Infante, Ann. Entomol. Soc. Am. 89:700-709 (1996)]. The hydrocarbons of the alternative host, C. oryzae (Coleoptera: Curculionidae) consists of n-alkanes (C17 to C31), 3-, 4-, 5-, 7-, 9-, 11-, 12-, 13-, 14-, and 15-methyl alkanes, and a series of dimethyl alkanes of the series 3, 17-; 5, 11-; 5, 17-; 7, 11-; 7, 13-; 13, 17-; and 15, 19-. No unsaturated hydrocarbons were found. No significant differences in hydrocarbon composition were found between male and female C. oryzae. Hydrocarbon patterns of four species of Cephalonomia are compared and shown to be species-specific. The data are discussed in terms of ecological and physiological parameters.

Record 6
AU: Damon,-A.; Valle,-J.
TI: Comparison of two release techniques for the use of Cephalonomia stephanoderis (Hymenoptera: Bethylidae), to control the coffee berry borer Hypothenemus hampei (Coleoptera: Scolytidae) in Soconusco, southeastern Mexico.
SO: Biol-control. Orlando, Fla. : Academic Press. June 2002. v. 24 (2) p. 117-127.
LA: English
DE: cephalonomia-. parasitoids-. parasitoid-augmentation. release-techniques. adults-. cultures-. comparisons-. host-parasite-relationships. parasitism-. predation-. mortality-. parasites-of-insect-pests. biological-control-agents. insect-control. coffea-arabica. mexico-.
AB: Cephalonomia stephanoderis Betrem (Hymenoptera: Bethylidae) is one of the few known natural enemies of the coffee berry borer (CBB), Hypothenemus hampei Ferrari (Coleoptera: Scolytidae), the most important pest of coffee throughout the world. The response of this parasitoid to its host, in field cages and small field sites, was shown to be highly variable and unpredictable and between 62% and 96% of all parasitoids released did not enter a target CBB-infested coffee berry. The parasitoid did not respond differently to aggregations of 2, 6, or 12 CBB-infested berries. However, the performance of C. stephanoderis released as a culture of parasitized hosts was up to five times better than when the parasitoid was released in the traditional manner as adults because a greater proportion of the parasitoids released as a culture entered and remained within target berries. Individual performance was, however, similar for both release methods; a single parasitoid killed, on average, by a combination of parasitism and predation, between 3.75 and 18.74 individual CBB. The release of C. stephanoderis as a culture offers an important step forward in the technology for the use of this parasitoid. However, estimates indicate that, even when

released as a culture, very large numbers of parasitoids (e.g., 59 million per hectare, to control a 65% CBB infestation in a densely planted, productive plantation, towards harvest time) would be necessary to control CBB. This method of CBB control is unlikely therefore to be economically viable.

Record 7
AU: Sobolik,-V.; Zitny,-R.; Tovcigrecko,-V.; Delgado,-M.; Allaf,-K.
TI: Viscosity and electrical conductivity of concentrated solutions of soluble coffee.
SO: J-food-eng. Oxford : Elsevier Science Ltd. Feb 2002. v. 51 (2) p. 93-98.
LA: English
DE: coffee-. viscosity-. electrical-conductivity. concentration-. temperature-. mass-. mathematical-models. equations-. flow-.
AB: Viscosity of concentrated aqueous solutions (omega = 0.5-0.8) of soluble coffee was measured in the temperature range 25-95 degrees C. After some time of the shear application in the viscometer and passing a temperature of 95 degrees C, the rheological behaviour was found to be Newtonian. The viscosity was correlated by a five parameter function of coffee mass fraction and temperature. Specific electrical conductivity of coffee solutions in tap water (omega = 0-0.8) was measured in the temperature range 25-72 degrees C. A seven parameter model based on the assumption that the solution is composed of a partially dissociated species and water describes very well the measured data. A modified Casteel-Amis model equation has been identified for comparison. The conductivity dependence on mass fraction exhibits maxima, which are shifted towards higher concentrations the higher is the temperature. Viscosity, refractivity index, density and thermal conductivity of aqueous coffee solutions (omega = 0-0.5) are reviewed.

Record 8
AU: Silva,-M.C.; Nicole,-M.; Guerra-Guimaraes,-L.; Rodrigues,-C.J.-Jr.
TI: Hypersensitive cell death and post-haustorial defence responses arrest the orange rust (Hemileia vastatrix) growth in resistant coffee leaves.
SO: Physiol-mol-plant-pathol. London ; Orlando : Academic Press, c1986-. Apr 2002. v. 60 (4) p. 169-183.
LA: English
DE: coffea-arabica. coffea-congensis. hemileia-vastatrix. disease-resistance. leaves-. defense-mechanisms. apoptosis-. haustoria-. rust-diseases. growth-. spore-germination. appressoria-. stomata-. callose-. enzyme-activity. phenolic-compounds.
AB: The growth of a coffee orange rust fungus (Hemileia vastatrix Berk and Br.) isolate (race II) and the sequence of responses it induced in leaves of resistant Coffea arabica L. and C. congensis Froehner as well as on a susceptible C. arabica were investigated cytologically and biochemically. The percentages of germinated urediospores and of appressoria formed over stomata as well as the fungal growth inside leaf tissues were similar in resistant and susceptible leaves until the 3rd day after the inoculation. In the susceptible leaves, at the majority of the infection sites (70%) the fungus pursued its growth without apparent inhibition while in the resistant leaves the fungus ceased its growth with higher frequency (34 in C. arabica and 54% in C. congensis) after the formation of at least one haustorium. The first signs of incompatibility, detected 2 days after the inoculation, were cytologically expressed by hypersensitive host cell death (HR), host cell wall autofluorescence and haustoria encasement with callose and beta-1,4-glucans. Biochemically, two peaks of phenylalanine ammonia-lyase (PAL) activity were detected by 2 and 5 days after the inoculation. The 1st peak coincided with the early accumulation of phenolic compounds and with the beginning of cell death. The 2nd peak could be related to later accumulation of phenols and the lignification of the host cell walls. About 5-7 days after the inoculation, ultrastructural observations revealed the accumulation of a material partially crystallized in the intercellular spaces around the senescent hyphae, next to

dead host cells and in close association with the middle lamella that initially labelled for pectins. It also contained.
polysaccharides and phenolic-like compounds. Cellulose, hemicellulose, extensins, hydroxyproline-rich glycoproteins and proteins were not detected. The hypertrophy of the host cells in the infection area were also observed around 12 days after the inoculation corresponding macroscopically to the reaction flt. In susceptible plants, cell death was also observed 3 days after the inoculation but only in a reduced percentage of infection sites in which the fungus aborted at an early stage. A late haustorium encasement and stimulation of PAL activity were also observed but these delayed host responses did not prevent fungal growth and sporulation. The intercellular material, only observed in the resistant plants, is here reported for the first time and although its role is unknown it might be the result of plant cell death.

Record 9
AU: Charurin,-P.; Ames,-J.M.; Del-Castillo,-M.D.
TI: Antioxidant activity of coffee model systems.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. June 19, 2002. v. 50 (13) p. 3751-3756.
LA: English
DE: coffee-. simulation-. chlorogenic-acid. sucrose-. cellulose-. arginine-. amino-acid-derivatives. roasting-. oxidation-. inhibition-. free-radicals. chemical-reactions.
AB: Coffee model systems prepared from combinations of chlorogenic acid (CGA), N(alpha)-acetyl-1-arginine (A), sucrose (S), and cellulose (C) were roasted at 240 degrees C for 4 min prior to analysis by UV-visible spectrophotometry, capillary zone electrophoresis (CZE), and the ABTS radical cation decolorization assay. The A/CGA/S/C and A/S/C systems were also fractionated by gel filtration chromatography. Antioxidant activity of the systems showed a positive, nonlinear relationship with the amount of CGA remaining after roasting. Sucrose degradation was a major source of color in the heated systems. There was no relationship between antioxidant activity and color generation.

Record 10
AU: Del-Castillo,-M.D.; Ames,-J.M.; Gordon,-M.H.
TI: Effect of roasting on the antioxidant activity of coffee brews.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. June 19, 2002. v. 50 (13) p. 3698-3703.
LA: English
DE: coffee-. roasting-. beans-. extracts-. organic-compounds. molecular-weight. oxidation-. inhibition-.
AB: Colombian Arabica coffee beans were roasted to give light, medium, and dark samples. Their aqueous extracts were analyzed by gel filtration chromatography, UV-visible spectrophotometry, capillary electrophoresis, and the ABTS(radical+) assay. A progressive decrease in antioxidant activity (associated mainly with chlorogenic acids in the green beans) with degree of roasting was observed with the simultaneous generation of high (HMM) and low molecular mass (LMM) compounds possessing antioxidant activity. Maximum antioxidant activity was observed for the medium-roasted coffee; the dark coffee had a lower antioxidant activity despite the increase in color. Analysis of the gel filtration chromatography fractions showed that the LMM fraction made a greater contribution to total antioxidant activity than the HMM components.

Record 11
AU: Mattila,-P.; Kumpulainen,-J.
TI: Determination of free and total phenolic acids in plant-derived foods by HPLC with diode-array detection.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. June 19, 2002. v. 50 (13) p. 3660-3667.
LA: English

DE: hplc-. phenolic-acids. fruit-. vegetables-. wines-. fruit-juices. bakery-products. coffee-.
CC: Q504; Q505; Q500
AB: A high-performance liquid chromatographic (HPLC) method with diode-array detection (DAD) was used to identify and quantify free and total phenolic acids (m-hydroxybenzoic acid, p-hydroxybenzoic acid, protocatechuic acid, gallic acid, vanillic acid, syringic acid, o-coumaric acid, m-coumaric acid, p-coumaric acid, caffeic acid, ferulic acid, sinapic acid, chlorogenic acid, and ellagic acid) in plant foods. Free phenolic acids were extracted with a mixture of methanol and 10% acetic acid. Bound phenolic acids were liberated using first alkaline and then acid hydrolysis followed by extraction with diethyl ether/ethyl acetate (1:1). All fractions were quantified separately by HPLC. After HPLC quantification, results of alkali and acid hydrolysates were calculated to represent total phenolic acids. Ellagic acid was quantified separately after long (20 h) acid hydrolysis. The methods developed were effective for the determination of phenolic acids in plant foods. DAD response was linear for all phenolic acids within the ranges evaluated, with correlation coefficients exceeding 0.999. Coefficients of variation for 4-8 sample replicates were consistently below 10%. Recovery tests of phenolic acids were performed for every hydrolysis condition using several samples. Recoveries were generally good (mean >90%) with the exceptions of gallic acid and, in some cases, caffeic acid samples.

Record 12
AU: Barry-Etienne,-D.; Bertrand,-B.; Schlonvoigt,-A.; Etienne,-H.
TI: The morphological variability within a population of coffee somatic embryos produced in a bioreactor affects the regeneration and the development of plants in the nursery.
SO: Plant-cell,-tissue-organ-cult. Dordrecht, The Netherlands : Kluwer Academic Publishers. Feb 2002. v. 68 (2) p. 153-162.
LA: English
DE: coffea-arabica. somatic-embryogenesis. acclimatization-. plant-embryos. germination-. roots-. growth-. cotyledons-. plant-morphology. bioreactors-. regenerative-ability. field-tests. micropropagation-. methodology-.
AB: A 1-liter bioreactor was used to obtain approximatively 800 Coffea arabica somatic embryos, 86% of which reached the 'germinated' stage but with morphological heterogeneity. The population was sub-divided into three categories according to cotyledon area: 'small', 'medium' and 'large', that amounted to 32%, 36% and 4.5%, respectively. The effect of embryo morphology on plantlet conversion after direct sowing in soil and on plant development in the nursery was investigated. Somatic embryos with large cotyledons had only a 25% plantlet conversion rate, whereas somatic embryos with small to medium-sized cotyledons had conversion rates of 47% and 63%, respectively. The vigour of the aerial and root systems of regenerated plantlets at the end of the plant conversion stage was also affected as the embryos with small, medium and large cotyledon mostly regenerated small plantlets (0.5-1.5 cm), medium plantlets (1.5-2.5 cm) and large plantlets (2.5-5 cm), respectively. When transplanted in plastic bags, these 3 populations of plantlets exhibited distinct development rates. They had an initial slow growth phase, which was much longer for the small plantlets, followed by a rapid growth phase. After 40 weeks in the nursery, an analysis of the growth parameters of aerial and radical systems showed that the vigour of the plants was strongly related to the vigour of the plantlets transplanted. The heterogeneity of somatic embryos in the bioreactor affected both the plant conversion efficiency in soil and the plant growth in nursery, where it mainly resulted in retarded growth, primarily in plantlets derived from the somatic embryos with small cotyledons.

Record 13
AU: Ulloa-R,-J.B.; Verreth,-J.A.J.

TI: Growth, feed utilization and nutrient digestibility in tilapia fingerlings (Oreochromis aureus Steindachner) fed diets containing bacteria-treated coffee pulp.
SO: Aquac-res. Oxford : Blackwell Science, c1995-. Feb 2002. v. 33 (3) p. 189-195.
LA: English
DE: oreochromis-aureus. growth-. feed-intake. feed-conversion-efficiency. digestibility-. coffee-pulp. processing-. bacteria-. evaluation-. liveweight-. growth-rate. protein-efficiency-ratio. protein-utilization. dry-matter. protein-digestibility. survival-. fiber-.
AB: The effectiveness of bacteria treated-coffee pulp (BT-CoP) in fish diets was evaluated in a feeding trial with Oreochromis aureus (Steindachner) fingerlings. Five diets were formulated to contain 0%, 6%, 12%, 18% and 24% BT-CoP, replacing wheat meal. Fish were reared in a recirculating unit consisting of 16 aquaria. Each aquarium was stocked with 10 fish of 1.1-2.4 g. Fish were fed ad libitum twice daily (10 and 15 h) for 4 weeks. Fish fed diets without BT-CoP and with 6% BT-CoP showed similar growth (body weight, growth rate: RGRm) and feed utilization (feed conversion ratio, protein efficiency ratio, apparent net protein utilization). Diets containing 0% and 6% BT-CoP gave similar dry matter and protein digestibility coefficients, but dietary BT-CoP levels higher than 6% produced lower digestibility values, except for carbohydrate. It is concluded that 0. aureus fingerlings may assimilate only small amounts (6%) of BTCoP in the diets without adverse effects on growth and feed utilization parameters. The CoP-containing diets did not affect fish survival (100%). The depression in tilapia performance may be associated mainly with the high level of fibre present in the CoP diets.

Record 14
AU: Webb,-B.L.; Hanks,-D.H.; Jolley,-V.D.
TI: A pressurized hot water extraction method for boron.
SO: Commun-soil-sci-plant-anal. Monticello, N.Y. : Marcel Dekker Inc. 2002. v. 33 (1/2) p. 31-39.
LA: English
DE: boron-. soil-fertility. soil-analysis. extraction-. hot-water-treatment. pressure-treatment. extractants-. equipment-. arid-soils. spectrometry-.
ID: expresso-machines.
CC: J500
AB: Extracting boron (B) to predict plant availability in arid soils is a tedious soil test procedure, and an inexpensive, rapid alternative would be welcomed. This paper compares the results of tests conducted with pressurized hot water and conventional boiling hot water extraction of soil B. The time required for pressurized hot water extraction varied with each soil, but averaged 1.0 min per sample compared 10 min per sample for the standard boiling hot water technique. A Maxim EX-450 model espresso machine producing water at 90 degrees C was used to extract B from 40 arid zone soils. Resulting aliquots were analyzed by ICP spectrometry. The measured values of B with pressurized hot water extraction were higher than with the boiling hot water extraction. There was a high and significant correlation between B values using the boiling hot water extraction and the pressurized hot water extraction [r = +0.83 (p = 0.001)]. A regression equation y = 0.12217 + 0.21155x(r2 = 68) (y is mg kg(-1) boiling hot water extractable B and x is mg kg(-1) pressurized hot water extractable B) converts pressurized hot water readings to standard values already correlated with field response. Also tested were three espresso machines from different manufacturers (Krups, Mr. Coffee and Maxim) testing five widely divergent soils and found similar B extraction with each espresso machine. This pressurized hot water extraction procedure provides a much needed simplification for measuring B in soils, but currently the concentration must be determined with ICP rather than colorimetric measurement because of color interference.

Record 15

AU: Thompson,-F.E.; Subar,-A.F.; Brown,-C.C.; Smith,-A.F.; Sharbaugh,-C.O.; Jobe,-J.B.; Mittl,-B.; Gibson,-J.T.; Ziegler,-R.G.
TI: Cognitive research enhances accuracy of food frequency questionnaire reports: results of an experimental validation study.
SO: J-Am-Diet-Assoc. Chicago, IL : The American Dietetic Association. Feb 2002. v. 102 (2) p. 212-218, 223-225.
LA: English
DE: adults-. dietary-surveys. food-intake. errors-. data-collection. techniques-. evaluation-. foods-. questionnaires-. calibration-.
AB: Objective: To test whether changing a food frequency questionnaire (FFQ) on the basis of cognitive theory and testing results in greater accuracy. Accuracy was examined for 4 design issues: a) Grouping: asking about foods in a single vs multiple separate questions; b) different forms of a food: asking consumption frequency of each form of a food (eg, skim, 2%, whole milk) vs a nesting approach-asking frequency of the main food (eg, milk) and proportion of times each form was consumed; c) additions (eg, sugar to coffee): asking independent of the main food vs nested under the main foods; d) units: asking frequency and portion size vs frequency of units (eg, cups of coffee). Design: Participants in two randomly assigned groups completed 30 consecutive daily food reports (DFRs), followed by 1 of 2 FFQs that asked about foods consumed in the past month. One was a new, cognitively-based National Cancer Institute (NCI) Diet History Questionnaire; the other was the 1992 NCI-Block Health Habits and History Questionnaire. Subjects/setting: 623 participants, age range 25 to 70 years, from metropolitan Washington, DC. Statistical analyses performed: Accuracy was assessed by comparing DFR and FFQ responses using categorical (percent agreement) and continuous (rank order correlation, discrepancy scores) agreement statistics. Results: Grouping: accuracy was greater using separate questions. Different forms of food: accuracy was greater using nesting. Additions: neither approach was consistently superior; accuracy of the addition report was affected by accuracy of the main food report. Units: both approaches were similarly accurate. Conclusions: Accuracy of FFQ reporting can be.
improved by restructuring questions based on cognitive theory and testing.

Record 16
AU: Mosdol,-A.; Christensen,-B.; Retterstol,-L.; Thelle,-D.S.
TI: Induced changes in the consumption of coffee alter ad libitum dietary intake and physical activity level.
SO: Br-j-nutr. London, U.K. : CAB International. Mar 2002. v. 87 (3) p. 261-266.
LA: English
DE: coffee-. food-intake. diet-. physical-activity. leisure-behavior. foods-. men-. women-. sex-differences. energy-intake. nutrient-intake. norway-.
AB: Dietary trials with subjects on a freely selected diet may be affected by unwanted behavioural changes. Few studies, if any, have examined changes in coffee consumption and possible concomitant changes in diet and health-related habits. The aim of the present study was to examine whether induced changes in coffee consumption lead to changes in food habits and leisure-time physical activity. Healthy, non-smoking coffee-drinkers (n 214) were asked to change their coffee habits in a controlled clinical trial on the metabolic effects of coffee. The participants were asked to maintain their usual dietary habits. Self-perceived changes in diet and physical activity during the 6-week intervention period were assessed at the end. In the analyses, the participants were rearranged into groups reflecting the difference in coffee intake during the trial as compared with habitual intake. Associations with changes in food intake or physical activity were analysed by Spearman rank correlation. Changes in intake of 'chocolate, sweets' (r 0.179, $P<0.05$), 'cakes, sweet biscuits, pastry' (r 0.306, $P<0.001$), and 'jam' (r 0.198, $P<0.05$) showed positive associations with change in coffee intake during the trial. Negative associations were found for 'dishes with fish' (r -0.204, $P<0.01$) and many of the drinks as well as with physical activity (r -0.164, $P<0.05$). Induced changes

in coffee intake seem to alter ad libitum intake of several foods. The recognized associations between health behaviours may have physiological explanations.

Record 17
AU: Counet,-C.; Callemien,-D.; Ouwerx,-C.; Collin,-S.
TI: Use of gas chromatography-olfactometry to identify key odorant compounds in dark chocolate. Comparison of samples before and after conching.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Apr 10, 2002. v. 50 (8) p. 2385-2391.
LA: English
DE: chocolate-. gas-chromatography. smell-. volatile-compounds. aroma-. flavor-. food-processing. heat-treatment.
AB: After vacuum distillation and liquid-liquid extraction, the volatile fractions of dark chocolates were analyzed by gas chromatography-olfactometry and gas chromatography-mass spectrometry. Aroma extract dilution analysis revealed the presence of 33 potent odorants in the neutral/basic fraction. Three of these had a strong chocolate flavor: 2-methylpropanal, 2-methylbutanal, and 3-methylbutanal. Many others were characterized by cocoa/praline-flavored/nutty/coffee notes: 2,3-dimethylpyrazine, trimethylpyrazine, tetramethylpyrazine, 3(or 2),5-dimethyl-2(or 3)-ethylpyrazine, 3,5(or 6)-diethyl-2-methylpyrazine, and furfurylpyrrole. Comparisons carried out before and after conching indicate that although no new key odorant is synthesized during the heating process, levels of 2-phenyl-5-methyl-2-hexenal, Furaneol, and branched pyrazines are significantly increased while most Strecker aldehydes are lost by evaporation.

Record 18
AU: Kuiper,-W.E.; Meulenberg,-M.T.G.
TI: Vertical price leadership: a cointegration analysis.
SO: Agribusiness. New York : John Wiley & Sons, Inc. Summer 2002. v. 18 (3) p. 317-331.
LA: English
DE: food-products. wholesale-prices. retail-marketing. supply-. costs-. demand-. consumer-prices. price-formation. dynamic-models. marketing-channels. profitability-. retail-prices. trends-. errors-. coffee-. potatoes-. netherlands-.
AB: Here we detail a method to test whether or not retailers allow suppliers to set the wholesale price not only on the basis of the costs faced by the suppliers but also on the basis of consumer demand. Using standard theory, long-run price relationships between the stages in the channel are derived. Next, these static price relationships are imposed on a dynamic model to be tested for cointegration and long-run noncausality, embedding the hypotheses on vertical price leadership. To derive the testable implications of these hypotheses, we show that the common stochastic trend and long-run equilibrium error must explicitly be assigned to variables in the channel model. The model is particularly relevant for industries characterized by a low degree of product differentiation. An empirical application to two Dutch marketing channels for food products gives comprehensible results.

Record 19
AU: Blank,-I.; Pascual,-E.C.; Devaud,-S.; Fay,-L.B.; Stadler,-R.H.; Yeretzian,-C.; Goodman,-B.A.
TI: Degradation of the coffee flavor compound furfuryl mercaptan in model Fenton-type reaction systems.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Apr 10, 2002. v. 50 (8) p. 2356-2364.
LA: English
DE: coffee-. flavor-compounds. thiols-. chemical-degradation. hydrogen-peroxide. ferrous-ions. ascorbic-acid. edta-. volatile-compounds. free-radicals. oxidation-.

AB: The stability of the coffee flavor compound furfuryl mercaptan has been investigated in aqueous solutions under Fenton-type reaction conditions. The impact of hydrogen peroxide, iron, ascorbic acid, and ethylenediaminetetraacetic acid was studied in various combinations of reagents and temperature. Furfuryl mercaptan reacts readily under Fenton-type reaction conditions, leading to up to 90% degradation within 1 h at 37 degrees C. The losses were lower when one or more of the reagents was omitted or the temperature decreased to 22 degrees C. Volatile reaction products identified were mainly dimers of furfuryl mercaptan, difurfuryl disulfide being the major compound. In addition, a large number of nonvolatile compounds was observed with molecular masses in the range of 92-510 Da. The formation of hydroxyl and carbon-centered radicals was indicated by electron paramagnetic resonance spectra using alpha-(4-pyridyl-1-oxide)-N-tert-butylnitrone or 5-(diethoxyphosphoryl)-5-methyl-1-pyrroline-N-oxide as spin traps. Whereas hydroxyl radical was generated by Fenton-type reactions, the C-centered radical is probably a secondary product of the reaction of hydroxyl radical with various organic molecules, the reaction with furfuryl mercaptan appearing to be the most important. No evidence for S-centered radicals was seen in the spin-trapping experiments, but a sulfur-containing radical was detected when measurements were made at 77 K in the absence of spin traps.

Record 20
AU: Charlton,-A.J.; Farrington,-W.H.H.; Brereton,-P.
TI: Application of 1H NMR and multivariate statistics for screening complex mixtures: quality control and authenticity of instant coffee.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. May 22, 2002. v. 50 (11) p. 3098-3103.
LA: English
DE: instant-coffee. nuclear-magnetic-resonance-spectrum. hydrogen-. principal-component-analysis. discriminant-analysis. food-quality. quality-controls. hmf-.
AB: Principal components analysis (PCA) followed by linear discriminant analysis (LDA) of the nuclear magnetic resonance (NMR) spectra from 98 instant spray-dried coffees, obtained from 3 different producers, correctly attributed 99% of the samples to their manufacturer. Blind testing of the PCA model with a further 36 samples of instant coffee resulted in a 100% success rate in identifying the samples from the 3 manufacturers. Coffees from one manufacturer were also assigned into 2 groups using these techniques, and the compound 5-(hydroxymethyl)-2-furaldehyde was identified as the primary marker of differentiation.

Record 21
AU: Bicchi,-C.; Iori,-C.; Rubiolo,-P.; Sandra,-P.
TI: Headspace sorptive extraction (HSSE), stir bar sorptive extraction (SBSE), and solid phase microextraction (SPME) applied to the analysis of roasted Arabica coffee and coffee brew.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Jan 30, 2002. v. 50 (3) p. 449-459.
LA: English
DE: coffee-. beans-. roasting-. extraction-. volatile-compounds. laboratory-equipment.
AB: Headspace sorptive extraction (HSSE) and stir bar sorptive extraction (SBSE), two recently introduced solventless enrichment techniques, have been applied to the analysis of the headspace of Arabica roasted coffee and of the headspace of the brew and of the brew itself. In both HSSE and SBSE enrichment is performed on a thick film of poly(dimethylsiloxane) (PDMS) coated onto a magnet incorporated in a glass jacket. Sampling is done by placing the PDMS stir bar in the headspace (gas phase extraction or HSSE) or by immersing it in the liquid (liquid phase extraction or SBSE). The stir bar is then thermally desorbed on-line with capillary GC-MS. The performance of HSSE and SBSE have been compared through the determination of the recoveries and relative abundances of 16 components of the coffee volatile fraction to classical static headspace (S-HS) and to headspace and in-sample solid phase microextraction (HS-

SPME and IS-SPME, respectively) applying the fibers PDMS 100 micrometer, Carbowax/divinylbenzene 65 micrometer (CW/DVB), Carboxen/PDMS 75 micrometer (CAR/PDMS), polyacrylate 85 micrometer (PA), PDMS/divinylbenzene 65 micrometer (PDMS/DVB), and Carboxen/divinylbenzene/PDMS 50-30 micrometer (CAR/PDMS/DVB). In all cases, HSSE and SBSE gave higher recoveries, and this is entirely due to the high amount of PDMS applied.

Record 22
AU: Jham,-G.N.; Fernandes,-S.A.; Garcia,-C.F.; Silva,-A.A.-da.
TI: Comparison of GC and HPLC for the quantification of organic acids in coffee.
SO: Phytochem-anal. Chichester, Sussex, UK : Wiley, c1990-. Mar/Apr 2002. v. 13 (2) p. 99-104.
LA: English
DE: coffee-. food-composition. oxalic-acid. succinic-acid. malic-acid. fumaric-acid. tartaric-acid. citric-acid. quinic-acid. organic-acids. quantitative-analysis. gas-chromatography. hplc-.
AB: A GC and an HPLC method for the quantification of organic acids OAs in coffee have been compared. The GC procedure, employing trimethylsilyl derivatives, was found to be very tedious. The HPLC method, which employed an ion exchange column using a flow gradient of water containing 1% phosphoric acid and UV detection (210 nm), was found to be much simpler for the quantification of eight organic acids (oxalic, succinic, fumaric, malic, tartaric, citric, quinic and fumaric acids) in four representative coffee samples. The HPLC procedure was more convenient than that described in the literature since no pre-purification was required for quantification of the OAs.

Record 23
AU: Avallone,-S.; Brillouet,-J.M.; Guyot,-B.; Olguin,-E.; Guiraud,-J.P.
TI: Involvement of pectolytic micro-organisms in coffee fermentation.
SO: Int-j-food-sci-technol. Oxford : Blackwell Scientific Ltd. Feb 2002. v. 37 (2) p. 191-198.
LA: English
DE: coffea-arabica. fermentation-. erwinia-herbicola. klebsiella-pneumoniae. pectate-lyase. pectins-. mucilages-. chemical-reactions. ph-. leuconostoc-mesenteroides. lactobacillus-brevis. polygalacturonase-. food-processing.
AB: During the fermentation of Coffea arabica L., the most frequently found pectolytic bacteria were Erwinia herbicola and Klebsiella pneumoniae. These micro-organisms produce pectatelyase which is unable to depolymerize esterified pectins of mucilage without previous de-esterification. Furthermore, the optimal activities are observed at pH 8.5 whereas fermentation conditions are acidic (5.3-3.5). The major lactic acid bacteria, Leuconostoc mesenteroides, do not produce pectolytic enzymes. Only a Lactobacillus brevis strain, rarely isolated with a low frequency, shows a polygalacturonase activity compatible with fermentation conditions. Mucilage decomposition seems to be correlated to acidification and not to enzymatic pectolysis. Inoculation with pectolytic micro-organisms allows microbiological control of the fermentation but does not speed up the process. It would be preferable to use lactic acid bacteria so that the pH remained as close as possible to natural fermentation, where acidification is important. This practice would standardize the coffee fermentation microflora and therefore control the end product quality.

Record 24
AU: Morales,-F.J.; Babbel,-M.B.
TI: Antiradical efficiency of Maillard reaction mixtures in a hydrophilic media.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. May 8, 2002. v. 50 (10) p. 2788-2792.
LA: English
DE: maillard-reaction. glucose-. lactose-. amino-acids. coffee-. maillard-reaction-products. inhibition-. free-radicals.

AB: The Maillard reaction (MR) has a clear impact in food science, nutrition, and medical research. Free radical scavenging capacities of several MR mixtures made from single combinations of glucose or lactose and amino acids (gly, his, lys, trp, met, and cys) were evaluated by using the N,N-dimethyl-p-phenylenediamine radical cation assay. Medium-roasted coffee brew was used as reference of a thermally processed food. A novel approach has been applied in order to get more information about the kinetic behavior of the radical scavenging properties of MR mixtures in a watery environment. Antiradical efficiency (AE) concept has been applied, and it takes into consideration the reaction time, apart from the amount of antioxidant necessary to decrease by 50% the radical initial concentration (EC50). Cysteine and histidine reveal as powerful amino acids to exert a high AE in the MR mixtures. No relationship between AE parameter and browning was observed.

Record 25
AU: Anderson,-K.A.; Smith,-B.W.
TI: Chemical profiling to differentiate geographic growing origins of coffee.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Mar 27, 2002. v. 50 (7) p. 2068-2075.
LA: English
DE: coffee-. chemical-composition. elements-. geographical-variation. identification-. provenance-. neural-networks. principal-component-analysis. discriminant-analysis. indonesia-. east-africa. central-america. south-america.
AB: The objective of this research was to demonstrate the feasibility of this method to differentiate the geographical growing regions of coffee beans. Elemental analysis (K, Mg, Ca, Na, Al, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Mo, S, Cd, Pb, and P) of coffee bean samples was performed using ICPAES. There were 160 coffee samples analyzed from the three major coffee-growing regions: Indonesia, East Africa, and Central/South America. A computational evaluation of the data sets was carried out using statistical pattern recognition methods including principal component analysis, discriminant function analysis, and neural network modeling. This paper reports the development of a method combining elemental analysis and classification techniques that may be widely applied to the determination of the geographical origin of foods.

Record 26
AU: Herrera,-J.C.; Combes,-M.C.; Anthony,-F.; Charrier,-A.; Lashermes,-P.
TI: Introgression into the allotetraploid coffee (Coffea arabica L.): segregation and recombination of the C. canephora genome in the tetraploid interspecific hybrid (C. arabicaxC. canephora).
SO: Theor-appl-genet. Berlin; Springer-Verlag. Mar 2002. v. 104 (4) p. 661-668.
LA: English
DE: coffea-arabica. coffea-canephora. interspecific-hybridization. introgression-. segregation-. hybrids-. tetraploidy-. recombination-. genetic-markers. microsatellites-. restriction-fragment-length-polymorphism. loci-. chromosome-transmission.
AB: Transfer of desired characters from the diploid relative species such as Coffea canephora into the cultivated allotetraploid coffee species (Coffea arabica L.) is essential to the continued improvement of varieties. Behaviour of the C. canephora genome and its interaction with the C. arabica genome were investigated in tetraploid interspecific hybrids (C. arabica x C. canephora 4x) resulting from a cross between an accession of C. arabica and a tetraploid plant of C. canephora obtained following colchicine treatment. Segregation and co-segregation of restriction fragment length polymorphism (RFLP) and microsatellite loci-markers were studied in two BC1 populations. These two populations of 28 and 45 individuals, respectively, resulted from the backcross of two tetraploid F1 plants to C. arabica. The presence in BC1 plants of specific C. canephora markers was scored for 24 loci (11 RFLP and 13 microsatellites) distributed on at least 7 of the 11 linkage groups identified in C. canephora. At almost all loci analysed, the segregation of C. canephora

alleles transmitted by the (C. arabica x C. canephora 4x) hybrids conformed to the expected ratio assuming random chromosome segregation and the absence of selection. The recombination fractions of C. canephora chromosome segments were estimated for seven marker intervals, and compared with the recombination fractions previously observed in C. canephora for the equivalent marker intervals. The recombination frequencies estimated in both plant materials were rather similar, suggesting that recombination in the (C. arabica x C. canephora 4x) hybrid is not significantly restricted by the genetic differentiation between chromosomes belonging.
to the different genomes. The hybrid (C. arabica x C. canephora 4x) therefore appeared particularly favourable to intergenomic recombination events and gene introgressions.

Record 27
AU: Bucking,-M.; Steinhart,-H.
TI: Headspace GC and sensory analysis characterization of the influence of different milk additives on the flavor release of coffee beverages.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Mar 13, 2002. v. 50 (6) p. 1529-1534.
LA: English
DE: coffee-. flavor-compounds. release-. coffee-whitener. uht-milk. dried-skim-milk. coffee-cream. whipping-cream. condensed-milk. mass-spectrometry. smell-. gas-chromatography. odors-. volatile-compounds.
AB: Previous investigations of coffee flavor have been confined to the analysis of the aroma substances. These investigations showed that about 30 volatile compounds were substantially responsible for the coffee flavor. The aim of this study was to investigate the influence of different milk additives and one coffee whitener on the release of flavor impact compounds from coffee beverages. For the investigation of these effects an external static headspace technique was developed. With this technique the most potent odorants of the coffee beverage were determined. Analyses were performed by gas chromatography/olfactometry, flame ionization detection, and mass spectrometric detection. In addition, sensory studies of the odor profiles were performed. Milk and vegetable products as additives for coffee beverages affected the release of aroma substances in the brew through their lipid, protein, and carbohydrate components. All beverages with an additive showed reduced, but typical, odor profiles for each additive.

Record 28
AU: Nunes,-F.M.; Coimbra,-M.A.
TI: Chemical characterization of galactomannans and arabinogalactans from two arabica coffee infusions as affected by the degree of roast.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Mar 13, 2002. v. 50 (6) p. 1429-1434.
LA: English
DE: coffee-. roasting-. galactans-. galactomannans-. chemical-structure. chemical-composition. sugars-. costa-rica. brazil-.
AB: Galactomannans and arabinogalactans compose almost exclusively the polysaccharide fraction of roasted coffee infusions. To increase the knowledge about the effect of the degree of roast (DR) in the amount and chemical structure of the galactomannans and arabinogalactans, two arabica coffees of different geographical origins (Costa Rica and Brazil) were roasted for three degrees of roast (DRs 4.7-5.0, 8.7, and 10% of dry weight loss of green coffee beans, on a dry basis). The high molecular weight material was extracted with hot water and dialyzed (molecular weight cutoff > 12 kDa), and the material was separated in three cold-water-soluble fractions by graded addition of ethanol. The degree of polymerization and the degree of branching of the galactomannans decreased with the increase of the DR. As the DR increased, less branched arabinogalactans were extracted. The relative amount of terminally linked arabinosyl residues of the arabinogalactans decreased with the increase in DR, and the terminally linked galactosyl residues increased. Also, the size of the

arabinosyl side chains of the arabinogalactans decreased with the increase in DR.

Record 29
AU: Daglia,-M.; Tarsi,-R.; Papetti,-A.; Grisoli,-P.; Dacarro,-C.; Pruzzo,-C.; Gazzani,-G.
TI: Antiadhesive effect of green and roasted coffee on Streptococcus mutans' adhesive properties on saliva-coated hydroxyapatite beads.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Feb 27, 2002. v. 50 (5) p. 1225-1229.
LA: English
DE: coffee-. coffea-canephora. coffea-arabica. roasting-. inhibition-. streptococcus-mutans. adhesion-. hydroxyapatite-. saliva-. coatings-. nicotinic-acid. chlorogenic-acid.
AB: Green and roasted coffees of the two most used species, Coffea arabica and Coffea robusta, several commercial coffee samples, and known coffee components were analyzed for their ability to interfere with Streptococcus mutans' sucrose-independent adsorption to saliva-coated hydroxyapatite (HA) beads. All coffee solutions showed high antiadhesive properties. The inhibition of S. mutans' adsorption to HA beads was observed both when coffee was present in the adsorption mixture and when it was used to pretreat the beads, suggesting that coffee active molecules may adsorb to a host surface, preventing the tooth receptor from interacting with any bacterial adhesions. Among the known tested coffee components, trigonelline and nicotinic and chlorogenic acids have been shown to be very active. Dialysis separation of roasted coffee components also showed that a coffee component fraction with 1000 Da < MW < 3500 Da, commonly considered as low MW coffee melanoidins, may sensibly contribute to the roasted coffee's antiadhesive properties. The obtained results showed that all coffee solutions have antiadhesive properties, which are due to both naturally occurring and roasting-induced molecules.

Record 30
AU: Stadler,-R.H.; Varga,-N.; Milo,-C.; Schilter,-B.; Vera,-F.A.; Welti,-D.H.
TI: Alkylpyridiniums. 2. Isolation and quantification in roasted and ground coffees.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Feb 27, 2002. v. 50 (5) p. 1200-1206.
LA: English
DE: coffee-. roasting-. food-processing.
AB: Recent model studies on trigonelline decomposition have identified nonvolatile alkylpyridiniums as major reaction products under certain physicochemical conditions. The quaternary base 1-methylpyridinium was isolated from roasted and ground coffee and purified by ion exchange and thin-layer chromatography. The compound was characterized by nuclear magnetic resonance spectroscopy (1H, 13C) and mass spectrometry techniques. A liquid chromatography-electrospray ionization tandem mass spectrometry method was developed to quantify the alkaloid in coffee by isotope dilution mass spectrometry. The formation of alkylpyridiniums is positively correlated to the roasting degree in arabica coffee, and highest levels of 1-methylpyridinium, reaching up to 0.25% on a per weight basis, were found in dark roasted coffee beans. Analyses of coffee extracts also showed the presence of dimethylpyridinium, at concentrations ranging from 5 to 25 mg/kg. This is the first report on the isolation and quantification of alkylpyridiniums in coffee. These compounds, described here in detail for the first time, may have an impact on the flavor/aroma profile of coffee directly (e.g., bitterness), or indirectly as precursors, and potentially open new avenues in the flavor/aroma modulation of coffee.

Record 31
AU: Stadler,-R.H.; Varga,-N.; Hau,-J.; Vera,-F.A.; Welti,-D.H.

TI: Alkylpyridiniums. 1. Formation in model systems via thermal degradation of trigonelline.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Feb 27, 2002. v. 50 (5) p. 1192-1199.
LA: English
DE: trigonelline-. thermal-degradation. pyrolysis-. organic-nitrogen-compounds.
AB: Trigonelline is a well-known precursor of flavor/aroma compounds in coffee and undergoes significant degradation during roasting. This study investigates the major nonvolatile products that are procured after trigonelline has been subjected to mild pyrolysis conditions (220-250 degrees C) under atmospheric pressure. Various salt forms of trigonelline were also prepared and the thermally produced nonvolatiles analyzed by thin layer chromatography, liquid chromatography-electrospray ionization tandem mass spectrometry, and 1H and 13C nuclear magnetic resonance. Results revealed the decarboxylated derivative 1-methylpyridinium as a major product of certain salts, the formation of which is positively correlated to temperature from 220 to 245 degrees C. Moreover, trigonelline hydrochloride afforded far greater amounts of 1-methylpyridinium compared to the monohydrate over the temperature range studied. Investigations into other potential quaternary amine products of trigonelline also indicate nucleophilic substitution reactions that lead to dialkylpyridiniums, albeit at concentration levels approximately 100-fold lower than those recorded for 1-methylpyridinium.

Record 32
AU: Hofmann,-T.; Schieberle,-P.
TI: Chemical interactions between odor-active thiols and melanoidins involved in the aroma staling of coffee beverages.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Jan 16, 2002. v. 50 (2) p. 319-326.
LA: English
DE: coffee-. aroma-. thiols-. heterocyclic-nitrogen-compounds. chemical-reactions. volatile-compounds. radicals-.
AB: Comparative aroma dilution analyses of the headspaces of aqueous solutions containing either the total volatiles isolated from a fresh coffee brew, or these volatiles remixed with the melanoidins isolated from coffee brew, revealed a drastic decrease in the concentrations of the odorous thiols 2-furfurylthiol, 3-methyl-2-butenthiol, 3-mercapto-3-methylbutyl formate, 2-methyl-3-furanthiol, and methanethiol when melanoidins were present. Among these thiols, 2-furfurylthiol was affected the most: e.g., its concentration decreased by a factor of 16 upon addition of melanoidins. This was accompanied by a decrease in the overall roasty-sulfury aroma. Quantitations performed by means of stable isotope dilution assays confirmed the rapid loss of all thiols with increasing time while keeping the coffee brew warm in a thermos flask. Using [2H2]-2-furfurylthiol as an example, [2H]-NMR and LC/MS spectroscopy gave strong evidence that thiols are covalently bound to the coffee melanoidins via Maillard-derived pyrazinium compounds formed as oxidation products of 1,4-bis-(5-amino-5-carboxy-1-pentyl)pyrazinium radical cations (CROSSPY). Using synthetic 1,4-diethyl diquaternary pyrazinium ions and 2-furfurylthiol, it was shown that 2-(2-furyl)methylthio-1,4-dihydro-pyrazines, bis[2-(2-furyl)-methylthio]-1,4-dihydro-pyrazines, and 2-(2-furyl)methylthio-hydroxy-1,4-dihydro-pyrazines were formed as the primary reaction products. Similar results were obtained for models in which either 1,4-diethyl diquaternary pyrazinium ions were substituted by N(alpha)-acetyl-L-lysine/glycolaldehyde, or the 2-furfurylthiol by 2-methyl-3-furanthiol and 3-mercapto-3-methylbutyl formate. On the basis of these.
results it can be concluded that the CROSSPY-derived pyrazinium intermediates are involved in the rapid covalent binding of odorous thiols to melanoidins, and, consequently, are responsible for the decrease in the sulfury-roasty odor quality observed shortly after preparation of the coffee brew.

Record 33
AU: Pittet,-A.; Royer,-D.
TI: Rapid, low cost thin-layer chromatographic screening method for the detection of ochratoxin A in green coffee at a control level of 10 microgram/kg.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Jan 16, 2002. v. 50 (2) p. 243-247.
LA: English
DE: coffee-. ochratoxins-. food-contamination. thin-layer-chromatography.
AB: A thin-layer chromatographic (TLC) screening method was developed for the detection of ochratoxin A (OTA) in green coffee at a control level of 10 microgram/kg. The method is based on extraction of OTA with a mixture of phosphoric acid and dichloromethane, purification by liquid-liquid partition into sodium hydrogen carbonate, separation by normal-phase TLC, and detection by visual estimation of fluorescence intensity under a UV lamp at 366 nm. The method was validated by performing replicate analyses of uncontaminated green coffee material spiked at 3 different levels of OTA (5, 10, and 20 microgram/kg), and also by comparing results obtained on a series of test trial green coffees naturally contaminated with OTA (range 0.2 to 136.7 microgram/kg) with those measured by a quantitative immunoaffinity/HPLC method. The agreement between the two methods was excellent, and neither false positive nor false negative results were recorded. This screening method is rapid, simple, robust, and very cheap, which makes it particularly well adapted for implementation in coffee-producing countries.

Record 34
AU: Redgwell,-R.J.; Curti,-D.; Fischer,-M.; Nicolas,-P.; Fay,-L.B.
TI: Coffee bean arabinogalactans: acidic polymers covalently linked to protein.
SO: Carbohydr-res. Oxford : Elsevier Science Ltd. Feb 11, 2002. v. 337 (3) p. 239-253.
LA: English
AB: The arabinogalactan content of green coffee beans (Coffea arabica var. Yellow Caturra) was released by a combination of chemical extraction and enzymatic hydrolysis of the mannan-cellulose component of the wall. Several arabinogalactan fractions were isolated, purified by gel-permeation and ion-exchange chromatography and characterised by compositional and linkage analysis. The AG fractions contained between 6 and 8% glucuronic acid, and gave a positive test for the beta-glucosyl-Yariv reagent, a stain specific for arabinogalactan-proteins. The protein component accounted for between 0.5 and 2.0% of the AGPs and contained between 7 and 12% hydroxyproline. The AG moieties displayed considerable heterogeneity with regard to their degree of arabinosylation and the extent and composition of their side-chains. They possessed a MW average of 650 kDa which ranged between 150 and 2000 kDa. An investigation of the structural features of the major AG fraction, released following enzymatic hydrolysis of the mannan-cellulose polymers, allowed a partial structure of coffee arabinogalactan to be proposed.

Record 35
AU: Spangenberg,-P.; Andre,-C.; Langlois,-V.; Dion,-M.; Rabiller,-C.
TI: alpha-Galactosyl fluoride in transfer reactions mediated by the green coffee beans alpha-galactosidase in ice.
SO: Carbohydr-res. Oxford : Elsevier Science Ltd. Feb 11, 2002. v. 337 (3) p. 221-228.
LA: English
AB: We show that the yields in saccharide synthesis by tranglycosylation with alpha-galactosidase from green coffee beans can be greatly enhanced when working in ice. Thus, methyl alpha-D-galactopyranosyl-(1 to 3)-alpha-D-galactopyranoside (3a) produced by reaction of alpha-D-galactopyranosyl fluoride 1 with methyl alpha-D-galactopyranoside (2) is obtained with 51% yield in ice while only 29% is synthesized at 37 degrees C. This result, already previously found by others

with proteases and by us with a beta-galactosidase appears to be a general property of hydrolases.

Record 36
AU: Redgwell,-R.J.; Trovato,-V.; Curti,-D.; Fischer,-M.
TI: Effect of roasting on degradation and structural features of polysaccharides in Arabica coffee beans.
SO: Carbohydr-res. Oxford : Elsevier Science Ltd. Mar 1, 2002. v. 337 (5) p. 421-431.
LA: English
AB: The degree and nature of polysaccharide degradation at different roasting levels was determined for three Arabica (Coffea arabica) bean varieties. Between 12 and 40% of the bean polysaccharides were degraded depending on the roasting conditions. The thermal stability of the arabinogalactans, (galacto)mannans and cellulose was markedly different. The arabinogalactans and mannans were degraded up to 60 and 36%, respectively, after a dark roast, while cellulose showed negligible evidence of degradation. Roasting led to increased solubility of both the arabinogalactans and (galacto)mannans from the bean but the structural modifications, which accompanied this change in solubility, were different for each polysaccharide. Despite the moderate degradation of the (galacto)mannans, those remaining in the bean after roasting showed no evidence of change to their molecular weight even after a dark roast. In contrast, arabinogalactans were depolymerised after a light roast both by fission of the galactan backbone and loss of arabinose from the sidechains. The recently discovered covalent link between the coffee bean arabinogalactans and protein survived roasting. The glucuronic acid component of the AG was degraded markedly after a dark roast, but approximately 30% of the original content remained as part of the AG polymer. The results show that polysaccharide degradation during roasting is more marked than previously documented, and points to roasting induced changes to the polysaccharides as major factors in the changing physicochemical profile of the coffee bean during processing.

Record 37
AU: Licudine,-J.A.; McQuate,-G.T.; Cunningham,-R.T.; Liquido,-N.J.; Li,-Q.X.
TI: Efficacy and residues of phloxine B and uranine for the suppression of Mediterranean fruit fly in coffee fields.
SO: Pest-manag-sci. West Sussex, UK : Wiley, c2000-. Jan 2002. v. 58 (1) p. 38-44.
LA: English
DE: ceratitis-capitata. baits-. dyes-. insecticides-. insecticide-residues. persistence-. concentration-. aerial-spraying. ground-surface-spraying. coffea-. insect-control. hawaii-.
AB: The field efficacy of a bait containing phloxine B, uranine and Provesta 621 protein was tested against Mediterranean fruit fly (Ceratitis capitata; Medfly) by aerial and ground spraying in about 84 ha of coffee fields in Kauai, Hawaii, USA. Concurrently, soil and crop samples were collected from the aerially sprayed field and its unsprayed control field for residue studies. Efficacy of the sprays was assessed through trapping with both protein-baited and trimedlure-baited traps and through the infestation level of coffee cherries collected at least three-quarters ripe. The C capitata population was low at the start of the aerial and ground spray studies, but dramatically increased in the control fields. This increase coincided with initial ripening of coffee cherries. During times of peak population levels, C capitata populations were reduced by more than 91% in the ground-sprayed field and 99% in the aerial-sprayed field, relative to the populations in their respective control fields and based on protein-baited trap catches. Results of residue analyses indicated that uranine dissipated quickly compared with phloxine B on coffee and soil. Coffee samples collected at pre-spray periods had phloxine B residues of 7.2-25.5 ng g-1 on berries. Phloxine B concentrations were much higher on coffee leaves (163-1120 ng g-1). Lower concentrations of the dye were found from coffee samples collected during rainy days. Average phloxine B concentrations

immediately after spraying were 56 and 2840 ng g-1 in coffee berries and leaves, respectively. Dissipation of phloxine B on berries was fast, with a half-life (t1/2) of 3 days. Dissipation of phloxine B on leaves was fitted to two linear phases.

the initial (0-4 days) with a shorter t1/2 of 3 days and the later phase (4-28 days) with a longer t1/2 of 15 days. Average concentrations of phloxine B in the top soil ranged from 50 to 590 ng g-1 at pre-spray. Phloxine B initial concentration (770 ng g-1) reached a plateau immediately after the last spraying, but showed a steady decline over time with t1/2 of 16 days. Fast dissipation of the dyes in the field indicates that these chemicals may be environmentally compatible and therefore a promising alternative for fruit fly control.