Komoditas : MAWAR

Title:Nitrate absorption-concentration of Rosa hybrida cv. Sweet Promise grown in soilless culture
View Article: Agronomie. 2000. 20 (2). 165-174
CD Volume:336
Print Article: Pages: 165-174
Author(s):Bougoul S Brun R Jaffrin A
Author Affiliation:Unite de Recherche, Laboratoire d'energie solaire, Universite de Batna, Rue Chahid Mohamed El Hadi Boukhlouf, Batna, Algeria
Language:English
Language of Summary:french
Abstract:Recent measurements of transpiration rates and nitrate intakes of young rose plants grown in NFT were applied to existing models. Water demand was accurately reproduced by the passive leaf evaporation process described by Penman and Monteith (PM model). Mineral demand was tentatively described by Scaife's Pump-Leak-Buffer (PLB) model. The PLB model for roses predicted little phase shift between mineral-absorption and solar radiation; as a consequence, it excluded memory effects from the previous day. Some observed features were not accounted for: the saturation of nitrate reduction rate at high solar radiation, the inhibition of root mineral absorption at high temperature. A modified PLB model (MPLB) is proposed, which accurately reproduces nitrate uptake fluctuations under strongly varying climatic conditions. Combining PM and MPLB models enabled a modelling of the instantaneous absorption-concentration of nitrates in roses
Descriptors:soilless-culture. plant-nutrition. transpiration. uptake. nitrogen. nutrient-film-techniques. mathematical-models. absorption. deficiency. evaporation. inhibition. measurement. models. nitrates. saturation. solar-radiation. temperature. ornamental-plants. ornamental-woody-plants
Identifiers:rosa hybrida
Organism Descriptors:Rosa
Supplemental Descriptors:Rosaceae. Rosales. dicotyledons. angiosperms. Spermatophyta. plants
Subject Codes:FF003. FF061. FF062. FF100
Supplementary Info:10 ref
ISSN:0249-5627
Year:2000
Journal Title:Agronomie

Title:Scale Economies and Consolidation in Hog Slaughter
View Article: American Journal of Agricultural Economics. 82 (2) 2000. 334-46
CD Volume:302
Print Article: Pages: 334-346
Author(s):MacDonald J M Ollinger M E
Author Affiliation:USDA. USDA
Language:English
Abstract:We use establishment based panel data to estimate a cost function which identifies the role of scale economies in hog slaughter consolidation. We find modest but extensive technological scale economies in the 1990s, and they became more important over time. But wages rose sharply with plant size through the 1970s, and those wage premiums generated a pecuniary scale diseconomy that largely offset the effects of technological scale economies. The size-wage relation disappeared in the 1980s; with growing technological scale economies and disappearing pecuniary diseconomies, large plants realized growing cost advantages over smaller plants, and production shifted to larger plants
Descriptors:Agriculture: Aggregate Supply and Demand Analysis; Prices. Production; Capital and Total Factor Productivity; Capacity
Geographic Locator:U.S.
Subject Codes:EE110. EE350

ISSN:0002-9092
Year:2000
Journal Title:American Journal of Agricultural Economics

Title:Dietary glycine blunts lung inflammatory cell influx following acute endotoxin
View Article: American Journal of Physiology. 2000. 279 (2). L390-L398
CD Volume:314
Print Article: Pages: L390-L398
Author(s):Wheeler M D Rose M L Yamashima S Enomoto N Seabra V Madren J Thurman R G
Author Affiliation:Laboratory of Hepatobiology and Toxicology, CB 7365 Mary Ellen Jones Bldg., Department of Pharmacology, University of North Carolina, Chapel Hill, NC 27599-7365, USA
Language:English
Abstract:Mortality associated with endotoxin shock is likely mediated by Kupffer cells, alveolar macrophages, and circulating neutrophils. Acute dietary glycine prevents mortality and blunts increases in serum tumour necrosis factor- alpha (TNF- alpha) following endotoxin in rats. Furthermore, acute glycine blunts activation of Kupffer cells, alveolar macrophages, and neutrophils by activating a glycine-gated chloride channel. However, in neuronal tissue, glycine rapidly downregulates chloride channel function. Therefore, the long-term effects of a glycine-containing diet on survival following endotoxin shock were investigated. Dietary glycine for 4 weeks improved survival after endotoxin but did not improve liver pathology, decrease serum alanine transaminase, or effect TNF-alpha levels compared with animals fed control diet. Interestingly, dietary glycine largely prevented inflammation and injury in the lung following endotoxin. Surprisingly, Kupffer cells from animals fed glycine for 4 week were no longer inactivated by glycine in vitro; however, isolated alveolar macrophages and neutrophils from the same animals were sensitive to glycine. These data are consistent with the hypothesis that glycine downregulates chloride channels on Kupffer cells but not on alveolar macrophages or neutrophils. Importantly, glycine diet for 4 week protected against lung inflammation due to endotoxin. Chronic glycine improves survival by unknown mechanisms, but reduction of lung inflammation is likely involved
Descriptors:endotoxins. glycine. inflammation. liver. lungs. macrophages. neutrophils. tumour-necrosis-factor. alanine-aminotransferase. chloride. ion-transport
Organism Descriptors:rats
Supplemental Descriptors:Muridae. rodents. mammals. vertebrates. Chordata. animals. small-mammals
Subject Codes:LL510. VV140. VV820
Supplementary Info:34 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology

Title:Age-related changes in circadian responses to dark pulses
View Article: American Journal of Physiology. 2000. 279 (2). R586-R590
CD Volume:315
Print Article: Pages: R586-R590
Author(s):Duncan M J Deveraux A W
Author Affiliation:Department of Anatomy and Neurobiology, University of Kentucky Medical Center, 800 Rose St., Lexington, KY 40536-0298, USA
Language:English
Abstract:Aging involves many alterations in circadian rhythms, including a loss of sensitivity to photic and non-photic time signals. This study investigated the sensitivity of young and old hamsters to the phase advancing effect of a 6-h

dark pulse on the locomotor activity rhythm. Each hamster was tested 4 times over approx equal to 9 months; periods of exposure to a 14-h photoperiod were alternated with the periods of exposure to constant light (20-80 lx), during which the dark pulses were administered. There was no significant difference in the phase shifts exhibited by the young (4-10 months) and old hamsters (19-25 months) or in the amount of wheel running activity displayed during each dark pulse. However, young hamsters had a significantly greater propensity to exhibit split rhythms immediately after the dark pulses. These results suggest that, although aging does not reduce the sensitivity of the circadian pacemaker to this non-photic signal, it alters one property of the pacemaker, i.e., the flexibility of the coupling of its component oscillators
Descriptors:light. aging. circadian-rhythm. dark. photoperiod. photoperiodism
Organism Descriptors:hamsters
Supplemental Descriptors:Cricetinae. Muridae. rodents. mammals. vertebrates. Chordata. animals
Subject Codes:VV050. LL600
Supplementary Info:30 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology
Copyright:Copyright CAB International

Title:Liver export protein synthetic rates are increased by oral meal feeding in weight-losing cancer patients
View Article: American Journal of Physiology. 2000. 279 (3(1)). E707-E714
CD Volume:314
Print Article: Pages: E707-E714
Author(s):Barber M D Fearon K C H McMillan D C Slater C Ross J A Preston T
Author Affiliation:Department of Surgery, Royal Infirmary of Edinburgh, Edinburgh EH3 9YW, UK
Language:English
Abstract:We have demonstrated previously that, in the fasting state, whereas albumin synthesis is similar in cachectic cancer patients compared with controls, fibrinogen synthesis is increased. Whether synthesis of these proteins is altered after an oral meal was examined in eight weight-losing pancreatic cancer patients and six healthy controls by use of an intravenous flooding dose of [2H5]- or [2H8]phenylalanine. Cancer patients had a median weight loss of 19%, a lower serum albumin concentration, and a higher plasma fibrinogen concentration than controls ($P<0.005$). Fasting albumin synthesis rates were similar between cancer patients and controls (median total synthesis rate 11.3 vs. 13.9 g/day, respectively) and rose on feeding by a similar degree (median 29 and 24%). The fasting fibrinogen total synthetic rate was higher in cancer patients than in controls (median 3.3 vs. 1.0 g/day, $P=0.0019$). In cancer patients in the fed state, fibrinogen synthetic rate rose by a median of 38% ($P=0.012$), whereas in controls there was no significant change. These findings demonstrate significant upregulation by feeding of acute-phase protein synthesis in cachectic cancer patients
Descriptors:liver. protein-synthesis. cachexia. pancreas. neoplasms. weight-losses. nutritional-support
Organism Descriptors:man
Supplemental Descriptors:Homo. Hominidae. Primates. mammals. vertebrates. Chordata. animals
Subject Codes:VV130. VV600. VV120
Supplementary Info:45 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology
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Title:Developmental changes in the feeding-induced stimulation of translation initiation in muscle of neonatal pigs

View Article: American Journal of Physiology. 2000. 279 (6(1)). E1226-E1234
CD Volume:317
Print Article: Pages: E1226-E1234
Author(s):Davis T A Nguyen H V Agus Suryawan Bush J A Jefferson L S Kimball S R
Author Variant:Suryawan-A
Author Affiliation:Department of Pediatrics, United States Department of Agriculture/Agricultural Research Service, Children's Nutrition Research Center, Baylor College of Medicine, 1100 Bates St., Houston, TX 77030, USA
Language:English
Abstract:The rapid gain in skeletal muscle mass in the neonate is associated with a marked elevation in skeletal muscle protein synthesis in response to feeding. The feeding-induced response decreases with development. To determine whether the response to feeding is regulated at the level of translation initiation, the expression, phosphorylation, and function of a number of eukaryotic initiation factors (eIF) were examined. Pigs at 7 (n=47) and 26 (n=43) days of age were either fasted overnight or fed porcine milk after an overnight fast. In muscle of 7-day-old pigs, the hyperphosphorylated form of the eIF4E repressor protein, 4E-binding protein 1 (4E-BP1), was undetectable in the fasting state but rose to 60% of total 4E-BP1 after feeding; eIF4E phosphorylation was unaffected by feeding status. The amount of eIF4E in the inactive 4E-BP1.eIF4E complex was reduced by 80%, and the amount of eIF4E in the active eIF4E.eIF4G complex was increased 14-fold in muscle of 7-day-old pigs after feeding. The amount of 70-kDa ribosomal protein S6 (p70S6) kinase in the hyperphosphorylated form rose 2.5-fold in muscle of 7-day-old pigs after feeding. Each of these feeding-induced responses was blunted in muscle of 26-day-old pigs. eIF2B activity in muscle was unaffected by feeding status but decreased with development. Feeding produced similar changes in eIF characteristics in liver and muscle; however, the developmental changes in liver were not as apparent as in skeletal muscle. The results demonstrate that the developmental change in the acute stimulation of skeletal muscle protein synthesis by feeding is regulated by the availability of eIF4E for 48S ribosomal complex formation. The results further suggest that the overall developmental decline in skeletal muscle protein synthesis involves regulation by eIF2B
Descriptors:age-differences. binding-proteins. gene-expression. growth. liver. newborn-animals. phosphorylation. piglet-feeding. protein-synthesis. proteins. skeletal-muscle. translation
Organism Descriptors:pigs
Supplemental Descriptors:Sus-scrofa. Sus. Suidae. Suiformes. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL240. LL510. LL520
Supplementary Info:57 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology

Title:The effect of sample drying conditions on estimates of condensed tannin and fibre content, dry matter digestibility, nitrogen digestibility and PEG binding of Calliandra calothyrsus
View Article: Animal Feed Science and Technology. 2000. 87 (1/2). 29-40
CD Volume:332
Print Article: Pages: 29-40
Author(s):Palmer B Jones R J Wina E Tangendjaja B
Author Affiliation:CSIRO Tropical Agriculture, Davies Laboratory, PMB Post Office, Aitkenvale, Qld 4814, Australia
Language:English
Abstract:Leaf samples of the browse shrub Calliandra calothyrsus were used to study the effect of temperature of drying (25, 45, 65, 85 and 105 deg C), and method of drying, either in dry air (aerobic) or in dry nitrogen (anaerobic), on estimates of fibre, condensed tannin (CT), digestibility and PEG binding. These estimates were also made on freeze-dried samples. Correlations were made between

these variables. In general, there was much less change with increasing temperature for samples dried anaerobically than for samples dried aerobically for all measures. For the condensed tannin measures (using the butanol-HCl with tannins isolated from C. calothyrsus as a standard), there was an interaction of method x temperature of drying ($p < 0.01$ to $p < 0.0001$). At higher temperatures there was more bound tannin (protein- and fibre-bound) with aerobic drying. Free tannin under anaerobic conditions increased slightly with increasing temperature whereas there was a large linear decrease under aerobic drying. A similar response was obtained by the protein precipitation method though the mean level of free tannin using this method was much lower than by the butanol-HCl method (11% vs 21%). Total CT (TCT) increased slightly with temperature under anaerobic drying, but decreased by a similar magnitude (about 10%) with aerobic drying. The freeze-dried samples had values similar to samples dried at the lower temperatures (25 and 45 deg C) for all measures. The mean TCT for C. calothyrsus in this study of 29% is far higher than those reported in other studies using unrelated tannin standards. Acid detergent fibre (ADF) was higher for the aerobically dried samples, and levels for both drying methods increased slightly with temperature. For neutral detergent fibre (NDF), levels rose at temperatures above 45 deg C; the rise with aerobic drying was much greater and gave a significant interaction ($p < 0.01$). Both the N% in NDF and the total N in NDF were higher in the aerobically dried samples. For both measures, levels declined as temperature increased from 25 to 45 deg C and then increased. Levels for the freeze-dried samples were similar to those anaerobically dried at 25 and 45 deg C. In vitro dry matter and N digestibility (IVDMD and IVND) were measured by a modified Tilley and Terry [J. Br. Grassld. Soc. 18 (1963) 104] technique using plus or minus PEG with 14C-labelled PEG to correct IVDMD for PEG-tannin complexes in the residue (CIVDMD). With anaerobically dried samples there was no change with temperature for IVDMD, CIVDMD, or IVND in the presence of PEG (IVNDP). However, under aerobic conditions, for most measures of digestibility, levels declined above 45 deg C. PEG binding was unaffected by temperature of drying but, was lower ($p < 0.001$) for aerobic drying compared with anaerobic drying, and far higher for freeze-dried than for oven-dried samples. These data support the hypothesis that the degree of complexing of CT with components of the plant is affected by both temperature and oxidation; the latter having the greater effect particularly at high drying temperatures. Where facilities for freeze drying are not available, drying at 45 deg C would appear to be the best option
Descriptors:aerobic-conditions. anaerobic-conditions. binding. condensation. digestibility. dry-matter. drying. feeds. fibre. freeze-drying. methodology. nitrogen. oxidation. polyethylene-glycol. tannins
Organism Descriptors:Calliandra-calothyrsus
Supplemental Descriptors:Calliandra. Mimosoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants
Subject Codes:FF040. KK540. RR100. RR300
Supplementary Info:19 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Resistance of roses to pathotypes of Diplocarpon rosae
View Article: Annals of Applied Biology. 136 (1). Feb., 2000. 15-20
CD Volume:356
Print Article: Pages: 15-20
Author(s):Yokoya K Kandasamy K I Walker S Mandegaran Z Roberts A V
Author Affiliation:Department of Life Sciences, University of East London, Romford Road, London, E15 4LZ
Language:English
Language of Summary:English (EN)
Abstract:Colonies of Diplocarpon rosae derived from single conidia were isolated on malt extract agar, multiplied (at 23degreeC) and stored (at -20degreeC) on

surface-sterilised leaf discs of a universally susceptible rose, 'Frensham'. The resistance of 16 species and cultivars of Rosa to different isolates of D. rosae was assessed using surface-sterilised leaf discs. Four pathotypes of D. rosae were distinguished on the basis of host range. One species and one hybrid were resistant to all pathotypes. Two species and two cultivars were susceptible to all pathotypes. Four species and six cultivars were interpreted as having vertical resistance because they were strongly resistant to some but not all pathotypes. Only species and hybrids of the section Cinnamomeae were resistant to the pathotype identified as CW1 whereas only roses of other origins were resistant to the pathotype DA2
Descriptors:disease resistance. Horticulture (Agriculture); Infection
Organism Descriptors:Diplocarpon rosae (Ascomycetes): CW1 pathotype, DA2 pathotype, plant pathogen; rose (Rosaceae): host
Supplemental Descriptors:Ascomycetes: Fungi, Plantae; Rosaceae: Dicotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Dicots; Fungi; Microorganisms; Nonvascular Plants; Plants; Spermatophytes; Vascular Plants
Subject Codes:Horticulture (Agriculture); Infection
ISSN:0003-4746
Year:2000
Journal Title:Annals of Applied Biology

Title:Effects of sodium on mineral nutrition in rose plants
View Article: Annals of Applied Biology. 137 (1). August, 2000. 65-72
CD Volume:356
Print Article: Pages: 65-72
Author(s):Lorenzo H Cid M C Siverio J M Ruano M C
Author Affiliation:Departamento de Ornamentales y Horticultura, ICIA, La Laguna, Tenerife, 38200: hlorenzo@gabpp.org
Language:English
Language of Summary:English (EN)
Abstract:The effects of sodium (Na+) ion concentration on shoot elongation, uptake of ammonium (NH4+) and nitrate (NO3-) and the activities of nitrate reductase (NR) and glutamine synthetase (GS) were studied in rose plants (Rosa hybrida cv. "Lambada"). The results showed that shoot elongation was negatively correlated with sodium concentration, although no external symptoms of toxicity were observed. Nitrate uptake decreased at high sodium levels, specifically at 30 meq litre-1 of sodium. As flower development was normal under high saline conditions, this could suggest that nitrogen was being mobilised from shoot and leaf reserves. Ammonium uptake was not affected by any of the salt treatments applied probably because it diffuses through the cell membrane at low concentrations. Nitrate reductase activity was reduced by 50% at 30 meq litre-1 compared with control treatment, probably due to a decrease in the free nitrate related to nitrate uptake pattern. None of the salt treatments used affected total leaf GS activity (both chloroplastic and cytosolic isoforms) or leaf NPK mineral contents. Nitrate reductase activity in leaves increased at 10 meq litre-1 of sodium and GS activity in roots (cytosolic isoform only) followed the same pattern as NR. It is suggested that the activation of both enzymes at low salt level could be attributed to the beneficial effect of increased sulphur in the nutrient solutions
Descriptors:mineral nutrition. Nutrition. NPK [nitrogen-phosphorus-potassium]: fertilizer; ammonium: uptake; glutamine synthetase; nitrate: uptake; nitrate reductase; sodium
Organism Descriptors:Rosa hybrida [rose] (Rosaceae): cultivar-Lambada
Supplemental Descriptors:Rosaceae: Dicotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
Subject Codes:Nutrition
ISSN:0003-4746
Year:2000
Journal Title:Annals of Applied Biology

Title:Effects of dissolved inorganic carbon availability on growth, nutrient uptake and chlorophyll fluorescence of two species of marine microalgae
View Article: Aquacultural Engineering. 22 (3). June, 2000. 181-197
CD Volume:332
Print Article: Pages: 181-197
Author(s):Huertas Emma Montero Olimpio Lubian Luis M
Author Affiliation:Instituto de Ciencias Marinas de Andalucia (CSIC), Poligono Rio San Pedro, s/n, 11510, Puerto Real, Cadiz
Language:English
Language of Summary:English (EN)
Abstract:Growth of two species of marine microalgae, namely Nannochloropsis gaditana Lubian (Eustigmatophyceae) and Nannochloris maculata Butcher (Chlorophyceae), was investigated in cultures submitted to three different concentrations of dissolved inorganic carbon (DIC). Cultures of N. gaditana grown in the absence of DIC in the medium and aerated with less than 0.0001% (v/v) CO2 in air (low DIC conditions) showed a reduction in final cell biomass of approximately 56% as compared with the biomass obtained in cultures grown under control conditions (2 mM DIC in the medium and aerated with air-equilibrated levels of CO2, i.e. 0.03% (v/v) CO2). Growth was not observed in N. maculata cultured under low DIC conditions. A concentration of 1% (v/v) CO2 in air (high DIC conditions) did not modify growth of N. gaditana in relation to that in the control- culture but enhaced growth of N. maculata. Nutrient (NO3- and PO43-) uptake was also analyzed under the different growth conditions. The uptake of NO3- and PO43- by N. maculata was dependent on the inorganic carbon level; thus, whereas no nutrient absorption was observed in the low DIC-culture, growth at the highest inorganic carbon concentration caused an accelaration of the uptake. Capacity to use nitrate was restricted in N. gaditana cells under low DIC conditions, but nutrient uptake was similar in cultures adapted to air levels of CO2 and to CO2-enriched air. Chlorophyll fluorescence measurements were used to determine the photochemical efficiency of photosystem II and the non-photochemical quenching. A similar pattern of evolution of the actual quantum yield of photosystem II (phiPSII) was observed in all cultures of N. gaditana over the growth period, without development of non-photochemical quenching. In contrast, changes in phiPSII of N. maculata differed between treatments and were concurrent with carbon and nutrient availabilities. Non-photochemical quenching rose in this alga when carbon or phosphate limitation constrained proton dissipation from the lumen. Results are discussed in relation to the particular carbon uptake mechanism of each alga
Descriptors:growth; nutrient: uptake; photochemical efficiency. Aquaculture. chlorophyll: fluorescence; dissolved inorganic carbon: availability
Organism Descriptors:Nannochloropsis gaditana (Chrysophyta): aquaculture species; Nannochloropsis maculata (Chrysophyta): aquaculture species
Supplemental Descriptors:Chrysophyta: Algae, Plantae. Algae; Microorganisms; Nonvascular Plants; Plants
Subject Codes:Aquaculture
ISSN:0144-8609
Year:2000
Journal Title:Aquacultural Engineering

Title:Differential gene expression in the activation and maturation of human monocytes
View Article: Arch Biochem Biophys 2000 Feb 15;374(2):153-60
CD Volume:332
Print Article: Pages: 153-160
Author(s):Rouzaut A Lopez Moratalla N de Miguel C
Author Affiliation:Departamento de Bioquimica y Biologia Molecular, Universidad de Navarra, Pamplona, 31080, Spain
Abstract:Differential-display or RNA fingerprint was applied to identify genes differentially expressed in monocyte maturation induced by an immunomodulating

peptide on human peripheral blood mononuclear cells. Two unknown sequences (06c22 and 06c71) and p21 protein (cyclin dependent kinase inhibitor) were repressed, and three genes activated: Cathepsin D, DRP2 (dihydropirimidinase related protein 2), and gp91phox (91-kDa subunit of citochrome b(558)). Phenotype of evolving monocytes was analyzed by flow cytometry and mRNA level of identified genes determined by reverse transcription-PCR. The expression pattern of identified genes seemed to correlate with different monocyte subsets, monocyte-derived cells, and expected functional changes. After peptide addition, immature monocytes were initially activated, increasing the expression of CD25, CD69, and HLA-DR markers. This was accompanied by repression of p21 and the two unknown sequences, along with the simultaneous activation of Cathepsin D and DRP2. Later, the differentiation marker CD16 rose, and gp91phox gene expression activated. Further maturation led certain monocytes to express marker CD23 and gp91phox expression to reach a maximum, while Cathepsin D and DRP2 dropped to preactivation levels. Results reflect part of the evolution of immature monocytes toward macrophages and monocyte-derived dendritic cell precursors
Descriptors:Base Sequence. Blood Proteins. Cathepsin D. Cells, Cultured. Cyclins. DNA Primers. *Gene Expression Regulation. Human. Leukocytes, Mononuclear. Membrane Glycoproteins. NADPH Oxidase. Phenotype. Proteins. RNA, Messenger. Reverse Transcriptase Polymerase Chain Reaction. Sequence Analysis, RNA. Support, Non-U.S. Gov't
Geographic Locator:UNITED STATES
ISSN:0003-9861
Year:2000
Journal Title:Archives of Biochemistry and Biophysics

Title:Allantoate amidinohydrolase (Allantoicase) from Chlamydomonas reinhardtii: its purification and catalytic and molecular characterization
View Article: Arch Biochem Biophys 2000 Jun 15;378(2):340-8
CD Volume:333
Print Article: Pages: 340-348
Author(s):Piedras P Munoz A Aguilar M Pineda M
Author Affiliation:Departamento de Bioquimica y Biologia Molecular, Universidad de Cordoba, Cordoba, 14071, Spain
Abstract:An allantoate-degrading enzyme has been purified to electrophoretic homogeneity for the first time from a photosynthetic organism, the unicellular green algae Chlamydomonas reinhardtii. The purification procedure included a differential protein extraction followed by conventional steps such as ammonium sulfate fractionation, gel filtration, anion exchange chromatography, and preparative electrophoresis. Under the routine assay conditions (7 mM allantoate), specific activity for the purified enzyme was 185 U/mg, which rose to 225 U/mg under kinetic considerations (saturating substrate). Therefore, a turnover number of 4.5 x 10(4) min(-1) can be deduced for the 200-kDa protein. The enzyme is a true allantoicase (EC 3.5.3.4) that catalyzes the degradation of allantoate to (-)ureidoglycolate and (+)ureidoglycolate to glyoxylate. The enzyme exhibited hyperbolic kinetic for allantoate and ureidoglycolate with K(m) values of 2 and 0.7 mM, respectively. V(max) of the reaction with allantoate as substrate was nine times higher than that with ureidoglycolate. The native enzyme has a molecular weight of 200 kDa and consists of six identical or similar-sized subunits of 34 kDa each, organized in two trimers of 100 kDa. Each subunit has five cysteine residues, four of which are involved in disulfide bonds, with a total of 12 disulfide bonds in the 200-kDa protein. Allantoate inhibits competitively the reaction with ureidoglycolate as substrate. In addition, buffers and group-specific reagents affect the activity in the same manner irrespective of the substrate used. Those results suggest that both substrates use the same active site. The effect of group-specific reagents suggest that the amino acids histidine, tyrosine, and cysteine are essentials for the allantoicase activity with both substrates
Descriptors:Amino Acids. Ammonium Sulfate. Animal. Binding Sites. Catalysis. Chlamydomonas reinhardtii. Chromatography, Gel. Chromatography, Ion Exchange. Edetic Acid. Electrophoresis, Polyacrylamide Gel. Hydrogen-Ion Concentration.

Kinetics. Magnesium. Nitrogen. Support, Non-U.S. Gov't. Temperature. Time Factors. Ureohydrolases
Geographic Locator:UNITED STATES
ISSN:0003-9861
Year:2000
Journal Title:Archives of Biochemistry and Biophysics

Title:Differential regulation of endothelin secretion and endothelin receptor mRNA levels in JAR, JEG-3, and BeWo choriocarcinoma cell lines and in human trophoblasts, their nonmalignant counterpart
View Article: Arch Biochem Biophys 2000 Oct 15;382(2):245-52
CD Volume:333
Print Article: Pages: 245-252
Author(s):Bilban M Barth S Cervar M Mauschitz R Schaur RJ Zivkovic F Desoye G
Author Affiliation:Department of Obstetrics and Gynecology, University of Graz, Austria
Abstract:Endothelin (ET) secretion and expression of both ET-A and ET-B receptor subtypes have been found in a number of primary cancers. The present study tested (1) whether choriocarcinoma cells and their nonmalignant counterpart, the trophoblast, secrete ET-1 and express ET-A and ET-B receptors; (2) whether ET-1 secretion and receptor mRNA levels are regulated by the same factors in nonvascular tissues as in vascular tissues; and (3) whether such regulation is similar in malignant and nonmalignant cells. All cells secreted ET-1 in similar amounts (approximately 0.8 fmol/10(6) cells per 24 h) and secretion was unaffected by culture and treatment. Whereas ET-B accounted for almost all (>98%) ET receptor transcripts in the choriocarcinoma cells, the trophoblasts expressed about 20% ET-A receptor mRNA. During control cultures, ET-B mRNA levels rose in choriocarcinoma, with the greatest relative increase (6-fold; $P < 0.05$ vs 0 h) in BeWo, whereas in trophoblasts, ET-A mRNA transiently changed after 24 and 48 h. Treatment with dexamethasone and glucose did not alter the mRNA levels in all cells. Insulin induced changes ($P < 0.05$) in ET-B mRNA levels in BeWo (+90 and +60% after 24 and 48 h, respectively) and JEG-3 (-70%), but not in JAR and trophoblast cells. We conclude that malignant transformation affects the responsiveness of the endothelin receptor system to external stimuli and that the regulation of the endothelin system differs in vascular and nonvascular tissues
Descriptors:Base Sequence. Choriocarcinoma. DNA Primers. Endothelin-1. Female. Human. Pregnancy. RNA, Messenger. RNA, Neoplasm. Receptors, Endothelin. Support, Non-U.S. Gov't. Trophoblast. Tumor Cells, Cultured. Uterine Neoplasms
Geographic Locator:UNITED STATES
ISSN:0003-9861
Year:2000
Journal Title:Archives of Biochemistry and Biophysics

Title:Protective effect of lycopene on lipid peroxidation and oxidative DNA damage in cell culture
View Article: Arch Biochem Biophys 2000 Nov 1;383(1):56-9
CD Volume:333
Print Article: Pages: 56-59
Author(s):Matos HR Di Mascio P Medeiros MH
Author Affiliation:Departamento de Bioquimica, Instituto de Quimica, Universidade de Sao Paulo, SP, Brazil
Abstract:A high incidence of cancer has been correlated with chronic iron overload, and carotenoids are of interest as possible anticarcinogens. We have investigated the effect of lycopene on lipid peroxidation and on the formation of 8-oxo-7,8-dihydro-2'-deoxyguanosine (8-oxodGuo) in CV1-P monkey cells exposed to ferric nitrilotriacetate (Fe-NTA) plus ascorbate. Cells supplemented with lycopene (20 pmol/10(6) cells) showed a reduction of 86% in Fe-NTA/ascorbate-induced lipid peroxidation (TBARS). Levels of 8-oxodGuo rose from 1.59+/-0.09 residues/10(6) dGuo in the control cells to 14.02+/-0.41 residues/10(6) dGuo after incubation with (1:4 mM) Fe-NTA/ascorbate (40 microM). Lycopene

supplementation decreased in 77% the 8-oxodGuo levels in Fe-NTA/ascorbate-treated cells. These results indicate that lycopene can protect mammalian cells against membrane and DNA damage and possibly play a protective role against tumor promotion associated with oxidative damage
Descriptors:Animal. Antioxidants. Ascorbic Acid. Carotene. Cell Line. DNA Damage. Deoxyguanosine. Ferric Compounds. Lipid Peroxidation. Mutagens. Nitrilotriacetic Acid. Oxidative Stress. Support, Non-U.S. Gov't
Geographic Locator:UNITED STATES
ISSN:0003-9861
Year:2000
Journal Title:Archives of Biochemistry and Biophysics

Title:Effects of singlet oxygen on the extracellular matrix protein collagen: oxidation of the collagen crosslink histidinohydroxylysinonorleucine and histidine
View Article: Arch Biochem Biophys 2000 Dec 1;384(1):133-42
CD Volume:333
Print Article: Pages: 133-142
Author(s):Au V Madison SA
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Abstract:The reaction of singlet oxygen, a putative agent of skin photodamage, with the dermal collagen crosslink histidinohydroxylysinonorleucine (HHL) and its precursor histidine is reported. Reaction studies were performed with both purified HHL and bovine dermal tissue. We demonstrate that singlet oxygen can selectively oxidize HHL and histidine amino acid residues in dermal tissue and that intermediate oxidation products of histidine lead to new crosslink products. A novel mechanism for crosslink formation was proposed to involve nucleophilic addition to a transient imidazolone intermediate formed from singlet oxygen oxidation of the histidine imidazole moiety. The implication for such adduct formation and histidine oxidation in collagen proteins is the expression of aberrant collagen crosslinks, perturbation of the dermal collagen function, and hence an altered dermal state
Descriptors:Animal. Cattle. Collagen. Dipeptides. Extracellular Matrix Proteins. Histidine. Hydroxyproline. In Vitro. Lysine. Male. Oxidation-Reduction. Oxygen. Oxygen Isotopes. Photochemistry. Rose Bengal. Skin. Spectrometry, Mass, Electrospray Ionization. Spectrophotometry, Ultraviolet
Geographic Locator:United States
ISSN:0003-9861
Year:2000
Journal Title:Archives of Biochemistry and Biophysics

Title:Substrates obtained from mushroom cultivation as an alternative feed ingredient
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (Special iss.). 27-34
CD Volume:297
Print Article: Pages: 27-34
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Document Editor:Aumaitre-A. Lee-B-D. Ha-J-K
Conference Title:Proceedings of 2000 International Symposium Recent Advances in Animal Nutrition, Seoul, Korea, 20-22 April 2000
Language:English
Abstract:There are many changes, both qualitative and quantitative, chemical as well as biochemical (enzymatic) in spent substrate during the growth and fructification of fruiting fungi. Depending upon the species/strain, culture condition, and substrate used the spent substrate is more soluble, contains 3- to 5-times more free sugar and 2- to 3-times more free amino acids than

undegraded substrate. Decreases in cellulose, hemicellulose and lignin contents and increase in the ash content are concomitant. Certainly, these substrates possess a variety of degradatory enzyme like cellulase, hemicellulase, oxidizing enzymes and protease. Several applications of spent substrates are proposed, including sound use of this material in a sustainable agricultural system. The nutrients composition of substrate used during full spawn run, after harvest for 1 month, and spent substrate were analysed. Energy content, and most fat and fibre fraction percentages declined, while protein content rose in substrate of Pleurotus sp. but not of P. abalonus. Even though the substrate of Lentinus edodes has as good nutrient composition as the others it is not recommended as a substitute for commercial diet in growing quail ration. Spent substrate of P. ostreatus and Ganoderma sp. can replace up to 30% of the ration with no significant difference in growth performance. Most spent substrates can replace 10-20% of the ration, depending on species of fruiting fungi
Descriptors:cellulose. composition. diet. energy-content. fibre. free-amino-acids. growth-rate. hemicelluloses. lignin. mushrooms. nutrients. protein-content. proteinases. poultry-feeding. agricultural-byproducts. edible-fungi. poultry
Identifiers:Pleurotus abalonus
Organism Descriptors:fungi. Ganoderma. Lentinula-edodes. Pleurotus. Pleurotus-ostreatus. quails
Supplemental Descriptors:Aphyllophorales. Basidiomycotina. Eumycota. fungi. Lentinula. Agaricales. Pleurotus. Coturnix. Phasianidae. Galliformes. birds. vertebrates. Chordata. animals
Subject Codes:LL500. XX200. RR300
Supplementary Info:20 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:The manipulation of milk secretion in lactating dairy cows - review
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (2). 236-243
CD Volume:297
Print Article: Pages: 236-243
Author(s):Rose M T Obara Y
Author Affiliation:National Institute of Animal Industry, Tsukuba Norinkenkyudanchi, P.O. Box 5, Ibaraki 305-0031, Japan
Language:English
Abstract:A number of developments have occurred over recent years that are being used commercially or have the potential to increase the milk yield and consequently the efficiency of dairy cows. Bovine growth hormone (somatotropin) is the most widely known of several attempts that have been made to alter the metabolic endocrinology of dairy cows to increase the rate of milk secretion. The factors affecting the milk yield response to growth hormone, growth hormone-releasing factor, thyroxine and placental lactogen as well as to the immuno-neutralization of somatostatin are briefly considered. Secondly, the recent greater understanding of the mechanism by which milk yield is increased following more frequent milking, which has resulted from the identification and characterization of the feedback inhibitor of lactation (FIL) protein, is reviewed. The identification of this protein provides new avenues of research which may lead to a reduction in the rate of decline in milk yield with advancing lactation or to undiminished milk yields despite a reduction in frequency with which the animals are milked
Descriptors:cows. milk. milk-secretion. characterization. feedback. somatotropin. lactation. milk-yield. milking. placenta. choriomammotropin. somatostatin. thyroxine. milking-interval. reviews
Identifiers:growth hormone releasing factor. feedback inhibitor of lactation
Organism Descriptors:cattle

Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:QQ010. LL110. LL600
Supplementary Info:3 pp. of ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Plasma levels of hormones and metabolites as affected by the forages type in two different types of crossbred Holstein cattle
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (10). 1359-1366
CD Volume:297
Print Article: Pages: 1359-1366
Author(s):Chaiyabutr N Preuksagorn S Komolvanich S Chanpongsang S
Author Affiliation:Department of Physiology, Faculty of Veterinary Science, Chulalongkorn University, Henri Dunant Rd., Patumwan, Bangkok 10330, Thailand
Language:English
Abstract:An experiment was carried out to study plasma levels of hormones and metabolites of crossbred Holstein cattle during late pregnancy (28 days pre-partum), early lactation (30 days post-partum), mid-lactation (120 days post-partum) and late lactation (210 days post-partum). Two breed types of Holstein Friesian x Red Sindhi (50:50=50% HF) and Holstein Friesian x Red Sindhi (87.5:12.5=87.5% HF) were divided into four groups of four animals each. Two groups of each breed were fed with either rice straw treated with 5% urea or pangola hay (Digitaria decumbens) as the source of roughage throughout the experiments. There were substantial increases in the mean levels of total triiodothyronine (T3), insulin and glucagon at the onset of lactation, and these were maintained during lactation progression for all groups. The mean levels of prolactin and thyroxine (T4) were not significantly different among groups of animals, but the plasma cortisol concentration was slightly higher in both groups of 50% HF in comparison with those of 87.5% HF animals. The mean levels of plasma somatotropin (GH) of both groups of 87.5% HF animals feeding on either hay or urea-treated rice straw markedly rose in the early period of lactation and markedly reduced in mid- and late lactation. These changes were accompanied with changes of milk yield. In contrast to 50% HF animals, plasma GH levels were considerably higher in the late pregnancy period than in the early period of lactation and it remained constant in early lactation. The high levels of plasma progesterone and oestradiol concentration significantly declined after parturition and remained low through lactation. The plasma glucose level in the 50% HF animals feeding on hay or urea treated rice straw was higher than the 87.5% HF animals in all periods of experiments. Changes in plasma FFA levels of both types of crossbred animal were dependent on the endocrine status during late pregnancy and lactation. The levels of plasma FFA of 50% HF animals were higher ($p<0.05$) than those of 87.5% HF animals during late pregnancy. Plasma beta -hydroxybutyrate and lactate concentrations were not affected by feeding on hay or urea-treated rice straw during late pregnancy and lactation. These data demonstrate that there were no differences in the physiological performance in the same crossbred animals fed either forage. The 87.5% HF animals have the genetic potential for a high milk yield and homeorhetic adaptation for mammary function different from 50% HF animals during lactation. Altering lactation persistency in 87.5% HF is regulated mainly by chronically acting hormones through the period of lactation
Descriptors:hormones. genetics. crossbreeding. breed-differences. hay. rice-straw. urea. somatotropin. thyroid-hormones. pregnancy. lactation. cows. milk-yield. blood-chemistry. lactation-stage. sex-hormones
Geographic Locator:india
Organism Descriptors:cattle

Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations
Subject Codes:LL510. LL520. LL240. LL110
Supplementary Info:27 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Rapid environmental changes that affect leaf water status induce transient surges or pauses in leaf expansion rate
View Article: Australian Journal of Plant Physiology. 2000. 27 (10). 941-948
CD Volume:324
Print Article: Pages: 941-948
Author(s):Passioura J B Munns R
Author Affiliation:CSIRO Plant Industry, GPO Box 1600, Canberra, ACT 2601, Australia
Language:English
Abstract:We subjected wheat cv. Hartog and barley cv. Himalaya plants to rapid environmental changes, and monitored leaf elongation rates for several hours thereafter. Changes in light, humidity or salinity caused sudden rises or falls in leaf elongation rate, followed by a recovery phase that lasted 20-60 minutes. After a step change in light or humidity, the growing leaf eventually resumed its original elongation rate, although the shoot water status, as monitored by leaf thickness, differed markedly. Salinity, on the other hand, produced a persistent change in leaf elongation rate, which settled down to a lower steady rate after the transient response was over. To determine whether the sudden changes in leaf elongation rate were due to changes in leaf water relations, we kept shoots fully hydrated through the environmental changes by automatically pressurizing the roots to maintain leaf xylem on the point of bleeding. This annulled the environmental effects on leaf water status, and thereby largely removed the changes in leaf elongation rate. The only exception was at the dark:light transition, when the leaf elongation rate of pressurized plants rose sharply (in contrast to that of unpressurized plants, which fell), then underwent damped oscillations before settling at about its initial value. The sudden excursions of leaf growth in unpressurized plants accompanying the environmental changes were undoubtedly due to changes in leaf water status. The subsequent, generally complete, return of the leaf elongation rate to its initial value within an hour, despite the persistent change in leaf water status, suggests that a control system is operating at a time scale of tens of minutes that eventually overrides, partially or completely, the rapid effects of changes in leaf water status
Descriptors:barley. dark. humidity. leaves. light. moisture-content. photoperiod. salinity. shoots. wheat. growth-rate. plant-water-relations
Organism Descriptors:Hordeum-vulgare. Triticum-aestivum. Triticum
Supplemental Descriptors:Hordeum. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Triticum
Subject Codes:FF005. FF060. FF062
Supplementary Info:32 ref
ISSN:0310-7841
Year:2000
Journal Title:Australian Journal of Plant Physiology

Title:A validation test of WEPP to predict runoff and soil loss from a pineapple farm on a sandy soil in subtropical Queensland, Australia
View Article: Australian Journal of Soil Research. 2000. 38 (3). 537-554
CD Volume:322
Print Article: Pages: 537-554
Author(s):Yu B Ciesiolka C A A Rose C W Coughlan K J

Author Affiliation:Faculty of Environmental Sciences, Griffith University, Nathan Qld. 4111, Australia
Language:English
Abstract:Monthly runoff and soil loss simulated by WEPP (Water Erosion Prediction Project) were compared with field observations on a pineapple farm in SE Queensland, Australia, for a 3-year period, on a sandy soil. Slope length and steepness are 36 m and 5.5%, respectively. Three treatments, namely bare, farmers' conventional practice, and mulching of the furrows, were used. Infiltration and erodibility parameters were determined using WEPP-recommended equations and measurable soil properties. These parameters were also calibrated using the runoff and soil loss data for the bare plot only. Apart from the soil loss prediction for the mulching treatment, for which WEPP did not perform well, the average coefficient of efficiency in runoff and soil loss predictions was -0.02 using soil property-based parameter values and 0.66 using calibrated parameter values. The corresponding r2 values are 0.57 and 0.81, respectively. On the whole, WEPP is able to reproduce the trend and variations in runoff and soil loss among different treatments for the site. Parameter values based on measurable soil properties would greatly underestimate the runoff and soil loss for the site. Thus, use of WEPP outside its US database requires calibration with locally obtained data. The WEPP does not seem to model effectively the situation where there is considerable flow impediment with the furrows covered with mulch. The WEPP was not rejected, because the statistical performance indicators are reasonable for the site, and because the model is so complex that it is nearly impossible to pinpoint the source of discrepancy and articulate the model deficiency on physical grounds
Descriptors:pineapples. runoff. sandy-soils. subtropics. deficiency. equations. erodibility. erosion. furrows. indicators. infiltration. mulches. mulching. properties. slope. soil-properties. treatment. water-erosion. tests. models
Geographic Locator:Australia. Queensland
Identifiers:pineapple soils
Organism Descriptors:Ananas-comosus
Supplemental Descriptors:Ananas. Bromeliaceae. Bromeliales. monocotyledons. angiosperms. Spermatophyta. plants. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:JJ300. PP400. JJ900
Supplementary Info:34 ref
ISSN:0004-9573
Year:2000
Journal Title:Australian Journal of Soil Research

Title:Laboratory experiments and modelling studies of leaching of intermittently drained columns
View Article: Australian Journal of Soil Research. 2000. 38 (4). 891-903
CD Volume:322
Print Article: Pages: 891-903
Author(s):Rose D A Adey M A Al Sibai M
Author Affiliation:Department of Agricultural and Environmental Science, University of Newcastle, Newcastle upon Tyne, NE1 7RU, UK
Language:English
Abstract:This paper examines the intermittent leaching of columns of porous ceramic spheres, as analogues of soil aggregates, in 3 ways: theoretically, by laboratory experiments, and by simulation. The work extends earlier investigations of continuously saturated columns to the case where columns drain during breaks in the leaching process. Solute movement during displacement is described by the mobile-immobile convection-dispersion equation but, because air replaces solution as the soil drains, it is considered to be immiscible rather than miscible displacement. During the rest period solute redistributes within the aggregates with the concentration at the surface of aggregates increasing. During the next leaching period transfer of solute into macropores is consequently faster. This results in a greater leaching efficiency. The

intermittent drained leaching is less efficient than the continuously saturated intermittent leaching (by 16% under the conditions of our experiment) as, in the latter system, solute can diffuse from within aggregates into macropores during rest periods. Nevertheless there is a benefit compared with continuous leaching. Modelling shows (1) that the first-order mass-transfer rate coefficient increases as the number of leaching cycles increases, (2) that the concentration profiles of solute down the column of aggregates differ substantially between the saturated and drained situations, and (3) that the concentrations in the mobile and immobile solutions at the base of the column converge towards the end of each leaching cycle
Descriptors:leaching. aggregates. air. analogues. displacement. macropores. miscible-displacement. simulation. solutes. transport-processes. movement-in-soil. simulation-models
Subject Codes:JJ200. ZZ100
Supplementary Info:11 ref
ISSN:0004-9573
Year:2000
Journal Title:Australian Journal of Soil Research

Title:Bacterial cholecystitis with cardiac and pulmonary dissemination in a blue-naped mousebird (Urocolius macrourus)
View Article: Avian Diseases. 2000. 44 (2). 460-464
CD Volume:298
Print Article: Pages: 460-464
Author(s):Ferrell S T Phalen D Weeks B R
Author Affiliation:Fossil Rim Wildlife Center, Department of Animal Health Services, P.O. Box 2189, 2155 County Road 2008, Glen Rose, TX 76043, USA
Language:English
Language of Summary:spanish
Descriptors:case-reports. cholecystitis. myocarditis. pneumonia. aviary-birds. gall-bladder-diseases. disseminated-infections
Geographic Locator:USA. Texas
Identifiers:Urocolius macrourus
Organism Descriptors:Enterobacter. Escherichia-coli. Coliiformes
Supplemental Descriptors:Enterobacteriaceae. Gracilicutes. bacteria. prokaryotes. Escherichia. birds. vertebrates. Chordata. animals. North-America. America. Developed-Countries. OECD-Countries. Southern-Plains-States-of-USA. West-South-Central-States-of-USA. Southern-States-of-USA. USA. Great-Plains-States-of-USA. Gulf-States-of-USA. Southwestern-States-of-USA
Subject Codes:LL821. LL070
Supplementary Info:8 ref
ISSN:0005-2086
Year:2000
Journal Title:Avian Diseases

Title:Some safety aspects of Salmonella vaccines for poultry: distribution and persistence of three Salmonella typhimurium live vaccines
View Article: Avian Diseases. 2000. 44 (4). 968-976
CD Volume:299
Print Article: Pages: 968-976
Author(s):Barbezange C Humbert F Rose V Lalande F Salvat G
Author Affiliation:Agence Francaise de Securite Sanitaire des Aliments-Ploufragan, Unite HQPAP, BP53, Zoopole des Cotes d'Armor, 22440 Ploufragan, France
Language:English
Language of Summary:spanish
Abstract:The purpose of this study was to analyze the safety characteristics of three commercially available live Salmonella vaccine strains (vacT, Zoosaloral, and chi 3985) in relation to their persistence in individual animals but also

within a flock and in the environment. In a first experiment, the digestive and systematic distributions in chickens were followed for 10 days in individually reared chickens that were orally inoculated at 1 day of age. Strain chi 3985 quickly disappeared from the digestive tract but remained in the liver until the end of this experiment, whereas strains vacT and Zoosaloral colonized the liver as well as the gut for 10 days. In the second trial, behaviour of the vaccine strains was studied in groups of 20 chickens during 10 wk after a single oral administration to individual birds. Strain vacT remained in the environment of inoculated animals for 4-5 wk. Six weeks after the inoculation, vacT was not recovered from internal organs such as liver and spleen, and vacT disappeared from the digestive tract between the sixth and the 10th weeks. Comparatively, both Zoosaloral and chi 3985 vaccine strains persisted longer in the environment (8 wk at least). Of the vaccine strains, chi 3985 showed the greatest colonization of both systemic and digestive organs
Descriptors:biosafety. colonization. digestive-tract. live-vaccines. liver. spleen. strain-differences. poultry
Organism Descriptors:fowls. Salmonella-typhimurium
Supplemental Descriptors:Gallus-gallus. Gallus. Phasianidae. Galliformes. birds. vertebrates. Chordata. animals. poultry. Salmonella. Enterobacteriaceae. Gracilicutes. bacteria. prokaryotes
Subject Codes:HH600. LL821
Supplementary Info:22 ref
ISSN:0005-2086
Year:2000
Journal Title:Avian Diseases

Title:Contribution of various constituents of activated sludge to membrane bioreactor fouling
View Article: Bioresource Technology. 73 (2). June, 2000. 105-112
CD Volume:326
Print Article: Pages: 105-112
Author(s):Defrance Laure Jaffrin Michel Y Gupta Bharat Paullier Patrick Geaugey Valery
Author Affiliation:Department of Biological Engineering, UMR CNRS 6600, Technological University of Compiegne, 60205, Compiegne
Language:English
Language of Summary:English (EN)
Abstract:Urban effluents were treated in a pilot membrane bioreactor (MBR) fed by raw wastewater from a sewage plant. The MBR consisted of an aerated tank fed with raw water containing a volume of 600 l of activated sludge which was recirculated through an external circuit containing a ceramic membrane of 0.25 m2 area with 0.1 mum pores. Suspended solids (SS) concentration was stabilized at 10 g/l. The sludge and hydraulic residence times (SRT and HRT) were 60 days and 24 h, respectively. Elimination of chemical oxygen demand was higher than 95%. Rheological tests showed that activated sludges from the MBR and from the aeration tank of a classical plant were non-Newtonian. In order to evaluate the contribution of various sludge fractions to fouling, SS were first separated from the sludge by settling, then colloids were separated from the supernatant by a combination of flocculation and settling. The relative contributions of SS, colloids, and dissolved molecules (DM) to the resistance to filtration caused by fouling were found to be 65%, 30% and 5%, respectively. The filtration resistance due to each constituent was also measured as a function of its concentration. The permeate flux did not decrease much when cellular concentration rose from 2 to 6 g/l. The measured total filtration resistance was then compared with the sum of resistances of each constituents at the same respective concentrations as in the sludge. This calculated sum was found to be 50% higher than the measured total resistance, indicating that fouling resistances caused by each constituent were not additive

Descriptors:activated sludge constituents; membrane fouling; total filtration resistance; wastewater treatment efficiency. Bioprocess Engineering; Equipment, Apparatus, Devices and Instrumentation; Waste Management (Sanitation)
Subject Codes:Bioprocess Engineering; Equipment, Apparatus, Devices and Instrumentation; Waste Management (Sanitation)
ISSN:0960-8524
Year:2000
Journal Title:Bioresource Technology

Title:Deforestation and population pressure in the state of Rondonia, Brazil
View Article: Bois et Forets des Tropiques. 2000. (No. 266). 23-33
CD Volume:353
Print Article: Pages: 23-33
Author(s):Imbernon J
Author Affiliation:CIRAD-TERA, 34398 Montpellier Cedex 5, France
Other Title:Deforestation et pression demographique au Rondonia, Bresil
Language:French
Language of Summary:spanish. english
Abstract:For more than 20 years, Brazilian Amazonia has been the site of a rapid conversion of rain forests to farming. The resulting deforestation is associated with the arrival of migrants and the construction of roads and thoroughfares, both supported by settlement programmes. Between 1950 and 1996 the population rose by 330%. However, population density is not the only factor behind this deforestation. Various land-use strategies adopted by settlers actually justify the scale of land clearance. In the state of Rondonia, there are 3 distinct deforestation processes, occuring at different paces and on different spatial scales: the development of farming (subsistence crops, annual crops and livestock rearing) by small farmers on land parcels in settlement zones, land speculation, and the extension of road networks to penetrate further into the forest and settle forested areas. Links between time and space scales are demonstrated by the joint use of satellite data about land use and census data. A combined analysis of these data brings to the forefront the social dimension of the conditions and changes observed
Descriptors:deforestation. tropical-rain-forests. settlement. farming-systems. livestock-farming. roads. infrastructure. population-density. land-development. monitoring. remote-sensing. satellite-imagery. land-clearance. forests
Geographic Locator:Rondonia. Brazil. Amazonia
Identifiers:land use population pressure. sbsistence farming
Supplemental Descriptors:Brazil. South-America. America. Developing-Countries. Threshold-Countries. Latin-America
Subject Codes:PP600. KK100. UU100. UU200. UU300. PP300. EE110. ZZ900
Supplementary Info:11 ref
ISSN:0006-579X
Year:2000
Journal Title:Bois et Forets des Tropiques

Title:Thermogenesis in three Philodendron species (Araceae) of French Guiana
View Article: Canadian Journal of Botany. 78 (5). May, 2000. 685-689
CD Volume:298
Print Article: Pages: 685-689
Author(s):Gibernau Marc Barabe Denis
Author Affiliation:Institut de Recherche en Biologie Vegetale, Universite de Montreal, Jardin Botanique de Montreal, 4101, Rue Sherbrooke est, Montreal, PQ, H1X 2B2
Language:English
Language of Summary:English (EN); French (FR)
Abstract:Spadix temperature was measured in three species of Philodendron: P. acutatum Schott, P. pedatum (Hooker) Kunth, and P. solimoesense A. C. Smith. These species showed two different patterns of spadix temperature during their

flowering cycle. In P. acutatum and P. pedatum (subgenus Philodendron), the spadix warmed up twice during the beginning of each flowering night with a temperature not significantly different from that of the ambient air between the two peaks. In P. solimoesense (subgenus Meconostigma), the spadix temperature rose to 14degreeC above that of the ambient air during the first night, then it progressively cooled down but remained 3- 6degreeC above the ambient air temperature. We propose that the heat production and the spadix temperature patterns observed may reflect different physiological processes and have a taxonomic significance in the genus Philodendron
Descriptors:flowering cycle. Physiology; Systematics and Taxonomy
Geographic Locator:French Guiana (South America, Neotropical region)
Organism Descriptors:Philodendron acutatum (Araceae); Philodendron pedatum (Araceae); Philodendron solimoesense (Araceae). spadix
Supplemental Descriptors:Araceae: Monocotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Monocots; Plants; Spermatophytes; Vascular Plants
Subject Codes:Physiology; Systematics and Taxonomy
ISSN:0008-4026
Year:2000
Journal Title:Canadian Journal of Botany

Title:Flower orientation in Pachycereus pringlei
View Article: Canadian Journal of Botany. 78 (12). December, 2000. 1489-1494
CD Volume:298
Print Article: Pages: 1489-1494
Author(s):Tinoco Ojanguren Clara Molina Freaner Francisco
Author Affiliation:Departamento de Ecologia Funcional, Estacion Regional del Noroeste, Instituto de Ecologia, Universidad Nacional Autonoma de Mexico, Hermosillo, SON: Clara1@servidor.unam.mx
Language:English
Language of Summary:English (EN); French (FR)
Abstract:The orientation of flowers in columnar cacti has been a subject of great interest to plant biologists. The interpretation of this pattern has invoked warmer temperatures as the underlying factor. In this paper, we describe flower orientation in two populations of Pachycereus pringlei (S. Watson) Britton & Rose and propose a hypothesis of the underlying mechanism. Stems from the two populations showed a significant mean direction of their flowers, with most flowers (70-77%) present between 90 and 270degree. Photosynthetic photon flux density interception and stem temperature reached maximum values on south-facing ribs, showing concordance with flower orientation. We suggest that PFD interception, through its influence on CO2 uptake and stem temperature, is the major factor underlying the observed orientation of flowers in P. pringlei
Descriptors:photosynthetic photon flux density: interception; stem temperature. Climatology (Environmental Sciences); Terrestrial Ecology (Ecology, Environmental Sciences); Radiation Biology. carbon dioxide: uptake
Organism Descriptors:Pachycereus pringeli (Cactaceae). flower: orientation, reproductive system
Supplemental Descriptors:Cactaceae: Dicotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
Subject Codes:Climatology (Environmental Sciences); Terrestrial Ecology (Ecology, Environmental Sciences); Radiation Biology
ISSN:0008-4026
Year:2000
Journal Title:Canadian Journal of Botany

Title:Isolation of Tn916-like conjugal elements from swine lot effluent
View Article: Canadian Journal of Microbiology. 46 (6). June, 2000. 542-549
CD Volume:299
Print Article: Pages: 542-549

Author(s):Haack Bradley J Andrews Robert E Jr
Author Affiliation:Department of Microbiology, Iowa State University, 207 Science 1, Ames, IA, 50011-3211
Language:English
Language of Summary:English (EN); French (FR)
Abstract:Isolates of Enterococcus faecalis obtained from a swine farrowing house outflow were examined for genetic elements similar to Tn916. Of the enterococci isolated, 71% were resistant to tetracycline. Among the tetracycline-resistant enterococci isolated from the outflow samples, approximately 34% were able to transfer the tetracycline resistance phenotype to Bacillus thuringiensis in cross-genus matings. The frequencies of transfer for 10 random isolates were comparable to those for transfer of Tn916 from E. faecalis to B. thuringiensis. In addition, these elements were shown to mobilize plasmid pC194 between Bacillus species, as did Tn916. Southern blot and polymerase chain reaction (PCR) analysis showed these elements share extensive structural homology with Tn916. The selected conjugal elements were capable of transfer to a Bacillus recipient in a soil environment. When the swine waste was introduced into the soil, the tetracycline resistant fecal enterococci levels rose from essentially undetectable levels to approximately 4 X 104 and remained at this level for 4 weeks. After six months, including one winter, levels had decreased to 5 X 103
Descriptors:TN916-like conjugal elements: isolation; bacterial antibiotic resistance mechanisms; conjugation: analysis; genetic exchange; swine farrowing house outflow: analysis; swine lot effluents: analysis. Molecular Genetics (Biochemistry and Molecular Biophysics); Waste Management (Sanitation)
Organism Descriptors:Enterococcus faecalis (Gram-Positive Cocci); bacteria (Bacteria); swine (Suidae)
Supplemental Descriptors:Bacteria: Microorganisms; Gram-Positive Cocci: Eubacteria, Bacteria, Microorganisms; Suidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Bacteria; Chordates; Eubacteria; Mammals; Microorganisms; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Molecular Genetics (Biochemistry and Molecular Biophysics); Waste Management (Sanitation)
ISSN:0008-4166
Year:2000
Journal Title:Canadian Journal of Microbiology

Title:Use of lactose to induce expression of soluble NifA protein domains of Herbaspirillum seropedicae in Escherichia coli
View Article: Canadian Journal of Microbiology. 46 (11). November, 2000. 1087-1090
CD Volume:300
Print Article: Pages: 1087-1090
Author(s):Monteiro Rose A Souza Emanuel M Yates M Geoffrey Pedrosa Fabio O Chubatsu Leda S
Author Affiliation:Department of Biochemistry, Universidade Federal do Parana, Curitiba, PR, 81531-990: chubatsu@bio.ufpr.br
Language:English
Language of Summary:English (EN); French (FR)
Abstract:Overexpression and purification are procedures used to allow functional and structural characterization of proteins. Many overexpressed proteins are partially or completely insoluble, and can not be easily purified. The NifA protein is an enhancer-binding protein involved in activating the expression of nif and some fix genes. The NifA protein from many organisms is usually insoluble when over-expressed, and therefore difficult to work with in vitro. In this work we have overexpressed the central+C-terminal and the central domains of the Herbaspirrilum seropedicae NifA protein in an Escherichia coli background. Expression was induced with either IPTG or lactose. The data showed that induction with lactose promoted a significantly higher percentage of these

proteins in the soluble fraction than with IPTG. This probably reflects a slower kinetics of induction by lactose
Descriptors:Molecular Genetics (Biochemistry and Molecular Biophysics). IPTG [isopropyl-beta-D-thiogalactopyranoside]: inducer; NifA: enhancer-binding protein; lactose: inducer. Herbaspirillum seropedicae fix gene (Aerobic Helical or Vibrioid Gram-Negatives); Herbaspirillum seropedicae nif gene (Aerobic Helical or Vibrioid Gram-Negatives)
Organism Descriptors:Escherichia coli (Enterobacteriaceae): gene expression system; Herbaspirillum seropedicae (Aerobic Helical or Vibrioid Gram- Negatives)
Supplemental Descriptors:Aerobic Helical or Vibrioid Gram-Negatives: Eubacteria, Bacteria, Microorganisms; Enterobacteriaceae: Facultatively Anaerobic Gram-Negative Rods, Eubacteria, Bacteria, Microorganisms. Bacteria; Eubacteria; Microorganisms
Subject Codes:Molecular Genetics (Biochemistry and Molecular Biophysics)
ISSN:0008-4166
Year:2000
Journal Title:Canadian Journal of Microbiology

Title:Registration of 'Jaguar 3' tall fescue
View Article: Crop Science. 2000. 40 (1). 290-291
CD Volume:300
Print Article: Pages: 290-291
Author(s):Rose Fricker C A Fraser M L Meyer W A Zajac J Funk C R
Author Affiliation:Pure Seed Testing Inc., P.O. Box 449, Hubbard, OR 97032, USA
Language:English
Abstract:A brief description is provided for this tall fescue (Festuca arundinacea) cultivar (PI583290), released in 1992 for turf uses. The original parental germplasm of Jaguar 3 traces its lineage to plants selected from or related to Rebel and plants selected from 1962 to 1982 from old turfs in a number of US states. Jaguar 3 is a medium-dark-green tall fescue that has shown good turf quality in trials throughout the USA
Descriptors:cultivars. varieties. characteristics. lawns-and-turf. fodder-plants. ornamental-plants
Geographic Locator:USA
Identifiers:Jaguar-3
Organism Descriptors:Festuca-arundinacea. grasses. Poaceae
Supplemental Descriptors:Festuca. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. North-America. America. Developed-Countries. OECD-Countries
Subject Codes:FF020. FF003
Supplementary Info:2 ref
ISSN:0011-183X
Year:2000
Journal Title:Crop Science

Title:Registration of 'Shademaster' strong creeping red fescue
View Article: Crop Science. 2000. 40 (1). 291
CD Volume:300
Print Article: Pages: 291
Author(s):Rose Fricker C A Fraser M L Meyer W A
Author Affiliation:Pure Seed Testing Inc., P.O. Box 449, Hubbard, OR 97032, USA
Language:English
Abstract:Released in 1987, Festuca rubra cv. Shademaster (PI601706) is an advanced-generation synthetic cultivar derived from the progenies of nine plants selected from Vista. Shademaster is noted for its good shade tolerance and good turf quality under moderate or low maintenance conditions
Descriptors:characteristics. varieties. cultivars. shade. lawns-and-turf. fodder-plants. ornamental-plants
Identifiers:Shademaster

Organism Descriptors:Festuca-rubra. grasses. Poaceae
Supplemental Descriptors:Festuca. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:FF020. FF003. FF030
ISSN:0011-183X
Year:2000
Journal Title:Crop Science
Copyright:Copyright CAB International

Title:Cross species inoculation of Chewings and strong creeping red fescues with fungal endophytes
View Article: Crop Science. 2000. 40 (5). 1485-1489
CD Volume:300
Print Article: Pages: 1485-1489
Author(s):Johnson Cicalese J Secks M E Lam C K Meyer W A Murphy J A Belanger F C
Author Affiliation:Dep. of Plant Science, Rutgers, State University of New Jersey, 59 Dudley Rd., New Brunswick, NJ 08901-8520, USA
Language:English
Abstract:An effective technique was developed to inoculate 5 mature Chewings fescue (Festuca rubra subsp. fallax) and 6 strong creeping red fescue (Festuca rubra subsp. rubra) tillers with 4 fungal endophytes (3 Epichloe festucae and a Neotyphodium sp.). The 3 Epichloe festucae endophytes were designated as follows: Rose City, isolated from a strong creeping red fescue, and Cambridge and Delaware, both isolated from Chewings fescue plants. The Neotyphodium sp. endophyte was identified in Poa ampla cv. Service. Cultures of these endophytes were established from surface-sterilized endophyte-infected seeds. Plants to be inoculated were separated into individual tillers with roots. Leaf blades were trimmed to about 3 cm and a vertical slit of about 2 mm made at the junction between the root and shoot. A small piece of fungal mycelium was then removed from the culture plate and inserted into the slit. The tiller was immediately planted into potting mix and returned to the greenhouse. New growth was microscopically examined for the presence of endophyte. All 5 Chewing fescues and 3 of the 6 strong creeping red fescues were successfully inoculated. Eleven percent of the tillers were successfully inoculated, and all inoculated plants transmitted the endophytes to their offspring. This set of inoculated plants, with various combinations of genotypes and endophyte strains, allowed us to compare the effects of different endophytes on one host, and one endophyte on several hosts. When evaluated in the field (in a spaced-plant nursery at Adelphia, New Jersey, USA during 1997), the growth characteristics of these plants were dependent on endophyte and host genotype. Considerable interaction between the genotypes was seen. For example, one host inoculated with the Poa ampla endophyte showed enhanced performance, while another host inoculated with the same endophyte performed poorly
Descriptors:endophytes. genotypes. host-plants. inoculation. techniques. tillers
Identifiers:Epichloe festucae. Neotyphodium
Organism Descriptors:Epichloe. Festuca-rubra. Poa-ampla
Supplemental Descriptors:Clavicipitales. Ascomycotina. Eumycota. fungi. Epichloe. Festuca. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Poa
Subject Codes:FF007. ZZ390. ZZ900
Supplementary Info:32 ref
ISSN:0011-183X
Year:2000
Journal Title:Crop Science
Copyright:Copyright CAB International

Title:Catching Ariadne by her thread: how a parasitoid exploits the herbivore's marking trails to locate its host
View Article: Entomologia Experimentalis et Applicata. 2000. 95 (1). 77-85
CD Volume:309

Print Article: Pages: 77-85
Author(s):Hoffmeister T S Roitberg B D Lalonde R G
Author Affiliation:Behavioural Ecology Research Group, Department of Biological Sciences, Simon Fraser University, Burnaby, B.C., Canada
Language:English
Abstract:Chemical signals that can be associated with the presence of a host insect often work as arrestants in close range host location by parasitoids, leading to longer searching times on patches where such signals are present. Our current view of parasitoid host location is that by prolonging the search times in patches, randomly searching parasitoids enhance their chance of detecting host insects. However, prolonged search times are not necessarily the only modification in parasitoid behaviour. In this study, we examine the exploitation of host-fruit marking pheromone of rose-hip flies, Rhagoletis basiola Osten-Sacken (Diptera: Tephritidae) by the specialized egg-larval parasitoid Halticoptera rosae Burks (Hymenoptera: Pteromalidae). We provide evidence that the instantaneous probability that a host egg will be located by a searching parasitoid wasp differs markedly between pheromone-marked and unmarked fruits. The arresting response to the marking pheromone, i.e., the prolonged time a wasp is willing to search on marked fruits, can only account for a small fraction of the difference in successful host location on marked and unmarked fruits. We further demonstrate that the time wasps require to locate the host egg is independent of the size of the rose-hip harbouring the fly egg, and thus is independent of the area the wasp potentially has to search. A comparison of our findings with results of different search algorithms for parasitoid wasps suggests that wasps use the fly's pheromone marking trail as a guide way to the fly's oviposition site and thus the host egg
Descriptors:parasitoids. oviposition. hosts. natural-enemies. agricultural-entomology
Identifiers:Rhagoletis basiola. Halticoptera rosae
Organism Descriptors:Diptera. Halticoptera. Pteromalidae. Rhagoletis. Tephritidae. arthropods
Supplemental Descriptors:insects. arthropods. invertebrates. animals. Pteromalidae. Hymenoptera. Tephritidae. Diptera. Rhagoletis. Halticoptera
Subject Codes:YY500. FF620. YY700. HH100
Supplementary Info:48 ref
ISSN:0013-8703
Year:2000
Journal Title:Entomologia Experimentalis et Applicata

Title:Heavy contamination of a subsurface aquifer and a stream by livestock wastewater in a stock farming area, Wonju, Korea
View Article: Environmental Pollution. 109 (1). 2000. 137-146
CD Volume:334
Print Article: Pages: 137-146
Author(s):Cho Jang Cheon Cho Hong Baek Kim Sang Jong
Author Affiliation:Department of Microbiology, College of Natural Sciences, Seoul National University, Seoul, 151-742
Language:English
Language of Summary:English (EN)
Abstract:A survey of groundwater and stream water quality was undertaken in a stock farming area where livestock wastewater infiltrates into sandy unsaturated zones and saturated bedrock aquifers containing fractures. To determine the degree of contamination and track the effect of livestock wastewater on groundwater and stream water quality, the population of indicator bacteria (total coliforms, fecal coliforms, fecal streptococci, Staphylococcus spp., and sulfite-reducing clostridia) together with relevant physicochemical parameters were monitored along the wastewater flow-pathways over a 19-month period. The stream water was severely contaminated with livestock wastewater. Nearly all physicochemical and bacteriological parameters in the stream water were much greater than those in the groundwater. Nitrate-N concentrations ranged from 10.0

to 20.0 mg l-1 in boreholes located downstream (site C) from the livestock waste disposal site, while those in the background borehole (W2) were below 1.0 mg l-1. Densities of indicator bacteria in boreholes at site C were two or three orders of magnitude higher than those in W2 borehole. In boreholes located downstream from the livestock waste disposal site, the concentration of ammonium-N, nitrate-N, and pollution indicator bacteria increased as groundwater level rose due to infiltration of rainwater. In W2 borehole, however, physicochemical parameters and the number of pollution indicator bacteria had no correlation with the groundwater level. Collectively, these results suggest that the deep aquifers were heavily contaminated with infiltrated livestock wastewater, which consequently must be adequately treated to minimize groundwater pollution
Descriptors:borehole bacteria density; contaminated stream; contaminated subsurface aquifer; environmental pollution; livestock wastewater; polluted groundwater; polluted stream water; stock farming area. Agriculture; Freshwater Ecology (Ecology, Environmental Sciences); Pollution Assessment Control and Management; Waste Management (Sanitation)
Geographic Locator:Korea (Palearctic region): Wonju
Organism Descriptors:Staphylococcus sp. (Micrococcaceae): bioindicator; clostridia (Endospore-forming Gram-Positives): bioindicator, sulfite-reducing; coliforms (Enterobacteriaceae): bioindicator, fecal, total; streptococci (Gram-Positive Cocci): bioindicator
Supplemental Descriptors:Endospore-forming Gram-Positives: Eubacteria, Bacteria, Microorganisms; Enterobacteriaceae: Facultatively Anaerobic Gram- Negative Rods, Eubacteria, Bacteria, Microorganisms; Gram-Positive Cocci: Eubacteria, Bacteria, Microorganisms; Micrococcaceae: Gram- Positive Cocci, Eubacteria, Bacteria, Microorganisms. Bacteria; Eubacteria; Microorganisms
Subject Codes:Agriculture; Freshwater Ecology (Ecology, Environmental Sciences); Pollution Assessment Control and Management; Waste Management (Sanitation)
ISSN:0269-7491
Year:2000
Journal Title:Environmental Pollution

Title:Atmospheric input of elements to forest ecosystems: A method of estimation using artificial foliage placed above rain collectors
View Article: Environmental Pollution. 110 (2). 2000. 345-356
CD Volume:334
Print Article: Pages: 345-356
Author(s):Stachurski A Zimka J R
Author Affiliation:Department of Plant Ecology, Institute of Ecology, Polish Academy of Sciences, Dziekanow Lesny near Warsaw, 05-092, Lomianki
Language:English
Language of Summary:English (EN)
Abstract:Usefulness of a method of artificial foliage was tested for estimation of total ionic inputs from the atmosphere to forest ecosystems, as well as of processes relevant to ionic fluxes through tree canopies: uptake, leaching, passive flow. The studies were performed in Norway spruce and European beech stands in Karkonosze Mountains (Poland), in 1995-97. Artificial leaves of increasing leaf area index: 0, 2, 6 and 12 m2 m-2 were placed above standard rain collectors. It has been found that total atmospheric fluxes of H+, NH4+, Ca2+, Mg2+, Pb2+, NO3- and SO42- rose as surface area of the foliage increased. This was especially true for nitrate, sulphate and ammonium. No such relationship was found for K+, Na+, Zn2+, Cd2+, Cu2+ and PO43-. The increase in anion fluxes exceeded that in neutralising cations (NH4+, Na+, K+, Mg2+, Ca2+) and led to progressive rainwater acidification with the increase in the foliage area. An analysis of net canopy exchange (atmospheric input-throughfall flux) has shown that SO42-, PO43-, Na+, Ca2+ and Cu2+ flowed passively through the tree crowns; NH4+, NO3-, Zn2+, Cd2+ and occasionally Pb2+ were efficiently absorbed, whereas K+ was leached from the canopies. Beech was more effective in modifying ionic pool from the atmosphere than spruce. This related to H+

(greater absorption) and Mg2+ (greater leaching). It has been demonstrated that the results concerning trends in net canopy exchange and produced by the simple method of artificial foliage are comparable to more sophisticated techniques of the measurements. This proves the method to be useful
Descriptors:acid rain pollution; artificial foliage; foliage surface area; forest ecosystem; net canopy exchange; rainwater acidification. Climatology (Environmental Sciences); Terrestrial Ecology (Ecology, Environmental Sciences); Pollution Assessment Control and Management; Toxicology. ammonium: atmospheric, pollutant, toxin; cadmium (II) ions: atmospheric, pollutant, toxin; calcium (II) ions: atmospheric, pollutant, toxin; copper (II) ions: atmospheric, pollutant, toxin; hydrogen ion: atmospheric, pollutant, toxin; lead (II) ions: atmospheric, pollutant, toxin; magnesium (II) ions: atmospheric, pollutant, toxin; nitrate: atmospheric, pollutant, toxin; phosphate: atmospheric, pollutant, toxin; potassium ions: atmospheric, pollutant, toxin; sodium ions: atmospheric, pollutant, toxin; sulfate: atmospheric, pollutant, toxin; zinc (II) ions: atmospheric, pollutant, toxin
Geographic Locator:Karkonosze Mountains (Poland, Europe, Palearctic region)
Organism Descriptors:European beech (Fagaceae); Norway spruce (Coniferopsida)
Supplemental Descriptors:Coniferopsida: Gymnospermae, Spermatophyta, Plantae; Fagaceae: Dicotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Dicots; Gymnosperms; Plants; Spermatophytes; Vascular Plants
Subject Codes:Climatology (Environmental Sciences); Terrestrial Ecology (Ecology, Environmental Sciences); Pollution Assessment Control and Management; Toxicology
ISSN:0269-7491
Year:2000
Journal Title:Environmental Pollution

Title:A family of ubiquitin-like proteins binds the ATPase domain of Hsp70-like Stch
View Article: FEBS Lett 2000 Feb 11;467(2-3):348-55
CD Volume:327
Print Article: Pages: 348-355
Author(s):Kaye FJ Modi S Ivanovska I Koonin EV Thress K Kubo A Kornbluth S Rose MD
Author Affiliation:Medicine Branch, Division of Clinical Sciences, National Cancer Institute and National Naval Medical Center, Bethesda, MD, USA. fkaye@helix.nih.gov
Abstract:We have isolated two human ubiquitin-like (UbL) proteins that bind to a short peptide within the ATPase domain of the Hsp70-like Stch protein. Chap1 is a duplicated homologue of the yeast Dsk2 gene that is required for transit through the G2/M phase of the cell cycle and expression of the human full-length cDNA restored viability and suppressed the G2/M arrest phenotype of dsk2Delta rad23Delta Saccharomyces cerevisiae mutants. Chap2 is a homologue for Xenopus scythe which is an essential component of reaper-induced apoptosis in egg extracts. While the N-terminal UbL domains were not essential for Stch binding, Chap1/Dsk2 contains a Sti1-like repeat sequence that is required for binding to Stch and is also conserved in the Hsp70 binding proteins, Hip and p60/Sti1/Hop. These findings extend the association between Hsp70 members and genes encoding UbL sequences and suggest a broader role for the Hsp70-like ATPase family in regulating cell cycle and cell death events
Descriptors:Adenosinetriphosphatase. Amino Acid Sequence. Cell Cycle Proteins. Fungal Proteins. Heat-Shock Proteins 70. Human. Molecular Sequence Data. Saccharomyces cerevisiae. Sequence Alignment. Support, Non-U.S. Gov't. Support, U.S. Gov't, Non-P.H.S.. Support, U.S. Gov't, P.H.S.. Ubiquitin
Geographic Locator:NETHERLANDS
ISSN:0014-5793
Year:2000
Journal Title:FEBS Letters

Title:The effects of windthrow on forests at different spatial scales: a review
View Article: Forest Ecology and Management. 2000. 135 (1/3). 155-167
CD Volume:337
Print Article: Pages: 155-167
Author(s):Ulanova N G
Author Affiliation:Department of Geobotany, Biological Faculty, Moscow State University, Moscow 119899, Russia
Conference Title:Special issue. Selected papers from the IUFRO conference 'Wind and other abiotic risks to forests', held in Joensuu, Finland, August 1998
Language:English
Abstract:This paper aims at reviewing the ecological effects of windthrow and the processes by which the structure and composition of the boreal forest are affected. The windthrow problem has been investigated in Russia at different levels: landscape; forest community; and fallen tree ecosystems. All original data are from natural, protected, uneven-aged boreal Norway spruce (Picea abies) forests of the central Russian Plain. Mapping of vegetation was used to detect windthrow processes in primary forest communities. The scales of windthrow gaps in space and time determine the patch structure of the forest ecosystems. The main result of this phenomenon is the occurrence of gap-phase dynamics in forest communities. The development of gaps is very important for the survival of small and broadleaved trees in boreal coniferous forests. In the case study of the scales of natural windthrow disturbances, it was found that in uneven-aged Norway spruce forests, 7-12% of the surface was covered by pit-and-mound topography. After widespread windthrow, this figure rose to 15-25%. In this context, a procedure for dating windthrow topography was developed, along with methods of diagnosing uprooting disturbances of the soil. Much attention was also paid to the structure and properties of soil where uprooting had occurred. It was found that the microsites which are found in pit-and-mound topography differ pedogenically. Furthermore, the nature and rate of recovery of the background soil profile after uprooting varied a lot: e.g., with shallow uprooting the reconstruction of background soil conditions and processes was complete within 100 to 200 years, whereas in cases of major uprootings, it took more than a 200- to 300-year cycle. The role of tree uprooting in maintaining stable tree and grass population structures in forest communities was found to be very important. Spatial distribution of trees was associated with pit-and-mound topography in all types of forests. Furthermore, spruce trees regenerated better on mounds and fallen trees than on undisturbed surfaces. Multi-aged tree regrowth was therefore being constantly formed in virgin forests. There was also an increase in plant community floristic richness due to the establishment of certain pioneer species from other communities in microsites disturbed by uprooting. The gene pool of a population was rejuvenated as the plants appeared in these microsites from seeds and spores, whereas propagation in undisturbed areas was predominantly vegetative. As a result, the structure of forest plant populations was found to be in a stable multi-aged state
Descriptors:forest-trees. natural-regeneration. canopy-gaps. wind-damage. wind. plant-succession. forest-ecology. boreal-forests. vegetation-types. understorey. pioneer-species. plant-colonization. microclimate. spatial-distribution. effects. wind. ecosystems. stand-characteristics. stand-structure. botanical-composition. topography. ground-vegetation. virgin-forests. coniferous-forests. age. stand-age. soil
Geographic Locator:Russia
Organism Descriptors:Picea-abies
Supplemental Descriptors:Picea. Pinaceae. Pinopsida. gymnosperms. Spermatophyta. plants. Asia. Central-Europe. Europe. Developed-Countries
Subject Codes:ZZ331. PP800. FF700. JJ400. KK100. PP720
Supplementary Info:57 ref
ISSN:0378-1127
Year:2000
Journal Title:Forest Ecology and Management

Title:Damage and recovery of tree species after two different tornadoes in the same old growth forest: a comparison of infrequent wind disturbances
View Article: Forest Ecology and Management. 2000. 135 (1/3). 237-252
CD Volume:337
Print Article: Pages: 237-252
Author(s):Peterson C J
Author Affiliation:Department of Botany, 2502 Plant Sciences Building, University of Georgia, Athens, GA 30602, USA
Conference Title:Special issue. Selected papers from the IUFRO conference 'Wind and other abiotic risks to forests', held in Joensuu, Finland, August 1998
Language:English
Abstract:Catastrophic wind disturbances in natural forests remain poorly studied, and the literature allows few comparisons of damage and recovery in the same forests disturbed by distinct wind events. Thus, it is still uncertain whether published findings are idiosyncratic or representative. Here damage and recovery patterns are described for a large, primary hemlock/northern hardwoods forest in Pennsylvania, USA, which was struck by two separate tornadoes in 1985 and 1994, roughly 3 km apart. Dominant canopy species are Fagus grandifolia and Tsuga canadensis, co-dominants are Acer saccharum, Betula alleghaniensis and Prunus serotina; before the tornadoes, the study areas had been free of large-scale disturbance for at least 4000 years. The damage from the 1985 event was nearly complete, while the 1994 event left nearly two-thirds of the trees standing. The relationship between risk of damage to tree size was very different for the two events: it rose very steeply and achieved 100% damage at around 40 cm DBH [diameter at breast height] in the intense 1985 event, but was more linear in the 1994 event. Interspecific differences in the amount of damage within a given size class were significant in the less intense 1994 event, but were not detectable in the 1985 event. In both events, uprooted trees created root pits proportional to the size of the tree, and the pit size-tree size relationship did not differ between events. Although amount of damage differed between events, both sites showed a pattern of greater uprooting in intermediate size classes, considering only fallen trees. Sprouting by damaged trees was not abundant after either event, with 25% of snapped trees sprouting after the 1985 event, and 15.5% of damaged or down trees sprouting after the 1994 event. Survival of sprouted trees appeared similar between events: 68% were alive 4 years after the 1985 event, and 78% were alive 2 years after the 1994 event. Regeneration in the more severe 1985 blowdown was dominated by mid-successional Betula spp. species, while recruitment of new seedlings after the 1994 event was more modest. Future forest composition will shift dramatically after the very severe 1985 blowdown, while the forest area affected by the 1994 event will be a mixture of surviving canopy trees, sprouts and seedlings that survived in the understorey, and some newly-established individuals, which will slightly increase the representation of Betula spp. in the canopy
Descriptors:wind-damage. wind. storms. forests. natural-regeneration. old-growth-forests. vegetation-types. canopy. effects. stand-characteristics. stand-structure. age-of-trees. age. diameter. dimensions. sprouting. survival. plant-succession. forest-ecology. botanical-composition
Geographic Locator:Pennsylvania. USA
Organism Descriptors:Fagus-grandifolia. Tsuga-canadensis. Acer-saccharum. Betula. Betula-alleghaniensis. Prunus-serotina
Supplemental Descriptors:Middle-Atlantic-States-of-USA. Northeastern-States-of-USA. USA. North-America. America. Developed-Countries. OECD-Countries. Fagus. Fagaceae. Fagales. dicotyledons. angiosperms. Spermatophyta. plants. Tsuga. Pinaceae. Pinopsida. gymnosperms. Acer. Aceraceae. Sapindales. Betulaceae. Betula. Prunus. Rosaceae. Rosales
Subject Codes:KK110. PP800. PP500. FF700. ZZ331. KK100
Supplementary Info:54 ref
ISSN:0378-1127
Year:2000
Journal Title:Forest Ecology and Management

Title:Indole-3-acetic acid concentration during fruit development in date palm (Phoenix dactylifera L. cv. Hillawi)
View Article: Fruits (Paris) 2000. 55 (2). 115-118
CD Volume:318
Print Article: Pages: 115-118
Author(s):Abbas M F Abbas M J Abdel Basit O I
Author Affiliation:College of agriculture, Basrah University, Basrah, Iraq
Language:English
Language of Summary:spanish. french
Abstract:Endogenous IAA concentrations during fruit development of dates cv. Hillawi, growing in Basrah area, Iraq, were determined. Fifteen-year-old date palms were hand-pollinated and fruit sampling started from pollination and continued until fruits were completely ripened. IAA concentrations were determined by HPLC. IAA concentration was very high in non-pollinated flowers; it declined at fruit set, rose again as fruits entered the rapid phase of growth (log phase), then declined as fruits advanced toward the ripening phase. The high IAA content of Hillawi female flowers is probably responsible for the natural tendency of this cultivar to set parthenocarpic fruits if flowers are unpollinated. Changes in IAA concentration during fruit development may reflect the role of this natural hormone in the control of various fruit developmental stages
Descriptors:dates. plant-composition. chemical-composition. plant-growth-regulators. endogenous-growth-regulators. chromatography. plant-development. ripening. extraction. flowers. fruit-set. IAA. pollination. parthenocarpy. auxins. fruit-crops. fruits. subtropical-fruits
Geographic Locator:Iraq
Organism Descriptors:Phoenix-dactylifera
Supplemental Descriptors:Phoenix. Arecaceae. Arecales. monocotyledons. angiosperms. Spermatophyta. plants. West-Asia. Asia. Middle-East. Developing-Countries. Threshold-Countries
Subject Codes:FF003. FF060
Supplementary Info:12 ref
ISSN:0248-1294
Year:2000
Journal Title:Fruits

Title:Changes in vanillin and glucovanillin concentrations during the various stages of the process traditionally used for curing Vanilla fragrans beans in Reunion
View Article: Fruits (Paris) 2000. 55 (2). 119-125
CD Volume:318
Print Article: Pages: 119-125
Author(s):Odoux E
Author Affiliation:Laboratoire d'analyses chromatographiques du Cirad, Centre de la Reunion, Maison regionale des sciences et technologies, 100, route de la Riviere-des-Pluies, 97490 Sainte-Clotilde, Reunion
Language:English
Language of Summary:spanish. french
Abstract:Changes in the contents of vanillin and glucovanillin in beans of V. fragrans during the traditional curing process were investigated. The most important stages promoting the hydrolysis of glucovanillin into vanillin in order to improve the yield of vanillin were determined. A batch of 400 kg of green beans was cured using the traditional curing process consisting of killing, sweating, drying, washing, and conditioning. Beans were sampled after harvest (the green stage) and at each stage of the curing process. After extracting the aromatic compounds, the vanillin concentration was determined by HPLC. The dry matter (DW) content of each sample was determined as well. During the different stages of the curing process, water was lost from the beans. During the first phases of the curing process, the vanillin content rose in

stages with each phase of the sweating process and remained steady (2.2 g/100 g DW) when drying was initiated. The concentration of total vanillin (in its aglycone and glycosylated forms) was steady until the drying process (5.5 g/100 g) after which it decreased through the conditioning stage (2.8 g/100 g). The vanillin yield from the glucovanillin enzymatic hydrolysis amounted to about 40%. The study revealed 2 crucial phases: the killing and sweating stages on the one hand and the drying stage on the other hand
Descriptors:curing. aromatic-compounds. hydrolysis. yields. spice-plants. plant-composition. chemical-composition. vanillin. phenolic-compounds. quality
Geographic Locator:Reunion
Organism Descriptors:Vanilla. Vanilla-planifolia
Supplemental Descriptors:Orchidaceae. Orchidales. monocotyledons. angiosperms. Spermatophyta. plants. Vanilla. Indian-Ocean-Islands. Developing-Countries. Francophone-Africa
Subject Codes:FF003. FF040. QQ070
Supplementary Info:15 ref
ISSN:0248-1294
Year:2000
Journal Title:Fruits
Copyright:Copyright CAB International

Title:Seasonal changes in sex and adrenal steroid hormones of gopher tortoises (Gopherus polyphemus)
View Article: Gen Comp Endocrinol 2000 Feb;117(2):299-312
CD Volume:326
Print Article: Pages: 299-312
Author(s):Ott JA Mendonca MT Guyer C Michener WK
Author Affiliation:Department of Zoology and Wildlife Science, Auburn University, Alabama 36849, USA. jott@jonesctr.org
Abstract:We sampled a population of gopher tortoises (Gopherus polyphemus) from May to October 1997 to determine seasonal cycles of steroid hormones (testosterone, T; 17beta-estradiol, E; and progesterone, P) and related them to observations of mating behavior. In males, plasma T levels peaked in July and August and remained elevated through October. This coincides with the reported time of peak mating and spermatogenesis, indicating that males display an associated pattern of reproduction. In females, E levels were high in September and October. Plasma T levels in females were elevated in May, decreased to basal levels in June and July, and rose again in August and September. Elevated E and T levels correspond to the reported time of peak vitellogenic activity, indicating that females also display an associated cycle. Plasma P in females remained basal throughout the active season, suggesting that ovulation occurs in late winter. We also determined levels of corticosterone (B) to assess the influence of capture stress on tortoises and correlated B levels with tortoise activity patterns and sex steroid levels. We found no seasonal variation in levels of B in males or females. Plasma B levels were not correlated with levels of T or E, but were positively correlated with female P levels. Further, we found no relationship between plasma B levels in males and mean distance moved, mean number of burrows used, or mean home range size. However, there was a significant negative correlation between plasma B levels and male body size. In females, there was no relationship between B levels and mean distance moved, but B levels were significantly negatively correlated with the number of burrows females occupied. Lastly, there was no relationship between levels of B and the number of minutes required to obtain blood from an animal. However, B levels increased with the length of time that a tortoise spent in a trap, suggesting that trapped tortoises do exhibit capture stress
Descriptors:Adrenal Cortex Hormones. Animal. Body Weight. Corticosterone. Estradiol. Female. Growth. Male. Motor Activity. Ovarian Follicle. Ovary. Progesterone. Radioimmunoassay. *Seasons. Sex Hormones. Stress, Psychological. Support, Non-U.S. Gov't. Testis. Testosterone. Turtles
Geographic Locator:UNITED STATES
ISSN:0016-6480

Year:2000
Journal Title:General and Comparative Endocrinology

Title:Evidence for a hormonal tactic maximizing green turtle reproduction in response to a pervasive ecological stressor
View Article: Gen Comp Endocrinol 2000 Jun;118(3):407-17
CD Volume:326
Print Article: Pages: 407-417
Author(s):Jessop TS Hamann M Read MA Limpus CJ
Author Affiliation:Department of Zoology and Entomology, University of Queensland, Brisbane, Australia
Abstract:Mortality of breeding sea turtles due to excessive heat exposure after nesting activities is an unusual feature of the Raine Island green turtle rookery. Breeding turtles that fail to return to the ocean after oviposition can experience increasing body temperatures that exceed lethal limits (>39 degrees C) as ambient temperatures rise after sunrise. We investigated how acute increases in body temperature influenced plasma corticosterone (B) concentrations of individual turtles. Furthermore, interactions between progesterone (P) and testosterone (T) and increasing body temperature and the glucocorticoid corticosterone were examined for negative correlations. Breeding green turtles exhibited a 16-fold mean increase in plasma corticosterone concentration as body temperature (cloacal) rose from 28.2 to 40.7 degrees C in less than 6 h. However, the absolute increase in plasma B was small and much less than expected, despite the lethal stressor. Comparatively, the maximal B response to lethal heat stress was similar to plasma B concentrations obtained from breeding female turtles exposed to 8 h of capture stress. However, the maximal B response of breeding turtles exposed to heat and capture stressors was significantly less than the B response of nonbreeding adult female turtles subjected to an 8-h capture stressor. No negative correlations were observed between plasma T and plasma B, between plasma T and body temperature, between plasma P and plasma B, or between plasma P and body temperature. Our findings provide further evidence that reduced adrenocortical function operates in breeding green turtles in the presence of even the most pervasive of environmental stressors
Descriptors:Adrenal Cortex. Animal. Body Temperature. Corticosterone. *Environment. Female. *Heat. Oviposition. Progesterone. *Reproduction. *Stress. Support, Non-U.S. Gov't. Testosterone. Turtles
Geographic Locator:UNITED STATES
ISSN:0016-6480
Year:2000
Journal Title:General and Comparative Endocrinology

Title:Changes in thyroid hormones in the serum and the thyroid gland of hibernating frogs, Rana temporaria L
View Article: Gen Comp Endocrinol 2000 Aug;119(2):172-80
CD Volume:326
Print Article: Pages: 172-180
Author(s):Kowalczyk P Sotowska Brochocka J
Author Affiliation:Department of Vertebrate Physiology, Warsaw University, Al. Zwirki i Wigury 93, Warsaw, 02-089, Poland. pkowal@geo.uw.edu.pl
Abstract:The hypothalamo-pituitary-gonadal axis spontaneously activates in hibernating frogs, Rana temporaria, under constant conditions (0-4 degrees, darkness). The hypothesis that the spontaneous hibernatory activation involves other regulatory processes preparing the frogs for breeding and posthibernatory activity was tested. The serum concentrations and glandular contents of thyroid hormones (THs) were determined during hibernation. It was shown that (i) in both sexes, serum thyroxine and triiodothyronine levels significantly increased in the middle of January (week 13/14, between day 92 and 98 of hibernation); (ii) the peak of THs blood concentration was accompanied by a slow decrease of free forms of THs and the bound forms of both hormones dropped rapidly over this period; (iii) after a decrease on day 111, the low level of serum THs (but

higher than before the peak) was sustained to the end of hibernation; (iv) the thyroid content of free THs significantly rose after their "surge" into the blood, reached maximal values in the middle of February, and remained at this level to the end of hibernation (last week of March); (v) in spring, after spawning, the THs levels in glands and in serum were much lower than those at the end of hibernation or were not detectable; and (vi) the results were confirmed during the second season, when the material in the period of expected elevation of serum THs was collected every other day
Descriptors:Animal. Female. *Hibernation. Male. Rana temporaria. Support, Non-U.S. Gov't. Thyroid Gland. Thyroid Hormones. Thyroxine. Triiodothyronine
Geographic Locator:UNITED STATES
ISSN:0016-6480
Year:2000
Journal Title:General and Comparative Endocrinology

Title:Short-term stress increases testosterone secretion from testes in male domestic fowl
View Article: General and Comparative Endocrinology. 2000. 120 (1). 55-66
CD Volume:326
Print Article: Pages: 55-66
Author(s):Heiblum R Arnon E Gvaryahu G Robinzon B Snapir N
Author Affiliation:Department of Animal Sciences, Faculty of Agricultural, Food and Environmental Quality Sciences, The Hebrew University of Jerusalem, P.O. Box 12, Rehovot 76100, Israel
Language:English
Abstract:The effect of short-term stress on plasma testosterone (T) and corticosterone (B) was investigated in White Leghorn cockerels (Lohman line). Stress was induced by a 10-min physical restraint of caged juvenile (7 weeks, n=13), pubertal (17 weeks, n=34) and adult (40 weeks, n=10) cockerels, as well as 40-week-old adults reared together in a room lined with wood shavings (group reared, n=15). Restraint increased plasma T and B in all groups. Whereas B generally peaked at the end of the restraining period, T peaked 20 min later. The extent of T and B response to short-term stress was not influenced by basal levels of T, which were highest in adults, and basal levels of B, which were higher in caged adults than in group-reared adults. Injection of ACTH did not induce a greater increase in plasma T than in sham-injected controls. Restraint had no effect on plasma T in castrated adults, indicating that T is secreted from the testes rather than the adrenals in response to stress. In adults subjected to blood sampling, but not restraint, the T ratio rose by up to 11 times, emphasizing the importance of minimizing stress during procedures for determination of androgens
Descriptors:stress. stress-response. testosterone. testes. age. castration. corticosterone. corticotropin. poultry
Organism Descriptors:fowls
Supplemental Descriptors:Gallus-gallus. Gallus. Phasianidae. Galliformes. birds. vertebrates. Chordata. animals. poultry
Subject Codes:LL600
Supplementary Info:33 ref
ISSN:0016-6480
Year:2000
Journal Title:General and Comparative Endocrinology

Title:Noninvasive methods for measuring and manipulating corticosterone in hummingbirds
View Article: Gen Comp Endocrinol 2000 Nov;120(2):235-47
CD Volume:326
Print Article: Pages: 235-247
Author(s):Hiebert SM Ramenofsky M Salvante K Wingfield JC Gass CL
Author Affiliation:Biology Department, Swarthmore College, Swarthmore, Pennsylvania, 19081, USA

Abstract:The adrenocortical response to stress has been shown to be important in energy management of vertebrates. Although hummingbirds (Trochilidae) are useful models for studying energy balance, they are not amenable to traditional methods of studying hormones. In this study we report noninvasive methods for measuring and manipulating corticosterone (CORT), the principal stress glucocorticoid in birds. CORT was measured in cloacal fluid (CF) collected from unrestrained rufous hummingbirds (Selasphorus rufus). We demonstrate that CF CORT can be measured by radioimmunoassay without extraction. CF creatinine, when used as a reference measure for CF CORT, corrects for changes in hydration state. As in other birds, CORT in both plasma and CF rose in response to capture and handling stress and decreased after the termination of that stress, except that changes in CF concentration were delayed with respect to changes in plasma. When CORT, complexed with cyclodextrin to improve solubility, was added to artificial nectar, CF CORT concentrations changed in a predictable, dose-dependent fashion. Measuring CORT in CF is advantageous because it allows frequent and repeated sampling without itself provoking a detectable stress response and because baseline samples need not be obtained within the very short time between the onset of a stressor and the appearance of CORT in the plasma, as is true for blood sampling. Administration of exogenous CORT in the food offers a noninvasive, nonstressful, temporally sensitive method for experimentally manipulating hormone levels in an avian model that has already been used extensively for studies of energetics
Descriptors:Animal. Behavior, Animal. Birds. Body Weight. *Cloaca. Corticosterone. Creatinine. Energy Intake. Energy Metabolism. Food. Food Deprivation. Intestinal Secretions. Male. Radioimmunoassay. Support, Non-U.S. Gov't. Support, U.S. Gov't, Non-P.H.S.
Geographic Locator:UNITED STATES
ISSN:0016-6480
Year:2000
Journal Title:General and Comparative Endocrinology

Title:Functional interaction between the PKC1 pathway and CDC31 network of SPB duplication genes
View Article: Genetics 2000 Aug;155(4):1543-59
CD Volume:303
Print Article: Pages: 1543-1559
Author(s):Khalfan W Ivanovska I Rose MD
Author Affiliation:Department of Molecular Biology, Princeton University, Princeton, New Jersey 08544-1014, USA
Abstract:The earliest known step in yeast spindle pole body (SPB) duplication requires Cdc31p and Kar1p, two physically interacting SPB components, and Dsk2p and Rad23p, a pair of ubiquitin-like proteins. Components of the PKC1 pathway were found to interact with these SPB duplication genes in two independent genetic screens. Initially, SLG1 and PKC1 were obtained as high-copy suppressors of dsk2Delta rad23Delta and a mutation in MPK1 was synthetically lethal with kar1-Delta17. Subsequently, we demonstrated extensive genetic interactions between the PKC1 pathway and the SPB duplication mutants that affect Cdc31p function. The genetic interactions are unlikely to be related to the cell-wall integrity function of the PKC1 pathway because the SPB mutants did not exhibit cell-wall defects. Overexpression of multiple PKC1 pathway components suppressed the G2/M arrest of the SPB duplication mutants and mutations in MPK1 exacerbated the cell cycle arrest of kar1-Delta17, suggesting a role for the PKC1 pathway in SPB duplication. We also found that mutations in SPC110, which encodes a major SPB component, showed genetic interactions with both CDC31 and the PKC1 pathway. In support of the model that the PKC1 pathway regulates SPB duplication, one of the phosphorylated forms of Spc110p was absent in pkc1 and mpk1Delta mutants
Descriptors:Blotting, Western. Calcium-Binding Proteins. Cell Cycle Proteins. DNA-Binding Proteins. Fungal Proteins. G2 Phase. Gene Expression Regulation, Fungal. Genetic Complementation Test. Membrane Proteins. Mitosis. Mitotic Spindle Apparatus. Mutation. Nuclear Proteins. Phenotype. Phosphorylation.

Saccharomyces cerevisiae. Support, Non-U.S. Gov't. Support, U.S. Gov't, P.H.S.. Temperature. Time Factors. Ubiquitin
Geographic Locator:UNITED STATES
ISSN:0016-6731
Year:2000
Journal Title:Genetics

Title:Reconstruction of the leaves of two new species of Pseudosmodingium (Anacardiaceae) from Oligocene strata of Puebla, Mexico
View Article: International Journal of Plant Sciences. 161 (3). mAY, 2000. 509-519
CD Volume:318
Print Article: Pages: 509-519
Author(s):Ramirez Jose L Cevallos Ferriz Sergio R S Silva Pineda Alicia
Author Affiliation:Departamento de Paleontologia, Circuito de la Investigacion Cientifica, Instituto de Geologia, Universidad Nacional Autonoma de Mexico, Ciudad Universitaria, 04510, Mexico, DF
Language:English
Language of Summary:English (EN)
Abstract:Leaves of two new plants are reconstructed from their isolated leaflets collected from the Oligocene Los Ahuehuetes locality near Tepexi de Rodriguez in Puebla, Mexico. The leaves of Pseudosmodingium mirandae Ramirez-Garduno et al. are compound imparipinnate with leaflets of variable morphology. The leaflets of five leaf morphotypes vary from narrow elliptic to lanceolate or lorate; they are symmetrical to slightly asymmetrical, with acute to attenuate apex, acute to cuneate base, and entire to serrate margin. Venation is simple pinnate craspedodromous, with secondary veins slightly curved near their base; secondary veins may dichotomize near the margin to become tertiary veins, and intersecondary veins are small and oblique to the secondary veins. A small number of leaflets assigned to Pseudosmodingium terrazasiae Ramirez-Garduno et al. are distinguished from P. mirandae by the leaflet shape, length: width ratio, base shape, and apex angle. Morphological comparison of the fossil leaves with leaves of extant species of Anacardiaceae based on numerical analyses indicates a close similarity between P. mirandae and Pseudosmodingium multifolium Rose, while P. terrazasiae is more similar to Pseudosmodingium perniciosum (HBK) Engl. The presence of fossil species with extant relatives that are endemic to Mexico, along with previous reports, indicates that by the Oligocene, some lineages were already in place, although today they form part of the more xeric communities in southern North America
Descriptors:endemism; fossil record; geographic distribution; lineage; morphology; nomenclature; taxonomic description; xeric community. Paleobiology; Systematics and Taxonomy
Geographic Locator:Puebla (Mexico, North America, Nearctic region)
Organism Descriptors:Pseudosmodingium mirandae (Anacardiaceae): new species, paleobotany; Pseudosmodingium multifolium (Anacardiaceae): paleobotany; Pseudosmodingium perniciosum (Anacardiaceae): paleobotany; Pseudosmodingium terrazasiae (Anacardiaceae): new species, paleobotany. leaf
Supplemental Descriptors:Anacardiaceae: Dicotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
Subject Codes:Paleobiology; Systematics and Taxonomy
ISSN:1058-5893
Year:2000
Journal Title:International Journal of Plant Sciences

Title:Carotenoid pigments in Rosa mosqueta hips, an alternative carotenoid source for foods
View Article: Journal of Agricultural and Food Chemistry. 48 (3). March, 2000. 825-828
CD Volume:301

Print Article: Pages: 825-828
Author(s):Hornero Mendez D Minguez Mosquera M I
Author Affiliation:Departamento de Biotecnologia de Alimentos, Instituto de la Grasa (CSIC), Avenida Padre Garcia Tejero 4, 41012, Sevilla
Language:English
Language of Summary:English (EN)
Abstract:Carotenoid composition has been investigated in Rosa mosqueta hips (Rosa rubiginosa, Rosa eglanteria). Six major carotenoids were identified (beta-carotene, lycopene, rubixanthin, gazaniaxanthin, beta-cryptoxanthin, and zeaxanthin) together with other minor carotenoids (violaxanthin, antheraxanthin, and gamma-carotene). An average composition has been estimated as follows: beta-carotene (497.6 mg/kg of dry wt), lycopene (391.9 mg/kg of dry wt), rubixanthin (703.7 mg/kg of dry wt), gazaniaxanthin (289.2 mg/kg of dry wt), beta-cryptoxanthin (183.5 mg/kg of dry wt), zeaxanthin (266.6 mg/kg of dry wt), and minor carotenoids (67.1 mg/kg of dry wt). Possible uses in food technology are outlined and discussed including the preparation of highly colored oleoresins as natural colorants of food and beverages and as provitamin A sources
Descriptors:alternative carotenoid source characterization. Biochemistry and Molecular Biophysics; Foods. antheraxanthin; beta-carotene; beta-cryptoxanthin; carotenoid: pigment; colorant; gamma-carotene; gazaniaxanthin; lycopene; provitamin A; rubixanthin; violaxanthin; zeaxanthin
Organism Descriptors:Rosa mosqueta [Rosa eglanteria, Rosa rubiginosa, wild rose] (Rosaceae). rose hip
Supplemental Descriptors:Rosaceae: Dicotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
Subject Codes:Biochemistry and Molecular Biophysics; Foods
ISSN:0021-8561
Year:2000
Journal Title:Journal of Agricultural and Food Chemistry

Title:Role of hydroxyl radicals and singlet oxygen in the formation of primary radicals in unsaturated lipids: A solid state electron paramagnetic resonance study
View Article: Journal of Agricultural and Food Chemistry. 48 (4). April, 2000. 974-978
CD Volume:301
Print Article: Pages: 974-978
Author(s):Geoffroy Michel Lambelet Pierre Richert Pascal
Author Affiliation:Department of Physical Chemistry, University of Geneva, 30 Quai Ernest Ansermet, 1211, Geneva
Language:English
Language of Summary:English (EN)
Abstract:Primary radicals were generated by UV photolysis of samples of trilinolein, at 77 K and under a controlled atmosphere. The resulting EPR spectra clearly show that the amount of radicals is dependent on the purity of the lipid, the exposure to visible light in the presence of a photosensitizer and oxygen, and, finally, the presence of an antioxidant. These solid state EPR experiments indicate that if all of the elements for the production of singlet oxygen (Rose Bengal, molecular oxygen, and visible light) are not present, primary radicals are practically not generated. They also point out the various steps of the oxidation mechanism: formation of singlet oxygen, which reacts with the lipid to form a hydroperoxide; and photolytic formation of the hydroxyl radical, which reacts with the frozen lipid to generate primary lipidic radicals. This constitutes a new method for investigating lipid oxidation and studying the influence of photosensitizers and molecules that are likely to react with singlet oxygen
Descriptors:UV photolysis; food chemistry. Biochemistry and Molecular Biophysics; Foods. hydroxyl radicals; primary radicles: formation; singlet oxygen; trilinolein; unsaturated lipids
Subject Codes:Biochemistry and Molecular Biophysics; Foods

ISSN:0021-8561
Year:2000
Journal Title:Journal of Agricultural and Food Chemistry

Title:Antioxidant properties of crocin from Gardenia jasminoides Ellis and study of the reactions of crocin with linoleic acid and crocin with oxygen
View Article: Journal of Agricultural and Food Chemistry. 48 (5). May, 2000. 1455- 1461
CD Volume:301
Print Article: Pages: 1455-1461
Author(s):Pham Thanh Quan Cormier Francois Farnworth Edward Tong Van Hang Van Calsteren Marie Rose
Author Affiliation:Food Research and Development Centre, Agriculture and Agri-Food Canada, 3600 Casavant Boulevard West, Saint-Hyacinthe, Quebec, J2S 8E3
Language:English
Language of Summary:English (EN)
Abstract:Crocin-a water soluble carotenoid-is found in the fruits of gardenia (Gardenia jasminoides Ellis) and in the stigmas of saffron (Crocus sativus Linne). For crocin purification, gardenia fruits are extracted with 50% acetone, followed by ether washing, ion exchange, and separation by preparative HPLC. Purified crocin with purity of >99.6% has an antioxidative activity at concentrations up to 40 ppm. At 20 ppm the antioxidative activity of crocin is comparable to that of BHA. The antioxidant property of crocin as evaluated by the thiocyanate method was better than with the thiobarbituric acid method. The adduct between the linoleic acid radical and crocin was detected by LC-MS. When crocin reacted with oxygen in the presence of FeSO4, intermediates such as monohydroperoxides and dihydroperoxides of crocin were formed and detected by LC-MS
Descriptors:Biochemistry and Molecular Biophysics. crocin: antioxidant, fruit pigment; linoleic acid; oxygen
Organism Descriptors:Gardenia jasminoides [gardenia] (Rubiaceae)
Supplemental Descriptors:Rubiaceae: Dicotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
Subject Codes:Biochemistry and Molecular Biophysics
ISSN:0021-8561
Year:2000
Journal Title:Journal of Agricultural and Food Chemistry
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Title:Influence of a Saccharomyces cerevisiae selected strain in the volatile composition of rose wines. Evolution during fermentation
View Article: Journal of Agricultural and Food Chemistry. 48 (5). May, 2000. 1789- 1798
CD Volume:301
Print Article: Pages: 1789-1798
Author(s):Fraile Pablo Garrido Julian Ancin Carmen
Author Affiliation:Department of Applied Chemistry, Universidad Publica de Navarra, Campus Arrosadia s/n, E-31006, Pamplona
Language:English
Language of Summary:English (EN)
Abstract:There has been considerable controversy about the use of selected pure strains in wine fermentation. For that reason it is important to determine the influence of this vinification technique in the composition of wine because it arises from the type of yeast and the subsequent evolution during fermentation. This study researches the volatile composition of rose wines from the Garnacha must, inoculated with one selected NA33 strain of Saccharomyces cerevisiae. The inoculated yeast did not predominate in all of the samples. These samples showed a behavior intermediate between those of the control and samples in which NA33 did predominate. The greatest concentration of higher alcohols was in the control wine, and its evolution was similar in all fermentations. The esters

formed at the end of the fermentation and their concentrations were higher in the control than in the inoculated samples. In the control, acids were produced above all, in the first half of fermentation, and decreased from then onward. In the sample in which the yeast predominated, the synthesis occurred later and to a lesser extent than in the control
Descriptors:Rose wine; fermentation; strain influence. Foods. volatiles
Organism Descriptors:Saccharomyces cerevisiae (Ascomycetes)
Supplemental Descriptors:Ascomycetes: Fungi, Plantae. Fungi; Microorganisms; Nonvascular Plants; Plants
Subject Codes:Foods
ISSN:0021-8561
Year:2000
Journal Title:Journal of Agricultural and Food Chemistry

Title:Olfactory and quantitative analysis of aroma compounds in elder flower (Sambucus nigra L.) drink processed from five cultivars
View Article: Journal of Agricultural and Food Chemistry. 48 (6). June, 2000. 2376-2383
CD Volume:301
Print Article: Pages: 2376-2383
Author(s):Jorgensen Ulla Hansen Merete Christensen Lars P Jensen Karina Kaack Karl
Author Affiliation:Department of Fruit, Vegetable and Food Science, Danish Institute of Agricultural Sciences, Kirstinebjergvej 10, DK-5792, Aarslev
Language:English
Language of Summary:English (EN)
Abstract:Fresh elder flowers (Sambucus nigra L.) were extracted with an aqueous solution containing sucrose, peeled lemon slices, tartaric acid, and sodium benzoate to make elder flower syrup. Aroma compounds emitted from the elder flower syrup were collected by the dynamic headspace technique and analyzed by GC-FID and GC-MS. A total of 59 compounds were identified, 18 of which have not previously been detected in elder flower products. The concentrations of the identified volatiles were measured in five elder cultivars, Allesoe, Donau, Sambu, Sampo, and Samyl, and significant differences were detected among cultivars in the concentration levels of 48 compounds. The odor of the volatiles was evaluated by the GC-sniffing technique. cis-Rose oxide, nerol oxide, hotrienol, and nonanal contributed to the characteristic elder flower odor, whereas linalool, alpha-terpineol, 4-methyl-3- penten-2-one, and (Z)-beta-ocimene contributed with floral notes. Fruity odors were associated with pentanal, heptanal, and beta- damascenone. Fresh and grassy odors were primarily correlated with hexanal, hexanol, and (Z)-3-hexenol
Descriptors:cultivar variation; elder flower drink: beverage; odor classification; plant breeding. Horticulture (Agriculture); Biochemistry and Molecular Biophysics; Foods; Methods and Techniques. aroma compounds; volatiles
Organism Descriptors:Sambucus nigra [elder] (Caprifoliaceae): crop, cultivar-Allesoe, cultivar-Donau, cultivar-Sambu, cultivar-Sampo, cultivar-Samyl
Supplemental Descriptors:Caprifoliaceae: Dicotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
Subject Codes:Horticulture (Agriculture); Biochemistry and Molecular Biophysics; Foods; Methods and Techniques
ISSN:0021-8561
Year:2000
Journal Title:Journal of Agricultural and Food Chemistry

Title:Foliar Application of selenite and selenate to potato (Solanum tuberosum): effect of a ligand agent on selenium content of tubers
View Article: Journal of Agricultural and Food Chemistry. 2000. 48 (10). 4749-4751

CD Volume:302
Print Article: Pages: 4749-4751
Author(s):Poggi V Arcioni A Filippini P Pifferi P G
Author Affiliation:Dipartimento di Chimica Industriale e dei Materiali, Universita di Bologna, Viale Risorgimento 4, I-40136 Bologna, Italy
Language:English
Abstract:The effect of a foliar spray of selenium on potatoes was investigated for 2 years. Amounts of 0, 50, and 150 g of Se ha-1 were applied both as sodium selenate and as sodium selenite in water, either pure or with the addition of 0.15% of soluble leonardite as a source of humic acids (pH 7). Tuber selenium concentration increased with the application levels, both with sodium selenate and with sodium selenite, when only aqueous solutions were used. When humic acids were added, the tuber selenium level rose more markedly after the application of sodium selenate as compared to the case of the aqueous solutions; however, in the case of sodium selenite, the level showed a large increase only after the application of 50 g of Se ha-1. Kinetics showed that humic acids raised the selenate availability, but no differences were found in the distribution of selenium in the tuber fractions. Foliar application of selenium with humic acids was proven to be a good way to increase the selenium content of potatoes, but the assimilation process of selenium was simpler with selenate than with selenite
Descriptors:foliar-spraying. humic-acids. leonardite. potatoes. selenium
Organism Descriptors:Solanum-tuberosum
Supplemental Descriptors:Solanum. Solanaceae. Solanales. dicotyledons. angiosperms. Spermatophyta. plants
Subject Codes:FF003. FF040
Supplementary Info:15 ref
ISSN:0021-8561
Year:2000
Journal Title:Journal of Agricultural and Food Chemistry

Title:Assessment of the protein quality of 15 new northern adapted cultivars of quality protein maize using amino acid analysis
View Article: Journal of Agricultural and Food Chemistry. 48 (11). November, 2000. 5351-5361
CD Volume:302
Print Article: Pages: 5351-5361
Author(s):Zarkadas Constantinos G Hamilton Robert I Yu Zi Ran Choi Victor K Khanizadeh Shahrokh Rose Nicholas G W Pattison Peter L
Author Affiliation:Eastern Cereal and Oilseed Research Centre, Central Experimental Farm, Research Branch, Agriculture and Agri-Food Canada, Ottawa, ON, K1A 0C6: zarkadascg@em.agr.ca
Language:English
Language of Summary:English (EN)
Abstract:Amino acid determinations were carried out on 15 new northern adapted cultivars of quality protein maize (QPM) containing opaque- 2 modifier genes to ascertain whether their amino acid scoring patterns could be used to select high-lysine QPM genotypes and to assess their protein quality. Total protein in these cultivars ranged from 8.0 to 10.2% compared to two commercial maize varieties, Dekalb DK435 (7.9%) and Pioneer 3925 (10.3%). Four of these QPM genotypes, QPM-C26, QPM-C21, QPM-C79, and QPM-C59, contained high levels of lysine (4.43-4.58 g of lysine/100 g of protein), whereas the remaining varied from 3.43 to 4.21 g of lysine/100 g of protein, compared to Dekalb DK435 and Pioneer 3925, which contained 2.9 and 3.1 g of lysine/100 g of protein, respectively. Although lysine is the first limiting amino acid in QPM inbreds, the high-lysine QPM genotypes may supply apprx70.2- 72.6% of human protein requirements, compared to 46.2% for Dekalb DK435 and 50.1% for Pioneer 3925, 55-63% for oats, and 59-60.3% for barley. Northern adapted QPM genotypes may have the potential to increase their lysine content even further, either by an increase in specific high-lysine-containing nonzein proteins, such as the

synthesis of factor EF-1a, or by a further reduction in the 19 and 22 kDa alpha-zein in the endosperm or both. This knowledge could assist maize breeders in the selection of new high-performance QPM genotypes with improved protein quality and quantity
Descriptors:amino acid scoring patterns; protein quality. Agronomy (Agriculture); Molecular Genetics (Biochemistry and Molecular Biophysics). amino acids. maize opaque-2 modifier gene (Gramineae)
Organism Descriptors:maize (Gramineae): northern adapted cultivars
Supplemental Descriptors:Gramineae: Monocotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Monocots; Plants; Spermatophytes; Vascular Plants
Subject Codes:Agronomy (Agriculture); Molecular Genetics (Biochemistry and Molecular Biophysics)
ISSN:0021-8561
Year:2000
Journal Title:Journal of Agricultural and Food Chemistry

Title:Antioxidant activity of selected Spanish wines in corn oil emulsions
View Article: Journal of Agricultural and Food Chemistry. 48 (11). November, 2000. 5581-5587
CD Volume:302
Print Article: Pages: 5581-5587
Author(s):Sanchez Moreno Concepcion Satue Gracia M Teresa Frankel Edwin N
Author Affiliation:Departamento de Metabolismo y Nutricion, Consejo Superior de Investigaciones Cientificas (CSIC), Instituto del Frio, Ciudad Universitaria, 28040, Madrid: csanchezm@if.csic.es
Language:English
Language of Summary:English (EN)
Abstract:Wines contain phenolic compounds that may be useful for preventing lipid oxidation as dietary antioxidants. This study was aimed at evaluating the antioxidant activity in corn oil emulsions of seventeen selected Spanish wines and two California wines. The inhibition of hydroperoxide formation at 10 muM gallic acid equivalents (GAE) varied from 8.4% to 40.2% with the red wines, from 20.9% to 45.8% with the rose wines, and from 6.5% to 47.0% with the white wines. The inhibition of hydroperoxide formation at 20 muM GAE varied from 11.9% to 34.1% with the red wines, from 0.1% to 34.5% with the rose wines, and from 3.3% to 37.2% with the white wines. The inhibition of hexanal formation at 10 muM GAE varied from 23.6% to 64.4% with the red wines, from 42.7% to 68.5% with the rose wines, and from 28.4% to 68.8% with the white wines. The inhibition of hexanal formation at 20 muM GAE varied from 33.0% to 46.3% with the red wines, from 11.3% to 66.5% with the rose wines, and from -16.7% to +21.0% with the white wines. The antioxidant effect decreased with increasing concentration. This antioxidant activity was related to the five main groups of phenolic compounds identified in wines by HPLC. The relative antioxidant activity correlated positively with the total phenol content of wines (by the Folin-Ciocalteu method and by HPLC), benzoic acids, anthocyanins, flavan-3-ols, and flavonols, for the inhibition of hydroperoxides and hexanal at 10 and 20 muM GAE
Descriptors:Spanish wines: beverage, ethnic food; corn oil emulsions: fats and oils; wine antioxidant activity; wine prooxidant activity. Biochemistry and Molecular Biophysics; Foods. hexanol; hydroperoxides
Subject Codes:Biochemistry and Molecular Biophysics; Foods
ISSN:0021-8561
Year:2000
Journal Title:Journal of Agricultural and Food Chemistry

Title:Nitrogen metabolism and fertility in cattle: I. Adaptive changes in intake and metabolism to diets differing in their rate of energy and nitrogen release in the rumen
View Article: Journal of Animal Science. 78 (10). October, 2000. 2659-2669

CD Volume:319
Print Article: Pages: 2659-2669
Author(s):Sinclair K D Sinclair L A Robinson J J
Author Affiliation:Craibstone Estate, Scottish Agricultural College, Bucksburn, Aberdeen, AB21 9YA: k.sinclair@ab.sac.ac.uk
Series Title:and FE:A diets but did not rise in heifers offered the SE:S and FE:S diets. All feed offered was consumed within 1 h on diets SE:S and FE:S throughout the experiment. The proportion of feed consumed within 1 h of feeding declined from 100% on d 0 to aroun
Language:English
Language of Summary:English (EN)
Abstract:The ruminal degradability, intake, and metabolism of diets differing in their relative rate of energy and nitrogen release in the rumen were characterized prior to their use in a study of the effects of high peripheral levels of ammonia on reproductive function in cattle. In a 2 X 2 factorial experiment, replicated four times, 16 heifers were offered isocaloric and isonitrogenous diets containing two sources of fermentable carbohydrate, fiber (slow energy release, SE) or starch (fast energy release, FE), and two rates of nitrogen release, which were either synchronous (S) or asynchronous (A) to that of energy release. Throughout the experiment, the amount of feed offered was held constant, at a level equivalent to 1.5 X maintenance. Four ruminally fistulated sheep were used to determine the in situ degradability of these diets. The 16 heifers were bled before feeding at 0800 and at 0900, 1000, 1100, 1200, 1400, and 1600 on d 0 (introduction to dietary treatments) and on d 4, 7, 11, 14, 21, and 28. Diet refusals were recorded at hourly intervals after feeding. The rapidly degradable nitrogen fraction of the SE:A and FE:A diets was greater than that of the SE:S and FE:S diets. Postprandial jugular plasma ammonia levels rose to a peak of around 300 mumol/L in heifers offered the
Descriptors:feed intake; fertility. Animal Husbandry (Agriculture). ammonia: plasma; insulin: plasma; nitrogen: metabolism, rumenal release; urea: plasma
Organism Descriptors:bovine (Bovidae): breed-Charolais x Holstein-Friesian, female, heifer
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Effects of duodenal infusions of palmitic, stearic, or oleic acids on milk composition and physical properties of butter
View Article: Journal of Dairy Science. 83 (7). July, 2000. 1428-1433
CD Volume:319
Print Article: Pages: 1428-1433
Author(s):Enjalbert F Nicot M C Bayourthe C Moncoulon R
Author Affiliation:Departement Elevage and Produits, Laboratoire d'Alimentation, Ecole Nationale Veterinaire, 23 Chemin des Capelles, 31076, Toulouse Cedex: f.enjalbert@envt.fr
Language:English
Language of Summary:English (EN)
Abstract:Four dairy cows fitted with a duodenal cannula were used in a 4 X 4 Latin square design to investigate the effects of daily duodenal infusion of 500 g of fatty acids (containing mainly C16:0, C18:0, or cis-C18:1) on fecal concentrations of fatty acids, fatty acid profiles of milk fat, and solid fat content of butter. Fecal concentrations of C16:0 and especially of C18:0 were increased by duodenal infusion. Infusion with C16:0 increased the proportion of C16:0 in milk fat and delayed softening of butter when the temperature rose. Infusion with C18:0 resulted only in a slight increase of C18:0 proportion in milk fat and did not significantly affect solid fat in butter between -10 and

30degreeC. With the infusion of cis-C18:1, the proportion of cis-C18:1 in milk fat was more than twice that of control, to the detriment of C16:0. Butter contained low proportion of solid fat, even at low temperatures. Increasing C16:0 or cis-C18:1 in milk fatty acid via duodenal infusion can be used to study their specific effects on butter characteristics, but, because of a low transfer from infusion to milk, this method is less efficient with C18:0
Descriptors:butter: dairy product, physical properties; milk: composition, dairy product. Animal Husbandry (Agriculture); Foods. fat; fatty acids; oleic acid: duodenal infusion; palmitic acid: duodenal infusion; stearic acid: duodenal infusion
Organism Descriptors:cattle (Bovidae): dairy animal, female. feces: digestive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Foods
ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:Influence of dietary protein level and origin on the flow of mucin along the small intestine of the preruminant calf
View Article: Journal of Dairy Science. 83 (12). December, 2000. 2820-2828
CD Volume:319
Print Article: Pages: 2820-2828
Author(s):Montagne L Toullec R Formal M Lalles J P
Author Affiliation:Unite Mixte de Recherches sur le Veau et le Porc Institut National de la Recherche Agronomique, Ecole Nationale Superieure Agronomique de Rennes, 65, rue de Saint Brieuc, 35042, Rennes Cedex: lalles@roazhon.inra.fr
Language:English
Language of Summary:English (EN)
Abstract:The objective of this study was to investigate the effect of the dietary crude protein (CP) content and origin on the flow of mucin protein along the small intestine of the preruminant calf. Diets contained 1, 10, 20 and 28% of CP supplied by skim milk powder (SMP) in experiment 1. Diets differed by the nature of protein (soybean protein concentrate (SPC), partially hydrolyzed soybean protein isolate (HSPI) or potato protein concentrate (PPC)) in experiment 2. Duodenal, jejunal, and ileal digesta were collected from calves fitted with simple cannulae and continuously infused the milk replacers into the abomasum. In experiment 1, the basal flow of mucin protein was 1.1, 1.8, and 4.0 g/kg or dry matter intake at the duodenum, jejunum, and ileum, respectively. Mucin protein contributed to 19 and 40% of ileal loss of CP and lysine, respectively. When dietary CP rose from 1 to 28%, the flow of mucin protein increased at the duodenum (+300%). In experiment 2, the flow of mucin protein increased by 70% at the duodenum and at the jejunum when SMP was partially replaced by SPC and HSPI. With PPC, this flow increased at the duodenum (+24%) and ileum (+52%). These data demonstrate the importance of mucin as a source of endogenous nitrogen and the impact of dietary protein content and origin on this flow
Descriptors:Digestive System (Ingestion and Assimilation); Nutrition. crude protein: dietary intake; lysine; mucin: flow; nitrogen; partially hydrolyzed soybean protein isolate: dietary intake; potato protein concentrate: dietary intake; soybean protein concentrate: dietary intake
Organism Descriptors:cattle (Bovidae): calf. duodenum: digestive system; ileum: digestive system; jejunum: digestive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Digestive System (Ingestion and Assimilation); Nutrition
ISSN:0022-0302

Year:2000
Journal Title:Journal of Dairy Science

Title:Long-term wastewater treatment effectiveness of a northern Wisconsin peatland
View Article: Journal of Environmental Quality. 2000. 29 (5). 1703-1714
CD Volume:320
Print Article: Pages: 1703-1714
Author(s):Nichols D S Higgins D A
Author Affiliation:USDA-Forest Service, North Central Research Station, 1831 E. Hwy. 169, Grand Rapids, MN 55744, USA
Language:English
Abstract:Secondary effluent from a wastewater stabilization lagoon system was applied to an acidic, nutrient-poor, 8.3-ha peatland for the purpose of advanced wastewater treatment. Application occurred from June to October at an average rate of 10 cm yr-1 from 1979 to 1982, 24 cm yr-1 from 1983 to 1988, and 40 cm yr-1 from 1989 to 1996, increasing surface flow from the application area by 47, 78, and 154%, respectively. The pH of the peatland outflow increased from 4.2 to 6.7, chloride rose from 1.1 to 80 mg litre-1, and total phosphorus increased from 0.05 to 0.6 mg litre-1. Because raw sewage input was only one-half of the lagoon system's design capacity, the lagoons provided a high degree of sewage treatment, removing 95% of suspended solids (SS), biochemical oxygen demand (BOD), and nitrogen from the wastewater stream. Phosphorus removal in the lagoons, which was 98% in the first years of operation, declined to 85% by 1995. The peatland contributed little additional treatment, removing only 37% of the nitrogen and 17% of the phosphorus remaining in the lagoon effluent. The peatland's capacity to retain phosphorus was exhausted after a few years of application. Increased pH, nutrient availability, and water levels altered the peatland vegetation community. The Sphagnum ground cover was reduced or eliminated in many places, and dense stands of cattail (Typha sp.) developed in some areas. Small peatlands such as this one seem poor candidates for use as tertiary treatment systems
Descriptors:waste-water-treatment. peatlands. long-term-experiments. effluents. application. pH. phosphorus. sewage. retention. nutrients. water-table
Geographic Locator:USA. Wisconsin
Organism Descriptors:Sphagnum. Typha
Supplemental Descriptors:Sphagnaceae. mosses. Bryophyta. plants. Typhaceae. Typhales. monocotyledons. angiosperms. Spermatophyta. North-America. America. Developed-Countries. OECD-Countries. East-North-Central-States-of-USA. North-Central-States-of-USA. USA. Lake-States-of-USA
Subject Codes:PP200. XX300. PP320. PP600. PP720
Supplementary Info:28 ref
ISSN:0047-2425
Year:2000
Journal Title:Journal of Environmental Quality

Title:Reduction of biogenic amine formation using a negative amino acid-decarboxylase starter culture for fermentation of fuet sausages
View Article: Journal of Food Protection. 63 (2). Feb., 2000. 237-243
CD Volume:320
Print Article: Pages: 237-243
Author(s):Bover Cid Sara Hugas Marta Izquierdo Pulido Maria Vidal Carou M Carmen
Author Affiliation:Department of Nutrition and Food Science, CeRTA, Faculty of Pharmacy, University of Barcelona, Av. Joan XXIII s/n, E-08028, Barcelona
Language:English
Language of Summary:English (EN)
Abstract:The ability of Lactobacillus sakei CTC494, a negative amino acid-decarboxylase starter culture, to reduce biogenic amine accumulation during

sausage fermentation and storage at 4 and 19degreeC was studied. The effect on the amine formation of the tyramine producer Lactobacillus curvatus CTC371, as a positive strain, was also examined in comparison to a spontaneous fermentation process without starter culture (control batch). The polyamines spermine, spermidine, and diaminopropane were not influenced by the ripening, and their levels slightly decreased in all the batches throughout the storage. Tyramine, cadaverine, and putrescine were the main amines formed during the ripening. The addition of starter culture resulted in a decrease on the biogenic amine formation, depending on the strain inoculated. A great reduction in tyramine content was achieved when L. sakei CTC494 was inoculated, whereas L. curvatus CTC371 only attenuated tyramine accumulation compared with the control batch. Both starters were able to significantly limit the production of putrescine and cadaverine, and they inhibited tryptamine and phenylethylamine formation by the wild microbial flora. Tyramine levels of the control sausages rose during the storage at both temperatures, whereas those of cadaverine only increased at 19degreeC. On the contrary, sausages manufactured through the starter controlled fermentation did not show changes of amine contents during the storage. The addition of a proper selected starter culture is advisable to produce safer sausages with low contents of biogenic amines
Descriptors:Fuet sausages: meat product; storage temperature. Foods. cadaverine: formation; diaminopropane: formation; putrescine: formation; spermidine: formation; spermine: formation; tyramine: formation
Organism Descriptors:Lactobacillus curvatus (Regular Nonsporing Gram-Positive Rods): fermentation agent, strain-CTC371; Lactobacillus sakei [Lactobacillus saki] (Regular Nonsporing Gram-Positive Rods): fermentation agent, strain-CTC494
Supplemental Descriptors:Regular Nonsporing Gram-Positive Rods: Eubacteria, Bacteria, Microorganisms. Bacteria; Eubacteria; Microorganisms
Subject Codes:Foods
ISSN:0362-028X
Year:2000
Journal Title:Journal of Food Protection

Title:Comparison of methods for enumeration of yeasts and molds in shredded low-moisture, part-skim mozzarella cheese
View Article: Journal of Food Protection. 63 (4). April, 2000. 529-533
CD Volume:320
Print Article: Pages: 529-533
Author(s):Spangenberg Dana S Ingham Steven C
Author Affiliation:Department of Food Science, University of Wisconsin-Madison, 1605 Linden Drive, Madison, WI, 53706-1565
Language:English
Language of Summary:English (EN)
Abstract:Two studies were conducted to compare established and new methods for enumerating yeasts and molds in shredded low-moisture, part- skim mozzarella cheese stored under refrigeration and temperature- abuse conditions. Yeast and mold counts covered a range of 6 log10 units. In study 1, the potato dextrose agar plus chlortetracycline (PDA) pour plate, dichloran rose bengal chloramphenicol (DRBC) spread plate, Petrifilm, and Iso-Grid hydrophobic grid-membrane filtration methods were used to analyze samples after ltoreq1 day of unopened storage at 7degreeC and after opening, resealing, and 2 days of storage at 25degreeC. The results of all methods were highly correlated (r2 gtoreq 0.96). In study 2, the PDA, DRBC, and Iso-Grid methods were compared with the Simplate 2-day method in an analysis of 42 samples stored for various times at 8, 11, 15, and/or 22degreeC. The results of all methods except the Simplate method were again highly correlated (r2 gtoreq 0.94), although yeasts and molds were not always detected by all methods. Compared with the PDA, DRBC, and Iso-Grid methods, the Simplate method most often (10 of 42 samples, 23.8%) failed to detect yeasts and molds when at least one other method did, and the results were less highly correlated with those of other methods (r2 = 0.88 to 0.90). Our results suggest that the PDA, DRBC, Petrifilm, and Iso-Grid methods are

equivalent for enumerating yeasts and molds in shredded low-moisture, part-skim mozzarella cheese samples
Descriptors:microbial food contamination; mozzarella cheese: cheese, low-moisture, part-skim, shredded. Bioprocess Engineering; Foods; Methods and Techniques
Organism Descriptors:mold (Fungi): pathogen; yeast (Fungi): pathogen
Supplemental Descriptors:Fungi: Plantae. Fungi; Microorganisms; Nonvascular Plants; Plants
Subject Codes:Bioprocess Engineering; Foods; Methods and Techniques
ISSN:0362-028X
Year:2000
Journal Title:Journal of Food Protection

Title:Effect of high hydrostatic pressure on Cryptosporidium parvum infectivity
View Article: Journal of Food Protection. 63 (9). September, 2000. 1262-1267
CD Volume:320
Print Article: Pages: 1262-1267
Author(s):Slifko Theresa R Raghubeer Errol Rose Joan B
Author Affiliation:Department of Marine Science, University of South Florida, 140 7th Avenue South, Saint Petersburg, FL, 33701
Language:English
Language of Summary:English (EN)
Abstract:The incidence of foodborne disease outbreaks caused by contaminated low-pH fruit juices is increasing. With recent mandatory pasteurization of apple juice and the industry's concerns of food safety, fruit juice processors are showing more interest in alternative nonthermal technologies that can kill >99.99% of microbial pathogens present in foods. The association of the coccidian protozoan, Cryptosporidium, with diarrheal disease outbreaks from contaminated tap water and fruit juice raises a safety concern in the food and beverage industries. The objective of this study was to evaluate the effects of high hydrostatic pressure (HHP) on C. parvum oocysts. Oocysts were suspended in apple and orange juice and HHP treated at 5.5 X 108 Pa (80,000 psi) for 0, 30, 45, 60, 90, and 120 s. Oocyst viability was assessed by excystation using bile salts and trypsin while the cell culture foci detection method was used to assess infectivity. Results indicated that HHP inactivated C. parvum oocysts by at least 3.4 log10 after 30 s of treatment. No infectivity was detected in samples exposed to gtoreq60 s of HHP and >99.995% inactivation was observed. This study demonstrated that HHP efficiently rendered the oocysts nonviable and noninfectious after treatment at 5.5 X 108 Pa
Descriptors:apple juice: fruit juice; orange juice: fruit juice. Foods
Organism Descriptors:Cryptosporidium parvum (Sporozoa): food contaminant, infectivity, parasite. oocysts
Supplemental Descriptors:Sporozoa: Protozoa, Invertebrata, Animalia. Animals; Invertebrates; Microorganisms; Protozoans
Subject Codes:Foods
ISSN:0362-028X
Year:2000
Journal Title:Journal of Food Protection

Title:The role of soil pipes as a slope runoff mechanism, subarctic Yukon, Canada
View Article: Journal of Hydrology (Amsterdam) 2000. 233 (1/4). 206-222
CD Volume:331
Print Article: Pages: 206-222
Author(s):Carey S K Woo M K
Author Affiliation:School of Geography and Geology, McMaster University, Hamilton, Ont., L8S 4K1, Canada
Language:English

Abstract:Extensive soil piping occurs in the central Wolf Creek basin, Yukon, Canada at the interface of the organic and mineral horizons. Flow in these pipes is ephemeral, transmitting water only when the water table is within or above the zone where pipes occur. During snowmelt, pipeflow began several days after the onset of surface runoff. Pipeflow contribution increased until ground thaw lowered the water tables, leaving matrix flow within the organic layer as the dominant mode of runoff. Pipeflow accounted for 21% of runoff during the 15 day melt period of 1997. Following melt, pipeflow recurred only during two intense summer rainstorms, each yielding different pipeflow response characteristics. During melt, pipeflow closely followed the daily snowmelt cycles and responded earlier than the integrated slope runoff. In the summer, pipeflow hydrographs rose and fell much quicker than direct storm runoff from the entire slope, which was dominated by fast matrix flow within the organic layer. Pipeflow contributing areas were relatively small, but their extent changed with hillslope wetness. Analysis showed that the Manning flow formula can be combined with contributing areas to simulate pipeflow discharges. Unlike temperate environments where frozen ground is not a factor, the frost table position significantly controls the position of the phreatic surface, and must be considered in any models of pipeflow in permafrost slopes
Descriptors:runoff. slopes. analysis. characteristics. frost. horizons. interface. models. permafrost. responses. summer. transmission. water-table. preferential-flow. soil-water-movement. frigid-soils
Geographic Locator:Canada. Yukon-Territory
Supplemental Descriptors:North-America. America. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Canada
Subject Codes:JJ300. PP500. ZZ800
Supplementary Info:32 ref
ISSN:0022-1694
Year:2000
Journal Title:Journal of Hydrology

Title:Contribution of groundwater and overland flows to storm flow generation in a cultivated Mediterranean catchment. Quantification by natural chemical tracing
View Article: Journal of Hydrology (Amsterdam) 2000. 233 (1/4). 241-257
CD Volume:331
Print Article: Pages: 241-257
Author(s):Ribolzi O Andrieux P Valles V Bouzigues R Bariac T Voltz M
Author Affiliation:INRA Unite de Science du Sol, Domaine Saint-Paul, 84914 Montfavet Cedex 9, France
Language:English
Abstract:Storm flow generation was analysed by natural chemical tracing in a small Mediterranean wine-growing catchment (0.91 km2) at Roujan, Herault, France. Two autumn runoff events with different characteristics were studied. The first, a minor one (specific peak flow=28 litres/s per km2), was used to evaluate the sensitivity of the environment to low intensity rainfall. The second was significantly larger (specific peak flow=944 litres/s per km2) and analysed the response of the catchment to heavy downpours. Tracer concentrations at the catchment outlet, for the groundwater of two distinct geomorphological units (depression and plateau) and in an experimental plot were presented. A mixing model involving three reservoirs and two tracers (chloride and nitrate) estimated the contributions of the three main storm flow components: (a) the pre-event water deriving from the depression groundwater; (b) the event water of the precipitations; and (c) the pre-event water of the plateau groundwater. The event water end member basically corresponds to infiltration-excess overland flow plus direct precipitation on saturated areas. The imprecision of the calculations was estimated by the Monte Carlo method. During both runoff events, there was little variation in the rate at which the stream was fed by pre-existing water deriving from the groundwater, although the water tables rose rapidly. Overland flow dominated in the rapid storm flow. Its contribution varied between 12 and 82% according to the importance of the event. When the

water level rose, particularly in the case of the heavy runoff event, the overland flows concentrated in the man-made network of ditches running down towards the main ditch. This wave of overland flow spread, expelling the pre-event water into the ditches located downstream, which were initially fed by the groundwater. With the rapid rise in the level of water in the ditches, ditch water infiltrated into the groundwater, and the latter then ceased to contribute to the flow in the ditch network
Descriptors:groundwater. autumn. characteristics. ditches. Monte-Carlo-method. nitrate. overland-flow. responses. runoff. tracers. variation. storms
Geographic Locator:France
Supplemental Descriptors:Western-Europe. Europe. Mediterranean-Region. Developed-Countries. European-Union-Countries. OECD-Countries
Subject Codes:PP500. JJ300. JJ800
Supplementary Info:45 ref
ISSN:0022-1694
Year:2000
Journal Title:Journal of Hydrology
Copyright:Copyright CAB International

Title:The use of temperature and the isotopes of O, H, C, and noble gases to determine the pattern and spatial extent of groundwater flow
View Article: Journal of Hydrology (Amsterdam) 2000. 237 (1/2). 100-112
CD Volume:331
Print Article: Pages: 100-112
Author(s):James E R Manga M Rose T P Hudson G B
Author Affiliation:Department of Geological Sciences, University of Oregon, Eugene, OR 97403, USA
Language:English
Abstract:Isotopic tracer and temperature measurements at large volume cold springs in the central Oregon Cascades, USA, were used to understand the pattern of groundwater flow. Standard oxygen and hydrogen isotope interpretations are used to determine the mean recharge elevation for springs. Carbon and helium isotopes are used to measure the component of dissolved magmatic gas in the spring waters. Inferences from isotopic measurements are compared with temperature measurements made at the springs to determine whether groundwater circulates to shallow or deep depths in the subsurface. Integrating the measurements of tracers derived at the surface, tracers derived from the subsurface, and temperature measurements can thus be used to derive a three dimensional picture of groundwater flow
Descriptors:groundwater-flow. tracers. temperature. isotopes. springs-(water). mountain-areas. groundwater-recharge. altitude
Geographic Locator:USA. Oregon
Supplemental Descriptors:North-America. America. Developed-Countries. OECD-Countries. Pacific-Northwest-States-of-USA. Pacific-States-of-USA. Western-States-of-USA. USA
Subject Codes:PP200
Supplementary Info:51 ref
ISSN:0022-1694
Year:2000
Journal Title:Journal of Hydrology
Copyright:Copyright CAB International

Title:Susceptibility of Vespula vulgaris (Hymenoptera: Vespidae) to generalist entomopathogenic fungi and their potential for wasp control
View Article: Journal of Invertebrate Pathology. 2000. 75 (4). 251-258
CD Volume:329
Print Article: Pages: 251-258
Author(s):Harris R J Harcourt S J Glare T R Rose E A F Nelson T J
Author Affiliation:Landcare Research, Private Bag 6, Nelson, New Zealand
Language:English
Descriptors:entomogenous-fungi. biological-control

Organism Descriptors:Vespula-vulgaris. Metarhizium-anisopliae. Beauveria-bassiana. Aspergillus-flavus
Supplemental Descriptors:Vespula. Vespidae. Hymenoptera. insects. arthropods. invertebrates. animals. Metarhizium. Deuteromycotina. Eumycota. fungi. Beauveria. Aspergillus
Subject Codes:HH100. YY700. VV230
Supplementary Info:24 ref
ISSN:0022-2011
Year:2000
Journal Title:Journal of Invertebrate Pathology

Title:Pulse-chase analysis of the in vivo assembly of the bacteriophage T4 tail
View Article: J Mol Biol 2000 Mar 17;297(1):99-117
CD Volume:307
Print Article: Pages: 99-117
Author(s):Ferguson PL Coombs DH
Author Affiliation:Department of Biology, University of New Brunswick, Fredericton, NB, E3B 6E1, Canada
Abstract:The in vivo assembly pathway of the complex tail of bacteriophage T4 virus was determined using pulse-chase analysis as a non-invasive alternative to the in vitro experiments previously used to map assembly. Bacteriophage T4 mutants defective in head assembly were used to infect cultures of Escherichia coli in order to study tail assembly in isolation. Beginning with the onset of late protein synthesis, the cultures were labeled continuously with [(3)H]leucine to normalize against subsequent sample losses. After completed tails had begun to accumulate at a constant rate, the cultures were pulsed with [(35)S]methionine, and then chased. Completed tails were purified at one minute intervals for the next 30 minutes and their proteins separated electrophoretically and counted by liquid scintillation. Total (35)S incorporation into each protein rose and then leveled off as the chase of unlabeled methionine flushed the label through the pools of soluble proteins and assembly intermediates and into completed tails. The inflection point in the sigmoidal (35)S-incorporation curve of each protein marks the maximal uptake of (35)S within that pool just before the effect of the chase becomes apparent and the curve begins to level off. The length of the delay in the apparent chase time reflects the position of that protein in the pathway. The closer the assembly point to the end of the pathway, the sooner the chase appears, revealing the relative order of assembly. As predicted, tail completion proteins such as gp18 (tail sheath) and 19 (tail tube) show the earliest inflection, while those earlier in the pathway take longer to chase. Of the 17 tail proteins analyzed, 14 are in agreement with the established in vitro pathway. The other three, gp15, gp10 and gp53, have helped us to develop a model that offers a plausible explanation for their altered chase times
Descriptors:Bacteriophage T4. Electrophoresis, Polyacrylamide Gel. Escherichia coli. Genes, Viral. Kinetics. Leucine. Methionine. *Models, Biological. Mutation. Solubility. Support, Non-U.S. Gov't. Time Factors. Viral Tail Proteins. *Virus Assembly
Geographic Locator:ENGLAND
ISSN:0022-2836
Year:2000
Journal Title:Journal of Molecular Biology

Title:Complementation between dimeric mutants as a probe of dimer-dimer interactions in tetrameric dihydrofolate reductase encoded by R67 plasmid of E. coli
View Article: J Mol Biol 2000 Sep 8;302(1):235-50
CD Volume:305
Print Article: Pages: 235-250
Author(s):Dam J Rose T Goldberg ME Blondel A

Author Affiliation:Unite de Biochimie Cellulaire (CNRS URA 2185), Institut Pasteur, Paris, Cedex 15, F-75724, France
Abstract:The effect of mutations on the interactions between dimers in R67 dihydrofolate reductase (R67 DHFR), a tetrameric enzyme conferring resistance to trimethoprim, was investigated by site-directed mutagenesis combined with phenotypic, enzymatic, and biochemical analysis.Some 14 mutants at two positions involved in a hydrogen bond between dimers were constructed. All were shown to be dimers. However, complementation between pairs of dimeric mutated proteins resulted in the restoration of the enzymatic activity and heterotetramer formation. A combinatorial approach was set up to create efficiently such heterotetramers and identify the complementing pairs of mutations. A dozen of such pairs were found. An accurate method was set up to measure the association of the complementing dimers in a "quasi-isologous" heterotetramer and used to study the effects of mutations and pH on the association. Thus, the pair of proteins bearing respectively the S59A and H62L mutations was shown to form heterotetramers with catalytic properties close to those of the wild-type protein. Its association was as strong as that of the wild-type protein at cytoplasmic pH (6. 5), and was more stable at lower pH values.A double-mutant protein bearing simultaneously the S59A and H62L mutations was produced and analyzed. Its association was weakened by 1.2 kcal/mol as compared to the wild-type enzyme at pH 6.5 but was insensitive to pH. Comparing the energy of association between dimers in the wild-type protein, the heterotetramer and the double mutant allowed us to dissect the effects of the pH and of the molecular context on a subset of interactions between the R67 DHFR subunits
Descriptors:Amino Acid Substitution. Binding Sites. Catalysis. Diffusion. Dimerization. Enzyme Stability. Escherichia coli. *Genetic Complementation Test. Hydrogen Bonding. Hydrogen-Ion Concentration. Kinetics. Models, Molecular. Mutation. Plasmids. Protein Structure, Quaternary. Spectrometry, Fluorescence. Support, Non-U.S. Gov't. Tetrahydrofolate Dehydrogenase. Thermodynamics. Titrimetry. Ultracentrifugation
Geographic Locator:ENGLAND
ISSN:0022-2836
Year:2000
Journal Title:Journal of Molecular Biology

Title:Impacts of western juniper on plant community composition and structure
View Article: Journal of Range Management. 2000. 53 (6). 574-585
CD Volume:321
Print Article: Pages: 574-585
Author(s):Miller R F Svejcar T J Rose J A
Author Affiliation:Rangeland Resources Oregon State University, Burns, OR 97720, USA
Language:English
Language of Summary:spanish
Abstract:Western juniper (Juniperus occidentalis) has been actively invading shrub steppe communities during the past 120 years. The majority of these stands are still in transition, from early open juniper shrub steppe communities to closed juniper woodlands. In addition, juniper expansion has been occurring across a broad array of soils and topographic positions. Despite the high degree of spatial and developmental heterogeneity, juniper woodlands are frequently treated generically in resource inventories, management, and wildlife habitat assessments. Our goal was to evaluate the impact of western juniper encroachment and dominance on plant community composition and structure across several plant associations. This study was conducted in southeastern Oregon and northeastern California on low sagebrush (Artemisia arbuscula), mountain big sagebrush (A. tridentata subsp. vaseyana), and aspen (Populus tremuloides) alliances. Stages of woodland development across plant associations were categorized into 1 of 4 successional phases (early, mid, late, and closed) based on tree growth and stand structural characteristics. Plant cover by species group, species diversity and richness, bare ground, soil characteristics, altitude, aspect, and slope were measured in one hundred and eight 60x46 m macroplots. Twinspan was

used to sort plant communities. Regression analysis was used to evaluate the relationship of tree canopy cover to shrub and herbaceous cover. Vegetative cover and bare ground were compared between early and closed stands within plant communities. Woodland structure at stand closure was different among associations varying from 19% cover and 64 trees ha-1 in a low sagebrush community to 90% cover and 1731 trees ha-1 in an aspen community. Increase in juniper dominance had little impact on low sagebrush and an inconsistent effect on bitterbrush (Purshia tridentata). In the mountain big sagebrush alliance, sagebrush cover declined to approximately 80% of maximum potential as juniper increased to about 50% of maximum canopy cover. Aspen also declined as juniper dominance increased. Herbaceous cover and species diversity declined and bare ground increased with increasing juniper dominance in the mountain big sagebrush/Thurber needlegrass (Stipa thurberiana) association. However, herbaceous cover on the deeper soils characterized by Idaho fescue (Festuca idahoensis) did not decrease with increasing juniper dominance. To determine the effect of juniper dominance or woodland management on community composition and structure, plant community and stage of stand development should be identified
Descriptors:steppes. plant-succession. plant-colonization. forest-trees. plant-communities. synecology. rangelands. ground-cover. canopy. shrubs. plant-competition. trees
Geographic Locator:USA. Oregon. California
Identifiers:shrub steppes
Organism Descriptors:Juniperus-occidentalis. Artemisia-arbuscula. Artemisia-tridentata. Populus-tremuloides. Populus. Purshia-tridentata. Stipa-thurberiana. Festuca-idahoensis
Supplemental Descriptors:Juniperus. Cupressaceae. Pinopsida. gymnosperms. Spermatophyta. plants. North-America. America. Developed-Countries. OECD-Countries. Pacific-Northwest-States-of-USA. Pacific-States-of-USA. Western-States-of-USA. USA. Artemisia. Asteraceae. Asterales. dicotyledons. angiosperms. Populus. Salicaceae. Salicales. Purshia. Rosaceae. Rosales. Stipa. Poaceae. Cyperales. monocotyledons. Festuca
Subject Codes:PP350. KK100. PP720. ZZ331
Supplementary Info:52 ref
ISSN:0022-409X
Year:2000
Journal Title:Journal of Range Management

Title:Methyl bromide adsorption on activated carbon to control emissions from commodity fumigations
View Article: Journal of Stored Products Research. 2000. 36 (1). 65-74
CD Volume:337
Print Article: Pages: 65-74
Author(s):Leesch J G Knapp G F Mackey B E
Author Affiliation:USDA-Agricultural Research Service, Horticultural Crops Research Laboratory, 2021 South Peach Avenue, Fresno, CA 93727-5951, USA
Language:English
Abstract:A process to control emissions of methyl bromide (MB) into the atmosphere following the fumigation of commodities has been developed. The process consists of adsorbing the MB in the vent-stream from a fumigation process onto activated carbon (carbon). Research was undertaken to observe the effects of (1) temperature, (2) relative humidity (r.h.), (3) the concentration of MB in the vent-stream, and (4) carbon type on the amount of MB that could be adsorbed (loaded) on the activated carbon. Temperature had the most effect on the loading, followed by r.h., for a given type of carbon. The loading decreased as temperature and r.h. increased. For a given temperature and r.h., the loading varied significantly for different carbon types. These differences were consistent with the type of pore structures of the carbons, which in turn is determined by the raw materials and by the activation procedures used during the carbon manufacturing process. Temperatures in the carbon column rose in response to the adsorption of MB. By monitoring the temperatures, the adsorption zone

could be followed throughout the column from the inlet at the start of an adsorption run to column exhaustion, or breakthrough at the end of the trial. Breakthrough was reached when the MB concentration in the column exhaust stream reached 500 ppm (2 mg/l) MB. Relative humidity of the vent-stream was less critical than first anticipated because of the heating of the column. The temperature increase due to the heat of adsorption lowered the r.h. at the adsorption zone which led to the increased adsorption capacity normally associated with low humidities
Descriptors:activated-carbon. adsorption. pest-control. stored-products. stored-products-pests. postharvest-decay. atmosphere. commodities. fumigation. heating. relative-humidity. methyl-bromide. monitoring. temperature. environmental-impact. pollution-control. environmental-protection. pesticides. environment. agricultural-entomology
Organism Descriptors:arthropods
Supplemental Descriptors:invertebrates. animals
Subject Codes:HH400. PP600. ZZ900
Supplementary Info:9 ref
ISSN:0022-474X
Year:2000
Journal Title:Journal of Stored Products Research

Title:Field monitoring Sitophilus zeamais and Sitophilus oryzae (Coleoptera: Curculionidae) using refuge and flight traps baited with synthetic pheromone and cracked wheat
View Article: Journal of Stored Products Research. 2000. 36 (4). 341-353
CD Volume:337
Print Article: Pages: 341-353
Author(s):Likhayo P W Hodges R J
Author Affiliation:Kenya Agricultural Research Institute, P.O. Box 14733, Nairobi, Kenya
Language:English
Abstract:Flight traps with open vertical baffles and refuge traps in the form of rectangular cardboard boxes were used to catch Sitophilus zeamais and S. oryzae in Kenya. Traps baited with the aggregation pheromone (Sitophilure), and for the first time traps baited with pheromone and food bait (cracked wheat), were field tested in southern Kenya. Both traps types were effective in capturing Sitophilus spp. and gave a higher weevil catch when baited with pheromone and cracked wheat combined than with pheromone or cracked wheat alone. The combination of pheromone and cracked wheat had an additive effect on trap catch and not a synergistic effect as reported in earlier laboratory trials. Different pheromone loadings of 0.5, 1 and 2 mg were tested. The catch of S. zeamais in flight traps rose significantly with increasing concentration. For refuge traps, the same effect was observed although the difference between 1 and 2 mg was not statistically significant. The trend was for increasing S. oryzae catch with concentration, although total catches were very much lower than those for S. zeamais, and differences did not prove statistically significant. Traps placed on the floor near infested maize cribs captured significantly more Sitophilus spp. than those actually placed in the cribs. Adult Sitophilus captured were sexed and in both flight and refuge traps the sex ratio was biased in favour of females, even though the sex ratio of weevils from infested maize cobs, which were the source of the captured weevils, was approximately even
Descriptors:traps. monitoring. wheat. aggregation-pheromones. baits. maize. sex-ratio. insect-pests. plant-pests. stored-products-pests. stored-products. control. agricultural-entomology
Geographic Locator:Kenya
Organism Descriptors:Sitophilus-oryzae. Sitophilus-zeamais. Triticum-aestivum. Zea-mays. arthropods. Triticum
Supplemental Descriptors:Sitophilus. Dryophthoridae. Coleoptera. insects. arthropods. invertebrates. animals. Triticum. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Zea. East-Africa. Africa-

South-of-Sahara. Africa. Developing-Countries. ACP-Countries. Commonwealth-of-Nations. Anglophone-Africa
Subject Codes:FF620. HH500
Supplementary Info:17 ref
ISSN:0022-474X
Year:2000
Journal Title:Journal of Stored Products Research
Copyright:Copyright CAB International

Title:Anthracenone ABA analogue as a potential photoaffinity reagent for ABA-binding proteins
View Article: Phytochemistry (Oxford). 53 (3). Feb., 2000. 349-355
CD Volume:330
Print Article: Pages: 349-355
Author(s):Irvine Nicholas M Rose Patricia A Cutler Adrian J Squires Tim M Abrams Suzanne R
Author Affiliation:Plant Biotechnology Institute, National Research Council of Canada, 110 Gymnasium Place, Saskatoon, SK, S7N 0W9
Language:English
Language of Summary:English (EN)
Abstract:An anthracenone analogue of abscisic acid (ABA) was synthesized as a potential photoaffinity reagent and tested for biological activity. Reaction between 10,10'-dimethoxy-9-anthrone with two equivalents of the lithiated dianion of cis-3-methylpent-2-en-4-yn- 1-ol afforded an acetylenic alcohol key intermediate. Subsequent reduction of the triple bond, functional group manipulation of the side chain alcohol and deprotection of the dimethoxy protected anthrone provided anthracenone ABA analogue 7 as a potential photoaffinity reagent for ABA-binding proteins. The effect of natural ABA and the potential photoaffinity anthracenone ABA 7 on corn cell growth was determined at various concentrations. The results show that anthracenone ABA 7 is perceived as ABA-like, although producing less inhibition than ABA itself. For example, 7 at 33 muM produces approximately the same inhibition as ABA at 10 muM
Descriptors:growth inhibition; phytochemistry. Biochemistry and Molecular Biophysics; Chemical Coordination and Homeostasis. ABA [abscisic acid]: plant growth regulator, plant hormone; ABA- binding protein [abscisic acid-binding protein]; anthracenone ABA analogue [anthracenone abscisic acid analogue]: potential photoaffinity reagent; benzophenone
Organism Descriptors:maize (Gramineae)
Supplemental Descriptors:Gramineae: Monocotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Monocots; Plants; Spermatophytes; Vascular Plants
Subject Codes:Biochemistry and Molecular Biophysics; Chemical Coordination and Homeostasis
ISSN:0031-9422
Year:2000
Journal Title:Phytochemistry

Title:Dichromenoxanthones from Tovomita brasiliensis
View Article: Phytochemistry (Oxford). 55 (7). December, 2000. 815-818
CD Volume:330
Print Article: Pages: 815-818
Author(s):Marques Vera Lucia L De Oliveira Fernando M Conserva Lucia M Brito Rose Grace L Guilhon Giselle Maria S P
Author Affiliation:Departamento de Quimica, Universidade Federal de Alagoas, 57072- 970, Maceio: conserva@fis.ufal.br
Language:English
Language of Summary:English (EN)
Abstract:Two dichromenoxanthones (1,6-dihydroxy-6',6'-dimethylpyrano(2',3':3,4)-6'',6''- dimethylpyrano(2'',3'':7,8)xanthone

(brasilixanthone A) and 1,6- dihydroxy-6',6'-dimethylpyrano(2',3':2,3)-6'',6''-dimethylpyrano(2'',3'':7,8)xanthone (brasilixanthone B)), along with betulinic acid, friedelin, sitosterol and stigmasterol were isolated from the roots and stems of Tovomita brasiliensis. Their structures were characterized on the basis of 1H and 13C NMR spectral data, including 2D NMR experiments
Descriptors:Pharmacognosy (Pharmacology). 1,6-dihydroxy-6',6'-dimethylpyrano(2',3'-2,3)-6'',6''- dimethylpyrano(2'',3''-7,8)xanthone [brasilixanthone B]: dichromenoxanthone, isolation, structure; 1,6-dihydroxy-6',6'- dimethylpyrano(2',3'-4,4)-6'',6''-dimethylpyrano(2'',3''- 7,8)xanthone [brasilixanthone A]: dichromenoxanthone, isolation, structure; betulinic acid: isolation, structure; friedelin: isolation, structure; sitosterol: isolation, structure; stigmasterol: isolation, structure
Organism Descriptors:Tovomita brasiliensis (Guttiferae): medicinal plant. root; stem
Supplemental Descriptors:Guttiferae: Dicotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
Subject Codes:Pharmacognosy (Pharmacology)
ISSN:0031-9422
Year:2000
Journal Title:Phytochemistry

Title:Effects of extreme high temperature, drought and elevated CO2 on photosynthesis of the Mojave Desert evergreen shrub, Larrea tridentata
View Article: Plant Ecology. 2000-. 148- (2-). 183-193
CD Volume:310
Print Article: Pages: 183-193
Author(s):Hamerlynck E P Huxman T E Loik M E Smith S D
Author Affiliation:Department of Biological Sciences, University of Nevada, Las Vegas, NV 89154, USA
Language:English
Abstract:The interaction of extreme temperature events with future atmospheric CO2 concentrations may have strong impacts on physiological performance of desert shrub seedlings, which during the critical establishment phase often endure temperature extremes in conjunction with pronounced drought. To evaluate the interaction of drought and CO2 on photosynthesis during heat stress, one-year-old Larrea tridentata seedlings were exposed to nine days of heat with midday air temperature maxima reaching 53 deg C under three atmospheric CO2 concentrations (360, 550 and 700 micro mol mol-1) and two water regimes (well-watered and droughted). Photosynthetic gas exchange, chlorophyll fluorescence and water potential responses were measured prior to, during and one week following the high temperature stress event. Heat stress markedly decreased net photosynthetic rate (Anet), stomatal conductance (gs), and the photochemical efficiency of photosystem II (Fv/Fm) in all plants except for well-watered L. tridentata grown in 700 micro mol mol-1 CO2. Anet and gs remained similar to pre-stress levels in these plants. In droughted L. tridentata, Anet was ca. 2x (in 550 micro mol mol-1 CO2) to 3x (in 700 micro mol mol-1 CO2) higher than in ambient-CO2-grown plants, while gs and Fv/Fm were similar and low in all CO2 treatments. Following heat stress, gs in all well-watered plants rose dramatically, exceeding pre-stress levels by up to 100%. In droughted plants, gs and Anet rose only in plants grown at elevated CO2 following release from heat. This recovery response was strongest at 700 micro mol mol-1 CO2, which returned to Anet and gs values similar to pre-heat following several days of recovery. Extreme heat diminished the photosynthetic down-regulation response to growth at elevated CO2 under well-watered conditions, similar to the action of drought. Ambient-CO2-grown L. tridentata did not show significant recovery of photosynthetic capacity (Amax and CE) after alleviation of temperature stress, especially when exposed to drought, while plants exposed to elevated CO2 appeared to be unaffected. These findings suggest that elevated CO2 could promote photosynthetic activity during critical periods of seedling

establishment, and enhance the potential for L. tridentata to survive extreme high temperature events
Descriptors:drought. photosynthesis. air-temperature. chlorophyll. fluorescence. gas-exchange. heat-stress. photosystem-II. seedlings. water-potential. carbon-dioxide-enrichment. stomatal-resistance
Geographic Locator:Mojave-Desert
Organism Descriptors:Larrea-tridentata
Supplemental Descriptors:Larrea. Zygophyllaceae. Sapindales. dicotyledons. angiosperms. Spermatophyta. plants
Subject Codes:FF060. PP350. PP500. FF062
Supplementary Info:55 ref
ISSN:1385-0237
Year:2000
Journal Title:Plant Ecology

Title:Influence of ascorbate and the Mehler peroxidase reaction on non-photochemical quenching of chlorophyll fluorescence in maize mesophyll chloroplasts
View Article: Planta. 2000. 210 (5). 765-774
CD Volume:334
Print Article: Pages: 765-774
Author(s):Ivanov B Edwards G
Author Affiliation:Institute of Basic Biological Problems, Russian Academy of Sciences, Pushchino, 142292, Russia
Language:English
Abstract:Non-photochemical quenching of chlorophyll fluorescence (NPQ) and quantum yield of photosystem II (PSII) were studied with intact mesophyll chloroplasts of maize during the initial minutes of illumination using the pulse-modulated chlorophyll fluorescence technique. NPQ was rapidly reversible in the dark at any point during illumination, which is indicative of energy-dependent dissipation of energy (mediated via thylakoid DELTA pH changes and ascorbate-dependent synthesis of zeaxanthin). In chloroplast suspensions including 15 mM ascorbate in the medium, with addition of oxaloacetate and pyruvate, the PSII yield, rate of reduction of oxaloacetate and phosphorylation of pyruvate reached maxima after approximately 2 min of illumination. Under these conditions, which promote phosphorylation and a decreased DELTA pH across the thylakoid membrane, NPQ rose to a maximum after 2-3 min of illumination, dropped to a minimum after about 6 min, and then increased to a steady-state level. A rather similar pattern was observed when leaves were illuminated following a 30-min dark period. Providing chloroplasts with higher levels of ascorbate (60 mM) prevented the transient drop in NPQ. Anaerobic conditions or addition of potassium cyanide caused a decrease in PSII yield, providing evidence for operation of the ascorbate-dependent Mehler-peroxidase reaction. These conditions also strongly suppressed the transient drop in NPQ. Dithiothreitol, an inhibitor of violaxanthin de-epoxidase, caused a large drop in NPQ even in the presence of high levels of ascorbate. These results suggest that the decline in NPQ occurs in response to an increase in lumen pH after initiation of phosphorylation, that this decline can be suppressed by conditions where ascorbate is not limiting for violaxanthin de-epoxidase, and that the increase in NPQ after such a decline is the result of development of energy dissipation in PSII reaction centres
Descriptors:ascorbic-acid. chlorophyll. chloroplasts. fluorescence. maize. mesophyll. peroxidase. enzyme-activity. phosphorylation. photosystem-II. pyruvic-acid. zeaxanthin
Organism Descriptors:Zea-mays
Supplemental Descriptors:Zea. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:FF005. FF060
Supplementary Info:40 ref
ISSN:0032-0935

Year:2000
Journal Title:Planta

Title:Evidence for covalent linkage between xyloglucan and acidic pectins in suspension-cultured rose cells
View Article: Planta. 2000. 211 (2). 275-286
CD Volume:334
Print Article: Pages: 275-286
Author(s):Thompson J E Fry S C
Author Affiliation:Edinburgh Cell Wall Group, Institute of Cell and Molecular Biology, The University of Edinburgh, Daniel Rutherford Building, The King's Buildings, Edinburgh EH9 3JH, UK
Language:English
Abstract:Neutral xyloglucan was purified from the cell walls of suspension-cultured rose (Rosa sp. cv. Paul's Scarlet) cells by alkali extraction, ethanol precipitation and anion-exchange chromatography on 'Q-Sepharose FastFlow'. The procedure recovered 70% of the total xyloglucan at about 95% purity in the neutral fraction. The remaining 30% of the xyloglucan was anionic, as demonstrated both by anion-exchange chromatography at pH 4.7 and by high-voltage electrophoresis at pH 6.5. Alkali did not cause neutral xyloglucan to become anionic, indicating that the anionic nature of the rose xyloglucan was not an artefact of the extraction procedure. Pre-incubation of neutral [3H]xyloglucan with any of ten non-radioactive acidic polysaccharides did not cause the radioactive material to become anionic as judged by electrophoresis, indicating that stable complexes between neutral xyloglucan and acidic polysaccharides were not readily formed in vitro. The anionic xyloglucan did not lose its charge in the presence of 8 M urea or after a second treatment with NaOH, indicating that its anionic nature was not due to hydrogen-bonding of xyloglucan to an acidic polymer. Proteinase did not affect the anionic xyloglucan, indicating that it was not associated with an acidic protein. Cellulase converted the anionic xyloglucan to the expected neutral nonasaccharide and heptasaccharide, indicating that the repeat-units of the xyloglucan did not contain acidic residues. Endo-polygalacturonase converted about 40% of the anionic xyloglucan to neutral material. Arabinanase and galactanase also converted appreciable proportions of the anionic xyloglucan to neutral material. These results show that about 30% of the xyloglucan in the cell walls of suspension-cultured rose cells exists in covalently-linked complexes with acidic pectins
Descriptors:linkage. pectins. cell-walls. cellulase. chromatography. electrophoresis. ethanol. extraction. polysaccharides. proteinases. residues. xyloglucans
Organism Descriptors:Rosa
Supplemental Descriptors:Rosaceae. Rosales. dicotyledons. angiosperms. Spermatophyta. plants
Subject Codes:FF003. FF060. FF040
Supplementary Info:45 ref
ISSN:0032-0935
Year:2000
Journal Title:Planta
Copyright:Copyright CAB International

Title:Nitrification and denitrification in forest soil subjected to sprinkling infiltration
View Article: Soil Biology & Biochemistry. 2000. 32 (5). 669-678
CD Volume:330
Print Article: Pages: 669-678
Author(s):Paavolainen L Fox M Smolander A
Author Affiliation:Finnish Forest Research Institute, P.O. Box 18, 01301 Vantaa, Finland
Language:English

Abstract:On Ahvenisto esker, southern Finland, groundwater was recharged by sprinkling lake water directly onto forest soil. Due to infiltration, the pH of the humus layer rose from approx equal to 5 to 6.5, nitrification was initiated and the fluxes of N2O and leaching of nitrate from the soil increased. Nitrification in ammonium-enriched soil suspensions was pH-dependant in a gradient from 4.7 to 6.7. In the soils subjected to infiltration, the production of (NO2+NO3)-N was inhibited by decreasing the pH to 5.3 or lower. Low pH also led to decreased numbers of nitrifiers. In the soils not subjected to infiltration (control soils), (NO2+NO3)-N production initiated at pH 6.7 and the numbers of nitrifiers increased. In incubation experiments, with no added ammonium, the adjustment of pH to 6.7 also initiated nitrification in the control soils. Thus, increase in soil pH was the main reason for initiation of nitrification at this site. During infiltration, N2O was produced mainly by denitrification and approx equal to 75% of the denitrification products was N2. In the samples from the humus layer, the concentrations of (NO2+NO3)-N, the net production of mineral N and net nitrification were in general less, whereas denitrification enzyme activity and denitrification potential were higher than in the samples from the mineral soil layer. The mineral soil may therefore contribute substantially to the leaching of nitrate
Descriptors:denitrification. forests. infiltration. enzyme-activity. groundwater-recharge. humus. initiation. leaching. mineral-soils. nitrate. nitrification. nitrogen. responses. soil-pH. soil. suspensions. transformation
Geographic Locator:Finland
Supplemental Descriptors:Scandinavia. Northern-Europe. Europe. Developed-Countries. European-Union-Countries. OECD-Countries
Subject Codes:JJ100. KK100. JJ300. JJ200
Supplementary Info:30 ref
ISSN:0038-0717
Year:2000
Journal Title:Soil Biology & Biochemistry

Title:Microbial responses to simulated tillage in cultivated and uncultivated soils
View Article: Soil Biology & Biochemistry. 2000. 32 (11/12). 1547-1559
CD Volume:331
Print Article: Pages: 1547-1559
Author(s):Calderon F J Jackson L E Scow K M Rolston D E
Author Affiliation:Department of Vegetable Crops, University of California, Davis, CA 95616, USA
Language:English
Abstract:The immediate effects were examined of simulated tillage on microbial community structure as determined by phospholipid fatty acid (PLFA) profiles, microbial activity, and carbon (C) and nitrogen (N) pools. Intact cores were obtained from Chualar sandy loam (Typic Argixerolls) soils under grassland and vegetable production. The top 15 cm of soil was sieved to simulate tillage, then the cores were incubated in the greenhouse. Sampling took place 1 day before the tillage simulation and throughout the next 2 weeks. In the grassland soil, multivariate analysis showed changes in PLFA profiles within hours, indicating rapid changes in microbial community structure. Specific PLFA markers indicated a reduction in microeukaryotic biomass as well as an increase in a microbial stress marker after sieving. Respiration (as determined by soil incubation in sealed containers) decreased immediately after sieving and continued to decline through the next 14 days. Sieving was followed by a continuous accumulation of nitrate. In the vegetable soil, the changes in PLFA profiles were slow and gradual. The PLFA stress indicator rose only slightly. Microbial activity and biomass were low, and only small changes occurred in most variables. A decline in respiration and an increase in nitrate occurred several days after sieving. In both soils, decreased soil moisture may have contributed to changes in soil responses after sieving. Short-term responses to tillage may be less pronounced in soils with a long history of cultivation because of a relatively resilient

microbial community and/or because lower initial microbial biomass and nutrient pools preclude a strong response to disturbance
Descriptors:microorganisms. responses. soil. tillage. analysis. biomass. carbon. containers. cultivation. grasslands. grassland-soils. horticultural-soils. microbial-flora. moisture. multivariate-analysis. nitrate. nitrogen. nutrients. organic-matter. respiration. sandy-loam-soils. simulation. soil-water. stress. structure. fatty-acids. mineralization. Mollisols. disturbed-soils
Identifiers:Xerolls. microbial biomass
Subject Codes:JJ100. JJ900. JJ200. JJ400
Supplementary Info:54 ref
ISSN:0038-0717
Year:2000
Journal Title:Soil Biology & Biochemistry
Copyright:Copyright CAB International

Title:Characteristics and modeling of runoff hydrographs for different tillage treatments
View Article: Soil Science Society of America Journal. 2000. 64 (5). 1763-1770
CD Volume:323
Print Article: Pages: 1763-1770
Author(s):Yu B Sombatpanit S Rose C W Ciesiolka C A A Coughlan K J
Author Affiliation:Faculty of Environmental Sciences, Griffith Univ., Nathan QLD 4111, Australia
Language:English
Abstract:Surface runoff rate is a critical variable in determining the rate of soil erosion and sediment transport. Rainfall and runoff data at 1-min. intervals from an experiment site at Khon Kaen, Thailand, were used to test a three-parameter runoff model originally developed for bare plots in relation to soil erosion studies. The site has a sandy soil with a slope of 3.6%. Plot length and width were 30 and 5 m, respectively. Four tillage treatments with three replicates each were considered: up- and down-slope cultivation, two contour cultivation treatments with tillage depth of 25 and 50 cm, respectively, and no-tillage. Runoff data for 200 individual runoff hydrographs showed that runoff amount and peak runoff rate for the no-tillage treatment were significantly less than those for other treatments at the site. On average, runoff amount and peak runoff rate for the no-tillage treatment were 37 and 44%, respectively, of those for the up- and down-slope cultivation. Results for contour cultivation practices are between the two extremes, although the water retention was not greater with greater tillage depth as we originally thought would be the case at the site. For these 200 runoff events for the four treatments, the model for runoff hydrographs worked well, with an average coefficient of efficiency of 0.90 and an average standard error of 0.88 mm h-1. The model performance is particularly good for large storm events with high volumetric runoff coefficient. The three model parameters vary considerably from event to event and from treatment to treatment. The initial infiltration amount was inversely related to prior 10-d rainfall at the site; the spatially averaged maximum rate of infiltration can be related to the maximum retention or the US Soil Conservation Service Curve Number, and the hydrologic lag time is least variable among different storm events and tillage treatments, but tends to decrease with peak runoff rate
Descriptors:models. runoff. rain. tillage. contour-cultivation. no-tillage. infiltration. sandy-soils
Geographic Locator:Thailand
Supplemental Descriptors:South-East-Asia. Asia. Developing-Countries. ASEAN-Countries
Subject Codes:PP200. JJ300. JJ900
Supplementary Info:37 ref
ISSN:0361-5995
Year:2000
Journal Title:Soil Science Society of America Journal

Title:Identification of molecular markers linked to Rdr1, a gene conferring resistance to blackspot in roses
View Article: Theoretical and Applied Genetics. 2000. 101 (5/6). 977-983
CD Volume:336
Print Article: Pages: 977-983
Author(s):Malek B von Weber W E Debener T
Author Affiliation:Institute for Ornamental Plant Breeding, Bornkampsweg 31, D-22926 Ahrensburg, Germany
Language:English
Abstract:Resistance to blackspot, caused by Diplocarpon rosae, in the tetraploid rose genotype 91/100-5 had been characterised previously as a single dominant gene in duplex configuration. In the present study, tetraploid progeny (95/3) segregating for the presence of the blackspot resistance gene Rdr1 were screened with 868 RAPD and 114 AFLP primers/primer combinations. Seven AFLP markers were found to be linked to Rdr1 at distances between 1.1 and 7.6 cM. The most closely linked AFLP marker was cloned and converted into a SCAR marker that could be screened in a larger population than the original AFLP, and was linked at a distance of 0.76 cM. The cloned fragment was used as an RFLP probe to locate the marker on a chromosome map of diploid roses. This is the first report of markers linked to a resistance gene in roses
Descriptors:roses. random-amplified-polymorphic-DNA. linkage. genetic-markers. plant-pathogenic-fungi. fungal-diseases. plant-diseases. plant-pathogens
Identifiers:amplified fragment length polymorphism
Organism Descriptors:Rosa. Diplocarpon-rosae
Supplemental Descriptors:Rosaceae. Rosales. dicotyledons. angiosperms. Spermatophyta. plants. Diplocarpon. Helotiales. Ascomycotina. Eumycota. fungi
Subject Codes:FF003. FF020. WW000. HH600. FF610
Supplementary Info:36 ref
ISSN:0040-5752
Year:2000
Journal Title:Theoretical and Applied Genetics
Copyright:Copyright CAB International