No.	Records	Request
1	721	CASSAVA
2	425	MANIHOT
3	787	CASSAVA or MANIHOT
4	16957	PY=2004
* 5	31	#3 and (PY=2004)

Record 1 of 31 - AGRICOLA 1998-2004/09
AU: Tungsangprateep,-S.; Jindal,-V.K.
TI: Sorption isotherms and moisture diffusivity in fried cassava-shrimp chips.
SO: International journal of food properties. 2004, v. 7, no. 2 p. 215-227.

Record 2 of 31 - AGRICOLA 1998-2004/09
AU: Berry,-S.D.; Fondong,-V.N.; Rey,-C.; Rogan,-D.; Fauquet,-C.M.; Brown,-J.K.
TI: Molecular evidence for five distinct Bemisia tabaci (Homoptera: Aleyrodidae) geographic haplotypes associated with cassava plants in sub-Saharan Africa.
SO: Annals of the Entomological Society of America. 2004 July, v. 97, no. 4 p. 852-859.
AB: The Bemisia tabaci (Gennadius) complex contains the only known whitefly vector of plant-infecting begomoviruses, which are the causal agents of mosaic diseases of cassava in Africa and India. Widespread phenotypic variability, together with the absence of definitive morphological taxonomic characters for this whitefly complex, has confounded both the systematics and the study of its virus vector biology. Substantial genetic variability and phylogeographical relationships have been shown for phenotypic, but morphologically identical, variants of B. tabaci based on the mitochondrial (mt) cytochrome oxidase I (COI) sequence, leading to the suggestion that they represent a species complex. Here, phylogenetic relationships were explored, using the mtCOI sequence (780 bp) as a molecular marker, for B. tabaci collected from cassava plants in southern and western Africa, including Cameroon, Zambia, Mozambique, Zimbabwe, Swaziland, and South Africa. Maximum likelihood analyses of mtCOI sequences revealed that most B. tabaci examined were placed into one of three subgroups within the major sub-Saharan African clade, which also contains previously reported populations indigenous to Malawi and Uganda, and collectively shared on overall nucleotide (nt) identity at 88.9-99.7%. Two other reference populations, the monophagous Benin haplotype from Asystasia spp. and a B. tabaci from cassava in the Ivory Coast (IC), were the most divergent outliers of the sub-Saharan clade, each representing the only member of their respective clade (I and V), at the present time. Members of the sub-Saharan clade associated with cassava had as their closest relatives haplotypes I and II of the Mediterranean-Northern Africa clade, with which they shared a collective 84.2-92.9% nt identity (not including the IC cassava reference haplotype). In contrast, the sub-Saharan African clade diverged from the Americas and Southeast Asia/Far East clades at 79.7-85.1 and 77.5-84.9%, respectively. Within the sub-Saharan clade, subclade II contained B. tabaci from Zambia, Mozambique, South Africa, and Swaziland at 95-99% identity. The sub-Saharan subcluster III contained haplotypes from southern and western

Africa. Counter to the otherwise phylogeographical relationships observed for cassava-associated B. tabaci from southern Africa, one and two populations from Cameroon (okra) and Zimbabwe (cassava), respectively, grouped with the major Mediterranean-North Africa clade, together with their closest relative associated with okra from IC, are included here as a reference sequence for the first time, with which they collectively formed a new, third subclade. Thus, phylogenetic analysis of B. tabaci mtCOI haplotypes examined thus far from the African continent has revealed five major cassava-associated haplotypes, which grouped primarily based on extant geography, with the exception of one and two collections from Cameroon and Zimbabwe, respectively. Hypotheses explaining the potential distributions of haplotypes are discussed.

Record 3 of 31 - AGRICOLA 1998-2004/09

AU: Sseruwagi,-P.; Rey,-M.E.C.; Brown,-J.K.; Legg,-J.P.

TI: The cassava mosaic geminiviruses occurring in Uganda following the 1990s epidemic of severe cassava mosaic disease.

SO: Annals of applied biology. 2004, v. 145, no. 1 p. 113-121.

Record 4 of 31 - AGRICOLA 1998-2004/09

AU: Olasantan,-F.O.; Bello,-N.J.

TI: Optimum sowing dates for okra (Abelmoschus esculentus) in monoculture and mixture with cassava (Manihot esculenta) during the rainy season in the south-west of Nigeria.

SO: Journal of agricultural science. 2004 Feb., v. 142, pt. 1 p. 49-58.

AB: Experiments to evaluate the optimum sowing date for okra (Abelmoschus esculentus) sown in monoculture or in mixed stands with cassava (Manihot esculenta) were sited on free-draining sandy loam soils in southwestern Nigeria. Okra was sown at the end of July, in mid-August and early September as a late-season crop in 1999 and at the end of May, in early June and at the end of June as an early-season crop in 2000. It was sown at seed rates sufficient to achieve final population densities of 33000 and 40000 plants/ha in late-season crops (1999) and early-season crops (2000), respectively. The late-season crops had shorter growth duration, received less rainfall, and experienced cooler temperatures during establishment and the early vegetative stage, and warmer temperatures during the reproductive phase than the early-season crops. Intercropping had no significant effect on the growth and tuber yields of cassava, or on phenology (i.e. time to vegetative growth, flowering and fruiting) and pod yield of okra in both seasons. However, it reduced weed growth by 35-57%, and kept both the soil and canopy environments of cassava cooler by 2.3-5.8 ÀC and more moist by 15-30 g/kg, compared with monoculture. The phenology and pod yields of the early- and late-season okra in both cropping systems were dependent on sowing date, indicating that okra production is only suitable at particular sowing dates in both seasons. July-sown okra in the 1999 late-season and May-sown crop in the 2000 early-season took progressively the longest time (i.e. 3-10 and 2-5 days, respectively) to flower and fruit, but these crops controlled weeds and modified the cassava environment better than the rest, and gave the highest fresh pod yields and economic returns. It took okra pods longer to reach marketable size in the late season

than early season (i.e. 5-9 v 2. 6 days). It is concluded that the optimal sowing date to attain maximum pod yield and economic returns from late-season okra is July or August and from early-season crop is May or early June. Bearing in mind financial constraints and production costs, the optimal season target for maximum edible pods is the early season and for maximum economic returns is the late season.

Record 5 of 31 - AGRICOLA 1998-2004/09

AU: Restrepo,-S.; Velez,-C.M.; Duque,-M.C.; Verdier,-V.

TI: Genetic structure and population dynamics of Xanthomonas axonopodis pv. manihotis in Colombia from 1995 to 1999.

SO: Applied and environmental microbiology. 2004 Jan., v. 70, no. 1 p. 255-261.

AB: Restriction fragment length polymorphisms (RFLPs) were used to study the population genetics and temporal dynamics of the cassava bacterial pathogen Xanthomonas axonopodis pv. manihotis. The population dynamics were addressed by comparing samples collected from 1995 to 1999 from six locations, spanning four different edaphoclimatic zones (ECZs). Forty-five different X. axonopodis pv. manihotis RFLP types or haplotypes were identified between 1995 and 1999. High genetic diversity of the X. axonopodis pv. manihotis strains was evident within most of the fields sampled. In all but one site, diversity decreased over time within fields. Haplotype frequencies significantly differed over the years in all but one location. Studies of the rate of change of X. axonopodis pv. manihotis populations during the cropping cycle in two sites showed significant changes in the haplotype frequencies but not composition. However, variations in pathotype composition were observed from one year to the next at a single site in ECZs 1 and 2 and new pathotypes were described after 1997 in these ECZs, thus revealing the dramatic change in the pathogen population structure of X. axonopodis pv. manihotis. Disease incidence was used to show the progress of cassava bacterial blight in Colombia during the 5-year period in different ecosystems. Low disease incidence values were correlated with low rainfall in 1997 in ECZ 1.

Record 6 of 31 - AGRICOLA 1998-2004/09

AU: Ramdath,-D.D.; Isaacs,-R.L.C.; Teelucksingh,-S.; Wolever,-T.M.S.

TI: Glycaemic index of selected staples commonly eaten in the Caribbean and the effects of boiling v. crushing.

SO: British journal of nutrition. 2004 June, v. 91, no. 6 p. 971-977.

AB: Integrating information about the glycaemic index (GI) of foods into the Caribbean diet is limited by the lack of data. Therefore, we determined the GI of eight staple foods eaten in the Caribbean and the effect on GI of crushing selected tubers. Groups of eight to ten healthy volunteers participated in three studies at two sites. GI was determined using a standard method with white bread and adjusted relative to glucose. The mean area under the glucose response curve elicited by white bread was similar for the different groups of subjects. In study 1, the GI of cassava (Manihot esculenta; 94 (sem 11)) was significantly higher than those of breadfruit (Artocarpus altilis; 60 (sem 9)), cooking ' green' banana (Musa spp.; 65 (sem 11)) and sadha roti (65 (sem 9)) (P=0.018). There was no significant difference in the GI of the foods in study 2: dasheen (Colocasia esculenta var. esculenta;

77 (sem 10)), eddoes (Colocasia esculenta var. antiquorum; 61 (sem 10)), Irish potato (Solanum tuberosum; 71 (sem 8)), tannia (Xanthosoma sagittifolium; 60 (sem 5)) and white yam (Dioscorea alata; 62 (sem 6)), and, in study 3, crushing did not significantly affect the GI of dasheen, tannia or Irish potato. However, when the results from studies 2 and 3 were pooled, the GI of dasheen (76 (sem 7)) was significantly greater than that of tannia (55 (sem 5); P=0.015) with potato being intermediate (69 (sem 6)). We conclude that dasheen and cassava are high-GI foods, whereas the other tubers studied and sadha roti are intermediate-GI foods. Given the regular usage of cassava and dasheen in Caribbean diets we speculate that these diets would tend to be high GI, although this could be reduced by foods such as sadha roti and white yam. The range of GI between the staples is sufficiently large that health benefits may be accrued by replacing high-GI staples with intermediate-GI staples in the Caribbean diet.

Record 7 of 31 - AGRICOLA 1998-2004/09

AU: Gomez-Vasquez,-R.; Day,-R.; Buschmann,-H.; Randles,-S.; Beeching,-J.R.; Cooper,-R.M.

TI: Phenylpropanoids, phenylalanine ammonia lyase and peroxidases in elicitor-challenged cassava (Manihot esculenta) suspension cells and leaves.

SO: Annals of botany. 2004 July, v. 94, no. 1 p. 87-97.

AB: Background and aims Control of diseases in the key tropical staple, cassava, is dependent on resistant genotypes, but the innate mechanisms are unknown. The aim was to study phenylpropanoids and associated enzymes as possible defence components. Methods Phenylalanine ammonia-lyase (PAL), phenylpropanoids and peroxidases (POD) were investigated in elicited cassava suspension cells and leaves. Yeast elicitor was the most effective of several microbial and endogenous elicitors. Fungitoxicity was determined against the cassava pathogens Fusarium solani, F. oxysporum and the saprotroph Trichoderma harzianum. Key results A single and rapid (> or = 2-3 min) oxidative burst, measured as hydrogen peroxide, occurred in elicited cells. PAL activity was induced maximally at 15 h and was preceded by PAL mRNA accumulation, which peaked at 9 h. Symplasmic POD activity increased four-fold in cells, 48 h post-elicitation. POD isoforms (2-7 isoforms, pI 3.1-8.8) were detected in elicited and unelicited cells, extracellular medium and leaves but two extracellular isoforms were enhanced post-elicitation. Also expression of a cassava peroxidase gene MecPOD1 increased in elicited cells. Only anionic forms oxidized scopoletin, with highest activity by isoform pI 3.6, present in all samples. Unidentified phenolics and possibly scopolin increased post-elicitation, but there was no enhancement of scopoletin, rutin or kaempferol-3-O-rutinoside concentration. Fungal germ tube elongation was inhibited more than germination by esculetin, ferulic acid, quercetin and scopoletin. T. harzianum was generally more sensitive than the pathogens and was inhibited by or = 50 micrograms mL-1 of ferulic acid and quercetin and or = 10 g mL-1 of scopoletin. Conclusions Phenolic levels in cells were not enhanced and were, theoretically, too low to be inhibitory. However, in combination and when oxidized they may contribute to defence, because oxidation of esculetin

and scopoletin by peroxidase and of esculetin by tyrosinase enhanced their fungitoxicity up to 20-fold.

Record 8 of 31 - AGRICOLA 1998-2004/09

AU: Carsky,-R.J.; Toukourou,-M.A.

TI: Cassava leaf litter estimation in on-farm trials.

SO: Experimental agriculture. 2004 July, v. 40, no. 3 p. 315-326.

AB: Cassava (Manihot esculenta) returns organic matter and nutrients to the soil through leaf litter and these amounts need to be quantified to help understand and design sustainable cropping systems. Our objectives were to estimate dry matter and nutrient contents in cassava leaf litter and to derive relationships between litter fall and easily measurable cassava yield components. Litter traps (1 m2) were placed in farmers' fields for monthly monitoring during a three year period. Maximum monthly leaf litter production ranged from 0.5 to 1.0 t ha-1, and occurred at the end of the first rainy season and at the onset of the next rainy season. In the first year, the mean dry matter of leaves collected during 12 months of growth was 3.4 t ha-1 for the unamended treatment, and 4.1 t ha-1 when N-P-K fertilizer was applied. The totals were 2.4 and 3.0 t ha-1 in 2000-2001 and 1.6 and 2.5 t ha-1 in 2001-2002, respectively. Annual differences were apparently related to rainfall. The relationship with fresh root yield was best described using one slope and yearly intercepts giving an r2 of 0.63. This relationship can be exploited for estimating litter dry matter in agronomic experiments when rough estimates are sufficient, keeping in mind that the relationship may not be the same for cultivars of differing architecture. Otherwise, the use of litter traps gives the best estimate of annual litter production.

Record 9 of 31 - AGRICOLA 1998-2004/09

AU: Batal,-A.B.; Parsons,-C.M.

TI: Utilization of various carbohydrate sources as affected by age in the chick.

SO: Poultry science. 2004 July, v. 83, no. 7 p. 1140-1147.

AB: In 3 experiments, New Hampshire x Columbian male chicks were fed carbohydrate-soybean meal (SBM) or casein diets from 0 to 21 d of age, and MEn was determined at 0 to 2, 3 to 4, 7, 14, and 21 d of age. Carbohydrate sources evaluated in experiment 1 were dextrose (D-glucose), conventional cornstarch, dextrinized cornstarch, corn-syrup solids, pregelatinized unmodified cornstarch, pregelatinized tapioca starch, tapioca dextrin, high-amylose starch, and polycose (mixed glucose polymers). Carbohydrate sources evaluated in experiments 2 and 3 were conventional corn, waxy corn, high-oil corn, corn flour, rice flour, dextrose, and sucrose. In experiment 1, chicks fed the dextrose diet had the highest weight gains, and the chicks fed high-amylose starch and pregelatinized unmodified cornstarch diets had the lowest weight gains. The MEn values varied among carbohydrate sources with MEn being highest for the dextrose diet and lowest for the high amylose starch diet. In experiment 2, chicks fed waxy corn, high-oil corn, or dextrose-SBM diets had ($P < 0.05$) higher growth rates than chicks fed conventional corn, corn flour, or rice flour. The MEn values increased with age for all diets except the dextrose-SBM, which was consistently high at all ages. In experiment 3, the dextrose diets (SBM or casein) yielded higher

growth performance and MEn values than the sucrose-diets, and the differences were greater at younger ages. The MEn values were also much higher for the casein than the SBM diets, and MEn of the SBM diets increased with increasing age. The results of this study indicate that MEn varies among carbohydrate sources and increases with age for most carbohydrate-SBM diets.

Record 10 of 31 - AGRICOLA 1998-2004/09

AU: Dorea,-J.G.

TI: Maternal thiocyanate and thyroid status during breast-feeding.

SO: Journal of the American College of Nutrition. 2004 Apr., v. 23, no. 2 p. 97-101.

AB: Cyanogenic glucosides are naturally present in plant foods especially in staple foods (cassava) consumed by millions of people in tropical countries. Most traditional processing methods are effective in detoxifying such goitrogens to safe levels of consumption. Nevertheless, residual cyanide (CN) is rapidly metabolized to thiocyanate (SCN) by existing metabolic pathways. There are concerns that goitrogens may reach the nursing infants through breast feeding or cow's milk based formulas. SCN adverse effects are commonly observed in relation to cigarette smoking. Breast-feeding is effective in protecting infants from anti-thyroid effects of eventual or habitual maternal exposure to CN exposure in food (cassava) or recreation habits (cigarette smoking). SCN goitrogenic effects occur secondary to iodine deficiency in special circumstances of high consumption of incomplete detoxified cassava and insufficient protein intake. Only during inadequate protein nutrition can SCN aggravate endemic iodine-deficient disorders (IDD).

Record 11 of 31 - AGRICOLA 1998-2004/09

AU: Delalibera,-I.-Jr.; Hajek,-A.E.

TI: Pathogenicity and specificity of Neozygites tanajoae and Neozygites floridana (Zygomycetes: Entomophthorales) isolates pathogenic to the cassava green mite.

SO: Biological control theory and applications in pest management. 2004 July, v. 30, no. 3 p. 608-616.

AB: The cassava green mite (CGM), Mononychellus tanajoa, a native of South America was accidentally introduced into Africa where it causes serious crop losses. The possibility of introducing classical biological agents from the native home of CGM into Africa was investigated. Thus, we conducted a series of laboratory assays of the native fungal pathogens, Neozygites tanajoae from Brazil and Neozygites floridana from Colombia and Brazil, and compared them with N. tanajoae isolates from Benin. Infectivity of both fungal species, was assayed against the twospotted spider mite, Tetranychus urticae, and against the red mite, Oligonychus gossypii. Pathogenicity against CGM and host range studies were conducted by transferring adult females of each mite species to leaf discs containing sporulated cadavers with a halo of conidia of each fungal isolate. All isolates caused some degree of infectivity to CGM. None of the isolates of N. floridana and N. tanajoae tested were pathogenic to O. gossypii, and only two isolates infected T. urticae. Most isolates from Brazil were highly virulent and infected only CGM. Sixteen N. tanajoae isolates caused more than 89% mortality and more than 62% of the CGM became mummified. A mummified CGM is

characteristically a swollen, brown fungus-killed mite that has great potential to produce conidia. However, high mortality was not always associated with high mummification. The median mummification time ranged from 4.4 to 6.7 days. Five Brazilian isolates caused >75% mummification with a median mummification time <5 days. Isolates that cause high mummification in a short period of time would be more likely to cause epizootics and to establish in the new environment. Therefore, these isolates would be the best candidates for introduction to Africa.

Record 12 of 31 - AGRICOLA 1998-2004/09

AU: Chiwona-Karltun,-L.; Brimer,-L.; Saka,-J.D.K.; Mhone,-A.R.; Mkumbira,-J.; Johansson,-L.; Bokanga,-M.; Mahungu,-N.M.; Rosling,-H.

TI: Bitter taste in cassava roots correlates with cyanogenic glucoside levels.

SO: Journal of the science of food and agriculture. 2004 Apr. 30, v. 84, issue 6 p. 581-590.

AB: Cassava roots contain cyanogenic glucosides. Malawian farmers classify cultivars into two groups based on the perceived danger of eating raw roots that they associate with bitterness. In the vernacular, cultivars that produce roots with bitter taste are called vyakubaba (bitter), whereas those yielding non-bitter roots are called vyakuzizra (cool). In the scientific literature they are distinguished as 'bitter' or 'sweet'. Roots from 'bitter' cultivars are processed prior to consumption. We studied the ability of farmers to predict the cyanogenic glucoside levels of 492 roots from the 10 most commonly grown cultivars. Twenty-eight farmers predicted the taste of each of the cultivars that they grew, and scored bitterness on a five-point scale by tasting the root tip. Thereafter cyanogenic glucosides were determined on half of the root, while a taste panel scored the taste of the other half. The mean cyanogenic glucoside level in 132 roots from 'cool' cultivars was 29 mg HCN eq kg-1 fresh weight (CI 25-33, range 1-123) and in 360 roots from bitter cultivars was 153 mg HCN eq kg-1 fresh weight (CI 143-163, range 22-661). Farmers' distinction of 'cool' and 'bitter' cultivars predicts glucoside levels. The tasting of the tip of the root improved the farmers' prediction of toxicity. Scoring of bitterness by a trained taste panel showed a stronger correlation with glucoside levels (r^2 = 0.67). This suggests that cyanogenic glucosides confer the bitter taste, notwithstanding the probability of additional modifying intrinsic factors.

Record 13 of 31 - AGRICOLA 1998-2004/09

AU: Lopez,-J.; Tejada,-I.; Vasquez,-C.; Dios-Garza,-J.-de; Shimada,-A.

TI: Condensed tannins in tropical fodder crops and their in vitro biological activity. 2.

SO: Journal of the science of food and agriculture. 2004 Mar., v. 84, issue 4 p. 295-299.

AB: With the aim to evaluate the biological activity of purified condensed tannins of tropical forages we conducted two in vitro experiments. In the first, using a radial diffusion technique, the protein precipitation of free condensed tannins (FCT) from Manihot esculenta, leucaena leucocephala, Arachis pintoi, Guazuma ulmyfolia, Gliricidia sepium and of tannic acid on bovine serum albumin (ASB), papain, pepsin and trypsin at pH 5.0 and 6.8 was

evaluated with a three-way analysis of variance. Significant effects (P< or = 0.05) for the tannin type, protein source, pH and their interactions were observed. Pepsin showed the highest protein precipitation (PP) at a pH of 5.0 (82.9 microgram) with FCT of G ulmyfolia and the lowest (0 and 0.2 microgram) of BSA with G sepium and A pintoi at pH 6.8. Experiments were then conducted using completely randomized designs in order to observe the effect of adding 0, 1.25 or 2.50 mg of FCT from M esculenta and L leucocephala to the rumen fluid-buffer in an in vitro dry matter digestibility test (IVDMD) of Medicago sativa and Brachiaria decumbens, The IVDMD value of M sativa (757 g kg-1) decreased with L leucocephala tannins, although with those of M esculenta it was increased (824 g kg-1 and 871 g kg-1, respectively) for 1.25 and 2.5 mg of FCT. The IVDMD value of B decumbens (774 g kg-1 without tannins) diminished with any tannin and any dose (P < 0.05). We conclude that there are differences in the FCT contents of fodder crops and in their biological activity measured as the capacity to precipitate proteins, which is modified by the type of tannin, the protein and the pH. The result of an IVDMD is regulated by the type of tannin and its dose.

Record 14 of 31 - AGRICOLA 1998-2004/09

AU: Obilie,-E.M.; Tano-Debrah,-K.; Amoa-Awua,-W.K.

TI: Souring and breakdown of cyanogenic glucosides during the processing of cassava into akyeke.

SO: International journal of food microbiology. 2004 May 15, v. 93, no. 1 p. 115-121.

AB: The population and composition of the lactic acid bacteria microbiota as well as the content of cyanogenic glucosides occurring at various stages of fermentation and subsequent processing of cassava roots into akyeke, a steamed sour cassava meal, were investigated. The number of lactic acid bacteria and percentage titratable acidity increased during 5 days of fermentation, but decreases were observed in the subsequent operations of washing' the dough with water followed by partial drying and steaming. In field and laboratory samples, Lactobacillus plantarum accounted for 59.3% and 52.3%, Lactobacillus brevis 23.3% and 22.8% and Leuconostoc mesenteroides subsp. cremoris 14.5% and 15.8%, respectively, of all lactic acid bacteria isolated at various stages of fermentation and processing. A reduction of about 98% occurred in the total cyanogens (CN) content of cassava roots during processing, from 69.3 to 1.4 and 110.3 to 2.8 mg CN equivalent/kg dry weight for laboratory and field samples of akyeke, respectively.

Record 15 of 31 - AGRICOLA 1998-2004/09

AU: Sampaio,-G.R.; Castellucci,-C.M.N.; Pinto-e-Silva,-M.E.M.; Torres, -E.A.F.S.

TI: Effect of fat replacers on the nutritive value and acceptability of beef frankfurters.

SO: Journal of food composition and analysis an official publication of the United Nations University, International Network of Food Data Systems. 2004 June-Aug, v. 17, no. 3-4 p. 469-474.

AB: This study determined the effect of fat replacers on the nutritive value and consumer acceptability of beef frankfurters.

Four fat replacers, carrageen gum, modified cassava starch, microparticulated whey protein, and oat bran, were used to replace pork back fat (control). Use of whey protein resulted in a 71.7% decrease in total lipids, followed by oat bran, carrageen, and cassava starch with decrease of 70.6%, 70.0%, and 69.49%, respectively. The cholesterol and energy of frankfurters with carrageen were decreased by 32.0% and 29.0%, respectively. The panelists indicated that the formulation with cassava starch was similar to the control in terms of acceptability, thus suggesting that the lipid content was not the main deciding factor. Further work in this area is necessary to identify the ideal fat-replacer.

Record 16 of 31 - AGRICOLA 1998-2004/09

AU: Matsui,-K.N.; Larotonda,-F.D.S.; Paes,-S.S.; Luiz,-D.B.; Pires,-A. T.N.; Laurindo,-J.B.

TI: Cassava bagasse-Kraft paper composites: analysis of influence of impregnation with starch acetate on tensile strength and water absorption properties.

SO: Carbohydrate polymers. 2004 Feb. 25, v. 55, no. 3 p. 237-243.

AB: A fibrous residue rich in non-extracted starch (bagasse) obtained from the industrial production of cassava starch was used to obtain a composite that is similar to cardboard, through a technique used in small scale artisan production of recycled paper. A mixture of 90% cassava bagasse and 10% of Kraft paper was used for the production of these composites. Kraft paper was added as a source of long fibres, in order to improve the mechanical properties of the material. The prepared material has similar characteristics to the molded fibre packaging made using recycled paper, as used in egg boxes. However, cassava bagasse has advantages over recycled paper, in view of the fact that it is obtained from known and renewable sources. The impregnated and non-impregnated materials were submitted to tests of tensile strength and to direct contact with water by complete immersion of the samples. The cassava bagasse-Kraft paper composites obtained had a slight resistance to direct contact with water. The water mass absorbed by the materials impregnated with starch acetate was approximately half that of the materials without impregnation. However, the impregnation had little influence on the tensile strength of the tested samples. Starch acetate is therefore an attractive additive for use in the manufacture of waterproof materials, such as disposable trays.

Record 17 of 31 - AGRICOLA 1998-2004/09

AU: Freitas,-R.A.; Paula,-R.C.; Feitosa,-J.P.A.; Rocha,-S.; Sierakowski,-M.R.

TI: Amylose contents, rheological properties and gelatinization kinetics of yam (Dioscorea alata) and cassava (Manihot utilissima) starches.

SO: Carbohydrate polymers. 2004 Jan. 1, v. 55, no. 1 p. 3-8.

AB: After defatting yam and cassava starches have amylose contents of 36.2 and 24.2%, respectively. Suspensions of these starches in water were analysed, in an oscillatory rheometer, using a heating rate of 4.0 ÀC min-1, deformation of 1% and a frequency of 1 Hz, the initial temperatures of gelatinization being 71 and 62 ÀC for yam and cassava, respectively. A gelatinization study was also carried out by differential scanning calorimetry with different

heating rates (2.5, 3.0, 4.0 and 5.0 ÀC min-1), to give, by the Arrhenius equation, the activation Energy (Ea) of the process. Yam starch showed a more energetic gelatinization process of when compared to cassava starch and also had a lower rate constant (s-1), indicating a relatively slow gelatinization process of at higher temperatures. Yam gels formed by autoclaving a suspension (50 g l-1) showed after 24 h of refrigeration, a stronger structure than for a cassava gel.

Record 18 of 31 - AGRICOLA 1998-2004/09

AU: Danso,-K.E.; Ford-Lloyd,-B.V.

TI: Cryopreservation of embryogenic calli of cassava using sucrose cryoprotection and air desiccation.

SO: Plant cell reports. 2004 Apr., v. 22, no. 9 p. 623-631.

AB: A simplified technique which simultaneously induces and cryoprotects embryogenic calli using sucrose followed by dehydration was developed for the cryopreservation of cassava genetic resources. An initial experiment to optimise the sucrose concentration needed for both embryo production and cryoprotection showed that higher concentrations of sucrose-between 0.4 M and 0.5 M-significantly reduced the viability as well as the number of embryos produced by the embryogenic clumps in the absence of freezing. Post-thaw viability as well as embryogenic competence of clumps depended on the percentage moisture lost, duration of exposure to higher sucrose concentrations and the duration of induction of embryogenic clumps. Extending the period of cryoprotection to 21 days coupled with increased moisture loss (greater than 75%) significantly increased both post-thaw viability and the embryogenic competence of cryopreserved clumps to 95%, while reducing the duration decreased post-thaw viability. Cryopreserved callus clumps developed secondary and cyclic embryos similar to those of the non-cryopreserved controls. The optimised protocol was successfully applied to SM1-2075-1 Line 1 somatic embryos. The rate of plant recovery from cryopreserved embryos of both TME 9 and SM1-2075-1 Line 1 was comparable to that of the non-cryopreserved embryos. Successful cryopreservation of embryogenic clumps of cassava can be used to establish in vitro genebanks for long-term conservation of cassava genetic resources to complement field genebanks and other in vitro methods already being used.

Record 19 of 31 - AGRICOLA 1998-2004/09

AU: Gary,-R.E.-Jr.; Foster,-W.A.

TI: Anopheles gambiae feeding and survival on honeydew and extra-floral nectar of peridomestic plants.

SO: Medical and veterinary entomology. 2004 June, v. 18, no. 2 p. 102-107.

AB: It is widely believed that the malaria vector Anopheles gambiae Giles (Diptera: Culicidae) rarely or never feeds on sugar in nature. If so, the need for supplemental blood-feeding may be increased and this would help to explain why it is such an efficient malaria vector. Nonetheless, both sexes of this mosquito species readily imbibe and digest sugar solutions, and sugar is a staple of laboratory colonies. In this study, we investigated whether An. gambiae will feed on the extra-floral nectar of three common peridomestic plants in Africa, and on

honeydew of the mealybug Pseudococcus longispinus (Targioni-Tozetti) (Hemiptera: Homoptera: Pseudococcidae), and how this affects survivorship. We found that both males and females of An. gambiae provided with vegetative parts of cassava (Manihot esculenta Crantz) survived as well (average = 26.3 and 19.2 days, respectively) as they did on 50% sucrose solution (average = 29.7 and 24.3 days, respectively) and much longer than they did on water alone (average = 1.8 days, both sexes). Females provided with mealybug honeydew also lived substantially longer (average = 16.5 days) than those on water alone. Males and females provided with vegetative parts of castorbean (Ricinus communis L.) also survived much longer (average = 12.7 and 7.8 days, respectively) than on water, but those provided with flowering lantana (Lantana camara L.) did not. Anthrone tests of females after one night of exposure to these potential energy sources confirmed that they obtained fructose from cassava, from mealybug honeydew, and from non-flowering castorbean, but not from lantana or from castorbean lacking its petiolar nectaries. Previous laboratory studies had shown that sugar availability affects the survival and biting frequency of An. gambiae. It now appears that this mosquito can locate natural sources of plant sugar readily and utilize them effectively. Nectar-producing plants in the domestic environment may play a significant role in this mosquito's energy budget and malaria vectorial capacity.

Record 20 of 31 - AGRICOLA 1998-2004/09

AU: Moyses,-D.N.; Barrabin,-H.

TI: Rotenone-sensitive mitochondrial potential in Phytomonas serpens: electrophoretic Ca2+ accumulation.

SO: Biochimica et biophysica acta = International journal of biochemistry, biophysics and molecular biology Bioenergetics. 2004 June 7, v. 1656, issues 2-3 p. 96-103.

AB: Phytomonas sp. are flagellated trypanosomatid plant parasites that cause diseases of economic importance in plantations of coffee, oil palm, cassava and coconuts. Here we investigated Ca2+ uptake by the vanadate-insensitive compartments using permeabilized Phytomonas serpens promastigotes. This uptake occurs at a rate of 1.13+/-0.23 nmol Ca2+ mg protein-1 min-1. It is completely abolished by the H+ ionophore FCCP and by valinomycin and nigericin. It is also inhibited by 2 micromolar ruthenium red, which, at this low concentration, is known to inhibit the mitochondrial calcium uniport. Furthermore, salicylhydroxamic acid (SHAM) and propylgallate, specific inhibitors of the alternative oxidase in plant and parasite mitochondria, are also effective as inhibitors of the Ca2+ transport. These compounds abolish the membrane potential that is monitored with safranine O. Rotenone, an inhibitor of NADH-CoQ oxidoreductase, can also dissipate 100% of the membrane potential. It is suggested that the mitochondria of P. serpens can be energized via oxidation of NADH in a pathway involving the NADH-CoQ oxidoreductase and the alternative oxidase to regenerate the ubiquinone. The electrochemical H+ gradient can be used to promote Ca2+ uptake by the mitochondria.

Record 21 of 31 - AGRICOLA 1998-2004/09

AU: Forslund,-K.; Morant,-M.; Jorgensen,-B.; Olsen,-C.E.; Asamizu,-E.; Sato,-S.; Tabata,-S.; Bak,-S.

TI: Biosynthesis of the nitrile glucosides rhodiocyanoside A and D and the cyanogenic glucosides lotaustralin and linamarin in Lotus japonicus.
SO: Plant physiology. 2004 May, v. 135, no. 1 p. 71-84.
AB: Lotus japonicus was shown to contain the two nitrile glucosides rhodiocyanoside A and rhodiocyanoside D as well as the cyanogenic glucosides linamarin and lotaustralin. The content of cyanogenic and nitrile glucosides in L. japonicus depends on plant developmental stage and tissue. The cyanide potential is highest in young seedlings and in apical leaves of mature plants. Roots and seeds are acyanogenic. Biosynthetic studies using radioisotopes demonstrated that lotaustralin, rhodiocyanoside A, and rhodiocyanoside D are derived from the amino acid L-Ile, whereas linamarin is derived from Val. In silico homology searches identified two cytochromes P450 designated CYP79D3 and CYP79D4 in L. japonicus. The two cytochromes P450 are 94% identical at the amino acid level and both catalyze the conversion of Val and Ile to the corresponding aldoximes in biosynthesis of cyanogenic glucosides and nitrile glucosides in L. japonicus. CYP79D3 and CYP79D4 are differentially expressed. CYP79D3 is exclusively expressed in aerial parts and CYP79D4 in roots. Recombinantly expressed CYP79D3 and CYP79D4 in yeast cells showed higher catalytic efficiency with L-Ile as substrate than with L-Val, in agreement with lotaustralin and rhodiocyanoside A and D being the major cyanogenic and nitrile glucosides in L. japonicus. Ectopic expression of CYP79D2 from cassava (Manihot esculenta Crantz.) in L. japonicus resulted in a 5- to 20-fold increase of linamarin content, whereas the relative amounts of lotaustralin and rhodiocyanoside A/D were unaltered.

Record 22 of 31 - AGRICOLA 1998-2004/09
AU: Schulthess,-F.; Chabi-Olaye,-A.; Gounou,-S.
TI: Multi-trophic level interactions in a cassava-maize mixed cropping system in the humid tropics of West Africa.
SO: Bulletin of entomological research. 2004 June, v. 94, issue 3 p. 261-272.

Record 23 of 31 - AGRICOLA 1998-2004/09
AU: Watanabe,-K.; Yamamoto,-T.; Yamada,-T.; Sakuratani,-T.; Nawata,-E. ; Noichana,-C.; Sributta,-A.; Higuchi,-H.
TI: Changes in seasonal evapotranspiration, soil water content, and crop coefficients in sugarcane, cassava, and maize fields in Northeast Thailand.
SO: Agricultural water management. 2004 June 15, v. 67, issue 2 p. 133-143.

Record 24 of 31 - AGRICOLA 1998-2004/09
AU: Immanuel,-G.; Vincybai,-V.C.; Sivaram,-V.; Palavesam,-A.; Marian,-M.P.
TI: Effect of butanolic extracts from terrestrial herbs and seaweeds on the survival, growth and pathogen (Vibrio parahaemolyticus) load on shrimp Penaeus indicus juveniles.
SO: Aquaculture. 2004 June 14, v. 236, no. 1-4 p. 53-65.
AB: Emergence of microbial disease in aquaculture industries implies serious financial lose. Usage of commercial antibiotics for disease treatment produces undesirable side effects. Certain ayurvedic herbal compounds are having potent effect on growth and

survival as well as antimicrobial properties of aquatic organisms. In this study, six types of antimicrobial compounds were extracted using n-butanol from terrestrial plants such as Ricinus communis (T1), Phyllanthus niruri (T2), Leucus aspera (T3) , Manihot esculenta (T4) and sea weeds Ulva lactuca (T5) and Sargassum wightii (T6). The yield of extractable matter was between 10.20% and 17.50%. The antimicrobial activity of these extracts was tested against shrimp pathogen Vibrio parahaemolyticus by giving due consideration to zone of inhibition. Powder form of these extracts was bioencapsulated in Artemia and fed to Peneaus indicus juveniles reared in individual tanks inoculated with shrimp pathogen V. parahaemolyticus at the rate of 107CFU ml-1. P. indicus juveniles reared in V. parahaemolyticus uninoculated water and fed with unenriched Artemia (C1) exhibited maximum survival (86.10%), specific growth rate (SGR, 2.87%) and less bacterial load (0.43 and 0.52x103 CFU g-1 in muscle and hepatopancreas tissues). The shrimps reared in V. parahaemolyticus inoculated medium and fed with unenriched Artemia (C2) showed lowest survival (24.44%), specific growth rate (1.11%) and more bacterial load (3.71 and 3.86x105 CFU g-1 in muscle and hepatopancreas tissues). The shrimps fed with herbal and seaweed diets-enriched Artemia (T1-T6) boosted the survival (43.32-58.88%), specific growth rate (1.46-2.15%) and lowered V. parahaemolyticus load (1.36-2.03 and 1.47-2.16x105 CFU g-1 in muscle and hepatopancreas tissues, respectively) in the culture system. Among the herbal diets screened, R. communis (T1) gave better results than the other products. The findings of the present study would be highly useful to produce quality, disease-free shrimps with high production.

Record 25 of 31 - AGRICOLA 1998-2004/09
AU: Li,-Z.T.; Jayasankar,-S.; Gray,-D.J.
TI: Bi-directional duplex promoters with duplicated enhancers significantly increase transgene expression in grape and tobacco.
SO: Transgenic research. 2004 Apr., v. 13, no. 2 p. 143-154.

Record 26 of 31 - AGRICOLA 1998-2004/09
AU: Alabi,-B.S.; Ayeni,-A.O.; Agboola,-A.A.; Majek,-B.A.
TI: Manual control of thorny mimosa (Mimosa invisa) in cassava (Manihot esculenta).
SO: Weed technology a journal of the Weed Science Society of America. 2004 Jan.-Mar., v. 18, no. 1 p. 77-82.

Record 27 of 31 - AGRICOLA 1998-2004/09
AU: An,-L.V.; Hong,-T.T.T.; Lindberg,-J.E.
TI: Ileal and total tract digestibility in growing pigs fed cassava root meal diets with inclusion of fresh, dry and ensiled sweet potato (Ipomoea batatas L. (Lam.)) leaves.
SO: Animal feed science and technology. 2004 May 3, v. 114, no. 1-4 p. 127-139.

Record 28 of 31 - AGRICOLA 1998-2004/09
AU: Levasseur,-V.; Djimde,-M.; Olivier,-A.
TI: Live fences in Segou, Mali: an evaluation by their early users.
SO: Agroforestry systems. 2004, v. 60, no. 2 p. 131-136.

Record 29 of 31 - AGRICOLA 1998-2004/09

AU: Onyango,-C.; Henle,-T.; Hofmann,-T.; Bley,-T.
TI: Production of high energy density fermented uji using a commercial alpha-amylase or by single-screw extrusion.
SO: Lebensmittel-Wissenschaft+Technologie Food science+technology. 2004, v. 37, no. 4 p. 401-407.

Record 30 of 31 - AGRICOLA 1998-2004/09
AU: Okao-Okuja,-G.; Legg,-J.P.; Traore,-L.; Jorge,-M.A.
TI: Viruses associated with cassava mosaic disease in Senegal and Guinea Conakry.
SO: Journal of phytopathology. 2004 Feb., v. 152, no. 2 p. 69-76.

Record 31 of 31 - AGRICOLA 1998-2004/09
AU: Fellows,-P. (Peter), 1953-
TI: Processed foods for improved livelihoods.
SO: Rome : Agricultural Support Systems Division, Food and Agriculture Organization of the United Nations, c2004. viii, 65 p. : ill.
AB: Most food needs some form of preparation and processing to make them more attractive to eat. Foods such as grains, fish and vegetables are unpalatable in their raw state. Others such as cassava are dangerous if eaten without processing. Many different processes have been developed and, wherever there are communities of people, the treatments, methods and recipes used will be a reflection of their requirements. Processing provides for security food supply, it can enhance the keeping quality of the original materials and, moreover, it can provide the basis for making a reasonable living.