No.	Records	Request
1	2302	SORGHUM
2	16957	PY=2004
* 3	76	#1 and (PY=2004)

Record 1 of 76 - AGRICOLA 1998-2004/09
AU: Prior,-S.A.; Raper,-R.L.; Runion,-G.B.
TI: Effect of implement on soil CO2 efflux: fall vs. spring tillage.
SO: Transactions of the ASAE. 2004 Mar-Apr, v. 47, no. 2 p. 367-373.
AB: Assessing strategies to help mitigate the rise in atmospheric CO2 includes evaluation of management decisions concerning tillage practices that influence soil carbon loss. Information is lacking on seasonal CO2 efflux patterns, as affected by degree of soil disturbance/residue mixing and time of tillage operations. An experiment was conducted following a grain sorghum [Sorghum bicolor] (L.) Moench.] crop on a Norfolk loamy sand (Typic Kandiudults) in east-central Alabama to characterize soil CO2 efflux patterns as affected by tillage implement (disk-type, chisel-type, and undisturbed) and time of soil disturbance (fall and spring). Soil CO2 efflux assessment began immediately following fall tillage and continued for a period of about six months. Measures were also taken in the spring after imposing tillage treatments on another set of plots. Concurrent measures were also made on undisturbed plots. For fall measurements, increased CO2 efflux was related to degree of soil disturbance. Losses were similar for the chisel and undisturbed treatments and lower than the disk treatment; cumulative efflux estimates also reflected such differences. With spring tillage, CO2 losses for the undisturbed and disk treatment were similar, while the chisel treatment exhibited a slightly lower loss. Results suggest that selection of fall tillage equipment that maintains surface residue and minimizes soil disturbance could help reduce CO2 loss. However, such considerations for spring tillage operations would not result in a substantial reduction in CO2 loss.

Record 2 of 76 - AGRICOLA 1998-2004/09
AU: Yonli,-D.; Traore,-H.; Hess,-D.E.; Abbasher,-A.A.; Boussim,-I.J.
TI: Effect of growth medium and method of application of Fusarium oxysporum on infestation of sorghum by Striga hermonthica in Burkina Faso.
SO: Biocontrol science and technology. 2004 June, v. 14, no. 4 p. 417-421.

Record 3 of 76 - AGRICOLA 1998-2004/09
AU: Pierzynski,-G.M.; Heitman,-J.L.; Kulakow,-P.A.; Kluitenberg,-G.J.; Carlson,-J.
TI: Revegetation of waste fly ash landfills in a semiarid environment.
SO: Journal of range management. 2004 May, v. 57, no. 3 p. 312-319.
AB: This study investigated vegetation strategies for a fly ash landfill in a semi-arid environment. Ten plant species adapted to the local climate were initially evaluated for their germination characteristics in various mixtures of Tivoli fine sand, fly ash, and cattle manure. Alkali sacaton (native, Sporobolus airoides (Torr.) Torr.), blue grama (native, Bouteloua gracilis (H.B.K.) Lag. Ex Griffiths), a forage sorghum (variety Canex, Sorghum bicolor (L.) Moench), sand bluestem (variety Woodward, Andropogon

hallii Hack.), and sideoats grama (variety El Reno, Bouteloua curtipendula (michx.) Torr.) were selected for further evaluation. Concurrently, mixtures were evaluated to determine the effects of the soil amendments on soil saturated paste electrical conductivity (EC) and pH. The addition of even 50 g kg-1 fly ash increased EC values above 4.0 dS m-1, indicating salt tolerant species may be needed. Six mixtures were selected for use in a greenhouse study and for further study of moisture retention characteristics. Using an X/Y format, where X is fly ash content and Y is manure content (g kg-1) and the balance of the mixture was Tivoli fine sand, those mixtures were 0/0, 200/0, 200/100, 200/200, 100/100, and 300/100. The addition of manure provided ample quantities of plant nutrients. Alkali sacaton was the only plant specie not adversely affected by the addition of fly ash. For biomass production, height, vigor and leaf tip burn, all remaining species had significantly better growth or ratings with 0/0 as compared to any other mixture. Soil moisture retention characteristics of the Tivoli fine sand can be significantly changed through amendment with fly ash or manure. Sixty cm of Tivoli sand was estimated to have the same available water holding capacity as 45 cm of 200/0, 39 cm of 200/100, 34 cm of 200/200, 47 cm of 100/100, and 33 cm of 300/100.

Record 4 of 76 - AGRICOLA 1998-2004/09
AU: Folliard,-A.; Traore,-P.C.S.; Vaksmann,-M.; Kouressy,-M.
TI: Modeling of sorghum response to photoperiod: a threshold-hyperbolic approach.
SO: Field crops research. 2004 Sept. 10, v. 89, issue 1 p. 59-70

Record 5 of 76 - AGRICOLA 1998-2004/09
AU: Saini,-V.K.; Bhandari,-S.C.; Tarafdar,-J.C.
TI: Comparison of crop yield, soil microbial C, N and P, N-fixation, nodulation and mycorrhizal infection in inoculated and non-inoculated sorghum and chickpea crops.
SO: Field crops research. 2004 Sept. 10, v. 89, issue 1 p. 39-47.

Record 6 of 76 - AGRICOLA 1998-2004/09
AU: Osman,-M.A.
TI: Changes in sorghum enzyme inhibitors, phytic acid, tannins and in vitro protein digestibility occurring during Khamir (local bread) fermentation.
SO: Food chemistry. 2004 Nov., v. 88, issue 1 p. 129-134.

Record 7 of 76 - AGRICOLA 1998-2004/09
AU: Goodwin,-P.H.; Oliver,-R.P.; Hsiang,-T.
TI: Comparative analysis of expressed sequence tags from Malva pusilla, Sorghum bicolor, and Medicago truncatula infected with Colletotrichum species.
SO: Plant science. 2004 Sept., v. 167, issue 3 p. 481-489.

Record 8 of 76 - AGRICOLA 1998-2004/09
AU: Reinbott,-T.M.; Conley,-S.P.; Blevins,-D.G.
TI: No-tillage corn and grain sorghum response to cover crop and nitrogen fertilization.
SO: Agronomy journal. 2004 July-Aug, v. 96, no. 4 p. 1158-1163.

Record 9 of 76 - AGRICOLA 1998-2004/09

AU: Appleton,-D.J.; Rand,-J.S.; Priest,-J.; Sunvold,-G.D.; Vickers,-J. R.
TI: Dietary carbohydrate source affects glucose concentrations, insulin secretion, and food intake in overweight cats.
SO: Nutrition research. 2004 June, v. 24, no. 6 p. 447-467.
AB: This study was undertaken to assess the impact of dietary carbohydrate source on food intake, body composition, glucose tolerance, insulin sensitivity, and glucose and insulin concentrations in overweight and obese cats with reduced insulin sensitivity. Sixteen overweight and obese cats were divided into two groups and randomly allocated one of two extruded diets formulated to contain similar starch content (33%) from different cereal sources (sorghum and corn versus rice). Meal response, glucose tolerance and insulin sensitivity tests were performed before and after a 6-week weight-maintenance phase and after an additional 8-week free-access feeding phase. Dual energy x-ray absorptiometry (DEXA)Æderived body composition was determined in each cat before the study and after each test phase. Food intake was measured daily and body weight measured twice weekly for the duration of the study. When compared with the sorghum/corn-based diet, cats fed the rice-based diet consumed more energy and gained more weight in response to free-access feeding. Cats fed the rice-based diet also tended to have higher glucose concentrations and insulin secretion in response to a glucose load or a test meal. We conclude that a sorghum and corn blend is a superior carbohydrate source than rice for overweight cats with glucose intolerance and reduced insulin sensitivity. Such a diet may help to minimize overeating and additional weight gain, and may also reduce the risk of developing type 2 diabetes mellitus.

Record 10 of 76 - AGRICOLA 1998-2004/09
AU: Ellis-Jones,-J.; Schulz,-S.; Douthwaite,-B.; Hussaini,-M.A.; Oyewole,-B.D.; Olanrewaju,-A.S.; White,-R.
TI: An assessment of integrated Striga hermonthica control and early adoption by farmers in northern Nigeria.
SO: Experimental agriculture. 2004 July, v. 40, no. 3 p. 353-368.
AB: Two sets of on-farm trials, each covering two years, were conducted in the northern Guinea savannah of Nigeria over the period 1999-2001, the objective being to compare integrated Striga hermonthica control measures (soybean or cowpea trap crops followed by maize resistant to Striga) with farmers' traditional cereal-based cropping systems. In both sets of trials, this proved to be highly effective in increasing productivity over the two year period, especially where soybean was used as a trap crop. Resistant maize after a trap crop increased the net benefit over the two cropping seasons in both trials by over 100% over farmer practice. However, in the second set of trials there was no significant increase in productivity between a trap crop followed by Striga resistant maize, and a trap crop followed by local maize especially where legume intercropping and fertilizer had been applied in the farmer practice. There was also no increase in productivity between two years' traditional cereal cropping and one year's local maize followed by Striga resistant maize. This indicates the importance of a legume trap crop in the first year in order to ensure high productivity in the second year, regardless of variety. Up to 20% of farmers obtained higher productivity from their own practices, notably intercropping of

cereals with legumes and use of inorganic fertilizers. Leguminous trap crops and Striga resistant maize, together with two key management practices (increased soybean planting density and hand-roguing) were seen to be spreading both within and beyond the research villages, indicating that farmers see the economic benefits of controlling Striga. Survey findings show that explaining the reasons why control practices work can greatly increase the adoption of these practices. Wider adoption of Striga control will therefore require an extension approach that provides this training as well as encouraging farmers to experiment and adapt Striga control options for their local farming systems.

Record 11 of 76 - AGRICOLA 1998-2004/09

AU: Emechebe,-A.M.; Ellis-Jones,-J.; Schulz,-S.; Chikoye,-D.; Douthwaite,-B.; Kureh,-I.; Tarawali,-G.; Hussaini,-M.A.; Kormawa,-P.; Sanni,-A.

TI: Farmers' perception of the Striga problem and its control in northern Nigeria.

SO: Experimental agriculture. 2004 Apr., v. 40, no. 2 p. 215-232.

AB: The parasitic angiosperms, Striga hermonthica and S. gesnerioides, obligate root parasites endemic in sub-Saharan Africa, constitute severe constraints to cereal and legume production in West and Central Africa. Over the years, a range of effective component technologies has been identified for Striga control in Africa. The potential of these technologies has been demonstrated under researcher-managed conditions. To promote farmer testing of the technologies, community workshops were conducted in 42 rural communities in Kaduna State, northern Nigeria. These revealed that agriculture was the main source of livelihood for most households. The three most important crops, maize, sorghum and pearl millet are attacked by S. hermonthica, regarded as the major constraint to crop production, often causing 70-100% crop loss. Farmers recognised two types of Striga damage (underground and aboveground), with greater damage being caused by underground Striga. Farmers attributed increasing incidence and severity of Striga damage to lack of capital, poor soil fertility, infestation of previously uninfested land by Striga seeds, and continuous cropping of host crops. The most widely used among the 15 existing Striga control techniques identified by the farmers were hoe weeding and hand pulling, application of inorganic fertilizer and manure, crop rotations, fallowing, and early planting. In assessing possible control measures farmers considered increased crop yield, reduced Striga reproduction and Striga emergence, greater crop vigour, and increased soil fertility as positive attributes. Negative attributes comprised increased labour requirement, higher costs, increased risk of crop damage or yield reduction, and lower quantity and quality of produce. Overall, a legume-cereal rotation was the most highly rated control option for S. hermonthica management evaluated by the farmers. The implications of these results are examined with respect to farmers' adoption and adaptation of Striga control options beyond the experimental plots.

Record 12 of 76 - AGRICOLA 1998-2004/09

AU: Singh,-B.U.; Padmaja,-P.G.; Seetharama,-N.

TI: Biology and management of the sugarcane aphid, Melanaphis sacchari (Zehntner) (Homoptera: Aphididae), in sorghum: a review.
SO: Crop protection. 2004 Sept., v. 23, no. 9 p. 739-755.
AB: The sugarcane aphid, Melanaphis sacchari (Zehntner, 1897) is a key pest on sorghum and sugarcane in many areas of Africa, Asia, Australia, the Far East, and parts of Central and South America. The status of research of its geographical distribution, host range, nature of damage, extent of crop losses, and ecobiology in sorghum is summarized and research programs in different countries are reviewed. Numerous germplasm accessions, A/B- and R-lines, agronomic elite lines, hybrids, and varieties, identified as sources of resistance providing genetic diversity from different countries are listed. Studies on the components of resistance showed the predominance of antixenosis for colonization/establishment on IS 1144C, IS 12664C, and TAM 428, and antibiosis was observed on IS 12609C, IS 12664C, and TAM 428 for least number of days to reproduction, greater mortality, shorter longevity, and production of no or fewer nymphs. The morpho-physiological traits and biochemical factors associated with resistance have been discussed. There is a significant decline in diastase activity but increase in crude fiber and carbohydrates in the grain due to infestation by M. sacchari. It is a vector of three persistent viruses (millet red leaf, sugarcane yellow leaf, and sugarcane mosaic viruses). Among the control tactics, cultural practices, natural enemies, and chemical control together can prevent the sugarcane aphid from reaching the economic threshold levels. Current progress has been reviewed and ideas for future research are suggested.

Record 13 of 76 - AGRICOLA 1998-2004/09
AU: Yang,-C.; Everitt,-J.H.; Bradford,-J.M.
TI: Airborne hyperspectral imagery and yield monitor data for estimating grain sorghum yield variability.
SO: Transactions of the ASAE. 2004 May-June, v. 47, no. 3 p. 915-924.
AB: As hyperspectral imagery is becoming more available, it is necessary to evaluate its potential for crop monitoring and precision agriculture applications. In this study, airborne hyperspectral imagery was examined for estimating grain sorghum (Sorghum bicolor (L.) Moench) yield variability as compared with yield monitor data. Hyperspectral images containing 128 spectral bands in the visible to near-infrared region were acquired using an airborne hyperspectral imaging system from two grain sorghum fields during the 2000 growing season, and yield data were collected from the two fields using a yield monitor. The raw hyperspectral images were geometrically corrected, georeferenced, and resampled to 1 m resolution, and the raw digital numbers were converted to reflectance. The calibrated image data were then aggregated into images with a cell size of 9 m, close to the combine's effective cutting width. Correlation analysis showed that grain yield was significantly related to the image data for all the bands except for a few in the transitional range from the red to the near-infrared region. Principal component analysis indicated that the first few principal components of the hyperspectral images accounted for 99% of variability in the image data. Stepwise regression analysis based on the first ten principal components revealed that five significant components explained 68% and 80% of the variability in grain yield for

fields 1 and 2, respectively. Stepwise regression analysis performed directly on the yield and hyperspectral data identified four optimum bands for field 1 and seven for field 2. The best four-band combination accounted for 69% of the variability in yield for field 1, while the best seven-band combination explained 82% of the variability for field 2. These results demonstrate that hyperspectral imagery can be a useful remote sensing data source for crop yield estimation.

Record 14 of 76 - AGRICOLA 1998-2004/09
AU: Singh,-B.U.; Padmaja,-P.G.; Seetharama,-N.
TI: Stability of biochemical constituents and their relationships with resistance to shoot fly, Atherigona soccata (Rondani) in seedling sorghum.
SO: Euphytica international journal of plant breeding. 2004, v. 136, no. 3 p. 279-289.

Record 15 of 76 - AGRICOLA 1998-2004/09
AU: Awika,-J.M.; Rooney,-L.W.; Waniska,-R.D.
TI: Properties of 3-deoxyanthocyanins from sorghum.
SO: Journal of agricultural and food chemistry. 2004 July 14, v. 52, no. 14 p. 4388-4394.
AB: There is increasing interest in natural food colorants with functional properties. Anthocyanins from black, brown (containing tannins), and red sorghums were characterized by spectrophotometric and HPLC techniques. The antioxidant activity and pH stability of the anthocyanins were also determined. Sorghum brans had 3-4 times higher anthocyanin contents than the whole grains. Black sorghum had the highest anthocyanin content (average = 10.1 mg/g in bran). The brown and red sorghum brans had anthocyanin contents of 2.8-4.3 mg/g. Only 3-deoxyanthocyanidins were detected in sorghum. These compounds are more stable to pH-induced color change than the common anthocyanidins and their glycosides. Additionally, crude sorghum anthocyanin extracts were more stable than the pure 3-deoxyanthocyanidins. The antioxidant properties of the 3-deoxyanthocyanidins were similar to those of the anthocyanins. Pigmented sorghum bran has high levels of unique 3-deoxyanthocyanidins, which are stable to change in pH and have a good potential as natural food pigments.

Record 16 of 76 - AGRICOLA 1998-2004/09
AU: Finlayson,-S.A.; Gohil,-H.L.; Kato-Noguchi,-H.; Lee,-I.J.; Morgan,-P.W.
TI: Circadian ethylene synthesis in Sorghum bicolor: expression and control of the system at the whole plant level.
SO: Journal of plant growth regulation. 2004 Mar., v. 23, no. 1 p. 29-36.
AB: Ethylene production by sorghum is rhythmic and the amplitude of the rhythm is increased both by dim, far-red enriched light and in mutant plants deficient in phytochrome B. The mechanisms involved in controlling ethylene production were examined in detail by measuring the rate of ethylene production among organs and tissues, examining the organ-specific levels of ACC (1-aminocyclopropane-1-carboxylic acid, the ethylene precursor) and investigating the contribution of the roots to shoot ethylene production. The results demonstrate that the expanding leaves were the major source of ethylene under dim, far-red enriched

light and in the phytochrome B mutant. Enhanced ethylene production by the expanding leaf appeared to be the result of targeted delivery of ACC to this tissue. Root ACC levels were much higher than those in the shoot but roots converted much less of this endogenous ACC to ethylene. Applying ACC to the roots had only a marginal effect on their ethylene production, but greatly increased that of the shoots. Decapitated shoots continued to produce ethylene in a rhythmic pattern but the amplitude decreased with time compared to intact plants. The results collectively suggest that some, but not all, of the shoot ethylene rhythm depends on the transport of ACC from the roots to the shoots.

Record 17 of 76 - AGRICOLA 1998-2004/09

AU: Oyediran,-I.O.; Hibbard,-B.E.; Clark,-T.L.

TI: Prairie grasses as hosts of the western corn rootworm (Coleoptera: Chrysomelidae).

SO: Environmental entomology. 2004 June, v. 33, no. 3 p. 740-747.

AB: We evaluated 21 prairie grass species thought to be among those dominant 200 yr ago in the western Great Plains as larval hosts of the western corn rootworm, Diabrotica virgifera virgifera LeConte. Maize, Zea mays L., and sorghum, Sorghum bicolor L., were included as positive and negative controls. Twenty pots of each test species were planted, and each pot was infested 5 wk later with 20 neonate western corn rootworm larvae. Four pots within each of four replications were randomly assigned a sample date for larval extraction. The remaining pot from each replication was used to monitor adult emergence. At 5, 10, 15, and 20 d after infestation, pot contents from assigned pots were placed in Tullgren funnels equipped with 60 W-lights for extraction of larvae. The percentage of larvae recovered, larval head capsule width, and adult emergence varied significantly among the grass species. The percentage of larvae recovered from western wheatgrass, Pascopyrum smithii (Rydb.); pubescent wheatgrass, Elytrigia intermedia (Host); and side-oats grama, Bouteloua curtipendula Michx., was not significantly different than that from maize when sample dates were combined. The number of adults produced from pubescent wheatgrass was not significantly different than the number produced from maize. The average dry weight and head capsule width of adults produced from grass species were not significantly different than the head capsule widths and dry weights of those adults from maize. Overall, adults were produced from 14 of the 23 species evaluated. The results from this study are discussed in relation to the potential ancestral hosts of western corn rootworm larvae and in relation to resistance management of transgenic maize.

Record 18 of 76 - AGRICOLA 1998-2004/09

AU: Hentz,-M.; Nuessly,-G.

TI: Development, longevity, and fecundity of Sipha flava (Homoptera: Aphididae) feeding on Sorghum bicolor.

SO: Environmental entomology. 2004 June, v. 33, no. 3 p. 546-553.

AB: Sipha flava is a serious pest in sugarcane in southern Florida, so efforts in better understanding its biology were initiated. Development, longevity, and fecundity of alate and apterous S. flava (Forbes) feeding on Sorghum bicolor [L.] Moench., cultivar ' Kow Chow,' were examined under near-ambient temperature and

lighting conditions within a glasshouse. After examining several body dimensions during apterous aphid development (antennal length, head width, body length, and abdominal width), antennal length was found to be the best indicator of an instar. Apterous aphids completed development from nymph to adult in approximately equal to 8 d and passed through four instars. A comparison between the sizes of apterous and alate morphs indicated that apterous females were larger and weighed more than the alates. Both morphs survived equally as long during reproduction (21 d) but produced slightly different numbers of nymphs over their life (apterous = 54.3, alate = 48.2). During the first 8 d of reproduction, apterous adults produced 3.3 nymphs/d and alates produced 2.3 nymphs/d. However, during the following 8 d, nymphal production by apterous females dropped to 2.7 nymphs/d but increased to 2.9 nymphs/d by alates. The estimated intrinsic rate of natural increase (rm) for apterous aphids was 0.314. The net reproductive rates (Ro) for alate and apterous adults based on 0% nymphal mortality were 45.80 and 53.09 and for 21% nymphal mortality were 36.3 and 41.9, respectively.

Record 19 of 76 - AGRICOLA 1998-2004/09

AU: Rebollar-Rebollar,-S.; Garcia-Salazar,-J.A.; Martinez-Damian,-M.A. ; Salas-Gonzalez,-J.M.

TI: Evaluation of trade policy on the sorghum market in Mexico, 2000.

SO: Agrociencia. 2004 Mar-Apr, v. 38, no. 2 p. 249-260.

Record 20 of 76 - AGRICOLA 1998-2004/09

AU: Zhao,-B.Y.; Ardales,-E.; Brasset,-E.; Claflin,-L.E.; Leach,-J.E.; Hulbert,-S.H.

TI: The Rxo1/Rba1 locus of maize controls resistance reactions to pathogenic and non-host bacteria.

SO: Theoretical and applied genetics. 2004 June, v. 109, no. 1 p. 71-79.

AB: Infiltration of different maize lines with a variety of bacterial pathogens of maize, rice and sorghum identified qualitative differences in resistant reactions. Isolates from two bacterial species induced rapid hypersensitive reactions (HR) in some maize lines, but not others. All isolates of the non-host pathogen Xanthomonas oryzae pv. oryzicola (bacterial leaf streak disease of rice) and some isolates of the pathogenic bacterium Burkholderia andropogonis induced HR when infiltrated into maize line B73, but not Mo17. Genetic control of the HR to both bacteria segregated as a single dominant gene. Surprisingly, both phenotypes mapped to the same locus, indicating they are either tightly linked or controlled by the same gene. The locus maps on the short arm of maize chromosome six near several other disease-resistance genes. Results indicate the same type of genes may contribute to both non-host resistance and resistance to pathogens.

Record 21 of 76 - AGRICOLA 1998-2004/09

AU: Kondo,-M.; Kita,-K.; Yokota,-H.

TI: Effects of tea leaf waste of green tea, oolong tea, and black tea addition on sudangrass silage quality and in vitro gas production.

SO: Journal of the science of food and agriculture. 2004 May, v. 84, issue 7 p. 721-727.

AB: This study evaluated the fermentation characteristics and in vitro gas production of sudangrass (Sorghum sudanese) silage with tea leaf waste of green tea, oolong tea and black tea added. All types of tea leaf waste contain large amounts of nitrogen (N) and tannins, and a small amount of low-water-soluble carbohydrates. Sudangrass was preserved without (control) and with green tea waste (GTW), oolong tea waste (OTW) or black tea waste (BTW) at rates of 50, 100 and 200 g kg-1 fresh matter in laboratory silos. The pH and butyric acid levels were significantly lower in GTW at all rates and in OTW at the 200 g kg-1 rate, whereas those levels were high in the control and BTW-treated silage. Lactic acid level was appreciably higher in GTW- and OTW-treated silage than the control and BTW-treated silage. The addition of all types of tea waste increased the total N and tannins of the silage, whereas the acid detergent insoluble N was increased in the OTW- and BTW-treated silage. GTW treatment increased gas production within a 96-h period compared with the control, whereas OTW and BTW additions at 200 g kg-1 rates caused lower gas production. It is concluded that the fermentation characteristics and feed value of the silage incorporating with tea leaf wastes are different for these types of tea leaf. Among the three kinds of tea waste, GTW is the most valuable material as a silage additive.

Record 22 of 76 - AGRICOLA 1998-2004/09

AU: Westphal,-A.; Robinson,-A.F.; Scott,-A.W.-Jr.; Santini,-J.B.

TI: Depth distribution of Rotylenchulus reniformis under crops of different host status and after fumigation.

SO: Nematology international journal of fundamental and applied nematological research. 2004, v. 6, pt. 1 p. 97-107.

Record 23 of 76 - AGRICOLA 1998-2004/09

AU: Prom,-L.K.; Lopez,-J.D.-Jr.

TI: Viability of Claviceps africana spores ingested by adult corn earworm moths, Helicoverpa zea (Boddie) (Lepidoptera: Noctuidae).

SO: Journal of economic entomology. 2004 June, v. 97, no. 3 p. 764-767.

AB: A study was conducted in College Station, TX, to determine the viability of Claviceps africana spores in the digestive tract of adult corn earworm moths, Helicoverpa zea (Boddie). Both sexes were exposed to ergot-infected sorghum panicles for 30 min, and spores were recovered from excreta of the moths at 24-, 48-, and 72-h intervals after feeding. Recovered spores were quantified, and viability was determined by the germination rate of macroconidia. Nearly a 100-fold greater concentration of spores was recovered from female excreta at the three time intervals compared with male excreta. Concentration of spores in female and male excreta was greatest at 24 h, with a significant reduction at the later time intervals. Spore germination rates for both sexes were greater at 24 h, with survival being significantly reduced at the 72-h interval. Spores in female excreta survived longer than those from male excreta. Spore survival over time was significantly reduced in male excreta. Spore concentration and survival were greater from female excreta, which is key, because egg-laying activities on sorghum panicles intensify during flowering, and this source of ergot spores could contribute to the spread of the disease. This study demonstrates that corn earworm moths can internally carry viable ergot spores for

several days and can act as primary dispersal agents for the fungus. This is important because contaminated moths migrating from areas in Mexico and southern Texas where ergot is endemic could transmit and spread the disease to other sorghum growing regions of the United States.

Record 24 of 76 - AGRICOLA 1998-2004/09

AU: Barikmo,-I.; Ouattara,-F.; Oshaug,-A.

TI: Protein, carbohydrate and fibre in cereals from Mali--how to fit the results in a food composition table and database.

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. 291-300.

AB: During the past 5 years, the main staple foods (cereals) used in Mali have been collected to develop a food composition table and database. We present recent results of protein, carbohydrate and fibre content for some cereals. Samples were collected from five different regions. To reduce laboratory costs, composite samples (cs) were made. The cereals analysed were sorghum (Sorghum bicolor) (cs=142), millet (Pennisetum glaucum) (cs=163), maize (Zea mays) (cs=107), wheat (Triticum aestivum) (cs=123), rice (Oryza sativa) (cs=151) and fonio (Digitaria exilis) (cs=104). Fonio is an old cereal cultivated across the dry savannahs in West Africa, and is very popular in Mali. All samples were cleaned and processed (ready to cook) before analysis. Detailed sampling plans were used. For total nitrogen, Kjeldahl and Dumas combustion methods were used. Methods used for carbohydrate (sugar and starch) were polarimetric, spectrophotometric and HPLC, and a gravimetric method was used for fibre. The mean«S.D. content of protein for 100 g cereal was: in millet 7.9«1.4 g, sorghum 10.3«0.7 g, maize 7.6«1.1 g, rice 6.3«0.3 g, wheat 10.6«1.1 g and fonio 7.2«0.4 g. The mean«S.D. content of carbohydrate and fibre per 100 g cereal was: in millet 65.8«10.1 and 6.2«2.3 g, sorghum 73.5«4.3 and 4.7«0.1 g, maize 73.0«10.2 and 4.6«1.3 g, rice 83.7«7.8 and 1.1«0.0 g, wheat 75.1«1.8 and 3.0«0.0 g and fonio 74.3«0.1 and 2.2«0.3 g, respectively. As indicated by the standard deviations there were considerable geographical differences in nutrient content for the same cereal. There is no apparent explanation for these differences. Until this is explored further, it is necessary to develop separate tables for different regions.

Record 25 of 76 - AGRICOLA 1998-2004/09

AU: Lyimo,-M.E.; Berling,-S.; Sibuga,-K.P.

TI: Evaluation of the nutritional quality and acceptability of germinated bambara nut (Vignia-subterranea (L) Verle) based products.

SO: Ecology of food and nutrition. 2004 May-June, v. 43, no. 3 p. 181-191.

AB: Nutritional quality and sensory acceptability of germinated bambara nut based products were determined. Mixtures of germinated bambara nut with sorghum and maize (30:70) w/w were made. In a mixture of bambara nut with maize, protein content increased from 10.5 to 11.7%; while in a mixture of bambara nut with sorghum, protein content increased from 12.0 to 13.1%. Fat content decreased by 2.5% in a mixture of bambara nut with maize, while in that of bambara nut with sorghum it decreased by 9.5%. Improvement of protein digestibility was observed in all

mixtures. Tannin content was reduced by 39.6% in a mixture of bambara nut with maize, while in that of bambara nut with sorghum it was reduced by 23.0%. Breads were prepared by blending germinated bambara nut flour (30 parts) with wheat flour (70 parts). Porridge was made by blending germinated bambara nut flour (30 parts) with germinated maize flour (70 parts). All products showed no significant difference upon sensory evaluation. However, porridge prepared from germinated mixture of bambara nut with sorghum received least score in taste.

Record 26 of 76 - AGRICOLA 1998-2004/09

AU: Bhargava,-S.; Paranjpe,-S.

TI: Genotypic variation in the photosynthetic competence of Sorghum bicolor seedlings subjected to polyethylene glycol-mediated drought stress.

SO: Journal of plant physiology. 2004 Jan., v. 161, no. 1 p. 125-129.

AB: Eleven varieties of Sorghum bicolor, subjected to PEG-mediated drought stress were compared for their photosynthetic performance. The varieties differed in their relative water content over a range of PEG concentrations (0-25 %). CO2 assimilation, stomatal conductance and the quantum yield of PSII electron transport decreased with increasing PEG concentrations in all varieties. However the intercellular CO2 concentration showed a nonlinear PEG concentration-dependent change. At lower PEG concentrations there was a decrease in the levels of intercellular CO2 concentration in all varieties that could be attributed to stomatal closure. At higher PEG concentrations, some varieties showed an increase in the intercellular CO2 concentration, indicating an inhibition of photosynthetic activity due to non-stomatal effects, while others did not. It was seen that the varieties differed in the stress thresholds at which stomatal and metabolic limitations to photosynthesis occur. These differences in the photosynthetic adaptation of Sorghum varieties could be useful in identifying genotypes showing large differences in photosynthetic adaptation, which could be useful in mapping photosynthetic traits for drought stress tolerance.

Record 27 of 76 - AGRICOLA 1998-2004/09

AU: Awika,-J.M.; Rooney,-L.W.

TI: Sorghum phytochemicals and their potential impact on human health.

SO: Phytochemistry. 2004 May, v. 65, no. 9 p. 1199-1221.

AB: Sorghum is a rich source of various phytochemicals including tannins, phenolic acids, anthocyanins, phytosterols and policosanols. These phytochemicals have potential to significantly impact human health. Sorghum fractions possess high antioxidant activity in vitro relative to other cereals or fruits. These fractions may offer similar health benefits commonly associated with fruits. Available epidemiological evidence suggests that sorghum consumption reduces the risk of certain types of cancer in humans compared to other cereals. The high concentration of phytochemicals in sorghum may be partly responsible. Sorghums containing tannins are widely reported to reduce caloric availability and hence weight gain in animals. This property is potentially useful in helping reduce obesity in humans. Sorghum phytochemicals also promote cardiovascular health in animals. Such properties have not been reported in humans and

require investigation, since cardiovascular disease is currently the leading killer in the developed world. This paper reviews available information on sorghum phytochemicals, how the information relates to current phytonutrient research and how it has potential to combat common nutrition-related diseases including cancer, cardiovascular disease and obesity.

Record 28 of 76 - AGRICOLA 1998-2004/09
AU: McDonough,-C.M.; Floyd,-C.D.; Waniska,-R.D.; Rooney,-L.W.
TI: Effect of accelerated aging on maize, sorghum, and sorhum meal.
SO: Journal of cereal science. 2004 May, v. 39, no. 3 p. 351-361.
AB: Accelerated aging at 50ÀC significantly affected the physical and chemical properties of sorghum and maize. Aging caused associations between starch granules, protein matrix, and cell walls. During aging, floury areas of the endosperm became more corneous; as the endosperm hardened, strong associations between starch and protein developed, causing the endosperm to fracture through endosperm cells instead of along cell walls, which is common for non-aged maize. Aging significantly decreased the pasting viscosity of starch, molecular solubility at 85ÀC and the molecular weight of solubilized starch. Solubility of albumins and globulins decreased while solubility of proteins extracted by a reducing agent and/or in alkaline pH increased during aging. Decreased solubility and functionality of starch and protein in aged grain appear to be due to protein oxidation.

Record 29 of 76 - AGRICOLA 1998-2004/09
AU: Okori,-P.; Rubaihayo,-P.R.; Ekwamu,-A.; Fahleson,-J.; Dixelius,-C.
TI: Genetic characterization of Cercospora sorghi from cultivated and wild sorghum and its relationship to other Cercospora fungi.
SO: Phytopathology. 2004 July, v. 94, no. 7 p. 743-750.
AB: Genetic variability and population structure of Cercospora sorghi from wild and cultivated sorghum were investigated to gain insight into their potential impact on epidemics of gray leaf spot of sorghum in Africa. Population structure was examined using data derived from amplified fragment length polymorphism (AFLP) of C. sorghi by Nei's test for population differentiation, G(ST), and analysis of molecular variation (AMOVA). Two ecological populations of C. sorghi in Uganda were devoid of population structure (G(ST) = 0.03, phiF(ST) = 0.01, P = 0.291). AMOVA revealed that genetic variability was due mainly to variations within (99%) rather than between (0.35%) populations, and Nei's genetic distance between the two populations was 0.014. Phenetic analysis based on AFLP data and polymerase chain reaction-restriction fragment length polymorphism analyses of the internal transcribed spacer regions of rDNA and mitochondrial small subunit rDNA separated Cercospora cereal pathogens from dicot pathogens but did not differentiate among C. sorghi isolates from wild and cultivated sorghum. Our results indicate that Ugandan populations of C. sorghi compose one epidemiological unit and suggest that wild sorghum, while not affecting genetic variability of the pathogen population, provides an alternative host for generating additional inoculum.

Record 30 of 76 - AGRICOLA 1998-2004/09
AU: Gbehounou,-G.; Adango,-E.; Hinvi,-J.C.; Nonfon,-R.
TI: Sowing date or transplanting as components for integrated Striga

hermonthica control in grain-cereal crops.
SO: Crop protection. 2004 May, v. 23, no. 5 p. 379-386.
AB: A study on the effect of sowing date on Striga hermonthica infestation of maize and sorghum indicated a linear relationship. When sowing was delayed for 30 days crops were 3.5-5 times less infested than after early sowing. This effect of delayed sowing cannot be explained by a change in the root distribution of the host plants. It may be caused by a combined effect of a dying-off process of the seeds and excess soil moisture. It may not be related to the occurrence of secondary dormancy. Although measurements of soil moisture content did not show measurable differences in the course of the rainy season, it may be assumed that this resulted in leaching of host root exudates following heavy showers, which would reduce Striga germination. Despite a higher infestation, early sowing gave higher crop yields compared to late sowing. Therefore, delayed sowing does not seem to be a practical control method for farmers in Benin. However, transplanting after cultivation in a Striga-free nursery for 4-6 weeks, which may be comparable to late sowing is a better alternative as it combines the respective beneficial effects of early sowing and the effects on Striga of delayed planting.

Record 31 of 76 - AGRICOLA 1998-2004/09
AU: Perez-Sira,-E.E.; Lares-Amaiz,-M.
TI: A laboratory scale method for isolation of starch from pigmented sorghum.
SO: Journal of food engineering. 2004 Oct., v. 64, no. 4 p. 515-519.
AB: Sodium bisulfite and sodium hypochlorite at various concentrations in alkaline medium were assayed to bleach dark sorghum grains, before starch isolation. After testing different concentrations of the reagents, and time of exposure into the reagent method 2C was chosen. It used an alkaline mix of sodium hypochlorite 5.25% solution and 50 g KOH. As a result, an easy and quick method to isolate white starch from dark sorghum is reported. Percent of purity of the isolated starch from dark seed samples were compared to that exhibited by starch isolated from white sorghum grains, and slight differences between the isolates were recorded. These differences were attributed to the unequal isolation methods and/or varietal differences. The yield of the starch from dark seed samples was 30 « 1%.

Record 32 of 76 - AGRICOLA 1998-2004/09
AU: Zhang,-G.; Hamaker,-B.R.
TI: Starch-free fatty acid complexation in the presence of whey protein.
SO: Carbohydrate polymers. 2004 Mar. 15, v. 55, no. 4 p. 419-424.
AB: The effect of whey protein on starch-free fatty acid (FFA) complexation was studied in a model system composed of sorghum starch, whey protein, and different FFAs (palmitic, oleic, linoleic, and lauric acids) in a weight ratio of 20:2:1(w/w/w). Whey protein decreased the enthalpy of the melting of the starch-lipid complex by 20-30% for the FFAs except linoleic acid, and increased the reformation exothermic enthalpy by 150-350% in the DSC cooling cycle. The large difference between enthalpies upon heating and cooling in the starch-FFA sample was diminished by the addition of whey protein. X-ray diffraction data showed more pronounced crystalline order of V-type starch-FFA complexes

when whey protein was present. A previously described cooling stage viscosity peak, formed due to starch-FFA-protein complexation, paralleled formation of the better defined V-type crystallite of the starch-FFA complex. Whey protein also significantly decreased the amount of starch-FFA complexation in a dilute system. The effect of protein on starch-FFA complexation was related to the formation of a three-component complex composed of starch, FFA, and protein previously identified in our laboratory.

Record 33 of 76 - AGRICOLA 1998-2004/09
AU: Doka,-O.; Bicanic,-D.D.; Dicko,-M.H.; Slingerland,-M.A.
TI: Photoacoustic approach to direct determination of the total phenolic content in red sorghum flours.
SO: Journal of agricultural and food chemistry. 2004 Apr. 21, v. 52, no. 8 p. 2133-2136.
AB: Photoacoustic (PA) spectroscopy in the ultraviolet and visible was demonstrated to be a suitable tool for direct determination of total phenolic content in red sorghum flours. The PA spectra obtained feature two characteristic peaks: the first centered at 285 nm is due to the aromatic amino acids, while the second one at 335 nm is associated with the total phenolic content. The outcome of the PA study was compared with the results obtained by a conventional, tedious Folin-Ciocalteau chemical method. Statistical analysis indicates no significant difference between the two methods used in this study.

Record 34 of 76 - AGRICOLA 1998-2004/09
AU: Ogbonna,-A.C.; Obi,-S.K.C.; Okolo,-B.N.; Odibo,-F.J.C.
TI: Purification and some properties of a cysteine proteinase from sorghum malt variety SK5912.
SO: Journal of the science of food and agriculture. 2004 Jan. 30, v. 84, issue 2 p. 113-120.
AB: A cysteine proteinase from sorghum malt variety SK5912 was purified by a combination of 4 M sucrose fractionation, ion-exchange chromatography on Q- and S-Sepharose (fast flow), gel filtration chromatography on Sephadex G-100 and hydrophobic interaction chromatography on Phenyl Sepharose CL-4B. The enzyme was purified 8.4-fold to give a 13.4% yield relative to the total activity in the crude extract and a final specific activity of 2057.1 U mg-1 protein. SDS--PAGE revealed two migrating protein bands corresponding to apparent relative molecular masses of 55 and 62 kDa, respectively. The enzyme was optimally active at pH 6.0 and 50 ÀC, not influenced across a relatively broad pH range of 5.0-8.0 and retained over 60% activity at 70 ÀC after 30-min incubation. It was highly significantly ($P < 0.001$) inhibited by Hg2+, appreciably ($P < 0.01$) inhibited by Ag+, Ba2+ and Pb2+ but highly significantly ($P < 0.001$) activated by Co2+, Mn2+ and Sr2+. The proteinase was equally highly significantly ($P < 0.001$) inhibited by both iodoacetate and p-chloromercuribenzoate and hydrolysed casein to give the following kinetic constants: K(m) = 0.33 mg ml-1; V(max) = 0.08 micromol ml-1 min-1.

Record 35 of 76 - AGRICOLA 1998-2004/09
AU: Liu,-A.; Wang,-B.; Hamel,-C.
TI: Arbuscular mycorrhiza colonization and development at suboptimal root zone temperature.

SO: Mycorrhiza. 2004 Apr., v. 14, no. 2 p. 93-101.

Record 36 of 76 - AGRICOLA 1998-2004/09
AU: Auge,-R.M.; Moore,-J.L.; Sylvia,-D.M.; Cho,-K.
TI: Mycorrhizal promotion of host stomatal conductance in relation to irradiance and temperature.
SO: Mycorrhiza. 2004 Apr., v. 14, no. 2 p. 85-92.

Record 37 of 76 - AGRICOLA 1998-2004/09
AU: Muthukumar,-B.; Bennetzen,-J.L.
TI: Isolation and characterization of genomic and transcribed retrotransposon sequences from sorghum.
SO: Molecular genetics and genomics MGG. 2004 Apr., v. 271, no. 3 p. 308-316.

Record 38 of 76 - AGRICOLA 1998-2004/09
AU: Tamado,-T.; Milberg,-P.
TI: Control of parthenium (Parthenium hysterophorus) in grain sorghum (Sorghum bicolor) in the smallholder farming system in eastern Ethiopia.
SO: Weed technology a journal of the Weed Science Society of America. 2004 Jan.-Mar., v. 18, no. 1 p. 100-105.

Record 39 of 76 - AGRICOLA 1998-2004/09
AU: Moore,-J.W.; Murray,-D.S.; Westerman,-R.B.
TI: Palmer amaranth (Amaranthus palmeri) effects on the harvest and yield of grain sorghum (Sorghum bicolor).
SO: Weed technology a journal of the Weed Science Society of America. 2004 Jan.-Mar., v. 18, no. 1 p. 23-29.

Record 40 of 76 - AGRICOLA 1998-2004/09
AU: Lyon,-B.G.; Smith,-D.P.; Lyon,-C.E.; Savage,-E.M.
TI: Effects of diet and feed withdrawal on the sensory descriptive and instrumental profiles of broiler breast fillets.
SO: Poultry science. 2004 Feb., v. 83, no. 2 p. 275-281.
AB: Effects of diet and feed withdrawal times on the sensory profile and shear values of broiler breast meat were determined. Feeds were formulated with 3 dietary carbohydrate sources (corn, milo, and wheat). Birds (n = 192) were processed between 42 and 52 d of age. Feed was withdrawn for 0 or 8 h prior to pilot plant processing under simulated commercial conditions. Pectoralis major muscles were removed 4 h postmortem and frozen until evaluated. Thawed breast fillets were cooked in heat-seal bags immersed in 85ÀC water until an internal temperature of 80ÀC was reached. Color, shears, and sensory profiles (18 attributes) were determined. Meat from corn-fed birds required significantly less force to shear (6.0 kg) than meat from birds fed milo (6.7 kg) or wheat (7.1 kg). Feed withdrawal did not affect the flavor profile; however, meat from birds at 0 h feed withdrawal were darker and redder. Diet significantly affected the sensory profile. Brothy scores were significantly higher in meat from corn-fed birds than in meat from birds fed wheat or milo. Diet and feed withdrawal significantly affected sensory texture. Meat from wheat-fed birds was harder, more cohesive, and more chewy and exhibited larger particle size than meat from birds fed corn or milo. Moisture release values were lower and toothpack values were higher in meat from birds processed at 0 h feed-withdrawal

time compared with meat from birds held 8 h without feed. Dietary carbohydrate source appears to have a measurable impact on flavor and texture of broiler breast meat.

Record 41 of 76 - AGRICOLA 1998-2004/09

AU: Fukao,-T.; Paterson,-A.H.; Hussey,-M.A.; Yamasue,-Y.; Kennedy,-R. A.; Rumpho,-M.E.

TI: Construction of a comparative RFLP map of Echinochloa crus-galli toward QTL analysis of flooding tolerance.

SO: Theoretical and applied genetics. 2004 Apr., v. 108, no. 6 p. 993-1001.

AB: To analyze quantitative trait loci (QTLs) affecting flooding tolerance and other physiological and morphological traits in Echinochloa crus-galli, a restriction fragment length polymorphism (RFLP) map was constructed using 55 plants of the F2 population (E. crus-galli var. praticola x E. crus-galli var. formosensis). One hundred forty-one loci formed 41 linkage groups. The total map size was 1,468 cM and the average size of linkage groups was 35.8 cM. The average distance between markers was 14.7 cM and the range was 0-37.2 cM. Early comparisons to the genetic maps of other taxa suggest appreciable synteny with buffelgrass (Pennisetum spp.) and sorghum (Sorghum spp.). One hundred ninty-one F2 plants were used to analyze QTLs of flooding tolerance, plant morphology, heading date, number of leaves, and plant height. For flooding tolerance, two QTLs were detected and one was mapped on linkage group 24. Other traits, including plant morphology, heading date, number of leaves, and plant height were highly correlated. Three genomic regions accounted for most of the mapped QTLs, each explaining 2-4 of the significant marker-trait associations. The high observed correlation between the traits appears to result from QTLs with a large contribution to the phenotypic variance at the same or nearby locations.

Record 42 of 76 - AGRICOLA 1998-2004/09

AU: Bayala,-J.; Teklehaimanot,-Z.; Ouedraogo,-S.J.

TI: Fine root distribution of pruned trees and associated crops in a parkland system in Burkina Faso.

SO: Agroforestry systems. 2004, v. 60, no. 1 p. 13-26.

Record 43 of 76 - AGRICOLA 1998-2004/09

AU: Wright,-A.L.; Hons,-F.M.

TI: Soil aggregation and carbon and nitrogen storage under soybean cropping sequences.

SO: Soil Science Society of America journal. 2004 Mar.-Apr., v. 68, no. 2 p. 507-513.

AB: Management practices, such as no-tillage (NT) and high-intensity cropping sequences, have the potential to enhance C and N sequestration in agricultural soils. The objectives of this study were to investigate the impacts of conventional-tillage (CT), NT, and multiple cropping sequences on soil organic carbon (SOC) and nitrogen (SON) sequestration and on distribution within aggregate-size fractions in a southcentral Texas soil after 20 yr of treatment imposition. No-tillage management increased soil aggregation compared with CT, with the bulk of SOC and SON storage present in larger aggregate-size fractions (>2 mm, 250 m to 2 mm) at both soil depths. Multiple cropping systems, such as a grain sorghum [Sorghum bicolor (L.) Moench]/wheat (Triticum

aestivum L.)/soybean [Glycine max (L.) Merr] (SWS) rotation and a wheat/soybean (WS) doublecrop had the highest SOC and SON storage, while the continuous monoculture soybean treatment had the lowest storage. Soil organic C and SON storage were significantly greater under NT than CT for all cropping sequences at 0 to 5 cm and for SWS and WS at 5 to 15 cm. At the 0- to 5-cm depth, NT increased SOC storage by 64% and SON storage by 76% compared with CT. However, at 5 to 15 cm, NT only increased SOC storage by 28% and SON storage by 40%. The use of NT showed a greater impact for increasing SON storage than for SOC storage, suggesting that N cycling is an important factor related to soil C sequestration potential.

Record 44 of 76 - AGRICOLA 1998-2004/09
AU: Kato,-T.; Kimura,-R.; Kamichika,-M.
TI: Estimation of evapotranspiration, transpiration ratio and water-use efficiency from a sparse canopy using a compartment model.
SO: Agricultural water management. 2004 Mar. 15, v. 65, issue 3 p. 173-191.

Record 45 of 76 - AGRICOLA 1998-2004/09
AU: Zougmore,-R.; Mando,-A.; Stroosnijder,-L.
TI: Effect of soil and water conservation and nutrient management on the soil-plant water balance in semi-arid Burkina Faso.
SO: Agricultural water management. 2004 Mar. 1, v. 65, issue 2 p. 103-120.

Record 46 of 76 - AGRICOLA 1998-2004/09
AU: Eickhoff,-T.E.; Baxendale,-F.P.; Heng-Moss,-T.M.; Blankenship,-E. E.; San-Segundo,-B.
TI: Turfgrass, crop, and weed hosts of Blissus occiduus (Hemiptera: Lygaeidae).
SO: Journal of economic entomology. 2004 Feb., v. 97, no. 1 p. 67-73.
AB: Blissus occiduus Barber is an important pest of buffalograss, Buchloe dactyloides (Nuttall) Engelmann, turf. No-choice studies documented the susceptibility of selected turfgrasses, crops, and weeds to B. occiduus feeding. Highly to moderately susceptible grasses included buffalograss; yellow Setaria glauca (L.) and green foxtail Setaria viridis (L.); Kentucky bluegrass, Poa pratensis L.; perennial ryegrass, Lolium perenne L.; brome, Bromus spp. Leyss.; zoysiagrass, Zoysia japonica Steudel; Bermuda grass, Cynodon dactylon (L.) Pers.; sorghum, Sorghum bicolor (L.) Moench; tall fescue, Festuca arundinacea Schreb.; and barley Hordeum vulgare (L.). Slightly to nonsusceptible grasses included fine fescue, Festuca ovina hirtula L.; rye, Secale cereale L.; crabgrass Digitaria sanguinalis (L.); bentgrass, Agrostis palustris Huds.; wheat, Tritium aestivum L.; corn, Zea mays L.; fall panicum Panicum dichotomiflorum Michx.; and St. Augustinegrass, Stenotaphrum secundatum (Walt.) Kuntze. The reproductive potential of B. occiduus was also investigated on these same grasses. B. occiduus produced offspring on 15 of the 18 turfgrass, crop, and weed species evaluated. No reproduction occurred on either Bermuda grass or St. Augustinegrass, and buffalograss plants were killed by B. occiduus feeding before offspring could be produced.

Record 47 of 76 - AGRICOLA 1998-2004/09
AU: Patil,-S.L; Sheelavantar,-M.N.
TI: Effect of cultural practices on soil properties, moisture conservation and grain yield of winter sorghum (Sorghum bicolor L. Moench) in semi-arid tropics of India.
SO: Agricultural water management. 2004 Jan. 1, v. 64, issue 1 p. 49-67.

Record 48 of 76 - AGRICOLA 1998-2004/09
AU: Pring,-D.R.; Tang,-H.V.
TI: Transcript profiling of male-fertile and male-sterile sorghum indicates extensive alterations in gene expression during microgametogenesis.
SO: Sexual plant reproduction. 2004 Mar., v. 16, no. 6 p. 289-297.

Record 49 of 76 - AGRICOLA 1998-2004/09
AU: Ma,-H.M.; Schulze,-S.; Lee,-S.; Yang,-M.; Mirkov,-E.; Irvine,-J.; Moore,-P.; Paterson,-A.
TI: An EST survey of the sugarcane transcriptome.
SO: Theoretical and applied genetics. 2004 Mar., v. 108, no. 5 p. 851-863.
AB: Its large genome and high polyploidy makes sugarcane (Saccharum spp.) a singularly challenging crop to study and improve using genetic approaches. To provide large numbers of functionally characterized candidate genes that might be tested for direct association (rather than distant linkage) with economically important traits, we sequenced the 5' ends of 9,216 clones from three cDNA libraries (apex, leaf and mature internode), representing 3,401 non-redundant sequences. About 57% of these sequences could be assigned a tentative function based on statistically significant similarity to previously characterized proteins or DNA sequences. Another 28% corresponded to previously identified, but uncharacterized, sequences. Some of the remaining unidentified sequences were predicted to be genes which could potentially be new to plants or unique to sugarcane. Comparisons of the sugarcane ESTs to a large sorghum EST database revealed similar compositions of expressed genes between some different tissues. Comparison to a detailed Arabidopsis protein database showed some highly conserved sequences, which might be useful DNA markers for pan-angiosperm comparative mapping. These EST sequences provide a foundation for many new studies to accelerate isolation of agronomically important genes from the cumbersome sugarcane genome.

Record 50 of 76 - AGRICOLA 1998-2004/09
AU: Asnaghi,-C.; Roques,-D.; Ruffel,-S.; Kaye,-C.; Hoarau,-J.Y.; Telismart,-H.; Girard,-J.C.; Raboin,-L.M.; Risterucci,-A.M.; Grivet,-L.
TI: Targeted mapping of a sugarcane rust resistance gene (Bru1) using bulked segregant analysis and AFLP markers.
SO: Theoretical and applied genetics. 2004 Feb., v. 108, no. 4 p. 759-764.
AB: The presence of a major resistance gene (Bru1) for brown rust in the sugarcane cultivar R570 (2n about 115) was confirmed by analyzing segregation of rust resistance in a large population of 658 individuals, derived from selfing of clone R570. A subset of this population was analyzed with AFLP and bulked segregant

analysis (BSA) to develop a detailed genetic map around the resistance gene. Four hundred and forty three primer pairs were used resulting in the identification of eight AFLP markers surrounding the resistance gene in an interval of 10 cM, with the closest markers located at 1.9 and 2.2 cM on each side of the gene. Efficiency of the AFLP/BSA applied to the complex polyploid genome of sugarcane is discussed, as well as the potential of the newly identified AFLP markers for developing a map-based cloning approach exploiting, synteny conservation with sorghum.

Record 51 of 76 - AGRICOLA 1998-2004/09
AU: Oliver,-A.L.; Grant,-R.J.; Pedersen,-J.F.; O'Rear,-J.
TI: Comparison of brown midrib-6 and -18 forage sorghum with conventional sorghum and corn silage in diets of lactating dairy cows.
SO: Journal of dairy science. 2004 Mar., v. 87, no. 3 p. 637-644.
AB: Total mixed rations containing conventional forage sorghum, brown midrib (bmr)-6 forage sorghum, bmr-18 forage sorghum, or corn silage were fed to Holstein dairy cows to determine the effect on lactation, ruminal fermentation, and total tract nutrient digestion. Sixteen multiparous cows (4 ruminally fistulated; 124 d in milk) were assigned to 1 of 4 diets in a replicated Latin square design with 4-wk periods (21-d adaptation and 7 d of collection). Diets consisted of 40% test silage, 10% alfalfa silage, and 50% concentrate mix (dry basis). Acid detergent lignin concentration was reduced by 21 and 13%, respectively, for the bmr-6 and bmr-18 sorghum silages when compared with the conventional sorghum. Dry matter intake was not affected by diet. Production of 4% fat-corrected milk was greatest for cows fed bmr-6 (33.7 kg/d) and corn silage (33.3 kg/d), was least for cows fed the conventional sorghum (29.1 kg/d), and was intermediate for cows fed the bmr-18 sorghum (31.2 kg/d), which did not differ from any other diet. Total tract neutral detergent fiber (NDF) digestibility was greatest for the bmr-6 sorghum (54.4%) and corn silage (54.1%) diets and was lower for the conventional (40.8%) and bmr-18 sorghum (47.9%) diets. In situ extent of NDF digestion was greatest for the bmr-6 sorghum (76.4%) and corn silage (79.0%) diets, least for the conventional sorghum diet (70.4%), and intermediate for the bmr-18 sorghum silage diet (73.1%), which was not different from the other diets. Results of this study indicate that the bmr-6 sorghum hybrid outperformed the conventional sorghum hybrid; the bmr-18 sorghum was intermediate between conventional and bmr-6 in most cases. Additionally, the bmr-6 hybrid resulted in lactational performance equivalent to the corn hybrid used in this study. There are important compositional differences among bmr forage sorghum hybrids that need to be characterized to predict animal response accurately.

Record 52 of 76 - 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 53 of 76 - AGRICOLA 1998-2004/09
AU: Yu,-J.; Tuinstra,-M.R.; Claassen,-M.M.; Gordon,-W.B.; Witt,-M.D.

TI: Analysis of cold tolerance in sorghum under controlled environment conditions.
SO: Field crops research. 2004 Jan. 8, v. 85, issue 1 p. 21-30.

Record 54 of 76 - AGRICOLA 1998-2004/09
AU: Prasifka,-J.R.; Heinz,-K.M.; Winemiller,-K.O.
TI: Crop colonisation, feeding, and reproduction by the predatory beetle, Hippodamia convergens, as indicated by stable carbon isotope analysis.
SO: Ecological entomology. 2004 Apr., v. 29, no. 2 p. 226-233.
AB: 1. Habitat management to enhance natural enemy populations in agricultural systems may help regulate levels of crop pests, but little research addresses the behaviour of immigrating beneficial insects. 2. Stable carbon isotopes were used in complementary laboratory and field studies to examine colonisation behaviour of an ephemeral agricultural habitat by the lady beetle, Hippodamia convergens Guerin-Meneville. 3. Under laboratory conditions, H. convergens carbon isotope ratios, delta13C, changed after its food supply was shifted from a C4- to a C3-based diet of aphids produced on grain sorghum or cotton respectively. Final isotope ratios of adult H. convergens were closer to that of the new C3-based diet, with most change in delta13C occurring within 3 days after the diet shift. 4. The carbon isotope ratios of lady beetle adults collected in cotton fields suggested that grain sorghum was a continuous source for H. convergens until many nearby sorghum fields matured and senesced. 5. When cotton aphid (Aphis gossypii Glover) prey were absent, carbon isotope ratios of beetle populations did not change over time and virtually no egg production by H. convergens was detected. This indicates that beetles were feeding little on non-aphid resources originating in cotton. 6. With cotton aphids present, beetle isotope ratios decreased towards the carbon isotope ratio of cotton, indicating adult feeding in cotton. As a result, egg masses produced had carbon isotope ratios in the C3 range of values. 7. The results suggest that some predator species may be retained in habitats without large prey populations, a quality essential in controlling pests in agricultural systems.

Record 55 of 76 - AGRICOLA 1998-2004/09
AU: Nikkhah,-A.; Alikhani,-M.; Amanlou,-H.
TI: Effects of feeding ground or steam-flaked broom sorghum and ground barley on performance of dairy cows in midlactation.
SO: Journal of dairy science. 2004 Jan., v. 87, no. 1 p. 122-130.
AB: Ten Holstein cows in midlactation were used in a 5 x 5 replicated Latin square design with 21-d periods to determine the effects of feeding ground or steam-flaked broom sorghum (Sorghum bicolor) and ground barley (Hordeum vulgare L.) on lactation performance and nutrient digestibility. Diets were fed as total mixed ration and consisted of 46% forage and 54% concentrate (DM basis). Treatment diets included ground barley, ground barley plus ground broom sorghum, ground broom sorghum, ground barley plus steam-flaked broom sorghum, and steam-flaked broom sorghum. Yield of fat-corrected milk was 2.3 kg greater for cows fed diets containing steam-flaked broom sorghum than for cows fed its ground form (24.4 vs 22.1 kg) and was 2.8 kg greater for cows fed diets containing a blend of steam-flaked broom sorghum plus ground barley than for cows fed ground sorghum (24.9 vs 22.1 kg).

Yields and percentages of milk fat, protein, SNF, total solids, and apparent digestibility of crude protein were greater for cows fed steam-flaked broom sorghum and ground barley vs. ground broom sorghum. Including steam-flaked rather than ground broom sorghum in diets significantly increased fecal pH (7.10 vs 6.87) and improved efficiency of feed conversion (1.26 vs 1.15). Feeding steam-flaked broom sorghum alone or with ground barley compared with ground sorghum or the blend of ground barley and ground broom sorghum decreased plasma urea nitrogen increased glucose in plasma. Results of this study showed that feeding steam-flaked broom sorghum compared with ground broom sorghum could supply a more efficient source of energy for lactating cows.

Record 56 of 76 - AGRICOLA 1998-2004/09
AU: Rebe,-M.; Van-Den-Berg,-J.; Donaldson,-G.
TI: The status of leaf feeding resistance and oviposition preference of Busseola fusca (Fuller) (Lepidoptera: Noctuidae) and Chilo partellus (Swinhoe) (Lepidoptera: Crambidae) for sweet sorghum (Sorghum bicolor) landraces.
SO: International journal of pest management. 2004 Jan-Mar, v. 50, no. 1 p. 49-53.

Record 57 of 76 - AGRICOLA 1998-2004/09
AU: Tefera,-T.
TI: Farmers' perceptions of sorghum stem-borer and farm management practices in eastern Ethiopia.
SO: International journal of pest management. 2004 Jan-Mar, v. 50, no. 1 p. 35-40.

Record 58 of 76 - AGRICOLA 1998-2004/09
AU: Van-Vliet,-P.C.J.; Beare,-M.H.; Coleman,-D.C.; Hendrix,-P.F.
TI: Effects of enchytraeids (Annelida: Oligochaeta) on soil carbon and nitrogen dynamics in laboratory incubations.
SO: Applied soil ecology a section of Agriculture, Ecosystems and Environment. 2004 Feb., v. 25, no. 2 p. 147-160.

Record 59 of 76 - AGRICOLA 1998-2004/09
AU: Sweeney,-D.W.; Moyer,-J.L.
TI: In-season nitrogen uptake by grain sorghum following legume green manures in conservation tillage systems.
SO: Agronomy journal. 2004 Mar.-Apr., v. 96, no. 2 p. 510-515.
AB: With renewed interest in legumes as green manures, it is important to understand their effect on in-season N uptake of following nonlegume row crops. This study assessed the effect of legumes as green manures on in-season N uptake by subsequent grain sorghum [Sorghum bicolor (L.) Moench] grown in conservation tillage systems in the eastern Great Plains. Treatments were (i) red clover (Trifolium pratense L.) and hairy vetch (Vicia villosa Roth) before grain sorghum vs. continuous grain sorghum, (ii) reduced or no-tillage, and (iii) fertilizer N rates. The experiment was conducted on two adjacent sites (Parson silt loam: fine, mixed thermic Mollic Albaqualf) similar in organic matter but Site 1 higher in pH, P, and K than Site 2. In-season N uptake was often statistically greater in reduced-tillage than no-tillage systems. At both sites, red clover as a previous crop resulted in about 25% greater N uptake by sorghum vs. sorghum grown continuously with no previous legume crop. Nitrogen uptake

by sorghum at the boot and soft dough growth stages responded linearly to increasing N rate, but the slope was <0.2, indicating low fertilizer N efficiency on this soil. Calculated N fertilizer equivalencies were >135 kg ha-1 during the first year for both legumes at each site, but values for red clover remained greater than those for hairy vetch in subsequent years, especially at the higher fertility site. Grain yield tended to be maximized when N uptake at the soft dough stage exceeded 100 kg ha-1 at Site 2 but continued to increase as N uptake increased at the higher-fertility Site 1. Utilizing legumes as green manures can increase in-season N uptake by following grain sorghum crops compared with continuous sorghum in these prairie soils.

Record 60 of 76 - AGRICOLA 1998-2004/09

AU: McLaughlin,-M.R.; Fairbrother,-T.E.; Rowe,-D.E.

TI: Nutrient uptake by warm-season perennial grasses in a swine effluent spray field.

SO: Agronomy journal. 2004 Mar.-Apr., v. 96, no. 2 p. 484-493.

AB: Haying removes soil nutrients in manured fields. Grass hays were compared for nutrient removal in an effluent spray field. Eastern gamagrass (Tripsacum dactyloides L.), indiangrass [Sorghastrum nutans (L.) Nash], johnsongrass [Sorghum halepense (L.) Pers.], switchgrass (Panicum virgatum L.), and common and 'Coastal' bermudagrass [Cynodon dactylon (L.) Pers.] were grown on a Brooksville silty clay (fine, montmorillonitic, thermic Aquic Chromuderts) in Mississippi. The field produced johnsongrass hay and received swine (Sus scrofa domesticus) effluent (estimated 371, 61, and 629 kg ha-1 yr-1 of N, P, and K, respectively) for 8 yr before the study. In the 3-yr study, common bermudagrass produced 4.6 to 15.0 Mg dry matter (DM) ha- yr-1 and was not different from Coastal bermudagrass (5.2 to 13.7 Mg ha-1 yr-1). Highest annual DM yields of johnsongrass, eastern gamagrass, switchgrass, and indiangrass were 9.7, 9.5, 9.1, and 5.5 Mg ha-1 yr-1, respectively. Highest annual uptakes of N by common and Coastal bermudagrass, johnsongrass, eastern gamagrass, switchgrass, and indiangrass were 314, 280, 188, 181, 167, and 106 kg ha-1, respectively. Respective highest annual uptakes of P were 44, 35, 23, 21, 19, and 14 kg ha-1. Uptakes of Ca, K, Mg, Cu, Fe, Mn, and Zn were as high or higher in common bermudagrass as in the other grasses. Dry matter yield of common bermudagrass was correlated (r = 0.99, P = 0.0001) with uptakes of N, P, and K. Replacing johnsongrass with bermudagrass would increase annual DM yield in the field 155 to 249% and P uptake 194 to 259%.

Record 61 of 76 - AGRICOLA 1998-2004/09

AU: Ribera,-L.A.; Hons,-F.M.; Richardson,-J.W.

TI: An economic comparison between conventional and no-tillage farming systems in Burleson County, Texas.

SO: Agronomy journal. 2004 Mar.-Apr., v. 96, no. 2 p. 415-424.

AB: Tillage systems that reduce the number of cultivation steps can, according to soil scientists, save soil moisture, fuel, labor, and machinery costs, as well as reduce wind and water erosion. However, many producers in South Texas are reluctant to adopt these practices. The objective of this study was to compare the economics of conventional tillage (CT) and no-tillage (NT) systems on three commercial crops produced in South Texas: grain sorghum [Sorghum bicolor (L.) Moench], wheat (Triticum aestivum

L.), and soybean [Glycine max (L.) Merr.]. When considering the economics of both tillage systems, three areas affecting profit were addressed: changes in cost per hectare, changes in yield per hectare, and the impact on net income risk. Empirical distributions of net income for different tillage systems under risk were estimated using a Monte Carlo simulation model of net income per hectare. Certainty equivalents were used to rank the tillage systems because they can be used to rank risky alternatives for risk-averse decision makers. The risk premium for risk-averse decision makers who prefer NT over CT ranges between $12.60 and $34.25 per hectare for all five crop rotations. Risk-neutral decision makers would prefer continuous sorghum and sorghum-wheat-soybean rotation over all other rotations under CT and NT, respectively. However, risk-averse decision makers would prefer continuous sorghum over all other rotations either under CT or NT. The results suggest that under risk-neutral rankings, NT would be preferred over CT in three out of the five crop rotations tested. However, assuming a risk-averse decision maker, NT would be preferred over CT in all five crop rotations.

Record 62 of 76 - AGRICOLA 1998-2004/09

AU: Hwang,-K.T.; Weller,-C.L.; Cuppett,-S.L.; Hanna,-M.A.

TI: Changes in composition and thermal transition temperatures of grain sorghum wax during storage.

SO: Industrial crops and products. 2004 Mar., v. 19, no. 2 p. 125-132.

AB: Grain sorghum (Sorghum bicolor) wax is composed mainly of aldehydes, alcohols, and acids. Aldehydes, comprising about one-half of the wax, are readily converted to acids in presence of air. In this study, whole sorghum wax and an aldehyde fraction from sorghum wax were subjected to oxidative conditions. Changes in the major components and thermal transition temperatures were determined using HPLC and differential scanning calorimeter (DSC), respectively. The aldehyde fraction was oxidized markedly to acids over 4 months in storage at room temperature. Acid content, in the fraction, was initially 5-7% and increased to 42-51% after 135 days in storage. Consequently, thermal transition apex and end temperatures of the fraction, which were initially 73-74 and 76-77ÀC, respectively, increased to 80-81 and 83-85ÀC, respectively, after 135 days. Whole sorghum wax, composed initially of 55% aldehydes, 37% alcohols, and 7% acids, slightly increased acid level to 8-12% during storage over 5 months under various conditions. Thermal transition temperatures of the wax changed little over all storage conditions during 5 months of storage with 83-84ÀC for apex temperatures and 86-87ÀC for end temperatures.

Record 63 of 76 - AGRICOLA 1998-2004/09

AU: Camarena,-E.A.; Gracia,-C.; Cabrera-Sixto,-J.M.

TI: A mixed integer linear programming machinery selection model for multifarm systems.

SO: Biosystems engineering. 2004 Feb., v. 87, no. 2 p. 145-154.

AB: An integrated program, called MULTIPREDIO, was developed at University of Guanajuato and University Polytechnic of Valencia using mixed integer linear programming linked to several databases contained in spreadsheets to select agricultural

machinery for a multifarm system. The program selects the machinery set for each farm, which corresponds to the lowest annual mechanisation cost of the multifarm system through time. The input information consists of variable and fixed costs for 12 yr from the multifarm, the schedule of operations and the different combinations of equipment and the area of each farm. The program works under the environment of the worksheet and the user does not require knowledge of linear programming to understand the input and output of the model program. The program is capable of calculating the number of working days required for each tractor-implement at each farm in the different periods, and also allows to study the effect of changing values on fixed and variable costs through time. A case in Guanajuato, Mexico, for five farms cultivating wheat and sorghum is used to demonstrate the model application because the mechanisation costs are reduced during the passage of time (at the present value), thus affecting the optimum solution in such a way that alternative solutions are found through time. The optimum solution of the machinery park selected for the first year is not the same as that selected through other years. For the studied case three optimal solutions were found, one of them for years 1-5, another one for years 6-8 and the last one for years 9-12. In case of machinery, the optimal solution is below the quantity of tractors available on the five farms.

Record 64 of 76 - AGRICOLA 1998-2004/09

AU: Close,-T.J.; Wanamaker,-S.I.; Caldo,-R.A.; Turner,-S.M.; Ashlock,-D.A.; Dickerson,-J.A.; Wing,-R.A.; Muehlbauer,-G.J.; Kleinhofs,-A.; Wise,-R.P.

TI: A new resource for cereal genomics: 22K barley GeneChip comes of age.

SO: Plant physiology. 2004 Mar., v. 134, no. 3 p. 960-868.

AB: In recent years, access to complete genomic sequences, coupled with rapidly accumulating data related to RNA and protein expression patterns, has made it possible to determine comprehensively how genes contribute to complex phenotypes. However, for major crop plants, publicly available, standard platforms for parallel expression analysis have been limited. We report the conception and design of the new publicly available, 22K Barley1 GeneChip probe array, a model for plants without a fully sequenced genome. Array content was derived from worldwide contribution of 350,000 high-quality ESTs from 84 cDNA libraries, in addition to 1,145 barley (Hordeum vulgare) gene sequences from the National Center for Biotechnology Information nonredundant database. Conserved sequences expressed in seedlings of wheat (Triticum aestivum), oat (Avena strigosa), rice (Oryza sativa), sorghum (Sorghum bicolor), and maize (Zea mays) were identified that will be valuable in the design of arrays across grasses. To enhance the usability of the data, BarleyBase, a MIAME-compliant, MySQL relational database, serves as a public repository for raw and normalized expression data from the Barley1 GeneChip probe array. Interconnecting links with PlantGDB and Gramene allow BarleyBase users to perform gene predictions using the 21,439 non-redundant Barley1 exemplar sequences or cross-species comparison at the genome level, respectively. We expect that this first generation array will accelerate hypothesis generation and gene discovery in disease defense pathways, responses to abiotic

stresses, development, and evolutionary diversity in monocot plants.

Record 65 of 76 - AGRICOLA 1998-2004/09

AU: Wilhelm,-W.W.; Johnson,-J.M.F.; Hatfield,-J.L.; Voorhees,-W.B.; Linden,-D.R.

TI: Crop and soil productivity response to corn residue removal: a literature review.

SO: Agronomy journal. 2004 Jan.-Feb., v. 96, no. 1 p. 1-17.

AB: Society is facing three related issues: overreliance on imported fuel, increasing levels of greenhouse gases in the atmosphere, and producing sufficient food for a growing world population. The U.S. Department of Energy and private enterprise are developing technology necessary to use high-cellulose feedstock, such as crop residues, for ethanol production. Corn (Zea mays L.) residue can provide about 1.7 times more C than barley (Hordeum vulgare L.), oat (Avena sativa L.), sorghum [Sorghum bicolor (L.) Moench], soybean [Glycine max (L.) Merr.], sunflower (Helianthus annuus L.), and wheat (Triticum aestivum L.) residues based on production levels. Removal of crop residue from the field must be balanced against impacting the environment (soil erosion), maintaining soil organic matter levels, and preserving or enhancing productivity. Our objective is to summarize published works for potential impacts of wide-scale, corn stover collection on corn production capacity in Corn Belt soils. We address the issue of crop yield (sustainability) and related soil processes directly. However, scarcity of data requires us to deal with the issue of greenhouse gases indirectly and by inference. All ramifications of new management practices and crop uses must be explored and evaluated fully before an industry is established. Our conclusion is that within limits, corn stover can be harvested for ethanol production to provide a renewable, domestic source of energy that reduces greenhouse gases. Recommendation for removal rates will vary based on regional yield, climatic conditions, and cultural practices. Agronomists are challenged to develop a procedure (tool) for recommending maximum permissible removal rates that ensure sustained soil productivity.

Record 66 of 76 - AGRICOLA 1998-2004/09

AU: Oswald,-A.; Ransom,-J.K.

TI: Response of maize varieties to Striga infestation.

SO: Crop protection. 2004 Feb., v. 23, no. 2 p. 89-94.

AB: Striga hermonthica is endemic in the semi-arid and semi-humid areas of Sub-Sahara Africa. This plant parasite reduces crop yields of maize and sorghum, the major staple food source of the region. Presently, there are no Striga-resistant maize varieties commercially available in Western Kenya. Striga resistant or tolerant maize would form an important part of an integrated control approach. To determine the response of the maize varieties most widely grown by farmers around Lake Victoria to Striga, a field experiment was conducted at two locations and over two seasons. The results showed a high variability among commercial maize varieties with respect to the effects of Striga parasitism. Short-cycle varieties have the lowest Striga densities but produce acceptable yields only in low-stress environments. Long-cycle varieties are too susceptible to Striga and are not completely adapted to the agro-ecological conditions

of the region. Some medium-cycle varieties show level of resistance and/or tolerance to Striga while others supported high numbers of Striga and had reduced yield. Nevertheless, sufficient genetic variability exists to recommend varieties suitable to enable farmers to obtain some yield advantage by selecting those with the most Striga tolerance for a range of farming situations found in Western Kenya.

Record 67 of 76 - AGRICOLA 1998-2004/09
AU: Kader,-M.A.; Jutzi,-S.C.
TI: Effects of thermal and salt treatments during imbibition on germination and seedling growth of sorghum at 42/19 degrees C.
SO: Journal of agronomy and crop science = Zeitschrift fur Acker- und Pflanzenbau. 2004 Feb., v. 190, no. 1 p. 35-38.

Record 68 of 76 - AGRICOLA 1998-2004/09
AU: Grichar,-W.J.; Besler,-B.A.; Brewer,-K.D.
TI: Effect of row spacing and herbicide dose on weed control and grain sorghum yield.
SO: Crop protection. 2004 Mar., v. 23, no. 3 p. 263-267.
AB: Field studies were conducted in 2000 and 2001 near Yoakum, Texas without irrigation to determine the effect of row spacing and herbicide dose on weed control and grain sorghum response. Atrazine or dimethenamid alone or in combination were compared under conventional row spacing (single rows spaced 91 cm apart on a bed) and twin rows (two rows spaced 20 cm apart on a single bed). Amaranthus albus (tumble pigweed) control was 100% with all treatments except dimethenamid at 0.56 kg/ha which controlled at least 96%. Panicum texanum (Texas panicum) control was less than 80% with dimethenamid at 0.56 kg/ha and atrazine at 0.56 and 1.12 kg/ha under the conventional row spacing. Under the twin-row system, P. texanum control was greater than 80% with all herbicides. Cyperus esculentus (yellow nutsedge) control was less than 70% early season with both row spacings but greater than 80% late season under the twin-row system.

Record 69 of 76 - AGRICOLA 1998-2004/09
AU: Nunes,-A.; Correia,-I.; Barros,-A.; Delgadillo,-I.
TI: Sequential in vitro pepsin digestion of uncooked and cooked sorghum and maize samples.
SO: Journal of agricultural and food chemistry. 2004 Apr. 7, v. 52, no. 7 p. 2052-2058.
AB: An in vitro protein digestion study, using pepsin, was carried out in uncooked and cooked sorghum and maize flour samples. The digestibility values from the uncooked samples showed that sorghum presents digestibility values similar to those of maize. In the case of the cooked samples, it was found that a wet cooking procedure promotes a decrease in sorghum protein digestibility when compared to maize. Electrophoresis was used to follow the in vitro pepsin sequential digestion procedure, and infrared spectroscopy was applied to establish its efficiency. SDS-PAGE results showed that both uncooked samples (sorghum and maize) behave in a similar way. The wet cooking procedure increases the amount of high molecular weight aggregates and promotes the appearance of two nonreducible and nondigestible 45 and 47 kDa proteins. These two protein fractions are directly related to the loss of digestibility. It was also shown that in cooked sorghum

the monomers (Wgc-, Wga-, and Wgb-) are more resistant to digestion than the corresponding uncooked samples.

Record 70 of 76 - AGRICOLA 1998-2004/09

AU: Seitz,-L.M.; Ram,-M.S.

TI: Metabolites of lesser grain borer in grains.

SO: Journal of agricultural and food chemistry. 2004 Feb. 25, v. 52, no. 4 p. 898-908.

AB: Many volatile alcohol and ester metabolites of the lesser grain borer (LGB, Rhyzopertha dominica) cultured on wheat grain were identified. Volatiles from infested samples at 80 ÀC were collected on Tenax absorbent, thermally desorbed, and analyzed by gas chromatography (GC) using infrared (IR) and mass (MS) detectors for component identification. A solid-phase microextraction (SPME) technique was used to analyze selected samples with a GC-MS system set up for obtaining chemical ionization mass spectra. SPME was also used in a synthesis process required to identify ester metabolites. Predominant compounds in LGB-infested grains were 2-pentanol and its esters of 2-methyl-2-pentenoic (A) and 2,4-dimethyl-2-pentenoic (B) acids, which are known aggregation pheromones, dominicalures 1 and 2. 2-Pentanol esters of saturated A, Wgb-keto- and Wgb-hydroxy derivatives of A and B, homologues of A and B, and acid moieties lacking the 2-methyl substitution were found. Other straight- and branched-chain secondary alcohols and their esters were also observed. Reexamination of GC-MS-IR data acquired in previous investigations of LGB cultured on sorghum grain and commercial samples in a grain odor study showed the presence of many LGB metabolites in addition to the known dominicalures.

Record 71 of 76 - AGRICOLA 1998-2004/09

AU: Schumann,-A.W.; Sumner,-M.E.

TI: Formulation of environmentally sound waste mixtures for land application.

SO: Water, air, and soil pollution. 2004 Feb., v. 152, no. 1-4 p. 195-217.

Record 72 of 76 - AGRICOLA 1998-2004/09

AU: Sklan,-D.; Prag,-T.; Lupatsch,-I.

TI: Apparent digestibility coefficients of feed ingredients and their prediction in diets for tilapia Oreochromis niloticus x Oreochromis aureus (Teleostei, Cichlidae).

SO: Aquaculture research. 2004 Mar. 25, v. 35, no. 4 p. 358-364.

AB: Apparent digestibility of crude protein (CP), lipid, carbohydrate, energy and fatty acids was measured in various feed ingredients fed to hybrid tilapia (Oreochromis niloticus x Oreochromis aureus) including fish and poultry meals, corn gluten, soybean meal, rapeseed meal, sunflower seed meal, wheat, corn, sorghum, barley and wheat bran. Chromic oxide was used as a non-absorbed marker. A diet compounded from a mixture of these ingredients was then used to examine the possibility of predicting the digestibility of formulated diets. In addition, the effect of pelleting or extrusion on digestibility of a compound diet was examined. Apparent digestibility of CP ranged from 75% to 97%, lipids from 72% to 90% and energy from 39% to 89% in the different ingredients. Apparent digestibility of carbohydrates was lower and ranged from 32% to 80%. Digestibility

of fatty acids ranged from 75% to 90% with saturated fatty acids exhibiting digestibilities lower than unsaturated fatty acids. In a full-fat soy diet containing 19% fat, digestibility of lipids did not decrease. There were no significant differences in digestibility between a diet that was either pelleted or extruded. Tests conducted using a compound diet indicated that ingredient digestibility was additive for protein, lipids carbohydrates and energy. Diets for the hybrid tilapia may thus be formulated on the basis of digestibility of individual ingredients, for the nutrients examined in this study.

Record 73 of 76 - AGRICOLA 1998-2004/09
AU: Belton,-P.S.; Taylor,-J.R.N.
TI: Sorghum and millets: protein sources for Africa.
SO: Trends in food science and technology. 2004 Feb., v. 15, no. 2 p. 94-98.

Record 74 of 76 - AGRICOLA 1998-2004/09
AU: Herrera,-A.; Tellez-Luis,-S.J.; Gonzalez-Cabriales,-J.J.; Ramirez,-J.A.; Vazquez,-M.
TI: Effect of the hydrochloric acid concentration on the hydrolysis of sorghum straw at atmospheric pressure.
SO: Journal of food engineering. 2004 June, v. 63, no. 1 p. 103-109.
AB: Sorghum straw is a raw material useful for the xylose production by hydrolysis. The main application of xylose is its bioconversion to xylitol, a functional sweetener with important technological properties. The objective of this work was to study the hydrolysis of sorghum straw with hydrochloric acid at 100 C. Several concentrations of HCl (2-6%) and reaction time (0-300 min) were evaluated. Kinetic parameters of mathematical models for predicting the concentration of xylose, glucose, acetic acid and furfural in the hydrolysates were found and used to optimise the process and compared with results reported in the literature using other conditions and acids. Optimal conditions found for hydrolysis were 6% HCl at 100 C for 83 min, which yielded a solution with 21.3 g xylose/l, 4.7 g glucose/l, 0.8 g furfural/l and 2.8 g acetic acid/l.

Record 75 of 76 - AGRICOLA 1998-2004/09
AU: Gowda,-N.K.S.; Ramana,-J.V.; Prasad,-C.S.; Singh,-K.
TI: Micronutrient content of certain tropical conventional and unconventional feed resources of Southern India.
SO: Tropical animal health and production. 2004 Jan., v. 36, no. 1 p. 77-94.

Record 76 of 76 - AGRICOLA 1998-2004/09
AU: New,-Leon.
TI: Grain sorghum irrigation.
SO: [College Station, Tex.] : Texas Cooperative Extension, Texas A&M University System, [2004]