APPENDIX 1

Abstracts of Technical Papers

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White Lupin: A Potential New Crop for the Southern U. S.
D. W. REEVES*, E. VAN SANTEN, G. L. MULLINS, and P. L. MASK, USDA-ARS National Soil Dynamics Lab and Auburn University.

Forty-five years ago, blue (*Lupinus angustifolius* L.), white (*L. albus* L.), and yellow (*L. luteus* L.) lupin were the most common green manures for cotton (*Gossypium hirsutum* L.) grown on the Southern Coastal Plain. Loss of government price supports, cheap N fertilizer, disease pressure, and lack of cold tolerance eliminated the crop from the area. A multidisciplinary team of ARS and Auburn University researchers has been studying the potential of white lupin as a component in modern cropping systems. Research areas include plant pathology, germplasm evaluation and breeding, fertility requirements, molecular markers and genetic diversity, cultural practices and management, forage quality, and herbicide evaluations. Grain yields from 1988 to 1993 trials have ranged from 160 kg/ha to 3985 kg/ha (averaging 1,932 kg/ha), dependent upon treatments and years. Silage yields (35% dry matter) have averaged 30.2 Mg/ha. Poor soil drainage is the major constraint identified for lupin production. Progress has been made developing varieties better adapted to the Southeast using germplasm from foreign collaborators.

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Forage Yield, Quality and Persistence of Interspecific Pennisetum Hybrids in the Caribbean. M.B. ADJEI*, S.C. SCHANK AND T.J. GENTRY, Univ. of Virgin Islands and Univ. of Florida.

In two, 2-yr experiments, forage yield and quality, and stand persistence of 'Mott' dwarf elephantgrass (*Pennisetum purpureum*) were compared with those of either pure lines of elephantgrass or their interspecific hybrids with pearlmillet (*P. glaucum*) in mixture with glycine (*Neonotonia wightii*). Grasses were harvested every 60 to 90 d based on rainfall. Annual forage yield of tall pure lines or their triploid hybrid with pearlmillet was 21-29 Mg ha^{-1} compared with 9-23 Mg ha^{-1} from Mott and its hexaploid derivatives. Forage *in vitro* organic matter digestibility (IVOMD) for Mott (65%) at 60 d regrowth was similar to the hexaploids but superior to the tall lines. Crude protein content and IVOMD of *Pennisetum* forage stockpiled for 90 d were 70 and 570 g kg^{-1}, respectively. Mott cultivar maintained a higher tiller density than the hybrids and 28% for Mott. Seed propagated *Pennisetum* hybrids have a potential for stockpiled forage in the Caribbean if their persistence is improved.

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Effects of Metsulfuron on Management of Pensacola Bahiagrass. M. M. EICHHORN, Jr., Louisiana Agric. Exp. Stn., Hill Farm Res. Stn., Homer.

Pensacola bahiagrass (PB), *Paspalum notatum, Flugge*, has become widely established in Coastal bermudagrass (CB), *Cynodon dactylon* (L.) Pers., meadows across Louisiana. Where managed for hay production, yield, forage quality, and market value of hay have been reduced. Over a 4 year period, field experiments were conducted with herbicide metsulfuron (METS) to identify procedures that would provide maximum control of PB in CB meadows. After late winter greenup of dormant stoloniferous mats, degree of PB control maximized at an unacceptable 85.8% when 14 g METS ha^{-1} was applied in mid-May on PB exhibiting 30-45 cm basal leaf growth. A subsequent application of 14 g METS ha^{-1} on 1 Oct to PB exhibiting 15-20 cm basal leaf growth was required to provide an acceptable 97.5% degree of control. Under simulated hay management, application of METS at 18 g ha^{-1} following the 2nd harvest in Jul provided both maximum degree of annual PB control, 95.6%, and CB stand recovery, 31.8%. In absence of applied herbicide, PB stands in CB meadow ranging initially from .05-.90 ha increased annually by a multiplier of 1.06 (R^2=.94, P<0.0001).

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Session 3 - Level 1 Foyer
Convention Center
Poster session - Row Crop and Forage Production

Posters Present - 8:00 A.M. - 12 NOON
Authors Present - 9:00 A.M. - 11:00 A.M.

Effect of Various Inoculants on Yield of Runner Peanut.
J.A. BALDWIN, Univ. of Georgia.

Nitrogen is the nutrient in crops that most often limits yields. However, peanuts (Arachis hypogea L.), a legume, can produce their own nitrogen. The roots of the peanut plant are infected by Rhozobia bacteria, causing nodules to form. Within these nodules, the bacteria can convert atmospheric nitrogen into a form usable by the plant. It is recommended that fields not planted to peanut during the previous 4-5 years be inoculated with commercially available forms of Rhizobium bacteria. The most commonly used form has been granular inoculant which is dropped in the seed furrow at planting. Powdered and frozen inoculants are currently being marketed as alternatives to the granular materials. During 1993, a study was initiated to evaluate the effects of two brands of powdered inoculant or one brand of frozen inoculant compared to no inoculant on the yield and grade of peanut. The plots were in a randomized complete block design and replicated three times. The field had not been planted to peanut during the past 15 years. No differences occurred due to any treatment for yield or grade of peanuts produced. Yields ranged from 5410 Kgha^{-1} to 5870 Kgha^{-1}.

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Effects of Ethephon on Cotton Yield Components and Distribution of Open Bolls. O. M. M. WASSEL, C. O. GWATHMEY, R. M. HAYES, and P. E. HOSKINSON, Univ. of Tennesses.

Ethephon (Prep™) may alter yield components and distribution of open bolls in upland cotton (*Gossypium hirsutum* L.). A field experiment was conducted at Jackson TN in 1993 to study effects of ethephon timing and dose on 'Deltapine 50' cotton. Ethephon was applied at 1.12 and 2.24 kg a.i./ha when 30% and 45% of bolls had opened, and at 1.12 kg a.i./ha when 60% were open. Bolls opening before treatment were identified and monitored separately from bolls influenced by treatments. Ethephon reduced seed index of ethephon-influenced bolls (P=0.02). Lint percent was not significantly affected. Seed cotton weight per boll tended (P=0.15) to be lower in ethephon-influenced bolls. Treatments had no effect on seed cotton yields (P=0.64). The percentage of total open bolls was increased by ethephon (P<0.01). Application at 30% bolls open shifted the distribution of open bolls to upper fruiting branches (P=0.04). Ethephon may produce compensatory changes in boll number and boll weight components of yield.

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Effects of Mulch Color on Growth of Okra.
K. KAUL*[1], E.C. GREER[1], M.J. KASPERBAUER[2], and C. MAHL[1], [1]Kentucky State University and [2]USDA-ARS.

Far-red (FR) to red (R) light ratios in reflected light have been shown to affect plant growth and yield. Experimental plots were covered with black plastic mulch. Okra seeds were planted through holes cut in plastic mulch. After the seeds had germinated, plastic mulch was painted with oil-based paints to get a white, red, or green surface. FR/R ratio in light reflected from the mulch surface was determined with a spectroradiometer. Four okra plants growing on each color were harvested by cutting at the soil level when the plants were three, six, and nine weeks old. Data on stem length and diameter, number of nodes, number of branches, leaf area and thickness, and dry weights of stem and leaves were collected. It was found that higher FR/R ratio in reflected light resulted in better vegetative growth.

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