2001 PROCEEDINGS

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POSTER SESSION I

Field Survey of Thrips and Tomato Spotted Wilt Virus In West Texas Peanut.

J.S. ARMSTRONG*1, G.C. KRAEMER1 and F.L. MITCHELL2. Department of Plant and Soil Science1, Box 42122, Texas Tech University, Lubbock, TX 79409 and Texas Agricultural Experiment Station, Lubbock, TX 79403, 2 Texas A&M Research and Extension Center, Stephenville, TX 76401.

Seven different thrips species were identified, and thrips densities estimated on seedlings, terminals and blooms from a two-year survey (1999 and 2000) of West Texas peanut. Three thrips species collected; western flower thrips, *Frankliniella occidentalis* (Pergande), tobacco thrips, *Frankliniella fusca* (Hinds), and onion thrips, *Thrips tabaci* Lindeman are known vectors of tomato spotted wilt virus (TSWV). A total of 736 western flower thrips were collected in 1999 (80.3% of the total) and 2,541 in 2000 (82.0% of the total) indicating that they represent a significant portion of thrips attacking peanut. Tobacco thrips, the species responsible for epidemics in central and south Texas, totaled 159 (17.9%) of those collected in 1999 and 543 (17.5%) of those collected in 2000. The results of this thrips survey show that the western flower thrips would have the highest probability of transmitting TSWV followed by the tobacco thrips and the onion thrips. No visual symptoms of TSWV were observed in any of the fields that were surveyed for thrips.

Microscopic Examination of Peanut Somatic Embryo Abnormalities.

K. CHENGALRAYAN1*, S. HAZRA2 and M. GALLO-MEAGHER1. 1Agronomy Department, and Plant Molecular and Cellular Biology Program, University of Florida, Gainesville, FL 32611; 2Plant Tissue Culture Department, National Chemical Laboratory, Pune 411008, India.

Genetic engineering studies of peanut offer the possibility to develop new varieties. One pre-requisite of such research has been the development of *in vitro* methods to regenerate plants. Peanut has been regenerated via both embryogenesis and organogenesis for more than two decades. The most successful peanut transformation protocols have utilized somatic embryos. However, reports on embryogenesis suggest low frequencies of conversion. This failure to convert is often attributed to morphological abnormalities. Stereo and scanning electron microscopic studies of structural abnormalities were conducted on somatic embryos regenerated from various explants cultured on media containing different auxins. Three explants, mature zygotic embryos, mature zygotic embryo-derived leaflets, and primary somatic embryos were cultured on media containing either 20 mg/l 2,4-dichlorophenoxyacetic acid (2,4-D), 20 mg/l a-naphthaleneacetic acid (NAA), or 10 mg/l picloram. Regardless of the explant type, somatic embryos cultured on medium containing 2,4-D or NAA were fasciated and showed more abnormalities compared to those developed on medium containing picloram.

Evaluation Of New Peanut Seed Lines For Reaction Against Aflatoxin.

R. CUERO1 and H. A. MELOUK2. 1Prairie View A&M University, CARC, P.O. Box 685, Prairie View, Texas 77446; 2USDA-ARS, 127 Noble Research Center, Oklahoma State University, Stillwater, Oklahoma 74078.

Aflatoxin produced by *Aspergillus flavus* is a problem in peanut production despite many existing methods to control the toxin production in seed. Therefore, the present work was aimed to evaluate the resistance of five peanut genotypes lines against aflatoxin production and/or growth of *A. flavus*. Peanut seed of TX 901338-2, Okrun, SW Runner, TX 961738, and TX 961678 were used in this study. Surface disinfected (hot water) seeds, were inoculated with toxigenic *A. flavus* NRRL 3357. Prior to disinfection, seed of TX 961678 and Okrun had the highest initial mycoflora colonization (4-6 %) in addition to *A. flavus* (26%). Each peanut seed line, was divided and placed in replicates of sterile perforated micro-porous (0.2 microns) bags at Water Activity (Aw) of 0.80, 0.85, 0.90, and 0.95. Bags containing inoculated peanut seed, were incubated in an environmental growth chamber set with the corresponding relative humidity (RH=80, 85, 90, 95%) at 25o C for 2 and 4 weeks when analysis for aflatoxin production and fungal growth was performed. Aflatoxin analysis was carried out by ELISA , while fungal growth was estimated by colony forming units (CFU). Okrun and SW Runner showed the highest (about 90%) resistance to both growth of *A. flavus* and to production of aflatoxin (no toxin at 0.80 Aw for Okrun, 10 ppb at 0.85 Aw for SW Runner as compared to other lines, which showed higher toxin production at the same Aw. However, TX 901338-2 and TX 961738 showed the greatest resistance to growth of *A. flavus* (75%) as compared to the other lines. Aflatoxin was equally produced by all five lines at 0.95 Aw. TX 961738 showed the least resistance to both A. flavus growth and aflatoxin production, under all Aw(s). Overall, all lines at the lowest Aw (0.80) only started showing toxin production and fungal growth at the 4 week (>2.00 ppb; >1x102 CFU, respectively). The highest growth of *A. flavus* at the highest Aw did not correspond with highest aflatoxin production. These results warrant continuing the evaluation under field conditions.

Residual Weed Control for Peanut (*Arachis hypogaea*) with Imazapic, Diclosulam, Flumioxazin, and Sulfentrazone in Alabama, Georgia, and Florida: A Multi-State and Year Summary.

T.L. GREY*, D.C. BRIDGES, E.F. EASTIN1, E.P. PROSTKO1, and W.K. VENCILL2, Dep. of Crop and Soil Sci., University of Georgia, Griffin, GA 30223, Tifton1, and Athens2 W.C. JOHNSON, III. USDA-ARS Tifton GA; B.J. BRECKE, G.E. MACDONALD, and J.A. TREDAWAY, Agronomy Dept., University of Florida; J.W. EVEREST and G.R. WEHTJE, Agronomy and Soils Dept., Auburn University; and J.W. WILCUT, Dept. of Crop Science, N.C. State University.

Peanut development and maturity require a long growing season and thus, the residual activity of herbicides applied early season may not provide effective season-long weed control if no additional herbicides are applied. This is illustrated by the fact that paraquat + bentazon tank-mixed EPOT is often used to control weed escapes. Recently new residual herbicides have been researched and registered for peanut including imazapic in 1996, diclosulam in 2000, flumioxazin in 2001 and sulfentrazone is under registration review. To summarize current and future weed control options for peanut producers, extension, and the agriculture chemical industry, a review was conducted for these residual herbicides. Weed control data from research conducted from 1990-2000 by University of Georgia, University of Florida, and Auburn University from over 100 experiments was compiled, reviewed, and summarized. Included were imazapic, diclosulam, flumioxazin, sulfentrazone, and a standard, paraquat + bentazon. Twelve regionally important weeds were selected: sicklepod, Florida beggarweed, purple and yellow nutsedge, morningglory species, smallflower morningglory, bristly starbur, wild poinsettia, common cocklebur, prickly sida, common ragweed, and tropic croton. Data was averaged across test and years to report average weed control for each of the 12 weeds when each herbicide was applied alone at the recommended rates, and in combination with paraquat + bentazon. Weed control ratings reflect mid-season (July) data except for Florida beggarweed, which are from late-season (Sept.). Sicklepod control with imazapic POST alone was 86%; 73% with paraquat + bentazon; and, <69% with other herbicides alone. Florida beggarweed control was 90% with flumioxazin PRE; 79% with diclosulam PPI; 76% with imazapic POST and sulfentrazone PRE; and 70% with paraquat + bentazon. Purple nutsedge control was 93% with imazapic POST; 70% with sulfentrazone PRE; and, <69% with other herbicides applied alone. Yellow nutsedge control was 93% with imazapic POST; 98% with sulfentrazone PRE; 83% with diclosulam PRE; and <69% with flumioxazin PRE and paraquat + bentazon. Control of other species varied by treatment when herbicides were applied alone. When herbicides were applied in combination with paraquat + bentazon weed control generally improved. The following is noteworthy: only imazapic controlled sicklepod; only flumioxazin controlled Florida beggarweed greater than 90%; imazapic controlled purple and yellow nutsedge greater than 90%; sulfentrazone controlled yellow nutsedge greater than 90%; all herbicides gave good-excellent morningglory control; diclosulam provided nearly 90% bristly starbur control at all rates and application timings.

PLANT PATHOLOGY I

Scanning Electron Microscopy of Control of Sclerotinia Blight by Fluazinam on Peanut Limbs.

J.E. BAILEY* and W.E. SCHADEL, Department of Plant Pathology, North Carolina State University, Raleigh,NC 27695-7616.

Sclerotinia blight, caused by *Sclerotinia minor* Jagger, is a serious disease in peanut production in the United States. The fungicide Omega 500F (fluazinam) has demonstrated a high level of activity against *S. minor* in amended agar media and soil plate experiments, and field trials. The purpose of this study was to document the infection process using scanning electron microscopy, and show how Omega 500F interacts with *S. minor* at the infection court to modify disease incidence in a laboratory setting. An isolate of *S. minor* (#58) was obtained from the collection of Dr. Barbara Shew, North Carolina State University, Raleigh, NC and used to inoculate oat grains. The inoculum was stored at 4° C until use. Peanut plants (cultivar 98R) were grown in a greenhouse. At 6 weeks after germination, one lateral limb on each of the three plants was treated with fluazinam by using a camel hair paintbrush to saturate the surface of the experimental limbs with 0.8 ml fluazinam dissolved in 100 ml of water. The fluazinam-treated limbs were allowed to dry for 4 hours before inoculation with a *S. minor* infected oat grain on moist sand. Limbs were positioned over the infested oat and covered with a plastic bag for 3 days at room temperature. Limb tissue was removed at 72 hr, cut into pieces and prepared for SEM. The fluazinam-treated peanut limbs possessed normal healthy tissue of the epidermis and outer cortex and had no evidence of disease 3 days after inoculation with *Sclerotinia minor.*

Infection cushions developed on the epidermis of untreated peanut limbs 2 days after inoculation with *Sclerotinia minor.* The untreated peanut limbs lacked normal, healthy tissue integrity of the epidermis and outer cortex 2 days after inoculation with *Sclerotinia minor* due to the presence of infection hyphae. The untreated peanut limbs were extensively covered with infection hyphae and exhibited extensive tissue disruption 3 days after inoculation with *Sclerotinia minor. S. minor* hyphae attempted to grow on the treated limbs, however, hyphal growth was inhibited. Hyphal growth of *Sclerotinia minor* on the untreated limbs was extensive causing serious tissue disruption on the untreated limbs 3 days after inoculation with *Sclerotinia minor.*

Defining the Relationship Between Plant Stand, Tomato Spotted Wilt, and Pod Yield From Peanut Seed Treatment Trials.

T. B. BRENNEMAN* and R. WALCOTT, Department of Plant Pathology, University of Georgia, Tifton, GA 31793 and Athens, GA 30602.

Five peanut seed treatment trials were conducted from 1997-2000 to compare the industry standard Vitavax PC with various experimental treatments. The cultivar Georgia Green was planted in all trials except one where Georgia Runner was used. Good quality seed were planted at 4.8-6.9 seed/ft from May 2 to May 20 with a Monosem planter in a seedbed prepared by conventional tillage. For all trials, a wide range was found for plant stands (0.9-4.3 plants/ft), tomato spotted wilt (TSWV) incidence (0-84%), and pod yield (1161-5285 lb/A). Vitavax PC provided excellent control of seed and seedling diseases and increased yield an average 1016 lb/A more than the 2485 lb/A obtained from nontreated seed. Plant stands were increased from 2.2 to 3.5 plants/ft with Vitavax PC, and TSWV was reduced from an average 27% to 11% final incidence. Vitavax PC also reduced Aspergillus crown rot by 88%, whereas Maxim and Maxim/Apron had no effect on the disease. A mixed model multiple regression using data from all trials described the relationship between TSWV, plant stand, and yield as follows: Yield = 3728 - 31.5 (TSWV) + 176.4 (Stand - 2.7). Stand is the number of plants/ft of row and was set at 2.7, the mean number for all treatments. Most of the effect of plant stand on yield was attributable to TSWV. These results verify the importance of obtaining a uniform stand of peanuts with at least four plants per foot in areas with significant TSWV damage.

Tank-mix Combinations of Benzimidazole Fungicides and Chlorothalonil for Control of Peanut Leaf Spot.

A. K. CULBREATH*, and T. B. BRENNEMAN, Dept. of Plant Pathology. The University of Georgia, Coastal Plain Expt. Station, Tifton, GA 31793.

Field tests were conducted in Tifton and Plains, GA from to determine the efficacy of tank mix combinations of benomyl or thiophanate-methyl with chlorothalonil for control of leaf spot diseases caused by *Cercospora arachidicola* and *Cercosporidium personatum* on peanut (*Arachis hypogaea*). In all tests, tank-mix combinations of 0.125 lb ai/A of the respective benzimidazole fungicide with 0.56 lb ai of chlorothalonil were compared to full rates (1.12 lb ai/A) of chlorothalonil alone. All treatments were applied on a 14-day calendar schedule with a total of 7 applications per season. Across five tests from 1997-2000, final Florida 1-10 scale leaf spot severity ratings averaged 3.9 for both the thiophanate methyl + chlorothalonil tank mix and the chlorothalonil standard, with yields of 3833 and 3857 lb/A (No significant difference, p = 0.05) for the respective treatments. Across four tests from 1998-2000, final leaf spot severity ratings averaged 3.7 for the benomyl+ chlorothalonil tank-mix and 5.0 (LSD = 1.0, p = 0.05) for the chlorothalonil standard, with average yields of 4011 and 3993 lb/A (No significant difference, p = 0.05) for the respective treatments. Although benzimidazole fungicides were not applied alone in all tests, benomyl (0.25 lb ai/A) was applied alone full season in one test in 2000 in which the tank-mix of benomyl and chlorothalonil was compared to chlorothalonil alone. In that test, under an extremely heavy epidemic of early leaf spot, benomyl alone failed to control the disease late in the season, and final leaf spot ratings for the plots treated with benomyl alone were 9.4 compared to 10.0 for the non-treated control. These fungicides are very active on foliar pathogens of peanut and are also systemic. However, they have significant problems with fungicide resistance in the leaf spot pathogen populations. Tank-mix combinations of chlorothalonil with thiophanate methyl or benomyl show promise for preserving the utility of their utility.

Factors Affecting Incidence and Management of Pepper Spot of Peanut.

J. P. DAMICONE* AND K. E. JACKSON. Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078-3033.

Pepper spot, a foliar disease of peanut caused by the fungus *Leptosphaerulina crassiasca*, has increased in prevalence in Oklahoma. In field trials evaluating the responses of peanut cultivars to fungicide programs for control of Sclerotinia blight, significant differences (P=0.05) in incidence of pepper spot among fungicide programs and cultivars were observed. Incidence of pepper spot was highest in plots treated with iprodione (32%) and second highest for dichloran (12%) compared to fluazinam (1-3%) and the untreated control (1%). Disease incidence for the cultivars ViruGard (17%), Tamspan 90 (13%), Tamrun 98 (13%), and Georgia Green (11%) were greater than for Okrun (1%). Field trials to evaluate the performance of fungicide programs for control of pepper spot were conducted for two seasons on Tamspan 90 and ViruGard. Plots of ViruGard received one or two sprays of iprodione at 1.12 lb/A to enhance pepper spot. Fungicide programs consisted of six applications on a 14-day schedule beginning ca. 45 days after planting. Treatments consisted of chlorothalonil, mancozeb, triazoles, strobilurins, thiophanate-methyl, and cupric hydroxide applied alone or in combination using recommended tank mixtures and sequences. Disease incidence in untreated plots ranged from 50 to 60% for Tamspan 90 and from 62 to 76% for ViruGard. Chlorothalonil and combinations of chlorothalonil plus a strobilurin or thipohanate-methyl were the only treatments that consistently reduced (P=0.05) disease incidence on Tamspan 90. The percent reduction in disease incidence on Tamspan 90 for chlorothalonil ranged from 64 to 77%. None of the treatments reduced disease incidence on ViruGard. Treatment effects on yield were not significant for either cultivar. While none of the treatments typically used for foliar disease control were highly effective against pepper spot, yield loss from the disease was not demonstrated. In one of the trials, yields exceeded 3,200 lb/A for Tamspan 90 and 3,500 lb/A for ViruGard for all treatments.

A Simple Alternative to Solid State Fermentation for Producing Aflatoxin Biocontrol Formulations.

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Biological control of aflatoxin contamination of peanuts can be achieved by applying nontoxigenic strains of *Aspergillus flavus* and *A. parasiticus* to soil around peanut plants. In the majority of studies that have demonstrated the efficacy of this process, nontoxigenic strains have been applied in a formulation produced by solid state fermentation of those strains on a sterile small grain, such as rice. Production of commercial-scale quantities of a biocontrol formulation by solid state fermentation is expensive and time-consuming because the substrate must be sterilized, inoculated, fermented 1-2 days, and dried at relatively low temperature. An alternative method for producing biocontrol formulations has been developed in which hulled barley or rice is spray-coated with conidia of the nontoxigenic strains that are suspended in oil. The coating technique eliminates the need for sterilization and drying of the substrate, and it can be readily scaled up to produce a biocontrol formulation at a rate of several tons per hour. Field experiments were conducted for three years to compare efficacies of the coated formulations of hulled barley and rice for reducing preharvest aflatoxin contamination of peanuts with that of solid state-fermented rice. Conditions of late-season drought, which are conducive for preharvest aflatoxin contamination, occurred in one of the three years, and all three formulations produced significant reductions (77-87%) in aflatoxin contamination compared with untreated controls. Reductions in aflatoxin contamination were not significantly different among the formulations. Results suggest that the coating method is preferable to solid state fermentation for commercial production of aflatoxin biocontrol formulations.

Oxalic Acid Production by Nine Isolates of *Sclerotinia minor*.

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Sclerotinia spp. produce oxalic acid in culture and in infected plant tissues. The acid damages plant tissues, causes nutrient release from plant cells, and increases activity of cell wall degrading enzymes. Nine isolates of *Sclerotinia minor* were chosen from a larger collection based on cultural characteristics and their ability to cause lesions on peanut leaflets. The relationships among mycelial growth rates, quantity of oxalic acid produced, and aggressiveness on susceptible peanut were investigated for these isolates. Isolates were grown on 39 g Pda/L water, 30 g Pda, 30 g Pda with 50 mg bromophenol blue (a pH indicator), and 30 g Pda with 50 mg bromophenol blue and 20 mg 75% PCNB WP. Agar concentration and dye did not affect growth rates. Changes in pH were easily visualized by a color change (blue to yellow) in the agar. Generally, aggressive isolates grew more rapidly and produced more acid, as indicated by colony diameter and the color of the medium, than less aggressive isolates. Rapid growth and acid production occurred between two and three da after transfer. Quantity of oxalic acid produced by the nine isolates was measured with a commercially available diagnostic kit used to detect oxalate in human urine. Isolates were grown in 24 g potato dextrose broth/L water for two or three da. An oxalic oxidase enzyme catalyzed conversion of oxalate to carbon dioxide and hydrogen perioxide, forming an inadamine dye. The intensity of the broth color was measured by a spectrophotometer at 590 nm and concentrations were calculated from a standard curve. The amount of acid produced varied with time and among isolates. Oxalic acid production for day two ranged from .03 to .15 mmol/L/mg dry mycelium and from .06 to .21 mmol/L/mg on day three. Isolate aggressiveness as measured by lesion size on leaves was correlated with mycelial dry weight, but not acid production per dry weight of mycelium.

Influence of Fungicides and Cultivars on Pod Rot of Peanut in Oklahoma.

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Rhizoctonia solani, Pythium myriotylum, Sclerotium rolfsii, and other factors cause pod rot, a disease complex of peanut. Pod rot was evaluated in fungicide and cultivar trials at several locations from 1995 to 2000. Mefenoxam applied at planting and again at early pegging, mefenoxam applied at early pegging, metalaxyl plus PCNB applied at planting and again at early pegging, and an untreated control were compared in four trials using the runner cultivar, AT-120. The fungicide treatments significantly reduced pod rot incidence by 48%, however yields were statistically similar between treatments. In trials targeted to control Pythium pod rot, an azoxystrobin program (0.3 lb. ai./acre applied at 60 and 90 days) applied to the cultivar AT-120 did not increase yield and pod rot was not significantly reduced. Pod rot was also evaluated in 14 trials targeted to control stem rot (*S. rolfsii*) and limb rot(*R. solani*). The azoxystrobin program and a four-spray block program with tebuconazole at 0.2 lb. ai. per acre consistently reduced pod rot incidence by 59% and 41%, respectively. However, increased yields for azoxystrobin (909 lbs. per acre) and for tebuconazole (783 lbs. per acre) were correlated to southern stem rot and not pod rot. Pod rot was evaluated in eight trials consisting of seven runner cultivars and one Spanish cultivar. Recommended grower fungicide programs based upon disease history were implemented in these trials. The runner cultivar, AT-120, had the highest average pod rot incidence in seven trials (18%) and the Spanish cultivar, Tamspan 90, had the lowest average pod rot incidence in seven trials (2%). Among runner cultivars, Tamrun 96 had the lowest average pod rot incidence in five studies (5%), while Okrun and Florunner had an average of 10% and 9%, respectively. Use of fungicides to control Pythium pod rot did not provide an economic benefit. However, azoxystrobin and tebuconazole were effective against R. Solani and S. rolfsii. Moderate resistance to pod rot was consistent for Tamrun 96 and Tamspan 90.

Evaluation of BAS 500 on Peanut Foliar and Soilborne Disease in Texas.

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BAS 500 fungicide (BASF Corp.) was tested alone and as part of a spray program in 1999 and 2000 peanut growing seasons. BAS 500 is a strobilurin derivative fungicide and should not be used exclusively due to possible disease resistance. The product was tested alone solely to evaluate its effectiveness on a particular disease. All studies were conducted at the experiment station in Lavaca County, Texas. BAS 500 rates were 6.12, 9.19 and 12.25 fl oz of formulated product/A with no adjuvant. Fungicide treatments in the studies were initiated from 31 to 41 days after planting and continued on a 14-day schedule. Plots in each of the studies were two rows with two row buffers on each side, each 20 ft. long. Fungicide standards including chlorothalonil, tebuconazole, and azoxystrobin were used as comparisons in respective tests. Leaf spot assessments were made using the Florida scale (1 = no disease; 10 = plants dead, defoliated from leaf spot). Rust assessments in 1999 were made using the I.C.R.I.S.A.T. scale where (1 = no disease; 9 = plant severely affected, 50-100% leaves withering). Soilborne disease was assessed by counting disease loci ($\leq$ 1 ft) per plot following digging after peanuts were inverted. In 1999, five BAS 500 sprays at each of the rates stated were blocked between Bravo WS (1.5 pt) as part of a spray program. In 2000, four BAS 500 sprays (6.12 and 9.19 fl oz) were blocked between one initial and two final Bravo WS sprays. BAS 500 (6.12 fl oz) was also applied in sprays 2,4 and 6 with Folicur 3.6F(7.2 fl oz) applied at sprays 3 and 5 with Bravo WS (1.5 pt) applied at sprays 1 and 7. BAS 500 (6.12 fl oz; sprays 2,4,6) was alternated with Bravo WS (sprays 1,3,5,7). In the 1999 spray program test study, under heavy predominantly early leaf spot (*Cercospora arachidicola*) pressure (8.3 rating-untreated plots) and moderately heavy rust (*Puccinia arachidis*) pressure (6.3 rating), BAS 500 resulted in ratings of 2.0 and 1.0 for each of the rates tested for leaf spot and rust, respectively. Moderate soilborne disease with 60% observed *S. rolfsii* and 40% *Rhizoctonia* resulted in BAS 500 control comparable to treatments in which Folicur and Abound were used. In 1999 studies, BAS 500 used alone provided excellent control of leaf spot, rust and soilborne disease under sustained pressure. In the 2000 spray program study, BAS 500 provided soilborne disease control comparable to fungicide standards. Foliar disease was absent due to unfavorable weather. BAS 500, when used alone in a 2000 study, provided superior control of predominantly early leaf spot. Under moderate soilborne pressure, BAS 500 was equal to standards. Yields were comparable between BAS 500 and standards in each year's testing.

BREEDING AND GENETICS

Application of the Simulation Model CROPGRO-Peanut in a Peanut Breeding Program.

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During the last 25 years, dynamic crop simulation models have been developed as a multipurpose tool for application in agricultural research. These models can be used to evaluate agricultural production risk as a function of climatic variability, to assess regional yield potential across a wide range of environmental conditions, and to determine suitable planting dates and other management factors for increasing yield. In addition, the use of models for ideotype and plant-type design and for assisting multi-location testing in plant breeding programs has also been explored. Multi-location evaluation is a major activity in breeding programs of all crops. Newly developed genotypes are evaluated over several seasons and across several locations to determine their adaptation and stability in different environments before releasing them into general cultivation by farmers. This process is laborious, time consuming and expensive. Furthermore, it is not possible to evaluate the promisimg lines for the entire range of environments that correspond to local farmers' conditions in different production areas. The use of the simulation model CROPGRO-Peanut may decrease the time and consume less resources in multi-location evaluation for the release of new cultivars to growers, thereby increasing breeding efficiency. To be able to identify the superior genotypes among promising peanut lines for different environments, we need to evaluate the possibility of the use of the peanut model as a breeding tool. A project was, therefore, initiated to evaluate the capability of the CROPGRO-Peanut model for identifying superior peanut lines. The objective of this paper is to present a case study about experimental data collection, model calibration, model evaluation, and application of the CROPGRO-Peanut model in a peanut breeding program in Northeast Thailand.

Generation of a Molecular Marker Map of the Cultivated Peanut, *Arachis hypogaea* L.

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To introduce variability from diploid wild species into tetraploid cultivated *Arachis hypogaea*, a synthetic amphidiploid ([*A. batizocoi* K9484 x (*A. cardenasii* GKP10017 x *A. diogoi* GKP10602)]4x) was used as donor parent to generate a backcross population of 78 progeny. Three hundred seventy RFLP loci were mapped onto 23 linkage groups, spanning 2210 cM. Chromatin derived from the two A-genome diploid ancestors (*A. cardenasii* and *A. diogoi*) comprised mosaic chromosomes, reflecting crossing over in the diploid A-genome interspecific F_1 hybrid. Little recombination was observed between A-genome-derived chromosomes and *A. batizocoi*, consistent with *A. batizocoi* having a different subgenomic affinity. Segregation distortion was observed for 25% of the markers, distributed over 20 linkage groups. Unexpectedly, 68% of the markers deviating from expected segregation showed an excess of the synthetic parent allele. This map has been used for identification of markers for root-knot nematode resistance, and current efforts are underway to identify markers for resistance to additional useful genes.

Greenhouse Testing of Transgenic Peanut for Resistance to *Sclerotinia minor* Jagger.

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Fungal diseases of peanut, such as Sclerotinia blight caused by *Sclerotinia minor*, are responsible for increased production costs and yield losses of up to 50% for peanut producers in the United States. Few cultivars with disease resistance, such as SW Runner, have been developed through traditional breeding practices. There is an urgent need for developing peanut cultivars that are resistant to the broad spectrum of fungal pathogens that pose a recurring threat to peanut health. Transgenic peanut plant lines containing anti-fungal genes have been produced from somatic embryos of the susceptible cultivar Okrun, and have been tested under greenhouse conditions for resistance to *S. minor* by inoculation with a mycelial plug. Disease symptoms, such as lesion length, vascular collapse, and plant vigor, were recorded for transgenic peanut, non-transgenic Okrun, and SW Runner plants. In general, transgenic peanut lines developed less severe symptoms than non-transgenic Okrun and slightly more severe symptoms than SW Runner. However, several transgenic lines did display increased plant vigor and ability to recover from disease when compared to SW Runner plants.

RFLP Loci Flanking a Locus for Resistance to *Meloidogyne arenaria* in Peanut.

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Three RFLP loci linked to a locus for resistance to *Meloidogyne arenaria* in peanut (*Arachis hypogaea* L.), were identified previously, but all markers mapped to one side of the resistance locus. In subsequent assays, a RFLP locus flanking the nematode resistance locus was identified. 150 BC_6F_2 individuals segregating for resistance were screened for phenotype and genotype using a resistance assay and Southern analysis. RFLP loci that had been previously mapped to linkage group 1 of a genetic map of peanut were hybridized to membranes containing digested DNA. Analysis of segregation of resistance and 5 RFLP loci using MAPMAKER/EXP 3.0 indicated S1018E and R2430E flanked the resistance locus with linkage distances of 1.8 cM and 1.2 cM, respectively. The identification of flanking RFLP loci linked to nematode resistance will provide for a more robust marker-assisted selection of nematode resistance in peanut.

Discovery of Naturally Occurring Hypoallergenic Peanut Germplasm.

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Peanut is a nutritious inexpensive, and popular food in the US and worldwide. Yet peanut has been identified as one of the most potent allergenic foods. The prevalence of peanut allergy is increasing possibly due to cross contamination of product during manufacturing of processed foods. No information is presently available on the allergen content of commercial peanut varieties. Such information would be critical in the selection of peanut varieties to be used in the food and confectionery industry for safer products. Thus, this study was conducted to identify allergen-free and/or hypoallergenic peanuts varieties from 34 commercially grown peanut germplam. Peanut seeds were defatted, and proteins extracted. ELISA protocol was utilized to detect specific antibodies in a pool of human sera from patients with documented history of peanut allergy. A pool of sera from individuals with no allergies to peanut was included as control. Allergen content was expressed as ELISA value. Each text was performed in triplicates for four replications. Extensive variation was found in the allergen content of the 34 commercial peanut germplasm tested. None of the germplasm was free of allergen. However, the Valencia plant type PI 261942 was found hypoallergenic with 0.02 ELISA value. This value was significantly lower ($p<0.05$) than that of PI 119880, another Valencia type with the highest allergen content (0.55). A positive relation was found between ELISA and protein content, and a negative one between protein and fat content. Peanut plant type was not an important factor for allergen content. However there was a significant regional effect in the allergen content of the various countries of origin.

Phorate-induced Peanut Genes that may Condition Acquired Resistance to Tomato Spotted Wilt.

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Peanut, *Arachis hypogeae* L., production in the Southeastern U.S. is severely threatened by tomato spotted wilt caused by the thrips-vectored tomato spotted wilt virus (TSWV). Control of TSWV in the field remains problematic. Cultural practices such as planting date, along with plant and row spacings can lead to reductions in TSWV incidence. However, cultivar selection appears to be a critical factor in reducing disease incidence. Although traditional breeding has produced cultivars with increased tomato spotted wilt resistance, none are immune to the disease, and yield losses can be high. Generally, the use of insecticides to control the thrips vectors has been ineffective for disease suppression. However, the systemic insecticide phorate appears to suppress spotted wilt and this disease reduction is unrelated to thrips control. Phorate is phytotoxic, and causes marginal necrotic lesions on peanut leaves that may induce host defense genes. As a first step toward understanding components of a phorate-induced response that may condition acquired resistance to tomato spotted wilt, we have used differential display of mRNA to identify gene products that are regulated by phorate treatment. Using 129 primer combinations, greater than 40 cDNAs were differentially displayed in a reproducible manner, cloned and analyzed. Putative identification of these cDNAs by comparison to known sequence data has allowed us to infer some of the biochemical pathways and molecular processes that are altered in peanut's response to phorate. Several of these cDNAs corresponding to transcripts with increased abundance in phorate-treated peanuts were identified as encoding pathogenesis-related proteins. These proteins may be components of a phorate-induced defense response associated with acquired resistance to tomato spotted wilt.

Evaluations of Peanuts with Multiple Pest Resistance.

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The University of Florida peanut (*A. hypogaea*) breeding program has devoted significant effort toward developing pest resistant germplasm and cultivars. Multiple disease resistant peanut cultivars released from the Florida program include Southern Runner (SR), Florida MDR98, and C-99R and all are late maturing. Presently three major disease problems receiving primary effort are late leafspot (*Cercosporidium personatum*) (CP), stem rot (WM), (*Sclerotium rolfsii*), and tomato spotted wilt virus (TSW) (*Tospovirus*). Field, laboratory and greenhouse studies confirm that advanced breeding lines with good resistance to one or more of the indicated diseases are in advanced testing. Multiple disease resistance is most evident in late maturing material, however good disease resistance has been established in some medium and early maturity lines. The late maturing lines UF97318, UF98326, UF98324, and UF99326 have shown excellent resistance to CP, WM, and TSW in Florida and Georgia field tests, exceeding SR for yield and disease resistance (1998-2000). These lines produced an average pod yield advantage of 1350 kg ha-1 (48.5%) over SR in unsprayed leafspot tests in Florida. In inoculated WM field studies these lines exceeded SR by 1142 kg ha-1 (35.7%). In Florida and Georgia TSW tests, UF97318 and UF98326 produced pod yields exceeding Georgia Green (GG) by 1546 kg ha-1 (47.1%). UF 97102, UF99113, and UF 99114 are medium maturity lines with good resistance to WM and TSW. In inoculated Florida WM tests, these three lines exceeded GG by 1784 kg ha-1 (77.6%) for pod yield (1998-2000). In TSWV studies in Georgia and Florida, UF97102 and UF99113 produced pod yields of 1381 kg ha-1 (41.6%) more than GG. Also, UF97102, UF98326, UF99113, and UF99114 have shown field and greenhouse resistance to CBR. Most of these lines appear to be acceptable in agronomic and other traits. Seed increases are in progress with advanced testing and evaluation in 2001.

Selection for Peanuts Resistant to Early Leafspot (*Cercospora arachidicola* Hori).

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Early leafspot (ELS, *Cercospora arachidicola* Hori) is the most ubiquitous pathogen of peanut (*Arachis hypogaea* L.) in the Virginia-Carolina production area. Although chemical control is usually excellent, the cost of the several fungicide applications required in a normal year is substantial, and there are times when growers are unable to make timely applications, as in the aftermath of Hurricane Floyd in 1999. Host plant resistance to ELS is an important component of disease management programs. Even partial resistance might permit longer intervals between chemical applications, thereby saving the grower the cost of one or more applications per season. Resistance to ELS has been an objective of the NCSU breeding program since its inception in the 1940s. Cultivar NC 5, released in 1964 before the advent of highly efficacious chemical controls, had some resistance to ELS as did subsequent releases NC 6, NC 12C, and Perry. All of these cultivars respond to chemical control of ELS. Several sources of resistance to ELS have been identified including PI 109839, PI 121067 and its descendant GP-NC 343, PI 269685, and PI 270806. Most partially resistant lines in the NCSU breeding program trace their resistance to PI 121067. Each year since 1991, putatively resistant lines were yield-tested with current cultivars and resistant checks in two adjacent trials at the NCDA Peanut Belt Research Station at Lewiston, NC. One trial received chemical ELS control while the other received none. Both tests were rated for defoliation (1=none to 9=complete) and harvested for yield and grade. All lines tested at an advanced level for other characteristics were tested for defoliation and yield in plots grown without ELS control. Means from all unsprayed tests were subjected to unbalanced analysis of variance and means for genotypes were adjusted to a common environmental level. The average defoliation score and pod yield for resistant selections were 5.0 and 3517 kg ha-1 compared to 7.2 and 2514 kg ha-1 for cultivars, 6.9 and 2713 for NCSU lines selected for purposes other than ELS resistance, and 4.7 and 2943 kg ha-1 for resistant checks. The most resistant and high-yielding lines derived from crosses between NCSU breeding lines tracing to PI 121067 and University of Florida lines tracing to PI 203396, the source of disease resistance in runner cultivars Southern Runner, Georgia Browne and Georgia Green. The correlation between defoliation score and yield was -0.81 in lines with no or minimal resistance, -0.66 in resistant breeding lines, and 0.01 in resistant checks.

PRODUCTION TECHNOLOGY I

Yield, Grade and Tomato Spotted Wilt Incidence of Georgia Green and AT-201 Peanut When Planted in Twin Versus Single Row Pattern.

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A new runner peanut cultivar, AT201, with Tomato Spotted Wilt tolerance (TSWV) and also a high oleic cultivar was compared to the standard Georgia Green at four locations in Georgia during 2000. The cultivars were planted in a 32-40 row pattern (average 36 inch) compared to nine inch twin rows. The same seed source, planters, and peanut invertor were used at all locations. The plots were in a randomized complete block design with a minimum of four replications. All locations were conventionally tilled and irrigated. There were no interactions due to location. When row patterns were averaged across cultivars there was a significant yield increase (4870 vs 4350 lb/A), plant stand (5 vs 4/ft of row) and less TSWV (19.8 vs 6.9%) for the twin row pattern $p \leq .01$. Peanut grades (%TSMK) were not different between row patterns.

Comparison of Ten Peanut-Based Cropping Systems in North Carolina.

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Balancing the agronomic and pest management benefits of crop rotation with the economic value of all crops within the cropping system is important. The economic benefit of all crops within a cropping system can be influenced by Federal legislation and associated marketing systems. Ten rotation systems consisting of peanut (PN), cotton (CT), corn (CR), and soybean (SB) were compared at two locations in North Carolina from 1997 through 2000. Peanut was planted in all rotation systems in 2000. Rotation systems (1997-2000) consisted of PN-PN-PN-PN, CT-PN-CT-PN, CR-PN-CR-PN, PN-CT-CT-PN, PN-CR-CR-PN, PN-SB-CR-PN, PN-SB-CT-PN, CR-CT-CR-PN, CR-SB-CT-PN, and PN-CT-CR-PN. Cylindrocladium black rot (caused by *Cylindrocladium crotalarie*)(CBR) developed more rapidly when SB was included in the rotation system or when PN was planted continuously rather than the other cropping systems at one of two locations. At a second location, CBR increased more in continuos PN compared with the other cropping systems. PN yield in 2000 was generally lower in these systems compared with systems containing more CR or CT without SB. CT was a more effective rotation crop than CR at one location with respect to PN yield (2000). Value of the CBR-resistant cultivars NC 10C and NC 12C compared with the susceptible cultivar NC 7 was documented in these studies. The combined economic value of cropping systems over the four-year period varied due to crop yield and market value of all crops in the rotation and environmental conditions. Scenarios including the Federal PN program versus marketing PN at the approximate world price revealed the importance PN in these cropping systems due to low prices for CR, CT, and SB over the four-year period.

Peanut Response to Prohexadione Calcium and Early Harvest.

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Prohexadione calcium has been evaluated in peanut for a number of years as the formulated product Baseline. Although this formulation of prohexadione calcium will not be marketed, the formulation Apogee did receive Federal registration for use in 2001. Research was conducted from 1997 through 2000 to determine benefits of prohexadione calcium under a wide range of conditions. When pooled over 49 trials, prohexadione calcium increased yield and gross economic value by approximately 330 kg/ha (293 lb/acre) and $180/ha ($76/acre) ($0.58/kg farmer stock), respectively. Considerable variation in response occurred, with some yield increases as high as 1110 kg/ha (1000 lb/acre) and gross economic value increases as high as $795/ha ($322/acre). Prohexadione calcium did not affect pod yield or gross value at some sites. The most responsive cultivar was NC 12C, especially when grown under irrigation. In other studies, benefits of the plant growth regulator Early Harvest (combination of kinetin, gibberellic acid, and indole butyric acid) were evaluated in peanut. The Early Harvest program consisted of in-furrow sprays followed by multiple postemergence applications throughout the season. When pooled over thirteen trials from 1997 through 2000, pod yield and gross economic value were not improved by Early Harvest when compared with non-treated peanut.

Yield and Grade Response of Peanut to Early Harvest® PGR.

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Early Harvest® PGR is a growth stimulant labeled for use on peanut and marketed by Griffin LLC. It contains 26.8, 13.4, and 8.9 mg of cytokinins, indole butyric acid, and giberrellic acid, respectively, per fluid ounce of formulated material. Tests were conducted in crop years 1998-2000 comparing peanuts treated with Early Harvest® PGR to an untreated check. Plots were six rows by 30 feet long and field plot design was a randomized complete block with four replications. The Early Harvest® PGR treatment in all three years consisted of applications of 3.2 ounces per acre at the 3-5 leaf stage, initial pegging, and two to three weeks after the second application. The 1998 test was planted at the Southwest Georgia Branch Experiment Station near Plains. Treatments were applied to the cultivar 'Georgia Green'. The 1999 and 2000 tests were conducted at the Coastal Plain Experiment Station at Tifton. In 1999, treatments were applied to 'Georgia Green', 'ViruGard', 'Florida MDR 98', and 'C 99R' cultivars. In 2000, treatments were applied to 'Georgia Green', 'C 99R', 'AgraTech 201', and 'AgraTech 1-1'. Data collected included yield and grade factors. There was no significant difference ($p \leq 0.05$) in yield or percent total sound mature kernels in any of the three years. There was no interaction between treatment and cultivars in 1999 and 2000. When averaged over the three years, the Early Harvest® PGR had a non-significant yield increase of 360 pounds per acre..

Peanut Genotype x Seeding Rate Interaction Study.

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For two consecutive years (1999-2000), six runner market type peanut genotypes were compared at three different seeding rates (3, 5, and 7 sd/ft) in split-plot designed field tests using a conventional single row pattern at the University of Georgia Coastal Plain Experiment Station. Analyses of Variance results from the 2-yr study showed highly significant differences (P#0.01) for genotypes (GE), seeding rates (SR) and GE X SR interaction. The highly significant GE X SR interaction indicates that certain individual peanut genotypes perform differently at these three seeding rates. It also demonstrates the need to continue conducting GE X SR interaction studies with newly developed genotypes or breeding lines to determine the optimum seeding rate for the highest yield, grade, and dollar value return per acre. For example, the high-yielding runner-type peanut cultivar 'Georgia Green' performed subpar at the below normal seeding rate of 3 sd/ft; whereas, at the recommended higher seeding rates Georgia Green produced the highest yield and dollar value among all of the other runner-type cultivars (C-99R, ViruGard, Florida MDR 98, and Southern Runner). Tomato spotted wilt virus (TSWV) incidence was also significantly lower for the TSWV-resistant Georgia Green cultivar at each of the higher seeding rates both 5 and 7 sd/ft of row.

Evaluation of Fungicides for Control of Multiple Diseases and the Effect on Yield in Peanut.

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Fungicide programs were evaluated in 1999 and 2000 for control of southern stem rot (*Sclerotium rolfsii*), limb rot (*Rhizoctonia solani*), and early leaf spot (*Cercospora arachidicola*) of peanut (*Arachis hypogaea* L.) in commercial fields with histories of these diseases. Plots were established using a randomized complete block design with three replications per treatment. 'Georgia Green' was planted at 5-6 seed/ft on 11 May 1999 and 26 May 2000. Treatments included combinations of chlorothalonil (Bravo Ultrex, 1.4 lb/A) with either tebuconazole (Folicur 3.6F, 7.2 fl oz/A) or azoxystrobin (Abound 2.08F, 18.5 fl oz/A) and chlorothalonil (Bravo Ultrex, .93 lb/A) + copper hydroxide (Kocide 4.5 LF, 1 pt/A) with either tebuconazole or azoxystrobin. Fungicides were applied (15 gal/A) seven times during the season on a 14-day interval. Tebuconazole was applied on sprays 3-6, azoxystrobin on sprays 3 and 5, and clorothalonil, with or without copper hydroxide, was applied on the remaining dates. Severity of soilborne disease was rated after the peanuts were dug on 17 Sep 1999 and 17 Oct 2000. Foliar disease was rated on 17 Sep 2000 (Florida leaf spot scale). Foliar disease was sparse in 2000 and leaf spot ratings were not significantly different among treatments. Severity of limb rot and stem rot was not significantly different among treatments in either 1999 or 2000. In 1999, yield from plots treated with chorothalonil, copper hydroxide, and tebuconazole was significantly greater than from plots treated with azoxystrobin. Final yields were not significantly different among treatments in 2000; however peanuts from plots treated with chlorothalonil/ copper hydroxide/azoxystrobin had significantly higher grades than from plots treated with either chlorothalonil/copper hydroxide/tebuconazole or chlorothalonil/azoxystrobin. During this study, each fungicide program generally performed well in controlling soil-borne and foliar diseases; yields for all treatments were 3918 lb/A or greater. Though not statistically significant, plots treated with copper hydroxide tended to yield better in both seasons than those plots treated with the same soilborne fungicide, but not copper hydroxide.

Irrigator Pro 1.0 vs. Irrigator Pro 2.0.

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Irrigator Pro is an expert system marketed by the Peanut Foundation for scheduling irrigation and certain pest control practices for peanut production. Version 1.0 was developed using new concepts and different strategies for each of the 2 yield potentials, 3 variety (maturity) groups, 3 soil groups, 2-3 irrigation capacities, 8 time periods, 2 planting periods, 2 root depths, 2 canopy coverages, 2 probabilities of rain, 3 maximum/minimum soil temperature ranges, and 3 accumulated water ranges. Each strategy was rule based and these rules were developed from data and experience obtained from research experiments. Version 2.0 used the same new concepts and strategies contained in Version 1.0, but the strategies were based upon mathematical relationships that estimated potential yield loss/day/acre (Y_{PL}) by $Y_{PL} = f(V_g, Y_p, S_g, W_A, C_g, T_s, P_p, W_3, W_5, W_7, W_{10}, W_{14}, W_{21}, P_r)$ where V_g = variety group, Y_p = yield potential of field, S_g = soil group, W_A= accumulated water since planting, P_p = plant time period, C_g = canopy coverage group, T_s = soil temperature range, W_3, W_5, W_7, W_{10}, W_{14} and W_{21} is the amount of effective water during the last 3,5,7,10,14,and 21 days, respectively, and P_r = probability of rain range. The loss/day/acre was calculated from equations developed from 20 years of peanut irrigation research. The amount of irrigation, forecast for next irrigation, date to rerun program, and probability decision is correct are determined from equations that relate the magnitude of the potential losses to these variables. Three year validation results are presented to compare performance of Irrigator Pro 2.0 to 1.0. There was no significant difference in yields, grades, and shelling outturns from plots managed by these 2 expert systems. However, Irrigator Pro 2.0 provided more risk management information that should promote a higher percent of compliance and more proactive management than obtained with Irrigator Pro 1.0.

Comparing Peanut Grown in Different Row Patterns.

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Row spacing, planting pattern, and seeding rate can affect peanut yield and quality. However, response can vary depending upon pest pressure, cultivar selection, and weather conditions. Research was conducted in 1999 (cultivar NC 10C) and 2000 (cultivar VA 98R) to determine the effect of peanut planted in rows spaced approximately 90 cm apart (seeding rate of 120 kg/ha in single rows and 145 kg/ha in twin rows), 45 cm apart (seeding rates of 120 kg/ha and 240 kg/ha), and 23 cm apart (seeding rates 120, 240, and 480 kg/ha). In additional studies, the peanut cultivars NC V-11, NC 12C, VA 98R, and Perry were seeded in single rows (120 kg/ha) and twin rows (145 kg/ha). Two digging dates were included in the second set of studies. In a third study, the cultivars NC 12C or NC V-11 were seeded in single rows (120 kg/ha) and twin rows (145 kg/ha and 190 kg/ha). There was no benefit of seeding peanut in rows less that 90 cm apart or at populations exceeding 145 kg/ha. However, these experiments were conducted under relatively pest-free conditions and with sufficient soil moisture for sustained plant growth. Pod yield was increased in several experiments when peanut was seeded in twin rows rather than single rows, although there was no benefit of seeding peanut in twin rows at rates exceeding 145 kg/ha.

PLANT PATHOLOGY II

Reaction of Hairy Peanut Genotypes to Southern Blight Under Field Conditions.

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Six hairy peanut (*Arachis hypogaea var. hirsuta L.*) genotypes (PI 576633, 576634, 576635, 576636, 576637, and 576638) and two runner cultivars (Tamrun 96 and SW Runner) were replicated four times in a randomized complete block design at the Texas Agricultural Experiment Station at Yoakum in 1999 and 2000. Each plot consisted of one 5-m row, with rows spaced 0.91 m apart. Sclerotial density of *Sclerotium rolfsii* was 2-3 viable sclerotia/225 g of soil (Tremona loamy fine sand) for both years. Six-week-old hairy peanut seedlings were transplanted 30 cm apart. Tamrun 96 and SW Runner were seeded at 2 seeds/30 cm. Southern blight disease loci were counted following inversion of plots. A significant (P= 0.10) rank correlation coefficient of 0.63 was obtained for the number of southern blight loci/plot between 1999 and 2000 for all genotypes. There was no treatment by year interaction, and therefore, data were combined for analysis of variance. The average number of southern blight loci/plot over the two years for Tamrun 96, SW Runner, PI 576633, 576634, 576635, 576636, 576637, and 576638 was 2.2, 0.5, 2.0, 2.6, 3.0, 1.9, 1.8, and 1.1, respectively with a $LSD_{0.05}$ of 1.4. The data confirm that hairy peanut genotypes possess useful resistance to southern blight.

Susceptibility of Large-seeded Virginia-type Peanuts to Web Blotch in Virginia.

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Eight publicly released peanut cultivars (Perry, VA-C 92R, NC 12C, Gregory, NC-V 11, VA 98R, VA 93B and NC 7), the privately released peanut cultivar AgraTech V-C 2, and the advanced breeding line VT 940419P were grown in yield tests in 2000. Tests were planted the first week of May in soil planted to either cotton or corn in 1999. By mid-summer, the Southampton County and City of Suffolk tests had levels of web blotch (*Phoma arachidicola)* severe enough to rate. This early appearance of web blotch at both locations was apparently the result of abnormal climatic conditions. Rainfall was recorded on 23 of 49 days during the period from 15 Jul to 4 Sep. This resulted in above-normal rainfall throughout this period of the growing season. Temperatures also averaged 2 to 3 F below normal for this same time period. Therefore, frequent periods of rainy weather and below normal temperatures coupled with low evaporation rate resulted in ideal conditions for the development of web blotch. Two rating systems were used to evaluate disease incidence. Percentage of web blotch on peanut leaves and also percentage of defoliation due to web blotch were visually scored by one rater. Another rater used a point scale to judge the severity of the disease. The results from both rating systems were similar. The data indicated that the cultivars Perry and AgraTech V-C 2 had the least amount of web blotch and the cultivars NC-V 11 and VA 98R were the most severely damaged. All other cultivars and the breeding line were intermediate in susceptibility to the disease. While web blotch of peanut only occurs sporadically in Virginia, heavy defoliation and the threat of significant yield losses as in 2000 underscore the importance of variety selection in peanut production.

Susceptibility of Virginia- and Runner-type Cultivars of Peanut to Sclerotinia Blight and their Response to Applications of Omega 500 Fungicide.

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Six virginia-type and eleven runner-type cultivars of peanut were evaluated for susceptibility to Sclerotinia blight in 1997, and nine cultivars of each type were evaluated in 1998 and 1999. The soil type at each location was Kenansville loamy sand. Fields were planted to cotton and peanut in alternating years and had a history of yield losses of peanut to Sclerotinia blight. Standard practices for peanut production were followed in each trial and included application of metam sodium for control of Cylindrocladium black rot and sprays of Bravo Weather Stik according to the Virginia leaf spot advisory. Trials in 1997 and 1998 were irrigated twice to minimize moisture stress as a result of below-normal rainfall. No irrigation was applied in 1999, because rainfall was above normal. Main plots were either virginia-type or runner-type cultivars, untreated or treated with Omega 500. Subplots were cultivars in two, 30- or 35-ft rows spaced 36 in. apart. The experimental design employed four randomized complete blocks. Virginia-type cultivars were planted at 3 to 4 seed/ft, and runner types were planted at 4 to 6 seed/ft. Treatments with Omega 500 1 pt/A were broadcast with one 8010LP nozzle over each row at a spray volume of 40 gal/A. Sprays were initiated at onset of Sclerotinia blight in one or more cultivars, and repeated at 3- to 4-week intervals for a total of three applications each year. The effect of treatment and cultivar on area under the disease progress curve (AUDPC), and yield were significant in all three years. VA 93B, N96072L and N96076L were the only virginia-type entries to exhibit partial resistance based on AUDPC, but yields were either similar to or less than that of susceptible varieties such as Gregory, NC-V 11, NC 7, and VA 92-R. NC 12C was consistently the most susceptible of the virginia-types. Perry (N93112C) exhibited disease tolerance in that AUDPC was similar to susceptible cultivars, but yield was consistently high for virginia-type cultivars. Tamrun 98 (Tx 901417), Tx 969342, Tx 969426, Tx 901338-2, and Ga 942007 were runner-types that showed partial resistance based on AUDPC. Susceptible runner-type cultivars included Florunner, Georgia Green, Southern Runner, Georgia Runner, Sun Oleic 97R, Andru 93, Georgia Bold, and Florida MDR 98. No group differences in susceptibility were apparent in comparisons of the mean AUDPC or yield for virginia- and runner-type cultivars. The overall yield of virginia- and runner-type cultivars without Omega treatment averaged 3251and 3324 lb/A, respectively. The yield response to treatment with Omega averaged 1002 lb/A for virginia-type cultivars and 962 lb/A for runner-type cultivars.

Managing Groundnut leaf diseases in Northern Ghana with Fungicides, Neem Seed extract and Local Soap.

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Losses due to foliar diseases (*Cercospora arachidicola, Cercosporidium personatum, Puccinia arachidis)* in Northern Ghana are major constraints to groundnut pod and vine yields. Farmers do not practice disease control procedures and perceive dead leaves as signs of crop maturity. Field experiments conducted at Nyankpala in 1999 evaluated the following products; tebuconazole, Folicur 3.6F @ .22 kg ai/ha tank mixed with azoxystrobin, Abound 2.08F @ 0.45 kg ai/ha, Topin-MR 50WP @ .350 kg ai/ha), 20% neem seed extract and 1% local soap (Alata Samina). Plots were sprayed on the average every 14 days. Folicur/Abound treated plots gave the highest vine and pod yield (9.9 and 1.7kg/plot respectively) and recorded the least disease score (2.3, Florida scale) as well as defoliation percentage (1.6%). Untreated and Neem sprayed plots had the highest disease scores (9.5 and 8.3 respectively), highest defoliation percentages (90.7 and 89.2), and lowest yields (0.7 and 0.8 kg/plot). Defoliation on Topin-MR treated plots was 27.2% and was predominantly due to groundnut rust attack which resulted in pod yield loss of 22.9%. Local soap was comparable to Topsin-MR. In the absence of adopting any control measure an average pod loss of 60% was recorded between plots sprayed with Folicur/Abound and those receiving no fungicide treatment. In another experiment, Local soap at two concentrations (1.0 and 2.5%) was compared to Folicur/Abound and Topin-MR. Soap at both levels gave higher pod yields than the untreated control. 1% soap had a lower defoliation percentage (72.3) than both 2.5% soap and the none-sprayed control (86.0 and 89.8% respectively). Therefore soap at 1% has shown consistency in the control of groundnut leaf diseases by reducing defoliation as well as increasing pod yield.

Effects of Actigard on Tomato Spotted Wilt Virus and Thrips in Peanut

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Recently, foliar applications of acibenzolar-S-methyl (Actigard) in combination with imidacloprid (Admire) have been shown to effectively suppress TSWV in Georgia flue-cured tobacco. Actigard is a plant activator, which is reported to activate the plant's defense mechanisms. The objective of this study was to evaluate the effectiveness of Actigard alone and in combination with phorate (Thimet) as compared to phorate alone for reducing the impact of TSWV and thrips in peanut. Field tests were conducted at the University of Georgia Lang Research Farm, Tift Co., GA. All plots were planted to Georgia Green on 9 June 2000 and were arranged in a randomized complete block design. Plots were 2 rows, 25 feet in length. All plots were bordered on both sides by TSWV susceptible cultivar GK-7. Treatments evaluated during 2000 included: (1) seed treatment of Thiamethoxam (Adage) (150 g ai/100 kg of seed); (2) seed treatment of Adage plus an in-furrow application of Actigard (3.5 g ai/ha); (3) in-furrow application of Actigard; (4) in-furrow application of phorate (0.4 lb. AI/ha); (5) in-furrow application of Actigard plus an in-furrow application of phorate; and (6) untreated control. Actigard alone and in combination with phorate effectively reduced TSWV incidence to a level comparable with that of phorate alone. Thrips populations did not appear to be affected by Actigard applications. Adage in combination with Actigard significantly reduced thrips larval populations from that of the control; however, no effect of Adage on TSWV was observed. Highest yield was observed with the seed treatment of Adage.

Variability Among Aflatoxin Test Results on Runner Peanuts Harvested from Five-Foot Row Lengths.

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An experiment was conducted to determine the variability associated with aflatoxin contamination of peanuts from plants grown in specified row lengths. Runner peanuts (cv. Georgia Green) were planted in ten 250-foot rows (6 seed/foot) and grown using standard production practices. Plants were exposed to natural late-season drought conditions making the peanuts susceptible to preharvest aflatoxin contamination. Plants were mechanically dug, inverted, and separated into 500 five-foot sections (plots). Peanuts from each numerically identified plot were harvested with a mechanical picker, dried to 8% kernel moisture, shelled, and analyzed for aflatoxin by HPLC. The average kernel mass and average aflatoxin concentration for all 500 plots was 131.4 g and 2,657 ng/g, respectively. The kernel mass varied among the 500 plots from a low of 4 g to a maximum of 283 g. The aflatoxin concentration among the 500 plots varied from a low of 0 ng/g to a maximum of 32,142 ng/g. The standard deviation among the 500 plot aflatoxin values was 4,061. Increasing plot length, by combining plots using weighted aflatoxin concentrations, decreased the standard deviation among plot aflatoxin values as predicted by statistical theory. For example, increasing plot row length by a factor of four, or from five to 20 feet, decreased the standard deviation by a factor of two, or from 4,061 to 2,031. A regression equation was developed to predict the effect of plot row length on the variability among aflatoxin plot values. This information is useful for designing field plot experiments to test various strategies for reducing or preventing preharvest aflatoxin contamination.

PRODUCTION TECHNOLOGY II

Interactions of Peanut Seed Size, Planting Depth, and Water to Emergence.

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Due to extended early season drought during the 2000 crop year, planting decisions for non-irrigated peanut producers in the Southeast were complicated. Soil moisture in most soils was depleted throughout the majority of the planting season. However, to qualify for full crop insurance coverage producers must plant peanuts by May 25th regardless of soil and environmental conditions. A replicated study was conducted to address the interactions of seed size, planting depth, and water (amount, timing, and frequency) to moisture imbibed and final emergence. Greenville fine sandy loam (fine, kaolinitic, thermic Rhodic Kandiudults) was gathered from a local field with a 2 year rotation out of peanuts and sifted over a vibratory screen to ensure that all volunteer peanut kernels were removed. Soil was placed in 70.5 x 28.8 x 24.8cm planter boxes at an average bulk density of 1.34 Mg m-3. Soil moisture at planting 0.08 m3 m-3. Georgia Green seed were sized into 3 commercial whole kernel categories of number 1s, mediums, and jumbos and planted at depths of 38 and 76 mm. Four water amounts of 0, 3, 8,and 18 mm were applied. The timing and frequency of the water applications were varied resulting in 56 different water scenarios. The primary objective was to develop recommendations relative to seed size and planting depth for non-irrigated peanut producers facing drought at planting.

Effects of Narrow and Twin Row Systems on Peanut Production in Texas.

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Twin row peanut culture was investigated to a limited extent in the 1970's in the Southwest using spanish market types. In general, results from these studies indicated that yields were 8 to 12% higher in the twin row configuration. Recent reports from the Southeast demonstrate that twin rows possess yield and grade advantages over conventional rows and lower incidence of TSWV compared to standard row spacings. Studies were installed at two sites in south Texas (Atascosa and Frio County) to evaluate twin, and narrow row production systems. Row spacings included conventional 38-inch, 15-inch (narrow), and twin rows spaced 10 inches apart. Experimental factors included two runner varieties (Georgia Green and Tamrun 96) planted at two seeding rates (60 and 100 lbs/acre) across all row spacing configurations. Studies were planted with a Monosem vacuum planter. A conventional two-row digger was used to dig all row spacing treatments. Results from each location showed similar results/trends; however, yields from the Frio County site were significantly higher than the Atascosa location due to irrigation well problems. Yields from the conventional, narrow and twin row configurations yielded 5441, 5017 and 5635 lbs/acre, respectively from the Frio County site, with no differences in grade. Within varieties, Georgia Green demonstrated a positive response to the twin row pattern. In the twin row configuration, Georgia Green yielded 5444 lbs/acre, compared to 5110 lbs/acre in the conventional pattern. Tamrun 96 did not show any interaction with row spacing. In all cases the narrow row pattern yielded less than the other row spacings. Seeding rate did not affect yield or grade. Based on this information, Georgia Green should be grown in the twin row pattern to maximize yield potential.

Drynut Computer Expert Systems.

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The objective of Drynut is to minimize the climatic environmental impact and economic risks in dryland peanut production while maximizing the economic return and improved peanut quality. Drynut uses new concepts, tools and management systems with finger tip computer-based technology to modify the impact of drought and heat stress in dryland peanut production. The use of soil temperature maximum/minimum thermometers is absolutely essential for monitoring Drynut crop conditions from preplanting through harvest. Based on research at the National Peanut Research Laboratory, Dawson, GA, the soil thermometers have unequivocally proven to be the best single, most accurate indicator to represent the overall health and well being of the peanut plant. This instrument has enabled researchers and peanut growers to gain new insight about the effects of drought stress. This tool can also be used to reduce plant stress as well as to issue pesticide alerts for more effective control and a safer environment under dryland peanut production. Selecting and scheduling the production and management practices for dryland peanut production commands the applications of "state of the art" peanut technology. Drynut utilizes knowledge from USDA, state research and extension peanut subject matter specialists, industry consultants and cooperating growers.

Effect of Twin Row Seeding Rates on Yield and Grade.

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Research has been conducted since the mid 1970's looking at the effect of row pattern and seeding rates on peanut yield and quality. The incidence of tomato spotted wilt virus (TSWV) has been increasing in the southeast since 1986 and has resulted in a renewed interest in twin rows and seeding rates. Researchers have periodically had to reexamine the effect of plant spacing on peanut production due to improved cultivars and cultural practices. Growers had started reducing seed costs by planting 75-100 pounds of seed per acre prior to 1986. Seed sizes were fairly consistent, averaging 750 seed per pound for runner types, but now, newer runner cultivars can range from 600 to 850 seed per pound. Research since 1986 has shown that in the presence of TSWV there is a positive effect on yield by keeping seeding rates high enough to establish a final stand count of at least four plants per foot of row.

Tests were conducted in 1999 and 2000 evaluating two cultivars, Georgia Green, and C-99R, planted in nine inch twin rows at three seeding rates-two, three, and four seed per foot of row. The test sites were irrigated and used recommended cultural practices. Georgia Green at six locations averaged 4,190, 4,500, and 4,380 lbs/acre at 2, 3, and 4 seed per foot of row respectively. C-99R at four locations averaged 3,920, 4,250, and 4,210 lbs/acre at 2, 3, and 4 seed per foot of row respectively. The results of these tests showed there was no advantage to increasing seeding rates above three seed per foot, but two seed per foot was insufficient.

HarvPro: A Decision Support System for Harvesting (Digging) Peanuts.

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Determining when to "dig" is a complex decision which mandates the use of "cutting edge" technology that will translate into the highest yield potential and quality to increase net profits for growers. These assessments should be based on a "gain/loss" analysis using a Guidance List. Losing a few older pods may be justified if a much larger percentage of younger pods are almost mature. Conversely, the pod profile may indicate a large enough quantity of mature pods to justify digging. A "gain/loss" relationship should be the dominant criteria when all other factors relating to when to dig are evaluated. HarvPro has a different strategy and flow chart for dry land and irrigated peanuts. Soil groups, crop rotation, environmental conditions and field observations are critical factors in using HarvPro. These must be assessed for each field. Three time periods and the hull-scrape technique are used in projecting the optimum estimated digging date. The time periods are: 1) more than 21 days, 2) 10 to 21 days and less than 10 days. The nine factors are: 1) stem strength, 2) leafspot diseases, 3) rhizoctonia, 4) white mold, 5) tomato spotted wilt virus, 6) other pest and weed problems, 7) plant health, 8) pod health, and 9) weather. The Hull Scrape Method combined with these other pertinent observations in a "gain/loss" relationship and the grower's judgment is the best way to determine when to dig. HarvPro contains a knowledge base, help files, flow charts and a user's guide to assist the grower in making the correct decision.

Virginia-Type Peanut Production Using Flue Gas Desulfurization Waste as a Calcium Source.

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Successful commercial production of the large-seeded virginia-type peanut in the Virginia-North Carolina peanut production area is dependent upon calcium fertilization. A study was conducted to determine if two flue gas desulfurization materials could supply the calcium needs of the peanut crop as well as the standard calcium sulfate materials already used for commercial peanut production in the Virginia-North Carolina peanut production area. These two materials were derived from the removal of sulfur from the emissions of burning coal to generate electricity. Both materials are high in calcium (20-25%) and each also contain sulfur. Field studies were conducted to compare these two materials with the US Gypsum Bulk 420 (granular) material and a control (no calcium applied) on peanut production. All treatments were applied to provide the same amount of calcium per ha to the crop. The peanut cultivar NC 7 was used. Both by-product materials were as effective as the US Gypsum Bulk 420 in providing the calcium needs of the peanut kernel for high seed germination rates and other quality characteristics. There were no differences in crop yield, grade, and value (quota peanut pricing) among the treatments. All treatments were better than the control. The flue gas desulfurization by-products were as effective as the standard grade calcium sulfate materials already in use in satisfying the calcium requirements of the large-seeded virginia-type peanut which are commercially produced in the Virginia – North Carolina peanut production area.

PROCESSING AND UTILIZATION

Physical Properties of a Short Pasta-type Product from Peanut Flour.

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Defatted peanut flour, a by-product of oil production, is under-utilized for human consumption in the US. The nutrient composition of defatted peanut flour suggests the potential for incorporating it into pasta, a popular meal item. However, information on peanut flour in pasta is limited to Chinese-type noodles containing 15% peanut flour. The objective of this study was to investigate physical properties of a short pasta-type product made with defatted peanut flour (PF: 58.5% protein, 1.3% fat). A Box-Behnken design for a 52 incomplete factorial arrangement of PF (0, 20, 40, 60, 80%) and guar gum (GG: 0.5, 0.75, 1.0, 1.25, 1.50%) was used in a standard short-pasta formulation. Pasta treatments were dried (21C, 23%RH), then after 72 hr they were cooked, and color (Minolta chroma-meter) and texture profiles (TA XT2i Texture Analyzer fitted with an Ottawa Cell) were evaluated. Commercial elbow macaroni was used as the control. Response Surface Methodology was used to estimate the quadratic response surface for each physical property from the equation: $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_12 + b_4X_22 + b_5X_1X_2$ where Y = dependent variable, b_0 = intercept, b_1 - b_5 = regression coefficients, X_1 = PF, and X_2 = GG.

Pasta became browner (hue: 93.7±0.97 - 78.5±0.70) as PF was increased from 0-80%. At 80% PF, L value increased from 61.6 to 66.2 as GG was increased from 0.5-1.2%, then decreased to 64.9 at 1.5% GG. There was no significant difference in hardness (g/force, compression) between the experimental treatments and the control. Cohesiveness increased as the GG was increased and as PF was increased above 29%, but was not affected with PF ≤ 28%. Experimental pasta formulations containing 60%PF + 0.7%GG to 80%PF + 1.3%GG would have cohesive properties similar to the control (0.13±0.019). Springiness increased from 0.25 to 0.56 as PF was increased from 30-80%. GG at <0.9% had little effect on springiness, but GG >0.9% increased springiness. Springiness of the control was 0.49±0.262. Results indicate that a product containing 60-75% defatted peanut flour and 0.75-1.2% guar gum, although tan in color, would have similar textural attributes to commercial short pasta.

Acceptability of Haitian Peanut Butter-type Products (Mambas).

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During recent years, small-scale food processors in Haiti have been manufacturing peanut butter-type products locally called mambas. Mambas are prepared from ground, roasted peanuts, and may be flavored with sugar or pimiento peppers, but contain no stabilizers. The objective of this study was to evaluate acceptability of mambas by Haitian consumers. Three types of mambas: Plain (no sugar or salt added), Sucre (with sugar and salt), and Pimente (with crushed pimiento peppers and salt); and one imported US peanut butter were evaluated by 199 panelists ranging from 14-77 years, and from 3 urban districts in Haiti. A Randomized Complete Block Design was used to serve samples in souffle cups labeled with 3-digit random codes. Panelists indicated their feelings about intensity levels of color, oily appearance, peanut flavor, sweetness, spiciness, and smooth mouthfeel of the samples on 5-point Just-About-Right scales. Color of the US peanut butter (US) and mamba sucre (MS) were considered Just-Right (JR) by 67 and 57% of panelists, respectively, but the mamba pimente (MP) was too pale (63%). Oily appearance of all products was acceptable to 51-59% of the participants. The peanut flavor of US, MS and MP was JR for 77, 80, and 74% of panelists, respectively, whereas it was too low in the plain mamba (M) for 41% of the panelists. Sixty-six and 67%, respectively, of panelists liked the sweetness of US and MS, but M and MP were not sweet enough for 72 and 68%, respectively, of the panelists. Fifty-five percent indicated that the spiciness of MP was JR whereas 82-92% felt that all the other products were not spicy enough. Most panelists (63-75%) felt that the products had an acceptable mouthfeel, but MS and MP were liked the most (75%). Results indicate that Haitian consumers prefer mambas that have sweet and spicy flavors to the unflavored products.

Screening The Core Germplasm Collection For Peanuts With Reduced Allergenic Potential.

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There are over 8000 accessions of peanuts available in the United States germplasm collection. A core collection of approximately 800 accessions has been produced that is thought to represent the genetic diversity of the germplasm. A controversy surrounds the issue of whether any cultivars may exist that naturally lack, or have significantly reduced amounts of, one or other of the peanut allergens. We have developed antibodies against the main peanut allergens and a rapid method to screen a core of the core germplasm collection, containing 100 peanut accessions, for the amount of total protein and levels of individual allergens in each cultivar. Currently, several cultivars with significant differences in the levels of one of major allergens (Ara h 1) have been found. If a cultivar(s) with reduced levels of one or the other allergen is found, it can be used in gene silencing and cross breeding experiments in attempt to eliminate or reduce the allergenic potential of a peanut significantly. In conjunction with novel processing methods and vaccine development studies, we believe that a peanut variety with reduced allergenic potential may contribute to reducing the severity of an allergic reaction and/or the chances of the original sensitization to peanuts.

Sensory Quality Evaluation of Market-Grade-Sized Red-Tip Seed Associated With TSWV Infection From Peanut Genotypes of Varying Resistance Levels.

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With the increasing impact of tomato spotted wilt tospovirus (TSWV) on peanut production there have been increasing concerns voiced by peanut processors that this disease has a negative impact on roasted peanut flavor quality. For many peanut growers it is their most important disease problem and there are few effective tactics for management of this disease. Development of cultivars with resistance to TSWV seems to have the most potential for minimizing the effects of this disease. A descriptive sensory panel evaluated selected TSWV resistant [Florida MDR 98 (UF91108) UF94320, UF97318] and non-resistant (Florunner) genotypes for sensory quality differences by comparing market-grade sized (jumbo, medium, and No. 1 runner) red-tip and normal seed from plants grown at two sites: Lewiston, NC and Marianna, FL. The triangle difference test and descriptive evaluation were performed on roasted peanut paste samples. Panelists were able to discern a difference between pastes from normal and red-tip seeds and a difference was most often discerned in UF97318. Discernment became more pronounced as the market-grade size decreased from jumbo to medium to No. 1. Intensity of roasted peanut and sweet attributes was highest in Florida MDR 98 and lowest in UF97318. It was more difficult to achieve a constant roasted paste color in red-tip than in normal samples. However, this difference had no effect on panelist's evaluation of sensory attributes. A specific factor enabling the panelists to discern differences between red-tip and normal roasted paste samples was not identified. However, it is probable that the ability to discern differences between red-tip and normal samples was the result of an accumulation of minor differences.

Real-time Monitoring of Peanut Roasting Using Infrared Thermometry.

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Peanut roasting is accomplished with heated air and results in peanuts that have a range of roast colors. Color differences in a lot of roasted peanuts have been ascribed to differences in maturity and moisture. Control of roasting parameters is based on the overall lot roast color desired. One potential approach for better control of resulting roast color range is the use of on-line thermal monitoring techniques like infrared thermometry and infrared image analysis. In this research infrared thermometry was used to monitor the distribution of temperatures for peanuts roasted at 350 F for 20 min using a gas-fired roaster. Eight lots of peanuts were roasted and the surfaces were imaged immediately after roasting using both infrared and visible range cameras. In addition to the initial images, thermal imaging was continued for an additional 15 images for each lot during a cooling period of approximately 3 min per batch. Captured images were subsequently analyzed for surface temperature distribution and average temperature values. Initial temperatures of individual lots averaged 289 F, 300 F, 295 F, 294 F, 303 F, 298 F, 307 F and 298 F with respective temperature ranges within a lot of 65 F, 57 F, 61 F, 44 F, 50 F, 59 F, 49 F and 60 F. It was noted that exposed (convex) surfaces of the top layer of kernels cooled rapidly while the non-exposed and surrounded kernels in underlying layers cooled much more slowly. This phenomenon was examined and analyzed by thermal analysis of linear cross sections illustrating the intermittent thermal peaks and valleys. The observed maxima and minima of linear thermal profiles had much narrower temperature ranges than rectangular surfaces and peak to peak and valley to valley variations generally remained within 20 F. This was further examined using a thermal time sequence analysis of both cumulative thermal histograms and linear thermal profiles of collected images, as well as three-dimensional depictions of thermal distribution data. The developed methodology was subsequently applied to monitor the thermal distribution and selected target temperature data during several peanut drying and roasting runs. Thermal images of individual trays containing processed peanuts were captured and analyzed in real time at the point of exit from the processing device.

TECHNICAL SESSIONS
POSTER SESSION II

Peanut Processing Practices by U.S. Food Manufacturers.

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A questionnaire focusing on peanut processing practices was developed by the researchers and validated by 5 food science and peanut industry professionals. The purpose was to determine common industry practices concerning roasting, blanching and processing of peanuts for use in food products and industry preference for types of peanuts and growing locations. A list of 24 U.S. food manufacturing companies producing peanut items was compiled from products on supermarket shelves and other sources. The survey was conducted by telephone interview with individuals employed in the research and development division of each company. The eleven companies who participated in the survey were located in California, Massachusetts, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania and Virginia. Six companies produced peanut butter, six made candy, and five processed snack peanuts. Other products produced included peanut butter cracker sandwiches, trail mix, toppings, peanut granules, and peanut flour. Companies manufacturing peanut butter used dry roasted and blanched peanuts and some combination of 2 to 4 types of peanuts (Runner, Virginia, Spanish and Valencia). Companies producing candy products used Runner, Virginia or Spanish peanuts and a variety of processing methods including dry roasting, blanching, roasting in oil, and cooking in the product. Peanuts were used in candy as whole, split, ground, chopped or diced. The majority of respondents did not indicate a preference for peanuts grown in a particular area of the country, but cost and availability were mentioned as buying considerations. Only one company used high oleic peanuts and defatted peanuts in their products. Study results indicate that most U.S. manufacturers of peanut products purchase shelled, pre-blanched peanuts and use a variety of processing methods.

New Experimental Farm Established to Address Agronomic and Economic Impacts of Restricted Water-Use.

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Potential water-use restrictions in some peanut (*Arachis hypogaea* L.) producing regions have created a need for research that examines the agronomic and economic impacts of these restrictions throughout all segments of the peanut industry. Studies will be conducted among different peanut crop rotations under non-irrigated, SDI (surface drip irrigation), and SI (sprinkler irrigation) to examine how restricted water-use influences long term peanut yield, post-harvest quality, and producer income. Field plots will be established, on approximately 16 ha located near Shellman, GA, in a randomized block design consisting of three irrigation treatments, seven crop rotations, two drip tube lateral spacings replicated three times. Three irrigation levels will be administered based on 100%, 75%, and 50% of estimated crop water-use, as well as, expert systems designed to enhance irrigation management decisions (i.e. Irrigator Pro and CAMS (Corn Aflatoxin Management System)). The experimental design will allow direct agronomic, economic, and other comparisons between non-irrigated, SDI and SI. Data collected will provide timely information on best management practices for each system.

Delivery and Application of Weather Information for Management of Peanut Production.

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The College of Agricultural and Environmental Sciences (CAES) of the University of Georgia initiated the development of the Georgia Automated Environmental Monitoring Network (AEMN) about ten years ago in 1991. The AEMN is a network of automated weather stations that are located across the state of Georgia. The network has grown from three stations in 1991 to more than 45 stations in 2001. One of the main objectives of the network is to monitor weather conditions in the main agricultural regions in Georgia and to provide near real-time weather data to agricultural producers and others associated with agribusiness. Each weather station measures air temperature, relative humidity, precipitation, soil temperature at three different depths, solar radiation, wind speed and direction, soil moisture, and various other variables. Information is transmitted via a dedicated telephone line to the CAES Campus in Griffin, Georgia. After downloading and processing the weather data, they can be retrieved from the World Wide Web at www.Georgiaweather.net. For more than 25 sites the weather information is updated at least once an hour. In addition to providing data, the web site also provides access to different computer programs that can be used as management tools. This includes a water balance calculator that accumulates rainfall for a user-defined period and provides a comparison to normal rainfall for the period 1961 through 1990. This program also calculates potential evapotranspiration (ET); the difference between potential ET and rainfall can be used for irrigation management. Several applications have especially been developed for the peanut outreach program. These include a drought map for southern Georgia and tables that show average soil temperature and cumulative precipitation. The weather network has provided a framework as a seamless interface between research and delivery of information to the farming community, using the latest information technologies that are currently available.

Variance in Financial Returns Considering Costs of Select Fungicide Spray Programs for Control of Leaf Spots and Rust of Peanut (cv 'Georgia Green').

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Bravo Ultrex 82.5 WDG (BU), Folicur 3.6 F (FO), and Abound 2.08 FL (AB) are commonly used fungicides by peanut growers for several diseases. From field tests during 1999 and 2000, on the cultivar 'Georgia Green', five different spray programs using these three fungicides were compared to each other for their effects on defoliation at the end of season and yield. BU was always used @ 1.4#/A and all rates are given on an acre basis. The treatments were: **1)** six sprays of BU; **2)** BU used for the 1st and 6th sprays coupled with AB @ 9.2 fl oz for the 2nd and 4th sprays and FO@ 4.8 fl oz for the 3rd and 5th sprays; **3)** BU used for the 1st and 6th sprays coupled with AB @ 9.2 fl oz for the 2nd and 4th sprays and FO @ 7.2 fl oz for the 3rd and 5th sprays; **4)** BU used for the 1st and 6th sprays coupled with a tank mix of AB @ 6.1 fl oz and FO @ 4.8 fl oz for the 2nd, 3rd, 4th, and 5th sprays; and **5)** BU used for the 1st and 6th sprays coupled with FO @ 7.2 fl oz for the 2nd, 3rd, 4th, and 5th sprays. The foliar diseases that were present were early leaf spot (*Cercospora arachidicola*), late leaf spot (*Cercosporidium personatum*), and rust (*Puccinia arachidis*). None of the treatments in either test differed from each other for defoliation at the end of the season or yield, but they were all different from their respective unsprayed controls (P=0.05). However, returns (@ $630/ton) for each dollar expended for the fungicides varied from $4.78 to $8.23 and $4.13 to $7.29 among these treatments for 1999 and 2000, respectively. The highest dollar returns in both years were for those treatments where FO and AB were alternated among the 2nd, 3rd, 4th, and 5th sprays. When Dithane DF was used @ 1 lb and tank mixed with FO at 4.8 fl oz, an additional $2.69 and $2.87 per dollar expended was obtained when compared to the 4-block spray of TE (treatment 5). The alternation of AB and FO for the control of peanut leaf spots and rust performed well financially on Georgia Green and these treatments are also compatible with necessary strategies for resistance management as well as for suppression of white mold, caused by *Sclerotium rolfsii*.

Production of Edible Peanut in Africa: An Integrated Approach of Physical and Sanitary Quality.

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Senegalese peanut production is mainly exported as oil product or by-product (cake) which competes with western countries subsidized and high yielded oil seed productions. In this context, diversification towards edible peanut production would be an alternative to oil production although it implies regular supply of very good quality product. The quality peanut enhancement program is an integrated approach which targets the different weak points along the peanut production and transformation chain in order to optimize yield and quality in African economic and agro-environmental conditions. At the pre-harvest level, seed coating, irrigation and disease management are the main issues, whereas post-harvest work will mainly consist of curing optimization and the development of quality management through the transformation process to ensure final product quality management through the transformation process to ensure final product quality. In this way, a national laboratory is under improvement to proceed to systematic aflatoxin and quality analysis on export market batches.

Nitrofoska (Basf) a Good Peanut Foliar Fertilizer Sprayed under Rainy Season in State of Morelos Mexico.

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Southern México is the main rain-fed peanut growing area in the country (States of Morelos, Puebla, Guerrero, Oaxaca and Chiapas, 80,000 acres). With relatively low pod yield (1.3 ton/ha), with the exception of Oaxaca, that averages 2.0 ton/ha. Factors like poor soils, low rain (160-240 in) and landrace genotypes, among other, are responsible for the low yields. Edaphic fertilization is not ussual in peanuts, so foliar fertilization could be a good agronomic practice for increasing peanut yields. An experiment was conducted during a rainy season of 2000 in San Marcos Cuauchichinola Mor. The objective was to evaluate four foliar fertilizers as indicate: Roniphos bio (15 ml/L water), Cito crop (5 ml/L water), Agromil- v (5 ml /L water) and Nitrofoska (15 ml / L water) and a control (pure water was applied). Products were sprayed three times during the blooming stage of a Florunner peanut cultivar. A randomized block design with four replications was used. Yield and yield components were recorded. Main results indicate that statistical differences were not found in any of fifteen traits measured. However, on the basis of absolute values Nitrofoska ranked as the best brand in number of mature pods (361.0/ six plants)., mature pod weight (386.2 g/ 6 p)., total pod weight (413.7 g/ 6 p)., 100 seeds weight (53.1 g)., number and weight of mature seeds in 6 plants (596.7 and 296.3 g, respectively)., biological yield (total dry matter) 1424 g/ 6 p., and seed weight-hull weight ratio (70.7). Cito-crop underliyed in total pod number (454.5)., dry matter of six plants (773.7 g)., and number and weight of inmature seeds (165.5 and 36.6 g respectively). In harvest index Roniphos- bio was the best foliar fertilizer (35.9%) versus 31.2 % (control). .Main conclusion is that Nitrofoska at a dosage of 15 ml /L water sprayed during the flowering stage could increase the peanut yield in State of Morelos, Mexico.

Tolerance of Metam Sodium Treated Peanut to Various Flumioxazin (Valor) Weed Management Systems.

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Field studies were conducted at the Tidewater AREC, Suffolk, VA in 2000 and 2001 to evaluate various flumioxazin (Valor) weed management systems with peanut grown in a production system utilizing preplant soil injection of metam sodium for suppression of Cylindrocladium black root rot (CBR). In 2000 flumioxazin at 0.063 and 0.094 lb ai/A was applied either at the time of metam sodium treatment, 2 weeks prior to planting (AF) or 3 days after planting (3 DAP). In 2001 flumioxazin at 0.063 and 0.094 lb ai/A was applied AF and at planting (AP). All flumioxazin treatments were applied in conjunction with a single application of pendimethalin (1.0 lb ai/A, PPI), s-metolachlor (1.33 lb ai/A, 2 wk PP) or sequential applications of s-metolachlor (0.95 lb ai/A, 2 wk PP + 0.95 lb ai/A, 3 DAP). All flumioxazin treatments were surface applied to beds shaped for planting. Flumioxazin treatments which were applied at 3 DAP were applied with 1 qt/A COC. Systems utilizing either pendimethalin (PPI) or s-metolachlor (PRE), followed by paraquat + bentazon + NIS (0.125 + 0.5 lb ai/A + 0.25% v/v) at ground cracking, and acifluorfen + bentazon + COC (0.25 + 0.5 lb ai/A + 1 qt/A) early postemergence, were included as standard herbicide treatment programs. Severe early season crop injury (40-73 percent) was obtained with flumioxazin treatments applied 3 DAP (2000) or AP (2001). Conversely in both years flumioxazin applied AF resulted in only slight growth suppression (7-10 percent). In both years AF treatments received at least 0.25 inch rainfall prior to crop emergence, while 3 DAP (2000) and AP (2001) treatments did not receive rainfall after application until emergence of the crop. In 2000 all flumioxazin treatments and the standard comparison treatments provided satisfactory season long control of fall panicum (Panicum dichotomiflorum), morningglory species (Ipomoea spp) and prickly sida (Sida spinosa). Despite high levels of early season crop injury resulting from flumioxazin, in 2000 yields of flumioxazin treated plots did not differ from plots treated with standard herbicide treatment programs.

Potential of Modified Defatted Peanut Flour as Meat Substitute and Functional Food Ingredient.

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The demand for ethnic foods is steadily increasing along with the demand for healthy and health promoting foods. Among these, Latin foods continue to have a strong demand as the US Hispanic population grows to become the largest minority population in the country by 2010. The development of meatless alternatives to meat-based Latin foods would meet the demand of vegetarians and other health conscious consumers. Defatted peanut flour is an underutilized by-product of the peanut industry that can be used to develop low-cost meat substitutes for use in food various food applications, including ethnic foods. The objectives of this study are to 1) modify defatted peanut by heat treatment and fungal fermentation, 2) develop meat analogs from modified defatted peanut flour and 3) evaluate the potential use of peanut-based meat analog as in three food products. Defatted peanut was modified by heat treatment and fungal fermentation. Modified peanut flour was processed into meat analogs and used as meat substitutes in tamales, taquitos and chili. Food product containing peanut-based meat substitute and controls were evaluated for color, flavor (beefy flavor for chili), texture and overall liking by a panel made up of Hispanic and non-Hispanic consumers using a 9-point hedonic scale. After fermentation and heat treatment, peanut lost its characteristic peanuty aroma and developed meat-like flavor. Hedonic ratings of products formulated with peanut-based meat analog were comparable to those of beef controls, with most mean ratings exceeding 6. Hispanics consistently rated product containing meat analog higher than their respective controls. Data showed that peanut-based meat substitutes can successfully replace meat in food products and provide consumers with cholesterol free vegetarian alternatives to meat-based food products. This novel use of peanut by-products is expected to add value to the peanut industry.

GRADUATE STUDENT COMPETITION I

Marker Assisted Selection in the transfer of Root-Knot nematode resistance in Peanut (Arachis hypogaea L.).

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Research was conducted on the feasibility of the use of marker assisted selection as a viable method to be employed in peanut breeding programs. This study examined how reliable the molecular markers were when compared to traditional field and greenhouse screenings. In addition, a further aim of the project was to introgress nematode resistance into the commercially available variety TAMRUN 96. Nematode resistant lines were selected and crossed with TAMRUN 96. The F_1 and F_2 generations were grown in the greenhouse and allowed to self-pollinate. While the F_2 plants are still in the vegetative state plant tissue was collected and used to conduct RFLP analysis according to the protocol established by Burow et al. Following RFLP analysis field and greenhouse screenings were conducted. Locations were chosen that previously contained high root knot nematode infestation. During the field plot trial individual soil samples were collected. Eggs were extracted by semi-automatic elutriation and the NaOCl extraction technique. Egg counts were taken and resistance based on the percent eggs relative to the susceptible checks in 500cc of soil. In the greenhouse trial, each plant was inoculated with Meloidogyne arenaria inoculant obtained from Tomato (Lycopersicon esculentum) roots provided by J.L. Starr. Egg counts in the greenhouse study were based on eggs per gram of root rather than per 500cc of soil. Resistance in the green house study was also based on the percent eggs relative to the susceptible checks. Statistical analysis was conducted on the results. Homozygous resistant plants were identified correctly 85% of the time. The high percentage of correct homozygous resistant identification coupled with the saving of time that results in this use of this technique justifies its use as a selection tool.

Intercropping as Disease Management for Early Leaf Spot of Peanut.

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In this study, peanut-corn intercropping was evaluated for its potential to reduce early leaf spot, caused by *Cercospora arachidicola,* in a modern mechanized farming environment. Our objectives were to determine what, if any, disease or yield advantages accrue from growing peanut (*Arachis hypogea*) with corn (*Zea mays*), and to understand the effects of corn on dispersal of the pathogen by describing the spatial dynamics of disease over time. The experiment consisted of five replicate blocks of unsprayed peanut monoculture, sprayed peanut monoculture, alternating row replacement intercrops, and strip (4-row) replacement intercrops. All plots were 16 rows wide and 14.6 m long. Corn and peanut (VA 98R) were planted on May 9, 2000 at the Castle Hayne Horticultural Crops Research Station, isolated from normal peanut production. In late

July, focal epidemics were initiated by placing infected peanut stems centrally in each plot. Leaf spot incidence and defoliation were determined weekly in a stratified sampling routine that allowed estimation of disease gradients in four directions. Airborne conidia were trapped with a Rotorod spore sampler in three blocks of all treatments except the sprayed monocrop. Early leaf spot symptoms were first observed 22 days after inoculation. Intimate intercrop and non-sprayed monocrop reached the highest mean level (averaged across distance) of disease incidence at 41% by 63 days after inoculation. Disease incidence AUDPC's for intimate intercrop and non-sprayed monocrop were significantly greater than the AUDPC for strip intercrop, which was significantly greater that the AUDPC for sprayed monocrop. Defoliation AUDPC's for intimate and strip intercrops were significantly greater than AUDPC's for sprayed and non-sprayed monocrops.

Effects of Diclosulam on Potential Crop Rotations Following Peanut Production in Texas.

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Diclosulam is used to control broadleaf weeds in peanut (Arachis hypogaea) and soybean (Glycine max) production, but has rotation restrictions of 10 months for cotton and 18 months for corn and sorghum. Therefore, field studies were conducted at the Texas Agricultural Experiment Station at Yoakum in 2000 to evaluate the persistence of diclosulam and its potential injury to rotational crops of peanut. The peanut variety planted was 'GK-7'. Rotational crops planted included corn ('Dekalb 580RR' and 'Dekalb 668'), grain sorghum ('Pioneer 8313') and cotton ('DeltaPine 436RR'). Preplant incorporated (PPI) treatments made in 1999 were 0.024 lb a.i./A, 0.048 lb/A and 0.072 lb / A. These rates represented 1X, 2X and 3X of the labeled rates, respectively. Two preemergence (PRE) treatments made in 1999 were 0.024 lb/A (1X) and 0.048 lb/A (2X). Plots sprayed in 1999 were quantified by comparing with a new set of plots established in 2000 that represented a standard curve from crop response. Percent injury, plant height measurements and dry weights were taken during the growing season and after harvest. No significant differences were seen in either variety of corn or in cotton plant heights and dry weights. Grain sorghum dry weight was significantly lower in the 2X rate applied PRE, but results at the 3X rate did not follow this same trend. Thus, it can be concluded for the given year and conditions, diclosulam did not cause injury to these specific rotational crops.

Control of Seed Transmission of *Cylindrocladium parasiticum* in Peanut with Seed Treatment Fungicides.

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Peanut seed with speckled testae, a symptom of infection by *Cylindrocladium parasiticum*, were treated with fungicides representing a wide range of chemistry. Treatments were applied while seed tumbled in a Gustafson laboratory treater. Liquid formulations were diluted with water and applied as a mist spray at 7 or 7.8 ml/kg seed. Untreated and fungicide-treated speckled seed of VA 98R and NC-V 11 were assayed on a selective medium to determine the viability of the pathogen. The fungus was recovered from untreated speckled seed of VA 98R and NC-V 11 at frequencies of 78 and 90%, respectively. Seed treatment with captan + pcnb + carboxin, fludioxonil, captan, and thiophanate methyl resulted in the greatest reduction in pathogen recovery from speckled seed. Untreated and fungicide-treated speckled seed of VA 98R and NC-V 11 were planted in steam-treated soil in the greenhouse. Seed were planted in 15.2-cm pots (five seed per pot) using a complete block design with five replications and each pot was a replication. Plants became infected with Cylindrocladium Black Rot (CBR) after untreated and treated speckled seed were planted. In VA 98R, assays of taproots indicated seed treatment with fludioxonil, tebuconazole, and LS 176 significantly reduced taproot colonization by *C. parasiticum* compared to the untreated check. In NC-V 11, only fludioxonil provided significant suppression of disease compared to the untreated check and captan + pcnb + carboxin. Speckled seed of NC-V 11 were treated with fungicide and planted in four randomized complete blocks in a field trial in Suffolk, Virginia. Plots consisted of two, 7.6-m rows. Metam sodium at 36 kg ai/ha (Metam 42%) was applied as a row treatment at a depth of 20.3 cm to all plots on 6 Apr and again on 24 Apr for destruction of soilborne *C. parasiticum*. Seed were planted on 16 May. At planting, *C. parasiticum* was recovered from untreated speckled seed of NC-V 11 at a rate of 75% and disease levels were high in plots planted with these seed. Seed treatment with fludioxonil, thiram, and tebuconazole significantly lowered CBR incidence compared to the untreated check and captan + pcnb + carboxin. Assays of taproots indicated that treatment with thiram significantly lowered the percentage of taproots colonized by the pathogen (35%) compared to the untreated check (76%) and captan + pcnb + carboxin (55%). Seed treatment with fludioxonil and thiram also led to some of the highest plant populations and yields. Based on the present study, seed treatment with thiram, fludioxonil, and tebuconazole may offer increased protection against seed transmission of *C. parasiticum* compared to captan + pcnb + carboxin. Fungicide combinations are currently being evaluated for activity against the seedborne pathogen.

Genetic Studies of Fresh Seed Dormancy in Spanish-Type Peanuts.

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The study of the genetics of fresh seed dormancy of in the Sahel region of Africa is of prime importance. In that region, most of the varieties grown are of Spanish-type, therefore they lack dormancy and are prone to important quality and quantity losses at harvest when extended rainfall occurs at a time when the crop is mature. Many authors who used different sources of dormancy in their various studies have studied the genetics of seed dormancy. Most of them used a Virginia-type peanut as a donor. Very seldom did they use a Spanish x Spanish type, as in this study. The results of these previous studies are very contradictory and no two studies have the same conclusions. Most of the difference is due to the fact that they did not use the same material and also to the nature of the peanut because even in the same study using different parents the results vary from one cross to another. The Spanish x Spanish type cross is more important to allow the crop to mature in the areas where the rainy season is very short and does not last more than for months. Because in using a Virginia-type peanut as a donor parent, length of the cycle will be transferred as well. The objectives of this study were to determine the gene actions and the heritability of these genes. Parents, F1, F_2, and F_3 generations of crosses between non-dormant Senegalese varieties (55-437, Fleur 11, and GC 8-35) and a dormant variety (73-30), also released in Senegal, were evaluated in the field in 2000 at the Bambey Research Station in Senegal. The reciprocal crosses were evaluated as well. The broad sense heritability for the crosses 55-437 x 73-30 and Fleur 11 x 73-30 was quite high, 89.51 and 80.77 respectively. No meaning full heritability value was detected in the cross GC 8-35x 73-30 because the additive gene effect was not significant. If narrow sense heritability could be estimated in this experiment it would be very low because the majority of the variation concerned the dominance (h) and the dominance x dominance (i) interactions. Generation mean analysis was carried out using P_1, P_2, F_1, F_2, and F_3 as suggested by Singh and Chaudhary (1979). The method uses a scaling test and a five-parameter model to test for gene effects. Data were transformed to square root + 0.5 as recommended by Little and Hills (1978). Striking differences existed between a cross and its reciprocal. For the crosses 55-437 x 73-30 and Fleur 11 x 73-30, the dominance effect (h) was highly significant (P=0.001). The additive x additive parameter (I) was also highly significant (P=0.001) and had a negative sign indicating a duplicate type of gene interaction. For the cross GC 8-35 the scaling test was non-significant meaning that the additive dominance model was adequate. When the reciprocals were used, maternal inheritance was found for the crosses 73-30 x 55-437 and 73-30 x Fleur 11 but not for 73-30 x GC 8-35. This is an indication that 73-30 and GC 8-35 probably have the same gene for dormancy, while 73-30 is contributing for the gene for dormancy in the other crosses.

Flint River Drought Protection Act Year One: Economic Analysis and Predictions.

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Preliminary models from the Georgia Department of Natural Resources (GDNR) predict cessation of stream flows on the Lower Flint River given current irrigation demand coupled with continued below average rainfall. The Flint River Drought Protection Act (FRDPA) was passed to reduce the amount of water used for irrigation to insure adequate stream flows remain for municipal, industrial, and ecological requirements. Based on data from 17 Southwest Georgia counties, probabilities depicting when the return per hectare of an irrigated crop exceeds the return per hectare of entering the FRDPA and planting the crop non-irrigated were calculated for corn, cotton, and peanut at various price and yield combinations. Five scenarios were modeled at FRDPA bid amounts of $185.33, $247.10, $308.88, $370.66, and $432.43 per hectare. Given a GDNR estimated $247.10 per hectare bid, a minimum irrigated peanut yield of 3082 kg/ha is required at current quota price before the per hectare net return to planting irrigated peanut exceeds the non-irrigated crop plus the $247.10 per hectare bid. Such analysis cannot be limited exclusively to peanut. At $1.43/kg cotton and $0.098/kg corn, minimum yields of 1070 kg/ha and 11,200 kg/ha, respectively, are required before planting irrigated becomes more profitable than entering the FRDPA. A FRDPA bid is scheduled for March 17, 2001. A survey of the participants will be used to compile a database for further analysis and forecasting. An ordinary least squares regression (OLS) model will be constructed to estimate bid amounts given future implementation of the Flint River Drought Protection Act.

BREEDING AND GENETICS II

Expression Patterns of Peanut Allergen Genes *arah1* and *arah2* during Seed Development.

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Three million children in the US suffer from food allergies, and peanut tends to have one of the most severe reactions. Therefore, it is important to find a way to reduce the food allergy risk associated with peanut. The expression patterns of two major peanut allergens genes, *arah1* and *arah2*, were examined over the course of seed development. Total RNA was isolated from four seed developmental stages of 12 different peanut cultivars. Northern blot analysis revealed that *arah1* and *arah2* were differentially regulated within a cultivar and between cultivars. However, for most cultivars, expression of these genes was either not detected or low at stage 1, the earliest stage of seed development, and expression peaked at the more mature stages (stage 3 for *arah2* and stage 4 for *arah1*). However, there were striking exceptions to this observation. For example, both genes were highly expressed in all four seed stages of 'Georgia Red'. Also, transcript levels for both genes were highest in stage 2 seed of 'Spancross' with levels decreasing with maturity. Further studies are being undertaken to determine protein levels in these cultivars, as well as a subset of the peanut germplasm core collection. If variation should exist, it may be possible to reduce the allergenicity of peanut through traditional breeding.

Genomic Characterization and Silencing of *Arah*2, a Major Peanut Allergen.

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Peanut allergy is an important food safety issue. It is estimated that over one million Americans are affected by peanut allergy. Allergic reactions to peanut range from vomiting, abdominal discomfort, and anaphylactic shock to death. There is currently no cure for peanut allergy. Thus genetic manipulation of peanut is essential to render this crop safer for human consumption. The objectives of this project were to: 1) isolate and characterize a major peanut allergen gene *Ara h2*, and 2) to silence it. We have isolated, sequenced and characterized the genomic DNA of *Ara h2*, one of the major peanut allergens. This is the first time a genomic DNA sequence is available for a peanut allergen gene. The Open Reading Frame starts with a transcription initiation codon ATG at position 1, and ends with a termination codon TGA at position 622. Sequence comparison with *Ara h2* cDNA clone revealed no intron. A *Xba* I / *Sac* I fragment of 430 base pairs was PCR amplified from *Ara h2* genomic clone, and inserted in sense orientation into a puC based transformation vector, between the CaMV 35 S promoter and the nos terminator, to co-suppress endogenous *Ara h2* in peanut.

Peanut embryogenic tissues were co-bombarded with the plasmid containing the peanut *Ara h2* transgene, and plasmid pBI426 containing a fusion gene GUS-NPT II under the control of CaMV 35S promoter. Putative transgenic cell lines showed GUS expression in embryogenic tissues. These cell lines will be subjected to molecular analyses when sufficient tissues become available.

Crossability in the Genus *Arachis* L.

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The genus *Arachis* is a native of south America and is presumed to have originated from Brazil. According to the classification of Krapovickas and Gregory (1994) the genus is divided into nine sections mainly based on crossability between the species and *Arachis hypogaea* (cultivated groundnut). Cultivated groundnut belongs to section *Arachis* with a tetraploid chromosome number of 2n = 40. Except for wild species in section *Rhizomatosae* and *A. monticola* (section *Arachis*), rest of the wild species are diploid with 2n=20. Some of the wild species from section *Arachis* are cross compatible with cultivated groundnut and hybrids have been successfully produced and are being successfully exploited for the improvement of crop. Some of the wild species such as *A. ipaensis*, *A. valida*, *A. glandulifera* and *A. palustris* are incompatible with *A. hypogaea*. When it is not possible to obtain hybrids by conventional hybridization techniques, growth regulator aided pollinations coupled with either embryo rescue or embryo germination may give rise to hybrids. crossability studies between cultivated groundnut and wild species from different sections in the genus *Arachis* have resulted in production of hybrids between wild species from sections outside section *Arachis*. Hybrid plants between *A. hypogaea* and *A. glabrata*, which belongs to section *Rhizomatosae*, have been successfully produced and have been backcrossed with *A. hypogaea*. Fertile hybrids were also produced when *A. duranensis* and *A. diogoi* (wild species from section *Arachis*) were crossed with *A. glabrata*. *A. glabrata* has multiple disease resistance. The hybrids were scored for rust, late leaf spot and early leaf spot and were found to to be resistant to the diseases as seen in *A. glabrata*. Similarly fertile hybrids were obtained between *A. hypogaea* and *A. kretmarie* (section *Procumbentes*) and between *A. hypogaea and A. chiquitana* (section *Procumbentes*) and were back-crossed with *A. hypogaea*. Hybrid plants were obtained between *A. hypogaea* and *A. sylvestris* (section *Heteranthae)*. *A. hypogaea* was successfully crossed with a hybrid between *A. appressipila* (section *procumbentes*)and *A. stenophylla* (section *Erectoides*). *A. paraguariensis* and *A. stenophylla* cross freely with each other to produce mature seeds. Embryos at cotyledonary stage of development were obtained when *A. macedoi* and *A. villosulicarpa*, both from sections *Extranervosae* and *A. triseminata* from section *Triseminata* were crossed with *A. hypogaea*. Crossability of *A. hypogaea* with wild species within section *Arachis* as well as from other sections has opened up new horizons in groundnut improvement by accessing genes from wild species.

Selection for Peanuts with Reduced Oil Content.

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Peanuts (*Arachis hypogaea* L.) contain approximately 520 g kg-1 oil by dry weight. In spite of the healthy fatty acid profile of peanut oil, some consumers avoid eating peanuts because of their high oil content. Processes to remove oil from whole-seed peanut products have been developed, but the products have not been well received by consumers. The N.C. Peanut Growers Assoc. has funded an effort to reduce the oil content of virginia-type peanuts via breeding. Under FDA regulations, a "reduced fat" product must contain less than three quarters of the fat of the standard product. In the case of virginia-type peanuts, this means an oil content of approximately 390 g kg-1 must be achieved. Sound mature kernels from over 1,000 peanut cultivars, breeding lines, introductions, and genetic mutant stocks were screened for oil content using nuclear magnetic resonance. Since 1994, all lines tested in replicated yield trials in the NCSU breeding program have been monitored for oil content. Cultivars and advanced NCSU breeding lines ranged from 475 to 566 g kg-1 without separating SMK into finer grades. Late-maturing leafspot-resistant and jumbo-pod lines had lower oil contents while early-maturing CBR-resistant lines had higher oil. Oil content in 580 mutants and introductions ranged from 442 to 562 g kg-1 with a mean of 512 g kg-1. The lower tail of the normal distribution included several related lines derived from crosses among irradiated mutants as well as some lines selected from Mexican introductions of *A. hypogaea* subsp. *hypogaea* var. *hirsuta* Köhler. Two breeding populations were established, one by crossing low-oil *hirsuta*-type lines with early-maturing NCSU breeding line N91026E, and a second by intermating low-oil lines with three elite NCSU lines with relatively low oil content. In the F_2 through F_4 generations, plants were selected in the field on the basis of pod characteristics; pods were hand-shelled, and oil content of a seed sample was determined by NMR. The selections with the highest and lowest oil contents were grown out in the following year. In 2000, a replicated trial of 100 low- and high-oil selections and 10 cultivars was grown at the NCDA Peanut belt Research Station at Lewiston, NC. Oil content of the cultivars averaged 535, the low selections 425 and the high selections 558 g kg-1. Low selections ranged from 376 to 479 and high selections from 455 to 607 g kg-1. Several selections were below 400, near the level needed to qualify as "reduced fat." Seed of the low-oil lines exhibited two general phenotypes: one irregular in shape and very hard in texture, and one uniformly shriveled along the main seed axis.

Combining Ability for Resistance to Bud Necrosis Caused by Peanut Bud Necrosis Tospovirus (PBNV) in Peanut (*Arachis hypogaea* L.).

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The types of gene action in the inheritance of resistance to PBNV were evaluated to identify peanut lines useful as parents in a PBNV resistance breeding program. The F_1 and F_2 progenies from a 6-parent diallel cross and their parents were evaluated for their reactions to PBNV at a peanut growing area in Kalasin province in Northeast Thailand where peanut bud necrosis disease (PBND) is a recurring problem. Plants of the F_1 and F_2 generations were assessed in the field on percentages of infected plants and disease scores of 1-5 at 30, 40, 50 and 60 days after sowing (DAS). Based on disease incidences, area under the disease progress curve (ADPC) was also constructed as an additional component of evaluating resistance. Genetic analyses indicated highly significant general combining abilities (GCA) for all the characters tested in both F_1 and F_2 generations, except the percentage of infected plants in F_1 at 30 DAS. No significant specific combining ability (SCA) was found for any of the characters investigated. The GCA sum of squares were much greater than those of SCA for all of the PBNV resistance components in both F_1 and F_2 generations, indicating that for these characters additive genetic variance was more important than nonadditive genetic variance. No significant reciprocal effect was observed for any of the characters studied, indicating that cytoplasmic factors were of minor importance in their inheritance. The peanut line ICGV 86388 was observed to have the best GCA effects for resistance to PBNV. The lines IC 10 and IC 34 also performed well in transferring resistance to this disease. Other parents, however, produced progenies that were susceptible to PBNV. Correlations between parental effects and GCA effects were significant for all the characters measured if assessed after 30 DAS. These results

Developing High O/L Peanut (*Arachis hypogaea* L.) cultivars for the Southwest.

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The agencies listed above and the Texas Peanut Producers Board and the Oklahoma Peanut Commission initiated a program in 1996 to develop high O/L ratio peanut cultivars for the Southwestern Peanut Production area. The source for the high O/L genes was UF435-1 and UF435-2 for the Spanish materials and SunOleic 95R for the runner lines. Four backcrosses have been made on the Spanish materials, with selections being made from each backcross cycle. Two, and in some cases three, backcrosses were made in the runner materials. Numerous selections were tested for O/L ratio, either on an individual seed basis or a composite sample of five or more seeds. The single seed testing was a non-destructive method so the seed could be tested and also planted for increase. Hundreds of lines of the Spanish and runner types were increased either in greenhouses, field nurseries in Texas or in field nurseries in Puerto Rico. Of tested lines, some have surfaced as being the best in specific traits. It has been difficult to identify Spanish lines that had yield and grade (TSMK) as high as the recurrent parent, Tamspan 90, but also containing the high O/L genes. Most often those lines with O/L readings above 15 to 20 were among the lowest in replicated tests in yield and grade. In reverse, those lines with highest yield and/or grade were lines with low O/L ratios. One BC_1 Spanish line has been identified as having the best potential for variety release pending selection of better lines from more advanced generations. This line is being seed increased for possible release in late 2001. Runner lines with desirable yield and grade have been relatively easier to select than the Spanish. Many high yielding lines with acceptable grade have been identified with a high O/L ratio. At present we are seed increasing one primary line and one secondary line. Both lines are derivatives from the Tomato Spotted Wilt Resistance program and

have a good level of tolerance to the virus. They also have exhibited some tolerance to soil borne disease organisms such as southern blight and sclerotinia. Release of one or more of these lines within the next 12 months is anticipated. Additional lines that have sclerotinia resistance and still others with sclerotinia and leaf spot resistance have been developed and are being evaluated. No good explanation is apparent for the runner lines with high O/L combined with high yield and grade being easier to select out of backcross three materials than for the Spanish types from the same generation. One possible reason is that the recurrent parent Tamspan 90 is known to not make a good parent in hybridization work. Another possibility is that SunOleic 95R was selected from a BC_3 population. Our crosses expanded that to BC_4, BC_5, or BC_6. The Spanish may become easier to select for with advancing BC generations.

Genome Donors of *Arachis hypogaea* L.

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It is widely acknowledged that *Arachis hypogaea* is an allotetraploid ($2n = 4x = 40$) species with two constituent A and B genomes. Several representative species of the two genomes have been proposed as progenitor species including *A. duranensis* (AA), *A. batizocoi* (BB), *A. ipaensis* (BB), and two recently named species *A. trinitensis* (AA) and *A. williamsii* (BB). Knowledge of the progenitor species will help in the understanding of the origin, evolution, and distribution of variation in the cultivated gene pool. An overall goal of this study is to create a synthetic amphidiploid, similar in genomic constitution to *A. hypogaea*. The objective of this study was to DNA fingerprint progenitor candidate species and compare banding patterns with *A. monticola* and different botanical varieties of *A. hypogaea*. The plant material for this study included *A. duranensis* [KGBSPSc 30067, GKP (LL) 10038, and ScVn 21766] and *A. trinitensis* (WiCla 1117) as the A genome accessions and B genome donor species included *A. batizocoi* (K 9484), *A. ipaensis* (KGBSPSc 30076), and *A. williamsii* (WiCla 1118). Also included were *A. monticola* accessions (KGBSPSc 30062 and ScVn 21769) and PIs 339954, 501296, 339960, 261924, 590455, and Grif. 12518 representing the six botanical varieties of *A. hypogaea*. RAPD analysis was carried out with 10 random primers from Operon Technologies, and AFLP analysis was conducted with two fluorescently labelled E-primers in combination with eight M-primers, using a LICOR automated sequencer. As in many previous studies, no variation in banding patterns was observed between *A. monticola* and *A. hypogaea* or within *A. hypogaea*. *Arachis trinitensis* and *A. batizocoi* exhibited unique DNA fingerprints and are unlikely progenitor species of *A. hypogaea*. Among the observed species, *A. williamsii* was most similar to *A. ipaensis* and shared many bands with *A. hypogaea*, but at a lower frequency than *A. ipaensis*. The three *A. duranensis* accessions had similar DNA banding patterns to *A. hypogaea*. The data indicate that accessions of *A. duranensis* and *A. ipaensis* are the likely progenitors of the domesticated peanut.

A Putative Peanut Trypsin Inhibitor Gene Reveals Homology With Peanut Allergens.

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Peanut allergens and peanut trypsin inhibitors are seed storage proteins. Peanut allergens are known to trigger allergic reactions that can be acute, severe and life threatening. Peanut trypsin inhibitors are pathogenesis-related (PR) proteins and play an important role in the plant defense mechanism against insects. They are also known to possess antinutritional elements leading to abdominal discomfort. The objectives of this investigation were: 1) to synthesize degenerate oligonucleotids DNA to be used as probes to isolate a Bowman-Birk trypsin inhibitor (BBTI) from a peanut cDNA library, and 2) to sequence and characterize the clones. About 32 degenerate oligonucleotides DNA primers were synthesized based on the published amino acid sequences of peanut BBTI. Two oligonucleotides were selected as probes to screen the cDNA library. Three putative positive clones were isolated, purified and sequenced. Sequence information of clone 53A revealed 696 base pairs and included the start codon. This sequence has 47.5% homology with a cowpea Bowman-Birk trypsin inhibitor gene and 41.7% homology with a soybean Bowman-Birk trypsin inhibitor gene. The sequence also shows 96% and 93% homology with *Ara h4* and *Ara h3* respectively, two peanut allergen genes.

WEED SCIENCE

Peanut Tolerance to Glyphosate Spot Applications.

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With the introduction of new herbicides for use in peanut, many problem weeds currently have control options available. However, weed control programs can often be quite expensive, and weed escape may still occur. Also, these new herbicides may be ineffective on several perennial weed species. Therefore, trials were established in Texas (Flomot, Lamesa, and Yoakum) and Georgia (Tifton) to investigate the effects of glyphosate applied as a spot application in peanut. Glyphosate was applied as a 2% solution at various applications timings. Ammonium sulfate was applied with glyphosate at 17 lbs/100 gallons of spray solution. Application timings included 2 weeks after crack (WAC), 4 WAC, 8 WAC, 10 WAC, 2 + 4 WAC, 2 + 8 WAC, 2 + 10 WAC, 4 + 8 WAC, 4 + 10 WAC, 2 + 4 + 8 WAC, and 4 + 8 + 10 WAC. Markers, to simulate weed populations, were placed down the peanut row at 3 feet intervals. Glyphosate was applied as a single spot application to each marker at the various timings. Trials were maintained weed-free at each location. Yields were recorded at each of the locations.

Injury was observed in the form of chlorosis, necrosis, stunting, and stand reduction due to loss of peanut plants at all locations. At Flomot in 1999, the only treatments that reduce peanut yields compared to the weed-free check were the 2 WAC and 4 WAC treatments. Grades were reduced with all multiple applications except 2 + 4 and 2 + 8 WAC. Due to drought conditions yield was not recorded at Flomot in 2000. However, similar peanut injury and stand reductions were observed. At Lamesa in 1999, yields were reduced with all multiple applications and the 2 WAC application. Grades were reduced with all multiple applications except 2 + 4 and 2 + 10 WAC. Yields were only reduced with the 2 + 10 WAC and 4 + 10 WAC treatments at Lamesa in 2000. Grades were reduced with all treatments except 4 WAC. Yields were not effected by any treatment at Yoakum in 1999. In 2000, yields were reduced with all treatments except the 8 WAC and 2 + 8 WAC treatments. Grades were only reduced with the 2 + 10 WAC, 2 + 4 + 8 WAC, and 4 + 8 + 10 WAC treatments. Yields were reduced with all application timing when compared to the weed-free check at Tifton in both 1999 and 2000. These trials indicated that under dense weed populations (approximately 1/yd2) severe injury and reductions in peanut yield (over 1000 lbs/A in many instances) and grade can occur from the use of glyphosate as a spot-application for weed control in peanut.

Dual Magnum® Provides Improved Nutsedge and Grass Control when Combined with Strongarm and Valor.

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Dual has been a vital component of peanut weed control programs for many years. The control of yellow nutsedge, grasses, and small-seeded broadleaves Dual MAGNUM® provides is the reason for its prominent use in the peanut market. With the introduction of Strongarm to the market in 1999 and Valor possibly in 2001, growers have new herbicide options to control economically important weeds in peanuts. Tank mixtures of Dual MAGNUM ® with either Strongarm or Valor were evaluated the past two years for nutsedge and grass control compared to the herbicides applied alone. Eleven trials conducted during 1999 and 2000 across the peanut growing regions were summarized. Herbicide rates used in the summation were Strongarm @ the 0.024 lb ai/A, Valor @ the 0.094 lb ai/A and Dual MAGNUM® @ the 1.3 lb ai/A with all reported treatments applied pre-emergence. All trials were conducted as small-plots tests and treatments were applied with tractor-mounted sprayer or CO_2 backpack sprayer. Comparing Strongarm, Dual MAGNUM®, and a combination of the two herbicides applied together, six trials were summarized with five showing a significant increase in nutsedge control with the combination compared to Strongarm applied solo. Comparing Valor, Dual MAGNUM®, and a combination of the two herbicides applied together, five trials were summarized with five showing a significant increase in nutsedge and grass control with the combination compared to Valor applied solo. With nutsedge and grass control being vital for maximizing peanut production, Dual MAGNUM® should remain a prominent component in peanut weed control programs.

Common Purslane (*Portulaca oleracea* L.) Control in Peanut with Postemergence Herbicides.

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A field study was conducted during the 2000 growing season in Frio County in south Texas to evaluate common purslane control using postemergence (POST) herbicides. POST herbicides were applied using a CO_2 backpack sprayer calibrated to deliver 20 GPA at 30 PSI. All POST sprays included Agridex at the rate of 1.0 qt/A. Purslane was 4 to 6 inches tall at time of herbicide application. When rated 7 days after treatment (DAT), Blazer alone at 0.25 and 0.375 lb ai/A or in combination with 2,4-DB at 0.25 lb ai/A controlled 86 to 94% common purslane. Storm at 0.75 lb ai/A controlled 93% purslane. Basagran alone at 1.0 lb ai/A controlled 71% while 2,4-DB alone at 0.25 lb ai/A controlled 35% purslane. Cadre, Pursuit, and Tough alone or in combination with 2,4-DB failed to control common purslane (< 60%). When rated 34 DAT, Cadre and Pursuit alone at 0.063 lb ai/A or Tough alone at 0.94 lb ai/A provided poor control (< 68%) of common purslane. When 2,4-DB was added to Cadre or Tough, control improved to $\geq$ 88%. Blazer alone at 0.25 lb ai/A or 0.375 lb ai/A controlled 77 to 86% common purslane respectively; however when 2-4-DB was added, control was $\geq$ 94%. Storm and Basagran controlled 96% common purslane while 2,4-DB alone controlled 71%. No peanut yield was taken.

Pesticide Runoff and Washoff from Simulated Rainfall in Conventional-Tillage Peanut Production.

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Studies were conducted in 1998 and 1999 in Tifton, GA to determine the amount of pesticide runoff and washoff from conventional-tillage peanut production using simulated rainfall. Ethalfluralin (0.8 kg ai/ha) and metolachlor (2.2 kg ai/ha) were applied preplant incorporated and preemergence, respectively, to two replicate mesoplot runoff plots in peanut. Rainfall was simulated approximately 24 hours after application using raindrop irrigation sprinklers, raised 1.8 m above the soil surface. Approximately 25 mm of simulated rainfall was produced over a 2 hour period. The procedure was repeated at mid-season, when peanut achieved full canopy closure, applying rhodiamine WT dye and chlorothalonil, followed by simulated rainfall 24 h later. This allowed comparison of a highly soluble and insoluble chemicals deposited on peanut foliage. Runoff from both simulations was collected in an excavated pit at the end of the peanut rows. Amounts of ethalfluralin, metolachlor, and chlorothalonil in runoff water were determined using methylene chloride extraction of unfiltered runoff samples. Amounts of rhodiamine were measured by fluorescence. Maximum and average concentrations (ppb) observed in runoff water were ethalfluralin:17 and 7; metolachlor: 280 and 104; rhodiamine: 818 and 179; chlorothalonil 495 and 163. Percentage of the applied amounts lost in runoff in the four events was 0.02-0.05, 0.09-0.41, 0.090-0.17 and 0.24-1.1 % for ethalfluralin, metolachlor, rhodiamine and chlorothalonil, respectively. These results confirm that soil incorporation protects a chemical from runoff losses and also indicate that relatively high concentrations of foliar-deposited chemicals may be present in runoff. Compared with soil-applied chemicals, the higher foliar wash-off concentrations may be offset by a lower runoff water volume from a soil with full canopy closure. The rhodiamine runoff data suggests a dramatic solubility effect, in which the highly soluble chemical is rapidly leached below the soil surface. In effect, rhodiamine was soil incorporated by the rainfall that occurred prior to the beginning of runoff.

Diclosulam Performance in West Texas Peanut.

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Field studies were conducted in 2000 and 2001 to evaluate peanut response and weed control following soil applied diclosulam (Strongarm). Experiments were established in Brownfield and Union, TX to evaluate purple nutsedge (*Cyperus rotundus* L.), golden crownbeard (*Verbesina encelioides* L.), and shining tickseed (*Corispermum nitidum* L.) control. Diclosulam was applied PPI and PRE at 0.016, 0.024, or 0.048 lb ai/A and imazapic (Cadre) was applied POST at 0.063 lb ai/A at all locations. The Union location had a blanket application of pendimethalin (Prowl) at 0.62 lb ai/A PPI and an additional PRE treatment of flumioxazin (Valor) at 0.094 lb ai/A.

In 2000, Strongarm PPI or PRE at 0.024 lb ai/A controlled purple nutsedge 57% 21 days after planting (DAP). Strongarm applied PRE at 0.016, 0.024, and 0.048 lb/A controlled purple nutsedge 50, 70, and 80% late season. Late season control by Strongarm applied PPI increased from 28 to 80% as rate increased. In 2001, Strongarm at 0.024 lb ai/A controlled purple nutsedge 90-95% 41 DAP.

In 2000, Strongarm controlled golden crownbeard and shining tickseed greater than 88% 53 and 83 DAP. Late season golden crownbeard control was 100% by Valor and 88-95% by Strongarm PRE. Strongarm applied at 0.016 and 0.024 lb ai/A controlled golden crownbeard 50 and 60% late season. Shining tickseed was controlled 100% late season by Cadre and Valor. PPI treatments of Strongarm controlled shining tickseed 60-70% late season. In 2001, Strongarm PRE at 0.016, 0.024, and 0.048 lb ai/A controlled both shinning tickseed and golden crownbeard 100% 51 DAP. Cadre and Valor also provided 100% control of shinning tickseed and golden crownbeard 51 DAP.

Peanut growth and yield response to Strongarm was observed at Lamesa, TX. All plots were kept weed-free season long. In 2000, at 14 DAP, 0.048 lb ai/A Strongarm PPI or PRE injured peanut 50%. Strongarm at 0.024 lb ai/A PPI or PRE injured peanut 28% and Strongarm at 0.016 lb ai/A PRE and PPI injured peanut 10-12%. No peanut injury was observed from Valor PRE at 0.094 lb ai/A. Peanut injury was 10% and 20% from Strongarm at 0.024 lb ai/A applied PRE and PPI, respectively, and 3 and 12% from Strongarm at 0.016 applied PRE and PPI at 85 DAP. Cadre injured peanut 7% 85 DAP. At the end of the season, 8% to 10% peanut injury was observed from Strongarm at 0.048 lb ai/A. All other Strongarm treatments had < 3% injury at the end of season. Peanuts were harvested from the Union and Lamesa locations. At Union, yields were not different between Strongarm and Prowl only plots. The Strongarm PPI plot showed a yield decrease of 480 lb/A when the 0.048 lb ai/A rate was compared to the 0.016 lb ai/A rate. Peanut yield from both Valor and the untreated control plot yielded >3100 lb/A. Strongarm applied 0.024 lb ai/A PPI produced 2400 lb/A, while the 0.024 lb ai/A PRE yielded 2600 lb/A. In 2001, peanut was injured 27% by Strongarm applied PRE and 10% PPI 14 DAP. Yield will be determined at the end of the season.

Yellow Nutsedge (*Cyperus esculentus* L.) Management with Strongarm and Dual Magnum Herbicides in Texas High Plains Peanut.

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Yellow nutsedge (*Cyperus esculentus* L.) infests numerous acres on the Texas Southern High Plains. Dual Magnum (metolachlor) has been used to control yellow nutsedge in peanut for several years. Due to concern about potential injury from preplant incorporated and preemergence application, many growers apply Dual Magnum early postemergence. Experiments were conducted in 1999 and 2000 to evaluate yellow nutsedge control with Strongarm (diclosulam) applied PRE at three rates (0.15, 0.3, and 0.45 ounces per acre), Dual Magnum applied postemergence (POST) at three rates (0.5, 1.0, and 1.3 pints per acre), and combinations of these herbicides. Florunner peanut was planted on producer farms near Loop, TX in 1999, and near Denver City, TX in 2000 in fields heavily infested with yellow nutsedge. Applications were made using a tractor mounted compressed air sprayer that delivered 10 gallons per acre at 24 psi. Yellow nutsedge control and peanut injury was evaluated 24, 39, and 51 days after planting (DAP) in 1999 and 31, 53 and 71 DAP in 2000.

No Strongarm by Dual Magnum interaction was observed at any rating date in 1999. Strongarm at 0.15, 0.3, and 0.45 oz/A PRE controlled yellow nutsedge 84%, 91%, and 95% (51 DAP). Dual Magnum at 0.5, 1.0, and 1.3 pts/A POST controlled yellow nutsedge 46%, 60%, and 61% (51 DAP). Strongarm at 0.30 oz/A PRE controlled yellow nutsedge more effectively than Strongarm at 0.15 oz/A PRE, and was similar to Strongarm at 0.45 oz/A PRE averaged across Dual Magnum treatments (51 DAP). Dual Magnum at 1.3 pts/A POST improved yellow nutsedge control compared to either Dual Magnum at 0.5 or 1.0 pts/A POST combined over all Strongarm rates.

Strongarm at 0.15, 0.3, and 0.45 oz/A PRE controlled yellow nutsedge 46%, 61%, and 81% (53 DAP) in 2000. Dual Magnum at 0.5, 1.0, and 1.3 pts/A POST controlled yellow nutsedge 10%, 13%, and 15% (53 DAP). A Strongarm by Dual Magnum interaction was observed 71 DAP. When Strongarm was applied at 0.15 oz/A PRE, additional Dual Magnum POST applications did not provide acceptable yellow nutsedge control 71 DAP. When Strongarm was applied at 0.3 oz/A PRE, Dual Magnum at 1.3 pts/A POST improved yellow nutsedge control to 88%. This control was better than Dual Magnum at 0.5 or 1.0 pts/A POST, and equivalent to Strongarm 0.45 oz/A PRE with any rate of Dual Magnum POST. When Strongarm was applied at 0.45 lbs/A PRE, all Dual Magnum POST rates provided equivalent control of yellow nutsedge (85 to 88%).

Dual Magnum POST did not injure peanut. Strongarm injured peanut in 1999 3 to 15% (51 DAP), with increased injury as rate increased. Injured plants were stunted, but this injury was not observed at harvest. Strongarm at 0.15 oz/A injured peanut 4% (31 DAP), but no injury was observed 53 DAP in 2000. Strongarm at 0.3 oz/A injured peanut 11% (31 DAP), but injury decreased to 4% (71 DAP). Similar injury was observed from Strongarm at 0.45 oz/A (16% at 31 DAP and 6% 71 DAP). No injury was observed at harvest, and neither grade nor yield was affected by any herbicide treatment.

Cadre and Cotton: A Peanut Producer's Dilemma.

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Cadre (imazapic) was registered for use in peanuts by American Cyanamid in 1996. Since that time, Cadre has become one of the most popular peanut herbicides. It has been estimated that 42% of the peanut acres in Georgia are treated with Cadre. One of the problems that limits the use of Cadre in peanuts is its 18 month cotton rotation restriction. This presents many growers with a challenge due to the fact that cotton is frequently rotated with peanuts. Although some producers will not plant cotton in a field that has been previously treated with Cadre, many are willing to take the risk because of the greater potential economic returns of cotton in comparison to other rotational crops. Hedging this risk occurs because the incidence and severity of Cadre carryover to cotton has been very unpredictable.

Research was initiated in 2000 to assess the impact of Cadre carryover to cotton and to investigate potential solutions to this problem. Results from an on-farm test, located in a Brooks County cotton field, showed that yield losses from Cadre injury were as high as 46%. Surprisingly, Cadre could only be detected in 1 of 3 soil samples obtained from the test area. Other research conducted in Plains and Tifton indicated that cotton is tolerant to direct soil applications of Cadre at 1/16-1/8X rates (equivalent to 2-4 ppb) depending upon the soil type. Generally, results from another study in Tifton suggested that there were no significant differences in cotton variety tolerance to Cadre. However, the cotton varieties, "GA161" and "AP6101" tended to have better tolerance of Cadre than some of the other varieties that were evaluated.

Weed Control for Peanut (*Arachis hypogaea*) with the Residual Herbicides Imazapic, Diclosulam, Flumioxazin, and Sulfentrazone: Field and Greenhouse Experiments.

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Peanut development and maturity require a long growing season. The residual activity of herbicides applied early season may not provide effective season-long weed control if no additional herbicides are applied. Therefore, residual weed control is an important part of peanut production. The lack of extended residual activity, variation in weed control spectrum, rotational restrictions, and cost are factors in herbicide selection. Until recently, these factors have limited the domination of any one particular herbicide in the Southeastern United States peanut market. Imazapic POST was registered in 1996, diclosulam for PPI or PRE application in peanut in 2000, and flumioxazin PRE and sulfentrazone PPI or PRE are currently under registration review for peanut. Field and greenhouse tests were conducted to determine the effectiveness of these residual herbicides. Weed control data from research were conducted in 2000. The field herbicide treatments included imazapic POST (71 g.ha-1 a.i.), diclosulam PPI and PRE (18 and 26 g.ha-1 a.i.), flumioxazin PRE (87 and 104 g.ha-1 a.i.), sulfentrazone PRE (168 and 280 g.ha-1 a.i.) and a standard, paraquat + bentazon. All weed control ratings reflect late-season weed control (August 17) except for sicklepod, which are from mid-season ratings (June 27). Sicklepod control with imazapic alone was 95%; 40% with paraquat + bentazon; and, <63% with other herbicides alone. When residual herbicides were used in combination with paraquat + bentzon EPOT, sicklepod control was improved to >60% with flumioxazin and diclosulam but not with sulfentrazone. The combination of paraquat + bentazon EPOT with imazapic POST sicklepod control was 95%. Florida beggarweed control was 83% or greater with flumioxazin, diclosulam, and sulfentrazone; and 54% or less with imazapic and paraquat + bentazon. The combination of paraquat + bentazon with flumioxazin, diclosulam, sulfentrazone, and imazapic improved Florida beggarweed control to 81% or greater. Yellow nutsedge control was 93% with imazapic; 95% or greater with sulfentrazone; 78 and 83% with diclosulam at 18 and 26 g.ha-1 a.i., respectively; and less than 28% with flumioxazin and paraquat + bentazon. Wild poinsettia control 85% or greater with diclosulam, sulfentrazone, and imazapic but 66% or less with flumioxazin and paraquat + bentazon. Generally, when herbicides were applied in combination with paraquat + bentazon weed control generally improved. Data for these residual herbicide treatments for the control of Florida beggarweed and sicklepod in glasshouse experiments will be presented at the meeting.

GRADUATE STUDENT COMPETITION II

Integration of Strip-Tillage, Resistant Cultivars, and Reduced Fungicide Inputs for Management of Peanut Leaf Spot.

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Field experiments were conducted in 2000 to determine the effects of tillage and the number of fungicide applications on early (*Cercospora arachidicola*) leaf spot of peanut (*Arachis hypogaea*). A split-split plot experiment with four replications was conducted at the Lang Farm on the Coastal Plain Expt. Station. Whole-plot treatments were conventional (CONV) vs. strip-tillage (ST) seedbed preparation treatments. Sub-plot treatments were cultivars Ga. Green (GG), C-99R, and Florida MDR-98. Sub-sub-plot treatments were seven fungicide regimes, and included: 1) no fungicide; 2) chlorothalonil (CHL) 1.26 kg/ha; 3) tebuconazole (TEB) 0.23 kg/ha (sprays 3-6) and CHL 1.26 kg/ha (all other sprays); and 4) azoxystrobin (AZO) 0.33 kg/ha (sprays 3 and 5) and CHL 1.26 kg/ha (all other sprays), applied at 14 day intervals (7 total sprays). Treatments 5-7 consisted of the same fungicides used in treatments 2-4, respectively, but applied at 21-28 day intervals (4 total sprays). In treatments 6 and 7, TEB or AZO respectively were applied at sprays 2 and 3 and CHL in all others. Leaf spot severity (Fla. 1-10 scale, where 1 = no leaf spot and 10 = total defoliation) was lower in ST plots than in CONV plots in all three cultivars and in all treatments that included only four fungicide applications. Leaf spot ratings in GG were 9.7, 4.8, 4.3, 3.6, 7.4, 7.3 and 6.2 (LSD = 1.2) for treatments 1-7, respectively in CONV plots, and 9.2, 3.3, 3.4, 2.7, 5.0, 4.3, and 3.3 (LSD = 0.8), respectively in ST plots. Similar trends were observed on Florida MDR-98 and C-99R, but at lower severity levels. Split-plot experiments with four replications were conducted in two commercial fields (one using ST and one using CONV tillage practices) ca. 0.25 miles apart in Worth Co., GA. Whole plots were 12 ft x 1000-1200 ft in size, and treatments consisted of cultivars GG and Florida MDR-98. Sub-plots were two fungicide treatments: 1) AZO 0.33 kg/ha (sprays 3 and 5) and CHL 1.26 kg/ha (all other sprays), applied at 14 day intervals and 2) AZO 0.33 kg/ha (sprays 2 and 4) and CHL 1.26 kg/ha (all other sprays), applied at 21-28 day intervals. Leaf spot ratings were 2.3 and 4.4 for GG and 1.9 and 3.3 for Florida MDR-98 (LSD = 0.4) for treatments 1 and 2, respectively in CONV plots, and 2.1 and 2.9 for GG and 2.3 and 1.7 for Florida MDR (LSD = 0.2) respectively in ST plots. Use of strip-tillage may reduce fungicide requirements for leaf spot control on GG, and should allow for even better leaf spot control when combined with resistant cultivars such as Florida MDR-98 or C-99R.

Peanut Disease Management Utilizing an In-Furrow Treatment of Azoxystrobin.

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Azoxystrobin (Abound 2.08F) applied in-furrow has provided yield increases in experimental plots. However, disease control provided by this treatment is not well understood. Two trials were conducted in 2000 to examine disease management through the use of an Abound in-furrow application. A split-plot design with four or five repli-

cates per treatment was used. Main plots were treatment with Abound 2.08F in-furrow (0.35 pt/A) at planting or nontreated and sub-plots were Abound 2.08F (1.15 pt/A) applications at 60 and 90 days after planting (DAP) or nontreated. In-furrow treatments caused no phytotoxicity and there were no effects on plant stand counts in either trial at 14 and 21 DAP. Aspergillus crown rot, incited by *Aspergillus niger*, was rated at 28 and 35 DAP and was found to be significantly suppressed in plots receiving the in-furrow treatment of Abound for both trials. Destructive ratings revealed significant reductions in incidence of southern stem rot, caused by *Sclerotium rolfsii*, in plots receiving the in-furrow treatment versus the nontreated control at 49 DAP (11.4%) and 57-58 DAP (9.5%). These differences were not detected later in the growing season. Mid-season applications of Abound significantly reduced final southern stem rot incidence regardless of in-furrow treatment by 25.3% and 15% for the two trials. Neither in-furrow nor mid-season applications of Abound had a significant effect on tomato spotted wilt or Cylindrocladium black rot, caused by *Cylindrocladium parasiticum*. When Abound in-furrow was applied in conjunction with mid-season applications, non-significant yield increases of 414 and 168 lbs/A were seen in the two trials. Similarly, value increased $113/A and $84/A when the in-furrow treatment was applied.

Effect of Inoculation with *Sclerotium rolfsii* at Three Plant Developmental Stages in Three Runner Peanut Genotypes.

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Inoculation with *Sclerotium rolfsii* (the causal agent of southern blight) was performed on three runner peanut genotypes, (Okrun, Tamrun 96 and Texas 961678), at three developmental stages (50, 75 and 100 days after planting). Bulb pans (15x30 cm) containing 25 lb of soil mix (sand: soil: peat: 1:2:1: v/v/v) were recessed in field soil leaving a 5-cm rim above the soil line. Two plants were grown in each pan, and five pans were grouped to constitute a plot. Each plant was inoculated at the base with three sclerotia of an isolate of *S. rolfsii*, placed on 1-cm dia Whatman #1 filter paper disk. After inoculation, plots were covered with cheesecloth for 5-7 days and mist irrigated to maintain high humidity which enhances sclerotial germination. Disease was assessed weekly using a 1-6 scale, where: 1= no mycelia on stem, 2= less than 25% of stem colonized by mycelia, 3 = one damaged stem, 4= two damaged stems, 5= three damaged stems and 6= dead plant. The experiment was conducted as 3x4 factorial arrangement in a complete block design with four replications. Plants were dug at 145 days after planting, and pod and seed dry weights were determined. Data were analyzed using Proc Mix (SAS Institute Inc., Cary, NC) using the slice option from least significant means of treatments to compare simple effects. There were significant differences ($P<0.05$) in disease severity at harvest between all genotypes. Southern blight severity in all genotypes was highest when plants were inoculated at 50 DAP, where Okrun had a disease severity of 4.0, followed by TX 961678 with 3.4, and Tamrun 96 with 2.5. Pod and seed weights per plant were significantly lower in all genotypes when plants were inoculated at 50 DAP, and no significant differences were observed between all controls and plants inoculated at 100 days after planting. These results provide useful information on characterization of resistance or susceptibility of peanut genotypes to southern blight under field conditions.

Effect of Plant Population Density on Epidemiology of Peanut Stem Rot.

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An experiment was conducted in microplots to determine the effects of plant population density on the development of peanut stem rot caused by *Sclerotium rolfsii*. Two rows of Georgia Green seed were planted in each plot in a cross pattern with seed spacings of 2, 4, 6, 8, 10 and 12 inches. The center plant in each plot was inoculated with *S. rolfsii* on one of three different dates and the plots watered to promote disease development. On August 19, disease severity was rated on the inoculated plants, as well as disease incidence and extent of spread to the other plants. Inoculation date was not significant (> 0.05) ; data for all three inoculation dates were averaged. Seed spacing had a significant effect (<0.05) on disease development. Mean disease severity of the center plant ranged from 32% to 60% with the 6-inch to 12-inch seed spacings having the lowest disease severity and 2-inch seed spacing having the highest. Mean disease incidence, the proportion of diseased plants to total plants, ranged from 17% with the 12-inch seed spacing to 43% with the 2-inch spacing. The mean number of diseased plants per plot ranged from 0.9 with the 12-inch spacing to 8.8 with the 2-inch spacing. Mean length of diseased row was measured along each axis and ranged from 4 inches with the 12-inch spacing to 27 inches with the 2-inch spacing. Five days prior to harvest, disease severity was assessed on the terminal plants on each axis. The mean severity ranged from 6% with the 12-inch spacing to 42% with the 2-inch spacing. Based on these results, the potential for increased severity, incidence, and spread of stem rot increases with higher density peanut plantings.

Model Assisted Peanut Production in Georgia.

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Environmental and policy issues are obstacles peanut producers will continue to confront. The tedious task of producing a profit while remaining environmentally mindful is greater now than ever before. In 2000, two methods of peanut production were compared on a large scale basis (>5.93 ha) at the Southwest Georgia Branch Experiment Station in Plains and the Southeast Georgia Branch Experiment Station in Midville. One method, the FARM (Field Adaptive Research Model) model, utilized three proven production models. Irrigation applications were triggered by Irrigator Pro, herbicide recommendations were made using HERB, and fungicide applications were initiated by AU-Pnut. The second method used current recommended cultural practices and was initiated by experiment station personnel. Tillage, row spacing, seeding rate, preplant herbicide and pre-plant insecticide differed between locations, but remained the same within methods at each location. The FARM model resulted in fewer irrigation applications compared to traditional methods at both locations. Herbicide costs using the HERB model were less at Plains and Midville by $17.08 ha-1 and $34.40 ha-1, respectively . The AU-Pnut method triggered one less fungicide application at Plains and three fewer applications at Midville compared to a calendar based spray schedule. The Hull-Scrape method was used to determine digging date at each location. Economic analysis of production costs was done using FARMCATS, a new budgeting and cost accounting system. At both locations, net farm income and total costs were less using the FARM model method. The two production methods will be compared again in 2001 at the Plains and Midville locations and will include an additional experiment station site and four on-farm locations.

ENTOMOLOGY

Seasonal Abundance and Chemical Suppression of Burrower Bug in Strip-Tillage Peanut.

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Pangaeus bilineatus Say was the most abundant burrower bug species collected from strip-tillage peanut planted into corn stubble. Adults of this species were found in peanut throughout the 2000 growing season using 11-cm diameter pitfall traps. *Pangaeus bilineatus* reproduced in peanut based on the late-season collection of nymphs. Few immatures were found before 1 September and the peak nymphal population occurred during the last week of September. Liquid chlorpyrifos (1.0 lb ai/ac Lorsban 4E) applied on 6 June and granular chlorpyrifos (2.0 lb ai/ac Lorsban 15G) applied on 7 July resulted in significant reductions in burrower bug kernel-feeding injury and significant increases in grade (approximately 2 % TMK increase) relative to the untreated check. Granular chlorpyrifos (2.0 lb ai/ac) applied on 10 August and foliar lambda-cyhalothrin (0.03 lb ai/ac Karate Z) applied on 25 July did not measurably reduce burrower bug injury or increase grade. None of the treatments resulted in a significant yield increase. These are single year efficacy results. More information is needed on whether burrower bug is a significant economic risk in reduced tillage peanut production systems.

Effects of Peanut Variety and Insecticides on Thrips Populations and Transmission of Tomato Spotted wilt Virus.

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Previous research has shown that incidence and severity of tomato spotted wilt virus (TSWV) in peanut can be controlled, at least in part, by the application of specific insecticides. In addition, different varieties of peanut have shown a great deal of variability in their susceptibility to the virus. In 1999 and 2000, two peanut varieties and four insecticide treatments were compared in a field with a history of incidence of TSWV to elucidate the efficacy of these treatment combinations in controlling the virus. Plots were two rows, 36 inches apart, 20 feet long and replicated four times in a split plot design with insecticides as whole plots and varieties as subplots. TAMRUN 98 and TAMRUN 96 represented varieties considered susceptible and resistant to TSWV, respectively. In 1999, insecticide treatments consisted of three at-plant, granular formulations including; Payload 15G (5 lbs/A), Thimet (5 lbs/A), and Temik (6.7 lbs/A). In addition, a post-emergence treatment was used consisting of Orthene 75S (.67 lbs/A). In 2000, the Payload treatment was not used but an at-plant hopperbox treatment of Orthene 75S (4 oz/A) was substituted. In 1999, thrips populations were assessed by sampling five quadrifoliate leaves in each plot at 4, 10 and 14 days after the post emergence application. In 2000, a similar approach was used but samples were taken at 3, 7, 14 and 22 days after the post emergence treatment. Percent incidence of TSWV was taken prior to harvest and severity of TSWV was rated using the percent of plants showing stunting and wilting symptoms. Thrips populations were greater in 1999 than in 2000, with significantly greater populations in untreated peanut than in plants treated with any of the various insecticides. During both years of this test, on two of the sampling days, thrips populations were significantly greater in TAMRUN 96 than in TAMRUN 98. TAMRUN 98 experienced significantly higher incidence (30%) and severity (4%) of disease symptoms than TAMRUN 96 (7% and 0.3 % for incidence and severity, respectively). In both years, significantly greater yields were obtained in TAMRUN 96 (2476 lbs/A and 3723 lbs/A in 1999 and 2000, respectively) than in TAMRUN 98 (1612 lbs/A and 3162 lbs/A in 1999 and 2000, respectively). No significant differences in yield were observed between insecticide treated and untreated peanut.

Application of Field Research Results to Management Recommendations for Insect Pests of Virginia Peanuts.

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Each year, results of the Virginia Tech Insect Pest Research/Extension program are summarized and presented to peanut producers to encourage adoption of 'best management' practices. A brief summary of 2000 findings includes information on tobacco thrips, potato leafhopper and southern corn rootworm – the primary pest species encountered. All field trials were replicated using a RCB design. Plots were 4-rows by 40-ft in length – with treatments applied, and insect and/or plant damage ratings made on the two center rows of each plot. Yields were determined by digging, combining and drying peanuts from the two center rows of each plot (80 row-ft/plot) using commercial equipment. Trials were managed according to standard VCE recommendations. Five field trials were conducted at TAREC to evaluate 39 treatments for thrips control. The average yield advantage, over all trials and treatments, compared with the untreated controls was 599 lb/acre. The highest yields were obtained with 1) Temik 15G @ 7 lb/acre applied in-furrow followed by Orthene 97 @ 3.1 oz/acre applied in a 12 to14-inch foliar band at late ground cracking (ca. three weeks after planting); 2) Orthene 97 @ 16.3 oz/acre applied as a liquid in-furrow followed by at late cracking foliar band @ 3.1 oz/acre; and 3 and 4) two foliar bands of either Karate Z @ 1.28 oz/acre or Orthene 97 @ 3.1 oz/acre, the first at late cracking and the second in two weeks. Seven trials were conducted on growers' fields in a 3-county area to evaluate 30 treatments for potato leafhopper control. All insecticides were applied one time as a broadcast foliar treatment. Application time in relation to plant stage varied with location. The average yield advantage, over all trials and treatments, compared with the untreated controls was 342 lb/acre. Mean percent yield increases over the untreated controls were as follows: 8.6% for Steward 1.25EC @ 2.56 oz/acre; 11.2% for Asana XL @ 3 oz/acre; 12.9% for Danitol 2.4EC @ 10.6 oz/acre; 20.6% for Karate Z @ 1.28 oz/acre; and 21.5% for Lorsban 15G @ 13 lb/acre. Plots were evaluated weekly by assigning an estimate of percentage of leaves exhibiting leafhopper injury based on visual inspection. Statistical regression of the maximum percent leaf injury to yield (lb/acre) showed that yields were not reduced until 20% or more of the leaves exhibited injury. At leaf injury levels greater than 20%, there was a significant relationship (R2 = 0.41) with yield decreasing as percent leaf injury increased (Y = -11.9x + 3281). Sixteen on-farm validations of the 'Southern Corn Rootworm Risk

Index' were conducted over seven counties and included three peanut varieties (VA 98R, VA 92R, and NC-V 11), and eleven soil types (Bonneau, Buncombe, Dragston, Emporia, Eunola, Kenansville, Lynchburg, Mattaponi, Nansemond, Rains and Slagle). Index predictions were compared to pod damage assessments at the end of the season. Based on soil type, soil drainage class, variety, planting date and history of rootworm damage, the index predicted eight cases of low risk, five of medium and three of high risk. All low risk predictions were accurate. Three of five medium risk predictions were accurate and two cases were over predicted (predicted medium when only low damage occurred). All high risk predictions were over predicted, as only low damage occurred.

Evaluations of Novel Insecticides for Control of Thrips and Lepidopterous Larvae on Peanuts in Alabama.

J.R. WEEKS* and L. WELLS. Department of Entomology/Plant Pathology, Auburn University and Alabama Agricultural Experiment Station, Wiregrass Research & Extension Center, Headland, AL 36345.

Impending losses of currently labeled insecticides in peanuts due to re-registrations and the lack of commercial development activity for peanut insecticides are creating a potential crisis for peanut growers. Studies were initiated in 2000 to investigate the impact of several new synthetic chemistries, as well as some botanical and organic insecticides on thrips and lepidopterous larvae. In one study Kaolin formulated as Surround WP @ 25 lb/ 100 gal., Hot Pepper Wax @ 8 oz./ gal., Neem Oil formulated as Triact 70 @ 2 gal./100 gal., and Karate Z @ .015 lb ai/A as a standard were applied with a backpack sprayer @ 15 GPA to Georgia Green cv. peanuts. Two applications were made one week apart to peanuts 14 days after cracking. Visual plant damage ratings made 2 weeks post-treatment indicated no significant reduction in thrips damage compared to an untreated check except for the Karate treatment. Final tomato spotted wilt ratings showed the Untreated plots with an average TSW of 45%, Karate Z with 31%, Surround with 30%, Hot Pepper Wax with 38.75%, and Triact 70 with 42 %. Only the Karate Z plots with an average yield of 3049 lb/A had a significant yield increase over the untreated plots which had an average yield of 2505 lb/A.

A second study conducted in 2000 evaluated Steward @ .065,.075 &.09 lb ai/A, Tracer @ .032, .045, & .067 lb ai/A, and Intrepid @ .125 lb ai/A for control of redneck peanut worm(*Stegasta bosqueela* Chambers). These candidate insecticides were compared with standard treatments of Karate Z @ .03 lb.ai/A, Asana XL @ .036 lb ai/A, Lannate LV @ .38 lb ai/A and an untreated control. One application was made to Georgia Green cv. peanuts in August with a tractor-driven sprayer calibrated @ 15 GPA. Post-treatment insect counts were made at 5 and 7 days after application. At 5 days Karate, Asana, and Tracer significantly reduced numbers of RKPW compared to the untreated check. At 7 days all treatments but Intrepid significantly reduced RKPW numbers compared to the untreated check.

PRODUCTION TECHNOLOGY III

Effect of Chelated Calcium on Valencia Peanut Yield

N. PUPPALA*, R.D. BAKER and R.B. SORENSEN. Agricultural Science Center at Clovis, NMSU – Clovis, NM - 88101, U.S.A; USDA-ARS-National Peanut Research Lab, Dawson, Georgia – 31742,U.S.A

Calcium nutrition is often a yield limiting factor for peanuts and is necessary for pod growth and to increase peg strength. Calcium (Ca) applied to the fruiting zone can increase the number of pods per plant. An application of Ca at 30 to 45 days after penetration of pegs into the soil has increased the percentage of developed pods. Calcium applied as gypsum did not show any significant difference in yield during 1999 growing season. This project will determine whether applications of chelated calcium at three different rates (1.7 kg ha-1, 3.5 kg ha-1 and 6.8 kg ha-1) will influence pod yield and farmer stock grade. Chelated calcium (EDTA – Ethylene diamine tetra-acetate) was applied using a Cady wheel fertilizer injector at 45 days after planting on both sides of the peanuts. The experiment was conducted under two different irrigation systems of subsurface drip irrigation (SDI) and center pivot irrigation (CP). Pod yield, farmer stock grade (FSG), and water applied to the SDI system were compared with that of the CP irrigation system. Pod yields with the SDI system averaged 2700 kg ha-1 or a 17% increase over CP system (2316 kg ha-1). Among the three calcium rates tested, application of 1.7 kg ha-1 under SDI resulted in 12% higher pod yield compared to control (no calcium). Under CP application of 6.8 kg ha-1 Ca resulted in 6% higher yield compared to control. Application of dairy manure at 37.5 tons ha-1 along with calcium improved the pod yield and farmer stock grade under SDI system. More research is needed to conclude these findings.

Influence of Production Practices on Yield and Gross Economic Value of the Virginia Market Type Cultivars NC V-11, NC 12C, VA 98R, and Perry.

L. SMITH*, A. COCRAN, P. SMITH, M. WILLIAMS, D. JORDAN, and D. JOHNSON. North Carolina Cooperative Extension Service, Raleigh, NC 27695-7620.

Peanut response to various cultural and pest management practices can be influenced by cultivar selection. The cultivars NC V-11 and NC 12C are the most commonly planted cultivars in North Carolina at the present time. Plantings of the cultivar VA 98R increased dramatically in 2000, and the recently released cultivar Perry shows promise for the Virginia-Carolina production region. Understanding how these cultivars respond under various production systems will be important in optimizing yield potential. Experiments were conducted to determine the effect of planting pattern (single rows versus twin rows), prohexadione calcium (with or without application of this plant growth regulator), and tillage systems (planting into crop stubble or conventionally tilled systems) on yield and gross value of the cultivars NC V-11, NC 12C, VA 98R, and Perry. Two digging dates were included in all experiments. When comparing twin and single row planting patterns, there was no difference in yield or gross value, regardless of cultivar. Prohexdione calcium (repeat applications of 140 g ai/ha) increased row visibility of all cultivars at all locations, and increased pod yield at two of three locations regardless of cultivar. Tillage did not have a major effect on yield, and there was little interaction among tillage systems and cultivars.

Trends in Georgia Peanut Production and Marketing: Results from County Agricultural Extension Agent Surveys.

N.B. SMITH[1] *, J.P. BEASLEY JR.[2], J.A. BALDWIN[2]. [1]Department of Agricultural and Applied Economics, [2]Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793

Georgia county agricultural extension agents are surveyed semiannually on peanut production practices in their respective county. The survey has been conducted since 1987 with some modifications to the survey questions over time. The survey is designed to collect baseline data for research and extension program planning and development. Information collected through the survey include crop rotations, cultivars, land preparation, fertilization, disease and nematodes, seed, cultural practices, entomology, weed management, marketing, and harvesting and drying. Trends observed over the last decade include increased adoption of twin-row production and reduced tillage statewide, about 20% of the acreage in 1999. The dominant runner variety changed from 70% Florunner in 1991 to nearly 90% Georgia Green in 1999. Crop rotations have shifted over the last decade as the crop mix has changed to include more cotton. The majority of peanut acreage in 1999 was planted following cotton (62%) from the previous year, whereas the majority of peanuts planted in 1991 followed corn (42%). The percent peanut acreage planted following peanuts the previous year dropped from 13% to 4%. The number of years between peanut crops in a field has grown from an average of 2 years to 2.5 years as Georgia farmers have planted fewer zero, one and two year rotations. Other trends in production practices include increased in-furrow insecticide applications, heavier seeding rates, more soil testing, and greater utilization of the hull-scrape method for harvest timing. Responses to peanut marketing questions show a decrease in additionals grown and marketed through the Georgia, Florida, Alabama Peanut Association while contracting has increased. Average quota lease prices ranged between eight and ten cents per pound while average quota sale prices ranged between 39 and 50 cents per pound during the nineties decade.

Impact of Average Plant Spacing and Planting Pattern on Yield and Canopy Coverage for Non-Irrigated Peanuts.

D.A. STERNITZKE*, J.I. DAVIDSON, Jr., and M.C. LAMB, USDA-ARS-National Peanut Research Laboratory, Dawson, GA 31742

Field experiments were conducted in Terrell County, GA from 1997 to 1999 to determine the effect of average plant spacing on pod mass per plant and yield for single row peanuts grown under nonirrigated conditions. Plants within treatments were thinned at random until average plant spacings of 23, 30 38, 48, and 61 cm were attained. This was done to mimic the effects of reduced emergence. Checks were not thinned and averaged 7.9 cm/plant. Pod mass per plant increased with spacing because competition for water, nutrients, and light decreased. In contrast, yield decreased with spacing because lower population losses exceeded gains stemming from a reduction in competition. Results from this study prompted a second experiment in 2000 to study the impact of plant spacing (as governed by planting pattern) for a fixed population on yield and canopy coverage. Equal populations of Georgia Green peanut were planted at 20 seed/m in single, twin, and diamond patterns on 1.8 m beds. Nearest adjacent seed distances were 4.8, 10, and 18 cm, respectively. Georgia's driest year on record

delayed planting until 28 June. Canopy closure in diamond plots was observed 69 days after planting. Neither single nor twin row patterns ever experienced closure. An extremely late planting date coupled with the relatively large distance between adjacent plants created an ideal environment for TSWV to spread within diamond pattern plots. In spite of these conditions yields from four of six diamond pattern replicates exceeded yields from single and twin row pattern treatments.

HARVESTING, CURING, SHELLING, STORING AND HANDLING

An Economic Rock Remover for an Amadas Combine.

P.D. BLANKENSHIP*, USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742.

Peanuts are harvested with various amounts and types of foreign materials which must be removed during post harvest processing for consumer acceptance of peanut products. To assist in rock removal during harvest, a modification to the pneumatic duct system used to transport peanuts from underneath a standard Amadas combine to the holding bin was designed. The design utilizes air flow patterns and turbulence following an elbow in the duct system and consists of an air deflector and a properly sized and spaced opening in the duct. A stationary duct system with a controllable peanut delivery apparatus was utilized in developing the duct modification. After preliminary testing during development, the efficiency of the duct modification rock removal was evaluated with three lots of peanuts averaging 0.45 t containing an average 283 rocks (2.38 % by weight). Peanuts were conveyed through the duct system at an average flow rate of 3.87 t/h. An average of 30 rocks comprising 42.5 % of the total rock weight were extracted from the peanuts. The weight of rocks removed averaged 153.5 g ranging from 18.7 g to 320.7 g. Rocks not removed averaged 24.2 g ranging from 1.7 g to 202.8 g. Results from the tests indicate that the duct modification appears to be effective in removing larger rocks from peanuts during harvest but not effective in removing smaller rocks. The design will be further evaluated with field testing.

Description of Single Kernel Moisture Distributions and Comparisons to Current Moisture Content Measurements of Peanut Kernels.

C. L. BUTTS* and R. B. SORENSEN. USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742.

The moisture content of individual peanut (*Arachis hypogea L.*) kernels within a given lot of farmer stock peanuts varies due to many factors including maturity distribution, soil conditions at harvest, time in the windrow, and curing conditions. During 2000, four varieties of peanut, AT201, GK7 High Oleic, Georgia Green, and NC2 were grown in Sasser, GA and dug on four different dates. At each digging, half the peanuts were harvested green and half were allowed to partially cure for approximately three days in the windrow. Peanuts were divided into four subsamples and placed on four different dryers. One sample from each variety was placed on each dryer. Samples to determine the harvested maturity profile and initial moisture content were obtained when peanuts were divided into four subsamples prior to curing. Maturity was determined using the hull-scrape method on a 200-pod sample. Initial kernel moisture content was determined using a conventional moisture meter and a single kernel moisture tester. Initial kernel and hull moistures were also determined using the oven method (ASAE S410.1, 1997). Peanuts were cured using air heated 8C above ambient, but no higher than 35C. A programmable logic controller monitored and controlled the curing process, and turned off dryers when the peanuts had reached the desired mois-

ture level. Kernel moisture content was again determined using the two moisture meters and the oven method

The moisture content of individual kernels were best described using a Exponential Modified Gaussian (EMG) distribution. Normal or Gaussian, Logistic, and Log-Normal distributions were also fit to the data for comparisons. The relationship between the oven and conventional moisture contents was relatively linear between 5 and 15% wet basis. However, above 15% moisture content, the relationship was nonlinear. A linear fit to the relationship between conventional moisture readings and oven moisture resulted in a R2=0.83 while a nonlinear expression had an R2=0.96. A linear regression of average single kernel moisture content to oven moisture had an R2=0.95. Error between the oven moisture and moisture content observed using the conventional meter was highly correlated to the standard deviation of single kernel moisture content (R2=0.61). As the standard deviation of single kernel moisture contents increased, the error increased exponentially. A relationship using the average and standard deviation of the single kernel moisture content as independent variables to estimate the conventional moisture content had an R2=0.81. Typically, the conventional moisture meter indicated a lower moisture content than the average single kernel moisture content. The difference tended to increase as the standard deviation of the single kernel moisture content increased.

Effect of Curing on Peanut Allergenicity.

S.Y. CHUNG[1*], C.L. BUTTS[2] and E.T. CHAMPAGNE[1]. [1]USDA-ARS, SRRC, New Orleans, LA 70124. [2]USDA-ARS, NPRL, Dawson, GA 31742.

Previously we have shown that peanut allergenicity (i.e., degree of IgE binding) increases with the level of advanced glycation end-adducts (AGE) formed during peanut roasting. AGE adducts are formed due to reactions between sugars and proteins. Heating facilitates their formation. As curing is a drying or heating process, AGE could possibly form during curing. If so, peanuts cured under different conditions (e.g., time and/or temperature) may vary in allergenicity. The objective of this study was to determine if curing under different conditions alter the levels of AGE adducts and allergenicity in peanuts. For this purpose, all peanuts were windrow-dried for at least 3 days. They were cured using air heated to temperatures ranging from 35 to 60 oC (95 to 140 F). Raw and roasted peanuts were then examined in enzyme-linked immunosorbent assays (ELISA), using polyclonal antibodies against AGE and a pooled serum (containing IgE antibodies) from patients allergic to peanuts, respectively. Results showed that curing under different conditions had little effect on peanuts when they are raw. However, when subjected to roasting, peanuts cured at a higher temperature or longer time yielded a higher level of AGE adducts and, consequently, allergenicity. This suggests that curing alone has little effect on peanut allergenicity, but together with roasting, it alters allergenicity. Proper monitoring of the curing and roasting processes could be the key to reducing peanut allergenicity.

ECONOMICS

Economic Evaluation of Peanut Management Systems for Insect and Disease Pests.
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To successfully produce peanuts in the southeast, insecticide and fungicide treatments are needed to control insects and diseases. In peanut production risk and uncertainty exists; however, peanut insects and peanut disease will be a problem. Producers constantly monitor costs and look for ways to reduce production expenses. The cost and production effectiveness of different treatment levels for insecticides and fungicides and the use of different varieties must be evaluated to determine the most economical treatment level. A study was established to evaluate three levels of insect and disease management for pest efficiency, peanut yield, peanut grade, and economic return. Three management systems were compared; low input, IPM, and high input. The low input system is defined as applying the minimum rates of recommended pesticides. The IPM system is defined as a management system where treatments are applied based on the AUPnut production model. The high input system utilized maximum recommended rates of pesticides. All other inputs were used at standard recommended practices for typical farm managers. The study was conducted at the Wiregrass Substation in Headland, Alabama under non-irrigated conditions. Yield data were calculated and grades were obtained for four varieties: Virugard, AT 1-1, Georgia Green, and C-99R. Severe weather pressure limited overall yields for the 2000 crop year. The high input levels yielded on average 487 pounds per acre higher than the IPM level, and 781 pounds per acre higher than the low input system. The highest yielding variety was Virugard for the maximum input system with C-99R yielding the highest for the low and IPM systems. From a grade and economic analysis, the high input systems for all varieties were economical compared to the low and IPM systems. The high input system was significantly higher on net income for all four varieties. Greatest cost effectiveness can be achieved utilizing a high input disease and insect management system in years with high drought pressure.

Consumers' Likelihood to Purchase a Meat Analogue Containing Peanut Protein.
C.M. JOLLY*, Department of Agricultural Economics and Rural Sociology, Auburn University, Auburn Alabama, 36849-5406. M. J. HINDS, Department of Nutritional Sciences, Oklahoma State University, Stillwater, OK 74078. P. LINDO, Department of Plant and Soil Sciences, Alabama A&M, University, Normal 35762.

Americans produce and eat large quantities of peanuts and peanut products. The per capita consumption of peanuts is about 6 pounds per annum. Recent research has shown that peanuts have several nutritional and health benefits. Given this information, attempts to shift the demand curve for peanuts and peanut products to the right are looming. One consideration has been to include peanut as a substitute protein in the production of meat analogues, such as hamburgers, hot dogs, or other types of deli-meats. Before embarking on a full-scale study, we conducted a preliminary survey

to determine consumers' acceptance of a meat analogue with a plant protein. Permission was obtained from Auburn and North Carolina Agricultural and Technical Universities in 1997 to conduct a survey of students, staff, and faculty. A survey of 606 respondents was self-administered. The age of the respondents ranged from 16 to 78, with about 43% of them coming from households of three to four individuals. Thirty-one % of the households had incomes of less than $10,000, 31% had incomes of $10,000 to $40,000, while 38% of them had incomes of more than $40,000. Most of the respondents (69%) had never eaten a vegetable meat substitute, 19% ate less than once per week, with only 12% indicating that they ate more than once per week. When asked whether they would be willing to try hot dogs, burgers, or a deli-meat containing some mixture of a meat substitute 57, 65, 64% stated "yes", but when asked if they would be willing to try the same products, but with only a meat substitute 27, 31 and 29%, respectively said "yes". The respondents indicated that some of the factors that would influence their choice of a new meat on the supermarket shelf would be the appearance (30%), the amount of fat per serving (24%), and the type of meat in the product (26%). When asked if the product containing only the meat substitute was cheaper than a comparable meat product, 37% said they would purchase it, but when the meat substitute was the same price, 24% said they would still buy, but only 16% said they would buy if the meat substitute was more expensive. The information provided does not tell the quantity of a product containing peanut protein a consumer would buy, but it indicates clearly that if there were such a product, that the sampled consumers would be willing to accept it with some percent of vegetable protein as a meat substitute.

Marketing of Quota and Additional Peanuts Within a No-Net-Cost Peanut Program.

K. M. ROBISON*, Farm Service Agency, United States Department of Agriculture, Washington, D.C 20250

The 1996 Act was a compromise in which the minimum national poundage quota level was eliminated and producers became responsible for any losses incurred in operating the peanut price support loan program. Balancing the need for adequate supplies and minimizing the potential for an assessment to cover loan losses was a major concern. The buy back provision took on added importance as a marketing tool. Contracting of additional production was expanded to insure adequate supplies in the best location. Producers used buy backs to improve cash flow. Shellers and manufacturers used buy backs to purchase adequate quantities to meet demand.

EXTENSION TECHNIQUES AND TECHNOLOGY/EDUCATION FOR EXCELLENCE

Fungicide Treatment Effects on the Incidence of Soileborne Diseases in Peanut.

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Field experiments were conducted in Calhoun Co., GA, during the 2000 season to evaluate four fungicide programs for control of soilborne diseases in peanut (*Arachis hypogaea* L.). The four treatments included azoxystrobin (Abound 2.08 F, two applications at 18.5 fl oz/A)), tebuconazole (Folicur 3.6 F, four applications at 7.2 fl oz/A), flutolanil (Moncut 50 WP, two applications at 1.0 lb/ac + Bravo 1.5 pt/ac), and flutolanil plus propiconazole (Montero, two applications at 1.44 lb/ac). Each program included applications of chlorothalonil for a total of seven applications during the season. Seven applications of chorothalonil alone (Bravo Weather Stik, 1.5 pt/A) were applied to the control plots. No difference in the severity of early leaf spot (*Cercospora arachidicola*) was observed among treatments. Southern stem rot (*Sclerotium rolfsii*) was nearly absent in the research plots. At the time of disease ratings, it was impossible to differentiate Rizoctonia limb rot from Diplodia collar rot and these diseases were evaluated together. Among treatments, azoxystrobin provided significantly better control of the limb rot/collar rot complex with 45 to 59 percent fewer diseased plants per 30.4 meters of row than all other treatments. Plots treated with azoxystrobin produced significantly (P=0.05) greater yields when compared to the control (chlorothalonil) and the other treatments. Similar results were obtained in a non- replicated study in 1999. In this study, a fungicide program that included two applications of azoxystrobin provided the best disease control and the largest yields.

Using the Northeast Agricultural Expo to Extend Information to North Carolina Peanut Growers.

P. SMITH*, M. WILLIAMS, L. SMITH, M. RAYBURN, D. JOHNSON, D. JORDAN, J. BAILEY, R. BRANDENBURG, and T. ISLEIB. North Carolina Cooperative Extension Service, North Carolina State University, Raleigh, NC 27695-7620.

The Northeast AG Expo has been held jointly by the North Carolina Cooperative Extension Service in a 6-county region in the state for almost a decade. A different commodity or subject matter is highlighted each year, with a variety of on-farm tests, exhibits, and tours developed for the program. Peanut and cotton are included in the Expo about every third year. The Expo consists of a one-day session conducted in mid September when peanut is included in the Expo. Participation by farmers and agribusiness and the general public has been as high as 250 people, depending upon the commodity mix and weather conditions. The Expo is a useful tool for gathering research-based information that has practical significance in the areas of production and pest management. In 1997 and 2000, a variety of peanut trials were conducted at the Expo site and included comparisons of tillage systems, planting patterns, cultivars and digging dates, disease management strategies, cultivars and breeding lines, plant growth regulators, inoculants, and integrated pest management techniques.

The Development of the Peanut Industry in Dawson County, Texas.

J. FARRIS. Texas Agricultural Extension Service, Lamesa, TX, 79331.

Dawson County is located in the Southern High Plains of Texas and is characterized as a semi-arid environment. Average annual rainfall is 18 inches and the growing season consists of 208 frost-free days. Primary soil in the county is an Amarillo fine sandy loam, with cotton, peanut and grain sorghum the predominant crops. Many farms are equipped with center pivot irrigation; and foliar and soil borne disease, and insect problems rarely affect the peanut crop, making the county very suitable for peanut production. Dawson County has 378,178 acres available for crop production, but only 70,884 acres are irrigated. With a three-year rotation of peanuts and cotton about 23,628 acres of peanuts could be planted annually. However, some areas of the county have high salt and boron levels in the irrigation water; and other areas do not have high enough irrigation well capacity (minimum of 1.50 inches per week), resulting in only about 20,000 acres that should be planted annually. Peanut production was initiated in the county in 1991on three farms; however, the first buying point did not open until 1993, which provided the initial infrastructure to expand the industry in the county. Runner (55%), Virginia (40%), and Spanish (5%) market types are being grown, with runner yields reaching 7000 lbs./acre, with an average of 3900 lbs./acre over the past several years. The majority of acres are produced as additionals, but the 1996 Farm Bill provided producers with the option to buy or lease quota across county lines, which has benefited Dawson County. Peanut offers cotton producers a viable rotation crop. As peanut acreage has grown over the past 8 years, so has the occurrence of disease and other production problems. As in all agriculture endeavors, the cost of production and the price of the commodity hold the key for future growth and/or sustainability for the county and the region.

The Effective Delivery of a County Extension Peanut Program in Henry County, Alabama.

J.D. JONES, D.L. HARTZOG, and J.R. WEEKS. Alabama Cooperative Extension System, Auburn University, Headland, AL 36345.

Growers are faced with many new challenges in today's agriculture. A good Extension Peanut Program must be based on sound research and delivered to the growers in such a way to meet their changing needs. In order to do just that we must work closely with growers, peanut specialists, grower groups and industry to gather the information to respond to the needs of the peanut growers. Since 1989 in Henry County, the Extension and Farmers Federation sponsored Hull Scrape Program has benefited 550 area growers an estimated 4.5 million dollars in profit due to digging their peanuts at optimum maturity. Some 4500 samples were submitted and were processed at no cost with a savings $112,500 to the grower during this 12 year period. Many methods were used to bring research based information about peanuts to the growers. Twenty-six grower meetings, twelve peanut scout schools, thirty-six peanut hull-scrape demonstration and several harvest clinics have been conducted. One-hundred twenty-five radio tapings and fifty TV programs were conducted. Youth work included 4-H and FFA peanut demonstration, 4-H peanut projects, and 4-H peanut essays being written. Also was involved in the Alabama Peanut Champions Program each year. These are a few things which have made a successful peanut educational program in Henry County, AL.

Terrell County Georgia Addresses Peanut Issues.

E. HAROLD WILSON*, Terrell County, Georgia Cooperative Extension Service, Dawson, Georgia. 31742.

The Terrell County Georgia Cooperative Extension office, like others in the Southeast, develops educational programs based on the needs of clientele. Producers receive their information through meetings, newsletters, news articles and day-to-day response. Several issues have faced our producers in recent years, such as managing peanuts in drought situations, increased costs of production, increased government regulations and record keeping requirements, and low commodity prices.

To address these issues, we designed several new methods of technology transfer and educational opportunities for our producers. We were instrumental with the evaluation and release of Irrigator Pro released by the USDA National Peanut Lab for irrigation scheduling and management. A water lottery was implemented by the State of Georgia during 2001 to not irrigate crops. We helped producers update their records and prepare for the bid process. Several cost cutting measures have been presented to producers with new methods of pest control implemented. Relay interplanting peanuts into wheat has been evaluated to look at water savings and tomato spotted wilt reduction.

Terrell County Extension initiated a new newsletter to producers entitled "Minimal Inputs During Adverse Times". The newsletter brings together the latest in research and technology to address options and minimal inputs on peanuts and rotational crops. The Extension agents role is to use all University and USDA resources to address issues for our producers.

Peanut Extension Educational Program in Caddo County, Oklahoma.

D.L. NOWLIN* Caddo County Oklahoma Cooperative Extension Service, Oklahoma State University, Anadarko,OK 73005, U.S.A.

The objectives of the Caddo County Crop Production Program are to reduce production costs, protect the environment, and improve profitability for peanut, soybean, and wheat producers. These objectives led to a wide range of activities and required assistance from many state and area extension specialists.

For peanut producers an annual peanut production meeting and peanut field tours were held. A peanut leafspot advisory was used to provide leafspot disease information in order to reduce production costs. A pesticide container recycling event is held each year. A peanut quota website was developed for assistance in obtaining quota poundage.

For wheat producers field tours for variety and soil fertility were held. An 8 week commodity marketing course was held to improve profitability. Marketing groups meet monthly at 2 locations in Caddo County.

For soybean producers several field tours were held to demonstrate varieties, row widths, planting dates, and rotation methods.

Minutes of the APRES Board of Directors Meeting
Renaissance Hotel
Oklahoma City, OK
July 17, 2001

The meeting was called to order by President Austin Hagan at 7:00 p.m.

President Hagan opened the meeting with a welcome and general comments.

President Hagan called on Executive Officer, Ron Sholar, to read the minutes of the last Board of Directors meeting held in Point Clear, AL. The minutes were approved as published in the 2000 Proceedings.

The following reports were made and approved by the Board of Directors:

(Editor's Note: Most of the oral reports given during the Board of Director's Meeting are identical to the official written report for the Proceedings. Where this is the case, the oral report is not presented in the minutes below. For the complete report, see the written report of the committee in the committee reports).

Executive Officer Report – Ron Sholar

Dr. Sholar reported that our society is in excellent condition financially. We are changing as the industry changes and there continues to be a small annual decline in membership. This reflects the fact that there are now fewer companies and individuals involved in the peanut industry.

American Society of Agronomy Liaison Report – Tom Stalker

See written report.

Southern Agricultural Experiment Station Directors – No report presented.

Council for Agricultural Science and Technology – Stan Fletcher

See written report.

Finance Committee – Tim Brenneman

See written report.

The committee met and reviewed the budget with the Executive Officer and found the society in very sound condition.

The Board of Directors approved moving $1000 from travel designated for CAST representative travel to the CAST Biotechnology Initiative. This will be the second consecutive year for APRES to contribute $1000 to this initiative.

The Board of Directors approved the conducting of a procedural audit of the processes used by the Executive Officer to conduct the business of the society. The audit will be conducted by Mrs. Sylvia Duncan of Stillwater, OK who has done the taxes for the society since its formation. The intent of the audit will be to determine if there are improvements that can be made in the way society business is conducted.

The proposed budget was accepted as modified.

Nominating Committee – Bob Lynch

The committee met this afternoon. Nominations were made and are as follows:

President-elect –Tom Isleib, North Carolina State University,
Raleigh, NC
State Employee Representative-Virginia-Carolina area – David Jordan
USDA Representative - Corley Holbrook
Industry Representative - Max Grice

All have accepted their willingness to serve. The floor will be opened for additional nominations during the business meeting. The report was accepted.

Publications and Editorial Committee – Carroll Johnson

See complete report.

There was significant discussion about publishing a electronic version of Peanut Science. This will involve more than simply archiving articles but will actually be electronic publishing. The board approved a recommendation that an ad hoc committee be named to study the establishment of an electronic journal. Carroll Johnson and Tom Stalker will serve on the ad hoc committee. The ad hoc committee is to report back at the 2002 annual meeting.

Peanut Quality Committee – Doug Smyth

See written report.

Public Relations Committee – Phil Mulder

See written report.

There was discussion on the need to expand and upgrade the APRES website but no specific decisions were made.

Bailey Award Committee – Robert Lemon

See written report.

Fellows Award Committee – Mark Black

See written report.

Seven nominations were received for Fellowship in the society.

The Fellows Committee has developed some changes to the Fellows selection guidelines. These changes will improve the instructions that are currently available to nominators and they will be incorporated into the Fellows selection guidelines. These modified instructions will be published in prominent locations in the society to ensure that all members are aware of the proper process for nominating a member for Fellowship.

Site Selection Committee – Hassan Melouk

See complete report as published.

Ben Whitty and Maria Gallo Meagher discussed possible locations for the 2003 meeting scheduled for Florida. They presented a proposal from the Clearwater Beach Hilton at Clearwater, FL.

Emory Murphy representing the Southern Peanut Farmers Federation discussed the possibility of a joint meeting between APRES and the SPFF. This group has been meeting at Panama Beach, FL. There was significant discussion about the positives and negatives of dovetailing the two meetings and changes that would be required to do so. The SPFF group expressed the opinion that dovetailing the meetings would be favorable to meeting sponsors. Others expressed the opinion that the integrity of the APRES meeting must not be compromised, even if unintended, by meeting with another group.

The Board of Directors voted to direct the Site Selection committee to work with the SPFF to determine if something could be worked out for a meeting of the two groups. Afterward the Site Selection Committee would submit proposals received from interested hotels to the Executive Officer for a final selection by the Board of Directors.

Coyt T. Wilson Distinguished Service Award Committee – Richard Rudolph

See complete report as published.

Joe Sugg Graduate Student Award Committee – Carroll Johnson

See complete report as published.

A formal report was presented at the business meeting and awards were presented.

Dow AgroSciences Award Committee – Walt Mozingo

See complete report as published.

Program Committee – John Damicone

We received 110 papers. This is comparable to recent years. Registration included 268 members and 136 spouses and children.

See complete report as published.

Other Business

The meeting was adjourned at 9:20 pm by President Hagan.

OPENING REMARKS BY THE PRESIDENT
AT THE 2001 APRES AWARDS AND BUSINESS MEETING
July 20, 2001

May you live in interesting times!

There is a saying "May you live in interesting times". For peanut growers and those of us that serve this nation's Peanut Industry, times are fixin' to get real interesting.

Political and economic forces have already been put in motion that will drastically alter the peanut industry in the U.S.

a. By 2007, tariffs on imported peanuts, particularly those from Argentina and Mexico, will be removed. Market will be open to imported peanuts at the world market price.
b. Central American countries may also compete for the U.S. peanut market. Already, used equipment is being exported to several countries.
c. Tough for $610 per ton peanuts to compete, despite the higher quality.

Politics are also putting a lot of pressure on the current Peanut Support Program. Opponents such as the American Peanut Coalition, Council for Citizens Against Government Waste, Consumer Federation of America, and the Peanut & Tree Nut Processors have their message on the internet and in the media, such as NBC News "Your Money" segment. Their arguments include:

a. Increased price for peanut products to consumers.
b. Higher costs for processors and producers of peanut products.
c. Discriminates against young farmers who don't have quota or those outside of traditional production areas.
d. Increased production costs.

In contrast, peanut producers are not getting their message through to the public. No rebuttal to opponents of the Peanut Support Program can be found on the Internet.

The upcoming 2002 Farm Bill will put the final nail in the coffin on the current quota and prices support system. Hearings have already been held concerning the fate of the peanut programs. The two options are:

1. Modify the Existing Peanut Support Program

a. Retain current poundage quota.
b. Increase support price to $780 per ton.
c. Does not comply with GATT or NAFTA.
d. Strong opposition from groups previously mentioned plus House and Senate members from northeast, H.R. 2164, which was filed in mid-June eliminates quota program and reduces the current support price of $610 to $500 per ton in 2003. In 2004, price supports for peanuts will be replaced with a non-recourse loan at a rate equal to not less than 85% of the simple average received by producers. Also, the maximum loan rate would not exceed $350 per ton. Restrictions on production of peanuts would be lifted. This Bill also creates a mechanism for USDA to purchase non-quota peanuts for federal food assistance programs.
e. H.R. 2296 would eliminate price supports and quota program for peanuts with no loan program and no compensation for the loss of peanut quota.

Needless to say, both of these bills as written would be a financial disaster for U.S. peanut producers. Basically, they would concede the U.S. peanut market to foreign suppliers.

There is an option being proposed by the peanut producer associations in Alabama, Florida, Georgia and West Texas. A Market Loan Program with a Target Price is being developed as an option to H.R. 2164.

a. Target Price would be $450 to $500 per ton.
b. Producer (not quota holder) would receive POP payments for difference between world price and target price.
c. Possibly farm quota would be eliminated by holders would be compensated for their loss.
d. Advantage
   GATT and NAFTA compliant.
e. Advantage – elimination of quota rental would cut production costs by $200 per acre. Real gain for non-quota holders.
f. May see some reduction in seed cost.
g. Would not penalize processors for using U.S. high quality peanuts first. Price competitive with imported peanuts and no transportation costs. Lower prices would strengthen U.S. position in Europe.
h. Politically, may get wide enough support to get through House and Senate.

Regardless of whether there is a program or not, there will be a huge shake up in the industry.

BUSINESS MEETING AND AWARDS CEREMONY
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
RENAISSANCE HOTEL
OKLAHOMA CITY, OKLAHOMA
July 20, 2001

The meeting was called to order by President Austin Hagan. The following items of business were conducted.

1. President's Report - Austin Hagan

2. Reports were given and awards were made by the following people. Detailed reports are presented in the PROCEEDINGS.

    a. Coyt T. Wilson Distinguished Service Award - Richard Rudolph
    b. Fellows Award - Mark Black
    c. Bailey Award - Robert Lemon
    d. Joe Sugg Graduate Student Competition - Carroll Johnson
    e. Dow AgroSciences Awards for Research and Education - R. W. Mozingo
    f. Past President's Award - Austin Hagan
    g. Peanut Science Associate Editors - Tom Stalker

3. The Following reports were made, accepted, and approved by the membership. Detailed reports are presented in the PROCEEDINGS.

    a. Executive Officer Report and Reading of Minutes of 2000 Meeting - Ron Sholar
    b. Finance Committee Report - Tim Brenneman
    c. Public Relations Committee Report - Phil Mulder
    d. Publications and Editorial Committee Report - W. Carroll Johnson, III
    e. Peanut Science Editor's Committee Report - H. Thomas Stalker
    f. Nominating Committee Report - W. Carroll Johnson, III
    g. Fellows Committee Report - Mark Black
    h. Bailey Award Committee Report - Robert Lemon
    i. Joe Sugg Graduate Student Award Report - W. Carroll Johnson, III
    j. Coyt T. Wilson Distinguished Service Award Report - Richard Rudolph
    k. Dow AgroSciences Awards Committee Report - Walton Mozingo
    l. Peanut Quality Committee Report - Doug Smyth
    m. Program Committee Report - John Damicone

4. Austin Hagan turned the meeting over to the new President, John Damicone of Oklahoma, who then adjourned the meeting.

Finance Committee Report

The APRES finance committee met Tuesday, July 17 with the following members present: David Hunt, Marshall Lamb, Vernon Langston, Dudley Smith, and Tim Brenneman. Ron Sholar attended as ex-officio and Mark Braxton as a visitor. The issue of liability insurance was discussed, particularly in regard to our off site activities. David Hunt will investigate this and present his findings to the committee at next years meeting. Our overall accounting procedures were discussed and the committee voted unanimously to authorize a procedural audit to review our policies and procedures. The executive officer was authorized to have this review conducted by the CPA that currently does the tax work for APRES. The committee also stressed that they were pleased with current operations and procedures. In other business the committee suggested that the quarterly reports from the executive director could be distributed via e-mail.

The committee voted unanimously to submit a budget of $76,750 for 2001-2002. The budget for the previous year was $72,700. This included a 4% raise for our two employees and is based on keeping dues and registration fees at current levels. Overall our society is in excellent financial condition. Our total assets rose from $179,481 to $184,319 during the past year. We do rely heavily on financial support from industry and this may be reduced in the future. This needs to be monitored closely and adjustments made accordingly.

Respectfully submitted,

Tim Brenneman, Chair
David Hunt
Marshall Lamb
Vernon Langston
Dudley Smith
John Wilcut

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
BUDGET 2001-02

RECEIPTS

Registration	$21,000
Membership Dues	19,000
Special Contributions	11,000
Other Income (Spouses program)	0
Differential Postage	1,800
Peanut Science & Technology	250
Quality Methods	0
Proceedings	0
Peanut Science & Page Charges	16,700
Peanut Research	0
Interest	5,500
Advances in Peanut Science	1,500
Other Income (misc)	0
Total Receipts	**$76,750**

EXPENDITURES

Annual Meeting	$ 11,000
Spouse Program	500
Coyt Wilson Awards	1,000
Dow AgroSciences Awards	2,000
Sugg, Bailey, Other Awards	750
CAST Membership	500
CAST BioTechnology Initiative	1,000
CAST Travel	0
Office Supplies	1,500
Secretarial Services	15,600
Postage	4,000
Travel – Officers	1,500
Bayer – Expense reimbursement to Extension Agents	0
Legal Fees (tax preparation)	600
Proceedings	5,000
Peanut Science	30,000
Peanut Science & Technology	0
Peanut Research	1,250
Quality Methods	0
Bank Charges	200
Miscellaneous	0
Advances in Peanut Science	0
Corporation Registration	350
OK/NC Sales Tax	0
Reserve	0
Total Expenditures	**$76,750.00**

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
BALANCE SHEET FOR FY 2000-01

ASSETS	June 30, 2000	June 30, 2001
Petty Cash Fund	$ 652.81	$298.19
Checking Account	29,990.36	26,958.62
Certificate of Deposit #1	27,132.88	28,670.65
Certificate of Deposit #2	16,988.09	17,925.77
Certificate of Deposit #3	9,497.67	10,065.16
Certificate of Deposit #4	12,399.10	13,151.95
Certificate of Deposit #5	16,176.91	17,032.38
Certificate of Deposit #6	13,106.17	13,815.78
Certificate of Deposit #7	11,130.34	11,710.74
Certificate of Deposit #8	5,000.00	5,000.00
Money Market Account	1,799.88	1,836.20
Savings Account (Wallace Bailey)	1,087.98	919.33
Bayer Account	8,395.96	12,292.94
Computer/printer	1,817.34	1,247.53
Peanut Science Account (Wachovia Bank)	1,453.60	1,453.60
Inventory of PEANUT SCIENCE AND TECHNOLOGY Books	3,820.00	3,600.00
Inventory of ADVANCES IN PEANUT SCIENCE Books	19,031.68	18,340.00
TOTAL ASSETS	**$179,480.77**	**$184,318.84**
LIABILITIES		
No Liabilities	0.00	0.00
Fund Balance	$179,480.77	$184,318.84
TOTAL LIABILITIES & FUND BALANCE	**$179,480.77**	**$184,318.84**

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
STATEMENT OF ACTIVITY FOR YEAR ENDING

	June 30, 2000	June 30, 2001
RECEIPTS		
Advances in Peanut Science Book	$ 2,124.54	$ 1,492.57
Annual Meeting Registration	22,634.00	17,925.00
Contributions	11,850.00	24,554.41
Differential Postage	1,375.00	1,937.50
Dues	16,995.00	19,398.00
Interest	7,226.36	6,318.01
Peanut Research	32.00	36.00
Peanut Science	76.00	1,312.50
Peanut Science Page Charges	17,953.50	11,574.30
Peanut Science and Technology Book	380.86	255.00
Proceedings	80.72	78.00
Quality Methods	40.00	0.00
Spouse Registration	4,037.00	2,033.00
Miscellaneous Income ($240-AL Field Tour/$30 credit Wallace Bailey checking account for service charges)	31.50	270.00
Other Income (redeposit reg desk petty cash)	400.00	0.00
CD Transfer	0.00	0.00
TOTAL RECEIPTS	**$85,236.48**	**$87,184.29**
EXPENDITURES		
Advances in Peanut Science Book	$ 0.00	0.00
Annual Meeting	15,888.92	22,999.86
Bank Charges	98.00	143.25
CAST Membership	510.00	1,529.00
Corporation Registration	115.00	100.00
Federal Withholding	996.00	1,008.00
FICA	1,651.00	1,660.56
Legal Fees	425.00	437.00
Medicare	386.12	388.32
Miscellaneous	0.00	0.00
Office Expenses	1,027.67	1,377.16
Oklahoma Withholding	235.00	144.00
Peanut Research	260.50	644.26
Peanut Science	25,050.88	23,110.15
Peanut Science and Technology Book	0.00	0.00
Postage	4,008.80	3,894.35
Proceedings	4,634.83	4,463.61
Sales Tax	35.00	62.40
Secretarial Services	11,108.98	11,166.00
Spouse Program Expenses	2,489.00	2,877.31
Refund (J French & K Robison)	75.00	30.00
Travel – Officers	1,994.70	1,062.93
Travel – CAST representative	155.58	0.00
Bayer – Reimb. expenses to Ext Agents	3,775.73	3,766.57
TOTAL EXPENDITURES	**$74,921.71**	**$80,864.73**
EXCESS RECEIPTS OVER EXPENDITURES	**$ 10,314.77**	**$ 6,319.56**

PEANUT SCIENCE BUDGET
2001-02

INCOME

Page and reprint charges	$ 16,000.00
Journal orders	700.00
Foreign mailings	1,300.00
APRES member subscriptions	9,300.00
Library subscriptions	2,700.00
TOTAL INCOME	**$30,000.00**

EXPENDITURES

Printing and reprint costs	$12,500.00
Editorial assistance	15,000.00
Office supplies	100.00
Postage	2,400.00
TOTAL EXPENDITURES	**$30,000.00**

ADVANCES IN PEANUT SCIENCE
SALES REPORT AND INVENTORY ADJUSTMENT
2000-01

	Books Sold	Remaining Inventory
Beginning Inventory		908
1st Quarter	5	903
2nd Quarter	11	892
3rd Quarter	14	878
4th Quarter	3	875
TOTAL	**33**	

33 BOOKS SOLD X $20.96 = $691.68 decrease in value of book inventory.
875 REMAINING BOOKS X $20.96 (BOOK VALUE) = $18,340.00 total value of remaining book inventory.

Fiscal Year	Books Sold
1995-96	261
1996-97	99
1997-98	66
1998-99	34
1999-00	45
2000-01	33

PEANUT SCIENCE AND TECHNOLOGY
SALES REPORT AND INVENTORY ADJUSTMENT
2000-01

	Books Sold	Remaining Inventory
Beginning Inventory		382
1st Quarter	2	380
2nd Quarter	19	361
3rd Quarter	1	360
4th Quarter	0	360
TOTAL	**22**	

22 books sold x $10.00 = $220.00 decrease in value of book inventory.

360 remaining books x $10.00 (book value) = $3,600.00 total value of remaining book inventory.

Fiscal Year	Books Sold
1985-86	102
1986-87	77
1987-88	204
1988-89	136
1989-90	112
1990-91	70
1991-92	119
1992-93	187
1993-94	85
1994-95	91
1995-96	50
1996-97	33
1997-98	49
1998-99	37
1999-00	30
2000-01	22

PUBLIC RELATIONS COMMITTEE REPORT

The committee met March 17, 2001 and occasionally throughout the 33rd Annual APRES Meetings. Members in attendance included; Phil Mulder, James Davidson, Curtis Jolly and Kenny Robison.

The committee wishes to acknowledge and thank Dr. Ron Sholar, Executive Officer (APRES) and Mr. Mike Kubicek for their diligent efforts in helping to publicize the 33rd Annual Meetings of APRES to some 20 plus news outlets including Farm Press, Agrinet and several local newspaper and radio stations in Oklahoma.

The committee also thanks Curtis Jolly for his efforts in publicizing the 33rd APRES meetings at the Alabama Peanut Farmer's Association Meetings in Dothan, AL. The committee also acknowledges the efforts of Dr. James Davidson in working with several young farmer groups and teacher groups in Georgia to expand the membership of APRES and disseminate an appreciation for peanuts.

The committee recommends that all committees and their members be posted in the annual APRES program. Committee members are selected early each year and without this reminder they can easily loose track of their responsibility.

The committee also suggested that all incoming chairs for public relations should attend and serve on the committee at least one previous year to gain an appreciation for their subsequent duties.

The committee suggested that the Board of Directors for APRES pursue a possible means of contracting for help in expanding our present web site to enhance public relations for APRES to hopefully increase membership and/or interest in our Society.

Respectfully submitted by:
Phil Mulder, chair
Curtis Jolly
Gary Gascho
David Rogers
J.H. Williams
Kenny Robison
Cecil Yancy

Also included in this report is a necrology report on Cathy Andrews-Kvien.

Ms. Cathy Andrews-Kvien

Whereas Ms. Kvien was former owner and editor of the publication "The Peanut Grower" and

Whereas Ms. Kvien was thoroughly involved with the Tift County School System and their Accelerated Reader Program and

Whereas Ms. Kvien was honored for the many contributions with the establishment of a memorial Chair for Family Reading by the Tift County Foundation for Educational Excellence and

Whereas Ms. Kvien lost her battle with cancer earlier this year, but stayed dedicated to her responsibilities to the end

Be it resolved that Ms. Kvien's contributions to the peanut industry and its families are honored by the American Peanut Research and Education Society.

PUBLICATIONS AND EDITORIAL COMMITTEE REPORT

Members present: Carroll Johnson (Chairman), Gerald Harrison, Eric Prostko, and David Jordan

Dr. Tom Stalker, Editor, also attended the meeting.

The Committee expressed their appreciation to Dr. Stalker and the entire editorial board for their service to APRES and the journal PEANUT SCIENCE.

Dr. Stalker presented the Peanut Science Editor's Report. The journal's finances are in good shape, with income slightly exceeding expenditures. There were 36 manuscripts submitted to the journal since July 2000, eleven of which were symposium papers. Due to the specific nature of PEANUT SCIENCE, there will always be a limited amount of manuscripts submitted, making journal solvency a recurring topic. Therefore, all APRES members need to regularly submit papers and recruit the submission of papers from their peers and graduate students.

Dr. Stalker requested guidance regarding an inquiry that PEANUT SCIENCE papers be published as *.pdf files on individual scientist's web pages. The committee discussed the issue and passed the following motion:

> "Papers already published in PEANUT SCIENCE can be posted on individual web sites with the following conditions:
>
> 1. The paper has been published and printed in PEANUT SCIENCE.

2. The full citation, including the journal name, must be clearly identified when posted on the web site.
3. There must be written approval by the Editor of PEANUT SCIENCE before posting the paper on the web site.

Dr. Stalker also requested that the committee study the issue of electronically publishing the journal. The committee felt that this issue requires more study and investigation than be addressed in this meeting. Therefore, the committee requested that the APRES Board of Directors authorize formation of an ad-hoc committee to thoroughly study this issue during the next twelve months. The committee requested that Carroll Johnson and Tom Stalker be named to the ad-hoc committee.

Dr. Stalker requested that the committee authorize a special APRES publication entitled: "Status of Arachis Germplasm in the United States". This being prepared as part of a special publication by the U. S. Crop Germplasm Committee and this portion of the larger report would be useful to APRES members. Outside funding to defray cost of publication will be procured. The committee approved the request.

The following Associate Editors are completing their six year terms of service; John Cundiff, Thomas Isleib, Jack Bailey, and Walt Mozingo.

The following are new Associate Editors; Steve L. Brown, Barbara Shew, and Mark Barrow.

Respectively Submitted;

W. Carroll Johnson, III
Chairman

PEANUT SCIENCE EDITOR'S REPORT

Volume 27 of Peanut Science had 20 manuscripts totaling 104 pages. This represented a decrease in two manuscripts and 10 pages from the previous volume. Volume 28, issue no. 1 is in press and will have 11 manuscripts. The membership should receive the issue in September or early October. Volume 28, no 2 is currently being forwarded to the printer and will have 13 manuscripts, including nine from the 2000 APRES Symposium "Genetic Resources for the Third Millennium". Be December of this year, Peanut Science volumes should be on a timelier schedule.

Thirty-eight manuscripts were submitted to the journal from July 1, 2000 To June 30, 2002. This number represents an increase from the previous two years which averaged only 24 manuscripts. The difference was in large part due to the nine manuscripts submitted by authors from the plant breeding symposium. Is should be noted that all symposium papers were peer reviewed before acceptance, and that not all of the papers presented at the symposium are being published in the journal. The low submission rate continues to be a problem. To be financially solvent, the journal needs to publish 24 or more manuscripts in each volume, but the number of manuscripts published last year was only 20.

Last year's budget has been itemized and a proposed budget for the coming year has been completed. Both budgets can be found in these Proceedings. The journal had a positive financial balance during the past fiscal year in large part because of deferring reimbursements for mailing to the 2001-02 fiscal year.

Several members of the Society have requested that Peanut Science be published in both paper and electronic formats. The Editor is investigating procedures for establishing a web site, user access, and costs associated with electronic publication. A full report will be forwarded to the Publications Committee in 2002. Additional members have requested that they be allowed to reprint journal articles on existing web sites, and a policy needs to be established by the Society for electronic reproduction of journal articles.

Drs. John S. Cundiff, Thomas G. Isleib, Jack E. Bailey, and R. Walton Mozingo have completed six-year terms as Associate Editors of the journal. Sincere thanks is expressed to each of these Associate Editors for service to the journal and to APRES.

Respectfully submitted,
H. Thomas Stalker
Editor, Peanut Science

NOMINATING COMMITTEE REPORT

Report to the Board of Directors, Thirty-Third Annual Meeting of the American Peanut Research and Education Society.

The Nominating Committee for the 2001 Annual Meeting of the American Peanut Research and Education Society consisted of Larry Hawf (Monsanto Life Sciences Co.), Norris Powell (Tidewater Research and Education Center, VPISU), Paul Blankenship (USDA), and Bob Lynch (USDA, Past-President, Chair).

The Nominating Committee was charged with nominating candidates to serve as President-Elect, and Representative to the Governing Board from the Virginia-North Carolina Area, Industry, and USDA.

Committee members were sent an E-mail listing all APRES members from the VA/NC Area, Industry, and USDA and nominations were solicited. An E-mail listing the nominees was then circulated for each member's vote for the candidate they considered most appropriate for each position. The candidates for each position were then finalized via a phone call June 15, 2001.

The Committee nominated the following:

President-Elect:	Tom Isleib
Board Representative, Industry:	Max Grice
Board Representative, VA/NC Area:	David Jordan
Board Representative, USDA:	Corley Holbrook

Respectfully submitted,

Robert E. Lynch, chair
Norris Powell
Paul Blankenship
Larry Hawf

FELLOWS COMMITTEE REPORT

Seven nominations for recognition as American Peanut Research and Education Society Fellows were received and six were validated. The committee evaluated the nominations according to guidelines published in the 2000 Proceedings of the American Peanut Research and Education Society. Committee members participating in the review were Mark Black (Chairman), G.M. "Max" Grice, John Baldwin, Hassan Melouk, Roy Pittman and Charles Swann. The committee recommended to the Board of Directors that three of the nominees be named Fellows in the Society.

The Fellows Committee met at 1:00 p.m., July 17, 2001 during the APRES annual meeting to review work completed in 2001 and responsibilities for 2001-2002. Committee members present were Mark Black, John Baldwin, Roy Pittman, Charles Swann, and G. M. "Max" Grice. The committee recommended to the Board of Directors that guidelines for Fellow Nomination published annually in the Proceedings be reorganized to clarify eligibility for writing letters of nomination and support, letter format, communication with nominators about successful and unsuccessful nominations, and resubmission of nominations.

Fellow Awards were presented during the APRES Awards Ceremony on Friday, July 20, 2001 to Norris L. Powell, E. Jay Williams and Ronald J. Henning.

Respectfully submitted,

Mark Black, chair

BIOGRAPHICAL SUMMARIES OF FELLOWS

Dr. Ronald, J. Henning is the Director of Technical Services Division, DeLeon Peanut Company, Lamesa, TX. He is a native of Cheyenne, OK. Dr. Henning received his B.S. (1957) from Panhandle State University, Goodwell, OK; M.S. (1970) from Auburn University, Auburn, AL; and Ph.D. (1978) from University of Georgia, Athens, GA.

Dr. Henning has had a distinguished career serving the peanut industry. During positions with private industry, consulting, and extension, he has developed and implemented various new production techniques. He has served as a valuable resource person for diagnosing problems and education on peanut production and quality maintenance. He developed a crop modeling system to predict aflatoxin risk and crop size prior to harvest. His participation in field days and programs is widely sought in the Texas Southern High Plains.

He is author or co-author of numerous publications including refereed research papers, Extension bulletins and articles, and popular press releases. He has presented more than 250 radio and television programs and grower meetings that number in the thousands.

During the course of his career he has received numerous awards including the APRES Golden Peanut Research and Extension Award (1988), the T. Hayden Rogers Distinguished Service Award from the University of Georgia (1995), and Man of the Year Award for Service to Georgia Agriculture from Progressive Farmer (1997).

Dr. Henning has been a leader on the National Peanut Council including Senior Vice President. He has consulted internationally for Agency for International Development projects and private industry.

Dr. Henning has been a very active member of APRES, serving as President, President-Elect, Past-President, and Director. He has held numerous appointed offices on many committees. He has been an active supporter of the research and educational programs of APRES by his participation in delivering scientific papers and symposia at annual meetings. He has been a frequent contributor at APRES meetings and has published in Peanut Science and APRES Proceedings.

Dr. Henning is one of the most knowledgeable people in all aspects of the peanut industry in the U.S.A. today. He is modest and continually seeks new knowledge about peanut production. He generously shares his knowledge with all who seek it—even those who trade with and work for his employer's competitors. As Ron would say, "We are all in this together."

Dr. Norris L. Powell is Agronomist, Crop and Soil Environmental Sciences, Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA. He is a native of Standardsville, VA. Dr. Powell received his B.S. (1967) and M.S. (1969) from Virginia Polytechnic Institute and State University, Blacksburg, VA, and Ph.D. (1978) from Iowa State University, Ames, IA.

Dr. Powell is an expert on manganese, calcium, and especially boron fertility in peanut. He contributed to pioneering work on use of remote weather stations for computerized disease forecasting in peanut and is a pioneer in subsurface drip irrigation research with peanuts, corn, soybeans and vegetables. Dr. Powell was the principal investigator cooperating with the National Aeronautic and Space Administration (NASA) and a team of research scientist to develop the use of remote sensing (LANDSAT data and aerial photography) in production agriculture. The team investigated aerial false color infrared photography for the detection of Cylindrocladium black rot (CBR) and Sclerotinia blight diseases caused by two soilborne pathogens. These two diseases were new to the region at that time and where present were devastating to the crop. Results of this research have been widely published and discussed at the local, state, regional, national and international meetings with a variety of audiences from farmers to research scientists.

Dr. Powell's publications include numerous refereed journal articles, book chapters, conference proceedings, technical reports, non-technical reports, technical presentations with published abstracts, and Extension publications. He has served as advisor for several graduate students and is well known for helping other faculty achieve success and recognition.

Dr. Powell has provided many years of loyal leadership and distinguished service to the society, much of it behind the scenes. He has served as chairman and member of numerous committees. He has helped plan and host several APRES meetings, as well as presenting numerous papers and moderating technical sessions. He is frequently called upon for his expertise in writing and editing to review manuscripts for the journal Peanut Science. He has unselfishly devoted much time preparing successful award nominations for APRES colleagues and others.

Dr. Powell has distinguished himself through cooperation with other scientists and unselfish sharing of his knowledge on all aspects of the peanut industry.

Mr. E. Jay Williams is Extension Engineer for Peanuts, Biological and Agricultural Engineering, University of Georgia Cooperative Extension Service, Tifton, GA. He is a native of Millen, GA. Mr. Williams received his B.S. (1964) from University of Georgia and his M.S. (1966) from University of Florida.

Mr. Williams is regarded nationally and internationally as an outstanding engineer, USDA and university research scientist, Extension educator, and consultant. He has distinguished himself through his original and creative research cooperation with other scientists to predict color change in the peanut hull mesophyll layer, develop the Hull Scrape Method and Profile Layout Chart for determining maturity of peanut pods and scheduling optimum digging dates. He also developed the peanut wet blasting process and machine for use with the Hull Scrape Method. This development allowed more exposure of the peanut pod middle hull layer for accurate maturity placement on the Profile Chart without tedious knife-scraping of each pod by hand. Based on this design, growers in many peanut producing counties have blasting machines available for their use. The introduction and use of this method helped increase peanut yield and quality in Georgia, the U.S.A., and abroad. Mr. Williams was the first to demonstrate definitive relationships among kernel size, peanut maturity, and plant age. Other accomplishments include improving peanut harvesting equipment, developing an automated machine vision system (MVS) for Hull Scrape Maturity inspection, equipment and systems for reduced tillage, and an aspiration method to separate split seeds from whole seeds.

His numerous publications include refereed journal articles, conference proceedings, one patent, technical papers, non-technical reports, extension reports and technical presentations with a published abstract.

Mr. Williams has served APRES in many assignments including two terms as Associate Editor of Peanut Science and chair of two committees. He is active in national and state engineering societies. His many career honors and awards include the Georgia Section ASAE Engineer of the Year Award (1996); Co-recipient of the Progressive Farmer Man of the Year Award for Distinguished Service to Agriculture in the Southeast (1991); Co-recipient of two APRES Bailey Awards, once as senior author (1982) and once as junior author (1980).

Mr. William's outstanding contributions in peanut research and outreach have had tremendous impact on the entire peanut industry as well as consumers.

Guidelines for

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY FELLOW ELECTIONS

Fellows

Fellows are active members of the Society who have been nominated to receive the honor of fellowship by other active members, recommended by the Fellows Committee, and elected by the APRES Board of Directors. Up to three active members may be elected to fellowship each year.

Eligibility of Nominators

Nominations may be made by an active member of the Society except members of the Fellows Committee and the APRES Board of Directors. A member may nominate only one person for election to fellowship in any one year.

Eligibility of Nominees

Nominees must be active members of the Society at the time of their nomination and must have been active members for a total of at least five (5) years.

The nominee should have made outstanding contributions in an area of specialization whether in research, extension or administration and whether in public, commercial or private service activities. Members of the Fellows Committee and voting members of the APRES Board of Directors are ineligible for nomination.

Nomination Procedures

Preparation. Careful preparation of the nomination for a distinguished colleague based principally on the candidate's record of service will assure a fair evaluation by a responsible panel. The assistance of the nominee in supplying accurate information is permissible. The documentation should be brief and devoid of repetition. The identification of the nominee's contributions is the most important part of the nomination. The relative weight of the categories of achievement and performance are given in the attached "Format."

Format. Organize the nomination in the order shown in the "Format for Fellow Nominations." The body of the nomination, excluding publications lists and supporting letters, should be no more than eight (8) pages.

Supporting letters. The nomination shall include a minimum of three supporting letters (maximum of five). Two of the three required letters must be from active members of the Society. The letters are solicited by, and are addressed to, the nominator, and should not be dated. Those writing supporting letters need not repeat factual information that will obviously be given by the nominator, but rather should evaluate the significance of the nominee's achievements. Members of the Fellows Committee, the APRES Board of Directors, and the nominator are not eligible to write supporting letters.

Deadline. Six (6) copies of the nomination are to be received by the chairman of the Fellows Committee by March 1 each year.

Basis of Evaluation

A maximum of 10 points is allotted to the nominee's personal achievements and recognition. A maximum of 50 points is allotted to the nominee's achievements in his or her primary area of activity, i.e. research, extension, service to industry, or administration. A maximum of 10 points is also allotted to the nominee's achievements in secondary areas of activity. A maximum of 30 points is allotted to the nominee's service to the profession.

Processing of Nominations

The Fellows Committee shall evaluate the nominations, assign each nominee a score, and make recommendations regarding approval by April 1. The President of APRES shall mail the committee recommendations to the Board of Directors for election of Fellows, maximum of three (3), for that year. A simple majority of the Board of Directors must vote in favor of a nominee for election to fellowship. Persons elected to fellowship, and their nominators, are to be informed promptly. Unsuccessful nominations shall be returned to the nominators and may be resubmitted the following year.

Recognition

Fellows shall receive a plaque at the annual business meeting of APRES. The Fellows Committee Chairman shall announce the elected Fellows and the President shall present each a certificate. The members elected to fellowship shall be recognized by publishing a brief biographical sketch of each, including a photograph and summary of accomplishments, in the APRES PROCEEDINGS. The brief biographical sketch is to be prepared by the Fellows Committee.

Distribution of Guidelines

These guidelines and the format are to be published in the APRES PROCEEDINGS and again whenever changes are made. Nominations should be solicited by an announcement published in "APRES Peanut Research."

Format for

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY FELLOW NOMINATIONS

TITLE: "Nomination of ________________ for Election to Fellowship by the American Peanut Research and Education Society."

NOMINEE: Name, date and place of birth, mailing address, and telephone number.

NOMINATOR: Name, signature, mailing address, and telephone number.

BASIS OF NOMINATION: Primary area: designate Research, Extension, Service to Industry, or Administration.

Secondary areas: designate contributions in areas other than the nominee's primary area of activity.

QUALIFICATIONS OF NOMINEE: Complete parts I and III for all candidates and as many of II-A, -B, -C, and -D as are applicable.

I. Personal Achievements And Recognition (10 points)

A. Degrees received: give field, date, and institution for each degree.
B. Membership in professional and honorary academic societies.
C. Honors and awards received since the baccalaureate degree.
D. Employment: years, organizations and locations.

II. Achievement in Primary (50 Points) And Secondary (10 Points) Fields of Activity

A. Research

Significance and originality of basic and applied research contributions; scientific contribution to the peanut industry; evidence of excellence and creative reasoning and skill; number and quality of publications; quality and magnitude of editorial contributions. Attach a chronological list of publications.

B. Extension

Ability to (a) communicate ideas clearly, (b) influence client attitudes, and (c) motivate change in client action. Evaluate the quality, number and effectiveness of publications for the audience intended. Attach a chronological list of publications.

C. Service to Industry

Development or improvement of programs, practices, and products. Evaluate the significance, originality and acceptance by the public.

D. Administration or Business

Evidence of creativeness, relevance, and effectiveness of administration of activities or business within or outside the USA.

III. SERVICE TO THE PROFESSION (30 Points)

A. Service to APRES including length, quality, and significance of service

1. List appointed positions.
2. List elected positions.
3. Briefly describe other service to the Society.

B. Service to the profession outside the Society including various administrative skills and public relations actions reflecting favorably upon the profession

1. Describe advancement in the science, practice and status of peanut research, education or extension, resulting from administrative skill and effort.
2. Describe initiation and execution of public relations activities promoting understanding and use of peanuts, peanut science and technology by various individuals and organized groups within and outside the USA.

EVALUATION: Identify in this section, by brief reference to the appropriate materials in sections II and III, the combination of the contributions on which the nomination is based. Briefly note the relevance of key items explaining why the nominee is especially well qualified for fellowship.

BAILEY AWARD COMMITTEE REPORT

Bailey Award Committee met on Tuesday, July 17, 2001 in the Biltmore Room of the Renaissance Oklahoma City Hotel. Members present were John Beasley, Kelly Chenault, Ken Jackson (outgoing chair) and Robert Lemon (incoming chair). Not present were Rick Brandenburg, Glenn Wehtje, and Clyde Crumley. Clyde Crumley has taken a new position that has no peanut responsibility. The chair will contact him to ascertain if he will remain an APRES member. Committee discussed the 2001 meeting and coordination with session moderators. All moderators were notified of their responsibilities.

Thirteen presentations were nominated for the Bailey Award at the 2000 APRES meeting held in Point Clear, Alabama. Ten manuscripts were received by the submission deadline. Manuscripts were evaluated and ranked by the committee and the winner determined. The winner of the 2000-2001 Bailey Award is "Effect of Application of Nontoxigenic Strains of Aspergillus flavus and A.parasiticus on Subsequent Aflatoxin Contamination of Peanuts in Storage", Joe W. Dorner and Richard J. Cole, USDA-ARS National Peanut Research Lab, Dawson, Georgia.

Respectfully submitted,

Robert Lemon, chair
Glen Wehtje
Clyde Crumley
John Beasley
Kelly Chenault
Rick Brandenburg

Guidelines for

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY BAILEY AWARD

The Bailey Award was established in honor of Wallace K. Bailey, an eminent peanut scientist. The award is based on a two-tier system whereby nominations are selected based on the oral paper presentation in sessions at the annual APRES meeting, and final awards are made after critiquing manuscripts based on the information presented during the respective meeting.

For initial selection, the session chairman shall appoint three persons, including him/herself if desired, to select the best paper in the session. None of the judges can be an author or co-author of papers presented during the respective session. No more than one paper from each session can be nominated for the award but, at the discretion of the session chairman in consultation with the Bailey Award chairman, the three-member committee may forego submission of a nomination. Symposia and poster presentations are not eligible for the Bailey Award. The following should be considered for eligibility:

1. The presenter of a nominated paper, whether the first or a secondary author, must be a member of APRES.

2. Graduate students being judged for the Joe Sugg Award are also eligible for the Bailey Award if they meet all other criteria for eligibility.

Oral presentations will be judged for the Award based on the following criteria:

1. Well organized.

2. Clearly stated.

3. Scientifically sound.

4. Original research or new concepts in extension or education.

5. Presented within the time allowed.

A copy of these criteria will be distributed to each session chair and judge prior to the paper session.

Final evaluation for the Award will be made from manuscripts submitted to the Awards Committee, after having been selected previously from presentations at the APRES meetings. These manuscripts should be based on the oral presentation and abstract as published in the PROCEEDINGS.

Authorship of the manuscript should be the same (both in name and order) as the original abstract. Papers with added author(s) will be ruled ineligible. Manuscripts are judged using the following criteria:

1. Appropriateness of the introduction, materials and methods, results and discussion, interpretation and conclusions, illustrations and tables.

2. Originality of concept and methodology.

3. Clarity of text, tables and figures; economy of style; building on known literature.

4. Contribution to peanut scientific knowledge.

The Bailey Award chair for the current year's meeting will complete the following:

a) notify session moderators for the upcoming meeting of their responsibilities in relation to judging oral presentations as set in the guidelines in APRES PROCEEDINGS,
b) meet with committee at APRES meeting,
c) collect names of nominees from session moderators by Friday a.m. of Annual Meeting,
d) provide Executive Officer and Bailey Award committee members the name of Bailey Award nominees,
e) notify nominees within two months of meeting,
f) set deadline in late Fall or early winter for receipt of manuscripts by Bailey Award chair,
g) distribute manuscripts to committee members,
h) provide Executive Officer with Bailey Award winner and paper title no later than May 15, and
i) Bailey Award chair's responsibilities are completed when the Executive Officer receives Bailey Award recipient's name and paper title.

The presentation of bookends will be made to the speaker and other authors appropriately recognized.

JOE SUGG GRADUATE STUDENT AWARD REPORT

The committee met at 3:00 p.m. at the Renaissance Hotel in Oklahoma City, OK. The following members were present; Carroll Johnson, Peter Dotray, Ron Weeks, and Joe Dorner.

Chairman Johnson modified score sheets from the Southern Weed Science Society Graduate Student Contest for use by APRES for the Joe Sugg Graduate Student contest. A copy of the score sheet was mailed in June to each student participating in the contest as an aid in preparing their presentations.

Copies of the student's abstracts were distributed to the five judges. These were to be used to help brief the judges on the presentations, since there are 12 uninterrupted graduate student presentations with little time to tabulate scores. The abstracts were not used in the overall evaluation and scoring.

Judges were encouraged to provide an many constructive comments on the score sheets as possible, increasing the student's learning experiences from the contest.

Chairman Johnson mailed score sheets to the students after the meeting.

In follow-up business, the committee would like to make the following changes to the Contest:

1. Provide a better description of the Contest in the meeting announcement and APRES newsletter. Describe the evaluation and scoring processes. Announce the prize money for first and second place presentations. This may encourage more student participation.

2. Make every effort to schedule the Contest without conflicts with other sections.

Respectively Submitted;

W. Carroll Johnson, III, chair

Results of the 2001 Joe Sugg Graduate Student Contest:

First Place: "Peanut Disease Management Utilizing an In-Furrow Treatment of Azoxystrobin"; presented by S. L. Rideout from the University of Georgia.

Second Place: "Effect of Plant Population Density on Epidemiology of Peanut Stem Rot"; presented by L. E. Sconyers from the University of Georgia.

The first place award is $500 and the second place award is $250. Five hundred dollars are provided for the awards by the North Carolina Peanut Growers Association.

COYT T. WILSON DISTINGUISHED SERVICE AWARD REPORT

The Coyt T. Wilson Distinguished Service Award Committee met at 1:00 PM July 17, 2001 in Oklahoma City, OK. The committee had previously reviewed the nomination and qualifications of three excellent candidates for the 2001 award. All three candidates have provided outstanding service to the American Peanut Research and Education Society and the peanut industry, making the selection process difficult.

The committee will continue to encourage, and ask the membership to encourage colleagues to nominate members for this prestigious award. We highly recommend that candidates not chosen for the 2001 award be re-nominated in 2002.

The award committee selected Dr. Daniel W. Gorbet, Professor/Plant Breeder University of Florida, North Florida Research and Education Center, as the recipient of the 2001 Coyt T. Wilson Distinguished Service Award.

Respectfully submitted,

Richard Rudolph, chair
Robert Lynch
Corley Holbrook
Mike Schubert
Charles Simpson
Tom Whitaker

BIOGRAPHICAL SUMMARY OF COYT T. WILSON DISTINGUISHED SERVICE AWARD RECIPIENT

Dr. Daniel W. Gorbet is a Professor of Agronomy with the University of Florida, located at the North Florida Research and Education Center at Marianna, Florida. He received his Bachelor of Science from Texas A&I University (1965) and his Master of Science (1968) and Doctor of Philosophy (1971) from Oklahoma State University. He has served on the faculty of the University of Florida since 1970.

Dr. Gorbet is recognized for his distinguished service to the American Peanut Research and Education Society (APRES) since 1970. He has participated in all but one of the Society-s annual meetings since 1970. Dan has served APRES for 31 years as President (1987), Technical Program chair (1975, 1996), CAST Representative (1991-94) and numerous committees, chairing nine committees.

Dr. Gorbet has been very active in APRES annual meetings and activities. He has chaired six technical sessions, given or co-authored 93 presentations (abstracts) at annual meetings with six Bailey Award nominations (one received), and authored or co-authored 24 articles in *Peanut Science*. He is a co-author on the breeding chapter in *Peanut Science and Technology*. Dr. Gorbet has been recognized by APRES for his distinguished service and career by previously receiving the recognition as Fellow (1991) and the Dow AgroScience Award for Excellence in Research (1999).

Dr. Gorbet has been very active in the area of research on peanut breeding and genetics. He has been primary or co-developer of nine peanut cultivars. These cultivars include the first U.S. developed cultivar with late leafspot and rust resistance (Southern runner, 1986) and the first "high oleic" oil cultivar released in the world (SunOleic 95R, 1995). Dr. Gorbet has 475 publications, including three book chapters. He has given 78 invited presentations at professional meetings. He has been very active in cooperative research with scientists in other disciplines (pathology, entomology, food science, etc.).

Dr. Gorbet's program is nationally and internationally recognized. He has conducted peanut breeding program reviews in South Africa (1988), Australia (1995), and Argentina (2000). He has hosted numerous international visitors.

Dr. Gorbet provides leadership to the University of Florida peanut breeding program and related activities. This program was the first on peanut breeding in the U.S. (1920). Dan has also been active in graduate student training at the University of Florida, supervising three Ph.D. and two M.S. students and serving on 28 advisory committees. He has coordinated and participated in 30 annual peanut field days at the Marianna Center and participated in numerous extension meetings and related activities.

Dr. Gorbet is an innovative, dedicated and capable peanut scientist. He has been characterized by supporters as a worldwide team player and a man of integrity and hard work. His service, vision, work ethic, and lifelong contributions to APRES and the peanut industry are recognized with this award.

Guidelines for

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY COYT T. WILSON DISTINGUISHED SERVICE AWARD

The Coyt T. Wilson Distinguished Service Award will recognize an individual who has contributed two or more years of distinguished service to the American Peanut Research and Education Society. It will be given annually in honor of Dr. Coyt T. Wilson who contributed freely of his time and service to this organization in its formative years. He was a leader and advisor until his retirement in 1976.

Eligibility of Nominators

Nominations may be made by an active member of the Society except members of the Award Committee and the Board of Directors. However, the nomination must be endorsed by a member of the Board of Directors. A nominator may make only one nomination each year and a member of the Board of Directors may endorse only one nomination each year.

Eligibility of Nominees

Nominees must be active members of the Society and must have been active for at least five years. The nominee must have given of their time freely and contributed distinguished service for two or more years to the Society in the area of committee appointments, officer duties, editorial boards, or special assignments. Members of the Award Committee are ineligible for nomination.

Nomination Procedures

Deadline. The deadline date for receipt of the nominations by the chairman shall be March 1 of each year.

Preparation. Careful preparation of the nomination based on the candidate's service to the Society is critical. The nominee may assist in order to assure the accuracy of the information needed. The documentation should be brief and devoid of repetition. Six copies of the nomination packet should be sent to the committee chair.

Format TITLE: Entitle the document "Nomination of ________________ for the Coyt T. Wilson Distinguished Service Award presented by the American Peanut Research and Education Society". (Insert the name of the nominee in the blank).

NOMINEE: Include the name, date and place of birth, mail address (with zip code) and telephone number (with area code).

NOMINATOR AND ENDORSER: Include the typewritten names, signatures, mail addresses (with zip codes) and telephone numbers (with area codes).

SERVICE AREA: Designate area as Committee Appointments, Officer Duties, Editorial Boards, or Special Assignments. (List in chronological order by year of appointment.)

Qualifications of Nominee

I. Personal Achievements and Recognition:
   A. Education and degrees received: Give field, date and institution.
   B. Membership in professional organizations
   C. Honors and awards
   D. Employment: Give years, locations and organizations

II. Service to the Society:
   A. Number of years membership in APRES
   B. Number of APRES annual meetings attended
   C. List all appointed or elected positions held
   D. Basis for nomination
   E. Significance of service including changes which took place in the Society as a result of this work and date it occurred.

III. Supporting letters:

   Two supporting letters should be included with the nomination. These letters should be from Society members who worked with the nominee in the service rendered to the Society or is familiar with this service. The letters are solicited by and are addressed to the nominator. Members of the Award Committee and the nominator are not eligible to write supporting letters.

Award and Presentation

The award shall consist of a $1,000 cash award and a bronze and wood plaque both provided by the Society and presented at the annual meeting.

DOW AGROSCIENCES AWARDS COMMITTEE REPORT

The Dow AgroSciences Awards Committee consisted of seven members in 2000-2001. They were as follows:

Walt Mozingo, Chair (2001)	James Grichar (2001)
Joe Funderburk (2002)	Peggy Ozias-Akins (2002)
Fred Shokes (2003)	Albert Culbreath (2003)
Vernon Langston (Dow AgroSciences representative)	

Nominations were received and found to meet all the guidelines for acceptance. Copies of each nomination packet were mailed to all committee members for review and voting. Each committee member voted for the Awards by ranking the nominees from first to last. These rankings were sent to the Chair who tabulated the scores. The winners were the nominees with the lowest scores where 1 equaled first place.

The winner of the 2001 Dow AgroSciences Award for Excellence in Research is the team of Dr. Harold E. Pattee, Research Chemist, USDA/ARS, Biological and Agricultural Engineering Department and Dr. Tomas G. Isleib, Professor of Crop Science, both located at North Carolina State University in Raleigh, North Carolina. The winner of the Dow AgroSciences Award for Excellence in Education is Dr. Thomas A. "Chip" Lee, Jr., Professor and Extension Plant Pathologist at Texas A & M University in College Station, Texas. Biographical summaries for each winner is published in the APRES Proceedings and available as press releases.

The committee would like to encourage nomination of qualified APRES members. Past winners of one award does not eliminate anyone from nomination for the other award if they are qualified. All members of APRES from all segments of the peanut industry should be considered for nomination for these prestigious awards.

Respectively submitted,

Walton Mozingo, chair

BIOGRAPHICAL SUMMARY OF DOW AGROSCIENCES AWARD FOR EXCELLENCE IN RESEARCH RECIPIENT

The team of Drs. Harold E. Pattee, Thomas G. Isleib is recognized for their contribution to an understanding of the genetics of peanut flavor by developing the world's most comprehensive database on sensory attributes of roasted peanuts across peanut genotypes. They have used this data to quantify the influence of roast color and intensity of the fruity attribute on intensity of the roasted peanut attribute; identify an optimum roast color to maximize roasted peanut attribute; to find that roasted peanut, sweet, and bitter were heritable; ascertain the relative importance of genotype, environment, and genotype-by-environment interaction in determining intensity of roasted peanut, sweet, and bitter sensory attributes; and calculate estimates of broad-sense heritability of sensory attributes.

Dr. Pattee received his B.S. from Brigham Young University (1958), his M.S. from Utah State University (1960), his Ph.D. from Purdue University (1962), and did post-doctorate work (1962-63) at the University of California-Los Angeles. He is a Research Chemist, USDA-ARS and Professor of Botany and Food Science, North Carolina State University in Raleigh, North Carolina. Dr. Isleib received his B.S. from Michigan State University (1976) and his M.S. (1979) and Ph.D. (1982) from North Carolina State University. He is a Professor of Crop Science, North Carolina State University in Raleigh, North Carolina.

Their work has shown that regional variation in peanut flavor was not due to intrinsic differences among the three major regions but to the different varieties grown in the regions. The runner market-type was shown to have superior average flavor compared to the virginia and spanish market-types. Much of the flavor deficit of the virginia market-type was found to be due to the pervasive genetic influence of the large-seeded variety 'Jenkins Jumbo' in the ancestry of virginia-types and identified replacement parental resources to improve the flavor. Useful parents were identified in each of the four U.S. market-types. Identification of these parents provides breeders with the opportunity to maintain or improve the flavor profiles of new cultivars as they incorporate disease resistance or other agronomically useful traits. They found varieties with the high-oleic trait had a greater positive influence on the roasted peanut attribute than did their normal-oleic parents. This finding has stimulated research into the effect of the high-oleic trait on flavor of public and private sector breeding lines. Estimates of the flavor profiles of common cultivars and numerous breeding lines have provided the peanut industry with a basis for informed choice among cultivars. This information was also provided to individual breeding programs to assist in cultivar release decisions, and used in the release of runner cultivars C99R, Florida MDR 98, Georgia Green, SunOleic 95R and SunOleic 97R, and virginia-type cultivars Gregory, NC 12C, and Perry.

Harold has received numerous awards and honors during his career. He was elected Fellow, APRES (1983) and a Fellow Agricultural and Food Chemistry Division, American Chemical Society (1989). He received the Golden Peanut Research Award (1977), Distinguished Service Award, Agricultural and Food Chemistry Division, ACS (1988), Coyt T. Wilson Distinguished Service Award, APRES (1992) and Platinum Award, Agricultural and Food Chemistry Division, ACS (1994). He is also known for his many years of service to APRES as an officer, as Editor of Peanut Science, and senior Editor of Peanut Science and Technology and Advances in Peanut Science.

Tom is well known for his many other contributions as a plant breeder, educator, and graduate student advisor. He is a member of Phi Kappa Phi Honorary Society, Gamma Sigma Delta Honorary Society, and Sigma Xi Research Society. He received the National Food Processors Association Award (1985) and has served as an Associate Editor of Peanut Science.

DOW AGROSCIENCES AWARD FOR EXCELLENCE IN EDUCATION RECIPIENT

Dr. Thomas A. "Chip" Lee, Jr. is Professor and Extension Plant Pathologist, Department of Plant Pathology and Microbiology, Texas A&M University Agricultural Research and Extension Center, Stephenville. Dr. Lee received a B.S. in Agronomy (1968), M.S. in Plant Physiology (1970) and a Ph.D. in Plant Pathology (1973) all from Texas A&M University. His entire career has been spent at Stephenville, where he attained the rank of Professor in 1992.

Dr. Lee has an extensive educational and field-based research program and his efforts have directly impacted the development of commonly used disease best management practices employed by Texas peanut producers. The focus of his program has been on fungicide and nematicide evaluations with respect to soilborne pathogens. Most recently, Dr. Lee has been an integral member of the research team that developed and released the first variety with resistance to root-knot nematodes. He is viewed as a national and world authority in the application of peanut disease management principles. Recently, he traveled abroad to Australia, China and South Africa to deliver a series of educational seminars, and to evaluate local educational programs. Dr. Lee participates in numerous peanut educational events and is responsive to grower and industry needs. He is in constant demand during the season, providing disease identification and management recommendations. Moreover, he spends countless hours via travel, telephone and e-mail counseling growers and the industry regarding peanut production. Over his career, Dr. Lee has published more than 200 Extension publications and popular press articles. His Peanut Disease Atlas and the web-based Peanut Production Training site are in high demand by all sectors of the Texas peanut industry.

Dr. Lee is a leader in the peanut industry. He has been actively involved in the American Peanut Research and Education Society (APRES), the American Peanut Council (APC), and the Texas Peanut Producers Board for the duration of his career. Most recently, he was the 1997-1998 President of APRES and in 1998 served as chairman of the Nominations Committee. He was co-recipient of the APRES Bailey Award in 1998. Chip is an active member of APC and has served as a member of the Research and Education Committee and the Technical Review Committee for the past several years. Within the academic community, he has fostered the development of numerous careers. His program has been responsible for supporting numerous graduate and undergraduate students — many of which have become leading peanut practitioners across the USA and abroad.

Dr. Thomas A. "Chip" Lee, Jr., has been a staunch supporter of the peanut industry his entire life. He is well known throughout the world for his knowledge of peanut disease management and peanut production. Dr. Lee has built an impressive program over the past 28 years based on hard work, honesty and integrity and the ever-expanding Texas peanut industry is a testament to the excellence of his Extension programs.

Guidelines for

DOW AGROSCIENCES AWARDS FOR EXCELLENCE IN RESEARCH AND EDUCATION

I. Dow AgroSciences Award for Excellence in *Research*

The award will recognize an individual or team for excellence in research. The award may recognize an individual (team) for career performance or for an outstanding current research achievement of significant benefit to the peanut industry. One award will be given each year provided worthy nominees are nominated. The recipient will receive an appropriately engraved plaque and a $1,000 cash award. In the event of team winners, one plaque will be presented to the team leader and other team members will receive framed certificates. The cash award will be divided equally among team members.

Eligibility of Nominees

Nominees must be active members of the American Peanut Research and Education Society and must have been active members for the past five years. The nominee or team must have made outstanding contributions to the peanut industry through research projects. Members of the Dow AgroSciences Awards Committee are ineligible for the award while serving on the committee.

II. Dow AgroSciences Award for Excellence in *Education*

The award will recognize an individual or team for excellence in educational programs. The award may recognize an individual (team) for career performance or for an outstanding current educational achievement of significant benefit to the peanut industry. One award will be given each year provided worthy nominees are nominated. The recipient will receive an appropriately engraved plaque and a $1,000 cash award. In the event of team winners, one plaque will be presented to the team leader and other team members will receive framed certificates. The cash award will be divided equally among team members.

Eligibility of Nominees

Nominees must be active members of the American Peanut Research and Education Society and must have been active members for the past five years. The nominee or team must have made outstanding contributions to the peanut industry through education programs. Members of the Dow AgroSciences Awards Committee are not eligible for the award while serving on the committee.

Eligibility of nominators, nomination procedures, and the Dow AgroSciences Awards Committee are identical for the two awards and are described below:

Eligibility of Nominators

Nominators must be active members of the American Peanut Research and Education Society. Members of the Dow AgroSciences Awards Committee are not eligible to make nominations while serving on the committee. A nominator may make only one nomination each year.

Nomination Procedures

Nominations will be made on the Nomination Form for Dow AgroSciences Awards. Forms are available from the Executive Officer of APRES. A nominator's submittal letter summarizing the significant professional achievements and their impact on the peanut industry may be submitted with the nomination. Three supporting letters must be submitted with the nomination. Supporting letters may be no more than one page in length. Nominations must be postmarked no later than March 1 and mailed to the committee chair.

Dow AgroSciences Awards Committee

The APRES President is responsible for appointing the committee. The committee will consist of seven members with one member representing the sponsor. After the initial appointments, the President will appoint two new members each year to serve a term of three years. If a sponsor representative serves on the awards committee, the sponsor representative will not be eligible to serve as chair of the committee.

NOMINATION FORM FOR DOW AGROSCIENCES AWARDS

General Instructions: Listed below is the information to be included in the nomination for individuals or teams for the Dow AgroSciences Award. Ensure that all information is included. Complete Section VI, Professional Achievements, on the back of this form. Attach additional sheets as required.

****

Indicate the award for which this nomination is being submitted.
Date nomination submitted:

___ Dow AgroSciences Award for Excellence in Education

___ Dow AgroSciences Award for Excellence in Research

****

I. Nominee(s): For a team nomination, list the requested information on all team members on a separate sheet.

Nominee(s):

____

Address

____

Title ______________________________ Tel No. ______________________

II. Nominator:

Name_____________________________ Signature___________________________

Address

____

Title ______________________________ Tel No. ______________________

III. Education: (include schools, college, universities, dates attended and degrees granted).

IV. Career: (state the positions held by listing present position first, titles, places of employment and dates of employment).

V. Honors and Awards: (received during professional career).

VI. Professional Achievements: (Describe achievement in which the nominee has made significant contributions to the peanut industry).

VII. Significance: (A "tight" summary and evaluation of the nominee's most significant contributions and their impact on the peanut industry.) This material should be suitable for a news release.

PEANUT QUALITY COMMITTEE REPORT

The Peanut Quality Committee and interested APRES members met in the Egbert Room from 3:00 to 4:00 p.m. Aflatoxin testing was discussed briefly under old business. The majority of discussion centered around the broad topic of new cultivar development.

The U.S. peanut industry has developed a system to certify aflatoxin content in export peanuts, and thus guarantee a safe supply. Maximum total aflatoxin levels for raw peanuts and finished goods are 15 and 4ppb, respectively. The process has gained creditability in Europe, and builds the reputation of the U.S. industry as a dependable supplier of quality peanuts in the international market.

The process of how new peanut cultivars are developed and released has been an ongoing topic of discussion at APRES for many years. The general pattern has been that locally universities or private companies develop varieties using resources under their control. In some cases, peanut breeders obtain quality measurements from university or industry labs to help select promising lines.

It is recognized that successful cultivars need to work in broad growing regions, address a multitude of consumer product needs. The U.S. Department of Agriculture has begun to help with quality analysis and national testing standards.

Additional analytical resources are a key need for rapid development and release of successful cultivars. Manufacturers talked about variation among quality traits in different commercial lots accelerated progress towards new "gold standard" cultivars will require more cooperation and sharing of information. APRES members, particularly in shelling and manufacturing, need to identify analytical measurements to use for quality screens. It was suggested that a future Peanut Quality meeting could be the mechanism for bringing this information together.

Respectfully submitted,

Doug Smyth, chair
R.W. Mozingo
Brent Besler
Mack Birdsong
Timothy Sanders
Mark Burow
Yolanda Lopez

PROGRAM COMMITTEE REPORT

The OSU/ARS peanut team along with Mike Kubicek, executive secretary of the Oklahoma Peanut Commission worked to develop the program. There were 110 papers, down from last year and the 1994 annual meeting in Tulsa, but up from the late 1990's. The group decided not to support power point presentations during the breakout (concurrent) sessions due to potential problems with keeping a tight schedule. Complaints from paper authors were minimal. Hassan Melouk organized an excellent symposium on High-Oleic Peanut.

Registration included 268 members and 136 spouses and children.

Respectfully submitted,

John Damicone, chair

On behalf of APRES members and guests, the Program Committee says "THANK YOU" to the following organizations for their generous financial and product contributions:

Contributors for Special Events

Aventis	Dow AgroSciences
BASF	Syngenta
Bayer Corporation	Valent

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THIRTY-THIRD ANNUAL MEETING
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
OKLAHOMA CITY, OKLAHOMA
JULY 17-20, 2001

BOARD OF DIRECTORS

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Linda Sholar, Chair
Afaf Melouk
Kianna Kubicek
Sue Jackson
Mireille Damicone

PROGRAM HIGHLIGHTS

Tuesday July 17, 2001

7:00 a.m. – 2:00 p.m.	**Golf Tournament** Coffee Creek Golf LVB-Edmond
8:30 a.m. – 12:00 p.m.	**Crops Germplasm Committee** Room: Biltmore
12:00 p.m. – 8:00 p.m.	**APRES Registration** Ballroom D & E foyer area
1:00 p.m. – 5:00 p.m.	**Spouse's Registration and Hospitality** Room: Thread
1:00 p.m. – 2:00 p.m.	**Dow AgroSciences Awards Committee** Room: King Kade **Site Selection Committee** Room: Biltmore **Fellows Committee** Room: Grand Ave. **Coyt T. Wilson Award Committee** Room: Egbert
2:00 p.m. – 3:00 p.m.	**Associate Editors, Peanut Science** Room: King Kade **Public Relations Committee** Room: Biltmore **Bailey Award Committee** Room: Grand Ave.
3:00 p.m. – 4:00 p.m.	**Publications and Editorial Committee** Room: King Kade **Nominating Committee** Room: Biltmore **Joe Sugg Graduate Student Award Committee** Room: Grand Ave. **Peanut Quality Committee** Room: Egbert

4:00 p.m. – 5:00 p.m.	**Finance Committee** Room: King Kade
6:30 p.m. – 11:00 p.m.	**Board of Directors** Room: Biltmore
7:00 p.m. – 9:00 p.m.	**ICE CREAM SOCIAL, Aventis** Room: Ballroom A & B

Wednesday, July 18, 2001

8:00 a.m. – 4:30 p.m.	**APRES Registration** Ballroom D & E foyer area **Spouse's Registration and Hospitality** Room: Thread
8:00 a.m. – 5:00 p.m.	**Industry Exhibits** Room: C19 & C20
8:00 a.m. – 9:40 a.m.	**General Session** Room: Ballroom D & E
9:40 a.m. – 10:00 a.m.	**Break**

PROGRAM HIGHLIGHTS

10:00 a.m. – 12:00 p.m.	**HIGH OLEIC SYMPOSIUM** Room: Ballroom D & E
1:00 p.m. – 5:00 p.m.	**Poster Session I** Room: C19 & C20
1:00 p.m. – 3:00 p.m.	**Plant Pathology I** Room: MR16 **Breeding and Genetics I** Room: MR17 **Production Technology I** Room: MR18

3:00 p.m. – 3:30 p.m.	**Break**
3:30 p.m. – 5:00 p.m.	**Plant Pathology II** Room: MR16 **Production Technology II** Room: MR17 **Processing and Utilization** Room: MR18
6:00 p.m. – 9:00 p.m.	**Dinner, Syngenta** Room: Ballroom A & B

Thursday, July 19, 2001

8:00 a.m. – 12:00 p.m.	**APRES Registration** Ballroom D & E foyer area
8:00 a.m. – 4:00 p.m.	**Spouse's Registration and Hospitality** Room: Thread **Industry Exhibits** Room: C19 & C20
8:00 a.m. – 4:30 p.m.	**Poster Session II** Room: C19 & C20
8:00 a.m. – 10:00 a.m.	**Graduate Student Competition I** Room: MR16 **Breeding and Genetics II** Room: MR17 **Weed Science** Room: MR18
10:00 a.m. – 10:30 a.m.	**Break**
10:30 a.m. – 12:00 p.m.	**Graduate Student Competition II** Room: MR16 **Entomology** Room: MR17 **Production Technology III** Room: MR18

1:00 p.m. – 2:00 p.m.	**Harvesting, Curing, Shelling, Storing, and Handling** Room: MR16 **Economics** Room: MR17 **Industry Update** Room: MR18
2:00 p.m. – 3:45 p.m.	**Extension Techniques and Technology/ Education for Excellence** Room: MR17
2:30 p.m. – 3:30 p.m.	**USDA Agricultural Research Service** Room: MR16
6:30 p.m. – 9:00 p.m.	**Dinner, Bayer Corporation/BASF** National Cowboy & Western Heritage Museum

Friday, July 20, 2001

7:30 a.m. – 8:30 a.m.	**Breakfast, Valent/Dow AgroSciences** Room: Ballroom A & B
8:30 a.m. – 10:00 a.m.	**APRES Awards Ceremony and Business Meeting** Room: Ballroom A & B

SPECIAL EVENTS

Tuesday, July 17, 2001

7:00 p.m. – 9:00 p.m.	**Ice Cream Social** Sponsor: Aventis Room: Ballroom A & B

Wednesday, July 18, 2001

6:00 p.m. – 9:00 p.m.	**Reception/Dinner** Sponsor: Syngenta Room: Ballroom A & B

Thursday, July 18, 2001

6:30 p.m. – 9:00 p.m. **Reception/Dinner**
Sponsor: Bayer/BASF
National Cowboy and Western
Heritage Museum

Friday, July 18, 2001

7:30 a.m. – 8:30 a.m. **Valent/Dow AgroSciences Awards Breakfast**
Sponsor: Valent/Dow AgroSciences
Room: Ballroom A & B

GENERAL SESSION

Wednesday, July 18, 2001

8:00 a.m. – 9:40 a.m. **Ballroom D & E**

8:00 a.m. **Call to Order**
Dr. John Damicone, APRES President-Elect

8:05 a.m. **Welcome to Oklahoma**
Ms. Jane Jayroe, Secretary of Tourism and Executive Director of Oklahoma Tourism and Recreation Department

8:15 a.m. **Overview of Oklahoma Agriculture**
Dr. Samuel E. Curl, Dean and Director, Division of Agricultural Sciences and Natural Resources, Oklahoma State University

8:30 a.m. **Research Update**
Murray Campbell, National Peanut Board

8:45 a.m. **Oklahoma Weather With A Flair**
Guest Speaker

9:30 a.m. **Announcements**
Dr. John Damicone, APRES President-Elect

TECHNICAL SESSIONS

HIGH OLEIC SYMPOSIUM **Ballroom D & E**

Moderator: Hassan Melouk, USDA-ARS, Oklahoma State University Stillwater, Oklahoma

10:00 a.m. (1) Chemistry of peanut oil. T.H. Sanders. USDA-ARS, MQHRU, North Carolina State University, Raleigh, NC.

10:15 a.m. (2) Breeding and Genetics:

a. Breeding High Oleic Peanuts in Florida. D.W. Gorbet, University of Florida, North Florida Research and Education Center, Marianna, FL.

b. History of High Oleic Peanut Commercialization. K.M. Moore, AgraTech Seeds, Inc., Ashburn, GA.

11:00 a.m. (3) High Oleic Peanuts from a Southwest Shelleris Perspective. G.M. Grice. Vice President and General Manager, Birdsong Peanuts-Southwest, Gorman, TX.

11:15 a.m. (4) Manufactureris Perspective: Issues Related to High Oleic Peanut for Confectionery Products. D.A. Stuart. Hershey Foods Corp., Hershey, PA. Product Quality Attributes of High Oleic Acid Peanuts Used in Snack Foods. D.A. Smyth. Nabisco, Inc. Planters R & D, East Hanover, NJ.

11:45 a.m. Discussion

Wednesday, July 18, 2001

POSTER SESSION I **C19 & C20**

1:00 p.m. — 5:00 p.m.
(Authors present 2:30 p.m. — 3:30 p.m.)

(5) Field Survey of Thrips and Tomato Spotted Wilt Virus in West Texas Peanut. J.S. Armstrong*, G.C. Kraemer, and F. L. Mitchell. Texas Tech University, Lubbock, TX.

(6) Microscopic Examination of Peanut Somatic Embryo Abnormalities. K. Chengalrayan*, S. Hazra, and M. Gallo-Meagher. University of Florida, Gainesville, FL.

(7) Evaluation of New Peanut Seed Lines for Reaction Against Aflatoxin. R. Cuero* and H.A. Melouk. Prairie View A & M University, Prairie View, TX.

(8) Residual Weed Control for Peanut (Arachis hypogaea) with Imazapic, Diclosulam, Flumioxazin, and Sulfentrazone in Alabama, Georgia, and Florida: A Multi-State and Year Summary. T.L. Grey*, D.C. Bridges, E.F. Eastin, E.P. Prostko, W.K. Vencill, W.C. Johnson, JR., B.J. Brecke, G.E. Macdonald, J.A. Tredaway, J.W. Everest, G.R. Wehtje, and J.W. Wilcut. University of Georgia, Griffin, GA.

PLANT PATHOLOGY I **MR16**

Moderator: Bill Odle, Valent USA Corp., Garland, Texas

1:00 p.m.(9) Scanning Electron Microscopy of Control of Sclerotinia Blight by Fluazinam on Peanut Limbs. J.E. Bailey* and W.E. Schadel. North Carolina State University, Raleigh, NC.Wednesday, July 18, 2001

1:15 p.m. (10) Defining the Relationship Between Plant Stand, Tomato Spotted Wilt, and Pod Yield from Peanut Seed Treatment Trials. T.B. Brenneman* and R. Walcott. University of Georgia, Tifton, GA.

1:30 p.m. (11) Tank-mix Combinations of Benzimidazole Fungicides and Chlorothalonil for Control of Peanut Leaf Spot. A.K. Culbreath* and T.B. Brenneman. University of Georgia, Tifton, GA.

1:45 p.m. (12) Factors Affecting Incidence and Management of Pepper Spot of Peanut. J.P. Damicone* and K.E. Jackson. Oklahoma State University, Stillwater, OK.

2:00 p.m. (13) A Simple Alternative to Solid State Fermentation for Producing Aflatoxin Biocontrol Formulations. J.W. Dorner* and R.J. Cole. USDA-ARS, National Peanut Research Laboratory, Dawson, GA.

2:15 p.m. (14) Oxalic Acid Production by Nine Isolates of Sclerotinia minor. J.E. Hollowell*, M.R. Smith, and B.B. Shew. North Carolina State University, Raleigh, NC.

2:30 p.m. (15) Influence of Fungicides and Cultivars on Pod Rot of Peanut in Oklahoma. K.E. Jackson*, J.P. Damicone, and J.R. Sholar. Oklahoma State University, Stillwater, OK.

2:45 p.m. (16) Evaluation of BAS 500 on Peanut Foliar and Soilborne Disease in Texas. A.J. Jaks*, W.J. Grichar, and B.A. Besler. Texas Agricultural Experiment Station, Yoakum, TX.Wednesday, July 18, 2001

Breeding and Genetics I **MR17**

Moderator: Kelly Chenault, USDA-ARS, Stillwater, Oklahoma

1:00 p.m.(17) Application of the Simulation Model CROPGRO-Peanut in a Peanut Breeding Program. P.Banterng*, A. Patanothai, K. Pannangpetch, S. Jogloy, and G. Hoogenboom. Khon Kean University, Khon Kean, Thailand.

1:15 p.m.(18) Generation of a Molecular Marker Map of the Cultivated Peanut, Arachis hypogaea L. M.D. Burow, C.E. Simpson, J.L. Starr, and A. H. Paterson. Texas A&M University, College Station, TX.

1:30 p.m.(19) Greenhouse Testing of Transgenic Peanut for Resistance to Sclerotinia minor Jagger. K.D. Chenault* and H.A. Melouk. USDA-ARS, Plant Science and Water Conservation Laboratory, Stillwater, OK.

1:45 p.m.(20) RFLP Loci Flanking a Locus for Resistance to Meloidogyne arenaria in Peanut. G.T. Church*, C.E. Simpson, M.D. Burrow, and J.L. Starr. Texas A&M University, College Station, TX.

2:00 p.m.(21) Discovery of Naturally Occurring Hypoallergenic Peanut Germplasm. H. Dodo*, O. Viquez, and K. Konan. Alabama A&M University, Normal, AL.

2:15 p.m.(22) Phorate-induced Peanut Genes that may Condition Acquired Resistance to Tomato Spotted Wilt. M. Gallo-Meagher*, K Chengalrayan, J.M. Davis, and G.E. Macdonald. University of Florida, Gainesville, FL.

2:30 p.m. (23) Evaluations of Peanuts with Multiple Pest Resistance. D.W. Gorbet*, A.K. Culbreath, J.W. Todd, F.M. Shokes, T.A. Kucharek, T. Brenneman, E.B. Whitty, H.A. Wood, and J. Atkins. University of Florida, Marianna, FL.

Wednesday, July 18, 2001

2:45 p.m.(24) Selection for Peanuts Resistant to Early Leafspot (Cercospora arachidicola Hori). T.G. Isleib*. North Carolina State University, Raleigh, NC.

Production Technology I **MR18**

Moderator: Mark Gregory, OSU-OCES, Cordell, Oklahoma

1:00 p.m.(25) Yield Grade and Tomato Spotted Wilt Incidence of Georgia Green and AT-201 Peanut When Planted in Twin Verses Single Row Pattern. J.A. Baldwin*, R. McDaniel, D.E. McGriff, and B.Tankersley. Dept of Crop and Soil Sciences and Georgia Extension Service, Tifton, GA.

1:15 p.m.(26) Comparison of Ten Peanut-Based Cropping Systems in North Carolina. J.S. Barnes*, D.L. Jordan, C.R. Bogle, J.E. Bailey, K.L. Edmisten, E.J. Dunphy, S.G. Bullen, A.B. Brown, and P.D. Johnson. North Carolina Department of Agriculture and Consumer Services, Raleigh, NC.

1:30 p.m.(27) Peanut Response to Prohexadione Calcium and Early Harvest. J.B. Beam, D.L. Jordan*, and P.D. Johnson. North Carolina State University, Raleigh, NC.

1:45 p.m.(28) Yield and Grade Response of Peanut to Early Harvest(PGR. J.P. Beasley, JR.*. University of Georgia, Tifton, GA.

2:00 p.m.(29) Peanut Genotype x Seeding Rate Interaction Study. W.D. Branch* and J.A. Baldwin. University of Georgia, Tifton, GA.

2:15 p.m.(30) Evaluation of Fungicides for Control of Multiple Diseases and the Effect of Yield in Peanut. F.J. Connelly*, J.L. Jacobs, J.B. Tucker, G.B. Hardison, T.B. Brenneman, R.C. Kemerait, and J.A. Mixon. University of Georgia Cooperative Extension Service, Nashville, GA.

Wednesday, July 18, 2001

2:30 p.m.(31) Irrigator Pro 1.0 vs. Irrigator Pro 2.0. J.I. Davidson*, M.C. Lamb, D.A. Sternitzke, C.L. Butts, and H. Valentine. USDA-ARS National Peanut Research Laboratory, Dawson, GA.

2:45 p.m.(32) Comparing Peanut Grown in Different Row Patterns. D.L. Jordan*, R. Wells, and P.D. Johnson. North Carolina State University, Raleigh, NC.

Plant Pathology II **MR16**

Moderator: John Cagle, Bayer Corp.,
Mill Creek, Oklahoma

3:30 p.m.(33) Reaction of Hairy Peanut Genotypes to Southern Blight Under Field Conditions. H.A. Melouk*, B.A. Besler, and W.J. Grichar. USDA-ARS, Oklahoma State University, Stillwater, OK.

3:45 p.m.(34) Susceptibility of Large-seeded Virginia-type Peanuts to Web Blotch in Virginia. R.W. Mozingo*, C.W. Swann, and P.M. Phipps. Tidewater Agricultural Research and Extension Center, Suffolk, VA.

4:00 p.m.(35) Susceptibility of Virginia- and Runner-type Cultivars of Peanut to Sclerotinia Blight and their Response to Applications of Omega 500 Fungicide. P.M. Phipps*, D.B. Langston, JR., and R.W. Mozingo. Tidewater Agricultural Research and Extension Center, Suffolk, VA.

4:15 p.m.(36) Managing Groundnut Leaf Diseases in Northern Ghana with Fungicides, Neem Seed Extract, and Local Soap. F.K. Tsigbey*, J.E. Bailey, and S.K. Nutsugah. Savanna Agricultural Research Institute, Nyankpala-Tamale, Ghana.

Wednesday, July 18, 2001

4:30 p.m.(37) Effects of Actigard on Tomato Spotted Wilt Virus and Thrips in Peanut. M.L. Wells*, A.K. Culbreath, and J.W. Todd. University of Georgia, Tifton, GA.

4:45 p.m.(38) Variability Among Aflatoxin Test Results on Runner Peanuts Harvested from Five-Foot Row Lengths. T.B. Whitaker*, J.W. Dorner, F.G. Giesbrecht, and A.B. Slate. USDA-ARS, North Carolina State University, Raleigh, NC.

Production Technology II **MR17**

Moderator: David Nowlin, OSU-OCES,
Caddo Co., Oklahoma

3:30 p.m.(39) Interactions of Peanut Seed Size, Planting Depth, and Water to Emergence. M.C. Lamb*, J.P. Bostick, R.B. Sorensen, C.L. Butts, and K.S. Balkcom. USDA-ARS National Peanut Research Laboratory, Dawson, GA.

3:45 p.m.(40) Effects of Narrow and Twin Row Systems on Peanut Production in Texas. R.G. Lemon*, B.A. Besler, W.J. Grichar, D.J. Pigg, and K. Brewer. Texas Agricultural Experiment Service, College Station, TX.

4:00 p.m.(41) Drynut Computer Expert Systems. J.F. McGill*, R.B. Moss, D.A. Sternitzke, J.I. Davidson, M.C. Lamb, and C.L. Butts. University of Georgia, Tifton, GA.

4:15 p.m.(42) Effect of Twin Row Seeding Rates on Yield and Grade. D.E. McGriff*, B. Tankersley, and J.A. Baldwin. University of Georgia Cooperative Extension Service, Bainbridge, GA.

4:30 p.m.(43) HarvPro: A Decision Support System for Harvesting (Digging) Peanuts. R.B. Moss*, J.F. McGill, J.I. Davidson, E.J. Williams, J.A. Baldwin, and T.B. Brenneman. University of Georgia, Plains, GA.Wednesday, July 18, 2001

4:45 p.m.(44) Virginia-type Peanut Production Using Flue Gas Desulfurization Waste as a Calcium Source. N.L. Powell*. VPISU, Suffolk, VA.

Processing and Utilization **MR18**

Moderator: Margaret Hinds, Oklahoma State University
Stillwater, Oklahoma

3:30 p.m.(45) Physical Properties of a Short Pasta-type Product from Peanut Flour. D.A. Hardy* and M.J. Hinds, Oklahoma State University, Stillwater, OK.

3:45 p.m.(46) Acceptability of Haitian Peanut Butter-type Products (Mambas). M.J. Hinds*, C.M. Jolly, R.G. Nelson, Y. Donis, and E. Prophete. Oklahoma State University, Stillwater, OK.

4:00 p.m.(47) Screening the Core Germplasm Collection for Peanuts with Reduced Allergenic Potential. S.J. Maleki* and E.T. Champagne. USDA-ARS Southern Regional Research Center, New Orleans, LA.

4:15 p.m.(48) Sensory Quality Evaluation of Market-Grade-Sized Red-Tip Seed Associated with TSWV Infection from Peanut Genotypes of Varying Resistance Levels. H.E. Pattee*, T.G. Isleib, D.W. Gorbet, and F.G. Giesbrecht. USDA-ARS and Crop Science Department, North Carolina State University, Raleigh, NC.

4:30 p.m.(49) Real-time Monitoring of Peanut Roasting Using Infrared Thermometry. T.H. Sanders* and J. Simunovic. USDA-ARS, North Carolina State University, Raleigh, NC.

TECHNICAL SESSIONS

THURSDAY, July 19, 2001

POSTER SESSION II **C19 & C20**

8:00 a.m. — 4:30 p.m.
(Authors present 2:30 p.m. — 3:30 p.m.)

(50) Peanut Processing Practices by U.S. Food Manufacturers. C.M. Bednar*, J. Sheaffer, and C.C. King. Texas Womanís University, Denton, TX.

(51) New Experimental Farm Established to Address Agronomic and Economic Impacts of Restricted Water-Use. K.S. Balkcom*, M.C. Lamb, P.D. Blankenship, R.B. Sorensen, C.L. Butts, and D.L. Rowland. USDA-ARS National Peanut Research Laboratory, Dawson, GA.

(52) Delivery and Application of Weather Information for Management of Peanut Production. G. Hoogenboom*. University of Georgia, Griffin, GA.

(53) Variance in Financial Returns Considering Costs of Select Fungicide Spray Programs for Control of Leaf Spots and Rust of Peanut (cv. "Georgia Green"). T.A. Kucharek* and C.R. Semer. University of Florida, Gainesville, FL.

(54) Production of Edible Peanut in Africa: An Integrated Approach of Physical and Sanitary Quality. A. Mayeux*. Project Germplasm Arachide, Senegal.

(55) Nitrofoska (BASF) a Good Peanut Foliar Fertilizer Sprayed Under Rainy Season in State of Morelos Mexico. S. Sanchez-Dominguez* and E. Luna-Flores. Universidad Autonoma Chapingo, Chapingo, Mexico.

(56) Tolerance of Metam Sodium Treated Peanut to Various Flumioxazin (Valor) Weed Management Systems. C.W. Swann*. Tidewater AREC, Suffolk, VA.

(57) Potential of Modified Defatted Peanut Flour as Meat Substitute and Functional Food Ingredient. V. Ray, C. Ray, M. Ahmedna, and I. Goktepe, Food Science and Nutrition Program, North Carolina A&T State University, Greensboro, NC 27411

THURSDAY, July 19, 2001

GRADUATE STUDENT COMPETITION I **MR16**

Moderator: Ken Jackson, Oklahoma State University
Stillwater, Oklahoma

8:00 a.m.(58) Marker Assisted Selection in the Transfer of Root-Knot Nematode Resistance in Peanut (Arachis hypogaea L.). J.M. Cason*, C.E. Simpson, J.L. Starr, M.D. Burow, and A.H. Paterson. Texas Agricultural Experiment Station, Stephenville, TX.

8:15 a.m.(59) Intercropping as Disease Management for Early Leaf Spot of Peanut. L.E. Duffie*, B.B. Shew, and M.A. Boudreau. North Carolina State University, Raleigh, NC.

8:30 a.m.(60) Effects of Diclosulam on Potential Crop Rotations Following Peanut Production in Texas. C.A. Gerngross* and W.J. Grichar and S.A. Senseman. Texas Agricultural Experiment Station, Yoakum, TX and College Station, TX.

8:45 a.m.(61) Control of Seed Transmission of Cylindrocladium parasiticum in Peanut with Seed Treatment Fungicides. D.L. Glenn*, P.M. Phipps, and R. J. Stipes. Virginia Polytechnic and State University, Suffolk , VA.

9:00 a.m.(62) Genetic Studies of Fresh Seed Dormancy in Spanish-Type Peanuts. O. Ndoye*, C.E.. Simpson, and W.L. Rooney. Texas A&M University, College Station, TX.

9:15 a.m.(63) Flint River Drought Protection Act Year One: Economic Analysis and Predictions. M.H. Masters*. Auburn University, Auburn, AL.

THURSDAY, July 19, 2001

BREEDING AND GENETICS II **MR17**

Moderator: Ken Dashiell, Oklahoma State University
Stillwater, Oklahoma

8:00 a.m.(64) Expression Patterns of Peanut Allergen Genes arah1 and arah2 During Seed Development. I-H Kang*, M. Gallo-Meagher, and P. Ozias-Akins. University of Florida, Gainesville, FL.

8:15 a.m.(65) Genomic Characterization and Silencing of Arah 2, a Major Peanut Allergen. K. Konan*, O. Viquez, and H. Dodo. Alabama A&M University, Normal, AL.

8:30 a.m.(66) Crossability in the Genus Arachis L. N. Mallikarjuna* and P. J. Bramel. International Crops Research Institute for Semi Arid Tropics, Andhra Pradesh, India.

8:45 a.m.(67) Selection for Peanuts with Reduced Oil Content. R.W. Mozingo, II*, T.G. Isleib, and R.F. Wilson. North Carolina State University, Raleigh, NC.

9:00 a.m.(68) Combining Ability for Resistance to Bud Necrosis Caused by Peanut Bud Necrosis Topovirus (PBNV) in Peanut (Arachis hypogaea L.). V. Pensuk*, A. Patanothai, S. Wongkaew, and S. Jogloy. Khon Kaen University, Khon Kaen, Thailand.

9:15 a.m.(69) Developing High O/L Peanut (Arachis hypogaea L.) Cultivars for the Southwest. C.E. Simpson*, A.M. Schubert, M.R. Baring, Y. Lopez, H.A. Melouk, and K.E. Keim. Texas Agricultural Experiment Station, Texas A&M University, Stephenville, Lubbock and College Station, TX; USDA,ARS, Stillwater, OK and Oklahoma Agricultural Experiment Station, Oklahoma State University, Stillwater, OK.

9:30 a.m.(70) Genome Donors of Arachis hypogaea L. S.P. Tallury*, S.R. Milla, S.C. Copeland, and H.T. Stalker. North Carolina State University, Raleigh, NC.THURSDAY, July 19, 2001

9:45 a.m.(71) A Putative Peanut Trypsin Inhibitor Gene Reveals Homology with Peanut Allergens. O. Viquez*, K. Konan, and H. Dodo. Alabama A&M University, Normal, AL.

WEED SCIENCE **MR18**

Moderator: Mark Boyles, BASF Corp., Ripley, Oklahoma

8:00 a.m.(72) Peanut Tolerance to Glyphosate Spot Applications. T.A. Baughman*, B.L. Porter, W.J. Grichar, W.C. Johnson, III, P.A. Dotray, J.W. Keeling, J.R. Karnei, R.G. Lemon, B.A. Besler, and K.D. Brewer. Texas Agricultural Experiment Service, Vernon, TX.

8:15 a.m.(73) Dual MAGNUM(Provides Improved Nutsedge and Grass Control when Combined with Strongarm and Valor. G. Cloud*, B. Minton, J. Driver, D. Porterfield, and M. Johnson. Syngenta Crop Protection, Greensboro, NC.

8:30 a.m.(74) Common Purslane (Portulaca oleracea L.) Control in Peanut with Postemergence Herbicides. W.J. Grichar*, C.A. Gerngross, and B.A. Besler. Texas Agricultural Experiment Station, Yoakum, TX.

8:45 a.m.(75) Pesticide Runoff and Washoff from Simulated Rainfall in Conventional-Tillage Peanut Production. W.C. Johnson, III*, R.D. Wauchope, and H.R. Sumner. USDA-ARS Coastal Plain Experiment Station, Tifton, GA.

9:00 a.m.(76) Diclosulam Performance in West Texas Peanut. J.R. Karnei*, P.A. Dotray, J.W. Keeling, and T.A. Baughman. Texas Agricultural Experiment Station, Lubbock, TX.

THURSDAY, July 19, 2001

9:15 a.m.(77) Yellow Nutsedge (Cyperus esculentus L.) Management with Strongarm and Dual Magnum Herbicides in Texas High Plains Peanut. B.L. Porter*, P.A. Dotray, J.W. Keeling, and T.A. Baughman. Texas Tech University, Lubbock, TX.

9:30 a.m.(78) Cadre and Cotton: A Peanut Produceris Dilemma. E. P. Prostko*, A.S. Culpepper, T.L. Grey, C.W. Bednarz, and W.D. Duffie. University of Georgia, Tifton, GA.

9:45 a.m.(79) Weed Control for Peanut (Arachis hypogaea) with the Residual Herbicides Imazapic, Diclosulam, Flumioxazin, and Sulfentrazone: Field and Greenhouse Experiments. G.R. Wehtje* and T.L. Grey. University of Georgia, Griffin, GA.

GRADUATE STUDENT COMPETITION II **MR16**

Moderator: Ken Jackson, Oklahoma State University
Stillwater, Oklahoma

10:30 a.m.(80) Integration of Strip-Tillage, Resistant Cultivars, and Reduced Fungicide Inputs for Management of Peanut Leaf Spot. W.S. Monfort*, A.K. Culbreath, and T.B. Brenneman. University of Georgia, Tifton, GA.

10:45 a.m. (81) Peanut Disease Management Utilizing an In-Furrow Treatment of Azoxystrobin. S.L. Rideout* and T.B. Brenneman. University of Georgia, Tifton, GA.

11:00 a.m. (82) Effect of Inoculation with Sclerotium rolfsii at Three Plant Developmental Stages in Three Runner Peanut Genotypes. C. Saude*, H.A. Melouk, and M.E. Payton. USDA-ARS, Oklahoma State University, Stillwater, OK.

11:15 a.m. (83) Effect of Plant Population Density on Epidemiology of Peanut Stem Rot. L.E. Sconyers*, T.B. Brenneman, and K.L. Stevenson. University of Georgia, Tifton, GA.

11:30 a.m. (84) Model Assisted Peanut Production in Georgia. A.T. Wells* and J.P. Beasley. University of Georgia, Tifton, GA.

THURSDAY, July 19, 2001

ENTOMOLOGY **MR17**

Moderator: Phil Mulder, Oklahoma State University
Stillwater, Oklahoma

10:30 a.m. (85) Seasonal Abundance and Chemical Suppression of Burrower Bug in Strip-Tillage Peanut. J.W. Chapin* and J.S. Thomas. Clemson University, Blackville, SC.

10:45 a.m. (86) Effects of Peanut Variety and Insecticides on Thrips Populations and Transmission of Tomato Spotted Wilt Virus. P.G. Mulder*, K.E. Jackson, and J.P. Damicone. Oklahoma State University, Stillwater, OK.

11:00 a.m. (87) Application of Field Research Results to Management Recommendations for Insect Pests of Virginia Peanuts. D.A. Herbert, Jr.* Virginia Polytechnic Institute and State University, Suffolk, VA.

11:15 a.m. (88) Evaluations of Novel Insecticides for Control of Thrips and Lepidopterous Larvae on Peanuts in Alabama. J.R. Weeks* and L. Wells. Auburn, University, Headland, AL.

PRODUCTION TECHNOLOGY III — MR18

Moderator: Clay Jones, OSU-OCES, Bryan Co., Oklahoma

10:30 a.m. (89) Effect of Chelated Calcium on Valentia Peanut Yield. N. Puppala*, R.D. Baker, and R.B. Sorenson. New Mexico State University, Clovis, NM.

10:45 a.m. (90) Influence of Production Practices on Yield and Gross Economic Value of the Virginia Market Type Cultivars NC V-11, NC 12C, VA 98R, and Perry. L. Smith*, A. Cocran, P. Smith, M. Williams, D. Jordan, and D. Johnson. North Carolina Cooperative Extension Service, Raleigh, NC.

THURSDAY, July 19, 2001

11:00 a.m. (91) Trends in Georgia Peanut Production and Marketing: Results from County Agricultural Extension Agent Surveys. N.B. Smith*, J.P. Beasley, Jr., and J.A. Baldwin. University of Georgia, Tifton, GA.

11:15 a.m. (92) Impact of Average Plant Spacing and Planting Pattern on Yield and Canopy Coverage for Non-Irrigated Peanuts. D.A. Sternitzke*, J.I. Davidson, Jr., and M.C. Lamb. USDA-ARS National Peanut Research Laboratory, Dawson, GA.

HARVESTING, CURING, SHELLING, STORING AND HANDLING — MR16

Moderator: Soheila Maleki, USDA-ARS New Orleans, Louisiana

1:00 p.m.(93) An Economic Rock Remover for an Amadas Combine. P.D. Blankenship*. USDA-ARS National Peanut Research Laboratory, Dawson, GA.

1:15 p.m.(94) Description of Single Kernel Moisture Distributions and Comparisons to Current Moisture Content Measurements of Peanut Kernels. C.L. Butts* and R.B. Sorensen. USDA-ARS National Peanut Research Laboratory, Dawson, GA.

1:30 p.m.(95) Effect of Curing on Peanut Allergenicity. S.Y. Chung*, C.L. Butts, and E.T. Champagne. USDA-ARS, SRRC, New Orleans, LA.

THURSDAY, July 19, 2001

ECONOMICS **MR17**

Moderator: Mike Kubicek, Oklahoma Peanut Commission
Shawnee, Oklahoma

1:00 p.m.(96) Economic Evaluation of Peanut Management Systems for Insect and Disease Pests. T.D. Hewitt* and J.R. Weeks. University of Florida, Marianna, FL.

1:15 p.m.(97) Consumers Likelihood to Purchase a Meat Analog Containing Peanut Protein. C.M. Jolly*, M.J. Hinds and P. Lindo. Auburn University, Auburn, AL, Oklahoma State University, Stillwater, OK and Alabama A&M University, Normal, AL.

1:30 p.m.(98) Marketing of Quota and Additional Peanuts Within a No-Net-Cost Peanut Program. K.M. Robison*. USDA, FSA, Washington, D.C.

INDUSTRY UPDATE **MR18**

Moderator: Ron Sholar, Oklahoma State University
Stillwater, Oklahoma

1:00 p.m.(99) VALOR Herbicide and Valent Update. John Altom. Valent USA Corp., Gainesville, FL.

1:15 p.m. (100) BASF Product Update. Mark Boyles, BASF Corp., Ripley, OK.

1:30 p.m.(101) Messenger(- A New Technology for Todayís Peanut Production. Clyde Smith, Eden Bioscience Corp., Marianna, FL.

1:45 p.m.(102) OMEGA: Update on this New Fungicide for Peanut Disease Control. Melvin Grove, ISK Biosciences, Houston, TX.

THURSDAY, July 19, 200

12:00 p.m. (103) STRATEGO: A New Option for the Control of Foliar Diseases of Peanut. Herb Young, Bayer Corp., Tifton, GA.

EXTENSION TECHNIQUES and TECHNOLOGY/EDUCATION FOR EXCELLENCE **MR17**

Moderator: Richard Rudolph, Bayer Corporation
Peachtree City, Georgia

2:00 p.m.(104) Fungicide Treatment Effects on the Incidence of Soilborne Diseases in Peanut. P.D. Wigley*, R.C. Kemerait, and S.J. Komar, Calhoun County Extension Service, University of Georgia, Morgan, GA.

2:30 p.m.(106) Using the Northeast Agricultural Expo to Extend Information to North Carolina Peanut Growers. P. Smith*, M. Williams, L. Smith, M. Rayburn, D. Johnson, D. Jordan, J. Bailey, R. Brandenburg, and T. Isleib. North Carolina Cooperative Extension Service, North Carolina State University, Raleigh, NC.

2:45 p.m.(107) The Development of the Peanut Industry in Dawson County, Texas. J. Farris*. Texas Agricultural Extension Service, Lamesa, TX.

3:00 p.m.(108) The Effective Delivery of a County Extension Peanut Program in Henry County, Alabama. J.D. Jones*, D.L. Hartzog, J.R. Weeks. Alabama Cooperative Extension System, Auburn University, Abbeville, AL.

THURSDAY, July 19, 2001

3:15 p.m.(109) Terrell County Georgia Addresses Peanut Issues. E. H. Wilson*. Terrell County, Georgia Cooperative Extension Service, Dawson, GA.

3:30 p.m.(110) Peanut Extension Educational Program in Caddo County, Oklahoma. David Nowlin*, Caddo County Cooperative Extension, Ft. Cobb, OK.

SITE SELECTION COMMITTEE REPORT

The committee met on Tuesday (7/17/01) at 1:00 p.m. Seven out of eight members were present including APRES President Austin Hagan. David Jordan reported that a contract was signed with the Sheraton in Research Triangle Park (Raleigh), North Carolina, for the 2002 APRES meeting, July 16-19. The room rate is $100.00/day.

Ben Whitty and Maria Gallo-Meagher are negotiating with a couple resorts in Florida for the 2003 APRES meeting to be held July 7-11.

Robert Lemon reported that efforts for selecting a site in Texas for the 2004 APRES meeting will start soon.

Respectfully submitted,

Hassan Melouk, chair
Ron Sholar
Bob Sutter
David Jordan
Ben Whitty
Maria Gallo-Meagher
Robert Lemon
James Grichar

AMERICAN SOCIETY OF AGRONOMY LIAISON REPRESENTATIVE REPORT

The annual meetings of the joint American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America were held in Minneapolis, MN from November 5-9, 2000. Approximately 2,750 scientific presentations were made of which 14 were devoted to peanut research. Thirteen members of ARPES authored or co-authored presentations at the meetings. Dr. Tom Stalker served as chair-elect for the C1 (plant breeding) division of the Crop Science Society of America. The next annual meeting will be held at Charlotte, NC from October 21-25, 2001.

Respectfully submitted,

H. Thomas Stalker, chair

CAST REPORT

The CAST Board met in New Orleans, fall 2000 and in Washington, D.C., spring 2001. Harold Coble, USDA, is president. David Knauft, University of Georgia, is past-president. Stanley Fletcher, University of Georgia, is chairperson of the National Concerns Committee. Dr. Richard Stuckey, executive vice president since 1992, retired at the end of June 2001. Teresa Gruber, PH.D., J.D., is the new executive vice president of CAST.

CAST continues to provide the public, scientific societies, the news media and legislative bodies with science-based information on agricultural and environmental issues. Examples are:

- CAST created the Biotechnology Communications Initiative, which APRES provides financial support. This initiative serves as a resource to the public and the media (i.e., provide speakers and information in response to queries). A biotechnology web page has been developed – http://www.cast-science.org/biotechnology/index.html. Presentations have been made to numerous associations, organizations and governmental personnel.
- CAST has provided numerous testimonies before Congress on agricultural research and extension needs.
- CAST has provided briefings on their publication, "Vertical Coordination of Agriculture in Farming-Dependent Areas; and the Biotech Corn (StarlinkTM).
- CAST published a publication entitled, "The Professional Portfolio: Beyond the Curriculum Vitae." CAST has been working with the Institute for Conservation Leadership in developing leadership workshops for societies.
- CAST published an issue paper entitled, "Relevance of Soil Testing to Agriculture and the Environment."

CAST is currently supported by 37 scientific societies that represent over 180,000 member scientists. Further details are available on their web site at www.cast-science.org. One can also sign up for the CAST news email list at cast@cast-science.org.

Respectfully submitted,

Stanley M. Fletcher

BY-LAWS
of the
AMERICAN PEANUT RESEARCH AND
EDUCATION SOCIETY, INC.

ARTICLE I. NAME

Section 1. The name of this organization shall be "AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY, INC."

ARTICLE II. PURPOSE

Section 1. The purpose of this Society shall be to instruct and educate the public on the properties, production, and use of the peanut through the organization and promotion of public discussion groups, forums, lectures, and other programs or presentation to the interested public and to promote scientific research on the properties, production, and use of the peanut by providing forums, treatises, magazines, and other forms of educational material for the publication of scientific information and research papers on the peanut and the dissemination of such information to the interested public.

ARTICLE III. MEMBERSHIP

Section 1. The several classes of membership which shall be recognized are as follows:

a. Individual memberships: Individuals who pay dues at the full rate as fixed by the Board of Directors.

b. Institutional memberships: Libraries of industrial and educational groups or institutions and others that pay dues as fixed by the Board of Directors to receive the publications of the Society. Institutional members are not granted individual member rights.

c. Organizational memberships: Industrial or educational groups that pay dues as fixed by the Board of Directors. Organizational members may designate one representative who shall have individual member rights.

d. Sustaining memberships: Industrial organizations and others that pay dues as fixed by the Board of Directors. Sustaining members are those who wish to support this Society financially to an extent beyond minimum requirements as set forth in Section 1c, Article III.

Sustaining members may designate one representative who shall have individual member rights. Also, any organization may hold sustaining memberships for any or all of its divisions or sections with individual member rights accorded each sustaining membership.

e. Student memberships: Full-time students who pay dues at a special rate as fixed by the Board of Directors. Persons presently enrolled as full-time students at any recognized college, university, or technical school are eligible for student membership. Post-doctoral students, employed persons taking refresher courses or special employee training programs are not eligible for student memberships.

Section 2. Any member, participant, or representative duly serving on the Board of Directors or a committee of this Society and who is unable to attend any meeting of the Board or such committee may be temporarily replaced by an alternate selected by such member, participant, or representative upon appropriate written notice filed with the president or committee chairperson evidencing such designation or selection.

Section 3. All classes of membership may attend all meetings and participate in discussions. Only individual members or those with individual membership rights may vote and hold office. Members of all classes shall receive notification and purposes of meetings, and shall receive minutes of all Proceedings of the American Peanut Research and Education Society, Inc.

ARTICLE IV. DUES AND FEES

Section 1. The annual dues shall be determined by the Board of Directors with the advice of the Finance Committee subject to approval by the members at the annual business meeting. Minimum annual dues for the five classes of membership shall be:

a.	Individual memberships:	$ 40.00
b.	Institutional memberships:	40.00
c.	Organizational memberships:	50.00
d.	Sustaining memberships:	150.00
e.	Student memberships:	10.00

(Dues were set at 1999 Annual Meeting, Savannah, Georgia)

Section 2. Dues are receivable on or before July 1 of the year for which the membership is held. Members in arrears on July 31 for the current year's dues shall be dropped from the rolls of this Society provided prior notification of such delinquency was given. Membership shall be reinstated for the current year upon payment of dues.

Section 3. A registration fee approved by the Board of Directors will be assessed at all regular meetings of the Society.

ARTICLE V. MEETINGS

Section 1. Annual meetings of the Society shall be held for the presentation of papers and/or discussion, and for the transaction of business. At least one general business session will be held during regular annual meetings at which reports from the executive officer and all standing committees will be given, and at which attention will be given to such other matters as the Board of Directors may designate. Opportunity shall be provided for discussion of these and other matters that members wish to have brought before the Board of Directors and/or general membership.

Section 2. Additional meetings may be called by the Board of Directors by two-thirds vote, or upon request of one-fourth of the members. The time and place shall be fixed by the Board of Directors.

Section 3. Any member may submit only one paper as senior author for consideration by the program chairperson of each annual meeting of the Society. Except for certain papers specifically invited by the Society president or program chairperson with the approval of the president, at least one author of any paper presented shall be a member of this Society.

Section 4. Special meetings in conjunction with the annual meeting by Society members, either alone or jointly with other groups, must be approved by the Board of Directors. Any request for the Society to underwrite obligations in connection with a proposed special meeting or project shall be submitted to the Board of Directors, who may obligate the Society as they deem advisable.

Section 5. The executive officer shall give all members written notice of all meetings not less than 60 days in advance of annual meetings and 30 days in advance of all other special meetings.

ARTICLE VI. QUORUM

Section 1. Forty voting members shall constitute a quorum for the transaction of business at the business meeting held during the annual meeting.

Section 2. For meetings of the Board of Directors and all committees, a majority of the members duly assigned to such board or committee shall constitute a quorum for the transaction of business.

ARTICLE VII. OFFICERS

Section 1. The officers of this Society shall consist of the president, the president-elect, the most recent available past-president and the executive officer of the Society, who may be appointed secretary and treasurer and given such other title as may be determined by the Board of Directors.

Section 2. The president and president-elect shall serve from the close of the annual meeting of this Society to the close of the next annual meeting. The president-elect shall automatically succeed to the presidency at the close of the annual meeting. If the president-elect should succeed to the presidency to complete an unexpired term, he/she shall then also serve as president for the following full term. In the event the president or president-elect, or both, should resign or become unable or unavailable to serve during their terms of office, the Board of Directors shall appoint a president, or both president-elect and president, to complete the unexpired terms until the next annual meeting when one or both offices, if necessary, will be filled by normal elective procedure. The most recent available past president shall serve as president until the Board of Directors can make such appointment.

Section 3. The officers and directors, with the exception of the executive officer, shall be elected by the members in attendance at the annual business meeting from nominees selected by the Nominating Committee or members nominated from the floor. The president, president-elect, and most recent available past-president shall serve without monetary compensation. The executive officer shall be appointed by a two-thirds majority vote of the Board of Directors.

Section 4. The executive officer may serve consecutive annual terms subject to appointment by the Board of Directors. The tenure of the executive officer may be discontinued by a two-thirds vote of the Board of Directors who then shall appoint a temporary executive officer to fill the unexpired term.

Section 5. The president shall arrange and preside at all meetings of the Board of Directors and with the advice, counsel, and assistance of the president-elect, and executive officer, and subject to consultation with the Board of Directors, shall carry on, transact, and supervise the interim affairs of the Society and provide leadership in the promotion of the objectives of this Society.

Section 6. The president-elect shall be program chairperson, responsible for development and coordination of the overall program of the education phase of the annual meeting.

Section 7. (a) The executive officer shall countersign all deeds, leases, and conveyances executed by the Society and affix the seal of the Society thereto and to such other papers as shall be required or directed to be sealed. (b) The executive officer shall keep a record of the deliberations of the Board of Directors, and keep safely and systematically all books, papers, records, and documents belonging to the Society, or in any wise pertaining to the business thereof. (c) The executive officer shall keep account of all monies, credits, debts, and property of any and every nature accrued and/or disbursed by this Society, and shall render such accounts, statements, and inventories of monies, debts, and property, as shall be required by the Board of Directors. (d) The executive officer shall prepare and distribute all notices and reports as directed in these By-Laws, and other information deemed necessary by the Board of Directors, to keep the membership well informed of the Society activities.

ARTICLE VIII. BOARD OF DIRECTORS

Section 1. The Board of Directors shall consist of the following:

a. The president
b. The most recent available past-president
c. The president-elect
d. Three State employees' representatives - these directors are those whose employment is state sponsored and whose relation to peanuts principally concerns research, and/or education, and/or regulatory pursuits. One director will be elected from each of the three main U.S. peanut producing areas.
e. United State Department of Agriculture representative - this director is one whose employment is directly sponsored by the USDA or one of its agencies, and whose relation to peanuts principally concerns research, and/or education, and/or regulatory pursuits.
f. Three Private Peanut Industry representatives - these directors are those whose employment is privately sponsored and whose principal activity with peanuts concerns: (1) the production of farmers' stock peanuts; (2) the shelling, marketing, and storage of raw peanuts; (3) the production or preparation of consumer food-stuffs or manufactured products containing whole or parts of peanuts.
g. The President of the American Peanut Council
h. The Executive Officer - non-voting member of the Board of Directors who may be compensated for his services on a part-time or full-time salary stipulated by the Board of Directors in consultation with the Finance Committee.

Section 2. Terms of office for the directors' positions set forth in Section 1, paragraphs d, e, and f, shall be three years with elections to alternate from reference years as follows: d(VC area), e and f(2), 1992; d(SE area) and f(3), 1993; and d(SW area) and f(1), 1994.

Section 3. The Board of Directors shall determine the time and place of regular and special board meetings and may authorize or direct the president by majority vote to call special meetings whenever the functions, programs, and operations of the Society shall require special attention. All members of the Board of Directors shall be given at least 10 days advance notice of all meetings; except that in emergency cases, three days advance notice shall be sufficient.

Section 4. The Board of Directors will act as the legal representative of the Society when necessary and, as such, shall administer Society property and affairs. The Board of Directors shall be the final authority on these affairs in conformity with the By-Laws.

Section 5. The Board of Directors shall make and submit to this Society such recommendations, suggestions, functions, operation, and programs as may appear necessary, advisable, or worthwhile.

Section 6. Contingencies not provided for elsewhere in these By-Laws shall be handled by the Board of Directors in a manner they deem advisable.

Section 7. An Executive Committee comprised of the president, president-elect, most recent available past-president, and executive officer shall act for the Board of Directors between meetings of the Board, and on matters delegated to it by the Board. Its action shall be subject to ratification by the Board.

ARTICLE IX. COMMITTEES

Section 1. Members of the committees of the Society shall be appointed by the president and shall serve three-year terms unless otherwise stipulated. The president shall appoint a chairperson of each committee from among the incumbent committee members. The Board of Directors may, by a two-thirds vote, reject committee appointees. Appointments made to fill unexpected vacancies by incapacity of any committee member shall be only for the unexpired term of the incapacitated committee member. Unless otherwise specified in these By-Laws, any committee member may be re-appointed to succeed him/herself, and may serve on two or more committees concurrently but shall not chair more than one committee. Initially, one-third of the members of each committee will serve one-year terms, as designated by the president. The president shall announce the committees immediately upon assuming the office at the annual business meeting. The new appointments take effect immediately upon announcement.

Section 2. Any or all members of any committee may be removed for cause by a two-thirds approval by the Board of Directors.

a. Finance Committee: This committee shall consist of six members, three representing State employees, one representing USDA, and two representing Private Business segments of the peanut industry. Appointments in all categories shall rotate among the three U.S. peanut production areas. This committee shall be responsible for preparation of the financial budget of the Society and for promoting sound fiscal policies within the Society. They shall direct the audit of all financial records of the Society annually, and make such recommendations as they deem necessary or as requested or directed by the Board of Directors. The term of the chairperson shall close with preparation of the budget for the following year, or with the close of the annual meeting at which a report is given on the work of the Finance Committee under his/her leadership, whichever is later.

b. Nominating Committee: This committee shall consist of four members appointed to one-year terms, one each representing State, USDA, and Private Business segments of the peanut industry with the most recent available past-president serving as chair. This committee shall nominate individual members to fill the positions as described and in the manner set forth in Articles VII and VIII of these By-Laws and shall convey their nominations to the president of this Society on or before the date of the annual meeting. The committee shall, insofar as possible, make nominations for the president-elect that will provide a balance among the various segments of the industry and a rotation among federal, state, and industry members. The willingness of any nominee to accept the responsibility of the position shall be ascertained by the committee (or members making nominations at the annual business meeting) prior to the election. No person may succeed him/herself as a member of this committee.

c. Publications and Editorial Committee: This committee shall consist of six members appointed to three-year terms, three representing State, one USDA, and two Private Business segments of the peanut industry with membership representing the three U.S. production areas. The members may be appointed to two consecutive three-year terms. This committee shall be responsible for the publication of Society-sponsored publications as authorized by the Board of Directors in consultation with the Finance Committee. This committee shall formulate and enforce the editorial policies for all publications of the Society subject to the directives from the Board of Directors.

d. Peanut Quality Committee: This committee shall consist of seven members, one each actively involved in research in peanuts—(1) varietal development, (2) production and marketing practices related to quality, and (3) physical and chemical properties related to quality—and one each representing the Grower, Sheller, Manufacturer, and Services (pesticides and harvesting machinery in particular) segments of the peanut industry. This committee shall actively seek improvement in the quality of raw and processed peanuts and peanut products through promotion of mechanisms for the elucidation and solution of major problems and deficiencies.

e. Public Relations Committee: This committee shall consist of seven members, one each representing the State, USDA, Grower, Sheller, Manufacturer, and Services segments of the peanut industry, and a member from the host state who will serve a one-year term to coincide with the term of the president-elect. The primary purpose of this person will be to publicize the meeting and make photographic records of important events at the meeting. This committee shall provide leadership and direction for the Society in the following areas:

(1) Membership: Development and implementation of mechanisms to create interest in the Society and increase its membership. These shall include, but not be limited to, preparing news releases for the home-town media of persons recognized at the meeting for significant achievements.
(2) Cooperation: Advise the Board of Directors relative to the extent and type of cooperation and/or affiliation this Society should pursue and/or support with other organizations.
(3) Necrology: Proper recognition of deceased members.
(4) Resolutions: Proper recognition of special services provided by members and friends of the Society.

f. Bailey Award Committee: This committee shall consist of six members, with two new appointments each year, serving three-year terms. This committee shall be responsible for judging papers which are selected from each subject matter area. Initial screening for the award will be made by judges, selected in advance and having expertise in that particular area, who will listen to all papers in that subject matter area. This initial selection will be made on the basis of quality of presentation and content. Manuscripts of selected papers will be submitted to the committee by the author(s) and final selection will be made by the committee, based on the technical quality of the paper. The president, president-elect and executive officer shall be notified of the Award recipient at least sixty days prior to the annual meeting following the one at which the paper was presented. The president shall make the award at the annual meeting.

g. Fellows Committee: This committee shall consist of six members, two representing each of the three major geographic areas of U.S. peanut production with balance among State, USDA, and Private Business. Terms of office shall be for three years. Nominations shall be in accordance with procedures adopted by the Society and published in the previous year's PROCEEDINGS of APRES. From nominations received, the committee shall select qualified nominees for approval by majority vote of the Board of Directors.

h. Site Selection Committee: This committee shall consist of eight members, each serving four-year terms. New appointments shall come from the state which will host the meeting four years following the meeting at which they are appointed. The chairperson of the committee shall be from the state which will host the meeting the next year and the vice-chairperson shall be from the state which will host the meeting the second year. The vice-chairperson will automatically move up to chairperson.

i. Coyt T. Wilson Distinguished Service Award Committee: This committee shall consist of six members, with two new appointments each year, serving three-year terms. Two committee members will be selected from each of the three main U.S. peanut producing areas. Nominations shall be in accordance with procedures adopted by the Society and published in the previous year's PROCEEDINGS of APRES. This committee shall review and rank nominations and submit these rankings to the committee chairperson. The nominee with the highest ranking shall be the recipient of the award. In the event of a tie, the committee will vote again, considering only the two tied individuals. Guidelines for nomination procedures and nominee qualifications shall be published in the Proceedings of the annual meeting. The president, president-elect, and executive officer shall be notified of the award recipient at least sixty days prior to the annual meeting. The president shall make the award at the annual meeting.

j. Joe Sugg Graduate Student Award Committee: This committee shall consist of five members. For the first appointment, three members are to serve a three-year term, and two members to serve a two-year term. Thereafter, all members shall serve a three-year term. Annually, the President shall appoint a Chair from among incumbent committee members. The primary function of this committee is to foster increased graduate student participation in presenting papers, to serve as a judging committee in the graduate students' session, and to identify the top two recipients (1st and 2nd place) of the Award. The Chair of the committee shall make the award presentation at the annual meeting.

ARTICLE X. DIVISIONS

Section 1. A Division within the Society may be created upon recommendation of the Board of Directors, or members may petition the Board of Directors for such status, by two-thirds vote of the general membership. Likewise, in a similar manner, a Division may be dissolved.

Section 2. Divisions may establish or dissolve Subdivision upon the approval of the Board of Directors.

Section 3. Division may make By-Laws for their own government, provided they are consistent with the rules and regulations of the Society, but no dues may be assessed. Divisions and Subdivisions may elect officers (chairperson, vice-chairperson, and a secretary) and appoint committees, provided the efforts thereof do not overlap or conflict with those of the officers and committees of the main body of the Society.

ARTICLE XI. AMENDMENTS

Section 1. These By-Laws may be amended consistent with the provision of the Articles of Incorporation by a two-thirds vote of all the eligible voting members present at any regular business meeting, provided such amendments shall be submitted in writing to each member of the Board of Directors at least thirty days before the meeting at which the action is to be taken.

Section 2. A By-Law or amendment to a By-Law shall take effect immediately upon its adoption, except that the Board of Directors may establish a transition schedule when it considers that the change may best be effected over a period of time. The amendment and transition schedule, if any, shall be published in the "Proceedings of APRES".

Amended at the Annual Meeting of the
American Peanut Research and Education Society
July 16, 1999, Savannah, Georgia

APRES MEMBERSHIP
1975-2001

	Individuals	Institutional	Organizational	Student	Sustaining	Total
1975	419	—	40	—	21	480
1976	363	45	45	—	30	483
1977	386	45	48	14	29	522
1978	383	54	50	21	32	540
1979	406	72	53	27	32	590
1980	386	63	58	27	33	567
1981	478	73	66	31	39	687
1982	470	81	65	24	36	676
1983	419	66	53	30	30	598
1984	421	58	52	33	31	595
1985	513	95	65	40	29	742
1986	455	102	66	27	27	677
1987	475	110	62	34	26	707
1988	455	93	59	35	27	669
1989	415	92	54	28	24	613
1990	416	85	47	29	21	598
1991	398	67	50	26	20	561
1992	399	71	40	28	17	555
1993	400	74	38	31	18	561
1994	377	76	43	25	14	535
1995	363	72	26	35	18	514
1996	336	69	24	25	18	472
1997	364	74	24	28	18	508
1998	367	62	27	26	14	496
1999	380	59	33	23	12	507
2000	334	52	28	23	11	448
2001	314	51	34	24	11	434

2001-02
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