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Plant Pathology II

**** Editor's Note: This paper does not appear in the official program but was presented during the annual meeting***

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Plant Pathology III/Mycotoxins

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Production Technology I

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Production Technology II

POSTER SESSION

Isolation and Characterization of a cDNA Clone Encoding Peanut Glycinin Seed Storage Protein. S. M. BASHA and A. K. JAIN*, Division of Agricultural Sciences, Plant Biotechnology Program, Florida A&M University, Tallahassee, FL 32307.

Peanuts are excellent source of plant proteins and provide approximately 11% of the world's protein supply. Genome analysis and identification of specific genes for seed storage proteins are lacking for this important species. As a first step, a cDNA library from white seed stage of peanut was constructed and few cDNA clones have been partially sequenced to develop expressed sequence tags (EST) for genetic markers and developing probes. One of the EST clones showed high homology with Soybean Glycinin subunit (Gy3). A 1.87 Kb cDNA clone was purified and sequenced following cycle sequencing on an ABI Model. The analysis of nucleotide sequence of peanut *Gly1* revealed that the cDNA encodes a polypeptide of 617 residues with a molecular mass of 66 kDa. The derived amino acid sequences showed 58% and 74% identity with glycinin and legumin genes of other legumes. Northern blot analysis to study the expression of *Gly1* in peanut seeds of different stages of development indicated that its expression was highest at yellow maturity stage. Southern blot analysis is under progress to estimate the number of genes and identify other members of gene family. This will be helpful in understanding the genes and their accumulation pattern for major seed storage protein in peanut. In addition, isolation of cDNA clones for other major seed storage proteins such as Arachin and Non-arachin (globulin) using other EST clones are under progress.

Environmental Interactions that Affect Screening of Peanut Germplasm for Aflatoxin Resistance. K.T. INGRAM*, Department of Crop and Soil Sciences, The University of Georgia, Griffin, GA 30223-1797, and C.C. HOLBROOK. and USDA-ARS, Tifton, GA 31798.

Rain exclusion shelters lead to crop water deficit and increased likelihood of aflatoxin contamination in peanut. Such shelters can improve the efficiency of field screening for resistance to aflatoxin contamination, which is the combined resistance to infection by *Aspergillus* spp. and subsequent production of aflatoxin. Field research was done in 1997 and 1998 in Tifton, GA to quantify the spatial variation of soil temperature and moisture for peanut cultivars grown beneath rain exclusion shelters. We measured soil moisture and soil temperature at 5 and 25 cm soil depths in each of 12 plots beneath a 30 m × 9 m rain exclusion shelter, and air temperature, relative humidity, and solar radiation 1.5 m above the soil at a single location in the middle of the shelter. Data were stored at one-minute intervals, and averaged for each hour throughout the season using a CR10X datalogger (Campbell Scientific, Inc.). Daily maximum air temperatures beneath the shelters averaged 7.4°C warmer than that measured at a nearby weather station in 1997 and 8° warmer in 1998. Air temperatures regularly exceeded 40°C, well above the maximum for aflatoxin production. On the other hand, daily maximum soil temperatures at 5 cm depth neared 40°C before the crop canopy closed and before the shelter was placed above the plots, but soil temperature at 5 cm depth remained below 35°C during the entire rain exclusion period. Aflatoxin contamination was not correlated significantly with any environmental variable, nor did soil moisture or temperature differ significantly among varieties or shelter locations. We conclude that rain exclusion shelters are an effective and valid method for imposing uniform water deficit stress on peanut for field screening of germplasm for aflatoxin resistance.

Fertilizer and *Rhizobium* Inoculant Effects on Peanut Growth. L. CORLAY-CHEE, S. SÁNCHEZ D.*, E. ROBLEDO S., E. ALVAREZ S., S. GUTIÉRREZ G., and S. SALINAS S. Universidad Autónoma Chapingo. Km 38.5 carretera México-Texcoco, 56230 Texcoco, Méx. México.

In order to increase peanut yields, Ranferi Diaz variety seeds with erect habit, were inoculated and fertilized with nitrogen (50 Kg ha^{-1} as urea) and phosphorus (60 Kg ha^{-1} as monocalcic phosphate) under a split plot experimental design, during sowing. Inoculant was prepared with milled and autoclaved bean straw and impregnated with *Rhizobium* bacteria culture. *Rhizobium* was isolated from peanut nodules. Peanut was grown on a plot from Cuauchichinola, Morelos, México under rainfed conditions. Three plants from the central furrow were sampled 58 days after sowing and height, foliar area, dry matter, N- and P- uptake were evaluated. Pod yields were determined 110 days after sowing. In general N and P fertilization had no effect on plant height, and dry matter; however applied fertilizers level increased N- and P-uptake, even though foliar area and pod yield decreased. Inoculation had no significant effect. These results were attributed to the excessive amounts of soil N (123 Kg ha^{-1}) and P (112 Kg ha^{-1}). Studied soil did not require any fertilization or inoculation treatment. Its yield limitating factors may be water more than nutrient availability.

Study and Utilization of Peanut Germplasm in China. H.Q. XUE[1*] S.B.WAN[1] and C.C. HOLBROOK[2]. [1]Shandong Peanut Research Institute, Laixi 266601, Shandong, P.R.China and [2]USDA-ARS, Tifton, GA 31793-0748 USA.

Germplasm resources are the basis of genetic and breeding studies. This paper will document the study and utilization of peanut germplasm in China. There are 5790 accessions in the Chinese peanut germplasm collection. The collection includes 100 wild species, 2603 landraces, 176 released varieties, 1016 breeding lines and 1895 introductions from abroad. It is the fourth largest in the world after ICRISAT, American and Indian. The collection contains many accessions with some good growth and/or economically significant characteristics. High yielding genotypes, mainly released cultivars, include some which yield up to 10t/ha. The collection includes accessions with high protein content (>30%). The collection also includes accessions with more than 60% and accessions with less than 31% oil content. The collection also includes sources of resistance to early and late leafspot, web Bloch disease, nematodes and viruses. Accessions with resistance to some insects such as aphids and red spider are also available in the Chinese peanut germplasm collection. Seeds for most accessions are maintained at the national long-term peanut gene bank in Beijing. Some good accessions were used directly in peanut production in 1960's, but now their most important use is as parents in breeding programs. Forty accessions were directly or indirectly used in breeding programs. The accessions, Fuhuasheng and Shitouqi are in the pedigrees of 135 and 44 cultivars respectively constituting 84.9% and 27.7% of the total released cultivars, and indicates the importance of those two accessions in the peanut breeding history of China. This also suggests the genetic narrowness of peanut cultivars in China. To enlarge the genetic resource and to enhance the utilization of the peanut germplasm, many now accessions have been developed using different methods and added to the collections. Zaxuan No. 2 was developed from conventional hybridization method. RH321 and Fushi were developed from radioactive breeding. Several accessions with high resistance to leafspot, web blotch disease and drought tolerance were developed from interspecific crosses.

Effects of Cadre Application Timings on Peanut in Texas. T.A. BAUGHMAN*, P.A. DOTRAY, W.J. GRICHAR, R.G. LEMON. Texas Agricultural Extension Service and Texas Agricultural Experiment Station, Vernon, Lubbock, Yoakum, and College Station, TX.

Field research was conducted at 4 Texas locations (Central, North, South, and West) for 2 years during the 1996, 1997, and 1998 growing seasons to evaluate the effects of application timings of labeled rates of Cadre on peanut. The varieties varied from Spanish in Central Texas, Virginia in North Texas, and runner in South and West Texas. All trials were planted in early May except the North Texas location in 1997 was planted in late May. Application timings were at seven day intervals beginning at crack to 56 days after crack (DAC), except at the Central Texas location in 1997 which was applied up to 35 DAC. Plot size ranged from 5 feet by 25 feet to 13 feet by 30 feet, and included 3 to 4 replications. Traditional small plot techniques were used to apply all Cadre treatments, and fields were kept weed free for the entire growing season. There were no visual injury symptons at the North Texas location in 1997 or 1998 following any Cadre application. All treatments caused at least 10% visual injury 7 days after treatment except the 49 DAC treatment at the West Texas location in 1997. Visual injury 14 days after the 56 DAC treatment was less than 10% at this location. At the Central Texas location in 1996, there was at least 15% visual injury with all treatments, with injury as high as 40% with the 42 DAC treatment. Canopy height was reduced with the 42 and 48 DAC treatments, and width was reduced with the 28 and 42 DAC treatments in Central Texas in 1996. There was no effect on canopy height or width at the South Texas or West Texas locations in either year. Even where injury symptoms occurred, yield or grade were not reduced compared to the weed free check in any of these experiments.

Peanut Cultivar Response to Valor Preemergence. J. J. LOWERY*, J. W. WILCUT, S. D. ASKEW, J. F. SPEARS, T. G. ISLEIB, and J. CRANMER. Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620 and Valent USA, Cary, NC 27511.

Field studies were conducted at the Upper Coastal Plain Research Station near Rocky Mount, NC in 1996 and 1997 to evaluate the response of seven peanut varieties and one breeding line to Valor applied preemergence (PRE) at 0.063 lb ai/acre in a weed free environment. Peanut cultivars included NC 12C, NC 7, VAC 92R, NC-V 11, NC 10C, VC 1, and NC 9 and the breeding line N90010E. Nontreated comparisons were also included for each cultivar and the breeding line (here after considered a cultivar in this abstract). Visual injury was minimal from Valor on all peanut cultivars. Injury at midseason was not visually apparent on any cultivar. Valor did not influence the incidence of early leaf spot, late leaf spot, southern stem rot, cylindrocladium black rot, or tomato spotted wilt virus. Differences in peanut grade parameters and yield were also independent of Valor. The lack of stunting or slowing of peanut canopy development by Valor will allow for quicker canopy closure and could result in improved late-season weed control. These results help to verify the suitability of Valor as a weed management tool in southeastern peanut.

Peanut Cultivar Response to Strongarm Preplant Incorporated. W. A. BAILEY*, J. W. WILCUT, S. D. ASKEW, J. F. SPEARS, T. G. ISLEIB, and V. B. LANGSTON. Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620 and Dow AgroSciences, Raleigh, NC 27616.

Field studies were conducted at the Upper Coastal Plain Research Station near Rocky Mount, NC in 1996 and 1997 to evaluate the response of seven peanut varieties and one breeding line to Strongarm applied preplant incorporated (PPI) at 0.032 lb ai/acre in a weed free environment. Peanut cultivars included NC 12C, NC 7, VAC 92R, NC-V 11, NC 10C, VC 1, and NC 9 and the breeding line N90010E. Nontreated comparisons were also included for each cultivar and the breeding line (here after considered a cultivar in this abstract). Visual injury was less than 5% and was indepedent of cultivar and Strongarm at three weeks after planting. Injury at midseason was not visually apparent on any cultivar. Strongarm did not influence the incidence of early leaf spot, late leaf spot, southern stem rot, cylindrocladium black rot, or tomato spotted wilt virus. Differences in peanut grade parameters and yield were also independent of Strongarm. The lack of stunting or slowing of peanut canopy development by Strongarm will allow for quicker canopy closure and could result in improved late-season weed control. These results help to verify the suitability of Strongarm as a weed management tool in southeastern peanut.

Accumulation patterns of mRNA's during peanut seed development. H. MAZHAR* and S.M. BASHA. Plant Biotechnology Laboratory, Florida A&M University, Tallahassee, Fl 32307.

Peanuts are low in certain essential amino acids such as cysteine and methionine. A methionine-rich protein (MRP) has been identified and purified in our laboratory. The MRP isolated from the cv. Florunner exhibits six subunits following 2-dimensional gel electrophoresis. These subunits were described earlier to exhibit differential deposition pattern during seed maturation. To understand and determine whether these six subunits are the translational products of a single gene or independently translated from multiple genes, mRNA isolated from seeds of different maturities was translated *in vitro* using the wheat germ translation system (Promega) and examined by 1-D PAGE. 1-D electrophoresis of the translation products showed the presence of protein bands corresponding to the MRP's indicating that the total mRNA contained the MRP-mRNA population. The MRP's were more apparent in the translation products of mRNA from white and yellow stages of maturity than from the latter stages indicating that the MRP-mRNA content was higher at the early stages of seed development. To identify the compositional differences among the six MRP subunits, the *in vitro* translation products are being examined by 2-D PAGE. The data will pave way towards better understanding the deposition pattern of MRP.

PLANT PATHOLOGY I

RFLP markers for identification of resistance genotype in peanut. G.T. CHURCH, C.E. SIMPSON, and J.L. STARR*. Department of Plant Pathology and Microbiology, Texas A&M University, College Station TX 77843; and Texas Agricultural Experiment Station, Stephenville, TX 76401.

To increase the efficiency of breeding peanuts resistant to *Meloidogyne arenaria*, the utility of two RFLP loci linked to a single gene for resistance in identifying individuals homozygous for resistance was determined. Two tetrafolioate leaf samples were collected from each of 548 space planted individuals from three segregating $BC_7F_{2,4}$ breeding lines. DNA was successfully extracted from 82.5% of the individuals with the first attempt. Extraction of the second sample resulted in DNA from of 94.5% of the plants. After the DNA concentration was determined for each sample, the DNA was digested with EcoR I, and Southern blotted to Hybond-N+ membranes. The membranes were probed with the RFLP specific probe R2430E then stripped and reprobed with the probe R2545E. Samples from which no data were obtained due to problems in extraction, digestion, or hybridization ranged from a low of 14.4% for breeding line TP301-1-8 probed with R2430E to a high of 38.9% for line TP294-4-4 probed with R2545E. For the three lines, TP294-4-4, TP293-3-3, and TP301-1-8, 65.1%, 27.6%, and 29.5%, respectively, were identified as being homozygous for resistance with R2430E. The second marker, R2545E, identified 50%, 24.5%, and 23.5%, respectively, individuals homozygous for resistance. Differences between the two RFLP probes were due to unreadable data and differences in putative genotype. The use of these RFLP loci can aid in identification of genotype of individuals in a segregating population but these data are not unambiguous.

Identification of Marker Genes Associated with Late Leafspot Resistance. W.F. ANDERSON[1]*, G. KOCHERT[2], T. STALKER[3], H. WOOD[4] and K. MOORE[1]. [1]AgraTech Inc. Ashburn, GA; [2]University of Georgia, Athens, GA; [3]North Carolina State University, Raleigh, NC; and [4]U. of Florida, Gainesville, FL.

A very high level of resistance to late leafspot (*Cercosporidium personatum*) was identified in peanut lines derived from interspecific crosses. These homozygous lines were used as parents to incorporate resistance into high yielding varieties and to produce a segregating population for molecular marker studies. Hybrid seed were planted in the greenhouse to produce F_2 seed. These segregating populations, parents and appropriate controls were planted at the Green Acres Research Farm, University of Florida. The plants were maintained under normal agronomic practices minus foliar disease control. Individual plants within progeny rows were evaluated for late leafspot, early leafspot and rust. DNA was isolated and purified from leaf samples of individual plants of one cross. DNA samples from the F_2 population were pooled based on leafspot rating, and AFLP analysis was performed to identify polymorphisms between the resistant and susceptible pools. Individual plants within bulks were also evaluated via AFLPs. Individual F_2 plants within a cross between AT120 and a line derived from an interspecific cross with *A. durenensis* had very high levels of resistance to late leafspot. Bulked DNA samples from resistant plants were polymorphic compared to the susceptible bulks. Further results of this work and implications to their usefulness will be discussed.

Sensitivity of Early and Late Peanut Leafspot Pathogens to DMI Fungicides. K.L. STEVENSON[1*], G.B. PADGETT[2], and A.K. CULBREATH[3]. [1]University of Georgia, Athens, GA 30602-7274; [2]Louisiana State University, Winnsboro, LA 71295-5179; [3]University of Georgia, Tifton, GA 31793-0748.

Cercospora arachidicola and *Cercosporidium personatum* cause early and late leafspot of peanut, respectively, and are the target for most foliar fungicide applications on peanuts. Because of their activity on soilborne peanut pathogens in addition to superior leafspot control, the demethylation-inhibiting (DMI) fungicides propiconazole and tebuconazole are currently the fungicides of choice in peanut disease management programs. The major objective of this study was to survey populations of the peanut leafspot pathogens in Georgia by sampling peanut fields with known histories of DMI use in order to establish the current level of fungicide sensitivity in these pathogen populations. Monoconidial isolates of *C. arachidicola* and *C. personatum* were obtained from leaves collected from peanut fields in Georgia, in 1996. Some fields received applications of DMIs during the growing season and others had no current or previous exposure to DMIs. Sensitivity assays were conducted in potato dextrose broth amended with 12 different concentrations of propiconazole or tebuconazole ranging from 0 to 3 ppm. ED_{50} values for tebuconazole were obtained for 526 and 95 isolates of *C. arachidicola* and *C. personatum*, respectively. ED_{50} values for propiconazole were obtained for 548 and 99 isolates of *C. arachidicola* and *C. personatum*, respectively. For both fungi, both fungicides, and all locations, ED_{50} values followed lognormal distributions. ED_{50} values for *C. arachidicola* ranged from 0.0002 ppm to 1.08 ppm for tebuconazole and 0.0006 ppm to 0.77 ppm for propiconazole. Significant differences in sensitivities of *C. arachidicola* isolates to both DMIs were found among locations, but the differences did not appear to be associated with fungicide exposure history. Mean ED_{50} values for isolates of *C. arachidicola* from fields unexposed to DMIs were 0.028 ppm and 0.039 ppm for propiconazole and tebuconazole, respectively. The ED_{50} values did not differ significantly from the ED_{50} values of isolates from fields that had been treated with DMIs. The correlation between sensitivities to propiconazole and tebuconazole was positive, but weak (r=0.20). Mean ED_{50} values for *C. personatum* ranged from 0.016 ppm to 0.027 ppm for propiconazole and 0.029 ppm to 0.111 ppm for tebuconazole. Due to widespread use of DMI fungicides in commercial peanut fields in Georgia, establishment of a true baseline for these pathogens was not possible. However, results of this survey will serve as a relative baseline for detection of shifts in sensitivity and enable assessment of current resistance management strategies in peanut leafspot control programs.

Evidence of Impatiens Necrotic Spot Virus in Peanut in Southwest Texas. M.C. BLACK. Department of Plant Pathology & Microbiology, Texas A&M University, Uvalde, Texas 78802-1849.

Some evidence was obtained in 1998 that impatiens necrotic spot virus (INSV) infected peanuts nearing maturity in Frio County, TX. Symptoms on individual mature plants were the same as those associated with late season TSWV infections: yellow and wilted plants, internal taproot and crown necrosis, and plant death. Symptoms at Sites 1, 2 were in numerous overlapped foci up to 30 m diameter with dead plants at the center. Discrete foci were not obvious at Site 3 at small plot screening nurseries within a production field, or in the production field. Sites 1 and 2 were irrigated Georgia Green variety (45 and 56 ha). Site 3 had several hundred irrigated small plot breeding lines, Tamrun 88 spreader rows, and check varieties (0.8 ha) within a field of Tamrun 96 (56 ha). Each sample was a composite of three or four taproots and crowns from yellowed plants. Serology tests (ELISA) for INSV and tomato spotted wilt virus (TSWV) were conducted by Agdia Inc., Elkhart, IN. Five samples at Site 1 (13Oct98) had reactions of negative (-) for TSWV, two positive (+) for INSV, and three + for INSV. Reactions at site 2 (28Oct98) with one sample were + for TSWV and INSV. Reactions at site 3 (28Oct98) with four samples were Georgia Green + and -, Tamrun 96 + and +, Florunner + and +, and TX966305 breeding line + and + for TSWV and INSV, respectively. Similar foci of dying plants were seen in one field of Georgia Green in 1996 but not in 1997. INSV and TSWV are in the genus Tospovirus. Thrips insect vectors include tobacco thrips and western flower thrips. Transmission efficiency has been reported higher in tobacco thrips for TSWV and in western flower thrips for INSV. Tests other than ELISA for INSV and surveys for both viruses are planned for 1999.

Studies on the Localization in and Transmission of Tomato Spotted Wilt Tospovirus in Peanut Pod. S.S. PAPPU, Department of Entomology, H.R. PAPPU*, A.K. CULBREATH, Department of Plant Pathology, and J.W. TODD, Department of Entomology, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793.

Tomato spotted wilt *Tospovirus* (TSWV) is one of the yield-limiting factors affecting the profitability of peanut crop in the southeastern US. The localization of TSWV in peanut pod was determined by enzyme linked immunosorbent assay (ELISA) using TSWV-specific antibodies. Pods were collected from symptomatic and asymptomatic field-grown plants. Using ELISA, TSWV infection was confirmed in symptomatic plants by ELISA. Normal and abnormal looking pods from symptomatic plants were assayed by ELISA. Each pod was divided into shell, testa and cotyledons. 100% of the shell and testa samples of both normal and abnormal pods from symptomatic plants were positive for TSWV, whereas TSWV could not be detected in the cotyledons. No virus could be detected in any part of the pod collected from asymptomatic, virus-free plants. In grow-out tests of seed from these plants, none of the plants showed TSWV infection when assayed by ELISA. Results demonstrate the preferential accumulation of the virus in shell and testa and the absence of virus transmission through peanut seed.

Temperature and Moisture Affect the Decomposition Rate of *Sclerotinia minor* Sclerotia in Field Soil. M.E. MATHERON* and M. PORCHAS. Department of Plant Pathology/Yuma Agricultural Center, University of Arizona, Yuma, AZ 85364.

Sclerotinia minor is a soil-borne plant pathogen that can cause substantial economic losses on peanut as well as several other crops. This fungus, which causes Sclerotinia blight of peanut, can persist in field soil for several years by producing overseasoning structures called sclerotia. Experiments were conducted to determine the effect of soil temperature and moisture on the viability of these sclerotia. In a laboratory study, sclerotia of *S. minor* were buried 2.3 cm below the surface of a field soil (7-56-37 sand-silt-clay) in a series of containers 7.5 cm in diameter and 10 cm deep. Containers with sclerotia and soil then were incubated at 15, 20, 25, 30, 35 or 40 C for 1 to 4 weeks. At each temperature, the soil in half of the containers initially was irrigated with enough water to thoroughly wet the soil and then periodically thereafter to maintain soil moisture. No water was added to the soil in the other containers. At 1, 2, 3 and 4 weeks after burial in soil, sclerotia were collected, surface-sterilized, then plated onto potato dextrose agar to determine their viability. No viable sclerotia were recovered from moist soil incubated at 35 or 40 C for 1 to 4 weeks. The number of viable sclerotia retrieved from moist soil incubated at 25 or 30 C was significantly lower than that recorded at temperatures of 15 or 20 C. On the other hand, viable sclerotia were found in dry soil incubated at temperatures ranging from 15 to 40 C, with no significant difference in numbers of viable sclerotia among these incubation temperatures. In two field trials, sclerotia of *S. minor* were not viable 2 weeks after placement on the soil surface or buried at a depth of 5 or 10 cm in soil that was irrigated weekly. The temperature of this irrigated soil ranged from 20 to 52 C and was greater than 25 C for at least 87 % of the time, depending on soil depth. Soil water potential ranged from -25 to -40 kPa for 7 days after an irrigation. In nonirrigated soil, 30% of sclerotia were viable for 2 to 8 weeks after placement in the field. The temperature of the nonirrigated soil exceeded that of the irrigated soil by 6 C. Apparently, sclerotia of *S. minor* can be destroyed rapidly in the field when moist soil infested with these sclerotia is subjected to temperatures ranging from 25 to 35 C and above for at least 2 weeks.

Application of Metam Sodium, Aldicarb, Tebuconazole and Chlorothalonil for Control of Root, Pod and Foliar Diseases of Peanut in Virginia. P. M. PHIPPS, Tidewater Agr. Res. & Ext. Ctr., Virginia Polytechnic Institute & State University, Suffolk, VA. 23437

Production of the virginia-type peanut often requires a carefully chosen combination of chemicals for control of destructive root, pod and foliar diseases. Field trials in 1997 and 1998 compared the benefits of management programs with Metam (42% metam sodium), Temik (15% aldicarb), Folicur (38.7% tebuconazole), and Echo (54% chlorothalonil). Metam was applied at least 2 wk preplant ca. 10 in. deep in the center of rows spaced 36 in. apart for control of Cylindrocladium black rot (CBR) and nematodes. During application, the rows were bedded to a 4 in. height and 24 in. width. Temik 15G was applied to the seed furrow at planting for control of thrips and suppression of nematodes. Folicur 3.6F was applied for control of foliar, root and pod diseases. Echo 720 was used to minimize the risk of developing fungal resistance to Folicur and to control late season foliar diseases. Metam at 7.5 gal/A, Temik 15G at 7 lb/A, four foliar sprays of Folicur 3.6F at 7.2 fl oz/A with Induce at 0.5% of spray volume, and a final foliar spray of Echo 720 at 1.5 pt/A provided the best disease management. This program approach increased yield by 832 lb/A in 1997 and 1246 lb/A in 1998 compared to a program with only Temik 15G at 7 lb/A in the seed furrow and four foliar sprays of Echo 720 at 1.5 pt/A. Metam at 7.5 gal plus Temik 15G at 7 lb/A without sprays of Folicur significantly suppressed populations of *Meloidogyne hapla*, root galling, pod rot, and CBR incidence. Four applications of Folicur 3.6F at 7.2 fl oz/A suppressed CBR incidence significantly, but not as much as the Metam/Temik combination. Metam significantly reduced tap root infection by *Cylindrocladium parasiticum* according to biopsies of 100 plants (25/rep), whereas Folicur offered little or no protection of the tap root. Crop value ($/cwt) based on grade characteristics was increased significantly when Folicur and Metam were both used. In a separate trial in 1998, two sprays of Folicur followed by two sprays of Echo according to the leaf spot advisory controlled foliar diseases and suppressed CBR as well as four sprays of Folicur followed by a spray of Echo. Yields were increased 758 lb/A with two sprays of Folicur and 886 lb/A with four sprays of Folicur. Additional trials are needed to determine the benefit of two, three or four applications of Folicur. None of the treatments alone or in combination provided suppression of Sclerotinia blight.

Establishment of *Cylindrocladium parasiticum* in a Peanut Field. B.L. RANDALL-SCHADEL*, B.B. SHEW, and J.E. BAILEY. Seed Section, North Carolina Dept. Agriculture & Consumer Services and Dept. of Plant Pathology, North Carolina State University, Raleigh, NC 28695-7616.

Establishment of *Cylindrocladium parasiticum* in a peanut field was studied for two years with two sources of inoculum: artificially infested soil was used in one study and seeds with symptoms of infection by *C. parasiticum* were used in another. The susceptible cultivar NC 7 was planted in 24 plots that were 3 rows x 9 m long. Rate of disease spread from discrete loci of infested soil, similar to that occurring from seedborne inoculum, was simulated by placing 33 cm^3 of infested soil (10 microsclerotia [MS]/g) in 5 loci per plot. Addition of infested soil yielded detectable disease in 7% of the loci with at least one locus in 10 plots (42%) during the first season. Maximum interplant spread was 29 cm and greatest total spread was 46 cm. Diseased plants were not detected in rows where no inoculum was added. Plots with no detectable disease received additional inoculum the second year. Two plots with disease incidence in the first year were divided into15 subplots each and sampled for MS after each season and after planting the second year. At the end of the second season, 17 plots (71%) had from 1 to >200 diseased plants. Disease incidence and MS/g soil were affected by soil moisture. Disease gradients were analyzed and establishment patterns were compared to soil moisture patterns. To examine establishment from symptomatic seed, three speckled seed were planted perpendicular to the row in 45 loci per plot (15 loci in each of three 9 m rows). Disease incidence was rated approximately once a week. In 1994, three plots had one locus each with a positive isolation of *C. parasiticum* for a transmission rate of 0.09 %. In 1995, plots were reestablished in the original location. Disease ratings included examination for symptomatic seed at digging. All 12 plots had 7 or more loci with symptomatic seed. Isolations from those seed, however, resulted in recovery of *C. parasiticum* from only 7 loci (5 plots with 1 locus each, 1 plot with 2 loci). The low disease incidence in these plots reflect the sensitivity of this fungus to soil conditions. Further study is needed to understand the effect of conditions in the germnosphere and rhizosphere on the establishment of this pathogen in field conditions.

Evaluation of Select Genotypes of Peanut to Natural Inocula of Cylindrocladium Black Rot and Tomato Spotted Wilt Virus in Florida. T.A. KUCHAREK*[1], J. D. ATKINS[2], D.W. GORBET[3], and R.C. KEMERAIT[1]. [1]Plant Pathology Dept., University of Florida, Gainesville, FL 32611; [2]P.O. Box 37, Jay, FL 32565; [3]North Florida REC, 3925 Hwy 71, Marianna, FL 32446.

Cylindrocladium black rot (CBR) was first found in Florida, in Alachua and Columbia Counties in 1975. In 1984, CBR was found in Santa Rosa County where it has become a serious, annual problem. The first attempts to suppress CBR with resistant varieties in Florida occurred in 1989 on naturally infested sites. In Santa Rosa County, NC10C was compared to Florunner. NC10C had 28 and 3.4% more wilt from CBR than did Florunner, in unsprayed and diniconazole-sprayed treatments. In an unsprayed test in Washington County, NC10C had 54% fewer infection centers than did the Virginia cultivar, NC9 ($P \leq 0.01$). Of 10 commercial varieties that were evaluated for CBR on an infested site in Santa Rosa County in 1996, NC10C and unsprayed Florunner had 21 and 14% of the ft-row wilted, respectively, while Georgia Green and Southern Runner had the least wilt ($P \leq 0.05$) with 0.3 and 1.3%, respectively. NCV11 had 6.9% wilt. Southern Runner and Georgia Green also had the best ($P \leq 0.05$) plot appearance rating. The highest yields ($P \leq 0.01$) were attained by Georgia Green, NCV11 and sprayed (Folicur) Florunner. Of 15 entrees in a similar test in 1997, the least amount of wilt from CBR occurred in 90x7-3-5-1-b_2 -B (5%), Southern Runner (11%), NC12C (15%), 90x7-1-5-1-b_2-B (18%), and FL MDR 98(23%). The highest amount of wilt was 60% for NC10C ($P \leq 0.05$). In a small test at Quincy in 1998, the AUDPCs for CBR in FLMDR 98 and Georgia Green were less than for that of Florunner ($P \leq 0.05$) with FLMDR 98 having the highest yield ($P \leq 0.05$). In 1998, 13 entrees were evaluated for TSWV in Santa Rosa County because it was abundant at the site and dry weather during the early to mid season caused a near total absence of CBR. The genotypes that performed in the the uppper half for both reduced incidence of TSWV and higher yields were 89xOL 28-H01-7-4-1-1-b_3-B, 89xOL 28-H01-7-4-1-2-b_3-B, Georgia Green, 90x7-1-5-1-b_2-B, FLMDR 98, and Southern Runner. Virugard was equal to 89xOL28-H01-7-4-1-1-b_3-B for reducing TSWV, but it ranked poorly for yield in this test. Genotypes with resistance to both CBR and TSWV are available.

WEED SCIENCE

Evaluation of Preemergence Weed Control Systems in Peanuts (*Arachis hypogoea*). J. A.

TREDAWAY* and G. E. MACDONALD. Department of Agronomy, University of Florida, Gainesville, FL 32611-0500.

Two studies were conducted in Tifton, GA in 1997 and 1998 in runner peanuts. Preemergence treatments in 1997 included Dual (2.0 lb ai/A), Zorial (1.2), Goal (0.4), Valor (0.063, 0.078, 0.094), Caparol (1.0 and 1.25), and Strongarm (0.023). In addition, Cadre (0.063) was applied alone or following Valor applied PRE. In 1998, treatments included Valor, Goal, and Zorial at the rates used in the 1997 study with additional treatments of Valor (all rates) + Dual (2.0). In addition, several PRE treatments were applied in conjunction with Cadre EPOST. These included Axiom (0.55), Caparol (1.25), sulfentrazone (0.25), and Goal (0.3). In 1997, all treatments provided > 87% Florida beggarweed control except Dual and Caparol. No treatments with the exception of those containing Cadre provided acceptable (>85%) sicklepod control. Smallflower morningglory control was achieved with those treatments containing Valor. Poor control was observed with Goal and Strongarm while moderate control was seen with Zorial. In 1998, control of Florida beggarweed was achieved by Valor at all rates alone or with Dual with the exception of Valor at 0.063 applied alone. Unacceptable control <70% was observed by Cadre, Goal, and Zorial. Good control of all weeds evaluated was achieved with PRE treatments of Goal (0.3), Valor (0.063 or 0.078), Axiom (0.55), Caparol (1.5), and sulfentrazone (0.25) followed by cadre applied EPOST. Collectively these studies reflect the good weed control potential of Valor of Florida beggarweed and smallflower morningglory control. In addition, several PRE compounds coupled with EPOST Cadre applications provided excellent control of all weeds observed in these studies.

Cadre and Strongarm Comparisons for Nutsedge (*Cyperus* spp.) Control in Peanuts - 1998

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With the anticipated introduction of Strongarm (diclosulam) into the peanut herbicide market in the year 2000, many producers are interested in its efficacy in comparison to Cadre (imazapic). In 1998, field studies were conducted at four locations in Texas to compare the effectiveness of preplant incorporated and preemergence applications of Strongarm at 0.023 lb ai/A to postemergence applications of Cadre at 0.063 lb ai/A for the control of yellow and purple nutsedge (*Cyperus esculentus* and *C. rotundus*). In Lavaca and Eastland counties, Strongarm provided better early-season control of yellow nutsedge than Cadre when evaluated 38-57 days after planting (DAP). No differences in yellow nutsedge control were observed late-season (66-118 DAP). However, late-season yellow nutsedge control with both herbicides was less than 60%. Cadre provided better control of yellow nutsedge than Strongarm in Collingsworth county (86% vs. 60%). Generally, early-season control ratings (42-56 DAP) for purple nutsedge indicated that Cadre was more effective than Strongarm at the Frio county location. However, no differences in purple nutsedge control were observed by 85 DAP. Purple nutsedge control at this time with both Cadre and Strongarm was > 95%. Peanut yield data collected from the Eastland and Frio county sites indicated that there were no differences in yield or grade between Strongarm and Cadre.

VALOR™ Herbicide: It Takes the "Beg" out of Florida Beggarweed. J.V. ALTOM*, J.R. CRANMER, and J.A. PAWLAK, Valent USA Corporation, Gainesville, FL 32606, Cary, NC 27511, and Grand Ledge, MI 48837.

VALOR™, flumioxazin, is a low use rate preemergence broadleaf herbicide that will soon be labeled for use in peanuts and soybeans. The mode of action is inhibition of protoporphyrinogen oxidase, which leads to a disruption of the cell membrane. Flumioxazin rapidly degrades in water and soil, therefore leaching potential to groundwater is low and carryover potential to rotational crops is minimal. In research trials over the last decade, VALOR has controlled a number of hard-to-control weeds in peanuts such as Florida beggarweed, eclipta, bristly starbur, smallflower morningglory, Florida pusley, tropic croton, wild poinsettia, common lambsquarters, common ragweed, hairy indigo, and numerous others. In southeastern grown peanuts, the most common and troublesome weed has consistently been Florida beggarweed. VALOR at 2 to 3 ozpr/A has proven to be the most effective and consistent herbicide registered or in development for season-long Florida beggarweed control. VALOR has demonstrated activity on other key weeds such as nutsedges, grasses, and sicklepod, but these weeds are not consistently controlled. Therefore, VALOR will be recommended to follow a soil-incorporated DNA herbicide or be tank-mixed with another preemergence herbicide to improve control of nutsedges, grasses, and sicklepod. Because of the mode of action, low use rate, excellent crop rotation profile, low health and environmental risks, and season-long Florida beggarweed control, VALOR will offer southeastern peanut producers a valuable herbicide tool.

VALOR™ Herbicide: A New Soil Applied Herbicide for Weed Control in North Carolina and Virginia Peanuts. J.R. CRANMER*, J.V. ALTOM, and J.A. PAWLAK. Valent USA Corporation, Cary, NC 27511, Gainesville, FL 32606, and Grand Ledge, MI 48837.

VALOR™ (flumioxazin), formerly known as V-53482, is a new herbicide from Valent USA Corporation for broadleaf weed control in peanuts and soybeans. It is also being evaluated for use in cotton, sugarcane, and sunflowers. VALOR is a N-phenylphthalimide derivative which is a new chemistry for peanuts. The mode of action of this family is inhibition of protoporphyrinogen oxidase (PPO). Porphyrins accumulate in susceptible plants causing photosensitization, which leads to membrane lipid peroxidation. The peroxidation of membrane lipids leads to irreversible damage of membrane function and structure in susceptible plants. VALOR is applied preemergence to peanuts and provides six to eight weeks residual control. It degrades rapidly in water and soil. Dissipation occurs by a combination of hydrolysis and microbial oxidation. Although VALOR dissipates rapidly, discrete intermediates do not accumulate and the ultimate environmental products are incorporation into soil organic matter and carbon dioxide. Based on column leaching studies and the short aerobic soil half-life (11.9 to 17.5 days), the potential for VALOR or its degradation products to leach in field agricultural soils is low. The low use rate and rapid soil dissipation results in low carryover potential to rotational crops including cotton, tobacco, corn, soybeans, and small grains. VALOR at 0.063 lb ai/A controls common lambsquarters (*Chenopodium album* L.), eclipta [*Eclipta alba* (L.) Hassk.], Florida pusley (*Richardia scabra* L.), black nightshade (*Solanum nigrum* L.), eastern black nightshade (*Solanum ptycanthum* Dun.), Palmer amaranth (*Amaranthus palmeri* S. Wats), redroot pigweed (*Amaranthus retroflexus* L.), smooth pigweed (*Amaranthus hybridus* L.), spiny amaranth (*Amaranthus spinosus* L.), tumble pigweed (*Amaranthus albus* L.), prickly sida (*Sida spinosa* L.), spotted spurge (*Euphorbia maculata* L.), and Venice mallow (*Hibiscus trionum* L.). Additional weeds that are controlled when VALOR is applied at 0.094 lb ai/A include common ragweed (*Ambrosia artemisiifolia* L.), hemp sesbania [*Sesbania exaltata* (Raf.) Rydb. ex A. W. Hill], jimsonweed (*Datura stramonium* L.), ivyleaf morningglory [*Ipomoea herderacea* (L.) Jacq.], tall morningglory [*Ipomoea purpurea* (L.) Roth], entireleaf morningglory (*Ipomoea herderacea* var. *integriuscula*), tropic croton (*Croton glandulosus* var. septentrionalis Muell.-Arg.), and velvetleaf (*Abutilon theophrasti* Medicus). Based on field evaluations to date, VALOR will be an excellent new tool for weed control in North Carolina and Virginia peanuts once registered.

Interaction of Chloroacetamide Herbicides with Valor for Peanut Injury and Weed Control. W. J. GRICHAR*, E. P. PROSTKO, R. G. LEMON, B. A. BESLER, and K. D. BREWER. Texas Agricultural Experiment Station, Yoakum, TX 77995 and Texas Agricultural Extension Service, College Station, TX 77843, and Stephenville, TX 76401.

In field studies conducted in south and central Texas during the 1997 and 1998 growing seasons, the combination of Valor (V-53482) with Dual or Frontier followed by heavy rain resulted in season-long peanut injury. At one south Texas location, peanut injury 3 weeks after treatment (WAT) with Dual at 2.0 lb ai/A + Valor at 0.094 lb ai/A applied PRE resulted in 68% peanut stunting. Frontier at 1.5 lb ai/A + Valor at 0.094 lb ai/A resulted in 20% peanut stunting. When rated 12 WAT, Dual + Valor still had 49% peanut stunting while peanut injury with Frontier + Valor was 16%. At two central Texas locations Dual Magnum at 1.0 lb ai/A + Valor at 0.093 lb ai/A applied PRE resulted in 15% peanut stunting when rated 3 WAT. However, when rated 8 WAT no peanut stunting was observed. Peanut yields in plots stunted by Dual + Valor have been reduced up to 50% when compared with a weed-free check. High rainfall (4.0 to 5.0 inches) in combination with cool temperatures prior to or within two weeks of herbicide application have been associated with the severe peanut stunting. Under low to moderate rainfall conditions, little or no stunting has been observed with no reduction in yield. Yellow nutsedge (*Cyperus esculentus*) control with Dual or Frontier + Valor combinations have ranged from 65 to 100%. Annual grass (Texas panicum, southern crabgrass) and Palmer amaranth control has been > 80% in most instances.

Behavior of Strongarm in Purple and Yellow Nutsedge. J. W. WILCUT*, J. S. RICHBURG, III, and L. B. BRAXTON. Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620, and Dow AgroSciences, Indianapolis, IN 46268 and Tallahassee, FL 32308.

Greenhouse studies were conducted to determine the response of purple (Cyperus rotundus) and yellow (Cyperus esculentus) nutsedge to selective postemergence application of Strongarm. Separate experiments were conducted for purple and yellow nutsedge. Postemergence (POST) treatments with Strongarm were applied as foliar-only, soil-only, or foliar + soil treatments. A nonionic surfactant (0.25%, v/v) was included for all treatments applied to the nutsedge foliage. Nutsedge shoots were clipped to the soil surface at 28 days after treatment (DAT), dried for 48 h and recorded. Nutsedge plants were allowed to regrow for 14 days and shoots were again harvested (42 DAT). At this harvest, roots and tubers were washed free of soil, dried for 48 h and recorded. A randomized complete block design with five single-pot replicates for each treatment was used, and the experiments were repeated. Shoot dry weight reduction of purple and yellow nutsedge from Strongarm only occured when nutsedge plants absorbed the herbicide from the soil. Postemergence activity of Strongram on purple and yellow nutsedge was minimal. Data for nutsedge response from Strongarm placement in the soil profile and absorption, translocation, and metabolism experiments in both nutsedge species will also be presented at the meeting.

Interference and Economic Threshold of Yellow Nutsedge with Peanut. W. C. JOHNSON, III. USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793.

Yellow nutsedge is one of the most common and troublesome weeds of peanut production in the southeastern coastal plain. Losses from yellow nutsedge in peanut include yield reduction, foreign material contamination, and costs of control. However, there is evidence from previous research that yellow nutsedge is not overly competitive with peanut. Studies were conducted in 1997 and 1998 at the Coastal Plain Experiment Station in Tifton, GA to measure the full-season interference of yellow nutsedge in peanut using a response prediction experiment with a natural infestation of yellow nutsedge. 'Georgia Green' peanut was seeded in May each year, and plots were established immediately after crop emergence. Plots were 1.8 m by 1.8 m. replicated six times. Yellow nutsedge plants were counted four weeks after crop emergence in each plot, and six weed-free plots were randomly established. Parameters measured were peanut yield, and yellow nutsedge tubers and foreign material in harvested peanut. All parameters were regressed against yellow nutsedge density. Yellow nutsedge densities ranged from 0 to 127 plants/m^2. Regression analysis showed a 5% reduction in peanut yield with a yellow nutsedge infestation of approximately 6 plants/m^2 (R^2 = 0.50). Each yellow nutsedge plant/m^2 reduced peanut yield by 59 kg/ha. Data also showed a positive linear response between yellow nutsedge density and number of tubers contaminating harvested peanut. Tuber contamination increased by 5% for every yellow nutsedge plant/m^2. These results indicated that yellow nutsedge is an effective full-season competitor with peanut in the absence of any control efforts. However, given the documented susceptibility of yellow nutsedge to shading from other plants, early season control efforts in peanut should minimize losses.

Tolerance and Weed Control with Dinitroaniline Herbicides in West Texas Peanut. P.A. DOTRAY and J.W. KEELING. Texas Tech University, Lubbock, TX 79409-2122; Texas Agricultural Extension Service, Lubbock, TX 79401-9757; Texas Agricultural Experiment Station, Lubbock, TX 79401-9746.

Field experiments were conducted in 1998 near Lamesa, TX to evaluate peanut tolerance to dinitroaniline herbicides. The soil type was an Amarillo fine sandy loam with 0.4% organic matter and pH 7.8. Ethalfluralin at 0.56 or 0.75 lbs ai/A, pendimethalin at 0.5 or 0.75 lbs ai/A, or trifluralin at 0.5 or 0.63 lbs ai/A was broadcast applied using a tractor-mounted compressed air sprayer calibrated to deliver 10 GPA. Herbicides were applied preplant and incorporated with a springtooth harrow prior to listing on April 1 or incorporated with a rolling cultivator after listing on April 13. Peanut, AT 120, was planted on April 30. Visual injury was recorded throughout the growing season and peanut stand and canopy stature (height and width) were recorded once during the growing season. Peanut yields were determined at the end of the season. No herbicide adversely affected peanut stand, growth, or yield. Within each herbicide, no yield differences were observed as a result of rate or incorporation method. Yields from the dinitroaniline treated plots ranged from 3357 to 3700 lb/A. In a weed control study conducted near Lubbock, TX on an Amarillo sandy clay loam soil, ethalfluralin at 0.75 lbs ai/A or ethalfluralin plus diclosulam at 0.024 lbs ai/A were applied preplant and incorporated with a springtooth harrow prior to listing. Ethalfluralin alone controlled Palmer amaranth (*Amaranthus palmeri*) 90% and devil's-claw (*Proboscidea louisianica*) 0% at 118 days after planting (DAP). Ethalfluralin plus diclosulam controlled Palmer amaranth 98% and devil's-claw 91% at 118 DAP.

Tolerance of peanut (*Arachis hypogaea*) varieties to sulfentrazone. T.G. GREY* and D.C. BRIDGES. Crop and Soil Science Department, The University of Georgia, Georgia Research Station, 1109 Experiment Street, Griffin, GA 30223-1797. B.J. BRECKE West Florida Research and Education Center, University of Florida, 4253 Experiment Drive, Hwy 182, Jay, FL 32565.

Sulfentrazone is a phenyl aryltriazoline herbicide marketed for use either alone PRE or PPI for transplanted tobacco (*Nicotiana tabacum*) or as pre-packaged combination with chlorimuron-ethyl and applied PPI or PRE in soybean [*Glycine max*, (L.) Merr.]. Sulfentrazone controls numerous broadleaf weeds and grasses and in peanut it could provide effective Florida beggarweed (*Desmodium tortuosum*) control. The tolerance of six peanut varieties to sulfentrazone was determined using variable rates, application timing, and location. In 1996 and 1997, the peanut varieties Florunner, Georgia Green, Sunoleic 95R, AgriTech GK7, NC-7 and Spanco, were planted at the Southwest Branch Station near Plains, Georgia and at the West Florida Research and Education Center near Jay, Florida in a randomized complete block split-plot design. For both locations, herbicide systems included sulfentrazone applied either PRE at 0.14, 0.21, 0.28, 0.35, or 0.42 kg ai/ha. PRE fb an at cracking treatment (AC) sequential treatments were 0.14 PRE fb 0.14 AC, 0.21 PRE fb 0.14 AC, 0.21 PRE fb 0.21 AC, 0.28 PRE fb 0.07 AC or 0.28 PRE fb 0.14 AC, kg ai/ha respectively. The standard of imazipic and paraquat were also applied as separate treatments early post (EPOT). A weed free check was included for comparison for a total of 13 treatments. For Georgia and Florida for both years, visual peanut injury ratings and yield were taken. In Florida for 1996 and 1997, early and mid season peanut diameter readings were taken. While no trends were evident across the varieties for either yield reduction or plant diameter decrease, NC-7 did exhibit higher early season injury (ranging from 1 to 29%) across all sulfentrazone applications, PRE or PRE fb AC, at both locations and years. However, this injury did not affect yield as compared to the untreated weed free check. Overall peanut variety tolerance to sulfentrazone was high.

ECONOMICS

Twin vs. Single Row: Will the Increase in Yields Justify the Additional Costs? N.R. MARTIN[1], A.S. LUKE[2]*, S.M. FLETCHER[3], J.A. BALDWIN[4], W.D. SHURLEY[2]. [1]Department of Agricultural Economics and Rural Sociology, Auburn University, Auburn, AL 36849; [2]Department of Agricultural and Applied Economics, University of Georgia, Tifton, GA 31793; [3]Department of Agricultural and Applied Economics, University of Georgia, Griffin, GA 30223; [4]Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; and National Center for Peanut Competitiveness.

Recent research has shown that peanuts planted in a twin row pattern produce higher yields and grades with a lower incidence of TSWV than those planted in single row patterns. From a yield management perspective, this alternative production practice seems very enticing. However, this alternative must also be considered from an economic perspective, i.e. what affect does it have on the bottom line. The total economic cost must be considered. One major factor to be considered is additional or different equipment that is required. How much will it cost? How long will it take to fully recover the cost of the new equipment? Do the increased yields justify the additional costs for changing production practices? These questions were addressed through the use of a budget generator that considered the costs and returns for each treatment. The data set consisted of yields, grades, and TSWV ratings for 5 cultivars at 6 locations in Georgia across 2 years with 3 or 4 replications of each treatment. Current costs were used for direct inputs and equipment. Returns were based on the reported grades and USDA guidelines. All additional inputs required for twin row patterns were considered. Net returns to management were calculated for various acreage ranging from 100 to 1000 acres. Net returns to management for twin row averaged across all varieties ranged from $18/acre for 100 acres to $68/acre for 1000 acres. Twins outperformed single rows for all acreage above 100 by a range of $22/acre (not statistically significant) for 150 acres to $50/acre (P=0.02) for both 750 and 1000 acres when averaged across all varieties. When individual varieties were considered, the returns were conditional on varieties. One variety produced negative returns for twin rows regardless of acreage. Two other varieties did not show positive returns for twins until acreage exceeded 150, and two other varieties produced positive returns for twins regardless of acreage. The net returns for individual varieties ranged from $-141/acre to $300/acre. In addition, the analysis shows that a $27,000 Monosem planter can pay for itself in 3 years and produce positive net returns for a producer with as few as 100 acres.

Economic Analysis of Components Comprising the University Of Georgia Tomato Spotted Wilt Risk Index for Peanuts. A.S. LUKE*, S.M. FLETCHER, N.R. MARTIN, J.W. TODD, W.D. SHURLEY, A.K. CULBREATH, D.W. GORBET, J.A. BALDWIN, S.L. BROWN. National Center for Peanut Competitiveness, Departments of Agricultural and Applied Economics, Entomology, Plant Pathology and Crops and Soil Sciences, University of Georgia, Griffin and Tifton, GA; Department of Agricultural Economics and Rural Sociology, Auburn University, Auburn, AL; Department of Crop and Soil Sciences, University of Florida, Marianna, Fl.

In 1995, tomato spotted wilt virus (TSWV) became the most damaging disease problem in peanuts in Georgia and Florida. With chemical costs representing about 35% of the total variable production costs and the industry moving towards global competition, this virus can pose a major detriment to the competitiveness of peanut farmers because of the significant reduction in yields. After years of studying the disease, there is still no single cultural practice or chemical that eliminates the disease. An alternative is the use of various combinations of cultural practices which have been identified that significantly reduce the levels of TSWV. These practices have been incorporated into the University of Georgia Tomato Spotted Wilt Risk Index for Peanuts. However, this index has not had any economics incorporated into it and is viewed strictly as a yield management tool. While there is no direct cost in utilizing the index, there are alternative costs associated with the choices made on the various factors of the index. The database consists of three years of plot data with various treatments relating to the factors identified in the index. The plots were located across two states at three locations. The net returns were calculated for each individual plot replication using a budget generator that transforms plot data to representative farm-level data. Current production costs for test specific direct inputs and costs from the University of Georgia Cooperative Extension Service and USDA budgets for all other costs were used. A multi-tier pricing model was also incorporated with peanuts priced at quota, additional and fall transfer prices depending on the replication yield and average plot yield. The results indicated the importance of plant population, i.e. high seeding rates. The results also pointed out the importance of "resistant" varieties and the use of phorate at-planting. Each of these factors incurs additional costs, but they not only showed an increase in yield but also in net returns. The results also illustrated the importance of selecting an optimal planting date—not too early or late.

Is There an Economic Impact from the Use of the University of Georgia Tomato Spotted Wilt Risk Index for Peanuts? S.M. FLETCHER*; A.S. LUKE; N.R. MARTIN; J.W. TODD; W.D. SHURLEY; A.K. CULBREATH; D.W. GORBET; J.A. BALDWIN; S.L. BROWN; National Center for Peanut Competitiveness, Departments of Agricultural and Applied Economics, Entomology, Plant Pathology and Crops and Soil Sciences, University of Georgia, Griffin and Tifton, GA; Department of Agricultural Economics and Rural Sociology, Auburn University, Auburn, AL; Department of Crop and Soil Sciences, University of Florida, Marianna, Fl.

Tomato Spotted Wilt Virus is a financially devastating virus to the peanut industry. Incidence levels have been as high as 70 to 90% in fields affected by the virus. For each percentage point increase in TSWV severity, net returns to quota and land may be reduced by as much as $10/acre. The impact on yields and net returns from TSWV is evident, but, unfortunately, incidence levels and severity ratings assess the problem "after-the-fact." The University of Georgia devised an index to aid farmers in assessing their risk of TSWV before planting peanuts. Farmers can consider alternative management and production practices to lower their risk index value. At least one underlying question regarding this pre-production tool needs to be answered, "How much does the implementation of this tool in management decisions impact net returns—does it affect the bottom line?" The database consisted of three years of plot data across two states at three locations. The actual incidence level of TSWV was known for each replication. For each plot, a risk index value and net return to quota and land was computed. The index value was based on the Index for the corresponding year, and net returns were based on present economics, i.e. current prices. The net returns were then compared to the index value. The "least squares" method was used to determine the relationship between the index and the net returns to quota and land. For each point decrease in the Index, net returns to quota and land increased by $6.65/acre in 1996, $14.06/acre in 1997, and $11.07/acre in 1998. These findings suggest there is a significant economic impact on net returns from the use of The University of Georgia Tomato Spotted Wilt Risk Index for peanuts. The relationship between the net returns to quota and land per acre to the Risk Index values for 1996, 1997, and 1998 indicates that the data in 1997 and 1998 is much "tighter" around the regression line than in 1996. Also, the level of explanation increased significantly from 1996 to 1997 which is an indication that the index has improved.

A Risk-Budgeting Model For Peanut Production and Management Decision Making. W. DON SHURLEY[1]*, A.S. LUKE[1], S.M. FLETCHER[2], and N.R. MARTIN[3]. [1]Department of Agricultural and Applied Economics, University of Georgia, Tifton, GA 31793; [2] Department of Agricultural and Applied Economics, University of Georgia, Griffin, GA 30223; and [3]Department of Agricultural Economics, Auburn University, Auburn, AL 36849.

The 1996 farm bill eliminated the traditional carry-forward of peanut quota not marketed due to production shortfall. Loss of this "undermarketing" provision has resulted in fall lease being the only market for these unused quota pounds. Since the 1996 crop year, however, fall lease rates have been variable and in some instances deflated by the increased use of "buybacks" by peanut shellers. Because of the sharp reduction in quota in 1996 and loss of undermarketings, buybacks of additional peanuts have been used to increase quota supplies. Although peanuts are heavily insured through crop insurance, insurance coverage, loss, and indemnity also play a role in marketing decisions and alternatives. The 1996 farm bill also eliminated the cost of production escalator for quota peanut support prices (loan rate). Prices received by farmers for peanuts has declined and, as a result, profitability in peanut production is more dependent on yield and cost efficiency. A large percentage of all quota produced is leased from non-producer quota owners. Producers leasing quota have a high cashflow requirement. Data suggests that rates paid by farmers for spring lease of peanut quota have not declined commensurate with changes in the peanut program. It is important that peanut producers consider yield and price risk when making decisions. A costs and returns budget for peanuts was developed that considers yield risk, level of insurance, amount of lease paid for quota peanuts, proportion of irrigated and non-irrigated acres, acres planted, fall lease, and disaster transfers. A probability distribution of net returns is generated. Results of the model for a "typical" Georgia peanut enterprise show the sensitive nature of the interaction between quota pounds for the farm, acres planted, yield risk, lease rates, and level of insurance coverage. Probability distributions are developed for various levels of insurance coverage and at various amounts paid for spring lease of quota. Results also show the profitability or lack of profit in producing additional peanuts based on price, acreage planted, yield, and fall lease.

An Evaluation of Development of a Decision Support System on the Internet for Peanut Enterprise Analysis W.N. FERREIRA[1], N.R. MARTIN, JR.[1]*, S.M. FLETCHER[2], T.D. HEWITT[3], A.S. LUKE[4]. [1]Department of Agricultural Economics and Rural Sociology, Auburn University, Auburn, AL 36849; [2]Department of Agricultural and Applied Economics, University of Georgia, Griffin, GA 30223; [3]North Florida Research and Extension Center, University of Florida, Marianna, FL 32446; [4]Department of Agricultural and Applied Economics, University of Georgia, Tifton, GA 31793; and National Center for Peanut Competitiveness.

The objective of this study is to assess the importance of an agricultural decision support system on the Internet. Peanut farmers were asked to address the importance of decision tools including the Internet in the decision-making process. Farm managers who use computers provided responses needed to evaluate the significance of the Internet and the impact of a farm management web page to their decision making process. Examining the technical requirements in constructing a web page to solve a farm planning linear programming model was also evaluated. In order to obtain farmer opinions, a survey questionnaire was mailed to a sample of peanut farmer leaders. Lists of these farmers were obtained from the Alabama Cooperative Extension Service, the Georgia Peanut Commission, the Georgia Peanut Producers Association, and the Florida Cooperative Extension Service. The results of the survey are helping in determining the importance of development of an agricultural web page for peanut enterprise analysis. This potential Internet site could provide peanut farmers with information concerning enterprises that they should consider for inclusion in their farming operation, based on linear programming results. One hundred and nineteen respondents indicated an agricultural web page targeted for peanut farmers is most desired by young, college educated farm operators with computer experience for record keeping and farm business applications, and daily Internet users. A new web page for peanut enterprise analysis is also desired most by farm operators for whom the farm is the most important source of income. Linear programming (LP) is not familiar to a large number of peanut producers. LP is used more by academics and professional farm management consultants than by peanut farmers. Additional analysis is needed to evaluate web development tools needed to implement LP based farm planning as a component of such a web page.

Economics of Improving Production Efficiency of Peanuts In Strip-Tillage Systems. T.D. HEWITT*, F.M. SHOKES, D.W. GORBET and D.L. WRIGHT. University of Florida, NFREC, Marianna, FL 32446 and Quincy, FL 32351.

Soil problems, environmental issues, disease problems, improved technology and economic and policy considerations have combined to renew interest in reduced tillage systems for peanut production. Tighter profit margins have caused peanut producers to consider new production technology and ideas that will decrease costs or improve prices received. Tests were conducted at the North Florida Research and Education Center, Marianna and Quincy to demonstrate the production and economic feasibility of growing commercial cultivars under strip-tillage regimes and to compare spotted wilt-resistant cultivars using strip-tillage and conventional cultural practices. Main plots were tillage treatments planted in strips with cultivars randomized within each strip. The tests were planted in an area on which soft red winter wheat had been grown. Three peanut cultivars were used: Georgia Green, Florida MDR 98, and SunOleic 97R. Sub-plot treatments included phorate compared with no phorate. For leaf spot control, fungicide applications of chlorothalonil and tebuconazole were applied according to extension recommendations. The yields across all treatments were greater with the conventional than with strip-tillage at Marianna but the strip-till yielded slightly higher in Quincy for the late-planted trials. Yields for the early planted tests in Marianna averaged 450 pounds per acre higher for the conventionally planted tests. Economic returns to conventional plantings were $90 per acre over the strip-till plantings. Differences in yields and disease resistance were shown for the three cultivars, however, yield data were not collected for the early planting at Quincy. Georgia Green was more economical at the Quincy location for the late planting but MDR 98 showed economic benefits at the Marianna location. The use of phorate was economically beneficial for the cultivars used, returning $30 per acre over no phorate. The research illustrated that peanuts can be grown in strip-tillage systems with slightly lower economic returns, but strip-till will have soil conservation benefits that would likely show an economic return in the future. In addition, strip-tillage does show an incremental decrease in spotted wilt virus which would reduce costs for disease control.

Peanut Production and Marketing in Haiti. C. M. JOLLY*, Department of Agricultural Economics and Rural Sociology, Auburn University, Alabama Agricultural Experiment Station, Auburn, Alabama 36849 and E. PROPHETE, Centre de Recherche et de Documentation, Port-au-Prince, Haiti.

Peanut production and marketing play an important role in the agricultural strategy of Haitian, subsistence farmers. In this study, some of the factors influencing the production and marketing of peanuts in Haiti are analyzed. A survey was conducted among 842 farm households in three production areas in Haiti: Plateau Central, Palmiste-a-Vin, and Port-a-Piment. It was found that peanuts occupied 43.0 percent of all cultivated lands. About 62 percent of peanuts are grown in association with other crops, while 37.4 percent were produced under monoculture systems. Most of the peanut crop, 80.3 percent in Plateau Central, 82.2 percent in Palmiste-a-Vin, and 91.5 percent in Port-a-Piment, were sold. Only 3.2, 1.7, and 4.5 of peanuts in the respected locations were consumed at the household level. The rest of production was stored for seed use. Almost all farmers indicated that peanuts were produced to obtain cash, and that peanuts were ideal for the short rainfall seasons experienced in Haiti. The decision to sell at the retail level was based on total production and the transaction costs. In Plateau Central where yields were highest 91 percent sold at the wholesale, whereas in Palmiste-a-Vin, where yields were the lowest, only 3.6 percent sold at the wholesale level, and 94.4 percent at the retail. In Port-a-Piment, where yields and production were average, 56.9 percent sold at the retail level. In Plateau Central the transportation cost was 38 percent of the gross margin, whereas in Palmist-a-Vin it was 62 percent. In Port-a-Piment it averaged about 56 percent. Most of the farmers preferred to hold their peanuts for sale when price is high, but often farmers are forced to sell at harvest to obtain immediate cash. If farmers sold their peanuts at harvest their net margins ranged from 31 percent for Plateau Central to 19 percent for Palmiste-a-Vin. However, if farmers sold six months after harvest the net margins were 54 percent for Plateau Central, 48 percent for Palmist-a-Vin, and 48 percent for Port-a-Piment.

Purchasing Runner Type Peanuts Unscreened or Screened: The Sheller's Perspective. M.C. LAMB* and P.D. BLANKENSHIP. USDA-ARS National Peanut Research Laboratory, Dawson, GA 31742.

Mechanical screening to separate foreign material, loose shelled kernels (LSK), and smaller, lower value pods (thrus) from larger, higher value pods (overs) increased the value of lots compared to unscreened lots. The average per ton value of overs lots was $26.45 higher than unscreened peanuts, which translates into higher purchase cost to shellers when purchasing overs. The percent of LSK in unscreened peanuts was a key factor in whether shellers would prefer to purchase unscreened versus overs lots because as LSK increase the value per ton of FS peanuts decrease. The value of unscreened lots with 1 % LSK was $5.25 per ton less (not significant) than the resulting value after screening while the value of unscreened lots with 10 % LSK was $46.22 per ton less (P=0.01) than the resulting value after screening. LSK in overs lots were generally reduced to less than 1 % limiting the availability of LSK for shellers to recover into edible channels. However, removal of high risk components (LSK and small kernels) should reduce aflatoxin levels in overs lots compared to unscreened lots. Significant increases in jumbo and medium outturn were associated with shelling overs lots while decreases in number 1s resulted. The difference in gross shelled stock value between overs lots and unscreened lots was increased by $29.08 per ton where no LSK recovery resulted and $9.75 per ton with full LSK recovery. The differences in returns from purchasing and shelling overs lots compared to unscreened lots were tested for different levels of LSK in unscreened lots and varying LSK recovery levels into edible channels. Combinations of LSK and recovery levels resulted in varying return differences, both positive (indicating that shellers should prefer to purchase and shell unscreened lots) and negative (indicating that shellers should prefer to purchase and shell overs lots) and were significantly different from zero (P=0.05).

Determination of Increased Assessments for Peanut Producers for Marketing Years 1996 through 2002. KENNETH M. ROBISON. Tobacco and Peanut Division, Farm Service Agency, United States Department of Agriculture, Washington, D.C. 20013-2415.

Shellers and handlers have expressed concern that the industry may have over used the buyback in purchasing the 1998-crop which could lead to increased producer assessments in future crops. Section 155(c)(2)(A) of the Federal Agriculture improvement and Reform Act of 1996 states in general that the Secretary shall require that each marketing association establish pools and maintain complete and accurate records by area and segregation for quota and additional peanuts placed under loan. Section 155(c)(2)(D) states net gains on peanuts in each pool, unless otherwise approved by the Secretary, shall be distributed in proportion to the value of the peanuts placed in the pool by each producer. Sec 155(c)(2)(D)(d) states losses in area quota pools are covered in this order: 1) transfers from additional pools, 2) producers in same pool, 3) offset within area, 4) first use of marketing assessments, 5) cross compliance, 6) offset generally, 7) second use of marketing assessment, 8) increased assessment. Future oil stock prices are projected to be in the range of $200 per ton and potential quota loan losses in the range of $400 per ton, an increase in the number of quota loans over the 1996-crop, 1997-crop and 1998-crop could erase any potential gains from buybacks or association sales of additional loan peanuts.

GRADUATE STUDENT COMPETITION

Shoot and Root Growth of Two Peanut Cultivars Under Drought Stress. G. PATENA* and K.T. INGRAM. Department of Crop and Soil Sciences, The University of Georgia, Griffin, GA 30223-1797.

Drought reduces yield and quality of peanut. A deeper, more efficient root system should reduce the adverse effects of drought on peanut. Greenhouse research was done in Griffin, GA to investigate temporal and spatial distribution of two peanut varieties, Tifton 8, a drought susceptible cultivar, and ID47-10 (PI196744), a drought resistant peanut genotype. Though the two varieties differ in drought tolerance, previous research identified both as having large root systems. Four plants were grown in each of twenty-four 200-L containers with soil from a Tifton, GA peanut field Each 24 containers had horizontal minirhizotron tubes at 5, 15, 30, 45, 60, and 75 cm depths. Soil moisture sensors and thermocouples are placed at 3 depths in each container and measured at one-minute intervals using a CR10X data logger. Half of the containers for each genotype were either continuously well watered from sowing until maturity, or well watered from sowing to flowering, then allowed to dry naturally until soil moisture at 15 cm reached -1.0 MPa, followed by watering until maturity. Shoot elongation, leaf area, and flowering are observed nondestructively at 14-day intervals. At the beginning of the stress period, both varieties had similar total leaf area. At the beginning of the stress period, root density of Tifton 8 was significantly greater than that of ID47-10 in the 5, 15, and 30 cm soil depth, but differences were not significant in deeper locations. As stress progressed, Tifton 8 continued to add leaf area whereas the rate of leaf addition slowed quickly in ID47-10. As the stress became more severe, however, Tifton 8 shed leaves so that by the end of the stress, both varieties had similar leaf area and root distribution.

Evaluation of the Wild Species of Peanut for Resistance to Tomato Spotted Wilt Virus. J.H. LYERLY*, H.T. STALKER, J.W. MOYER, and K. HOFFMANN. Departments of Crop Science and Plant Pathology, North Carolina State University, Raleigh 27695.

Tomato spotted wilt virus (TSWV) is an important plant pathogen with an extensive host range, including the domesticated peanut (*Arachis hypogaea* L.). Previous field experiments indicated that several species of *Arachis* have potential as a source of resistance genes to this destructive virus. The objective of this project was to evaluate accessions of *Arachis* species for TSWV resistance. Plants from 46 accessions representing 20 species were manually inoculated in the greenhouse with a peanut isolate of TSWV. In this test, plants from 36 accessions developed systemic infection, whereas plants from accessions 9530, 10602, 862, 6330, 7377, 19616, 30106, 36018, and 36020 did not exhibit systemic symptoms. Plants from these accessions were then inoculated using the same methods with three more virulent isolates of TSWV. The disease incidence varied among plants and with the virus isolate. When cultivars were compared to resistant wild species, reduced disease incidence was observed in *Arachis* accessions. Additional tests with thrips indicated that this insect could not be used reliably for greenhouse inoculations. Results from this study indicated that *A. diogoi* (accession 10602) and *A. correntina* (accession 9530) have the highest levels of resistance and these species represent a potential source of resistance genes in a breeding program to control TSWV.

Evaluation of Field Resistance for Incidence and Location within Peanut of Tomato Spotted Wilt Virus.

M. MURAKAMI*, M. GALLO-MEAGHER and D. W. GORBET. Agronomy Department, University of Florida, Gainesville, FL 32611, North Florida Research and Education Center, Marianna, FL 32446.

Tomato spotted wilt virus (TSWV) has become a critical production factor in Southeastern US peanuts. Two cultivars, SunOleic 95R and Southern Runner, and one breeding line F86x43-1-1-1-1-1-b$_2$-B, were evaluated in replicated field tests at the Marianna NREC in 1998 for incidence and location within the plant of TSWV. Treatments consisted of early (April) and late (May) planting dates with 3" and 6" within row plant spacings. TSWV was detected by ELISA, and plants were either continuously or destructively sampled at 30, 60, and 100 days after planting, and just before harvest. In the early planting, significant TSWV infection did not occur until 100 d for all genotypes. In the late planting, an increase in TSWV infection occurred at 100 d for SunOleic 95R, but was not significant for Southern Runner or 86x43 at any time during the sampling period. SunOleic 95R showed a higher incidence of TSWV than either Southern Runner or 86x43 at 100 d and before harvest over both planting dates. There was no difference in the incidence of TSWV between Southern Runner and 86x43 under any continuously sampled treatment. Spacing did not show a difference in timing of TSWV infection. Destructive sampling revealed that a significant number of SunOleic 95R and Southern Runner plants had TSWV in their roots at 100 d for both planting dates, while 86x43 only showed an increase in TSWV in roots just before harvest for the early planting. Results from the continuous sampling indicate that late planting results in less TSWV infected plants and that by 100 d more SunOleic 95 R plants are infected with TSWV than either Southern Runner or 86x43. Results from the destructive sampling indicate that TSWV can be found in the root zone earlier in SunOleic 95 R and Southern Runner than in 86x43. 86x43 had the highest yield and SunOleic 95R had the lowest yield with Southern Runner being intermediate. Late planting and 3" spacing produced the greatest yield regardless of genotype. Therefore, field resistance of Southern Runner and 86x43, along with cultural practices, were important in reducing the impact of TSWV on yield.

Inheritance of Resistance Components to *Cercospora arachidicola* in *Arachis hypogaea*.

L.G. MOZINGO, H.T STALKER, T.G. ISLEIB and B.B. SHEW. Departments of Crop Science and Plant Pathology, North Carolina State University, Raleigh 27695.

Early leaf spot, caused by *Cercospora arachidicola*, is one of the most widespread and destructive diseases of peanut. Inheritance of early leaf spot resistance is complex due to partial resistance provided by the multigenic nature of resistance components. Leaf spot-resistant lines were evaluated in the field at Lewiston, NC and crosses were made between leaf spot-resistant and susceptible types. The F_2 progeny of two selected crosses were studied in the field for components of leaf spot resistance. The NC 7/NC GP WS-1 progeny have *Arachis hypogaea* and the wild species *A. cardenasii* in their pedigree. The NC 7/PI 109839 population represents two cultivated *A. hypogaea* lines. Bulk segregant analysis was used to screen progenies with 516 RAPD primers. Six primers were polymorphic in NC 7/NC GP WS-1. Regression analysis was used to associate these areas of the genome with components of early leaf spot resistance including sporulation rating, lesion diameter, defoliation, and rating. Plant color, southern corn rootworm resistance, and average seed length also were associated with markers in this population. Four markers, two in one linkage group and two unlinked markers, were polymorphic in the NC 7/PI 109839 population. These areas of the genome were associated with components of early leaf spot resistance including sporulation rating and defoliation. Leafhopper resistance also was associated with markers in this population. This is the first report of molecular markers being associated with genes for resistance in a cultivated cross in peanut.

Effects of Tillage and Chlorpyrifos Treatment on Soil-Inhabiting Pest and Beneficial Arthropods of Peanut. P.H. JOOST,* J.W. CHAPIN, J.S. THOMAS and A.C. WASHBURN. Department of Entomology, Clemson University, Edisto Res. & Ed. Center, Blackville, SC 29817.

A 3x2 split-plot factorial experiment was used to study the effects of tillage and chlorpyrifos treatment on soil-inhabiting pest and beneficial arthropods of peanut. Main plot treatments consisted of three tillage systems: conventional moldboard plow, strip-tillage into a killed wheat cover crop, and strip-tillage into corn stubble residue. Subplot insecticide treatments were granular chlorpyrifos applied on July 8 and no chlorpyrifos treatment. Pitfall traps were used to monitor soil surface arthropod activity from May 19 (planting) to Sept. 8 (R7 growth stage, 113 DAP). A 30 x 30 x 10 cm deep soil sample, centered over the row, was also taken weekly to biweekly from each plot and sieved for soil pest arthropods. Granulate cutworm (GCW), *Agrotis subterranea* (Fabricius) trap catches exhibited significant tillage, insecticide, and interaction effects. GCW activity was lower in the untreated strip-tillage systems than in untreated conventional tillage. Chlorpyrifos treatment initially suppressed GCW in conventional tillage, but increased GCW in both strip-till systems. Lesser cornstalk borer, *Elasmopalpus lignosellus* (Zeller) trap catches were lower in strip-tillage systems, but there was no measurable insecticide effect. Imported fire ant, *Solenopsis invicta* (Buren), populations were highest in corn strip tillage and lowest in conventional tillage. Fire ants were virtually eliminated in all systems by chlorpyrifos. Earwigs (Dermaptera) were more abundant in conventional than strip-tillage systems. Ground beetles (Carabidae) were more abundant in strip tillage systems for only two wk after planting. Carabids were more abundant in chlorpyrifos treated plots contemporaneous with increased corn earworm (*Helicoverpa zea*) populations following chlorpyrifos use. Rove beetles (Staphylinidae) were more abundant in wheat strip-till for the first five wk after planting, but then populations declined and were not affected by tillage or insecticide. Spiders (primarily Lycosidae) were more abundant in strip-tillage systems for four wk after planting and were reduced by chlorpyrifos in all systems. Insect counts from sieved soil samples remained low throughout the study, but wireworm (Elateridae) counts were highest in untreated corn strip-tillage. These data indicate that some predators, particularly fire ants, are more abundant and effective in suppressing certain pest species in strip-tillage systems Also, chlorpyrifos use is more disruptive in strip-tillage systems.

Interference of Tropic Croton in VC Peanuts. S. D. ASKEW*, J. W. WILCUT, and G. H. SCOTT. Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620.

Tropic croton is an annual broadleaf weed that is becoming more troublesome in peanut production areas throughout the southeastern coastal plain from Virginia to Georgia. The increasing spread of tropic croton is due to several management limitations. First, tropic croton cannot be adequately controlled with currently registered soil-applied herbicides and tropic croton is tolerant to most ALS-active herbicides. As the use of ALS-active herbicides has increased, so has the prevalence of tropic croton. There are several postemergence herbicides that will control tropic croton, but none provide residual control. Tropic croton seed starts maturing in mid- to late-July and as it matures, it is forcibly discharged from the plant. Additionally the seed is consumed by birds. These factors may serve to to further increase the spread of this troublesome weed. As a result of these factors, research was initiated to investigate the interference characteristics of tropic croton in peanut. Tropic croton populations were selected and maintained in Capron, VA plots by removing all unwanted plants while tropic croton seedlings were planted at the desired densities into Lewiston, NC plots. Plots were kept weed free of all other unwanted vegetation (except peanut and the desired tropic croton plants) by weekly hand weedings. Data collected included tropic croton height at weekly and biweekly intervals throughout the growing season, incidence of leafspot, tropic croton biomass, and peanut yields. Peanut yields were reduced 54 and 42% at densities of 32 tropic croton plants per 20 feet of row for Florigiant peanut at Capron in 1988 and 1989, and 28% for 32 tropic croton plants per 20 feet of row in NC 10C peanut at Lewiston in 1998. This data will be incorporated into the Peanut HERB decision aid program.

Peanut HERB Evaluations in North Carolina. G. H. SCOTT*, J. W. WILCUT, and S. D. ASKEW. Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620.

Experiments were conducted at Lewiston and Rocky Mount, NC to evaluate weed control, peanut response, and yield to weed management systems that used only soil-applied herbicides, postemergence (POST) herbicides, or a combination of soil and POST herbicides. Furthermore, the study evaluated standard POST treatments versus POST herbicide treatments selected by Peanut HERB, a decision aid program developed by the University of Georgia, the University of Florida, and North Carolina State University. The experimental design was a randomized complete block with a factorial arrangement of soil-applied herbicide options and POST herbicide options providing a total of 21 weed management systems. The soil-applied options included 1) none, 2) Dual II Magnum preplant incorporated (PPI) at 1.27 lb ai/ac, 3) Sonalan at 0.75 lb ai/ac, 4) Dual II Magnum PPI followed by (fb) Valor preemergence (PRE) at 0.078 lb ai/ac, 5) Dual II Magnum PPI fb Strongarm PRE at 0.024 lb ai/ac, 6) Sonalan PPI fb Valor PRE, or 7) Sonalan PPI fb Strongarm PRE. The POST options included 1) none, 2) Starfire at 0.125 lb ai/ac plus Basagran at 0.25 lb ai/ac early postemergence (EPOST) fb Storm at 0.75 lb ai/ac POST, or 3) a POST program selected by Peanut HERB. The EPOST treatment was applied 7 to 10 days before POST treatments were made. All POST treatments included a non-ionic surfactant at 0.25% (v/v). All POST treatments selected by Peanut HERB were applied with adjuvants according to herbicide label recommendations. Peanut injury was less than 10% early season from all soil-applied herbicide programs. Dual II Magnum based systems provided better yellow nutsedge control than ethalfluralin based systems. Yellow nutsedge control with Dual II Magnum was not further improved with PRE or POST herbicides. Sonalan controlled common lambsquarters 100% compared to 71% control with Dual II Magnum at Rocky Mount. The addition of Valor or Strongarm PRE to Dual II Magnum or Sonalan PPI improved control of common ragweed, ivyleaf morningglory, spurred anoda, prickly sida, and entireleaf morningglory. For the most part, weed control between the sequential standard EPOST plus POST system was comparable to that obtained with Peanut HERB. When only Dual II Magnum or Sonalan were applied PPI, Peanut HERB tended to outperform the standard POST system. Weed control from Dual II Magnum or Sonalan PPI alone failed to provide high peanut yields. However, the addition of Strongarm or Valor PRE to either herbicide provided high peanut yields, which were not further improved with any additional POST input. When no soil applied herbicides were used, peanut yields were higher with a total POST system selected by Peanut HERB than with the standard POST system of Starfire plus Basagran EPOST fb Storm POST.

Modification of Weather Based Advisories To Account For Leafspot Resistant Peanut Genotypes. V.M. ARIS* and J.E. BAILEY. Plant Pathology Dept. Box 7616, North Carolina State University, Raleigh, NC 27695

Weather-based spray advisories were adapted for use with three peanut genotypes (NC 7, NC 11, NC-GP 343) with varying resistance to early leaf spot (*Cercospora arachidicola*). Experiments were conducted in 1997 and 1998 in Bertie Co., NC. A mix of the fungicides propiconazole (3.6 EC 0.022 Kg ai/ha) and chlorothalonil (6F 0.83 Kg ai/ha), was applied according to weather-based advisories, or on a standard 14-day spray schedule. The NC leafspot advisory was altered in 1997 by increasing the threshold values of favorable conditions required for infection: hours of RH>95% corrected for unfavorable temperatures. In 1997 disease was observed to increase at lower temperatures. In 1998, corrections were made on some models to account for this. Both years, leafspot epidemics started late, mid-September. Yield differences were dependent on genotype. Treatments had no effects. In 1998, the models triggered very early in the season but there was no notable disease increase. Analysis are in progress to determine the causes of the overspray recommendation. Similar leaf spot control to the 14-day spray schedule was achieved with different models for each peanut genotype. Results show that the advisories can be adapted for resistant cultivars, so that farmers can further reduce fungicide usage.

Occurrence of *Cylindrocladium parasiticum* in Peanut Seed and Seed Transmission of Cylindrocladium Black Rot. D. L. GLENN*, P. M. PHIPPS, and R. J. STIPES. Tidewater Agr. Res. & Ext. Ctr., Suffolk, Va. 23437, and Dept. Plant Pathol., Physiol. & Weed Sci., VPI&SU, Blacksburg, Va. 24061.

Cylindrocladium black rot (CBR) of peanut can cause higher than expected losses of yield in some fields treated with metam sodium. Seed transmission of CBR was investigated to explain some of the failures in chemical control. Brown speckling on the seed coat of peanut has been a characteristic of seed infected with *Cylindrocladium parasiticum* Crous, Wingfield & Alfenas. Speckled seed were collected from selected seed lots after routine cleaning and sorting procedures. Three samples of 50 normal and speckled seed from five cultivars were rinsed for 2 min. in distilled water and cut latitudinally. The cut surfaces were then placed on agar plates of sucrose-QT medium for isolation of *C. parasiticum*. Assays of normal seed detected the pathogen only in a few seed of NC-V 11. The pathogen was isolated from 13, 84, 51, 75, and 19% of speckled seed of NC 7, NC-V 11, Gregory, VA-C 92R and VA 93B, respectively. *Aspergillus niger*, a cause of crown rot of peanut, was present at rates of 84, 19, 62, 31 and 100% of each respective lot, which suggests a competitive relationship may exist between the two organisms. Other fungi present, but with no apparent relationship to incidence of *C. parasiticum*, included *A. flavus*, *Rhizopus* sp. and *Sclerotium rolfsii*. Seed of VA-C 92R were selected to test for seed transmission of CBR under greenhouse conditions. Speckled seed and normal seed were treated with Vitavax PC at 4 oz/cwt and planted in 6-in. clay pots containing a 2:2:1 mixture of steamed soil, peat moss and vermiculite. Five seed of each type were planted alone or paired in each pot and treatments were replicated six times. Daily max./min. air temperatures averaged 29/21 C during the test. Plant emergence was 100% from normal seed and 90% from speckled seed. Disease severity after 8 weeks on a 0 to 3 scale (0-healthy; 3-dead) averaged 2.1 and 0.13 in plants from speckled seed and normal seed, respectively. Root rot severity on a 0 to 5 scale (0-healthy; 5-completely decayed) was 3.87 in plants from speckled seed and 0.63 in plants from normal seed. *C. parasiticum* was isolated from 79 and 6.7% of tap roots originating from speckled seed and normal seed, respectively. Fresh weights of plants averaged 27 g from speckled seed and 87 g from normal seed. Paired planting of speckled and normal seed produced evidence that secondary spread of the disease into plants from normal seed can occur under greenhouse conditions.

Influence of Fungicide Treatments on the Incidence of Soilborne Fungal Pathogens in Peanut. R.C. KEMERAIT, JR.* and T. A. KUCHAREK. Plant Pathology Department, University of Florida, Gainesville, FL 32611.

Influence of fungicides on the incidence of soilborne, fungal pathogens in peanut was evaluated biweekly during 1998. An experiment was conducted in Jay, Florida using a split-plot design. Whole plot treatments were applications of Benlate, Folicur 3.6F, and Moncut 50WP. Subplot treatments were the crop age at sampling. Disease was assessed as linear-foot of wilted row per whole plot and number of diseased plants per subplot. Hypocotyls, roots, pegs, and pods were surface sterilized, placed on acidified potato dextrose agar, and incubated at 25°C. Fungi were identified and incidence was studied using analysis of variance and correspondence analysis. Areas under the disease progress curves were significantly greater at the α=.05 level for the control and Benlate-treated plots than for those treated with Folicur 3.6F or Moncut 50WP. There was no significant difference in the average incidence of infection by *Aspergillus niger* or *A. flavus* among the fungicides. Average incidence of infection by *Cylindrocladium parasiticum* was significantly greater in plants from the control and Folicur 3.6F treatments than from those in Benlate or Moncut 50WP treatments; this trend was reversed for *Lasiodiplodia theobromae*. Incidence of *Sclerotium rolfsii* was significantly lower in Moncut 50WP and Folicur 3.6F treatments than in the control or Benlate treatment. Based on correspondence analysis, the most severe disease rating was associated with incidence of *L. theobromae* in all treatments except for Benlate. Fungicides had little effect on associations of time and disease severity with *A. niger*, *A. flavus*, and *Rhizoctonia solani*, though there were shifts associated with *S. rolfsii*, *C. parasiticum*, and *L. theobromae*. For example, incidence of infection by *C. parasiticum* was associated with a more severe disease rating in the control and Benlate treatment than in Moncut 50WP or Folicur 3.6F treatments. Therefore, an increased incidence of infection by specific pathogens is not necessarily an indication of greater disease severity.

Isolation and Characterization of Δ^{12} Fad and Search for Polymorphism Associated with the High Oleate Trait in Spanish Peanut.

Y. LOPEZ*, H.L. NADAF, J.P. CONNELL, A.S. REDDY and O.D. SMITH, Department of Soil and Crop Sciences, College Station, TX 77843-2474.

Marker-assisted selection (MAS) for improved fatty acid content (e.g. oleic acid) in peanut would accelerate the development of better peanut cultivars. During the last 10-15 years, oil composition of several oil seed crops has been genetically modified. Understanding of molecular mechanisms responsible for increased oleic acid accumulation would open avenues to alter fatty acid composition and allow detection of polymorphic regions which can be used for MAS. Sequences responsible for C18 fatty acid desaturation have been isolated and are candidates to be used as probes to score for polymorphism between low and high oleic to linoleic ration (O/L) lines. The purpose of this study is to isolated and characterize Δ^{12} fatty acid desaturase and identify polymorphism between low and high O/L genotypes. Southern Blots showed 3-4 copies/haploid genome and no major differences in organization between the two parental lines studied, Tamspan 90 and 435-2-2, low and high genotypes respectively. Know Δ^{12} desaturase sequences were used to determine genomic sequences of parental lines and genomic walk to promoter sequences. Comparisons of the coding sequences from the high and low oleic acid genotypes indicated several single nucleotide polymorphisms (SNP's). One SNP changed amino acid sequence. Interestingly, one "A" insertion polymorphism was found at 442 bp from the start codon. This insertion shifts the amino acid reading frame, probably resulting in truncated inactive protein. Similar fragments having these putative sequence differences were amplified from several Independent Developed Backcross Lines (IDBLs) and F_2's. The "A" insertion was present in most of the high O/L lines but not in all of them. This result suggests that not all the copies are expressed and raises the question of tissue-specific expression. RT-PCR was conducted on young embryos and several clones from each line were selected and sequenced. Nucleotide variation identified using the RT-PCR approach was similar to that seen using gene specific primers on genomic DNA from young leaves. Final results of the association of oil trait and molecular differences will be discussed.

SYMPOSIUM: IMPROVING THE ECONOMIC COMPETITIVENESS OF U.S. PEANUTS

Research and Extension Efforts Designed to Increase Profitability of Peanut Production in the V-C Area. D.L. JORDAN*. Department of Crop Science, North Carolina State University, Raleigh, NC 27695-7620.
Research and Extension efforts in North Carolina and Virginia are focused on improved genetics, development of integrated pest management (IPM) strategies, adoption of reduced-tillage systems, evaluating optimum plant populations and row spacings, evaluating new agrichemicals, and improving harvest techniques. Adoption of new technologies, modification of current approaches, and continued use of proven production practices will bring about incremental increases in profit. The main factor that will influence profitability for peanut growers in the V-C area will be the status of the Federal legislation and potential contracts between shellers and farmers if the Federal program is eliminated. Efforts in plant breeding and variety development continue to provide high yielding, pest resistant cultivars. The recent releases 'NC 12C', 'VA 98R', and 'Perry' are varieties that are high yielding and offer agronomic and disease management benefits. Weather-based advisories for Sclerotinia blight and leafspot management can reduce the number of unnecessary fungicide sprays and increase precision of necessary sprays. The variety Perry has partial resistance to Sclerotinia blight and Cylindrocladium black rot. VA 98R yields well and matures earlier than most virginia market types. Early maturity with high yield potential will be advantageous in the V-C area. Considerable success has been gained in developing an index to predict damage from southern corn rootworm. Use of this decision aid will become increasingly important as growers attempt to reduce production costs. Using weather-based advisories for disease control and eliminating insecticide applications for southern corn rootworm minimize outbreaks of spider mites. The Peanut HERB decision aid shows promise in determining if weed infestations justify herbicide applications based on economics. Considerable effort is being placed into determining where and when new insecticides, herbicides, fungicides, and plant growth regulators fit into peanut production systems. Likewise, the consistency of performance of reduced tillage systems is being evaluated. Adoption of reduced tillage systems without sacrificing yield and quality offer savings in time and input costs. Determining the economic impact of production in narrow rows has shown mixed results as has reductions or elimination of fertilizers, especially supplemental calcium. Efforts continue to focus on timely digging and handling of peanuts.

Maintaining Peanut Profitability in the Southwest. R.G. LEMON*, Texas Agricultural Extension Service, College Station, TX 77843, and J.R. SHOLAR, Plant and Soil Sciences Department, Oklahoma State University, Stillwater, OK 74078
The peanut industry in the Southwest has experienced significant change over the past few years. The region is attempting to maintain profitability utilizing a multi-faceted approach. Much of the acreage has been transitioned from traditional counties to new areas as allowed under the lease and sell provision of the 1996 Farm Bill. New regions are experiencing lower production costs and higher yields. Eastern Oklahoma acreage is declining due to older irrigation equipment, high disease incidence, high production cost and low yield. Peanut acreage is moving to the southwestern counties of Tillman, Beckham, Greer, and Jackson. Traditional Caddo county continues to support about 30,000 acres despite Sclerotinia blight problems, but growers are utilizing new varieties and management. Texas acreage has moved west into the South and Rolling Plains areas. Over 248,000 acres were harvested in the region in 1998, representing 83% of total state production. Irrigation has increased significantly due to regional movement. Oklahoma was about 50% irrigated in 1980, and 75 to 80% irrigated in 1995. Texas producers irrigated 50% of their peanuts in 1980, 71% in 1997, and 85 to 90% in 1998. Consequently statewide average yields have increased from 2,200 to 2,400 lbs/acre in Oklahoma and 2,100 to 2,600 lbs/acre in Texas. Additionally, producers have adopted numerous cultural practices to reduce production costs. Disease tolerant varieties are being utilized to combat tomato spotted wilt virus, Sclerotinia Blight, and southern blight. Tamrun 96 and Georgia Green are replacing Florunner, Okrun, Tamrun 88, and GK-7. High O/L varieties are being grown to enhance marketability. Producers have increased scouting programs and are timing fungicide and herbicide applications more appropriately. In-furrow insecticide use has been reduced. New regions are practicing proper crop rotation, and traditional areas are using the lease provision to establish better rotation intervals. Also, growers are employing larger harvesting equipment. In the area of research, plant breeding efforts continue to focus on host plant resistance, value added traits (high O/L runner and spanish), and earliness. Efforts are underway to evaluate ultra-narrow row production systems, irrigation management/technology, reduced tillage and precision agriculture.

Macro and Micro Opportunities to Improve Profitability T WELLS, G. VELLIDIS, D. THOMAS, G. RAINS, S. POCKNEE, C. PERRY, C. KVIEN*, D. KISSEL, J. HOOK, V. GARRICK and K. FRANKE. University of Georgia, Tifton, GA

Our joint public/private team believes that several new technologies are opening the door to reduced unit production costs through increasing efficiencies. These technologies are largely information-based and oriented on better linking inputs to projected outputs. Yield maps turned to profit maps enable growers to better visualize the areas of their fields that are profitable to crop and those which are better suited to alternative uses. We believe gains of approximately 7% are possible through alternative management of unprofitable areas. Applying additional inputs to the most productive spots in the field also has the potential to improve returns by 4%. Equipment tracking through the use of radio or cell phone linked DGPS systems can improve people efficiencies by 5% and equipment use by 4% as time and miles are saved in locating resources. Possibly the greatest savings in resources will come in better targeting of pest control materials (10% potential gains) and water (8% potential gains). The use of the Internet will continue to help growers to find and purchase inputs and locate information which will improve both production and marketing.

Improving the Domestic and International Competitiveness of U. S. Peanut Sheller Perspective. J.W. DORSETT. Golden Peanut Company, Alpharetta, GA 30022.

The largest and most reliable market for edible peanuts in the world is the U. S. market. Almost 10% of this market is being supplied by peanuts that are grown and shelled outside of the U. S. borders. This situation will continue because of the following reasons: (1) GATT quota allows annual increases in access to the U. S. market, (2) the NAFTA agreement not only allows for a phased-in open door policy of peanut kernels, but also gives total and free access to the U. S. market for peanut butter manufactured in Mexico from Mexican peanuts, (3) the imported peanuts are cheaper. The growers and shellers in the U. S. need to look at ways to take non-value-added costs out of the system. This should be accomplished by combining short- term solutions along with a long- term plan that will allow the domestic and international markets to be supplied. The shelling industry is on a collision course with the domestic farm policy on the one hand and the international trade policy on the other hand. How we handle these issues will determine the competitiveness of U. S. peanuts.

USA Peanuts "The Right Stuff". C. Ivy. M&M/Mars, Albany, GA 31706

US peanuts compete in two markets: US domestic and international. The North America Free Trade Agreement and the General Agreement on Tariffs and Trade have opened the door for the importation of foreign peanuts. Since their implementation, the import limits have been completely filled. In addition, the US share of peanuts exported during the last thirteen years has declined. Manufacturers make purchasing decisions based on value – combination of quality, service/reliability and price. The weight of each component is different among manufacturers, which explains why many origins supply the market. In order for the US to increase it's market share it must produce what the buyer wants and at a competitive value. The US can gain a competitive advantage by changing the structure of the industry and producing a product that meets the needs of the ultimate buyers – retail consumers. The current peanut industry is segmented into compartments that rarely cooperate in increasing value across the entire supply pipeline. If the industry could operate as one cohesive group and conduct / implement research projects that better meet the consumer needs this would produce a competitive value that would make the US the preferred origin.

PLANT PATHOLOGY II

Responses of Peanut Cultivars to Spray Programs for Control of Limb Rot and Southern Blight.
J. P. DAMICONE* and K. E. JACKSON. Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078.
The disease and yield responses of the peanut cultivars Tamrun 96, Tamrun 98, Georgia Green, and ViruGard to spray programs for southern blight (*Sclerotium rolfsii*) and limb rot (*Rhizoctonia solani*) were determined in 1997 and 1998. Comparisons were made to the susceptible cultivar Okrun, and to Tamspan 90 which may have partial resistance to these diseases. Spray programs consisted of six sprays applied on a 14-day schedule beginning about 45 days after planting. Spray programs were chlorothalonil at 1.12 lb/A (control), tebuconazole at 0.20 lb/A applied in blocks of two and four sprays, azoxystrobin at 0.20 and 0.30 lb/A applied at 60 and 90 days after planting, and a pre-mix of chlorothalonil at 1.12 lb/A and flutolanil 0.30 lb/A applied in a block of four sprays. Chlorothalonil at 1.12 lb/A was applied for foliar disease control on the remaining spray dates for the tebuconazole, axoxystrobin, and flutolanil programs. In 1997, incidence of southern blight in control plots was highest for Okrun (29%) compared to other cultivars (7% or less). For Okrun, all spray programs reduced southern blight by 50% or more. Spray programs had no effect on southern blight for the other cultivars. Incidence of limb rot was low (13% or less) and differences between cultivars and spray programs were not apparent. Yields were variable and only the main effect of cultivar was significant. Yield was highest for Tamrun 96 (4034 lb/A) and lowest for ViruGard (2873 lb/A). Yield for other varieties were similar and ranged from 3309 to 3765 lb/A. In 1998, limb rot was the primary disease and incidence of southern blight was low (7% or less). For control plots, incidence of limb rot was highest for Okrun (50%), and lowest for Tamrun 96 (25%) and Tamspan 90 (22%). The effect of spray program on limb rot was dependent on cultivar. Azoxystrobin at both rates provided excellent control of limb rot for all cultivars (incidence 5% or less). Folicur programs were most effective for Tamrun 96 and Tamspan 90. The flutolanil program was least effective and provided significant disease control only for Okrun. The effects of spray program and cultivar on yield were additive. The highest yields were achieved for Tamrun 96 (5194 lb/A) and Georgia Green (4927 lb/A) and for azoxystrobin at 0.30 lb/A (5366 lb/A), azoxystrobin at 0.20 lb/A (5073 lb/A), and the four-spray program with tebuconazole (4811 lb/A).

Integrated Disease Management of Three Peanut Cultivars. T. B. BRENNEMAN* and A. K. CULBREATH, Department of Plant Pathology, University of Georgia Coastal Plain Experiment Station, Tifton, GA 31793.
Georgia Green (GG), Georgia Runner (GR), and Florida MDR-98 (MDR) peanuts (*Arachis hypogaea*) were grown in 1997 and 1998 under six disease management programs. Test fields were infested with *Sclerotium rolfsii* (stem rot), *Rhizoctonia solani* (limb rot), *Cercospora arachidicola* (early leaf spot), and tomato spotted wilt tospovirus (TSWV). Chlorothalonil (1.26 kg/ha) was applied seven times (every 14 days) or according to Au-Pnuts. Tebuconazole (0.22 kg/ha) was applied at sprays 3-6 or 3 and 5 with the other sprays being chlorothalonil. Tebuconazole was also applied according to Au-Pnuts from 50-110 DAP with chlorothalonil applied both before and after according to the advisory. The last treatment consisted of full season chlorothalonil sprays with thifluzamide (0.45 kg/ha) applied at 50 DAP. A total of five and six sprays were applied according to Au-Pnuts in 1997 and 1998, respectively. The relative intensities of different diseases among cultivars was as follows: Early leaf spot, GR>GG>MDR; stem rot, GR=GG>MDR; Rhizoctonia limb rot, MDR>GG=GR; and TSWV, GR>GG≥MDR. All differences are significant at $P \leq 0.05$. The mean pod yield of cultivars was 4415, 4038 and 3275 kg/ha for MDR, GG and GR. There was a cultivar by treatment interaction for yield with MDR responding less to increased fungicide inputs. Tebuconazole treatments had less leaf spot than chlorothalonil treatments and Au-Pnuts tended to have more foliar disease than calender sprays. Thifluzamide had the lowest stem rot incidence followed by tebuconazole and chlorothalonil, respectively. Mean pod yields for thifluzamide, tebuconazole (4X), tebuconazole (2X), tebuconazole (AUP), chlorothalonil (AUP) and chlorothalonil (7X) were 4566, 4072, 3888, 4098, 3465 and 3522 kg/ha, respectively.

A Comparison of Fungicides and Fungicide Combinations for the Control of Southern Blight (*Sclerotium rolfsii*) in Peanut. T. A. LEE*, J. E. WELLS and C. B. MEADOR, Texas Agricultural Extension Service, Stephenville, TX 76401.

A comparison of Abound, Folicur, Moncut, Flint, BAS500 and RH0753 was made to a rotation of Abound and Folicur and the mixture Stratego (Flint + Tilt). Two applications of each treatment were made 55 and 85 DAP for *S. rolfsii* control. This was an irrigated test on Florunner peanut in Comanche County Texas. A randomized complete block plot design with 3 replications was used. A CO_2 backpack sprayer delivering 179 l/ha of spray volume was used. *S. rolfsii* was the primary fungus present in the plot. All plots received regular overspray with Bravo Ultrex to negate any leafspot effect. When compared to the untreated control, all treatments increased yield and value (P=0.10). No treatment increased yield or value over any other treatment (P=0.10)

Efficacy of Spray Programs for Control of Southern Stem Rot. K. E. Jackson* and J. P. Damicone. Departments of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078-3033.

During 1996 to 1998, spray regimes using recommended rates of tebuconazole, azoxystrobin, chlorothalonil, fluazinam, and flutolanil were evaluated for the management of southern stem rot (*Sclerotium rolfsii*) on Okrun peanut near Durant, OK. Within a six-spray chlorothalonil (14-d) program, tebuconazole and the pre-mixture of chlorothalonil and flutolanil were applied as a four-spray block (sprays two to five). In another treatment, azoxystrobin was substituted for chlorothalonil on the second and fourth spray. Two treatments consisted of either fluazinam or flutolanil tank mixed with chlorothalonil on the second and fourth spray. Another treatment was a tank mixture of chlorothalonil and tebuconazole applied six times in a 14-d interval. These treatments were compared to chlorothalonil alone and an untreated control. All fungicides, except chlorothalonil, reduced the incidence of southern stem rot (P=0.05) when compared to the untreated check (incidence ranged from 16 to 83%). Control of southern stem rot ranged from 60 to 88% for the azoxystrobin treatment, 69 to 81% for the tank mixture with tebuconazole and chlorothalonil, 85 to 94% for the fluazinam treatment , 69-82% for the flutolanil treatment, 63 to 66% for the four spray block with the pre-mixture of chlorothalonil and flutolanil, and 80 to 94% for the four spray block with tebuconazole. The four spray block program with tebuconazole had the highest yield in each of the three years (5247, 3842, and 3506 kg/ha, respectively) compared to the control which yielded 2374, 2521, and 2460 kg/ha and chlorothalonil alone which had yields of 2580, 2632, and 2419 kg/ha, respectively. Yields ranged from 3252 to 4760 ha/kg for the tank mixture of tebuconazole and chlorothalonil, 3567 to 4489 kg/ha for the fluazinam treatment, 3140 to 4358 kg/ha for the azoxystrobin treatment, and 2937 to 4185 kg/ha for the two different flutolanil spray regimes. This study demonstrated that spray regimes using azoxystrobin, flutolanil, fluazinam, and tebuconazole effectively controlled southern stem rot and increased yields by an average of 1323 kg/ha with a range of 417 to 2873 kg/ha. In the three year study, the four spray block program with tebuconazole had the highest average yield (3749 lb/acre) and the lowest average incidence of southern stem rot (7%).

Comparison of Fungicide Regimes for Foliar and Soil-borne Disease Control on Peanut. K.L. BOWEN*, A.K. Hagan, and J.Fajardo. Department of Plant Pathology, Auburn University, Auburn, AL 36849-5409.

Disease control with different application regimes of Bravo 720 at 1.5 pts/A with Folicur 3.6F at 0.45 pts/A and/or Abound SC were compared in two tests in 1998. Abound SC was applied at 0.77 pts/A at one site and at 1.15 pts/A at the second. All treatment regimes included seven fungicide applications, made on 14-day intervals, starting 11 June. Treatments included: Bravo season-long; Folicur applied on spray dates 3-6, with Bravo on others; Abound applied on spray dates 2-5, with Bravo on others; and Abound applied on spray dates 2 and 4, Folicur on dates 3 and 5, and Bravo on remaining dates. Severity of leaf spot diseases was rated using the Florida scale; southern stem rot hits (SSR) and limb rot incidence was assessed at digging, and yields determined. At the site where the lower rate of Abound was applied, there were no significant differences in measured parameters due to treatments. At the second site, treatments differed for SSR and limb rot. At both sites, contrast analyses of data indicated that combination treatments were significantly better than the use of Bravo alone for reducing incidence of limb rot and SSR. Correlation coefficients calculated between variables indicated that SSR and limb rot were consistently positively correlated, and yield was negatively correlated to incidence of SSR. At the site where the higher rate of Abound was used, contrast analyses indicated that alternating the three products was better for reducing SSR and limb rot than alternating Bravo with either Folicur or Abound.

An Historical Summary of Folicur Peanut Efficacy in University Testing from 1993-1998 in the Southeastern U.S.. H. S. YOUNG* and W. D. ROGERS, Bayer Corporation, Tifton, GA.

To develop an unbiased database of Folicur's impact against the primary peanut pathogens, all accessible data from standard university testing programs in Florida, Georgia and Alabama during the time period 1993 through 1998 were summarized. In all studies, the Folicur treatment selected was at the labeled rate of 7.2 fl oz/A for sprays 3-6 ("4-block") with chlorothalonil applied during applications 1,2 and 7. In 72 leafspot trials, the *Florida Leafspot Index 0-9 (FLI)* for the no-fungicide treatment was 8.2, for chlorothalonil FLI = 4.1 and for Folicur the FLI = 3.1. During this time period, Stem Rot (*Sclerotium rolfsii*, locally called white mold) evaluations were made in 107 trials. The average reduction in white mold by Folicur was 50.4%. Mean white mold incidence was 28% in the chlorothalonil-only treatment with an average yield of 2,956 lb/A. In Folicur 4-block treatments the average white mold incidence was 14% with a mean yield of 3,657 lb/A. The Folicur yield increase attributed primarily to white mold control was 701 lb/A. Abound comparisons with Folicur are available in 41 trials between 1995 and 1998. Prior to the Abound SC formulation evaluated in 1997, comparison was made with Abound 80WG (0.3 lbai/A) in combination with Crop Oil Concentrate (1.0% v/v). Abound (0.3 lbai/A) applied at timing 3 and 5 resulted in an average yield of 3,481 lb/A with Folicur 4-block yield averaging 3,521 lb/A. The Folicur yield was higher than Abound in 26 of the 41 trials.

Tank-Mix Combinations of Tebuconazole and Chlorothalonil for Peanut Leaf Spot Control.

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Six field tests were conducted in Tifton and/or Plains, GA from 1994-1998 to determine the effect of low rates of tebuconazole applied alone and in combination with chlorothalonil on early leaf spot (*Cercospora arachidicola*) and late leaf spot (*Cercosporidium personatum*) diseases of peanut (*Arachis hypogaea*). Ten treatments consisted of four rates (0, 0.043, 0.086, and 0.129 kg ai/ha) of tebuconazole applied alone and in tank mix combinations with chlorothalonil (0.42 kg ai/ha in 1994 and 0.63 kg ai/ha in subsequent years), full season applications of chlorothalonil (1.26 kg ai/ha), and chlorothalonil (1.26 kg ai/ha) (sprays 1,2 and 7) and tebuconazole (0.225 kg ai/ha) (sprays 3-6). Averaged across all tests, final leaf spot intensity ratings (Florida 1-10 scale) were 8.2, 5.1, 3.9, and 3.0 for 0, 0.043, 0.086, and 0.129 kg ai/ha, respectively, of tebuconazole alone and 5.9, 4.3, 2.9, and 2.5, respectively, for those same rates of tebuconazole plus low rates of chlorothalonil. Combinations of tebuconazole at 0.086 kg ai/ha or higher with chlorothalonil was superior (LSD = 0.7) to full season application of chlorothalonil at 1.26 kg ai/ha, for which Florida scale ratings averaged 3.7, and similar to that of the chlorothalonil-tebuconazole block applications, for which final leaf spot intensity ratings were 2.8. Yield effects varied greatly, but treatments with combinations of tebuconazole at 0.086 kg ai/ha or higher with chlorothalonil had yields comparable to those of the chlorothalonil-tebuconazole block regime in all tests. Southern stem rot (*Sclerotium rolfsii*) was present in all fields but at relatively low levels. These results indicate that combinations of low rates of tebuconazole and chlorothalonil can provide leaf spot control comparable or superior to current standard fungicide regimes.

Evaluation of Full Term Strobilurin Derivative Sprays for Control of Peanut Diseases in Texas. A.J. JAKS*, W. J. GRICHAR and B.A. BESLER, Texas Agricultural Experiment Station, Yoakum, Texas 77995.

Three strobilurin derivative fungicides were compared with a chlorothalonil and tebuconazole block spray and a chlorothalonil treatment alone, sprayed season long for control of peanut foliar and soilborne diseases. While the strobilurin fungicides should not be used exclusively due to possible disease resistance, the primary test purpose was to gauge disease control effectiveness of these fungicides when used alone. Abound® (Zeneca Ag. Prod.) at the respective rates per acre of 0.58 pt; 0.77 pt; 1.15 pt, and 1.54 pt; Flint® (Novartis Crop Protection) at 0.18 lb and 0.25 lb; and DPX 101 (4.8 fl oz and 6.4 fl oz) and DPX 102 (6.9 fl oz) (DuPont) were sprayed seven times on a 14-day schedule. The comparison block spray treatment used, Echo 720® (1.5 pt/A) at sprays 1,2 and 7 and Folicur® (7.2 fl oz/A) at sprays 3-6. Bravo Weather Stik (1.5 pt/A) was used alone for seven sprays. Plots were two rows, each 20 ft long. Early leaf spot (*Cerecospora arachidicola*) was predominant at the initial disease rating at 92 days after planting (DAP) with a moderate average rating of 4.3 in untreated plots at the final leaf spot rating (133 DAP) there was an equal observed mix of early and late leaf spot (*Cercosporidium personatum*). Untreated plots averaged a severe 9.4 rating at this time. Leaf spot assessments were made using the Florida scale (1 = no disease; 10 = plants dead, defoliated by leaf spot). Rust (*Puccinia arachidis*) infection did not occur during this test season. Soilborne disease pressure was moderate with 95% late developing mycelia growth from *S. Rolfsii* with 5% from Rhizoctonia pod rot at the harvest rating. At the initial leaf spot rating (92 DAP) Abound at the 1.15 pt and 1.54 pt rates/A and Flint at the 0.25 lb rate/A provided significantly better leaf spot control than the untreated check while none of the other treatments were significantly different from the untreated check. At the final rating (133 DAP) all treatments provided significantly better leaf spot control than the untreated check. The Echo 720 - Folicur 3.6F block spray treatment provided the best leaf spot control at this rating over all other treatments with the exception of the Bravo WS treatment which was not significantly different. The Abound 1.59 pt/A treatment was not significantly different from the Bravo WS treatment at this rating. All Abound treatments provided significantly better soilborne disease control than any of the other treatments with the exception of Flint (0.25 lb/A) which was not different from Abound at the 0.77 and 1.59 pt/A rates. All Abound treatments resulted in significantly higher yields than any other treatments with the exception of Flint (.25 lb/A) which was not different from Abound at 0.77 pt/A.

BREEDING AND GENETICS I

Alternative Genetic Sources of Large Seed Size - Evaluation of Agronomic and Quality Characteristics. H.E. PATTEE*, T.G. ISLEIB, and D.W. GORBET. USDA-ARS and Crop Science Dept., North Carolina State University, Raleigh, NC 27695-7625; North Florida Research & Education Center, Marianna, FL 32446.

Jenkins Jumbo, the source of large seed size in the virginia market-type, has been shown to have a deleterious ancestral effect on peanut flavor. The pervasiveness of Jenkins Jumbo in the ancestry of large-seeded germplasm contributes to the generally less intense roasted peanut flavor of the virginia market-type. As a remedy to this problem, alternative sources of large seed size have been identified and used as parents in crosses. Nine large-seeded selections were tested with NC 7 and Florunner as checks in replicated trials at two locations in North Carolina and one in northern Florida in 1996 and 1997. Pod yield and grade were measured. The SMK sample from each plot was evaluated by a descriptive sensory panel. NC 7, the standard large-seeded virginia cultivar, scored low for sweet sensory attribute, high for bitter and median for roasted peanut. UF 714021, a multiline incorporating the Altika cultivar along with several selections out of Altika, had the best flavor profile of the large-seeded selections, but it did not have particularly large seeds relative to NC 7 (786 vs 1016 mg seed^{-1} [P<0.01]). One very large-seeded (1186 mg seed^{-1}) selection derived from Japan Jumbo had flavor scores slightly superior to NC 7 (3.06 vs 3.04 flavor intensity units [ns] for roasted peanut, 2.81 vs 2.66 fiu [ns] for sweet, and 3.50 vs 3.86 fiu [P<0.05] for bitter). Other lines that had or were likely to have had Jenkins Jumbo as a recent ancestor were generally poor in roasted flavor, supporting the hypothesis that ancestry from Jenkins Jumbo imparts poor flavor characteristics.

Identification of drought induced transcriptional changes in peanut using differential display of mRNA. A. K. JAIN* and S. M. BASHA, Division of Agricultural Sciences, Plant Biotechnology Program, Florida A&M University, Tallahassee, FL 32307.

Pre-harvest contamination of peanut (*Arachis hypogaea* L.) with aflatoxin, a carcinogenic fungal secondary metabolite, is a recurrent problem especially under drought and elevated soil temperature conditions. To understand the molecular mechanism and differential gene expression under water fed and water stress conditions, 45 days old seedlings of peanut cultivar Florunner were subjected to water stress for 15 days. The mRNA from the leaf tissue of stressed and non-stressed plants was isolated and complimentary DNA (cDNA) molecules were synthesized *in vitro*. These molecules were amplified following Differential Display Reverse Transcribed - Polymerase Chain Reaction (DDRT-PCR). The DDRT products from stress and non-stress samples were resolved on a sequencing gel to compare qualitative and quantitative differences in the gene expression. A total of 24 primer combinations were tested. We have identified a total of 43 mRNA transcripts, which are affected due to water stress. Most of the transcripts showed quantitative effect leading to overexpression or suppression of genes following water stress. In addition, transcripts that are turned-on or turned-off in response to water stress have also been identified. Further, cloning and characterization of these transcripts; and analyzing their gene product will enable us to identify gene/s related to drought tolerance and/or suppressing fungal invasion. These results showed importance of using molecular approach that would be helpful in understanding molecular events associated with resistance to fungal growth and aflatoxin contamination in peanut.

Evaluating the performance of peanut genotypes as a forage crop. M.J. Freire, D.W. Gorbet, and K.H. Quesenberry*, Department of Agronomy. University of Florida.

Although peanut is best known for its edible seed, peanut hay is commonly used throughout the world as animal feed, as was the case of US until the 1950's. Reports dated from 1947 indicate that "in Florida more peanuts are hogged off every year than are harvested". Forage analysis show that peanut vines provide a high quality animal feed both for grazing and hay with in-vitro organic matter digestibility (IVOMD) ranging from 68 to 72% and crude protein in the range 16 to 20%, which is comparable to alfalfa and perennial peanut. However, the susceptibility of the existing cultivars to common diseases like rust and leaf spots leads to the extensive use of pesticides that has prevented use of peanut vines as animal feed. Recent advances in the area of peanut genetics and plant breeding have resulted in new genotypes with multiple pest resistance which has reduced the need for pesticide applications. This reopens the possibility for the use of peanut vines for forage, a potential benefit to the North Florida dairy industry. To tackle these issues an experiment was conducted in 1996 and 1997 involving several peanut genotypes under two harvest management levels. Vines of peanut breeding lines, PI's, and released cultivars were harvested once (at the end of the crop cycle - 140 days after planting) or twice (at 80 days and the end of the crop cycle). As expected significant differences in pod and forage yields existed between peanut lines. The most relevant results of this experiment refer to the differences between harvest management levels. By harvesting twice higher peanut forage yields were obtained while lowering pod yield when compared to one harvest. However, one of the most important consequences of cutting hay twice during the crop cycle is the reduction of insect and disease incidence most probably because young plant regrowth is less susceptible.

Impact of Differential Digging Dates on Performance of Lines in the Uniform Peanut Performance Test. R.W. MOZINGO, II, T.G. ISLEIB*, and P.W. RICE. Dept. of Crop Science, North Carolina State University, Raleigh, NC 27695-7629.

The Uniform Peanut Performance Test is a cooperative series of yield trials conducted each year by SAES scientists in seven states. At some locations, lines are dug at different dates depending on their reported maturity while in other trials, all entries are dug at a single common date or on two common dates. There is some debate among UPPT participants as to which is the more sound experimental method. Data from the published UPPT results for 1997 and 1998 were subjected to analysis of variance to determine whether or not there was significant interaction between the test entries and the length of the growing season expressed as days after planting (DAP) for yield, meat content, and average seed mass. Separate analyses were performed using data from the Southeast (SE: AL, FL, GA), Southwest (SW: OK, TX), and Virginia-Carolina (VC: NC, VA) regions. The difference between maximum and minimum season length within a given test was 11-35 days for 7 tests in the SE, 0-27 days for 6 tests in the SW, and 13-14 days for 4 tests in the VC. In the SE, no test out of 7 had a common digging date for all entries, and season length had a positive linear effect on all entries for all three traits (26 lb A^{-1} day^{-1} on yield, 0.20% day^{-1} on meat, and 5.7 mg $seed^{-1}day^{-1}$). In the SW, all entries were dug at a common date in 4 of 6 tests. There was no detectable overall effect of season length on yield, meat , or size, but there was significant ($P<0.01$) interaction between entries and season length for meat content with late-maturing lines increasing disproportionately. In the VC region where there were two common digging dates at each test site, there were positive linear effects of season length for all three traits: 24 lb A^{-1} day^{-1} on yield, 0.33% day^{-1} on meat, and 4.2 mg $seed^{-1}day^{-1}$. There was a significant entry -by--season-length interaction for yield with three early-maturing lines showing decreases associated with delayed digging. Combined across all three regions, the effect of season length was significant ($P<0.01$) on all three traits (25 lb A^{-1} day^{-1} on yield, 0.25% day^{-1} on meat, and 4.2 mg $seed^{-1}day^{-1}$), and there was no siginificant interaction of entries with season length. Because of the general lack of interaction between digging date and test entry, digging at common dates should provide unbiased comparisons of entry means. Digging some entries at later dates than others biases the comparisons among entries with the later-dug entries holding an advantage in yield and meat content and having generally heavier seeds. Comparison of entry means adjusted to a common season length versus unadjusted means shows that the bias, although present, does not seriously affect the ranking of entries. The occurrence of interaction for yield in the VC region is best taken into account by using more than one common digging date.

No-Pesticide Preliminary Yield Trials. W. D. BRANCH* and S. M. FLETCHER. Dept of Crop and Soil Sciences and Agricultural and Applied Economics, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793-0748 and Georgia Experiment Station, Griffin, GA 30223-1797, respectively.

Resistant peanut (*Arachis hypogaea* L.) cultivars are critically important to reduce the increasing cost of production. Current pesticides in the U. S. are quite effective but very expensive. So, the objective of this research study was to evaluate several advanced Georgia breeding lines when grown without any nematicides, fungicides, or insecticides. No-pesticide preliminary yield trials were conducted for the past three years (1996-98) at the University of Georgia, Coastal Plain Experiment Station under irrigation. However, pre-plant and occasionally post-applied herbicides were used for weed control. Thrips damage was noticeably uniform and severe early in the growing season each year, but plants seemingly recovered by mid-season. Probably the most endemic diseases particularly in the southeast now are both early and late leafspots [*Cercospora arachidicola* Hori and *Cercosporidium personatum* (Berk. & Curt.), respectively] and tomato spotted wilt virus (TSWV). Results from these replicated field tests strongly suggest that it would be economically feasible to significantly reduce pesticide cost with many of these advanced Georgia breeding lines compared to the five check cultivars (Florunner, GK-7, Southern Runner, Florida MDR 98, and Georgia Browne.) However, the bottom lines or profits were considerably lower with no pesticides because of the overall reduction in yield and grade. An alternative approach for a larger net return may also be achieved by increasing gross dollar values with current recommended input costs using the high-yielding disease-resistant cultivar, Georgia Green.

Androecial Variations in Peanut. R. O. HAMMONS* and L. H. EIDSON, 1203 Lake Drive, Tifton, GA 31794-3834.

The common androecium pattern in peanut (Arachis hypogaea L.) is 1U 3B 4S 2F, where U is uniloculate upright; B is biloculate upright; S is spherical; and F denotes sterile filament or staminodes. The upright and spherical anthers alternate. The sterile filaments center against the face of the standard petal. One of us (ROH) first observed this arrangement 50 years ago in 1949 and it was called the 'type' anther plan. A plant with nine functional anthers was noted in 1958. During 1960-62, the junior author collected 6,800 flower buds, sampling recent introductions and varieties in the USDA-Georgia peanut research program. She found *ca.* 80 percent with the 'type' pattern, 17 percent with a second plan (2U 3B 4S 1F), and three percent exhibited one of at least 12 other arrangements. Four of the twelve different displays of ten anthers, including the rare plan with 0U 5B 5S 0F. A relationship as found between the left or right overlap of the folded standard petal and the occurrence of the second sterile filament which can be found at either position nine or one. With this market, an observer can search for either plan with a reasonable degree of accuracy. The position of the uniloculate anther changes from location one to nine or the reverse, depending upon the way the standard petal rolls. This behavior suggests to us that the anther plan in Arachis is ancient and likely arose prior to speciation. Geneticists, peanut breeders, morphologists, and botanists interested in tracing the evolution of the common andrecium pattern may find a useful aid in this overlooked trait.

Advances of the Peanut Selection Program at University of Chapingo.II. Bunch Growing Habit Peanut.

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The main areas (states of Morelos, Puebla, Guerrero, Oaxaca and Chiapas) where peanut is grown ,under rainy season, are located in southern Mexico. In these regions peanuts are cultivated in an acreage up to 50,000 ha. However, except in the Coast of Oaxaca, low pod yield (1.5 t ha^{-1}) are harvested. Main reasons are poor soils, low levels of rain (160-240 in.) and due to the fact that most peanut varieties are landraces. In summer 1994 a selection and evaluation plot was conducted in San Marcos Cuauchi Mor; (18° 35' NL ,800 m high and 600-800 mm rain). A group of 25 bunch (Virginia and Spanish types) and some Valencias and experimental peanut genotypes were grown. During harvest, a sample of ten plants were pulled up by hand and selected. Good foliage health, good pod distribution on the plant, a large pod number per plant and medium size pod were the main traits for peanut selection. During 1995 and 1996 two on campus experiments were conducted in the same locality. 49 and 36 peanut genotypes were sown respectively. In 1997 in Petacas,Tepeojuma state of Puebla, a fourth peanut experiment was performed. 36 peanut varieties were used. Main results in pod yield ,indicate: Eventhough, in 1994 fifteen peanut varieties were selected, the best peanut pod yield were in Virginia Bunch 46-2, C7-Gro and C5-Gro. Such varieties yielded 1181.1 1180.0 and 1052.4 g/ten plants respectively. In 1995 peanut evaluation ,C-47 Mor.(367.1 g), C-1224 (351.5 g), Georgia 119-20 (301.7 g) Virginia Bunch 46-2 (297.5 g) and IS-Ec 25 (209.9) ranked in pod weight among 49 peanut varieties tested. During 1996 ,36 peanut genotypes evaluated ranked as follow: In state of Morelos the best pod yield were in IS-Ec2 (486.0 g), IS-Ec19 (451 g) Jumbo 2 (447.5 g), IS-Ec 15 (442 g) and IS- Ec5 (440.5 g). Meanwhile,. in State of Puebla (1997, a year with very little rain ,dry conditions) SM-14, "Criollo", IS-Ec 20 (Jumbo 2) ,IS-Ec- 15 (C5-Gro.) and IS-Ec 5 were the best in pod yield. Such varieties yielded 103.5, 102.5, 101.5, 85.5 and 76.6 g per ten plants ,respectively. These results indicate a very strong variability in pod yield during the four seasons when they were tested. However peanut genotypes such as IS-Ec 20, IS-Ec 15 and IS-Ec 5 showed a good performance in Morelos as well as Tepeojuma Puebla. In this last locality in 1997 very low rain was observed. It seems that genotype per environment interactions are being shown.

Evaluation of four peanut varieties for suitability to close row planting pattern.

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The first flowers on a peanut plant appear between 30 and 45 days from planting. From peg initiation to a mature pod is approximately 60 days The first pods to develop on a single plant are those pods closest to the tap root and commonly referred to as the tap root crop. If a grower was to target the tap root crop it may be possible to develop cropping systems and varieties that could be harvested in 90 to 100 days and produce yields comparable to current varieties and cropping systems. Reducing the time from planting to harvest can reduce expenses and risk for growers. In addition, earlier research has shown that a close row planting pattern will reduce incidence of Tomato Spotted Wilt Virus and inhibit weed growth. As a preliminary evaluation, four peanut varieties were planted in a replicated field trial with two different row patterns, two rows spaced 36 inches apart and eight rows spaced three inches apart. The test was dug 100 days after planting. Grade and yield were compared between the row patterns. Results confirmed that this planting pattern can be used to increase the onset of maturity and increase yield.

EXTENSION TECHNIQUES & TECHNOLOGY/ EDUCATION FOR EXCELLENCE

Effects of the Foliar Fertilizer Dynazyme on the Yield of Peanuts in Ben Hill County, Georgia. W. T. HALL* and J. A. BALDWIN. Cooperative Extension Service, University of Georgia, Fitzgerald, Georgia 31750, and Department of Crop and Soil Sciences, University of Georgia, Tifton, Georgia 31794.

An applied research plot was conducted in Ben Hill County in 1998 for the purpose of evaluating the effectiveness of the foliar applied fertilizer Dynazyme in enhancing peanut (Arachis hypogaea) yields. Part of a 40 acre peanut field was used in this study and divided into nine smaller plots of approximately 1 ½ acre each. The plots were subdivided into treated and untreated portions. The cultivar Georgia Green was planted in thirty-six inch rows. Plots were treated with Dynazyme at 1 quart/acre broadcast in the first two fungicide sprays. All plots were treated similarly in respect to other pesticides and fertilizers prior to and following applications of the foliar fertilizer. The peanuts were planted on May 18, dug on September 29, and combined on October 13-14. Samples were collected for plant tissue analysis in August. These showed very similar levels for all nutrients tested. All plots were measured before combining. In addition they were weighed individually after combining and moisture tests conducted. Grading of the peanuts was conducted as well. Plots fluctuated between treated and untreated checks as to the highest yields. The greatest positive difference was Plot 4 with a 309 pound difference. The plot with the greatest negative difference was Plot 9 with a 164 pound difference. Over the entire planting that was part of this study, the plots treated with the foliar fertilizer Dynazyme showed a yield advantage of 53 pounds.

Applied Field Research to Improve Peanut Production in Worth County, Georgia. J. L. MCLEAN*, J. P. BEASLEY, JR., T. B. BRENNEMAN, A. K. CULBREATH, J. W. TODD, G. E. MACDONALD. Worth County Extension Office, University of Georgia Cooperative Extension Service, Sylvester, Georgia 31791.

Worth County, Georgia has 56,551,963 pounds of basic quota peanuts currently in cultivation and our average cost of production is approximately $0.27 per pound for irrigated peanuts and $0.33 per pound for dryland peanuts. Worth County's seven-year average is only 2300 pounds per acre, primarily due to four drought years and lack of irrigation. We generally produce peanuts on Tifton sandy loam soil and are only approximately 35% irrigated. In 1998, tests were conducted at multiple sites in Worth County to evaluate methods of lowering production costs. The first test was established to determine if production costs could be lowered by utilizing a reduced tillage system. 'Georgia Green' and 'Georgia Bold' cultivars were compared under reduced (strip) and conventional tillage. Herbicide trials involving Sonalan, Strongarm, Starfire, Basagran, Storm, Cadre, and 2,4-DB were conducted at another site. A dryland fungicide test comparing Bravo and Terranil CU and an irrigated fungicide test comparing Bravo, Tilt/Bravo, Folicur, Abound and Moncut were conducted to determine the most cost-effective fungicide program. All plots were planted between May 4 and May 9. When averaged over both cultivars, the strip-till plots yielded 3573 lbs/A and the conventional tillage plots yielded 3258 lbs/A. Georgia Green yielded 3427 lbs/A compared to 3089 lbs/A for Georgia Bold under conventional till. In the strip-till plots, Georgia Green yielded 3682 lbs/A while Georgia Bold yielded 3463 lbs/A. The most economical weed control was achieved with a half rate of Strongarm followed by an early post treatment of Starfire, Storm, and 2,4-DB at the labeled rates. The best fungicide in a high-yielding, irrigated situation was Folicur, except where Rhizoctonia limb rot was a problem and Abound provided the best control. In the reduced-yield, dryland situation, peanuts treated with Terranil CU at the 2 pt/A rate graded better than the Bravo-treated peanuts, but the yield difference was minimal.

Cost Effectiveness of Pest Management Strategies in Peanut. R. L. BRANDENBURG, D.L. JORDAN*, J.E. BAILEY, B.M. ROYALS, P.D. JOHNSON, and V.L. CURTIS. Departments of Crop Science, Entomology, and Plant Pathology, North Carolina State University, Raleigh, NC 27695-7620.

Eight experiments were conducted in 1997 and 1998 to evaluate pest control, pod yield, gross value, and economic return with preventive and IPM-based disease, insect, and weed management strategies. Preventive strategies included prophylactic applications of herbicides, fungicides, fumigant, and insecticides. IPM strategies involved host-plant resistance, economic thresholds, and other reactive practices to manage pests. Preventive and IPM weed management strategies provided similar economic return in seven of eight experiments. Early leafspot (*Cercospora arachidicola*) control was similar when fungicides were applied biweekly or based on weather advisories. However, scheduling fungicide sprays using weather-based advisories eliminated two to three fungicide applications per year. Biweekly applications of fungicide increased damage from twospotted spider mite (*Tetrancychus urticae*) in one experiment compared with applications using weather-based advisories. Fumigation for cylindrocladum black rot caused by *Cylindrocladium crotalarie* (Loos) Bell and Sobers with metam sodium was needed in one of three experiments where this disease was present. Resistance of the cultivar 'NC 12C' was not sufficient to prevent yield and economic loss at one location where damage exceeded threshold. Iprodione was applied preventatively for suppression of sclerotinia blight (*Sclerotinia minor*). However, disease developed in only one of four experiments were fungicide was applied. Aldicarb applied in-furrow and acephate applied postemergence based on damage thresholds controlled tobacco thrips (*Frankliniella fusca* Hinds) similarly in seven of eight experiments. In one experiment aldicarb was more effective than acephate. Failure to apply clorpyrifos for southern corn rootworm (*Diabrotica undecimpunctata* Howardi) control resulted in yield and economic loss in three experiments. Clorpyrifos controlled potato leafhopper [*Empoasca fabae* (Harris)] and prevented yield loss caused by this insect. Collectively, these data indicate the complexity of pest management in peanut and some of the weaknesses associated with current pest control practices. The importance of accurate identification of pests and detailed field histories was also demonstrated in these studies. Likewise, a thorough understanding of production practices and timely implementation of pest control tactics is critical for adequate plant protection.

Efficacy of At-Plant and Foliar Insecticides in West Texas Peanut. C.R. CRUMLEY* Texas Agricultural Extension Service, Seminole, Texas.

The use of acephate15G (5.5lbs/acre in-furrow at-plant), aldicarb15G (4.8 lbs/acre in-furrow at-plant), aldicarb 15G (7 lbs/acre in-furrow at-plant), phorate 20G (5 lbs/acre in-furrow at-plant) and acephate75S {12 oz/acre applied to the foliage at 23 days after cracking (DAC)} did not result in statistically significant yield differences when compared to control plots. No statistically significant grade differences (sound mature kernels + sound splits) were observed in the control plots when compared to the other insecticide treatments. Statistically significant differences were observed in thrips populations between phorate 20G and acephate 75S and the control in this test, however there were no levels of tomato spotted wilt virus (TSWV) present in any plots. All adult thrips sampled from blooms and terminals during the first 36 DAC of this study were identified as Frankiniella occidentalis or western flower thrips. No significant differences in plant populations were found in the treatments as compared to the control nor were differences noted in plant height or reflected in a significant yield loss. Therefore, these data suggest that the use of at-plant systemic and foliar applied insecticides resulted in little benefit for the crop.

The Peanut Extension Program in Southampton County, Virginia. W. C. ALEXANDER* and C. W. SWANN. Southampton County Cooperative Extension, Courtland, VA 23837-0010, Tidewater AREC, Suffolk, VA 23437-9588.

Southampton County, Virginia produces approximately 24,000 acres of peanuts annually which constitute a major source of income for this southeastern Virginia county. Virginia Cooperative Extension educational programs in Southampton County place a major emphasis on updating and training peanut producers and agribusiness personnel related to the peanut industry. Educational programs emphasize training in the latest technology and information pertaining to peanut production, marketing and environmental impacts of peanut production. Peanut educational programs include distribution of a biweekly newsletter to 513 peanut business personnel, a six-hour in-depth peanut conference, four local meetings emphasizing current research, budgets and market outlook, three commercial/private pesticide applicator training sessions and recognition of high yield producers (4000 pounds per acre or more) and the county yield champion. On-farm and in-field programs include applied research field trials in pest management, variety performance and maturity clinics, as well as on-farm visits for diagnosis of crop production problems. Crop production information and advisories concerning general crop production information, timely application of pesticides for disease and insect management and a harvest season frost advisory are provided through a telephone hot line service, local radio station broadcasts and local Internet web site.

Yield Response of Several Peanut Cultivars When Planted in Single and Twin Row Patterns During 1997-98 in Decatur County, GA. D. E. MCGRIFF* J. A. BALDWIN, and J. E. HUDGINS. Cooperative Extension Service and Crop and Soil Sciences Department, The University of Georgia, Decatur County and Tifton, Georgia. 31793.

Research was conducted in Georgia from 1990-96 comparing the response of runner type peanut cultivars in single and twin row patterns. There was a positive, yet non-significant yield response to twin row patterns in most trials. Decatur County, GA annually grows over 20,000 acres of peanuts on sandy textured soils of which 80% is irrigated. Very little data was available to show the effect of row patterns on peanuts in sandy textured soil. Additionally, several new peanut cultivars had not been evaluated when planted in twin row patterns. A split-plot design study was conducted during 1997 and 1998 with row pattens as main plots and peanut cultivars as sub-plots. Twin rows had a 639 lb/acre yield increase, 1.5% higher total sound mature kernels (TSMK); and 6.5% reduction in tomato spotted wilt virus (TSWV) compared to single rows over nine cultivars in 1997. In 1998, twin rows had a 335 lb/A yield increase, 1% higher TSMK; and 9% reduction in TSWV compared to single rows.

Results of a Successful Peanut Extension Program in Bertie County North Carolina. W.J. GRIFFIN*, D.L. JORDAN, J.E. BAILEY, T.G. ISLEIB, R.L. BRANDENBURG, J.F. SPEARS, and G.A. SULLIVAN, North Carolina Cooperative Extension Service, North Carolina State University, Raleigh, NC 27695-7620.

Delivering research-based information to peanut growers is critical for successful production and is a primary goal of the Cooperative Extension Service in North Carolina. A variety of services are provided to growers through meetings, field days, newsletters, production guides, and personal interaction. In Bertie County, the Cooperative Extension Service includes a diverse program which delivers a variety of services that are important to the local and state economy. Peanut irrigation scheduling, targeting fungicide sprays based on weather-based advisories, evaluating resistance of experimental germplasm and commercially available varieties, determining pod maturity in order to predict optimum digging dates, developing reduced tillage systems, and assisting research and extension specialists with on-farm tests are key components of extension efforts designed to positively impact peanut producers in Bertie County. Impact statements derived from these activities suggest that profits increased by approximately $300,000 by using heat units and the pod blaster to determine optimum maturity. Using weather-based advisories to target fungicide sprays saved producers approximately $338,000 by eliminating unnecessary sprays and increasing the precision of necessary sprays for Sclerotinia blight and leafspot control. Peanut irrigation scheduling helped growers increase yield and profit by an estimated $221,000. Yield and grade increases resulting from planting the variety NC 12C (moderate resistance to CBR) increased income by approximately $30,000. Educational programs implemented to help farmers adopt reduced-tillage practices have resulted in savings of approximately $20,000. A variety of on-farm tests also were conducted in Bertie County to evaluate fungicide seed treatments, new varieties, integrated pest management systems, and plant growth regulators. Results from these studies will be beneficial in developing Cooperative Extension Service recommendations.

In the Middle of the Field a Successful County Agent Peanut Program.

R.L. Petcher. County Agent, Coffee County Extension System,
New Brockton, AL 36351.

The foundation to a successful County Extension peanut program is to understand the growers, their work, challenges and struggles in today's agriculture. A good extension peanut program starts in the middle of the field, working closely with growers, peanut specialists, industry specialists gathering scientific information and transmitting what is needed as quickly as possible. Since 1989 in Coffee County, the extension sponsored program that helps determine when to dig peanuts for optimum maturity, has processed 3500 field samples resulting in over $3 million dollars of profit to local growers. A multitude of methods were used throughout this 10-year program to bring research to growers and promote a dynamic program. Eight hundred peanut educational articles were written for local newspapers. Several feature articles have been printed in national magazines. Five newsletters per year have been mailed to 135 growers. One hundred and twenty radio talks and 50 TV programs were conducted. Fifteen grower production meetings, 7 marketing meetings, 8 harvest clinics, 10 field tours, 20 peanut demonstrations and 10 live and learn luncheons have been conducted. Youth work includes a 4-H peanut club, a district 4-H peanut essay and a peanut fun day for the entire community. A " Thank God the Peanuts Are In Celebration" is held each year for the "Real McCoys" farmers age seventy and above. These are a few of the major ingredients that have made a successful peanut educational program in Coffee County Alabama.

PLANT PATHOLOGY III/MYCOTOXINS

Detecting Resistance of Peanut to *Sclerotium rolfsii* in Paired Plot Field Trials. F. M. Shokes* and D. W. Gorbet. Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437 and North Florida Research and Education Center, Marianna, FL 32446.

Southern stem rot caused by *Sclerotium rolfsii* is a major problem of peanut in the U.S. Cultivars and breeding lines were grown in paired, inoculated and uninoculated plots at the North Florida Research and Education Center, Marianna, FL for the past six years in an effort to determine yield losses to stem rot. Tests with commercial cultivars and breeding lines indicate that differential responses to stem rot are detectable using paired plots. However, year-to-year data is erratic and genotypes with known field resistance may appear susceptible. If inoculum levels are too high they may overwhelm the resistance. In 1998, 11 peanut genotypes were grown in paired, 2-row plots (6.1m rows on 0.91m centers). Genotypes included Florunner (susceptible check), Southern Runner (moderately resistant check), FL MDR 98, 84x9B-4-2-1-1-2-b2-B, 84x28-5-4-2-2-b3-B, and 86x45-10-1-2-2-2-b2-B. Previous experience with inoculum levels on Chipola sandy loam soils indicated that 60 ml (by volume) of inoculum per row was sufficient (30 ml of seed infested with a pretested virulent isolate, SR8, plus 30 ml of sterile dry oat seed). Inoculum was applied in the afternoon 63 days after planting. Plots were irrigated with 0.5 in. of water in the morning and on two mornings thereafter to provide favorable conditions for infection. Pod yields of inoculated plots were compared to those of uninoculated plots to determine percent yield loss. There were significant differences in stem rot incidence and severity between inoculated and uninoculated rows of all genotypes. Only FL MDR 98 had significantly lower ($P \leq 0.05$) stem rot incidence than Florunner but nine genotypes had significantly lower severity. There were also significant differences between the genotypes in the percent yield lost to stem rot and all genotypes had a lower percentage yield loss than the susceptible check. Percent yield losses varied from 6% - 29% in the resistant genotypes compared to 63% for the susceptible check. Some genotypes had high incidence and severity yet only a nominal yield loss to stem rot, indicating a possibility of tolerance. For example, Southern Runner had 70% incidence and 45% severity, yet only sustained a 13% yield loss to stem rot. Results indicated useful levels of resistance and/or tolerance in the genotypes tested using the paired plots.

Field Reaction of Selected Runner Peanut Genotypes to Southern Blight. [1] B. A. BESLER*, [2] H. A. MELOUK and [1] W. J. GRICHAR. [1] Texas Agric. Expt. Stn., Yoakum, TX 77995, and USDA-ARS, Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078.

Eight peanut genotypes (Florunner, Okrun, Georgia Greene, MDR-98, Southern Runner, TX901338-2, Tamrun 98 and Tamrun 96) were replicated 4 times in a randomized complete block design at the Texas Agricultural Experiment Station at Yoakum in 1997 and 1998. Each plot consisted of two 8-m rows spaced at 0.91 m. Sclerotial density of *Sclerotium rolfsii* was about 3/225 g of soil (Tremona loamy fine sand) for both years. Disease loci were counted following inversion of plots. There was no year by genotype interaction for disease. A significant ($p=0.05$) rank correlation coefficient of 0.81 was obtained for disease incidence of Southern blight between 1997 and 1998. The average incidence of Southern blight over the two years for Okrun, Florunner, Tamrun 98, Georgia Greene, Southern Runner, Tamrun 96, MDR-98 and TX901338-2 was 20.6, 16.6, 16.0, 15.5, 13.5, 13.1, 10.6, and 10.5, respectively with a $LSD_{0.05}$ of 3.5. Yield was taken in 1997, but not in 1998 due to excessive rainfall (50 cm) after digging which ruined all plots. The genotype TX901338-2 yielded higher than all other genotypes followed closely by Tamrun 96. Both Okrun and Florunner were the lowest yielding genotypes.

Screening Peanut Genotypes for Resistance to *Sclerotinia minor* and *Cylindrocladium parasiticum* and Testing the Efficacy of Experimental Compounds for the Management of Sclerotinia Blight.

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Recent breeding efforts have developed a rich genetic resource for disease resistance. Genotypes were screened in the field in 1997 and 1998 for resistance to *Sclerotinia minor* and *Cylindrocladium parasiticum*. Experimental design for all experiments was a RCBD with three or four repetitions. Plots consisted of two rows totaling 15 m in length, spaced 0.91 m apart. Three advanced breeding lines exhibited moderate to high resistance to *S. minor* and of these, two had moderate resistance to *C. parasiticum*. Five wild derived lines were moderately to highly resistant to *S. minor* and also contain resistance to the foliar pathogens *Cercospora arachidicola* and *Cercosporidium personatum*. The systemic inducer actigard (0.14 kg ai/ha) failed to suppress *S. minor* and had no affect on plant growth or yield. Fluazinam (0.58 kg ai/ha) suppressed *S. minor* and increased yields and economic values. Fluazinam was further investigated at three rates (0.29, 0.58, and 1.16 kg ai/ha) on genotypes varying in resistance levels. No distinctions could be made between the three rates and their efficacy in suppressing *S. minor*. No adjustments could be made in fungicide rates to account for host resistance.

A Comparison of the Suppression of Aflatoxin Production in Liquid Cultures of *Aspergillus flavus* NRRL 5520 by *Fusarium moniliforme*, *Aspergillus niger*, *Rhizopus* and a Low Aflatoxin Producing *Aspergillus flavus* strain.

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The production of aflatoxins in liquid cultures by *Aspergillus flavus* NRRL 5520 in the presence of *Fusarium moniliforme*, *Aspergillus niger*, *Rhizopus* and a low aflatoxin producing *A. flavus* strain NRRL 5565 were compared. *A. flavus* NRRL 5520 was inoculated one, two, three and four days after inoculation with the test fungi. Flasks were incubated at 30°C and aflatoxin analysis was carried out every 24 hours for six days and then left for fourteen days before the final analysis. Three milliliter aliquots of culture medium were used for aflatoxin analysis each day after filtration. Aflatoxin analysis was carried out using the Vicam fluorometer with aflatest P columns. All test fungi showed the ability to initially suppress aflatoxin production by *A. flavus* NRRL 5520, however, only *A. niger* sustained this ability for the period tested. After 14 days, the ability to suppress aflatoxin production by *F. moniliforme*, *Rhizopus* and a low aflatoxin producing *A. flavus* strain NRRL 5565, was either completely lost or decreased. These results show that the inhibitory effect of certain microorganisms on aflatoxin production by *A. flavus* may be simply a delay (temporary) or may be long term suppression. Understanding these different interactions is valuable in biocontrol studies.

Market System Model to Predict the Effects of Regulatory and Processing Practices on the Removal of Aflatoxin from Peanuts.

T.B. WHITAKER* and F.G. GIESBRECHT. USDA, ARS, Raleigh, NC 27695-7625 and Department of Statistics, North Carolina State University, Raleigh, NC 27695-8203.

A spreadsheet model was developed to predict the effects of USDA aflatoxin regulations and peanut industry processing methods on the reduction of aflatoxin in peanuts marketed in the US. The model calculates the distribution of lots according to their aflatoxin concentration after each major regulatory and processing stage in the market system from the buying point to the manufacturer. The model can provide both USDA and the peanut industry with a method to compare and evaluate proposed new regulations and processing methods without actual costly implementation. Model development also indicates what information is readily known and not known about the effects of various processing methods on aflatoxin reduction in peanuts. The model is used to evaluate the peanut market system where farmers' stock peanuts are chemically tested for aflatoxin.

Evaluation of *Aspergillus oryzae* and *A. sojae* as Potential Biological Control Agents for Preharvest Aflatoxin Contamination of Peanuts. J. W. DORNER*, R. J. COLE, B. W. HORN, and P. D. BLANKENSHIP. USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742.

Studies were conducted in the Environmental Control Plot Facility at the NPRL to determine the potential of strains of *Aspergillus oryzae* and *A. sojae* as biological control agents against preharvest aflatoxin contamination of peanuts. Strains included one isolate each of *A. oryzae* and *A. sojae* from Japan that are used in food fermentations and an isolate of each species from the ARS Culture Collection (*A. oryzae* NRRL 552; *A. sojae* NRRL 5595). Also included in the biocontrol experiment were nontoxigenic strains of *A. flavus* and *A. parasiticus* previously shown to be effective as biocontrol agents. Fungi were cultured on rice for use as soil inoculum. Florunner peanuts in eight replicated plots (3 rows of 3 m) were inoculated with the Japanese strains, the ARS Culture Collections strains, or the *A. flavus/parasiticus* combination at 59 days after planting. Peanuts were subjected to late-season drought conditions to encourage development of aflatoxin contamination. Treatment with the combination of *A. oryzae* NRRL 552 and *A. sojae* NRRL 5595 produced a 77.2% reduction in aflatoxin contamination of edible category peanuts compared with uninoculated controls. This is compared with a 61.6% reduction achieved with the nontoxigenic *A. flavus* and *A. parasiticus* combination. However, treatment with the Japanese strains resulted in a reduction of only 10.9%. The use of *A. oryzae* and *A. sojae* as biocontrol agents against aflatoxin contamination is potentially important because these species are generally recognized as safe, are already used in the food industry, and might pose less risk to humans than the nontoxigenic strains of *A. flavus* and *A. parasiticus*.

Effect of Peanut Cultivation on Soil Populations of *Aspergillus flavus* and *A. parasiticus*. B. W. HORN*, R. L. GREENE and J. W. DORNER. National Peanut Research Laboratory, ARS, USDA, Dawson, GA 31742.

Soil populations of aflatoxin-producing *Aspergillus flavus* and *A. parasiticus* were examined from fields in four major peanut-growing regions of the United States: western Texas, central Texas, Georgia/Alabama, and Virginia/North Carolina. *A. parasiticus* was prevalent in regions with intensive peanut cultivation and was uncommon in regions where crops other than peanuts are cultivated. Georgia/Alabama had the highest soil densities of *A. flavus* (257 CFU/g) and *A. parasiticus* (304 CFU/g), and western Texas had the lowest densities of *A. flavus* (7 CFU/g) and *A. parasiticus* (1 CFU/g). Isolates of *A. flavus* were grown in liquid culture to detect regional differences in aflatoxin production. Georgia/Alabama had the most toxigenic isolates of *A. flavus*, with 92% of the isolates producing >10 μg/ml aflatoxin B_1, compared to Virginia/North Carolina where only 47% produced >10 μg/ml. It is postulated that the frequency of drought, a condition conducive to infection of peanuts by *A. flavus* and *A. parasiticus*, is responsible for soil population differences among peanut-growing regions.

PHYSIOLOGY AND SEED TECHNOLOGY/ PROCESSING AND UTILIZATION

Effects of Elevated Carbon Dioxide and Temperature on Growth and Yield of Peanut. K. J. BOOTE* and L. H. ALLEN, JR. Agronomy Department, University of Florida, Gainesville, FL. 32611-0500.

Projections of future global climate change associated with "greenhouse effect" gases include a doubling of current atmospheric carbon dioxide levels and increases of 2 to 4 C in air temperature. Therefore, studies were conducted to evaluate effects of doubled CO_2 and elevated temperature on peanut growth, partitioning, and pod yield. Experiments were conducted over three seasons on Florunner peanut sown in four temperature-gradient greenhouses controlled to near-ambient temperature and at +4.5 C above ambient temperature at either ambient or doubled (700 vpm) CO_2. There were four replications per treatment. Sufficient plants were sown to allow growth sampling only during the first 6 weeks (vegetative growth phase). Thereafter, the plant density remained constant to maturity, at 10 plants equally-spaced in each 2-m long (1-m wide) plot. Doubling the CO_2 concentration had the expected beneficial effect, increasing pod yield by 43% (average over three seasons), and increasing total biomass by 37%. It increased main stem node number by 2.5 nodes. These effects were attributed to increased leaf photosynthesis. By contrast, the 4.5 C elevation in temperature above ambient, caused lower pod yield (60% of ambient), with minor effects on total biomass accumulation (91% of ambient). The temperature effect appeared to shift biomass away from the pods and toward vegetation as shown by the decrease in pod harvest index (0.48 to 0.31) and increase in final main stem node number (from 30.5 to 35.4). The +4.5 C temperature decreased shelling percentage, seed size, weight per pod, percent extra large kernels, and number of pods per plant. Main effects were consistent in the three seasons and there was a beneficial interaction of elevated CO_2 at the high temperature in one year. Elevated temperature (above Florida ambient) did not accelerate the life cycle; rather, pod setting events after flowering were actually delayed in one year and the rate of pod addition appeared to be slower. This suggests high temperature effects on reproductive fertilization because flowering was normal and rapid.

Evaluation of the CROPGRO-Peanut Growth Model in the Guinea Savanna Zone of Ghana. J.B. NAAB, P. SINGH*, K.J. BOOTE and J.W. JONES. Savanna Agric. Res. Inst., Ghana; ICRISAT, India; Agronomy Dept. and Agric. & Biol. Engr. Dept., Univ. of Florida, Gainesville, FL. 32611-0500.

Field experiments were conducted over two seasons to collect data to adapt and evaluate the capability of the CROPGRO-peanut growth model to simulate peanut phenology, growth and soil water balance in the Guinea Savanna zone of Ghana. Two peanut cultivars of different duration (Chinese, 90 days, and F-Mix, 120 days) were grown under rainfed conditions, using three and four planting dates in 1997 and 1998, respectively. Treatments were replicated four times. Measurements were made of crop phenology, in-season dry matter accumulation, final pod yield, and soil water changes using a neutron moisture meter. The model simulated phenology accurately but initially overpredicted growth and pod yield. Therefore, we calibrated the fertility factor to account for somewhat lower dry matter growth, and also entered leaf loss estimates to account for losses caused by late leafspot. After considering these two factors, model predictions of growth were improved. The model simulated soil water balance fairly accurately, after adjusting the water-holding and drainage traits for the soil. Predictions of growth, yield, and water balance will be presented and yield gap losses from fertility, leafspot disease, stand loss, and water deficit will be estimated. Once calibrated and tested with site-specific data sets such as these, the ultimate goal is to use the peanut growth model to evaluate long-term weather risks for peanut production in this region, to include effects of year-to-year variability, effects of planting date, effects of crop management, and gains possible with genetic improvement.

trans-Resveratrol Cotent in Commercial Peanuts and Peanut Products. V.S. SOBOLEV* and R.J. COLE. National Peanut Research Laboratory, Agricultural Research Service, U.S. Department of Agriculture, 1011 Forrester Drive, Dawson, Georgia, 31742.

trans- Resveratrol (*trans*-3,5,4'-trihydroxystilbene; resveratrol) is one of the major stilbene phytoalexins produced by the peanut plant (*Arachis hypogaea L.*) as a defense response to a fungal challenge. Resveratrol has been shown to possess cancer chemopreventive activity in mice and to act as an antioxidant and antimutagen. It is also associated with reduced risk of cardiovascular disease by inhibiting or altering platelet aggregation and coagulation, or modulating lipoprotein metabolism. Resveratrol has been found in wines at 0.031 - 7.17 ppm level. However, a detailed analysis for the resveratrol content in peanuts has not been reported. The purpose of this work was to conduct an in-depth chemical analysis of the resveratrol content in peanuts and various peanut products commercially available in the U.S. A modified high-performance liquid chromatographic (HPLC) method for determination of resveratrol in peanuts and peanut products has been developed. Resveratrol was extracted with acetonitrile-water (90+10, v/v) by blending with diatomaceous earth at high speed followed by purification of an aliquot of the extract on a minicolumn packed with Al_2O_3-ODS (C_{18}) mixture. The column was eluted with acetonitrile-water (90+10, v/v), eluate was evaporated under nitrogen, and residue was dissolved in HPLC mobile phase. Resveratrol was quantitated by HPLC on silica gel with n-hexane-2-propanol-water-acetonitrile-acetic acid (1050+ 270+17+5+1, v/v) as a mobile phase. The recovery of resveratrol at 0.05, 0.50, 5.00, and 10.00 µg/g was 98.95 ± 17.79%, 117.23 ± 8.87, 100.10 ± 2.49, and 100.45 ± 1.51%, respectively. The quantitation limit of resveratrol in fresh peanuts was about 0.01 µg/g. Roasted peanuts had the lowest content of resveratrol of 0.055 ± 0.023 µg/g (n=21), while in peanut butter its concentration was significantly higher -- 0.324 ± 0.129 µg/g (n=46), and boiled peanuts had the highest level of 5.138 ± 2.849 µg/g (n=12). Resveratrol content in commercial peanut products was similar to the resveratrol content of the raw peanut fractions routinely used for making them.

Resveratrol Variability in Edible Peanuts. T.H. SANDERS* and W.D. BRANCH. USDA, ARS, Market Quality and Handling Research Unit, Raleigh, NC 27695-7624 and Dept. of Crop and Soil Science, University of Georgia, Coastal Plain Expt. Station, Tifton, GA 31793-0748.

Trans-resveratrol (3,5,4' trihydroxystilbene) has been identified as a constituent of edible peanuts. Concentrations of this phytoalexin increase greatly in peanuts which have been invaded by fungi. This study was conducted to examine differences in the relatively low concentrations of resveratrol that may be related to variety and stress during production. A total of fifteen genotypes were obtained from several locations. Blanched sound mature kernels (SMK) were extracted with 80 percent ethanol and purified through columns containing a 1:1 mix of basic alumina and silica gel RP18 before analysis by HPLC. Concentrations were generally below 0.2 µg/g fresh weight (FW); however, Small White Spanish contained 1.47 µg/g FW and Early Bunch contained 0.8 µg/g FW. Peanuts obtained from plants that were grown under leaf spot stress and controls that were sprayed regularly were analyzed for resveratrol. All nine genotypes in the leaf spot stress had resveratrol concentrations <0.25 µg/g FW. In the sprayed control, three genotypes contained 0.6-0.9 µg/g FW and one genotype contained 3.1 µg/g FW. These data suggest a possible relationship between above-ground plant structures and resveratrol concentration in peanuts. Treatment of grapevines with antifungal agents has resulted in enhanced *trans*-resveratrol synthesis.

The Effect of Processing on The Allergenicity of Peanuts S.J. MALEKI*, S.Y. CHUNG, E.T. CHAMPAGNE. USDA-ARS, Southern Regional Research Center, 1100 Robert E. Lee Blvd., New Orleans, LA 70124.

Peanuts are an important source of protein for both humans and animals. In the past decade there has been an increase in allergic reactions to peanut proteins, often resulting in fatalities. Current trends in peanut allergy research involve the study of the immune response to peanut allergens and the development of vaccines and immunotherapies. Little or no research has been done to test the influence of processing events utilized from the time of harvest to the time of consumption on the allergenicity of peanut proteins. Our data indicate that curing and roasting not only affect the structural characteristics of the major peanut allergens, but also result in the induction of other allergens that remain undetected in raw peanuts. Peanut proteins were shown to interact with various naturally occurring sugars to form larger complexes and become more resistant to heat treatment and digestive enzymes. The structural modifications observed resulted in an increase of allergenicity in the major peanut allergens, Ara h 1 and Ara h 2, as well as in whole peanut extracts. Collectively, these studies demonstrate that current processing events may be important in the allergenicity of peanuts. These findings may also influence the development of processing methods to reduce or even eliminate the allergenicity of peanut products. A decrease in allergenic properties could reduce the chances of original sensitization of infants and children to peanuts, which in turn will result in a decrease in the development of new peanut allergy cases. Reduced allergenicity of peanuts may also decrease the severity of the reactions that peanut allergic individuals have to peanut containing products.

Peanut Allergenicity Could Be Enhanced by Biochemical Reactions Occurring During Peanut Roasting. S.Y. CHUNG*, S.J. MALEKI, E.T. CHAMPAGNE. USDA-ARS, Southern Regional Research Center, 1100 Robert E. Lee Blvd., New Orleans, LA 70124.

It is known that peanut allergy is caused by peanut proteins or allergens. Several of these proteins have been identified and characterized from raw peanuts. However, little is known about the nature of these proteins from roasted peanuts. During roasting, a number of biochemical reactions occur which could lead to the modification of proteins or allergens, causing a change in their allergenicity. Our objective was to determine if the various biochemical reactions or their products alter the allergenicity of proteins. For this purpose, various model reactions which were thought to occur during roasting were established. These included the reactions of an allergenic or non-allergenic protein with each of the following peanut components: (1) reducing sugars; (2) by-products formed due to heating; (3) fatty acids; (4) lipid oxidation products; and (5) polyamines. Allergenicity was determined in competitive and immunoblot assays, using a pooled serum from patients allergic to peanuts. Results showed that allergenicity was enhanced due to the above reactions, and that the degree of enhancement was dependent on the type of reactions involved. The finding suggests that roasting could potentially enhance the allergenicity of a protein or allergen.

Effects of Extrusion Temperature and Feed Moisture Content on Peanut Flour Extrudates. M.J. HINDS*, School of Agriculture, North Carolina A&T State University, Greensboro, NC 27411, and R.D. PHILLIPS, Department of Food Science and Technology, The University of Georgia, Griffin, GA 30223.

Compared to other flours, peanut flour exhibits poor puffing characteristics. However, this property shows potential for peanut flour to be utilized as a texturing agent in food applications. Response Surface Methodology was used to investigate the effects of extruder barrel temperature (150, 170, and 190 C) and feed moisture content (22, 28, and 34%) on textural properties of extrudates from partially defatted (11.9%) peanut flour. A pilot plant scale extruder fitted with a single screw (5:1 compression ratio, operating at 135 rpm) and a 2mm (i.d.) cylindrical die was used. The diameters of the peanut extrudates were used as an indicator of expansion ratio. Textural properties (in terms of shear force) of dry (freshly-extruded) and rehydrated extrudates were evaluated using an Instron Universal Testing Machine (Model 1122) fitted with a Kramer cell. Strengths of the dry and rehydrated extrudates generally peaked when feed moisture content was 28%. Barrel temperature did not influence strength of the dry extrudates, but significantly ($p<0.05$) affected strength of the rehydrated ones. Increasing temperature from 150C to 190C increased the required shear force (for the rehydrated extrudates) from 3kg to 9kg. Barrel temperature did not affect expansion ratio. Diameters of freshly-extruded samples decreased from 3.2mm to 2.5mm as feed moisture content was increased from 22% to 34%. Results suggest that barrel temperatures of 170-190C and feed moisture content near 28% may be appropriate to produce textured peanut extrudates for incorporation into wet or dry food systems. Further experimentation is required for confirmation.

PRODUCTION TECHNOLOGY I

Prediction of Fruit Initiation for Commercial Peanut Cultivars. J.I. DAVIDSON*, W. GRIFFIN, J. FARRIS, M. SCHUBERT, AND C.L. BUTTS. National Peanut Research Laboratory, Dawson, GA 31742, Bertie County Extension Office, Windsor, NC 27983, Texas A&M University, Lubbock, TX 79401.

Accurate estimates of fruit initiation (FI) dates are needed to allow precise timing of production practices, such as irrigation, fertilization, and pest control. This study was conducted to provide FI data for commercial varieties commonly grown in the SE, SW, and VC peanut production areas and to develop practical methods for predicting FI dates in future years. FI data was obtained during CY 1995-1998 in Georgia for Andru 93, AT 108, AT 120, ViruGard, Georgia Green, Georgia Bold, GK-7, Flavor Runner, Georgia Runner, SunOleic, MDR, and Southern Runner. Similarly, during the same crop years in North Carolina, FI data was obtained for peanut varieties: NC 7, NC-V 11, VA 92R, NC 9, NC 10, NC 12, and VC-1. FI data was also obtained during these crop years in Dawson County, Texas for AT 120, NC 7, Florunner, and Tamrun 88. Five practical methods for predicting FI dates were developed and evaluated using the database. A method using FI dates for early and late plantings appeared to be the best practical method for the SE production area. A method using regression equations of planting date versus FI dates performed best for the SW production area while a heat unit method performed best for the VC production area. A statistical model using state, variety, planting date, and heat units performed well for all three production areas. This model should be especially useful for estimating FI dates of new varieties. Using standard coefficients and average constants this model reduces to:

$Y = C - 0.436P$ where Y = Fruit Initiation date in days after planting for new medium maturing variety, C = 96.5, 107, and 113 for Georgia, North Carolina and West Texas, respectively, and P = planting date in day of year (Julian).

Poultry Litter Effects on Yield and Grade of Runner Peanut.
J.F ADAMS* and D.L. HARTZOG, Auburn Univ.

The increase in poultry production has resulted in large amounts of litter being applied on agricultural land. Traditionally peanuts have not had litter applications since nitrogen is not recommended. Nine on-farm poultry litter experiments were initiated during 1993 and 1998 to determine the effect of litter applied to peanut. Rates of litter were 2 to 4 ton/acre. The litter treatments in all experiments were compared to an equal amount of NPK from commercial fertilizer. The poultry litter treatment had a higher yield than the "check" in seven of nine experiments and was higher than the commercial fertilizer in three experiments. Yield was not reduced in any experiment. Percent of sound mature kernel was reduced in only one experiment. Little work has been done to elucidate the beneficial effects of poultry litter on peanut.

Broiler Litter, Starter Fertilizer, and Fungicide Applications to Peanut in a Strip-Tilled, Intensive Crop Rotation. G. J. GASCHO*, T. B. BRENNEMAN, and G. H. HARRIS. Departments of Crop and Soil Sciences and Plant Pathology, University of Georgia, Tifton, GA 31793-0748.

A double-cropped, irrigated, conservation-tilled, three-year rotation was initiated at the Coastal Plain Experiment Station in Tifton, Georgia in 1996 and continues in order to determine the value of broiler litter application, fertilization needed to balance nutrition supplied as broiler litter. For peanut, a fungicide (flutolanil) application was also evaluated. Cotton, peanut, and pearl millet for grain are planted in the summer. Wheat and canola are planted in the winter. Following cotton and before peanut the plots are fallowed. All summer and all winter crops are grown each year. The plots are arranged in split-plots with broiler litter rates of 0, 4.48, 8.96, and 13.44 Mg/ha before each crop as the main plots and fertilizer and/or fungicide applications as the split plots. High rates of broiler litter are rapidly increasing soil test P, signaling potential environmental problems in the future. Any litter application was detrimental to peanut yield, grade, and value. Value of peanuts, when only 4.48 Mg litter/ha was applied was $273/ha/year less than when no litter was applied. There was no response to either 10-34-0 or 12-22-5 (S) starter fertilizer applied at 37.8 L/ha 5 cm deep and 5 cm to the side of the peanut seed, regardless of the litter rate. Peanut responded only to flutolanil in all three years of this rotation. At the suggested rate of broiler litter (none), two applications of 1.12 kg AI flutolanil increased value of peanuts by $743 /ha/year.

Pod Yield and Peanut Quality With Subsurface Drip Irrigation. R. B. SORENSEN* and F. S. WRIGHT. USDA-ARS-National Peanut Research Laboratory, 1011 Forrester Dr. SE, Dawson, GA 31742

Subsurface drip irrigation (SDI) has been used successfully on a variety of vegetable and row crops. Information on pod yield or kernel quality with SDI on peanut (*Arachis hypogaea*) is limited. A long term project was initiated to determine yield and quality of peanut irrigated with subsurface drip irrigation. SDI systems were installed in 1997 and 1998 at two separate locations. Site 1 was established on a Faceville sandy loam soil (clayey, kaolinitic, thermic, Typic Paleudault) where the crop was native pasture. Site 2 was on a Tifton loamy sand soil (Fine-loamy, siliceous, thermic Plinthic Paleudult) where cotton had been planted the previous two years. The SDI system includes two lateral spacings (0.91 and 1.83 m apart at 0.3 m below and parallel to the crop row), two emitter spacings (46 and 61 cm), three irrigation levels (two levels in 1997 and three in 1998), and a nonirrigated control. Irrigation water was applied daily based on estimated ET_a where water level one (WL1) was ET_p*Kc, and WL2 and WL3 were 0.75 and 0.5 times WL1. Site 1 showed no significant yield or kernel grade differences between drip tube spacing, emitter spacing or water level. SDI plots had significantly higher pod yield (5157 kg/ha) than the dryland plots (3827 kg/ha). SDI plots had more jumbo kernels (10.7%) than the dryland plots (7.7%). Site 2 showed no significant yield or kernel grade differences between drip tube spacing and water level. However, SDI plots had higher pod yield (56831 kg/ha) than the dryland plots (4048 kg/ha). SDI kernel grade had better return of jumbos (20.3%), mediums (39.5%), and ones (5.7%) than the dryland plots (11.2%, 44.7%, and 8.1%, respectively). Overall, SDI irrigated plots had higher yields and better quality than the nonirrigated plots.

A Windows 95/98® Application to Calculate Sprinkler System Operation and Ownership Costs. D.A. STERNITZKE*, M.C. LAMB, J.I. DAVIDSON, JR. and S.D. STERNITZKE. USDA-ARS-National Peanut Research Laboratory, Dawson, GA 31742; Dept. of Agricultural Economics and Rural Sociology, Auburn University, Auburn, AL 36849; Software Contractor, San Antonio, TX.

Costs associated with owning and operating a center pivot, cable-tow, or hose pull sprinkler system may exceed the financial benefits of higher yield and grade from irrigation. Determining the profitability of an existing or proposed system requires an accurate knowledge of those costs. Factors including equipment capital cost and useful life, depreciation, interest on investment, taxes, salvage value, fuel, lubrication, repairs, labor, and maintenance must be included in a precise cost analysis but are tedious to calculate. With so many factors and calculations involved, accurate cost estimates have been difficult for producers to determine. Fortunately the USDA/ARS National Peanut Research Laboratory has developed a Windows 95/98® application that includes all these factors and eliminates the computational workload. Armed with farm-specific information, a personal computer, and this program a producer can instantly calculate sprinkler system annual cost. Producers considering a sprinkler system investment will find the program particularly helpful.

Soil pH After Eleven Years of Subsurface Mircroirrigated Corn and Peanut. N. L. POWELL* and F. S. WRIGHT. Virginia Tech, Suffolk, VA and USDA-ARS, Dawson, GA.

Subsurface microirrigation is proving to become an important production practice for agronomic row crop irrigation in the southeast United States. A study was conducted to determine the feasibility of using subsurface microirrigation for a corn (*Zea mays L.*) grain and peanut pod (*Arachis hypogaea L.*) production rotation system in the Atlantic Coastal Plain region of the southeast United States. The effects of added fertilizer nutrients, chlorine, and amount of water applied to the soil through a permanently installed buried microirrigation system on soil pH after eleven years were investigated. The soils were an Uchee loamy sand (loamy, siliceous, thermic Arenic Hapludults) and Emporia fine sandy loam (Fine-loam, siliceous, thermic Typic Hapludults). Soil samples were taken for pH determinations at 15.2 cm intervals to a depth of 121.9 cm from the soil profile around the buried tubing within the research area. The soil samples were taken to the vertical depth indicated previously at 15.2 cm intervals perpendicular to the buried tubing. The sampling was initiated at a position over the tubing and extended up to 137.2 cm from the tubing depending upon the irrigation treatment. The value of the soil pH changed for the irrigated treatments when compared to the non-irrigated treatment. The initial soil pH's in the soil profile from 8 to 10 cm below the soil surface to 65 to 70 cm below the soil surface were 6.1 to 6.8 in the nonirrigated treatment. For the irrigated treatments the soil pH around the tubing buried 38 cm below the soil surface was as low as 4.2. Nitrogen added to the soil through the irrigation system included the ammonium, nitrates, and urea forms. The ammonium and urea have an acidifying effect on the soil while the nitrate has an alkaline effect on soil pH. Application of fertilizers through a subsurface microirrigation system should be done with caution.

Influence of Irrigation Water Quality and Quantity on Peanut Production in the Texas High Plains. R.G. LEMON* and M.L. McFARLAND, Texas Agricultural Extension Service, College Station, TX, 77843-2474, and J.C. TUGGLE, R.J. HENNING and C. DANHEIM, DeLeon Peanut Company, Lamesa, TX, 79331.

The Southern High Plains of Texas has experienced a significant influx of peanut acreage over the past three years. Much of this increased acreage and interest in peanut production has been associated with the cross-county transfer and cropping flexibility provisions of the 1996 Farm Bill and low cotton price. In 1998, more than 190,000 acres of peanut were planted in the area, comprising about 18 counties. Because of the dependence on irrigation in the region, water quantity and quality are a constant concern. Texas experienced a severe drought in 1998 and many producers encountered moderate to severe problems with well capacities and water quality. A study was implemented in 1998 to assess the influence of water quantity and quality on peanut yield and grade. Soil and water samples were obtained from 36 fields in Dawson and Terry counties at the beginning and end of the season. Samples were analyzed at the Texas Agricultural Extension Service Soil, Water and Forage Testing Laboratory in College Station. NC-7 was the variety at all locations. Yields and grades were obtained from each site and a production database is being developed as a means of better understanding water quality/quantity and production relationships. Regression analyses indicated boron in irrigation water and the soil sodium adsorption ratio (SAR) were negatively correlated with yield. Boron levels greater than 0.75 ppm and a SAR greater than 5 caused appreciable yield reduction. Peanut quality also was assessed and chlorides and water salinity both correlated with reduced grades. Chloride levels in irrigation water above about 450 ppm significantly reduced grades as did salinity values above about 2100 umhos/cm. Well capacity also was categorized and data indicated that for optimum peanut yield (yield goal of 5,000 lbs./acre), wells must have the capacity of about 4.5 to 5.0 gallons/minute/acre.

Control of Twospotted Spider Mite and Yield Impact in Virginia Peanut. D. A. HERBERT, JR.*[1], G. F. CHAPPELL, III[2], and M. J. PARRISH[3]. [1]Tidewater Agricultural Research and Extension Center, VPI&SU, Suffolk, VA 23437; VCE, [2]Prince George, VA 23875; [3]Dinwiddie, VA 23841.

Two field tests (I & II) were conducted to evaluate efficacy against twospotted spider mite, *Tetranychus urticae* Koch, and impact on peanut yield. Comite 6.55 (propargite) was applied at 1.84 kg (AI)/ha. Danitol 2.4EC (fenpropathrin) was applied at 0.24 or 0.34 kg (AI)/ha. An experimental ovicide, V-1283 3SC (Valent U.S.A. Corp.), was applied at 0.05 kg (AI)/ha, alone or tank mixed with Danitol. Treatments were applied either once, or once and repeated in 5 days using a CO_2 pressurized backpack sprayer. A 4-replicate RCB experimental design was used with plots 4 rows by 9.1 m long. A 10X hand lens was used to count live mites in a 2.0-cm diam area on 2 randomly selected leaflets per plot. Cumulative mite-days (CMD) were calculated for each treatment over the entire test period using $\sum(X_{i+1} - X_i)\,[(Y_i + Y_{i+1})/2]$, where X_i and X_{i+1} are adjacent sample dates and Y_i and Y_{i+1} are corresponding points of mean mite number per leaflet. Yield was determined from the 2 center rows of each plot. In Test I, all treatments provided significant reductions in mite numbers for about 14 days after the first application. By 14 days, control with the single application of Danitol at 0.24 kg (AI)/ha was not different from the untreated control. All treatments, except Comite applied one time, provided significantly higher yields compared with the untreated control. Yields were generally higher with double applications compared with single applications, or applications where Danitol was tank-mixed with V-1283. Overall, yields were increased from 924 kg/ha (Danitol applied once at 0.24 kg (AI)/ha) to 1,712 kg/ha (Danitol at 0.24 kg (AI)/ha + V-1283 applied once). In Test II, all treatments provided significant reductions in mite numbers for about 13 days. In general, Comite applied either once or twice, or Danitol applied twice at 0.34 kg (AI)/ha provided better mite control compared with other treatments. Overall, yields were low in Test II due to extreme drought conditions during most of the season. However, all treatments provided numerically higher yields compared with the untreated control and ranged from 206 kg/ha (Danitol applied once at 0.24 kg/ha) to 432 kg/ha (Danitol applied twice at 0.34 kg (AI)/ha). Only the latter provided a significant yield increase compared with the untreated control.

Discrete and Interactive Effects of Cultivar, Plant Population, and In-furrow Insecticide on Final Intensity of Spotted Wilt Disease, and Yield of Peanut at two locations in Georgia and Florida. J.W. TODD*, A.K. CULBREATH, D.W. GORBET, J.A. BALDWIN, S.L. BROWN, W.D. BRANCH, and S.M. FLETCHER. Departments of Entomology, Plant Pathology, Crop and Soil Sciences, Agricultural and Applied Economics, University of Georgia, Tifton and Griffin, GA; Department of Crop and Soil Sciences , IFAS, University of Florida, Marianna, FL.

Final intensities of tomato spotted wilt tospovirus (TSWV) epidemics were evaluated in five peanut cultivars and one advanced breeding line in relation to plant populations and in-furrow insecticide at Tifton, GA and Marianna, FL in 1998. At Tifton, percent of row-ft severely affected for the six entries averaged across plant populations and with or without Thimet® insecticide was significantly lower with 'Georgia Green', 'Virugard', 'FLMDR-98', and FL 84x9b than with 'GK-7', and 'Georgia Bold'. Only 'FL 84x9b' was significantly lower than 'Georgia Green', 'Virugard' and 'FLMDR-98'. At Marianna, percent of row-ft severely affected for the six entries averaged across plant populations and with and without Thimet® insecticide, was significantly higher with 'Georgia Bold' than all other entries. 'GK-7' was significantly lower than 'Georgia Bold', but significantly higher than all other entries. 'Georgia Green' was significantly lower than 'GK-7' and 'Georgia Bold' but was significantly higher than 'FL MDR-98', 'Virugard' and FL 84x9b. The latter three entries were not significantly different. The average effect of increasing seeding rate from three to six per row-ft, across cultivars and with or without Thimet® insecticide was to reduce final TSWV severity by 7% at Tifton and by 4.5% at Marianna. The average effect of using Thimet® insecticide in-furrow at-planting, across cultivars and seeding rates was to reduce final TSWV severity by 8% at Tifton and by 1.9% at Marianna. There was a decrease of 20 lbs of yield for each percentage point increase in TSWV final severity at Tifton. At Marianna, each percentage point increase in TSWV severity resulted in 31 lbs of yield reduction.

Evaluation of a Low Input Insect Management Program on Peanut in Alabama. J. R. WEEKS*, Dept. of Entomology, Auburn University, and L. WELLS, Wiregrass Expt. St., Alabama Agricultural Experiment Station, Auburn University, Headland, AL 36345

Four peanut cultivars, Andru93, Georgia Green, SunOleic97R, and Southern Runner, were evaluated in 1998 under rainfed conditions at the Wiregrass Experiment Station in Headland, Al. Three management levels were maintained among the four cultivars based upon weekly insect scouting. Management levels were designated low input, IPM, and high input. Yields of Georgia Green and Southern Runner were significantly affected by management level with increasing insect control inputs returning higher yields. Yields of Andru93 and SunOleic97R did not differ among the three insect management programs. In the 1998 studies, foliage feeders and lesser cornstalk borers (LCB) were the primary insect pests. Foliage feeder populations during the season consisted primarily of cutworm, corn earworm, and fall armyworm. Low input plots received no insecticide applications for foliage feeders, while IPM plots received one foliar spray and the high input plots received three sprays for foliage feeders. Low input plots received no treatment for LCB, while IPM plots and the high input plots were each treated once with chlorpyrifos granules for LCB control. Defoliation to Georgia Green in the low input plots resulted in a reduction in canopy, not lapping at harvest. Lesser cornstalk borer damage to Southern Runner in the low input plots resulted in higher pod and stem damage and reduced yields.

Temperature Control Algorithms for Automated Controls to Cure Peanuts. C. L. BUTTS*[1] and E. J. WILLIAMS[2]. [1]USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742-0509, [2]University of Georgia Cooperative Extension Service, Tifton, GA 31793-1209.

Previous research has shown that peanuts could be cured using plenum temperatures (Tp) based on humidity ratio (H) of the ambient air. Other research has also shown that controlling Tp so that the relative humidity (RH) was between 40-60% increased curing time 56% while decreasing fuel consumption 30% when compared to curing with a constant thermostat set point of 39 C. The introduction of affordable control networks for peanut dryers has made it possible to easily vary the curing temperature based on ambient temperature (Ta) and humidity conditions. However, little research has been conducted to determine the optimum control algorithm for automated temperature controllers. Peanuts from the same field were cured using 0.11 m^3 dryers to approximately 10% w.b. Plenum temperatures for each dryer were controlled using the following: 1) Conventional Control (CC): $Tp = Ta + 8$ C, ≤ 35 C; 2) Drying Rate Control 1 (DRC1, Butts *et al.* APRES 1996): $Tp = 15.699 - 201.46H \cdot \ln(H)$, ≤ 35 C; 3) Drying Rate Control 2 (DRC2): $Tp = 21.699 - 201.46H \cdot \ln(H)$, ≤ 35 C, and 4) Relative Humidity Control (RHC): $Tp = T(RH=45\%)$, ≤ 35 C (RHC). After curing, peanuts were placed in mesh bags and allowed to equilibrate to ambient conditions. The test was repeated 6 times between 16 Sep 1998 and 20 Oct 1998. Peanuts cured using DRC2 cured significantly faster (0.78 %/h) compared to peanuts cured using DRC1 (0.42%/h) and RHC(0.53 %/h). The DRC2 drying rate was not significantly greater than with CC (0.60 %/h). Milling quality as indicated by percent splits, percent bald kernels, and shelled stock value were not significantly different. Although not statistically significant, the percent split kernels averaged 10.2% in samples cured using CC, DRC2, and RHC while DRC1 averaged 8.7 %. Shelled stock value ranged from $959.89/metric ton using DRC2 to $978.74/metric ton using DRC1. Peroxide values and free fatty acids were at acceptable levels for all curing treatments and were not significantly different. Seed germination was not significantly different, although it ranged from 82.8% for RHC and 87.3% for DRC1. Flavor ratings were determined by a flavor panel on a scale from 1-8, with 6 being acceptable and 8 being the best. Flavor ratings were all greater than 7.1. Peanuts cured using DRC1 had a significantly higher flavor rating of 7.3 than peanuts cured using CC. However, they were not significantly higher than those cured using DRC2 or RHC (7.2).

Heat Pump Dehumidification Curing for Peanuts. E.J. WILLIAMS*[1], and C.L. BUTTS[2]. [1]Biological and Agricultural Engineering, University of Georgia, Tifton, GA 31793-1209 and [2]USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742.

Recent developments of 4-, 6-, and 8-row combines have increased harvest capacity to levels that greatly exceed the capacity to cure. Temperatures are often raised to levels in excess of 35 C to increase the rate of drying. Drying rates need to be increased while maintaining or improving kernel quality. Heat pump dehumidification curing (HPD) provides one alternative for increasing drying rate while minimizing thermal stress. Tests comparing HPD with LP gas curing were conducted in 0.61 x 0.61 x 1.22 m experimental bins. Plenum temperature control strategies for LP gas included 1) fixed 35 C (LPF), 2) ambient temperature + 8 C temperature rise, not exceeding 35 C (LPV), and 3) an experimental control algorithm based on the humidity ratio (H) (Butts *et al.* APRES 1996), $T=15.699-201.4611(H)\cdot\ln(H)$ (LPE). HPD operated with plenum temperatures ranging from 27 to 35 C and relative humidities from 26 to 42 %. Seven tests were conducted between 16 Sep and 4 Dec 1998. Initial moisture contents ranged from 16 to 30 % w.b., and peanuts were cured to approximately 10 % w.b. Drying rates of 0.37, 0.37, 0.28, and 0.25 %/h were obtained for HPD, LPF, LPV, and LPE, respectively. Respective mean plenum temperatures and relative humidities were 31.1 C - 35 %, 34.4 C - 43 %, 31.1 C - 52 %, and 29.4 C - 56 %. HPD had a drying rate equivalent to LPF while operating at a 3.3 C lower temperature. Farmers stock sound splits and shelled stock split/bald kernels increased from 0.8 to 1.2 % and 6.8 to 7.8 %, respectively, in order of increased drying rate. However, no significant differences were indicated among dollar values for farmers stock or shelled stock. Flavor ratings were all greater than 7.0 on a scale of 1 to 8, with 6 considered a passing score. Free fatty acids ranged from 0.1 to 1.0, and peroxide values were all below 0.4 meq.

Grading Runner Type Peanuts at High Moisture. P.D. BLANKENSHIP[1]*, M.C. LAMB[1], C.L. BUTTS[1], E.J. WILLIAMS[2], and T.B. WHITAKER[3]. [1]USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742; [2]Biological and Ag. Eng. Dept., Univ. of Georgia, Tifton, GA 31793; and [3]USDA, ARS, Market Quality and Handling Research Unit, NC State Univ., Raleigh, NC 27695-7625.

Recent development of high capacity harvesting equipment has shortened peanut harvesting time. Marketing regulations require preserving lot identity of farmer stock peanuts for grading until moisture content is 10.49 % or lower. The moisture requirement limits utilization of continuous flow dryers and improvement in peanut inventory control methods for peanut buying points at harvest. A comparison of grading runner type peanuts at high moisture content (HMC) versus moisture content at farmer marketing (LMC) was conducted at 9 buying points located in all 3 US peanut producing areas during the 1998 harvest. Initially, randomly selected lots were weighed and unofficially graded prior to curing by FSIS personnel following standard procedures. After curing, test lots were graded officially for marketing. During the experiment, 299 lots averaging 6.99 t at high moisture grading and 6.18 t at farmer marketing were graded. HMC's averaged 16.95 % ranging from 11 to 31 %. LMC's averaged 8.74 % ranging from 6 to 10 %. Comparisons of HMC and LMC grade factors for the test lots indicated that sound mature kernels (SMK) averaged 4.04 % higher in the HMC grades ($P=0.0001$). Splits (SS) were 2.19 %, other kernels 1.39 %, and hulls 0.63 % lower in the HMC grades ($P=0.0001$). SMK+SS were 1.85 % and total kernels 0.49 % higher in the HMC grades ($P=0.0001$). Means for loose shelled kernels, foreign material, and damage were not significantly different for HMC and LMC grades. HMC lot value averaged $ 232.44 higher than LMC ($P=0.0001$). Quadratic prediction equations were derived for each LMC grade factor using HMC and the HMC value for the grade factor. R^2's for equations predicting LMC grade factors were $\leq$ 0.81. Similar equations for lot weight and lot value had R^2's = 0.996. Data from the experiment indicate that even though individual LMC grade factors for runner type peanuts can not be predicted accurately from HMC grade data, LMC lot weight and value can be predicted very accurately. High moisture grading offers a possible alternative for peanut grading during harvest to allow modification of current post harvest handling procedures.

Breeding for Virginia-Type Peanuts Resistance to Multiple Diseases. T.G. ISLEIB*, J.E. BAILEY, P.W. RICE, and R.W. MOZINGO, II. Depts. of Crop Science and Plant Pathology, North Carolina State University, Raleigh, NC 27695-7629.

Because of impending changes in the pricing of peanuts, host plant resistance to diseases has emerged as an urgent objective for peanut breeders, even for diseases for which chemical control is available. The breeding program at NC State University has had long-standing programs of selection for resistance to our most common diseases: Cylindrocladium black rot (CBR) and early leaf spot (ELS). Three CBR-resistant cultivars, NC 8C, NC 10C, and NC 12C have been released, and a fourth is likely to be released in 1999. CBR resistance in the NC program is derived from released germplasm NC 3033 and breeding line NC Ac 03139. Many ELS-resistant lines have been selected; most trace to released germplasm GP-NC 343, but others derive their resistance from plant introductions PI 109839, PI 269685, and PI 270806. Efforts have been made to incorporate resistance to late leaf spot from the University of Florida program based on PI 203396. To date, we have released no cultivar specifically because of its resistance to ELS, but cultivars NC 6 and NC 12C have low levels of resistance to the disease. ELS-resistant selections generally are late in maturity and tend to have somewhat darker pods than are acceptable in the in-shell virginia market. In recent years, two "new" diseases have become widespread in North Carolina: Sclerotinia blight (SB) and tomato spotted wilt virus (TSWV). Because chemical control of these diseases is either not possible or not economical, programs of resistance breeding were begun. Reported sources of resistance were crossed with high-yielding, large-seeded parents while NC breeding lines were screened for resistance to SB and TSWV. Because NC 3033 exhibits some resistance to SB, we placed emphasis on screening CBR populations for SB resistance. For TSWV emphasis was placed on insect-resistant populations derived from GP-NC 343 in hopes that reduced thrips damage might translate into reduced TSWV incidence. For each disease, trials are conducted in the presence of the pathogen and without chemical controls to maximize disease development. Two trials are conducted at each such site: one of lines specifically selected for resistance to the disease and one of lines selected for resistance to another disease or simply for yield and grade in a chemically protected environment. Although higher levels of resistance to a particular disease usually are found in populations undergoing selection for that resistance, there have been several cases of superior resistance found in populations that have not undergone deliberate exposure to that disease. In the case of TSWV, several elite breeding lines were found to have excellent levels of resistance, perhaps because we select individual plants for yield at 50 cm in-row spacing and conduct yield trials at 25 cm spacing, maximizing the opportunity for TSWV to develop. TSWV susceptible plants and lines are unlikely to be retained under such a selection regime. Ten lines with superior levels of resistance to CBR, SB, and TSWV were identified (N93002L, N95001C, N95003C, N96009C, N96076L, N97064NT, N97085, N97122C, N97137C, and N97141C). N93002L, N97137C, and N97141C also had superior resistance to ELS.

Development and Release of a Root-knot Nematode Resistant Runner Peanut Variety. C. E. SIMPSON* and J. L. STARR, Texas Agric. Exp. Stn., Plant Path. & Microbio. Dept., Texas A & M University, Stephenville and College Station, TX.

A gene for root-knot nematode resistance was transferred from wild Arachis species, A. Cardenasii, into cultivated peanut through a bridge crossing technique and an intensive backcrossing program. We first crossed A. Cardenasii X A. Diogoi; crossed that partially fertile F1 hybrid with A. Batizocoi, doubled the chromosome number of the sterile F1 diploid hybrid with colchicine; then crossed the highly fertile amphiploid hybrid (TxAG-6) with Florunner, Tamnut 74, Tamspan 90, and NC-7. We accomplished three generations per year after 1987, the year we discovered the nematode resistance in A. Cardenasii, and A. Diogoi, and TxAG-6. Each year covered one complete cycle: backcrossing, F1 seed increase, testing of F1 and F2, production of cuttings, and selection of parents for the next cycle. Our laboratory/greenhouse selection for resistance was based on lines less than 10% of the susceptible Florunner in nematode eggs/g of root in 10 week old seedlings. The resistant line proposed for release is TP262-3-5, which was selected from the BC5F2 as being more than 90% pure for the root-knot resistance gene. This line has been tested with and w/o nematode pressure for 3 years. Yield data indicate that under heavy disease pressure, TP262-3-5 outperforms Florunner by 15 to 300%. Yields w/o nematode pressure are usually lower than Florunner, but often in the same statistical range. The line grades equal to Florunner without nematode presence, but superior with nematode infection. Shelling properties, seed size, pod size, and O/L ratio are very similar to Florunner, but the vine growth is approximately 18% smaller than Florunner, i.e., mainstem height and cotyledonary lateral length.

A Sclerotinia Resistant Runner Peanut Variety, Tamrun 98. O. D. SMITH, C. E. SIMPSON* and H. A. MELOUK, Texas Agric. Exp. Stn., Soil & Crop Sciences Dept., Texas A & M University, Stephenville and College Station, TX and USDA, ARS, Stillwater, OK.

Genes for Sclerotinia blight resistance (Sclerotinia minor Jagger) were transferred from the Spanish germplasm, TxAG-6 which was also the source of resistance for the cultivar 'Tamspan 90'. The original cross was made in College Station in 1988 between TxAG-6 and TP107-11, a sister line of the early maturing runner variety Langley. The F1 hybrid was backcrossed to TP107-11 in 1989, and BC1F2:3 selections made in the sclerotinia nursery at Stephenville in 1991. In yield tests, Tamrun 98 has out yielded commercial variety checks by more than 50% in soil heavily infested with sclerotinia. The seed size is equal to or larger than Florunner in most all tests, but not quite as large as Tamrun 96. Yield differences between Tamrun 98 and Tamrun 96 have not been as great as with Tamrun 98 and Florunner. Shelling tests on Tamrun 98 indicate that the variety will shell easily, yielding a very low percentage of splits, even when low moisture content exists. Flavor, O/L ratio, and other attributes of the edible market have been acceptable in all tests conducted to date.

B 1-3, Glucanase Activity in Transgenic Peanut. K.D. CHENAULT*, J.A. BURNS[a], and H.A. MELOUK. USDA-ARS, Stillwater, OK; [a]Monsanto Co., St. Louis, MO.

Fungal diseases of peanut are responsible for increased production costs and yield losses for peanut producers in the United States. Few cultivars with disease resistance 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 producers. Hydrolases such as chitinase and B 1-3, glucanase are known to degrade the cell walls of many fungi that attack plants, making them rational candidates for overexpression through genetic engineering to produce disease resistant crops. Somatic embryos of the peanut variety OKRun were transformed with a B 1-3, glucanase gene via microprojectile bombardment. Regenerated plant lines were tested for the presence of the glucanase gene by PCR and Southern blot and for enzyme activity by colorimetric assay. Several lines showed glucanase activity 2-4 times greater than background levels.

Evaluation of the Core Collection Approach for Identifying Resistance to *Meloidogyne arenaria* in Peanut. C.C. HOLBROOK[1*], P. TIMPER[1], and H. Q. XUE[2]. [1]USDA-ARS, Coastal Plain Exp. Stn., Tifton, GA 31793. [2]Shandong Peanut Res. Inst., Shandong, China.

Core collections are representative subsamples of germplasm collections. Use of core collections may improve the efficiency of germplasm evaluations. The peanut (*Arachis hypogaea* L.) core collection has been examined for resistance to the peanut root-knot nematode [*Meloidogyne arenaria* (Neal) Chitwood race 1]. Resistant indicator accessions from screening the core collection indicated 39 clusters in the entire germplasm collection that should be examined more thoroughly. The objective of this study was to evaluate how effective a two-stage core screening approach would be in identifying resistance to *M. arenaria* in the entire U.S. germplasm collection of peanut. Accessions from 30 clusters having resistant indicator accessions and from four clusters having very susceptible indicator accessions were tested for resistance in two greenhouse trials. This second stage screening identified 256 accessions that had a mean egg-mass rating of 2.5 or less. Twenty-two of these accessions had a mean egg-mass rating of 1.0 or less. There was a relatively large number of resistant accessions from China compared to the percentage of the germplasm collection that originated in China. The efficiency of identifying resistance to *M. arenaria* in clusters having resistant indicator accessions was significantly better than the success rate in clusters having susceptible indicator accessions. These results demonstrate that the use of a two stage screening approach with a core collection can improve the efficiency of germplasm evaluations.

Association Among Components of Resistance to Early Leaf Spot in Peanut Between and Within Different Environments. Z. A. CHITEKA*, D. W. GORBET, F. M. SHOKES, and T. A. KUCHAREK. Department of Crop Science, University of Zimbabwe, Box MP 167, Mt. Pleasant, Harare, Zimbabwe and Department of Agronomy, University of Florida, Gainesville, FL32611.

Early leaf spot (ELS), caused by *Cercospora arachidicola* Hori. reduces peanut yields. A knowledge of the association among components of resistance to ELS is necessary in breeding for resistance. Correlations among components of resistance to ELS were determined at Gwebi Variety Testing Center, Zimbabwe, over four seasons, 1990/91, 1991/92, 1992/93 and 1993/94 and over two seasons, 1995 and 1996 in Gainesville FL. The genotypes used, were, parents, F_1, F_2, and F_3 progeny of full diallel crosses involving the parents, 97/8/4, 148/7/25 (resistant), 'Flamingo' (intermediate) and 'Southern Runner' (susceptible). The components of resistance evaluated were latent period (LP), defined as days from inoculation to the first lesion sporulating, lesion diameter (LD), sporulation score (SP) with a 1-5 scale where 1=little or no sporulation and 5=more than 50% of lesion covered with stromata with heavy sporulation, and maximum percent sporulating lesions (MSP) at 30 days after inoculation (DAI). In Florida, disease severity was rated at 30 DAI, using a plant appearance score on a 1-10 scale (PAS) where 1=no disease and 10=plants dead. Latent period was significantly and negatively correlated with SP ($P<0.05$), ($r=-0.251$ to -0.666). Amount of sporulation was significantly and positively correlated with MSP ($P<0.05$), ($r=0.284$ to 0.500). Selection for one component may improve other components. Latent period and MSP were significantly correlated with PAS ($P<0.05$), ($|r|=0.219$ to 0.516), indicating that PAS can be used to identify genotypes with resistance to ELS. Correlations between measurements of components between Zimbabwe and Florida were low, probably due to differences in the ELS pathogen populations between Zimbabwe and Florida.

PRODUCTION TECHNOLOGY II

Alternative Tillage Systems for Peanuts. D.L. HARTZOG* and J.F. ADAMS.
Department of Agronomy and Soils, Auburn University, Auburn, AL 36849 and
B.GAMBLE Wiregrass Substation, Headland, AL 36345.

Farmers have traditionally used a moldboard plow and disk to reduce disease pressure from unincorporated plant residue and for herbicide incorporation and seedbed preparation. Experiments were conducted at the Wiregrass substation from 1995 to 1998 to determine if alternative tillage schemes with fungicides could maintain high yields. Whole plot tillage treatments consisted of moldboard plow, disk, chisel, Ro-till, ripper-bedder and moldboard plow plus chiselvator. Subplot treatments were four applications of folicur followed by a Bravo application or seven applications of Bravo alone. There were no differences in yield or TSMK for the tillage treatments in 1995, 1996, and 1998 but yields were lower for the disk treatment in 1997. Limited rainfall in 1997 with reduced rooting depth may have accounted for lower yields. Folicur treatments had higher yields in all tillage experiments except in 1997 where there was no differences in yield. The lack of moisture in 1997 eliminated any added benefit of one fungicide over another. On the other hand folicur did reduce whitemold and leafspot to a greater extinct than Bravo, but it was not reflected in yield. TSMK were unaffected by fungicide treatment in 1995, 1996, 1997 and 1998. Limited moisture in 1997 exacerbated the effect of tillage on yield in continuous peanuts. Conservation tillage practices can be adopted without yield reduction or increased disease pressures if moisture is not a limiting factor.

Reduced Tillage Production in North Carolina Peanut. A.J. WHITEHEAD, Jr.*, D.L. JORDAN, P.D. JOHNSON, J.M. WILLIAMS, J.S. BARNES, C.R. BOGLE, G.C. NADERMAN, and G.T. ROBERSON, North Carolina State University and North Carolina Department of Agriculture and Consumer Services, Raleigh, NC 27695.

Reduced tillage production has become a viable option for some peanut growers in the southern United States. However, peanut response to tillage as been inconsistent. Defining factors that affect peanut response to tillage is important in successfully integrating tillage into peanut production systems. Field experiments were conducted during 1997 and 1998 to compare pod yield, market grade, and gross economic value of peanut in conventional tillage systems compared with strip tillage systems. In one set of experiments tillage treatments consisted of: 1) disk and bed; 2) disk, chisel plow, and bed; 3) disk, moldboard plow, and bed; 4) strip till into beds established the previous fall (stale seedbeds); 5) strip till into existing corn or cotton beds; and 6) strip till into beds with a desiccated wheat cover crop. In these experiments preplant fertilizer [100 lb/acre potash or 150 lb/acre 5-10-10 (N, P_2O_5, K_2O)] was included as a treatment variable in each tillage system. In a separate set of experiments, peanut response to supplemental calcium (0, 300, and 600 lb/acre gypsum) was evaluated in conventional till, strip till, and no-till systems. Peanut response to tillage varied among locations and years, although tillage systems did not affect peanut response to preplant fertilizer placement. Tillage systems did affect pod yield and gross value independent of preplant fertilizer. In two experiments on a sandy clay loam soil, yield and gross value were generally lower in reduced tillage systems compared with conventional tillage systems. In other studies on sandy loam soils, pod yield and gross value in reduced tillage systems equaled or exceeded that of conventional tillage systems. On the sandy clay loam soil, where reduced tillage systems were less effective, compacted soil may have adversely affected peanut growth and pod development. In the gypsum study, interactions among tillage systems and gypsum rates were not significant. Although peanut generally responded to gypsum, response was independent of tillage system. These studies suggest that reduced tillage systems are a viable alternative to conventional tillage systems in some situations. Because digging is required prior to harvest, and because soil characteristics greatly influence efficiency of digging, growers should experiment with reduced-tillage systems on a fraction of their acreage before implementing wide-scale use.

Yield, Grade and Tomato Spotted Wilt Virus Incidence of Five Peanut Cultivars in Response to Twin Versus Single Row Planting Patterns. J. A. BALDWIN*, J. P. BEASLEY, JR., and S. L. BROWN. Department of Crop and Soil Sciences and Entomology, The University of Georgia, Tifton, Georgia. 31793.

During 1997 and 1998, studies were conducted at three locations each year in Georgia to compare the yield, grade (TSMK) and Tomato Spotted Wilt Virus (TSWV) incidences of five peanut cultivars when planted in 9-inch twin rows when compared to a 36-inch single row pattern. The peanut cultivars "Georgia Green", "ViruGard", "SunOleic 97R", "Flavor Runner 458" and "GK-7" were planted in a split-plot design with row patterns as main plots and cultivars as sub-plots. Each cultivar was planted at 3 seed/foot of row in each twin or 6 seed per foot of row in single rows to achieve the same plant population. All locations were irrigated. When averaged across cultivars and locations, twin rows resulted in significant ($p \leq .01$) yield increase (340 lb/A), higher TSMK (70 vs. 69), less other kernels (OK) (5.4 vs. 6.0), and less TSWV (33 vs. 40).

Addition of Doppler Radar Precipitation Estimates to Au-Pnut Disease Advisory. A. K. HAGAN* and K. L. BOWEN, Auburn University, AL; E. BAUSKE, R. R. GETZ, S. D. ADAMS, and K. S. HARKER, AWIS Corp., Auburn, AL.

Acceptance of the AU-Pnut disease advisory has been limited in part by the need to record daily rainfall daily rainfall using an on-site rain gauge or costly automated weather station. Doppler Radar (WSR-88D) offers a near-real time means of estimating daily precipitation 'events' of ≥ 0.25 cm for the AU-Pnut advisory. Using Doppler Radar data, computer-based algorithms generate precipitation estimates on a 2 x 2-km grid. To verify Doppler Radar precipitation estimates, CR-10 automated weather stations were installed near three peanut fields in Henry Co., AL. Two-fields had a history of frequent peanut production while peanut followed bahiagrass in the third. One of the three fields was irrigated. Each field was located within the grid using GPS. A spray advisory generated from precipitation data from Doppler Radar and the automated station were compared in replicated trials at each site. Applications of Bravo 720 @ 1.5 pt/A which were made after the first and usually second spray advisory were followed by 3 or 4 applications of Folicur 3.6F @ 0.45 pt/A as indicated by either advisory. A standard 14-day calendar spray program which consisted of 2 applications of Bravo 720 @ 1.5 pt/A, then 4 applications of Folicur 3.6F @ 0.45 pt/A, and finally Bravo 720 @ 1.5 pt/A was also included. Although several fewer or additional 0.25 cm precipitation 'events' were detected at all three sites by Doppler Radar as compared to the automated rain gauge, the same number of fungicide applications were made to the advisory plots at each site but not necessarily on the same day. Both spray advisories saved from one to three fungicide applications as compared with the standard calendar spray program without compromising control of leaf spot diseases and southern stem rot or peanut yield. In summary, Doppler Radar proved as effective as a rain gauge in generating an AU-Pnut spray advisory. Software has been developed to handle large volumes of Doppler data as well as generate both point and gridded outputs of AU-Pnut. Development of an interactive Internet-delivered version of AU-Pnut will be discussed.

The Effects of In-Furrow Insecticide and Early Post-emergence Herbicide Combinations on Peanut Growth and Yield and the Incidence of Tomato Spotted Wilt Virus.

G.E. MacDONALD*, S.L. BROWN, D.E. BELL, W.R. ETHREDGE, R.G. McDANIEL, W.A. ROBERTS, and J.A. TREDAWAY. Agronomy Department, University of Florida, Gainesville, FL 32601; Entomology Department, The University of Georgia, Tifton, GA 31794; and the University of Georgia Cooperative Extension Service, Athens, GA 30602.

Many factors influence the early-season growth of peanut and incidence of tomato spotted wilt virus (TSWV). At-plant insecticides are commonly used to reduce injury from thrips and have been shown to impact TSWV of peanut. Peanuts are also subject to at-cracking/early-postemergence herbicide treatments for weed control which are often injurious to the crop. Preliminary evidence suggests that there may be an interaction between insecticide and herbicide regimes with regard to peanut yield and TSWV. Therefore, studies were established in 1997 and 1998 in Tifton, GA to investigate the interactive effects of at-plant insecticides and early postemergence herbicide regimes on peanut growth, yield and the incidence of TSWV. In addition, large on-farm trials were conducted in Seminole, Irwin, Burke, and Dodge counties in Georgia in 1998. The experimental design for the research studies was a 2 X 5 factorial with 2 herbicide treatments (paraquat [0.13 lbs-ai/A] + bentazon [0.5] or imazapic [0.063]) and 5 insecticide treatments (aldicarb [0.6], aldicarb [1.0], phorate [1.0], acephate [0.19], and untreated). The on-farm trials were a 2 X 2 factorial with the same herbicide regimes and aldicarb [1.0], and phorate [1.0], for the insecticide treatments. All treatments in all locations/years were arranged in a randomized complete block design with 4 replications. In 1997, phorate + imazapic showed the highest yield and significantly less TSWV than the other treatments. In addition, there was a trend in higher yield for imazapic as compared to paraquat + bentazon. In 1998, this trend was not evident and there was little impact of herbicide regime and insecticide treatment at the research study in Tifton. However, in an average over the 4 on-farm trials there was significantly higher yield with phorate + imazapic as compared to the paraquat + bentazon treatments. TSWV incidence was very low in 1998 and few differences, if any, could be detected in the on-farm trials.

Influence of Adjuvants on Peanut Response to Prohexadione Calcium. D.L. JORDAN* and C.W. SWANN, Department of Crop Science, North Carolina State University, Raleigh, NC 27695 and Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437.

Research has demonstrated that prohexadione calcium (referred to as Baseline or BAS 125) retards vegetative growth, increases the percentage of extra large kernels (ELK), and in some instances increases pod yield. Twelve experiments were conducted in North Carolina and Virginia during 1997 and 1998 to compare peanut response to prohexadione calcium when applied with crop oil concentrate (COC), 28% urea ammonium nitrate (UAN), or a mixture of these adjuvants. Applying prohexadione calcium with UAN, either alone or with COC, increased row visibility and decreased main stem height compared with non-treated peanut or when prohexadione calcium was applied only with COC. Prohexadione increased pod yield in seven of twelve experiments regardless of the adjuvant treatment when compared with non-treated peanut. When pooled over experiments were a significant yield increase was noted, yield was increased approximately 10% (range of 5.8 to 15.8%) when prohexadione calcium was applied. UAN was generally the most effective adjuvant. In the other group of experiments, yield of peanut treated with prohexadione calcium did not differ from non-treated peanut. In general, yield increases were noted when peanut were grown with irrigation. These data suggest that UAN is critical for obtaining optimum row visibility and reduction of main stem height with prohexadione calcium. These data also suggest that prohexadione calcium can increase row visibility and in some instances increase pod yield. Additional research is needed to further define when peanut will respond favorably to prohexadione calcium and how prohexadione affects pest interactions with peanut.

Minutes of the APRES Board of Directors Meeting
Hyatt Regency
Savannah, Georgia
July 15, 1999

The meeting was called to order by President Charles Swann at 7:00 p.m. Those present were Charles Swann, Ron Sholar, Robert Lynch, Tom Stalker, Philip Utley, Bobby Walls, Pat Phipps, John Beasley, Mike Schubert, Chris Butts, Randy Griggs, Jeannette Anderson, Hassan Melouk, Chip Lee, James Grichar, Richard Rudolph, Jack Bailey, Alex Csinos, Stan Fletcher.

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

President Swann called on Executive Officer Ron Sholar to read the minutes of the last Board of Directors meeting held in Norfolk, VA. The minutes were approved as published in the 1998 Proceedings.

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

(Editor's Note: Some 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 membership in APRES remains relatively stable despite the continuing decline in the number of individuals involved in the overall peanut industry. Organizational members continue to decline slowly. He also reported that the society remains very solvent as would be reflected in the finance report which would be presented by Finance Committee Chair, Hassan Melouk.

American Society of Agronomy Liaison Report – Tom Stalker

See written report

Southern Agricultural Experiment Station Directors – Philip Utley

Dr. Utley reported that the Southern Directors would be meeting soon. Southern Directors remain strongly supportive of APRES. The southern directors remain concerned about the federal budget and particularly funding for special projects. He stated that the southern directors are available to help the society in any way they can.

Council for Agricultural Science and Technology – Stan Fletcher

Dr. Fletcher reported that in the future CAST would pay for only one meeting per year for a representative and the dues structure has been changed. He also reported that CAST has continued to conduct the Conversations on Change which have been sponsored by Kellogg Foundation. CAST has just received new funding to continue these meetings. Dr. Fletcher reported that he has been elected chair of the plant and soils work group in CAST. The group will be putting together issues papers.

Finance Committee – Hassan Melouk

Dr. Melouk reported that the Finance Committee met and reviewed the finances of the society and found everything in good order. Balance sheets for the year were passed out. He reported that the assets for the society on June 30, 1998 were $157,059.63 and the assets for the society on June 30, 1999 were $172,717.21. For the fiscal year, the assets for the society increased by $13,798.79. However, $12,045.60 came from Bayer Corporation for support of the County Extension Agent program.

The proposed budget for 1999-00 as prepared by the Executive Officer was distributed. A balanced budget of $68,000 was proposed by the Finance Committee. The society set in motion last year the process of raising member dues. All requirements to have the recommendation voted on at the business meeting on Friday morning have been met. The proposed dues are:

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

A change to the By-Laws is required to change the membership dues. If the new dues are approved, the new fee structure will take place for the fiscal year beginning July 1, 2000.

The Executive Officer reported that the annual meeting registration fee has been increased from $55 to $75 and the 1999 meeting will be the first meeting where the change will be in effect.

The report was accepted.

There was discussion about the policy of keeping the bulk of the assets of the society in low interest certificates of deposit versus placing some funds in mutual funds. Tom Stalker will explore the possibility of investing some funds in the market and will bring a proposal to the board next year regarding this. The Executive Officer reported that the society could have $30,000 to $40,000 available to invest.

The Board of Directors charged the Executive Officer and Tom Stalker to come to the Board with proposals for investing surplus society funds. These proposals will be presented to the Board at the 2000 Board of Directors meeting.

Nominating Committee – Chip Lee

Chip Lee reported that the nominating committee made their selections by telephone prior to the annual meeting. The nominations are:

President-elect – Austin Hagan, Auburn University, Auburn, Alabama
State Employee Representative-S.E. area – James R. Weeks, Wiregrass Experiment Station, Headland, Alabama
Manufactured Products Representative – Douglas A. Smyth, Planters, East Hanover, New Jersey

Publications and Editorial Committee – James Grichar

The Publications and Editorial Committee met on July 13, with Gerald Harrison, Carroll Johnson, John Beasley, Thomas Stalker, and James Grichar present. Volume 25 of Peanut Science had 26 manuscripts totaling 133 pages. The Fall issue is in the final stages of proofing and should be ready by August. During the year July 1, 1998 to June 30, 1999, 35 manuscripts were submitted to PEANUT SCIENCE. Thirteen were accepted, 19 still in review, and 3 released to authors. Nine manuscripts have been accepted for Volume 26, Issue #1.

To increase numbers of manuscripts submitted to PEANUT SCIENCE the committee passed a motion that symposium papers be considered for publication. The editor and the symposium chairman will decide if the symposium is suited for publication. Submission of manuscripts will be at the time of the symposium. Authors are responsible for publication costs.

Last year's budget	Income = $24,204.61
	Expense = $20,542.55
	Net profit =$ 3,662.36

One manuscript was printed without cost to author ($240).

Excessive time to review manuscripts continues to be a concern to the Editor and membership. Manuscripts need to be returned to authors within 6 months. Associate editors can also serve as one of the reviewers and should speed up the process.

Gary J. Gascho, C. Corley Holbrook, and Patrick M. Phipps have completed 6 year terms as associate editors of PEANUT SCIENCE. Sincere thanks to these individuals for their service to the journal and APRES. David Jordan, Mark Black and Kim Moore have agreed to replace these individuals.

To improve sales of Advances in Peanut Science the committee recommends that the Publications and Editorial chairman in cooperation with the APRES president write a letter to each state grower group and agricultural chemical contact person advertising the book. Present price is $45 – suggested case price = $495, i.e. buy 11 get 1 free. Since around 2000 books remain on inventory each member is encouraged to solicit sales.

John Beasley is new editor of the newsletter replacing Corley Holbrook. Due to time constraints, the newsletter will be published soon after this meeting.

Due to a problem with confirmation of abstracts the committee recommends that a policy be in place to notify authors of abstracts being received by the Technical Committee. This confirmation can be in writing or electronically and this information should be included in abstract instructions.

The Board of Directors indicated they want the email address printed on the blue-line abstract paper. This will facilitate corresponding with authors.

There was significant discussion about publishing symposia in Peanut Science. The Board voted to charge Dr. Stalker with the responsibility for developing a process for publishing symposia papers in Peanut Science.

Peanut Quality Committee – Carroll Johnson

The report was accepted. See complete report as published.

Public Relations Committee – Alex Csinos

The report was accepted. See complete report as published.

Bailey Award Committee – John Beasley

The report was accepted. See complete report as published.

The Board stated that the responsibility for the 2000 Bailey Award Committee starts with notification of session moderators. The Executive Officer will correspond with the Bailey Award Committee to facilitate the committee's actions for the 2000 meeting.

The Bailey Award Committee submitted clarifications/additions for the guidelines for selecting the Bailey Award winner. These were approved by the Board and will be added to the guidelines.

Because of problems in documentation of the nominees for the 1998 meeting, the Board voted that no Bailey Award winner would be named for 1998.

Fellows Award Committee – Mark Black (Reporting for Norris Powell)

Dr. Black reported that Ron Sholar and Jack Bailey had been selected as Fellows and had been approved by the Board of Directors.

The Fellows Award Committee will study the current guidelines for selecting the number of Fellows and will come to the 2000 meeting with a recommendation on whether the current guidelines are appropriate. Currently, up to three members may be selected each year. The Committee will study selection rates for other societies.

The committee will make a concerted effort to get more nominations for 2000. Richard Rudolph commented on the efforts of the Coyt T. Wilson Distinguished Service Award Committee to increase nominations for that award. The committee sent an email to people in every state encouraging them to solicit and make nominations for the award. A similar procedure could be used for Fellows nominations.

There was discussion on preparing Fellows plaques for all recipients. Prior to 1995, certificates were prepared for recipients but since that time, plaques have been presented. The Executive Officer reported that there were 12-15 Fellows who were still active in the society. The Board charged the Executive Officer to prepare a plaque for all active Fellows who have not previously received a plaque. Richard Rudolph indicated that Bayer would fund the purchase of the plaques.

Site Selection Committee – Robert Lynch

The report was accepted. See complete report as published.

Coyt T. Wilson Distinguished Service Award Committee – Richard Rudolph

The committee pointed out that they had tripled the number of nominees from 1998. They attributed this to the hard work the committee did in securing nominations.

The report was accepted. See complete report as published.

Joe Sugg Graduate Student Award Committee – Tom Stalker (Reporting for Jack Bailey)

Dr. Stalker reported there will be 11 papers presented with 5 judges.

The report was accepted. See complete report as published.

Dow AgroSciences Award Committee – Chris Butts

The report was accepted. See complete report as published.

Program Committee – Robert Lynch

The report was accepted. See complete report as published.

Other Business

The meeting was adjourned by President Swann.

OPENING REMARKS BY THE PRESIDENT AT THE 1999 APRES BUSINESS MEETING

July 16, 1999

APRES - The Peanut Industry and Change

Charles W. Swann

I would like to welcome members, families and guests to the Awards Presentation and Annual Business Meeting of the 1999 APRES Annual Meeting. I would like to recognize the hard work and superb planning that has gone into making this the thirty-first annual meeting of APRES a success. President-elect Bob Lynch, Local Arrangements Chair John Beasley, and Technical Program Chair Tim Brenneman and their committee members have done a masterful job in planning and conducting our 1999 meeting. The Hyatt Regency facilities have been exceptionally good and the hotel staff has been exceptionally cooperative.

It has been a pleasure to serve as APRES President this year. The committee structure and dedicated service of the APRES membership has done their usual outstanding job in effectively and efficiently carrying on the business of our Society. We are extremely fortunate to have the year by year effective guidance of our Executive Officer, Dr. Ron Sholar, who manages so many aspects of the operations of our Society. On behalf of the Society I'd like to offer my thanks to him for his diligence and dedication.

When APRES meets next year in Point Clear, Alabama we will have moved into a new millennium. In this new millennium APRES and Peanut Industry will be faced with many new opportunities and challenges. As we move forward to the new millennium I'd like to reflect for a few minutes upon some of the changes that have occurred in APRES and the Peanut Industry over the last 30 years or so.

APRES

Membership:

APRES membership reached a high of 742 in 1985 and has declined steadily since 1985, dropping to 496 in 1998.

Sustaining Membership:

APRES sustaining membership reached its highest level in 1980 with 32 sustaining members. Like general membership, sustaining membership steadily declined since 1980, dropping to 14 sustaining members in 1998.

Abstracts and Papers:

The number of papers and posters presented at APRES Annual Meetings reached its highest level of 134 in 1990. Last year this number had declined to 91 papers and posters. In 1999 we have had an increase in these presentations with 115 titles listed for this year's Annual Meeting.

The decline in membership in APRES closely parallels declining numbers of peanut related positions in the academic community as well as a decline in numbers in peanut related agribusiness firms. Declining numbers are evident in many segments of the peanut industry. In 1988 twenty-eight peanut shelling plants were in operation in the GFA region, while only 15 plants were in operation in 1998. Similar trends in the number of peanut shelling facilities have occurred in the Virginia/Carolina and Southwest production regions, as well. Industry acquisitions and mergers have significantly reduced the number of agricultural supply firms servicing the peanut industry. Currently major agrichemical firms such as Rhone-Poulenc Ag Company, Novartis Crop Protection Incorporated and Zeneca Ag Products are each composed of ten or more companies which had serviced the peanut industry in the past. Extension Agent numbers have declined as well. In 1990 Virginia Cooperative Extension listed 175 County Extension Agents-Agriculture (statewide) in their personnel directory. By 1995

Virginia's County Extension Agents-Agriculture number had dropped to 95. Luckily we have seen a reversal of the trend in declining numbers of Agricultural Extension Agents in Virginia with 120 positions being filled as of July 1999.

Considering the dramatic decline of numbers of peanut related agribusiness firms (and therefore positions), as well as academic positions related to the peanut industry, APRES membership and activities have fared amazingly well. The Society membership has taken steps at this meeting to place the Society on a sound financial footing by voting to slightly increase dues, beginning in the year 2000. Paper and poster presentation numbers have increased in 1999 and attendance has increased at this meeting as well.

It is difficult to know if APRES membership will again exceed the 700 member level. It is not difficult to know with confidence that APRES will continue to be a strong, active and highly productive contributor to the peanut industry and to the professional development of peanut related personnel in the new millennium.

BUSINESS MEETING AND AWARDS CEREMONY
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
Hyatt Regency Savannah
Savannah, Georgia
July 16, 1999

The meeting was called to order by President Charles Swann. The following items of business were conducted:

1. President's Report – Charles Swann.

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

   a. Fellows – Mark Black for Norris Powell
   b. Bailey Award – John Beasley
   c. Joe Sugg Graduate Student Competition – Jack Bailey
   d. Dow AgroSciences Awards for Research and Education – Christopher Butts
   e. Coyt T. Wilson Distinguished Service Award – Richard Rudolph
   f. Past President's Award – Charles Swann
   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 1998 Meeting – Ron Sholar
   b. Finance Committee – Hassan Melouk
      Dr. Melouk moved that annual dues be raised according to the schedule that was presented to the membership at the annual meeting in 1998. Members voted to raise society dues as recommended by the Finance Committee. The new dues schedule will be listed in the By-Laws.
   c. Nominating Committee – Thomas A. Lee, Jr.
   d. Public Relations Committee Report – Alex Csinos
   e. Publications and Editorial Committee – W. James Grichar
   f. Peanut Quality Committee – W. Carroll Johnson, III
   g. Site Selection Committee – Robert Lynch
   h. Program Committee – Robert Lynch

4. Charles Swann turned the meeting over to the new President, Robert Lynch of Georgia, who then adjourned the meeting.

FINANCE COMMITTEE REPORT

The Finance Committee met at 4:00 p.m. on July 13, at the Hyatt Regency in Savannah, Georgia, the site of the 31st annual meeting of APRES. Members present were: Hassan Melouk, Pat Phipps, Ken Noegel, Marshall Lamb, Justin Tuggle, Tim Brenneman, Ron Sholar (ex-officio), and Charles Swann (APRES President).

The committee reviewed the 1998-99 budget and financial records. All records indicate that APRES is in good financial condition. The Society had a balance of \$172,717.21, as of June 30, 1999, compared to \$157,059.63 for June 30, 1998.

The Finance Committee examined, discussed, and approved the proposed budget of \$68,000 for 1999-2000.

At the 1998 business meeting, APRES membership voted to increase the minimum annual dues, and therefore, a proposed change in the by laws needs to be voted on by the APRES members this morning (July 16, 1999).

Article IV. Dues and Fees

The article should read as follows:

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 membership	\$ 40.00
b. Institutional membership	40.00
c. Organizational membership	50.00
d. Sustaining membership	150.00
e. Student membership	10.00

The change to the by laws was approved by the APRES membership on July 16, 1999, and will be effective on July 1, 2000.

Respectfully submitted,

Hassan Melouk, Chair
Pat Phipps
Ken Noegel
Justin Tuggle
Tim Brenneman
Ron Sholar, Ex-Officio

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
BUDGET 1999-00

RECEIPTS

Annual Meeting Registration	$18,000
Membership Dues	14,000
Special Contributions	9,500
Other Income (Spouses program)	0
Differential Postage	2,000
Peanut Science & Technology	500
Quality Methods	0
Proceedings and Reprint Sales	0
Peanut Science	17,000
Interest	5,000
Advances in Peanut Science	2,000
Other Income (PR sales)	0
Other Income (misc)	0
TOTAL RECEIPTS	**$68,000**

EXPENDITURES

Annual Meeting (Breakfast, program, equip)	$ 7,000
Spouse Program	0
Coyt T. Wilson Awards	1,000
Dow AgroSciences Awards	2,000
Sugg, Bailey, Other Awards	1,500
CAST Travel	1,200
CAST Membership	500
Office Supplies	1,650
Secretarial Services	14,500
Postage	4,000
Travel	2,000
Legal Fees (Tax preparation)	350
Proceedings	3,500
Peanut Science	26,200
Peanut Science & Technology	0
Peanut Research	1,750
Quality Methods	0
Bank Charges	200
Miscellaneous	300
Advances in Peanut Science	0
Corporation Registration	350
OK Sales Tax	0
Reserve	0
TOTAL EXPENDITURES	**$68,000**
Excess receipts over expenditures	0

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
BALANCE SHEET FOR FY 1998-99

ASSETS	June 30, 1998	June 30, 1999
Petty Cash Fund	$ 565.58	$ 197.92
Checking Account	22,067.78	21,308.93
Certificate of Deposit #1	24,575.59	25,928.16
Certificate of Deposit #2	15,823.72	16,240.32
Certificate of Deposit #3	14,819.19	14,819.19
Certificate of Deposit #4	11,137.60	11,137.60
Certificate of Deposit #5	15,023.72	15,443.28
Certificate of Deposit #6	12,176.06	12,511.81
Certificate of Deposit #7	10,283.65	10,580.18
Money Market Account	1,727.49	1,763.99
Savings Account (Wallace Bailey)	1,044.21	1,066.40
Bayer Account	0	12,045.60
Computer and printer	0	2,387.15
Peanut Science Account (Wachovia Bank)	2,637.52	3,191.80
Inventory of PEANUT SCIENCE AND TECHNOLOGY Books	4,490.00	4,120.00
Inventory of ADVANCES IN PEANUT SCIENCE Books	20,687.52	19,974.88
TOTAL ASSETS	**$157,059.63**	**$172,717.21**
LIABILITIES		
No Liabilities	0.00	0.00
TOTAL FUND BALANCE	**$157,059.63**	**$172,717.21**

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

	June 30, 1998	June 30, 1999
RECEIPTS		
Advances in Peanut Science Book	$ 2,930.65	$ 1,595.00
Annual Meeting Registration	16,670.00	19,040.00
Contributions	9,960.02	16,352.00
Differential Postage	1,912.50	2,150.00
Dues	14,064.52	14,671.50
Interest	5,776.87	3,177.77
Peanut Research	48.00	48.00
Peanut Science	932.50	496.00
Peanut Science Page Charges	9,185.10	15,546.36
Peanut Science and Technology Book	372.50	475.00
Proceedings	26.00	26.00
Quality Methods	0.00	0.00
Spouse Registration	1,732.50	750.00
Other Income	80.35	0.00
Misc Income (overpayments)	0.00	51.71
CD Transfer	0.00	0.00
TOTAL RECEIPTS	**$63,691.51**	**$74,379.34**
EXPENDITURES		
Advances in Peanut Science Book	$ 0.00	$0.00
Annual Meeting	8,484.33	10,433.06
Bank Charges	92.75	118.00
CAST Membership	661.50	500.00
Corporation Registration	115.00	215.00
Federal Withholding	828.00	936.00
FICA	1,511.04	1,603.20
Legal Fees	450.00	400.00
Medicare	353.40	375.12
Miscellaneous	0.00	9.69
Office Expenses	1,237.91	3,991.27
Oklahoma Withholding	147.96	169.54
Peanut Research	1,560.36	300.00
Peanut Science	22,343.19	21,096.53
Peanut Science and Technology Book	120.00	0.00
Postage	3,718.48	3,735.76
Proceedings	3,524.71	3,040.04
Sales Tax	44.11	1.17
Secretarial Services	10,273.86	10,828.85
Spouse Program Expenses	1,902.50	1,880.00
Refund	0.00	55.00
Travel – Officers	1,994.29	892.32
TOTAL EXPENDITURES	**$59,363.39**	**$60,580.55**
EXCESS RECEIPTS OVER EXPENDITURES	**$ 4,328.12**	**$ 13,798.79**

PEANUT SCIENCE BUDGET
1999-00

INCOME

Page and reprint charges	$16,000.00
Journal orders	1,000.00
Foreign mailings	1,300.00
APRES member subscriptions	6,760.00
Library subscriptions	1,125.00
TOTAL INCOME	**$26,185.00**

EXPENDITURES

Printing and reprint costs	$10,185.00
Editorial assistance	14,000.00
Office supplies	500.00
Postage	1,500.00
TOTAL EXPENDITURES	**$26,185.00**

ADVANCES IN PEANUT SCIENCE
SALES REPORT AND INVENTORY ADJUSTMENT
1998-99

	Books Sold	Remaining Inventory
Beginning Inventory		987
1st Quarter	18	969
2nd Quarter	1	968
3rd Quarter	14	954
4th Quarter	1	953
TOTAL	**34**	

34 books sold x $20.96 = $712.64 decrease in value of book inventory.

953 remaining books x $20.96 (book value) = $19,974.88 total value of remaining book inventory.

Fiscal Year	Books Sold
1995-96	261
1996-97	99
1997-98	66
1998-99	34

PEANUT SCIENCE AND TECHNOLOGY
SALES REPORT AND INVENTORY ADJUSTMENT
1998-99

	Books Sold	Remaining Inventory
Beginning Inventory		449
1st Quarter	7	442
2nd Quarter	1	441
3rd Quarter	27	414
4th Quarter	2	412
TOTAL	**37**	

37 books sold x $10.00 = $370.00 decrease in value of book inventory.

412 remaining books x $10.00 (book value) = $4,120.00 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

PUBLIC RELATIONS COMMITTEE REPORT

The committee met via E-mail, and suggestions for activities were directed to the chairman for action. The committee also met on July 13, just prior to the 1999 APRES meeting. News releases announcing the 1999 APRES meeting were prepared and sent to the Peanut Grower magazine and the Southeastern Peanut Farmer.

In addition, in an attempt to both publicize the meeting and also encourage membership, a document publicizing the meeting was sent to a list of consultants who work on peanuts.

During the 1999 meeting, the Public Relations Committee would like for the chair of each awards committee to furnish us with a short written document describing the work and the award for each recipient. This will be used for local newspapers to publicize the event.

Also included is a necrology report on J.G. Woodroof from Georgia and Olin D. Smith.

Respectfully submitted,

Alex S. Csinos, Chair
Mike Kubicek
Craig Kvien
Chip Graham
Richard Sprenkel
Jim Davidson
Bobby Walls

Dr. Jasper Guy Woodroof

Whereas Dr. Jasper Guy Woodroof, retired University of Georgia Food Science Professor, was a leader in food science research, and

Whereas Dr. Woodruff often called "the father of food science" is recognized both nationally and internationally for his pioneering work with food processing and preservation, especially quick frozen foods, and

Whereas Dr. Woodroof organized the food science department in 1942 and acted as its department head for 26 years, and

Whereas Dr. Woodroof's food science research made great strides in the development of peanut butter and in preservation of peaches, pecans and peanuts, and

Whereas Dr. Woodroof was inducted into the Agricultural Hall of Fame in 1992, and

Whereas Dr. Woodroof passed away in Griffin, Georgia on November 6, 1998,

Be it resolved that Dr. Woodroof's contributions to the peanut industry are honored by the American Peanut Research and Education Society.

Dr. Olin D. Smith

Whereas Dr. Olin D. Smith, professor of soil and crop sciences at Texas A&M University, was a leader in developing numerous cultivars of Spanish peanuts, establishing new benchmarks for yield and adaptation with the varieties, Toalson, Tamspan 90, Tamrun 96 and Tamrun 98, and

Whereas Dr. Smith served as superintendent of the Wheatland Conservation Research Station for the Oklahoma Agricultural Experiment Station, and

Whereas Dr. Smith served the United States Agency for International Development as a project leader for CRSP, working with peanut breeders and producers in the West African countries of Senegal, Mali, and Burkina-Faso, and

Whereas Dr. Smith engaged in innovative research involving altering fatty acid ratios in peanuts to reduce oxidative rancidity and improve the shelf life of peanuts and by-products, and

Whereas Dr. Smith was the recipient of several awards for his research, which included Coyt T. Wilson Award and the American Peanut Council's Research and Education Award, and

Whereas Dr. Smith passed away in Bryan, Texas on March 4, 1999,

Be it resolved that Dr. Smith's contributions to the peanut industry are honored by the American Peanut Research and Education Society.

PUBLICATIONS AND EDITORIAL COMMITTEE REPORT

The Publications and Editorial Committee met on July 13, with Gerald Harrison, Carroll Johnson, John Beasley, Thomas Stalker, and James Grichar present. Volume 25 of Peanut Science had 26 manuscripts totaling 133 pages. The Fall issue is in the final stages of proofing and should be ready by August. During the year July 1, 1998 to June 30, 1999, 35 manuscripts were submitted to PEANUT SCIENCE. Thirteen were accepted, 19 still in review, and 3 released to authors. Nine manuscripts have been accepted for Volume 26, Issue #1.

To increase numbers of manuscripts submitted to PEANUT SCIENCE the committee passed a motion that symposium papers be considered for publication. The editor and the symposium chairman will decide if the symposium is suited for publication. Submission of manuscripts will be at the time of the symposium. Authors are responsible for publication costs.

Last year's budget	Income = $24,204.61
	Expense = $20,542.55
	Net profit =$ 3,662.36

One manuscript was printed without cost to author ($240).

Excessive time to review manuscripts continues to be a concern to the Editor and membership. Manuscripts need to be returned to authors within 6 months. Associate editors can also serve as one of the reviewers and should speed up the process.

Gary J. Gascho, C. Corley Holbrook, and Patrick M. Phipps have completed 6 year terms as associate editors of PEANUT SCIENCE. Sincere thanks to these individuals for their service to the journal and APRES. David Jordan, Mark Black and Kim Moore have agreed to replace these individuals.

To improve sales of Advances in Peanut Science the committee recommends that the Publications and Editorial chairman in cooperation with the APRES president write a letter to each state grower group and agricultural chemical contact person advertising the book. Present price is $45 – suggested case price = $495, i.e. buy 11 get 1 free. Since around 2000 books remain on inventory each member is encouraged to solicit sales.

John Beasley is new editor of the newsletter replacing Corley Holbrook. Due to time constraints, the newsletter will be published soon after this meeting.

Due to a problem with confirmation of abstracts the committee recommends that a policy be in place to notify authors of abstracts being received by the Technical Committee. This confirmation can be in writing or electronically and this information should be included in abstract instructions.

Respectfully submitted,

W. James Grichar, Chair

PEANUT SCIENCE EDITOR'S REPORT

Volume 25 of PEANUT SCIENCE had 26 manuscripts totaling 133 pages. The Fall issue is in the final stages of proofing and the membership should have their copy by early August. The issue has been held up due to few manuscript submissions during the summer of 1998, which resulted in a low number of articles for publication.

During the year July 1, 1998 to June 30, 1999, 35 manuscripts were submitted to PEANUT SCIENCE. Of these, 13 have been accepted, 19 are still in review, and 3 have been released to the authors. Nine manuscripts have been accepted for Volume 26, Issue #1.

Last year's budget has been itemized (attached) and a proposed budget for the coming year has been completed (attached). One manuscript was printed without cost to an international (Uguru, $240). During the past year PEANUT SCIENCE had a net $3,662.36.

Excessive time for reviewing manuscripts during the editorial process continues to be a concern to the Editor and membership. Manuscripts need to be returned to authors within 6 months. Associate editors can also serve as one of the reviewers, that may help speed-up the process of publication.

Drs. Gary J. Gascho, C. Corley Holbrook, and Patrick M. Phipps have completed six-year terms as an Associate Editor of PEANUT SCIENCE. Sincere thanks is expressed to these three individuals for their service to the journal and to APRES.

Respectfully submitted,

H. Thomas Stalker, Editor

NOMINATING COMMITTEE REPORT

The nominations committee met on July 13, 1999, in the Verelst Room, Hyatt Regency Savannah, at 3:00 p.m. Members present included; Chip Lee, Scott Wright, John Beasley and Ron Henning. Members had been previously polled via phone and emailed regarding nominations so the meeting was brief.

Nominations presented to the board are as follows:

President-elect – Austin Hagan, Auburn University, Auburn, Alabama
State Employee Representative-S.E. area – James R. Weeks, Wiregrass Experiment Station, Headland, Alabama
Manufactured Products Representative – Douglas A. Smyth, Planters, East Hanover, New Jersey

Respectfully submitted,

Thomas A. Lee, Jr., Chair

FELLOWS COMMITTEE REPORT

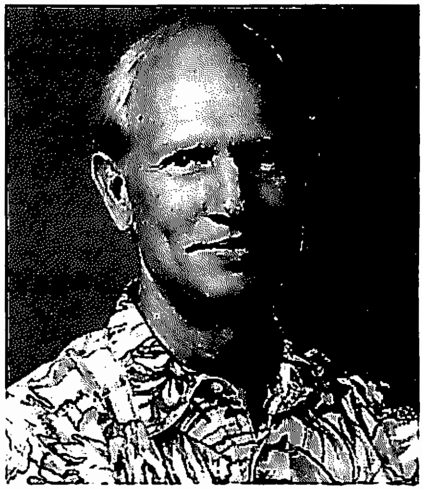
Two nominations for recognition as American Peanut Research and Education Society, Inc. Fellow were received before March 1, 1999, as required. The committee evaluated the nominations according to the guidelines published in the 1998 Proceedings, American Peanut Research and Education Society, Inc. 30:90-94. The committee recommended to the Board of Directors that the individuals nominated should be named Fellow in the American Peanut Research and Education Society. Committee members participating in the review were Mark Black, Fred Cox, Dan Gorbet, G.M. "Max" Grice, Charles Simpson, and Norris L. Powell (Chair).

The fellows committee met at 1:00 p.m. July 13, 1999, to review work completed in 1998-1999 and responsibilities for 1999-2000.

Respectfully submitted

by Mark Black for Norris L. Powell, Chair

BIOGRAPHICAL SUMMARIES OF FELLOWS



Dr. Jack E. Bailey is Professor and Extension Plant Pathologist, Department of Plant Pathology, North Carolina State University, Raleigh, North Carolina. Dr. Bailey received the B.S. degree (1974) from the Stephen F. Austin State University, and the M.S. (1977) and Ph.D. (1980) degrees from Michigan State University.

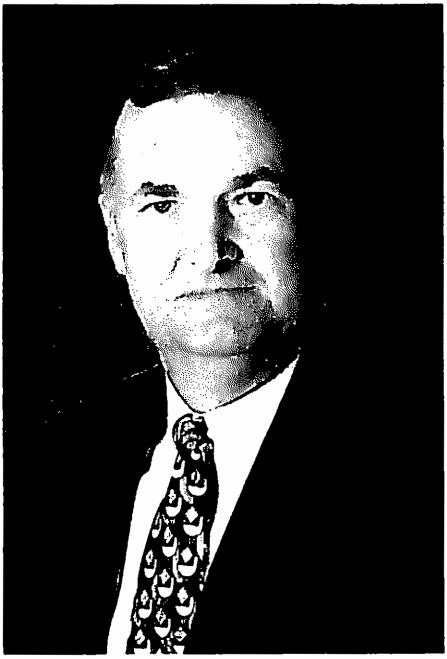
Dr. Bailey has been active in peanut education and research at North Carolina State University since 1980. He is recognized as a leader in the development of educational programs for the control of fungal diseases in peanuts in the Virginia-Carolina peanut production region. Working closely with counterparts in Virginia and colleagues at North Carolina State University, Dr. Bailey helped develop a method for fumigating peanut that has greatly reduced the adverse effects of Cylindrocladium black rot in peanut. He has worked closely with the peanut breeders in the development and evaluation of peanut varieties with resistance to the major diseases in the Virginia-Carolina peanut production area: early leafspot, Cylindrocladium black rot, Sclerotinia blight, and tomato spotted wilt virus. Dr. Bailey has vigorously promoted the use of weather-based spray advisories for leafspot and other diseases to minimize the application of chemical controls, contributing to lower cost of production for the grower and reduced risk of environmental contamination.

Dr. Bailey has been active in the American Peanut Research and Education Society since 1980. He has served on the Joe Sugg Graduate Student Award and the Coyt T. Wilson Distinguished Service Award committees. Dr. Bailey has served as an associate editor for PEANUT SCIENCE. He and his students have presented numerous technical papers on disease management at the American Peanut Research and Education Society annual meetings.

Dr. Bailey is recognized internationally for his efforts in developing weather-based predictions of disease development. He has served on the Peanut CRSP technology program for the Philippines, Thailand, and Ghana. He has also lectured and served on review teams in Russia, Australia, and Mali.

Dr. Bailey is a leader in peanut disease management in North Carolina as well as nationally and internationally. Through his education and research programs he has made an important contribution to the profitability and sustainability of the peanut industry in the Virginia-Carolina production region and the United States.

Dr. J. Ronald Sholar is Professor, Department of Plant and Soil Sciences, Oklahoma State University, Stillwater, Oklahoma. Dr. Sholar received a B.S. degree (1971) from the University of Tennessee at Martin and the M.S. (1973) and Ph.D. (1984) degrees from Oklahoma State University.



Dr. Sholar is a leader in education and technology transfer and conducts one of the most successful peanut extension programs in the United States. He provides statewide leadership for extension programs for peanuts in Oklahoma. Dr. Sholar has written more than 500 popular articles on crop production for commodity publications, extension publications, fact sheets and circulars, abstracts, and refereed journal articles.

He is well respected and highly regarded as an expert in peanut production and management by the peanut industry in the United States and abroad. He has served as a peanut consultant in England, Germany, Switzerland, and The Netherlands. He led an international delegation on a tour to study the peanut industry in China.

Dr. Sholar has served the Society with distinction the last sixteen years as its Executive Officer. He has been very effective at organizing and overseeing the annual meetings of the American Peanut Research and Education Society. He has served as editor of the PROCEEDINGS of the American Peanut Research and Education Society since 1984. He has provided skillful administration and financial guidance for the Society that has resulted in a 90% increase in the assets of the Society since 1984. Dr. Sholar served as the first representative of the American Peanut Research and Education Society to the Board of Directors of the Council for Agricultural Sciences and Technology.

Dr. Sholar's leadership abilities in extension have been recognized by the Society when he was awarded the American Peanut Research and Education Society Dow Elanco Award for Excellence in Extension in 1992. In 1993 the Society honored him with the Coyt T. Wilson Distinguished Service Award.

Because of his outstanding leadership abilities, Dr. Sholar's work has benefited and continues to benefit the Society, the peanut industry, and the larger industry of agriculture, both in the United States and internationally.

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 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, and staple each copy once in the upper left corner. Each copy must contain (1) the nomination proper, and (2) one copy of the three supporting letters (minimum of three but not more than five). The copies are to be mailed to the chairman of the Fellows Committee.

Deadline. The deadline date for receipt of the nominations by the chairman shall be March 1 of 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 recommendation 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 an appropriate framed certificate at the annual business meeting of APRES. The President shall announce the elected Fellows and 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 "Peanut Research".

Format for

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY FELLOW NOMINATIONS

TITLE: Entitle the document "Nomination of ____________ for Election to Fellowship by the American Peanut Research and Education Society", inserting 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: Include the typewritten name, signature, mail address (with zip code) and telephone number (with area code).

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

Secondary areas: include contributions in areas other than the nominee's primary area of activity in the appropriate sections of this nomination format.

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: give 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 (a) to communicate ideas clearly, (b) to influence client attitudes, (c) to 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. 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

1. Appointed positions (attach list).
2. Elected positions (attach list).
3. Other service to the Society (brief description).

Service to the Society and length of service as well as quality and significance of the type of service are all considered.

B. Service to the profession outside the Society

1. Advancement in the science, practice and status of peanut research, education or extension, resulting from administrative skill and effort (describe).
2. 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 (describe).

The various administrative skills and public relations actions outside the Society reflecting favorably upon the profession are considered here.

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. The relevance of key items explaining why the nominee is especially well qualified for fellowship should be noted. However, brevity is essential as the body of the nomination, excluding publication lists, should be confined to not more than eight (8) pages.

SUPPORTING LETTERS: A minimum of three (3) but not more than five (5) supporting letters are to be included for the nominee. Two of the three required supporting 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. Please urge those writing supporting letters not to repeat factual information that will obviously be given by the nominator, but rather to evaluate the significance of the nominee's achievements. Attach one copy of each of the three letters to each of the six copies of the nomination. Members of the Fellows Committee, the APRES Board of Directors, and the nominator are not eligible to write supporting letters.

BAILEY AWARD COMMITTEE REPORT

The Bailey Award Committee met at 2:00 p.m. in the Vernon Room of the Hyatt Regency Savannah, in Savannah, Georgia on Tuesday, July 13, 1999. Members present were Jim Todd, Ken Jackson, Kurt Warnken, Robert Lemon, and Chair, John Beasley. APRES President Charles Swann also attended.

Discussion centered around the confusion surrounding the 1998 Bailey Award. The committee proposes a specific set of guidelines be set outlining the exact role and timing of the chairman's responsibilities. They are as follows:

> 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.

Respectfully submitted,

John Beasley, Chair

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

Joe Sugg Graduate Student Award Committee met at 3:00 p.m., July 13. Members present: Jack Bailey, Alex Csinos, Robert Lemon, Hassan Melouk, Mike Kubicek. These members will be the judges for the paper session on Wednesday, July 14.

W.C. Johnson, III will preside over the session. There will be 10 presentations. Judges will score presentations based on:

- presentation
- visual aids
- originality
- abstract
- interaction with audience

First place winner receives $500, second place $250.

Respectfully submitted,

Jack Bailey, Chair

COYT T. WILSON DISTINGUISHED SERVICE AWARD REPORT

The Coyt T. Wilson Distinguished Service Award Committee met at 1:00 p.m., July 13, 1999, in Savannah, Georgia.

The Coyt T. Wilson award is awarded annually to a person who has contributed two or more years of distinguished service to the American Peanut Research and Education Society. The award was established in honor of Dr. Coyt. T. Wilson who provided leadership in the formative years of the Society. His contributions helped make possible the early and current success of the Society.

The award committee reviewed the qualifications of three excellent candidates for the 1999 award. All three nominees have provided outstanding service to the American Peanut Research and Education Society and the peanut industry, making selection a difficult task. The award committee recommends that the 1999 Coyt T. Wilson Distinguished Service Award be presented to Dr. Ray Hammons. Dr. Hammons has over 30 years of dedicated service to the peanut industry through the USDA-ARS, APRES, APREA, and PIWG. During his almost 35 years of plant breeding research, nine commercial peanut varieties have been developed. Within the Society, Dr. Hammons has been a leader in the area of media communications with his service to PEANUT SCIENCE, PEANUT RESEARCH, and various book committees.

Dr. Ray Hammons was presented the Coyt T. Wilson Distinguished Award for 1999.

To help ensure that nominations are submitted, the committee recommends:

1. That the Chairman contact the nominators of the individuals selected and encourage them to update and re-nominate their candidates in the following year, and
2. That the chairman contact the Peanut Agronomist in each state in the fall asking that person to remind colleagues to make a nomination.

These recommendations are made because several individuals indicated that the spring was a difficult time to find the time to properly document the qualifications of candidates.

Respectfully submitted,

Richard Rudolph, Chair

BIOGRAPHICAL SUMMARY OF COYT T. WILSON DISTINGUISHED SERVICE AWARD RECIPIENT

Dr. Ray O. Hammons received his B.S. (1947) and M.S. (1948) degrees in Agronomy from Mississippi State University. He earned his Ph.D. in Agronomy from North Carolina State University in 1953. Dr. Hammons began his career as an Assistant Professor of Agronomy and Assistant Agronomist at Purdue University in 1953. He served in this capacity until 1955, when he joined the USDA-ARS in Tifton, Georgia as a Geneticist, Plant Breeder. From 1972 until his retirement in 1984, Dr. Hammons served as Research Leader, Crops Research Unit, Tifton, Georgia. He was also USDA-ARS Supervisory Research Geneticist from 1975 to 1984. Dr. Hammons outstanding contributions to agriculture during his USDA-ARS career are documented by being recipient of the Eagle award for exemplary service, SEA area in 1983, and by earning three certificates of merit, USDA-ARS for outstanding contributions. Among Dr. Hammons major accomplishments with USDA-ARS are: (1) planning and coordinating the National Peanut Performance Tests, (2) starting the peanut information database, (3) acquired and provided the national germplasm repository with over 1300 plant or seed samples, (4) with co-workers, bred, selected, and released nine peanut varieties for commercial production and 25 germplasm lines with favorable traits such as disease resistance, early maturity, or improved food product stability, (5) he involved 109 different colleagues in cooperative research resulting in the publication of over 300 technical papers, abstracts, or other articles and (6) served as National technical Advisor-Peanut for the USDA. After his retirement, Dr. Hammons continued to serve the peanut industry as a consultant to the USDA-ARS and the Peanut Collaborative Research Support Program until 1993.

Dr. Hammons has been an active member of the Society since 1969, providing 30 years of Society service. During this time, he has attended 25 annual meetings. Significant contributions to the Society has been given by Dr. Hammons through his service on numerous committees, including Program, Nominating, Publications and Editorial, the committee to initiate the Bailey Award, and the Committee which recommended that the official journal, *Peanut Science*, be established. Major contributions of Dr. Hammons to the Society were his eleven years as editor, American Peanut Research and Education Society, PEANUT RESEARCH Newsletter and six years as Associate Editor of PEANUT SCIENCE. Because of his outstanding service to the Society and his contributions to the peanut industry, Dr. Hammons was elected Fellow, American Peanut Research and Education Society in 1982.

Through his research and involvement of others in research, Dr. Ray O. Hammons is recognized as an outstanding scientist who has contributed extensively to the selection and development of improved peanut varieties. This recognition resulted in his being asked to author two chapters in Peanuts: *Culture and Uses* (1973), and a chapter in *Peanut Science and Technology* (1982). He was also recognized by receiving the Golden Peanut Award from the American Peanut Council. His outstanding service has also been recognized by professional organizations not specific to peanuts. Dr. Hammons was elected Fellow, American Society of Agronomy (1975), and Fellow, Crop Science Society of America, (1985).

Dr. Ray O. Hammons had over 35 years of peanut breeding and production research. The total impact of his contributions to APRES and the peanut industry will continue as long as future researchers read the literature or use introduced germplasm.

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. They were:

Chris Butts, Chair (2000)	B.B. Shew (2000)
Tom Kucharek (1999)	R.W. Mozingo (2001)
Lance Peterson (1999)	James Grichar (2001)
John Baldwin (2000)	

A total of five nominations were received for the Awards. Nominees for the Award for Excellence in Education were Dr. H. Thomas Stalker (North Carolina State University), Dr. Patrick M. Phipps (Virginia Tech) and Dr. John P. Damicone (Oklahoma State University). Nominees for the Award for Excellence in Research were Dr. Timothy B. Brenneman (University of Georgia) and Dr. Daniel W. Gorbet (University of Florida).

Copies of nomination packets were mailed to all committee members. All other correspondence including discussions, voting and reporting were conducted via email. After considerable discussion, the committee decided that each member should rank the nominees, 1, 2, 3 etc. Each member's ranking was sent to the chair who then added the scores for each nominee. The nominee with the lowest total score was selected as the award winner. The committee will retain the nominations of those not selected for one year. The nominators will be contacted with an opportunity to update their original nomination.

The winner of the 1999 Dow AgroSciences Award for Excellence in Education is Dr. Patrick M. Phipps, Plant Pathologist from the Virginia Tech Tidewater Agricultural Research and Extension Center in Suffolk, Virginia. The winner of the 1999 Dow AgroSciences Award for Excellence in Research is Dr. Daniel W. Gorbet, Plant Breeder from the University of Florida, North Florida Research and Education Center in Marianna, Florida.

Press releases and biographies for each of the award winners follow.

Respectfully submitted,

Christopher Butts, Chair

BIOGRAPHICAL SUMMARY OF DOW AGROSCIENCES AWARD FOR EXCELLENCE IN RESEARCH RECIPIENT

Dr. Daniel W. Gorbet is a plant breeder at the University of Florida's North Florida Agricultural Research and Education Center in Marianna Florida. Dr. Gorbet earned a B.S. in Agricultural Education from Texas A & I University, a M.S. in Agronomy and Ph.D. in Crop Science from Oklahoma State University. Dan has been a Plant Breeder for the University of Florida since his graduation from Oklahoma State University.

He has spent a major part of his career developing peanut germplasm with improved quality and multiple disease resistance. After his colleagues retired or moved on, Dr. Gorbet took on the formidable task of maintaining and developing the high oleic germplasm. His persistence resulted in the release of the world's first high oleic peanut cultivars, SunOleic 95R and SunOleic 97R. He developed or co-developed nine peanut cultivars including the popular Southern Runner, and Florida MDR98. Southern Runner is one of the parents for the cultivar Georgia Green, currently the most widely grown peanut in the southeast.

He has been instrumental in training graduate students, graduate interns from Eastern Europe, and plant breeders from Malawi, Zimbabwe, and West Africa. Dr. Gorbet was the primary developer of a numerical scale for assessing leaf spot and improved methods for evaluating peanut for resistance to southern stem rot and tomato spotted wilt virus.

Dan has published 3 book chapters, 233 journal articles, and 130 abstracts. He has received numerous awards in the past such as 3 listings in the American Men and Women of Science and Who's Who in America. Dr. Gorbet is a Fellow in the American Peanut Research and Education Society. He was also named Progressive Farmer's Man-of-the-Year in Florida Agriculture for 1997. Dr. Gorbet is characterized by his nominator and supporters as a worldwide team player and a man of integrity and hard work. Certainly, his vision, work ethic and lifelong contributions to the peanut industry have made him worthy of the Dow AgroSciences Award for Excellence in Research.

BIOGRAPHICAL SUMMARY OF DOW AGROSCIENCES AWARD FOR EXCELLENCE IN EDUCATION RECIPIENT

Dr. Patrick M. Phipps is an extension plant pathologist at Virginia Tech's Tidewater Agricultural Research and Extension Center in Suffolk, Virginia. Dr. Phipps received a B.S. in Biology from Fairmont State College, a M.S. in Plant Pathology from Virginia Polytechnic Institute and State University, and a Ph.D. in Plant Pathology from West Virginia University. Upon completing his Ph.D. in 1974, Dr. Phipps completed a 4-year Post Doctoral Study at North Carolina State University. Pat has been at the Tidewater Agricultural Research and Extension Center in Suffolk since 1978.

Pat is recognized as a successful researcher and more importantly, for his ability to package that research in innovative and useful tools for the growers. In 1981, he developed and implemented the Virginia Leafspot Advisory Program cooperatively with USDA, ARS. He has continually improved the implementation by adding internet access to the traditional toll-free telephone hotline. He has secured the resources including funding and regional weather networks to implement these advisories. Advisories for managing leafspot, sclerotinia and CBR, minimizing frost damage, and for optimizing harvest available to growers and extension personnel via the Peanut/Cotton InfoNet. Pat's ability and enthusiasm have made him a valuable educator of our peanut producers and students alike.

Pat has mentored for twelve graduate students by serving on their advisory committees. He was principal advisor for seven focusing on peanut diseases. Under Dr. Phipps direction, six graduate students have competed in the annual Joe Sugg Graduate Student Paper Competition. Three placed second and one placed first. In 1989, two of Dr. Phipps students competed and won both first and second place. One former student put it this way, "this is a mark of a great researcher, always looking for the unusual and unexpected. He was successful in developing this same skill in me. This is a mark of a great educator".

Dr. Phipps is a prolific author, writing a total of 613 publications. These include 8 book chapters, 39 refereed journal articles, 183 bulletins and reports, 116 popular press articles, 151 numbered extension publications, 108 abstracts, 5 videotapes, and 3 worldwide web publication.

Dr. Phipps has been recognized by his peers through various awards. Some of these include the Extension Excellence Awards in 1994 presented by the American Phytopathological Society and the Virginia Tech Alumni Association, Certificate of Excellence presented in 1994 by the American Society of Agronomy, and the Bailey Award in 1986 and 1991 presented by the American Peanut Research and Education Society.

Dr. Patrick M. Phipp's unique and clear vision of the needs of his clientele and a way of motivating the people he works with to exceed their expectations in their own ability has earned him the Dow AgroSciences Award for Excellence in Education.

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 APRES Peanut Quality Committee discussed three issues of relevance to peanut quality. The issue of MSMA-arsenical residues in harvested peanut was discussed. Considerable efforts are being made behind the scenes to address this issue with regulatory agencies based on sound science and supporting data. Paralleling these efforts are aggressive educational efforts to discourage illegal applications of MSMA to peanut. These efforts have been successful to date, although the issue is still one of the most pressing issues facing the peanut industry.

Updates were presented on development of vaccines for peanut allergies. There are several promising developments at the University of Arkansas, although release of a vaccine appears to be three to five years away. Other efforts are being made to manage the problem of peanut allergies. Most of the major peanut processors are proactively recognizing the potential of allergic reactions to peanut products and addressing that with labels on consumer products written in plain language. Furthermore, peanut processors are working with groups to promote management of all food allergies, including peanut. These include educating sensitive patients on what they can do to avoid allergies, educating public institutions on what to expect with students with food allergies, and clearly marking foods that may contain commonly encountered food allergens.

The issue of generically altered crops, including peanuts, and potentially affected marketability was discussed. The European Community, including an increasing group in the U.S., is generally opposed to genetically altered crops for an array of reasons. Some committee members feel that officials in the European community are using the public outcry on genetically altered crops to their advantage to alter agricultural trade to their advantage. This is an ever evolving issue that has not yet directly affected peanut, although genetically altered peanut germplasm is in early stages of field development.

The Committee agreed to develop a statement to encourage all aspects of the peanut industry to promote peanut quality by addressing the following issues:

> The committee recognizes that pesticides are a critical component of commercial peanut production. Pesticide stewardship is crucial to properly use these tools and maintain peanut quality. The committee encourages all appropriate educational institutions to aggressively promote pesticide stewardship with all pesticides on peanut.

The committee encourages a strong education program to promote implementation of sound production practices that promote peanut quality and superior flavor. This includes all crop production practices and post-harvest handling procedures, including curing. This education program should be extended to all levels within the peanut industry.

The committee encourages sound practices to prevent contamination of grains and other nuts with harvested peanut. Trace amounts of contamination can lead to food allergies. This occurs at all levels in the peanut industry. Agricultural and industrial sanitation is the key to this aspect of education.

Respectfully submitted,

W. Carroll Johnson, III, Chair

PROGRAM COMMITTEE REPORT

The program committee was chaired by John Beasley, (Local Arrangements), Tim Brenneman (Technical Program), and Kathy Beasley (Spouse's Program). We have an excellent program with an opening session featuring the Honorable Tommy Irvin, Georgia Commissioner of Agriculture. Dr. Gale Buchanan, Dean and Director, College of Agriculture and Environmental Sciences, University of Georgia, Mitch Head, Peanut Advisory Board, Atlanta, Georgia, Dr. Wesley Burks, Peanut allergy researcher and Tyron Spearman to speak on the history of peanut production in Georgia. We will have 115 papers, 8 poster presentations, 10 graduate student papers, and a symposium on improving economic competitiveness of U.S. Peanuts. In addition, we have several social/fellowship functions that should greatly add to our meeting enjoyment.

Respectfully submitted,

Robert Lynch, Chair

CONTRIBUTORS TO THE 1999 APRES MEETINGS

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

Special Activities
American Cyanamid Company
BASF Corporation
Bayer Corporation
Dow AgroSciences
Novartis
Rhône-Poulenc Ag Company
Zeneca Ag Products

Regular Activities
Georgia Farm Credit Associations
Golden Peanut Company
LiphaTech
Southern Ag Carriers, Inc.

Spouses Activities
American Peanut Shellers Association

Products
Alabama Peanut Producers Association
Florida Peanut Producers Association
Georgia Peanut Commission
Georgia Peanut Producers Association
M&M/Mars
North Carolina Peanut Growers Association
Oklahoma Peanut Commission
South Carolina Peanut Producers Board
Southern Peanut Farmers Federation
Alabama Peanut Producers Association
Florida Peanut Producers Association
Georgia Peanut Commission
Texas Peanut Producers Board
Tom's Foods
Virginia Peanut Growers Association
Western Peanut Growers Association

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Program Highlights

Tuesday, July 13

Committee, Board, and Other Meetings

08:00-12:00	Crops Germplasm Committee	Waterfront Room
12:00-08:00	APRES Registration.	Mezzanine, 2nd Floor
01:00-05:00	Spouses Hospitality	Savannah Room
01:00-02:00	Associate Editors, Peanut Science	Verelst Room
01:00-02:00	Site Selection Committee	Percival Room
01:00-02:00	Fellows Committee	Vernon Room
01:00-02:00	Coyt T. Wilson Distinguished Service Award Committee	Sloane Room
02:00-03:00	Publications and Editorials Committee	Verelst Room
02:00-03:00	Public Relations Committee	Percival Room
02:00-03:00	Bailey Award Committee	Vernon Room
02:00-03:00	DowElanco Awards Committee	Sloane Room
03:00-04:00	Nominating Committee	Verelst Room
03:00-04:00	Joe Sugg Graduate Student Award Committee	Percival Room
03:00-04:00	Peanut Quality Committee	Vernon Room
04:00-05:00	Finance Committee	Verelst Room
04:30-06:00	Peanut System Working Group	Percival/Vernon
07:00-11:00	Board of Directors	Waterfront Room
07:00-09:00	**ICE CREAM SOCIAL Rhône-Poulenc**	**Harborside Center**

Wednesday, July 14

08:00-04:00	APRES Registration	Mezzanine, 2nd Floor
08:00-05:00	Spouses Hospitality	Savannah Room
08:00-05:00	Press Room/ Projector Room	Westbrook Room
08:00-09:40	General Session	Regency Ballroom

09:40-10:00	**Break** **Novartis**	**Mezzanine, 2nd Floor**
09:40-04:40	Poster Session	Mezzanine, 2nd Floor
10:00-12:15	Plant Pathology I	Regency Ballroom
10:00-12:15	Weed Science	Percival/Vernon
10:00-12:15	Economics	Verelst Room
01:45-03:00	Graduate Student Competition	Regency Ballroom
03:00-03:30	**Break** **Novartis**	**Mezzanine, 2nd Floor**
03:30-05:00	Graduate Student Competition	Regency Ballroom
06:00-09:00	**Reception/Evening Meal** **Zeneca Ag Products**	**Dinner Cruise** **"Georgia Queen"**

Thursday, July 15

08:00-05:00	Spouses Hospitality	Savannah Room
08:00-05:00	Press Room/ Projector Room	Westbrook Room
08:00-09:40	Symposium: Improving the Economic Competitiveness of U.S. Peanuts	Regency Ballroom
09:40-10:00	**Break** **Novartis**	**Mezzanine, 2nd Floor**
10:00-12:00	Plant Pathology II	Regency Ballroom
10:00-12:00	Breeding & Genetics I	Percival/Vernon
10:00-12:15	Extension Techniques and Technology/Education for Excellence	Verelst Room
01:15-03:00	Plant Pathology III/ Mycotoxins	Regency Ballroom
01:15-03:15	Physiology and Seed Technology/Processing and Utilization	Verelst Room
01:15-03:00	Production Technology I	Percival/Vernon
03:00-03:30	**Break** **Novartis**	**Mezzanine, 2nd Floor**

03:30-05:00	Entomology/Harvesting and Curing	Verelst Room
03:30-05:00	Breeding and Genetics II	Regency Ballroom
03:30-05:00	Production Technology II	Percival/Vernon
06:15-09:15	**Low Country Boil** **Bayer/American Cyanamid**	**Regency Ballroom**

Friday, July 16

07:00-08:00	**Awards Breakfast** **Dow AgroSciences/BASF**	**Regency Ballroom**
08:00-10:00	**APRES Awards Ceremony and Business Meeting** **Dow AgroSciences**	**Regency Ballroom**
10:00-12:00	Peanut CRSP	Westbrook Room

SPECIAL EVENTS

Tuesday, July 13

07:00-09:00 p.m.	**Ice Cream Social** **Rhône-Poulenc**	**Harborside Center**

Wednesday, July 14

06:00-09:00 p.m.	**Reception/Evening Meal** **Zeneca Ag Products**	**Dinner Cruise "Georgia Queen"**

Thursday, July 15

06:15-09:15 p.m.	**Low Country Boil** **Bayer/American Cyanamid**	**Regency Ballroom**

Friday, July 16

07:00-08:00 a.m.	**Awards Breakfast** **Dow AgroSciences/BASF**	**Regency Ballroom**

GENERAL SESSION

Wednesday, July 14
Regency Ballroom

08:00 Call to Order..Dr. Charles W. Swann, APRES President

08:05 Welcome to Savannah..Mayor Floyd Adams, Jr., Mayor of Savannah

08:15 Welcome to Georgia... Honorable Tommy Irvin, Georgia Commissioner of Agriculture

08:25 Peanut Research in Georgia .... Dr. Gale Buchanan, Dean and Director, College of Agricultural and Environmental Sciences, University of Georgia

08:40 Industry Perspective on Peanut Allergies/Nutrition .... Mr. Mitch Head, Peanut Advisory Board

08:50 Research on Peanut Allergies and Nutrition... Dr. A. Wesley Burks, M.D., Professor of Pediatrics University of Arkansas

09:15 History of Peanut Production in Georgia .... Mr. Tyron Spearman "Mr. Peanut," Editor of Peanut Farm Market News and Peanut Grower

09:35 Announcements
Technical Program Chair..................................... Dr. Tim Brenneman
Local Arrangements Chair....................................... Dr. John Beasley

09:40 Break with exhibitors.. Mezzanine, 2nd Floor

TECHNICAL SESSIONS

Wednesday, July 14

09:40-04:40 Poster Session ....Mezzanine, 2nd Floor
(Authors Present 3:00-4:00 p.m.)

Coordinator: T. B. Brenneman, University of Georgia, Tifton, GA

(1) Isolation and Characterization of a cDNA Clone Encoding Peanut Glycinin Seed Storage Protein. **S.M. Basha* and A.K. Jain.** Florida A&M University, Tallahassee, FL.

(2) Environmental Interactions that Affect Screening of Peanut Germplasm for Aflatoxin Resistance. **K.T. Ingram* and** C.C. **Holbrook.** University of Georgia, Griffin, GA.

(3) Fertilizer and *Rhizobium* Inoculant Effects on Peanut Growth. **L. Corlay-Chee, S. Sanchez D.*, E. Robledo S., E. Alvarez S., S. Gtierrez G., and S. Salinas S.** Universidad Autonoma Chapingo, Texcoco, Mexico.

(4) Study and Utilization of Peanut Germplasm in China. **H.Q. Xue*, S.B. Wan, and C. C. Holbrook.** Shandong Peanut Research Institute, Shandong, China.

(5) Effects of Cadre Application Timings on Peanut in Texas. **T.A. Baughman*, P.A. Dotray, W.J. Grichar, and R.G. Lemon.** Texas Agricultural Extension Service, Vernon, TX.

(6) Peanut Cultivar Response to Valor Preemergence. **J.J. Lowery*, J.W. Wilcut, S.D. Askew, J.F. Spears, T.G. Isleib, and J. Cranmer.** North Carolina State University, Raleigh, NC.

(7) Peanut Cultivar Response to Strongarm Preplant Incorporated. **W.A. Bailey*, J.W. Wilcut, S.D. Askew, J.F. Spears, T.G. Isleib, and V.B. Langston.** North Carolina State University, Raleigh, NC.

(8) Accumulation Patterns of mRNA's During Peanut Seed Development. **H. Mazhar* and S.M. Basha.** Florida A&M University, Tallahassee, FL.

Plant Pathology I
Regency Ballroom

Moderator: Kira Bowen, Auburn University, Auburn, AL.

10:00 (9) RFLP Markers for Identification of Resistance Genotype in Peanut. **G.T. Church, C.E. Simpson, and J.L. Starr*.** Texas A&M University, College Station, TX.

10:15 (10) Identification of Marker Genes Associated with Late Leafspot Resistance. **W.F. Anderson*, G. Kochert, T. Stalker, H. Wood, and K. Moore.** AgraTech Inc., Ashburn, GA.

10:30 (11) Sensitivity of Early and Late Peanut Leafspot Pathogens to DMI Fungicides. **K.L. Stevenson*, G.B. Padgett, and A.K. Culbreath.** University of Georgia, Athens, GA.

10:45 (12) Evidence of Impatiens Necrotic Spot Virus in Peanut in Southwest Texas. **M.C. Black.** Texas A&M University, Uvalde, TX.

11:00 (13) Studies on the Localization in and Transmission of Tomato Spotted Wilt Tospovirus in Peanut Pod. **S.S. Pappu, H.R. Pappu*, A.K. Culbreath, and J.W. Todd.** University of Georgia, Tifton, GA.

11:15 (14) Temperature and Moisture Affect the Decomposition Rate of *Sclerotinia minor* Sclerotia in Field Soil. **M.E. Matheron* and M. Porchas.** Yuma Agricultural Center, Yuma, AZ.

11:30 (15) Applications of Metam Sodium, Aldicarb, Tebuconazole and Chlorothalonil for Control of Root, Pod and Foliar Diseases of Peanut in Virginia. **P.M. Phipps.** Virginia Polytechnic Institute & State University, Suffolk, VA.

11:45 (16) Establishment of *Cylindrocladium parasiticum* in a Peanut Field. **B.L. Randall-Schadel*, B.B. Shew, and J.E. Bailey.** NCDA & CS Seed Section, Raleigh, NC.

12:00 (17) Evaluation of Select Genotypes of Peanut to Natural Inocula of Cylindrocladium Black Rot and Tomato Spotted Wilt Virus in Florida. **T.A. Kucharek*, J.D. Atkins, D.W. Gorbet, and R.C. Kemerait.** University of Florida, Gainesville, FL.

Weed Science
Percival/Vernon

Moderator: T. M. Webster, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA.

10:00 (18) Evaluation of Preemergence Weed Control Systems in Peanuts (*Arachis hypogaea*). **J.A. Tredaway* and G.E. MacDonald.** University of Florida, Gainesville, FL.

10:15 (19) Cadre and Strongarm Comparisons for Nutsedge (*Cyperus* spp.) Control in Peanuts - 1998. **E.P. Prostko*, W.J. Grichar, T.A. Baughman, K.B. Brewer, B.A. Besler, and R.G. Lemon.** Texas Agricultural Extension Service, Stephenville, TX.

10:30 (20) Valor™ Herbicide: It Takes the "Beg" out of Florida Beggarweed. **J.V. Altom*, J.R. Cranmer, and J.A. Pawlak.** Valent USA Corporation, Gainesville, FL.

10:45 (21) Valor™ Herbicide: A New Soil Applied Herbicide for Weed Control in North Carolina and Virginia Peanuts. **J.R. Cranmer* J.V. Altom, and J.A. Pawlak.** Valent USA Corporation, Cary, NC.

11:00 (22) Interaction of Chloroacetamide Herbicides with Valor for Peanut Injury and Weed Control. **W.J. Grichar*, E.P. Prostko, R.G. Lemon, B.A. Besler, and K.D. Brewer.** Texas Agricultural Experiment Station, Yoakum, TX.

11:15 (23) Behavior of Strongarm in Purple and Yellow Nutsedge. **J.W. Wilcut*, J.S. Richburg, III, and L.B. Braxton.** North Carolina State University, Raleigh, NC.

11:30 (24) Interference and Economic Threshold of Yellow Nutsedge with Peanut. **W.C. Johnson, III.** USDA, ARS, Tifton, GA.

11:45 (25) Tolerance and Weed Control with Dinitroaniline Herbicides in West Texas Peanut. **P.A. Dotray* and J.W. Keeling.** Texas Tech University, Lubbock, TX.

12:00 (26) Tolerance of Peanut (*Arachis hypogaea*) Varieties to Sulfentrazone. **T.G. Grey*, D.C. Bridges, and B.J. Brecke.** University of Georgia, Griffin, GA.

Wednesday, July 14

Economics
Verelst Room

Moderator: Foy Mills, ACU/JLA, Abilene, TX.

10:00 (27) Twin Single Row: Will the Increase in Yields Justify the Additional Costs? **N.R. Martin, A.S. Luke*, S.M. Fletcher, J.A. Baldwin, and W.D. Shurley.** University of Georgia, Tifton, GA.

10:15 (28) Economic Analysis of Components Comprising the University of Georgia Tomato Spotted Wilt Risk Index for Peanuts. **A.S. Luke*, S.M. Fletcher, N.R. Martin, J.W. Todd, W.D. Shurley, A.K. Culbreath, D.W. Gorbet, J.A. Baldwin, and S.L. Brown.** University of Georgia, Tifton, GA.

10:30 (29) Is There an Economic Impact from the Use of . the University of Georgia Tomato Spotted Wilt Risk Index for Peanuts? **S.M. Fletcher*, A.S. Luke, N.R. Martin, J.W. Todd, W.D. Shurley, A.K. Culbreath, D.W. Gorbet, J.A. Baldwin, and S.L. Brown.** University of Georgia, Griffin, GA.

10:45 (30) A Risk-Budgeting Model for Peanut Production and Management Decision Making. **W.D. Shurley*, A.S. Luke, S.M. Fletcher, and N.R. Martin.** University of Georgia, Tifton, GA.

11:00 (31) An Evaluation of Development of a Decision Support System on the Internet for Peanut Enterprise Analysis. **W.N. Ferreira, N.R. Martin*, S.M. Fletcher, and T.D. Hewitt.** Auburn University, Auburn, AL.

11:15 (32) Economics of Improving Production Efficiency of Peanuts in Strip-Tillage Systems. **T.D. Hewitt*, F.M. Shokes, D.W. Gorbet, and D.L. Wright**. University of Florida, Marianna, FL.

11:30 (33) Peanut Production and Marketing in Haiti. **C.M. Jolly* and E. Prophete.** Auburn University, Auburn, AL.

11:45 (34) Purchasing Runner Type Peanuts Unscreened or Screened: The Sheller's Perspective. **M.C. Lamb* and P.D. Blankenship.** USDA, ARS, National Peanut Research Laboratory, Dawson, GA.

12:00 (35) Determination of Increased Assessments for Peanut Producers for Marketing Years 1996 Through 2002. **K.M. Robison.** USDA, Farm Service Agency, Washington, DC.

Wednesday, July 14

Graduate Student Competition
Regency Ballroom

Moderator: W.C. Johnson, III, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA.

01:45 (36) Shoot and Root Growth of Two Peanut Cultivars Under Drought Stress. **G. Patena* and K.T. Ingram**. University of Georgia, Griffin, GA.

02:00 (37) Evaluation of the Wild Species of Peanut for Resistance to Tomato Spotted Wilt Virus. **J.H. Lyerly*, H.T. Stalker, J.W. Moyer, and K. Hoffmann**. North Carolina State University, Raleigh, NC.

02:15 (38) Evaluation of Field Resistance for Incidence and Location within Peanut of Tomato Spotted Wilt Virus. **M. Murakami*, M. Gallo-Meagher, and D. W. Gorbet**. University of Florida, Gainesville, FL.

02:30 (39) Inheritance of Resistance Components to *Cercospora arachidicola* in *Arachis hypogaea*. **L.G. Mozingo*, H.T. Stalker, T.G. Isleib, and B.B. Shew**. North Carolina State University, Raleigh, NC.

02:45 (40) Effects of Tillage and Chlorpyrifos Treatment on Soil-Inhabiting Pest and Beneficial Arthropods of Peanut. **P.H. Joost*, J.W. Chapin, J.S. Thomas, and A.C. Washburn**. Clemson University, Blackville, SC.

03:00 Break **Mezzanine, 2nd Floor**

Novartis

03:30 (41) Interference of Tropic Croton in VC Peanuts. **S.D. Askew*, J.W. Wilcut, and G.H. Scott**. North Carolina State University, Raleigh, NC.

03:45 (42) Peanut HERB Evaluations in North Carolina. **G.H. Scott*, J.W. Wilcut, and S.D. Askew**. North Carolina State University, Raleigh, NC.

04:00 (43) Modification of Weather Based Advisories to Account for Leafspot Resistant Peanut Genotypes. **V.M. Aris* and J.E. Bailey**. North Carolina State University, Raleigh, NC.

04:15 (44) Occurrence of *Cylindrocladium parasiticum* in Peanut Seed and Seed Transmission of Cylindrocladium Black Rot. **D.L. Glenn*, P. M. Phipps, and R.J. Stipes**. Tidewater Agr. Res. & Ext. Ctr., Suffolk, VA.

04:30 (45) Influence of Fungicide Treatments on the Incidence of Soilborne Fungal Pathogens in Peanut. **R.C. Kemerait, Jr.* and T.A. Kucharek**. University of Florida, Gainesville, FL.

TECHNICAL SESSIONS

Thursday, July 15

Symposium: Improving the Economic Competitiveness of U.S. Peanuts
Regency Ballroom

Moderator: John Baldwin, University of Georgia, Tifton, GA.

08:00 (46) Research and Extension Efforts Designed to Maintain and Increase Profitability of Peanut Produced in the V-C Area. **David Jordan.** North Carolina State University, Raleigh, NC.

08:20 (47) Maintaining Peanut Profitability in the Southwest. **Robert Lemon.** Texas A&M University.

08:40 (48) Macro and Micro Opportunities to Improve Profitability. **Craig Kvien.** University of Georgia, Tifton, GA.

09:00 (49) Improving the Domestic and International Competitiveness of U.S. Peanuts - A Sheller's Perspective. **Jimmy Dorsett.** Golden Peanut Company, Alpharetta, GA.

09:20 (50) USA Peanuts "The Right Stuff" **Charles Ivey.** M&M Mars, Albany, GA.

Plant Pathology II
Regency Ballroom

Moderator: *P. M. Phipps, Virginia Tech, Suffolk, VA.*

10:00 (51) Responses of Peanut Cultivars to Spray Programs for Control of Limb Rot and Southern Blight. **J.P. Damicone* and K.E. Jackson.** Oklahoma State University, Stillwater, OK.

10:15 (52) Integrated Disease Management of Three Peanut Cultivars. **T.B. Brenneman* and A.K. Culbreath.** University of Georgia, Tifton, GA.

10:30 (53) A Comparison of Fungicides and Fungicide Combinations for the Control of Southern Blight (*Sclerotium rolfsii*) in Peanut. **T.A. Lee*, J.E. Wells, and C.B. Meador.** Texas Agricultural Extension Service, Stephenville, TX.

10:45 (54) Efficacy of Spray Programs for Control of Southern Stem Rot. **K.E. Jackson* and J.P. Damicone.** Oklahoma State University, Stillwater, OK.

11:00 (55) Comparison of Fungicide Regimes for Foliar and Soil-borne Disease Control on Peanut. **K.L. Bowen*, A.K. Hagan, and J. Fajardo.** Auburn University, Auburn, AL.

11:15 (56) An Historical Summary of Folicur Peanut Efficacy in University Testing from 1993-1998 in the Southeastern U.S. **H.S. Young* and W.D. Rogers.** Bayer Corporation, Tifton, GA.

11:30 (57) Tank-Mix Combinations of Tebuconazole and Chlorothalonil for Peanut Leaf Spot Control. **A.K. Culbreath* and T.B. Brenneman.** University of Georgia, Tifton, GA.

11:45 (58) Evaluation of Full Term Strobilurin Derivative Sprays for Control of Peanut Diseases in Texas. **A.J. Jaks*, W.J. Grichar, and B.A. Besler.** Texas Agricultural Experiment Station, Yoakum, TX.

Breeding and Genetics I
Percival/Vernon

Moderator: *C. Corley Holbrook, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA.*

10:00 (59) Alternative Genetic Sources of Large Seed Size - Evaluation of Agronomic and Quality Characteristics. **H.E. Pattee*, T.G. Isleib, and D.W. Gorbet.** North Carolina State University, Raleigh, NC.

10:15 (60) Identification of Drought Induced Transcriptional Changes in Peanut Using Differential Display of mRNA. **A.K. Jain* and S.M. Basha.** Florida A&M University, Tallahassee, FL.

10:30 (61) Evaluating the Performance of Peanut Genotypes as a Forage Crop. **M.J. Freire, D.W. Gorbet, and K.H. Quesenberry*.** University of Florida, Gainesville, FL.

10:45 (62) Impact of Differential Digging Dates on Performance of Lines in the Uniform Peanut Performance Test. **R.W. Mozingo, II, T.G. Isleib*, and P.W. Rice.** North Carolina State University, Raleigh, NC.

11:00 (63) No-Pesticide Preliminary Yield Trials. **W.D. Branch* and S.M. Fletcher.** University of Georgia, Tifton, GA.

11:15 (64) Androecial Variations in Peanut. **R.O. Hammons* and L.H. Eidson.** Tifton, GA.

11:30 (65) Advances of the Peanut Selection Program at University of Chapingo. II. Bunch Growing Habit Peanut. **Samuel Sanchez-Dominguez.** Texcoco, Mexico.

11:45 (66) Evaluation of Four Peanut Varieties for Suitability to Close Row Planting Pattern. **K.M. Moore* and W.F. Anderson.** AgraTech Seeds Inc., Ashburn, GA.

Extension Techniques & Technology
Education for Excellence
Verelst Room

Moderator: Ken Noegel, Bayer Corporation, Kansas City, MO.

10:00 (67) Effects of the Foliar Fertilizer Dynazyme on the Yield of Peanuts in Ben Hill County, Georgia. **W.T. Hall* and J.A. Baldwin.** Georgia Cooperative Extension Service, Fitzgerald, GA.

10:15 (68) Applied Field Research to Improve Peanut Production in Worth County, Georgia. **J.L. McLean*, J.P. Beasley, Jr., T.B. Brenneman, A.K. Culbreath, J.W. Todd, and G.E. MacDonald.** Georgia Cooperative Extension Service, Sylvester, GA.

10:30 (69) Cost Effectiveness of Pest Management Strategies in Peanut. **R.L. Brandenburg, D.L. Jordan*, J.E. Bailey, B.M. Royals, P.D. Johnson, and V.L. Curtis.** North Carolina State University, Raleigh, NC.

10:45 (70) Efficacy of At-Plant Systemic and Foliar Insecticides in West Texas Peanut. **C. Crumley**. Texas Agricultural Extension Service, Seminole, TX.

11:00 (71) The Peanut Extension Program in Southampton County, Virginia. **W. Alexander and C.W. Swann*.** Tidewater Agricultural Research and Extension Center, Suffolk, VA.

11:15 (72) Yield Response of Several Peanut Cultivars When Planted in Single and Twin Row Patterns During 1997-98 in Decatur County, GA. **D.E. McGriff*, J.A. Baldwin, and J.E. Hudgins.** Georgia Cooperative Extension Service, Bainbridge, GA.

11:30 (73) Results of a Successful Peanut Extension Program in Bertie County North Carolina. **W.J. Griffin*, D.L. Jordan, J.E. Bailey, T.G. Isleib, R.L. Brandenburg, J.F. Spears, and G.A. Sullivan.** North Carolina State University, Raleigh, NC.

11:45 (74) In the Middle of the Field a Successful County Agent Peanut Program. **R.L. Petcher.** Coffee County Extension System, New Brockton, AL.

Plant Pathology III/Mycotoxins
Regency Ballroom

Moderator: Mike Matheron, University of Arizona, Yuma, AZ

01:15 (76) Detecting Resistance of Peanut to *Sclerotium rolfsii* in Paired Plot Field Trials. **F.M. Shokes* and D.W. Gorbet.** Tidewater Agricultural Research and Extension Center, Suffolk, VA.

01:30 (77) Field Reaction of Selected Runner Peanut Genotypes to Southern Blight. **B.A. Besler*, H.A. Melouk, and W.J. Grichar.** Texas Agricultural Experiment Station, Yoakum, TX.

01:45 (78) Screening Peanut Genotypes for Resistance to *Sclerotinia minor* and *Cylindrocladium parasiticum* and Testing the Efficacy of Experimental Compounds for the Management of Sclerotinia Blight. **A.V. Lemay*, J.E. Bailey, and B.B. Shew.** North Carolina State University, Raleigh, NC.

02:00 (79) A Comparison of the Suppression of Aflatoxin Production in Liquid Cultures of *Aspergillus flavus* NRRL 5520 by *Fusarium moniliforme, Aspergillus niger, Rhizopus* and a Low Aflatoxin Producing *Aspergillus flavus* strain. **W. Mubatanhema* and D.M. Wilson.** University of Georgia, Tifton, GA.

02:15 (80) Market System Model to Predict the Effects of Regulatory and Processing Practices on the Removal of Aflatoxin from Peanuts. **T.B. Whitaker* and F.G. Giesbrecht.** USDA, ARS, Raleigh, NC.

02:30 (81) Evaluation of *Aspergillus oryzae* and *A. sojae* as Potential Biological Control Agents for Preharvest Aflatoxin Contamination of Peanuts. **J.W. Dorner*, R.J. Cole, B.W. Horn, and P.D. Blankenship.** USDA, ARS, National Peanut Research Laboratory, Dawson, GA.

02:45 (82) Effect of Peanut Cultivation on Soil Populations of *Aspergillus flavus* and *A. parasiticus*. **B.W. Horn*, R.L. Greene, and J.W. Dorner.** USDA, ARS, National Peanut Research Laboratory, Dawson, GA.

Physiology and Seed Technology/ Processing and Utilization Verelst Room

Moderator: Craig Kvien, University of Georgia, Tifton, GA.

01:15 (83) Effects of Elevated Carbon Dioxide and Temperature on Growth and Yield of Peanut. **K.J. Boote* and L.H. Allen.** University of Florida, Gainesville, FL.

01:30 (84) Evaluation of the CROPGRO-Peanut Growth Model in the Guinea Savanna Zone of Ghana. **J.B. Naab, P. Singh*, K.J. Boote, and J.W. Jones.** ICRISAT, India.

01:45 (85) *trans*-Resveratrol Cotent in Commercial Peanuts and Peanut Products. **V.S. Sobolev* and R.J. Cole.** USDA, ARS, National Peanut Research Laboratory, Dawson, GA.

02:00 (86) Resveratrol Variability in Edible Peanuts. **T.H. Sanders* and W.D. Branch.** USDA, ARS, Market Quality and Handling Research Unit, Raleigh, NC.

02:15 (87) The Effect of Processing on the Allergenicity of Peanuts. **S.J. Maleki*, S.Y. Chung, and E.T. Champagne.** UAMS, Little Rock, AR.

02:30 (88) Peanut Allergenicity Could Be Enhanced by Biochemical Reactions Occurring During Peanut Roasting. **S.Y. Chung*, S.J. Maleki, and E.T. Champagne.** USDA, ARS, New Orleans, LA.

02:45 (89) Effects of Extrusion Temperature and Feed Moisture Content on Peanut Flour Extrudates. **M.J. Hinds* and R.D. Phillips.** North Carolina A&T State University, Greensboro, NC.

Production Technology I
Percival/Vernon

Moderator: *Steve L. Brown, University of Georgia, Tifton, GA.*

01:15 (91) Prediction of Fruit Initiation for Commercial Peanut Cultivars. **J.I. Davidson*, W. Griffin, J. Farris, M. Schubert, and C.L. Butts.** National Peanut Research Laboratory, Dawson, GA.

01:30 (92) Poultry Litter Effects on Yield and Grade of Runner Peanut. **J.F. Adams* and D.L. Hartzog.** Auburn University, Auburn, AL.

01:45 (93) Broiler Litter, Starter Fertilizer, and Fungicide Applications to Peanut in a Strip-Tilled, Intensive Crop Rotation. **G.J. Gascho*, T.B. Brenneman, and G.H. Harris.** University of Georgia, Tifton, GA.

02:00 (94) Pod Yield and Peanut Quality with Subsurface Drip Irrigation. **R.B. Sorensen* and F.S. Wright.** USDA, ARS, National Peanut Research Laboratory, Dawson, GA.

02:15 (95) A Windows 95/98® Application to Calculate Sprinkler System Operation and Ownership Costs. **D.A. Sternitzke*, M.C. Lamb, J.I. Davidson, Jr., and S.D. Sternitzke.** USDA, ARS, National Peanut Research Laboratory, Dawson, GA.

02:30 (96) Soil pH After Eleven Years of Subsurface Microirrigated Corn and Peanut. **N.L. Powell* and F.S. Wright.** Virginia Tech, Suffolk, VA.

02:45 (97) Influence of Irrigation Water Quality and Quantity on Peanut Production in the Texas High Plains. **R.G. Lemon* and M.L. McFarland.** Texas Agricultural Extension Service, College Station, TX.

Entomology/Harvesting & Curing
Verelst Room

Moderator: *Scott Wright, USDA-ARS, National Peanut Research Laboratory, Dawson, GA.*

03:30 (98) Control of Twospotted Spider Mite and Yield Impact in Virginia Peanut. **D.A. Herbert, Jr.*, G.F. Chappell, III, and M.J. Parrish.** Tidewater Agricultural Research and Extension Center, Suffolk, VA.

03:45 (99) Discrete and Interactive Effects of Cultivar, Plant Population, and In-Furrow Insecticide on Final Intensity of Spotted Wilt Disease, and Yield of Peanut at Two Locations in Georgia and Florida. **J.W. Todd*, A.K. Culbreath, D.W. Gorbet, J.A. Baldwin, S.L. Brown, W.D. Branch, and S.M. Fletcher.** University of Georgia, Tifton, GA.

04:00 (100) Evaluation of a Low Input Insect Management Program on Peanut in Alabama. **J.R. Weeks* and L. Wells.** Auburn University, Auburn, AL.

04:15 (101) Temperature Control Algorithms for Automated Control to Cure Peanuts. **C.L. Butts* and E.J. Williams.** USDA, ARS, National Peanut Research Laboratory, Dawson, GA.

04:30 (102) Heat Pump Dehumidification Curing for Peanuts. **E.J. Williams* and C.L. Butts.** University of Georgia, Tifton, GA.

04:45 (103) Grading Runner Type Peanuts at High Moisture. **P.D. Blankenship*, M.C. Lamb, C.L. Butts, E.J. Williams, and T.B. Whitaker.** USDA, ARS, National Peanut Research Laboratory, Dawson, GA.

Breeding and Genetics II
Regency Ballroom

Moderator: Kim Moore, AgraTech, Ashburn, GA.

03:30 (104) Breeding for Virginia-Type Peanuts Resistance to Multiple Diseases. **T.G. Isleib*, J.E. Bailey, P.W. Rice, and R.W. Mozingo, II.** North Carolina State University, Raleigh, NC.

03:45 (105) Development and Release of a Root-knot Nematode Resistant Runner Peanut Variety. **C.E. Simpson* and J.L. Starr.** Texas A&M University, Stephenville, TX.

04:00 (106) A Sclerotinia Resistant Runner Peanut Variety, Tamrun 98. **O.D. Smith, C.E. Simpson*, and H.A. Melouk.** Texas A&M University, College Station, TX.

04:15 (107) B 1-3 Glucanase Activity in Transgenic Peanut. **K.D. Chenault*, J.A. Burns, and H.A. Melouk.** USDA, ARS, Stillwater, OK.

04:30 (108) Evaluation of the Core Collection Approach for Identifying Resistance to *Meloidogyne arenaria* in Peanut. **C.C. Holbrook*, P. Timper, and H. Xue.** USDA, ARS, Coastal Plain Experiment Station, Tifton, GA.

04:45 (109) Association Among Components of Resistance to Early Leaf Spot in Peanut Between and Within Different Environments. **Z.A. Chiteka*, D.W. Gorbet, F.M. Shokes, and T.A. Kucharek.** University of Zimbabwe, Harare, Zimbabwe.

Production Technology II
Percival/Vernon

Moderator: Michael Franke, University of Georgia, Tifton, GA.

03:30 (110) Alternative Tillage Systems for Peanuts. **D.L. Hartzog*, J.F. Adams, and B. Gamble.** Auburn University, Auburn, AL.

03:45 (111) Reduced Tillage Production in North Carolina Peanut. **A.J. Whitehead, Jr.*, D.L. Jordan, P.D. Johnson, J.M. Williams, J.S. Barnes, C.R. Bogle, G.C. Naderman, and G.T. Roberson.** North Carolina State University, Raleigh, NC.

04:00 (112) Yield, Grade and Tomato Spotted Wilt Virus Incidence of Five Peanut Cultivars in Response to Twin Versus Single Row Planting Patterns. **J.A. Baldwin*, J.P. Beasley, Jr., and S.L. Brown.** University of Georgia, Tifton, GA.

04:15 (113) Addition of Doppler Radar Precipitation Estimates to Au-Pnut Disease Advisory. **A.K. Hagan*, K.L. Bowen, E. Bauske, R.R. Getz, S.D. Adams, and K.S. Harker.** Auburn University, Auburn, AL.

04:30 (114) The Effects of In-Furrow Insecticide and Early Post-emergence Herbicide Combinations on Peanut Growth and Yield and the Incidence of Tomato Spotted Wilt Virus. **G.E. MacDonald*, S.L. Brown, D.E. Bell, W.R. Ethredge, R.G. McDaniel, W.A. Roberts, and J.A. Tredaway.** University of Florida, Gainesville, FL.

04:45 (115) Influence of Adjuvants on Peanut Response to Prohexadione Calcium. **D.L. Jordan* and C.W. Swann.** North Carolina State University, Raleigh, NC.

Friday, July 16

07:00-08:00 Awards Breakfast.. Regency Ballroom
Dow AgroSciences/BASF

08:00-10:00 APRES Awards Ceremony
and Business Meeting.............................. Regency Ballroom
Dow AgroSciences

10:00-12:00 Peanut CRSP.. Westbrook Room

SITE SELECTION COMMITTEE

The site selection committee for APRES met July 13, 1999, at 1:20 p.m.

Bob Lynch reported that the Hyatt Regency Savannah had been very professional and was working very hard to make our stay and meeting most successful.

Kira Bowen reported that the 2000 meeting of APRES would be in the Grand Hotel, Point Clear, Alabama (July 11-14), which is 45 minutes from the airport. They are trying to arrange for use of University vans to transport people to and from the airport.

Ron Sholar reported that the Oklahoma committee for the 2001 meeting had decided on Oklahoma City as the site and had tentative contracts from the Renaissance and Westin Hotels. Motion was made, seconded and passed unanimously to allow the Executive Director to negotiate a contract and sign the contract for the Society.

The meeting for 2002 will be in North Carolina. David Jordan and Bob Sutter head the committee.

The 2003 meeting will be held in Florida and Ben Whitty and Maria Gallo-Meagher have agreed to serve on the committee.

Respectfully submitted,

Robert E. Lynch, Chair

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 Baltimore, Maryland, from October 18 to 22, 1998. More than 3,000 scientific presentations were made of which 11 were devoted to peanut research. Seventeen members of APRES authored or co-authored presentations, including one symposium presentation. Dr. David Knauft and Dr. Tom Stalker, both members of APRES, were named Fellow of the American Society of Agronomy and Fellow of the Crop Science Society of America. The next annual meeting will be held in Salt Lake City, Utah, on October 31 to November 4, 1999.

Respectfully submitted,

H. Thomas Stalker, Chair

CAST REPORT

The CAST Board met in Kansas City, fall 1998 and in Washington, D.C., spring 1999. Due to the restructuring of CAST new officers will be installed in the fall 1999 meeting. David R. Lineback, University of Maryland, is President. David Knauft, University of Georgia is president-elect. Harold Coble, North Carolina State University, is president-elect beginning fall 1999. Stanley Fletcher, University of Georgia is a member of the National Concerns Committee and is Chair of the Plant and Soil Science Work Group.

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:

* Provided written testimony regarding research prioritization questions for the Initiative for Future Agriculture and Food Systems.
* Testified before the Board on Agriculture National Research Council committee on the effectiveness of the competitive grants program.
* Participated in a Senate briefing on the Global Climate Change.
* Co-hosted a workshop on carbon sequestration in soil with Pacific Northwest National Laboratories and Oak Ridge National Laboratories. Papers were published in a proceedings.
* Conducted a briefing on the CAST report Benefits of Biodiversity for Senate staff, Office of Science Technology and Policy in the White House, the media and several other groups in the D.C. area.
* Sponsored a series of meetings on biotechnology in Washington, D.C. including media briefings.
* Testified before two subcommittees of U.S. House Agriculture committee on EPA's proposed Plant Pesticide rule. Submitted written comment on changing the name of the proposed "plant pesticide" term in the EPA rule to "plant-expressed protectant".
* Co-sponsored a workshop, "The FQPA: A Challenge for Science Policy and Pesticide Regulation".
* Cooperated in a roundtable meeting on biotechnology that focused on food package labeling issues.

The Conversations on Change program continues to evolve. A workshop was held in San Antonio in February. Topics discussed include online publishing, society membership, and leader development. Within this program an intersocietal symposium is being developed on the topic of "Promise or Threat of Genetically Modified Organisms in Global Agriculture". Further information on this program can be found on their web site at www.societies.org.

As part of the restructuring effort CAST has formed a strategic planning committee. Also a cross cutting water quality task force of the board has been formed.

CAST is currently supported by 38 professional and scientific organizations representing over 180,000 member scientists. Further details are available on their own 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, Chair

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 concems: (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
1975-1999

	Individual	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

1999-00
MEMBERSHIP ROSTER

INDIVIDUAL MEMBERS

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