1998
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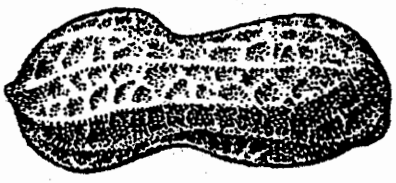

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POSTER SESSION

Isolation of Peanut cDNA Encoding Methionine-Rich Protein. M. YING*, H. MAZHAR and S.M. BASHA. Plant Biotechnology Program, Florida A&M University, Tallahassee, FL 32307.

Peanuts (*Arachis hypogaea L.*) are deficient in essential amino acid methionine. To improve the nutritional value of peanut, its methionine level has to be increased using genetic engineering. In this connection, we have isolated a methionine-rich protein (MRP) from peanut which contains 4.5% methionine. The MRP consists of six subunits with different molecular weights and methionine levels. The objective of this study was to screen a peanut cDNA library using the MRP antibodies to isolate the MRP gene(s). For this purpose, total MRP, MRP subunit 3 and 5 (MRP3 and MRP5) were isolated and purified using gel filtration, two-dimensional electrophoresis and electroelution techniques. Polyclonal antibodies were raised against total MRP, MRP3 and MRP5 in rabbits. The titer was 10^{-3} for all the three different antisera as determined by enzyme linked immunosorbant assay (ELISA). A peanut expression cDNA library (λgt11) was screened with the above three antisera. Several positive clones were identified. DNA from these positive clones is being isolated. The insert will be identified by Southern blotting, subcloned into suitable vectors and sequenced.

An Improved Capillary Electrophoretic Method for Separation of Native Peanut Seed Proteins. S. M. BASHA*, J. ANWAR and M. ALI-AHMAD. Division of Agricultural Sciences, Florida A&M University, Tallahassee, FL 32307.

Analysis of native peanut seed proteins using non-denaturing gel electrophoresis and HPLC techniques resolves them poorly. This is primarily due to the occurrence of predominant amount (> 70%) of arachin in the seed proteins. Hence, to identify variation in peanut seed protein composition they have to be dissociated with SDS or urea prior to analysis by one- or 2-dimensional gel electrophoresis. Earlier we had reported a capillary electrophoretic (CE) method for separation of peanut leaf, seed and cell culture proteins. Although this method resolved leaf and cell culture proteins satisfactorily it failed to resolve seed proteins. This study was aimed at developing a CE method capable of giving improved seed protein resolution. For this purpose, seed proteins were extracted and subjected to CE at different ionic strengths, pH and reversing the polarity. The results showed that a run buffer of 0.12 M sodium borate pH 9.3 gave the best resolution of seed proteins. Using this method peanut seeds of different maturities and cultivars were analyzed to determine the applicability of the CE method for identifying variation in peanut seed protein composition.

Effect of Chilling on Peanut Leaf Composition. M. A. ALI-AHMAD* and S. M. BASHA, Division of Agricultural Sciences, Florida A&M University, Tallahassee, Fl 32307.

The peanut (*Arachis hypogaea* L) plant is cold-sensitive and susceptible to cold damage, and cold-related problems. However, many temperate plant species undergo a number of biochemical and physiological changes following brief exposure to a low positive temperature which will increase their tolerance to freezing stress. The purpose of this research was to measure chill-induced changes in the metabolite levels for determining the response of peanut plants to cold stress. Peanut seedlings were subjected to cold stress by exposing them to 4°C for 0 to 7 days. Leaves were collected from these plants and analyzed for protein, amino acids and soluble sugars. The results showed that the levels of total protein, free amino acids and soluble sugar content were higher in cold-stressed plants compared to the plants grown at 25°C. Further analysis of proteins by SDS gel electrophoresis from cold stressed plants showed higher levels of polypeptides than control plants. Moreover, capillary electrophoresis showed major differences in the protein composition between cold stress and non-stressed leaves. In the free amino acids pool, proline, glycine and lysine levels were higher in cold stressed plants than the unstressed plants.

Immunochemical Characterization of a Methionine-rich Protein from Peanut. H. MAZHAR and S. M. BASHA. Plant Biotechnology Program, Florida A&M University, Tallahassee, FL 32307.

Peanuts like other legumes are low in sulfur containing amino acids such as methionine and cysteine. The major storage proteins of peanut belong to the globulin class and are termed as arachin and nonarachin. Together these proteins comprise about 87% of the total seed proteins. Previous research from our laboratory has resulted in the identification of a methionine-rich protein (MRP). The MRP has been purified and found to contain 4.0% methionine and 3.4% cysteine. The MRP resolves into six different subunits on 2-dimensional electrophoresis. Amino acid analysis of individual subunits revealed that MRP 3 and MRP 6 subunits contain high levels of methionine and cysteine. In order to further characterize the MRP, polyclonal antibodies were raised against the MRP 2 and MRP 3 subunits. Using these antibodies experiments are in progress to study the differential deposition pattern of the MRP as well as their breakdown during germination. Preliminary results have indicated that the MRP 2 was deposited as early as the 'white' maturity stage of development, while the MRP 3 was detected at a later stage ('yellow'). During germination the MRP 3 was found to degrade faster than the MRP 2. Hence, it appears that the MRP 3 must be located on the surface of the protein body while the MRP 2 might be located in the core of the protein body. Attempts are being made to localize these proteins in the protein body by double-label immunocytochemistry to confirm this hypothesis. A cDNA library is also being screened with the MRP antibody to isolate the MRP gene.

Soil and Aerial Environments Under a Rain Exclusion Shelter used to Screen Peanut Germplasm for Resistance to Aflatoxin Contamination. K.T. INGRAM*, Department of Crop and Soil Sciences, The University of Georgia, Griffin, GA 30223-1797, and C.C. HOLBROOK, USDA-ARS, Tifton, GA 31798.

Aflatoxin contamination of peanut is more severe under drought. Rain exclusion shelters have been used to increase the likelihood of aflatoxin contamination, thereby improving the efficiency of field screening for resistance to aflatoxin contamination, which is the combined resistance to infection by *Aspergillus flavus* and subsequent production of aflatoxin. This research was done to quantify the spatial variation of soil temperature and moisture for peanut cultivars grown beneath rain exclusion shelters. We instrumented one rain exclusion shelter (30 m x 9 m) constructed from a steel hoop frame covered with transparent plastic. The shelter covered 50 plots, each 2-rows x 2.4 m. The overall nursery included 5 genotypes with 10 replications. For this study we instrumented 12 plots that gave good spatial coverage within the shelter. We used Watermark moisture blocks to measure soil moisture and thermocouples to measure soil temperature both at 5 and 25 cm soil depths in each of the 12 plots. In six of these plots, we also measured soil moisture from 5 to 35 cm depth with time domain reflectometry probes. Air temperature and humidity, and total and net solar radiation were also measured beneath the rain exclusion shelter. Data from all environmental sensors were stored at one-minute intervals, and averaged for each hour throughout the season using a CR10X datalogger (Campbell Scientific, Inc.). Air temperatures beneath the shelters averaged 7.4°C warmer than those measured at a nearby weather station. During the last two weeks of the experiment, air temperature beneath the shelter averaged 39.9°C, with eight days having temperatures greater that 40°C. Soil temperatures at 5 cm depth approached 40°C before the canopy closed, but remained below 35°C after the soil above the thermocouple was shaded by the crop canopy. Soils were dries and warmest in plots of 419A. The only consistent effect of position under the shelter on soil temperature and moisture was that the plot in the middle of the north-west facing end was driest and warmest, perhaps because it received more direct afternoon solar radiation.

Interaction of In-furrow Thrips Insecticides and Postemergence Applied Herbicides on Growth and Yield of Virginia Peanut. D. A. HERBERT, JR.* and C. W. SWANN. Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437.
The interaction of in-furrow applied insecticides and postemergence applied herbicides is seen as an emerging but relatively poorly understood problem in the Virginia-North Carolina peanut growing area. In 1996, foliar chlorosis was noted after application of certain insecticide/herbicide combinations with some evidence of possible yield reductions. Two field trails were initiated in 1997 to begin elucidating the problem. NC-V 11 peanuts were planted and managed according to recommended practices. Plots were 4 rows (0.9-cm centers) by 12.16-m long, arranged in a randomized complete block design with 4 replicates. Metam-sodium 42% at 38.2 kg (AI)/ha was applied as a soil fumigant about 2 weeks prior to planting to suppress soil-born disease. In-furrow insecticides included Temik 15G at 1.12 kg (AI)/ha, Orthene 75S at 0.84 kg (dissolved in water) (AI)/ha, Thimet 20G at 1.12 kg (AI)/ha, Di-Syston 15G at 1.12 kg (AI)/ha, and an untreated control. Postemergence herbicides included Basagran 4EC at 1.12 kg (AI)/ha, Blazer 2L at 0.28 kg (AI)/ha, Storm 4EC at 0.56 kg (AI)/ha, and an untreated control. All herbicides were applied with Agridex 2L at 0.56 kg (AI)/ha. Dual 8E (1.12 kg (AI)/ha), Pursuit 70DG (0.035 kg (AI)/ha) and Starfire 1.5SC (0.14 kg (AI)/ha) were applied over the entire test area at or near planting Plots were kept weed free by cultivation and hand weeding. Data collected included plant stand counts, thrips injury ratings (0-10 scale), flower counts, subjective percent foliar chlorosis and growth suppression ratings, and yield (24.3 row-m/plot). In experiment 1, all insecticides provided significant levels of thrips control on June 23 when injury was greatest and ranged from 1.1 to 2.3 compared with 8.0 in the untreated control. All insecticide/herbicide combinations caused some foliar chlorosis and it ranged from 7.5% (Temik + Storm) to 35.0% (Di-Syston + Basagran). All combinations also caused some growth suppression with a range from 2.5% (Temik + Storm) to 36.3% (Di-Syston + Basagran). Yields ranged from 3967 kg/ha (Temik + Storm) to 2966 kg/ha (Di-Syston + Basagran). Trends were similar in experiment 2, except Temik + Blazer appeared to cause less plant damage and resulted in the highest yield (3583 kg/ha), and the Thimet + Basagran resulted in the lowest yield (2858 kg/ha).

High Oleic Oil Roasting of Partially Defatted Peanuts. G. E. BOLTON* and T. H. SANDERS. Department of Food Science and USDA, ARS, Market Quality and Handling Research Unit, North Carolina State University, Raleigh, NC 27695-7624.

Low density lipoprotein (LDL) oxidation is suspected to be a triggering factor for hardening of the arteries (atherosclerosis) in humans. Polyunsaturated fatty acids (PUFA) attached to the lipoproteins are much more susceptible to oxidation than monounsaturated fatty acids (MUFA). Studies suggest that changes in diet can increase MUFA content and decrease PUFA content in lipoproteins and thereby decrease LDL oxidation. This may explain the reduction in atherosclerosis seen as a result of changes in dietary fat. Peanuts have oil contents near 50%, whereas partially defatted peanuts have been reduced to oil contents near 30% by means of mechanical presses. The O/L ratio of peanut oil is highly correlated with the shelf-life potential of peanuts. Peanut breeders have produced peanuts with O/L ratios near 30, whereas the O/L ratio of regular peanuts is usually ca. 1.5. The use of high oleic peanut oil to roast regular O/L peanuts has been shown to improve the shelf-life of regular O/L peanuts. High oleic peanut oil was used to roast both regular and partially defatted peanuts with a regular peanut oil roast used as a control. Post-roast treatments were used to vary oil uptake into the peanuts. Peanuts were roasted at 177 C to a Hunter L value of 49 */- 1. Roasted samples were stored at 30 C in glass jars and aerated 3 times per week for 8 weeks. Samples were taken at regular intervals and analyzed for peroxide value (PV), oxidative stability index (OSI), moisture content, total fat, oil uptake and O/L ratios. The goal of this experiment was to produce peanuts with lower total oil content (35-40%) and higher O/L ratios. Lower total fat content and an increase in monounsaturated fats relative to polyunsaturated fats should result in both improved peanut product shelf-life and improved health benefits to consumers.

Consumer Analysis of Commercial Peanut Butter. K.L. MCNEILL* and T.H. SANDERS. Department of Food Science and USDA, ARS, Market Quality and Handling Research Unit, North Carolina State University, Raleigh, NC 27695-7624.

Consumer research was conducted on fifteen commercial creamy peanut butters to assess the critical product attributes for consumer acceptance. The objectives of this study were to define consumer responses in terms of acceptance and intensity of attributes and to determine the relationship between consumer language and the perceived sensory properties that drive consumer acceptance. A descriptive analysis panel screened forty-two commercially available creamy peanut butters to select fifteen representative samples for consumer panels to evaluate. Prior to the quantitative consumer research, two focus groups of 8-10 participants generated consumer terminology for the consumer test questionnaire. One hundred sixty consumers rated the peanut butters over a two-day period following a balanced incomplete block design. Consumers rated liking and intensity for 18 attributes that included appearance, flavor and texture. The consumer panel results identified four groups of products with unique flavor and texture characteristics. Through the consumer-descriptive data relationships, examined using a variety of uni- and multivariate statistical methods, attributes that affect consumer liking and the attributes that signal consumer responses of interest were identified. These attributes included roasted peanutty, salty, sweet, smooth/rough texture, and color attributes. This study identified critical consumer attributes for creamy peanut butter as part of a large study to correlate consumer acceptance language and descriptive analysis. Defining consumer liking attributes in terms of descriptive attribute intensities will allow descriptive analysis to predict consumer response.

Identification of Peanut Genotypes with Resistance to Rhizoctonia Limb Rot and the Correlation of Resistance with Hypocotyl Infections of Seedlings. M.D. FRANKE[1]*, T.B. BRENNEMAN[1], and C.C. HOLBROOK[2]. [1]Dept. of Plant Pathology, Univ. of Georgia, Coastal Plain Experiment Station, Tifton, Georgia 31793-0748 and [2]USDA-ARS, Tifton, Georgia 31793.

Sixty-six core selections from the peanut core collection along with Florunner, Southern Runner, Georgia Browne, and Georgia Green were screened for resistance to Rhizoctonia limb rot in field plots. Accessions were planted in two row plots 2.94 m long on 23 May and 20 May in 1996 and 1997, respectively. In 1996, plants were inoculated 11 September with 88.5 kg/ha of infested oat seed, and were inverted and rated 10 October. In 1997, plants were inoculated 8 September with 80.6 kg/ha of infested oat seed, and another 28.0 kg/ha was applied 8 October. In 1997, plants were inverted and rated 5 November. In both years ten stem sections were randomly cut from each plot. Average number of lesions, girdling lesions, and lesions longer than 2.54 cm were calculated per stem. Yield data was only collected in 1996. Data from both years was combined and subjected to an ANOVA followed by a means separation test using Fisher's LSD. The Fastclus procedure of PC-SAS was used to eliminate overlapping groups of means and resulted in the core selections and standards being placed into six clusters. Cluster six, which had the lowest cluster means for all three variables, contained the partially resistant cultivar Georgia Browne along with Georgia Green and six additional core selections. Eleven core selections representing the full range of disease expression and the four standard cultivars were tested for resistance to seedling hypocotyl infections in the greenhouse. Core selections 234 and 366 were the most resistant to hypocotyl infections while core selection 335 and Florunner were the most susceptible. Data from the seedling and the field experiments were analyzed to determine if a correlation between resistance to limb infections and hypocotyl infections exists. There was not a significant correlation between resistance to limb and hypocotyl infections indicating that screening genotypes for resistance to hypocotyl infections is not a good method of identifying potential sources of limb rot resistance.

The Management of Sclerotinia Blight (*Sclerotinia minor*) on Peanut (*Arachis hypogaea*) with Fluazinam, the Systemic Inducer Actigard, and Resistant Genotypes. A.V. Lemay* and J.E. Bailey. Department of Plant Pathology, North Carolina State University, Raleigh, NC 27695-7616.

Sclerotinia minor (Jagger) is an important soil-borne fungal pathogen on peanut. In North Carolina, annual yield losses can be from 10-50%. Currently, growers utilize the fungicide iprodione (Rovral 4F, Rhone-Poulenc Ag. Co., Research Triangle Park, NC) for management of Sclerotinia blight, but the efficacy and cost are a concern. The only genotype with desired market quality that demonstrates some resistance is VA 93B. A field test was implemented in Gates Co., NC, to study genotype resistance, the effect of fluazinam (Fluazinam 500F, Zeneca Ag. Products, Wilmington, DE) and the systemic inducer actigard (CGA 245704, Novartis, Greensboro, NC) on Sclerotinia blight disease incidence, and the interaction of these compounds with plant resistance. Thirteen peanut genotypes were planted in two 7.6-m row plots, seeded 2.4 cm apart, in a randomized complete block design with three repetitions on the 19 May 1997. Standard cultural practices were followed. Plants were treated with fluazinam (0.58 kg ai/ha), actigard (0.14 kg ai/ha) or remained untreated. Applications were made with a tractor mounted sprayer (3 hollow cone nozzles/row, 276 kPa, 56.78 L water/0.4 ha) on 5 Aug., 27 Aug., and 19 Sept. Disease ratings, made weekly from late-July to mid-October, entailed counting increments of 30 cm that contained *S. minor* hits. An analysis of variance and Waller-Duncan K-ratio were computed for the area under the curve using SAS (SAS Institute, Cary, NC). There were no block effects. NC7, N91026E and N93107C were the most susceptible, N93112C, NC3033, 96RL22 and VA 93B demonstrated moderate resistance, and 96RL18, 96RL19, 96RL20, 96RL21, N92056C and Tamspan showed the greatest resistance. Although treated plants were not significantly different (P=0.05) from the untreated, there did appear to be a general reduction in *S. minor* hits on some genotypes when treated with fluazinam. No interaction effects occurred between the compounds and genotypes. N92056C is a promising line, demonstrating resistance to *S. minor* and resulting in a high yield.

Evaluation of New Algorithms and Fungicide Spray Thresholds for the Virginia Sclerotinia Blight Advisory Program. D. B. LANGSTON, JR.*, P. M. PHIPPS, and R. J. STIPES. Tidewater Agricultural Research & Extension Center, Virginia Polytechnic Inst. and State Univ., Suffolk, VA 23437.

The Virginia Sclerotinia blight advisory program (FDI 32) was developed to give growers an advanced warning for the onset of Sclerotinia blight and to aid in the timing of fungicide sprays. In 1995, the FDI (five day index) 32 threshold called for a fungicide spray 13 days after disease onset. This prompted the testing of new algorithms which would ensure that fungicide sprays were applied more preventively. Parameters currently used in the FDI 32 algorithm have been previously described (Plant Dis. 81:236-244). New vine growth indices were one, two, three, or four if vines in adjacent rows were >30 cm, ≤30 cm, ≤15 cm, or touching between rows, respectively. Temperature parameters included air and soil temperature indices of three, two, one, or zero when the daily average temperature was ≤22 C, ≤25 C, ≤28 C, or >28 C, respectively. The temperature (air or soil) which gave the highest index was used in the assessment of disease risk. DAP (days after planting) dependent FDI thresholds for fungicide application were as follows: 16≤90 DAP, 32≤120 DAP, and 64>120 DAP. All spray programs utilized 0.58 kg/ha of fluazinam applied with one 8010LP nozzle centered over each row and calibrated to deliver 374 L/ha. Field trials were conducted at three locations in 1996 and 1997. Of the algorithms tested, the program which incorporated the new indices for vine growth and temperature along with DAP-dependent thresholds (vine/air-soil temp. w/DAP-dependent thresholds) consistently triggered fungicide sprays prior to disease onset and before sprays according to the FDI 32 algorithm and demand program. Sprays according to the vine/air-soil temp. algorithm w/DAP-dependent thresholds were applied from1 to 7 days prior to disease onset in 1996 and from 0 to 5 days prior to disease onset in 1997. Applications according to the FDI 32 algorithm ranged from 7 to 9 and 7 to 42 days after disease onset in 1996 and 1997, respectively. The vine/air-soil temp. algorithm w/DAP-dependent thresholds called for three sprays at all locations in both years. The FDI 32 algorithm averaged 2.7 and 1.7 sprays while the demand program called for 2.7 and 3 sprays in 1996 and 1997, respectively. Overall, the vine/air-soil temp. algorithm w/DAP-dependent thresholds suppressed disease and improved yield as good or better than other spray programs. These results indicated that the vine/air-soil temp. algorithm w/DAP-dependent thresholds was more effective than the FDI 32 algorithm for providing an advanced warning for disease, measuring disease risk and timing fungicide sprays.

Adapting a Weather Based Leafspot Advisory on Peanuts to Partially Resistant Genotypes. V. ARIS* and J.BAILEY. Department of Plant Pathology, North Carolina State University, NC 27695

The purpose of this work was to adapt a weather-based spray advisory for use with genotypes with various levels of resistance to early leafspot (*Cercospora arachidicola*). Three peanuts genotypes (NC 7, NC 11, NC-GP 343) were planted in a complete randomized block design (with 4 blocks) at the Peanut Belt Research Station in Lewiston, North Carolina . Each plot consisted of two 8 m rows flanked by border rows planted with NC 7. A mix of the fungicides propiconazole 3.6 EC (Tilt, Novartis) and chlorotalonil 6F (Bravo, ISK) at the rates of 0.022 and 0.83 Kg of ai/ha, respectively, was applied based on a weather based advisory spray schedule. The existing leaf spot advisory was altered by changing the duration of favorable conditions (hours of relative humidity above 95 % multiplied by a temperature scaling factor) necessary to trigger a spray recommendation. The number of favorable hours for infection were decreased from the 12 hours reference model to 8 and 10 hrs, to obtain a more conservative spray schedule, and were increased to 14, 16 and 18 hrs to obtain less conservative ones. Those different models were compared to a non-sprayed control and a standard spray schedule every 14 days. The 1997 growing season was very dry and the leaf spot epidemic started late in the season, in September. The 18 hrs and 16 hrs models never triggered, the 14 hrs and 12 hrs models called for one spray, the 10 hrs model for 3 sprays, and the 8 hrs model for 4 sprays. The application of fungicide triggered by the 12 hrs or 14 hrs model decreased the accumulation of inoculum within the plot and therefore slowed the disease increase later in the season when the conditions became favorable again (in September). Those models seem not to take into account disease development at lower temperatures, as they did not call for a spray in September while the epidemic started in the field. Models treatments and genotypes explained 94% of the area under the disease progress curve and defoliation in the field, but the statistical analysis did not show any significant relationship between the different models and the yield. These results show the importance of using an advisory that would decrease the need for fungicides spray in unfavorable years and supports the idea that models can be developed to reduce the number of fungicides applied to resistant genotypes.

Weed Management in North Carolina and Virginia Peanuts with Diclosulam. W. A. BAILEY*, J. W. WILCUT, S. D. ASKEW, D. L. JORDAN, C. W. SWANN, and V. B. LANGSTON. Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620; Tidewater Agricultural Research and Extension Center, Virginia Tech, Suffolk, VA 23437; and DowElanco, Raleigh, NC 27616.
Field studies were conducted at five locations in North Carolina and Virginia in 1996 and 1997 to evaluate different rates of diclosulam applied preemergence (PRE) with commercial standards for weed control, crop tolerance, and peanut yield. All plots received a PPI treatment of ethalfluralin at 0.75 lb ai/ac. Diclosulam was applied at 0.008, 0.016, 0.024, 0.031, or 0.046 lb ai/acre. Diclosulam controlled the Ipomoea morningglory complex which consisted of pitted morningglory (Ipomoea lacunosa L.), entireleaf morningglory (Ipomoea hederaceae var. integriuscula Gray), ivyleaf morningglory (Ipomoea hederaceae (L.) Jacq.), and tall morningglory (Ipomoea purpurea (L.) Roth.); yellow nutsedge (Cyperus esculentus L.), purple nutsedge (Cyperus rotundus L.), common ragweed (Ambrosia artemisiifolia L.), prickly sida (Sida spinosa L.), and eclipta (Eclipta prostrata L.) as good and frequently better than the commercial standards of acifluorfen plus bentazon, paraquat plus bentazon, or AC 263,222. Nutsedge control improved with increased rates of diclosulam with acceptable and consistent control requiring at least the 0.024 lb/ac rate. Systems that used ethalfluralin PPI plus diclosulam at 0.024 lb/ac PRE followed by an early postemergence (EPOST) treatment of acifluorfen plus bentazon provided better control of a broader spectrum of weeds and yielded higher than systems that used ethalfluralin PPI followed by an EPOST treatment of acifluorfen plus bentazon, AC 263,222 EPOST, or paraquat plus bentazon EPOST and acifluorfen plus bentazon postemergence (POST). Peanut exhibited excellent tolerance to diclosulam at all rates applied PRE. Diclosulam applied PRE at 0.031 lb/ac did not influence peanut yield or grade compared to peanuts not treated with diclosulam for any variety tested in 1996 or 1997. The following varieties were evaluated: NC 12C, NC 15, NC 7, VAC 92R, NCV 11, NC 10C, and NC 9. These experiments were kept weed free with weekly hand weedings.

Weed Management in Peanut with Flumioxazin. S. D. ASKEW*, J. W. WILCUT, and J. R. CRANMER. Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620, and Valent USA, Cary, NC 27511.
Field studies were conducted at four locations in North Carolina in 1996 and 1997 to evaluate different rates of flumioxazin with commercial standards for weed control, crop tolerance, and peanut yield. Flumioxazin was applied preemergence (PRE) at 0.063 or 0.094 lb ai/ac. Flumioxazin controlled the Ipomoea morningglory complex which included pitted morningglory (Ipomoea lacunosa L.), entireleaf morningglory (Ipomoea hederaceae var. integriuscula Gray), ivyleaf morningglory (Ipomoea hederaceae (L.) Jacq.), and tall morningglory (Ipomoea purpurea (L.) Roth.); common lambsquarters (Chenopodium album L.), velvetleaf (Abutilon theophrasti Medicus), jimsonweed (Datura stramonium L.), eclipta (Eclipta prostrata L.), and prickly sida (Sida spinosa L.) as good and frequently better than the commercial standards of acifluorfen plus bentazon, paraquat plus bentazon, norflurazon, or AC 263,222. Peanut exhibited good tolerance to flumioxazin at all rates. Flumioxazin applied PRE at 0.063 lb ai/ac did not influence peanut yield or grade compared to untreated peanut for any variety tested. The following varieties were tested: NC 12C, NC 15, NC 7, VAC 92R, NCV 11, NC 10C, and NC 9. The variety tolerance experiments were kept weed-free with weekly hand weedings.

Reaction of Runner Cultivars and Breeding Lines of Peanut to Sclerotinia Blight and their Responses to Fungicide Treatment. J. P. DAMICONE*, H.A. MELOUK, and K. E. JACKSON. Department of Entomology and Plant Pathology, and USDA/ARS, Oklahoma State University, Stillwater, OK 74078.

Tamspan 90, a Sclerotinia blight-resistant spanish cultivar, has been used to reduce yield losses and production costs in fields infested with *Sclerotinia minor* in Oklahoma. Resistant runner cultivars are needed because of the low demand for spanish peanuts. Two recently released runner cultivars (Tamrun 96 and Georgia Green) and two runner breeding lines from Texas A&M University (TX901417 and TX901338-2) were evaluated for their disease reaction compared to Okrun, a susceptible runner cultivar, and Tamspan 90. Over five trials in 1996 and 1997, disease incidence was highest for Okrun (50%) and lowest for Tamspan 90 (6%). The most resistant runner entries were TX901338-2 (13%) and TX901417 (16%). The cultivars Tamrun 96 (29%) and Georgia Green (26%) also had less disease than Okrun ($P=0.05$). Yields (kg/ha) for all entries were higher ($P=0.05$) than for Okrun (3005). Among entries, yields were highest for TX901338-2 (4369) and Tamrun 96 (4246), intermediate for Georgia Green (3415) and TX901417 (3607), and lowest for Tamspan 90 (3444). In two trials in 1997 where disease incidence was moderate, entries received three applications of iprodione at 1.12 kg/ha, two applications of dicloran at 3.4 kg/ha, one application of fluazinam at 1.12 kg/ha, two applications of fluazinam at 0.84 kg/ha, or no treatment. Entries responded similarly to fungicide treatment. At both locations, mean disease incidence across fungicide treatments for all entries was at least 50% lower than for Okrun ($P=0.05$). However, mean yields across fungicide treatments were greater than Okrun only for Tamrun 96 at both locations, and for TX901338-2 and Georgia Green at one location ($P=0.05$). Across entries, all fungicide treatments reduced mean disease incidence by over 50% compared to the control. However, mean yields across entries were greater than the control only for the treatment with two applications of fluazinam. Tamrun 96 and Georgia Green appear to be moderately resistant to Sclerotinia blight and may be useful for reducing losses to this disease in runner production. TX901338-2 and TX901417 have better resistance, but did not yield higher than Tamrun 96 in any of the trials. Further evaluations where disease incidence is high are warranted.

Reaction of Peanut Genotypes to *Sclerotium rolfsii* under Greenhouse Conditions. [1]H. A. MELOUK*, [2]S. S. ABOSHOSHA and [1]C. SAUDE. [1]USDA-ARS, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078; and [2]Department of Plant Pathology, Faculty of Agriculture, Alexandria University, Alexandria, Egypt.

Eight-wk-old peanut plants were inoculated with sclerotia of *S. rolfsii*. Two hundred fifty mg of dried crushed peanut leaves (DCPL) were spread around the base of each plant. Five sclerotia were placed on soil amended with DCPL next to each plant stem. Plants were incubated in clear polyethylene chambers at RH of > 95% and 25$\pm$2C. Infection on main stems was categorized from 1-5 where 1 = up to 20% of stem length colonized, 2 = >20$\leq$ 40%, 3 = >40$\leq$ 60%, 4 = >60$\leq$ 80%, and 5 = >80-100%. Three isolates of *S. rolfsii,* from Quincy, FL (F), Tifton, GA (T), and Yoakum, TX (Y), were used. Eight peanut genotypes, Florunner, Georgia Green, Okrun, Southern Runner, Tamrun 96, TX901417, TX901338-2, and UF91108 were used. Over genotypes, isolates F and T colonized more stem length than isolate Y at 11, 14, and 17 days after inoculation (DAI). Over isolates, Georgia Green, UF91108, and Southern Runner had infection categories of 3.8, 3.9, and 4.0, respectively, at 17 DAI. The other genotypes TX901417, TX910338-2, Tamrun 96, Okrun, and Florunner had infection categories of 2.8, 2.9, 3.0, 3.0, and 3.1, respectively.

Efficacy of Recommended Fungicide Treatment Regimes for the Control of Foliar and Soilborne Diseases on Three Cultivars of Peanut. A. K. HAGAN*, B. GAMBLE, and L. WELLS, Auburn University, AL 36849-5624.

Peanut cv. Georgia Green, Southern Runner, and GK-7 were planted on May 16, 1997 on a site with a history of southern stem rot (SSR). A RCB split-plot design with 4 replications had cultivars as whole plots and fungicide regimes as subplots. Individual fungicide subplots consisted of four 9.1 m rows on 0.9 m centers. The test was not irrigated. Fungicide were applied with a 4-row boom sprayer with TX18 nozzles spaced on 0.45 m centers at a volume of 112 l/ha at 14-day intervals. Recommended treatment regimes included: 1) 7 applications of Bravo Ultrex (1.25 kg a.i./ha); 2) 2 applications of Bravo Ultrex (1.25 kg a.i./ha) followed by 4 applications of Folicur 3.6F (0.202 kg a.i./ha), and then Bravo Ultrex (1.25 kg a.i./ha); 3) 5 applications of Bravo Ultrex (1.25 kg a.i./ha) bracketing 2 mid-summer applications of Abound 2SC (0.33 kg a.i./ha); and 4) 2 application of Bravo Ultrex (1.25 kg a.i./ha) followed by 5 applications of Bravo Moncut (1.25 + 0.33 kg a.i./ha). Early leaf spot (ELS) was assessed using the Florida leaf spot scale on the day prior to plot inversion. Counts of SSR loci were made immediately after plot inversion. The hull-scrape method was used to determine digging date. A late-season drought suppressed disease development and peanut yield. Although ELS ratings for Southern Runner were lower than those for Georgia Green and GK-7, SSR severity for each cultivar was similar. Tomato spotted wilt incidence was higher in GK-7 than the other two cultivars. Across all fungicide treatment regimes, yield of Georgia Green was greater than that of Southern Runner and GK-7. Among fungicide regimes, lowest ELS ratings were recorded in the Folicur 3.6F and Abound 2SC-treated plots. ELS ratings in the Bravo Moncut-treated plots were intermediate between those for the latter two fungicides and Bravo Ultrex alone. SSR control in the Abound 2SC, Bravo Moncut, and Folicur 3.6F-treated plots were similar. Abound 2SC, Bravo Moncut, and Folicur 3.6F increased yield 700 to 800 kg/ha as compared with Bravo Ultrex alone. Disease and yield data for each cultivar will also be discussed.

Penetration of Resistant and Susceptible Peanut Roots by Meloidogyne arenaria. P. TIMPER* and C. C. HOLBROOK. USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793

Moderate levels of resistance to *Meloidogyne arenaria* have been identified from several accessions in the U.S. germplasm collection. As a first step in our objective to determine whether expression of resistance among these accessions is similar, we compared the ability of second-stage juveniles (J2) of *M. arenaria* to penetrate seven moderately resistant genotypes and the susceptible Florunner. Seeds were planted individually into 180 cm^3 pots containing a sandy soil. After 16 days, 600 J2 were pipetted into each pot. The number of J2 that penetrated the roots was determined 3 days later for six plants per genotype. To determine whether J2 egress from the root after penetration, an additional six plants per genotype were transplanted to nematode-free soil after 3 days, and the number of J2 remaining in the roots determined after another 7 days. The number of J2 within the roots of resistant genotypes was similar to the number in Florunner after 3 days. However, for two of the genotypes (PI 196762 and 259639) the number of J2 remaining in the roots had declined to 38 and 41% that of Florunner 7 days after transplanting. Resistance in the other five genotypes may affect a life stage other than the J2.

Development of Southern Stem Rot in Peanuts Over Three Growing Seasons. K.L. BOWEN*. Dept. Plant Pathology, Auburn University, AL 36849.

Onset and development of southern stem rot (caused by *Sclerotium rolfsii*) were monitored over three growing seasons, 1995-1997. In each season, two planting dates and both irrigated and rainfed plots were monitored. The first planting date in each year was in mid- to late-April followed by a second planting 3 to 4 wks later. Plot inversion began 20 to 49 days after planting (DAP) and continued at 7 to 12 day intervals throughout each growing season, depending on the year. Plants were initially assessed for aboveground symptoms then inverted for determination of signs of *S. rolfsii* colonization on plants and disease intensity. Signs of *S. rolfsii* were found on plants as early as 28 days after planting (DAP) in 1996. Stem rot development differed in each of the three years and incidence of dead plants apparently due to stem rot ranged from 3 to 10% at the end of the season. Earlier- planted peanuts and rain-fed plots consistently had greater occurrence of disease than later-planted peanuts and irrigated plots, respectively. Incidence of *S. rolfsii* on plants was greatest in 1995 and least in 1997; numbers of dead plants apparently due to stem rot was greatest in earlier-planted peanuts in 1996. Over all plots and the entire growing season, soil moisture averaged 5.30%, 4.26%, and 7.52% in 1995, 1996, and 1997, respectively. Relationships among incidence of plants with signs of *S. rolfsii*, onset of disease symptoms, and environmental parameters will be presented.

Determining Pod Yield Losses to Stem Rot of Peanut. **F.M. Shokes* and D. W. Gorbet. University of Florida, North Florida Research and Education Center, 3925 Highway 71, Marianna, FL 32446.**

Stem rot of peanut caused by *Sclerotium rolfsii*, causes major yield losses in the southeastern U.S. peanut belt. Because of the nonrandom distribution of natural sclerotial inoculum in soils, measuring the actual pod losses to stem rot in a given cultivar is difficult. Yield losses to stem rot were evaluated for 11 runner and six virginia type cultivars in a randomized complete block study with three replications in 1995 and 1996. Plots were four rows of a given cultivar, 0.91 m apart by 6.1 m long. Inoculum of a virulent pretested isolate of the pathogen (SR8), growing on sterile oat seed, was applied to rows one and two of each plot and the two uninoculated rows were treated twice with an effective soil fungicide to minimize stem rot. Plots were watered before and for two consecutive days after inoculation to enhance infection. Disease incidence was assessed at digging as disease loci per 12.2 m. Percent yield loss to disease was calculated by comparing the yield of inoculated rows to that of uninoculated rows. Potential yields (uninoculated yields) of all cultivars in 1995 ranged from 4483 kg/ha to 5737 kg/ha and from 3838 kg/ha to 6216 kg/ha in 1996. Yield losses in runner type cultivars ranged from 43% to 64% in 1995 and from 50% to 76% in 1996. The lowest losses for the runner type cultivars were observed in Georgia Green (43% and 52%) and Southern Runner (48% and 50%). Yield losses in the virginia types ranged from 27% to 53% in 1995 and from 26% to 64% in 1996. With 27% loss in 1995 and 29% loss in 1996, NC9 was one of the best virginia types in these tests. Similar measurements of pod yield losses to stem rot are being used at the final level of screening for stem rot resistance in our tests of elite breeding lines. In 1997 six resistant breeding lines and the new cultivar FL MDR98 were compared to three commercial cultivars in inoculated versus uninoculated paired rows. Potential yields were 4337 kg/ha for Florunner, 5272 kg/ha for Georgia Green, and 6369 kg/ha for Southern Runner with losses to stem rot of 56%, 54%, and 27% for the three cultivars, respectively. FL MDR98 had a yield potential of 6600 kg/ha and sustained yield losses to stem rot of only 17.5%. Potential yields of the six elite breeding lines ranged from 5652 kg/ha to 7725 kg/ha with losses from 18% to 31%. The disease resistance and yield advantage of the new cultivar and the breeding lines relative to the commercial cultivars were evident under these adverse disease conditions.

Performance of Diclosulam in Texas Peanut. P.A. DOTRAY[1], J.W. KEELING[2], W.J. GRICHAR[3], E.P. PROSTKO[4], R.L. LEMON[5], T.S. OSBORNE[2], and K.D. BREWER[3]. [1]Texas Tech University, Lubbock, TX 79409 and Texas Agricultural Extension Service, Lubbock, TX 79401; [2]Texas Agricultural Experiment Station, Lubbock, TX 79401; [3]Texas Agricultural Experiment Station, Yoakum, TX 77995; [4]Texas Agricultural Extension Service, Stephenville, TX 76401; and [5]Texas Agricultural Extension Service, College Station, TX 77843.

Diclosulam (Strongarm), a new triazolopyrimidine herbicide for use in peanut (*Arachis hypogaea*) and soybean (*Glycine max*), has been developed to provide broad spectrum weed control with excellent crop safety. Field experiments were conducted in 1997 to evaluate diclosulam activity on numerous weed species in Texas peanut. In Lubbock County, diclosulam at 0.016 lb ai/A applied preemergence (PRE) controlled Palmer amaranth (*Amaranthus palmeri*) 88%, devil's-claw (*Proboscidea louisianica*) 95%, and yellow nutsedge (*Cyperus esculentus*) 98%, 154 days after treatment (DAT). In Frio County, diclosulam rates of 0.016 lb/A or greater applied preplant incorporated (PPI) or PRE controlled purple nutsedge (*C. rotundus*) at least 97%, 91 DAT. In Lavaca County, diclosulam applied PPI or PRE at 0.016 lb/A controlled eclipta (*Eclipta prostrata*) 100%, pitted morningglory (*Ipomoea lacunosa*) at least 80%, and yellow nutsedge at least 80%, 91 DAT. In Comanche County, diclosulam at 0.023 lb/A applied PPI or PRE controlled yellow nutsedge 77-83%, 91 DAT. Visual peanut injury (up to 6%) was observed following diclosulam at 0.046 lb/A in Lubbock, Lavaca, and Frio Counties. However, observations recorded 56 DAT in Comanche County showed visual injury up to 18% following applications of diclosulam at 0.023 lb/A. In Frio County, diclosulam at rates up to 0.046 lb/A did not affect peanut yield.

Weed Management in North Carolina and Virginia Peanuts with Diclosulam. G. H. SCOTT*, J. W. WILCUT, S. D. ASKEW, D. L. JORDAN, C. W. SWANN, and V. B. LANGSTON. Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620; Tidewater Agricultural Research and Extension Center, Virginia Tech, Suffolk, VA 23437; and DowElanco, Raleigh, NC 27616.

Field studies conducted at five locations in North Carolina and Virginia in 1996 and 1997 evaluated different rates of diclosulam applied preplant-incorporated (PPI) with commercial standards for weed control, crop tolerance, and peanut yield. All plots received a PPI treatment of ethalfluralin at 0.75 lb ai/ac. Diclosulam was applied at 0.008, 0.016, 0.024, 0.031, or 0.046 lb ai/acre. Diclosulam controlled the Ipomoea morningglory complex which consisted of pitted morningglory (Ipomoea lacunosa L.), entireleaf morningglory (Ipomoea hederaceae var. integriuscula Gray), ivyleaf morningglory (Ipomoea hederaceae (L.) Jacq.), and tall morningglory (Ipomoea purpurea (L.) Roth.); yellow nutsedge (Cyperus esculentus L.), purple nutsedge (Cyperus rotundus L.), common ragweed (Ambrosia artemisiifolia L.), prickly sida (Sida spinosa L.), and eclipta (Eclipta prostrata L.) as good and frequently better than the commercial standards of acifluorfen plus bentazon, paraquat plus bentazon, or AC 263,222. Nutsedge control improves with increased rates of diclosulam with acceptable and consistent control requiring at least the 0.024 lb/ac rate. Systems that used ethalfluralin plus diclosulam at 0.024 lb/ac PPI followed by an early postemergence (EPOST) treatment of acifluorfen plus bentazon provided better control of a broader spectrum of weeds and yielded higher than systems that used ethalfluralin PPI followed by an EPOST treatment of acifluorfen plus bentazon, AC 263,222 EPOST, or paraquat plus bentazon EPOST and acifluorfen plus bentazon postemergence (POST). Peanut exhibited excellent tolerance to diclosulam at all rates applied PPI.

Interactive Effects of Temik and Herbicides on Peanut Yield and Quality. R.G. LEMON*, W.J. GRICHAR, C. R. CRUMLEY, and T.A. HOELEWYN. Department of Soil and Crop Sciences, Texas A&M University, College Station, TX 77843, Texas Agricultural Experiment Station, Yoakum, TX 77995, Texas Agricultural Extension Service, Seminole, TX 79360 and Texas Agricultural Extension Service, College Station, TX 77843.

Field studies were conducted near Seminole, Texas in 1997 to evaluate the interactive effects of Temik and postemergence applied herbicides on peanut yield and quality. 'Florunner' peanuts were planted May 1, 1997 and Temik 15G was applied in-furrow at 4.4 lb product/A. Trifluralin was preplant soil incorporated to the entire field at 0.5 lb ai/A. Temik treated and untreated plots received postemergence applications of herbicides June 12, 1997, 42 days after planting. Herbicides evaluated included Basagran (1.0 lb ai/A), Blazer (0.375 lb ai/A), Storm (0.75 lb ai/A), Cadre (0.063 lb ai/A), Pursuit (0.063 lb ai/A), 2,4-DB (0.25 lb ai/A), Dual II (1.5 lb ai/A), Frontier (1.0 lb ai/A), and Tough (0.9 lb ai/A). The study site was maintained weed free. Individual plots were dug October 1 and machine harvested October 28. Visual observations indicated neither canopy size reductions nor peanut injury with any treatment. Across all postemergence herbicide treatments, Temik treated plots yielded less (4,309 lb/A) and had lower grades than plots receiving postemergence herbicides only (4,794 lb/A). Temik treated plots receiving postemergence applications of Blazer and Storm showed the lowest yields (3,872 lb/A and 3,791 lb/A, respectively) and grades of all herbicide treatments.

Effects of Cadre Applications on Runner, Spanish, and Virginia Peanut Growth and Yield. W.J. GRICHAR*[1], R.L. LEMON[2], P.A. DOTRAY[3], T. BAUGHMAN[4], E.P. PROSTKO[5], K.D. BREWER[1], B.A. BESLER[1], and T.A.HOELEWYN[2]. [1]Texas Agricultural Experiment Station, Yoakum, TX 77995; [2]Texas Agricultural Extension Service, College Station, TX 77843; [3]Texas Agricultural Experiment Station, Lubbock, TX 79401; [4]Texas Agricultural Extension Service, Vernon, TX 76385; and [5]Texas Agricultural Extension Service, Stephenville, TX 76401.

Field experiments were conducted in 1996 and 1997 in various peanut producing areas of the state to determine the effects of Cadre 2AS at 0.063 lb ai/A (4.0 oz product/A) applied at various intervals up to 63 days after planting (DAP) on peanut growth and yield. Cadre treatments were applied at 7 day intervals beginning at peanut crack and continuing until 56 days after cracking (DAC). All Cadre treatments included a non-ionic surfactant at 0.25% v/v. Peanut plant height and width measurements were taken approximately 60 DAC. Peanut yield and grade data were obtained as well as peanut pod, shell, and nut weight. No difference in growth, development, or yield was noted with 'GK-7' grown in South Texas or 'NC-7' grown in North Central Texas. Cadre reduced 'Tamspan 90' growth in one of two years under non irrigated conditions but this injury did not effect peanut yield. Cadre caused up to a 16% reduction in peanut growth on 'AT 120' in West Texas. No yield difference between any Cadre application and the untreated check were noted at any location. Also no differences in pod development were noted.

Residual Herbicide Systems for Peanut Weed Management. E. F. EASTIN*and G. E. MACDONALD, Crop & Soil Sciences Department, University of Georgia, Tifton, GA 31794-0748.

Various residual herbicides, either alone or in combination with one or two applications of paraquat + bentazon at 0.125 + 0.25 lb/A, were evaluated at four locations across Georgia for two years. Pendimethalin at 1 lb/A or ethalfluralin at 0.75 lb/A was applied preplant incorporated (PPI) to the entire test area at each site. Metolachlor at 1.5 lb/A, alachlor at 2 lb/A, norflurazon at 1.2 lb/A, dimethenamid at 1 lb/A, acetochlor at 1.5 lb/A, imazapic at 0.063 lb/A, or imazethapyr at 0.063 lb/A were applied preemergence (Pre) or 2 weeks after cracking (WAC). Weeds evaluated included: Texas panicum (Panicum texanum), common ragweed (Ambrosia artemisiifolia), smallflower morningglory (Jacquemontia tamnifolia), bristly starbur (Acanthospermum hispidum), Florida pusley (Richardia scabra), Florida beggarweed (Desmodium tortuosum), wild poinsettia (Euphorbia heterophylla), sicklepod (Senna obtusifolia), common cocklebur (Xanthium strumarium), and yellow nutsedge (Cyperus esculentus). Paraquat + bentazon applied 2WAC resulted in good control of ragweed, Florida beggarweed, and bristly starbur, and excellent control of smallflower morningglory. Paraquat + bentazon applied 2+5WAC gave good to excellent control of all weeds except Texas panicum (fair control). All residuals Pre or 2WAC followed by or tank mixed with paraquat+bentazon resulted in good control of yellow nutsedge. Alachlor applied Pre or 2WAC provided good control of sicklepod, acetochlor Pre or 2WAC resulted in good smallflower morningglory control, while metolachlor Pre or 2WAC provided good control of smallflower morningglory and Florida pusley. Norflurazon Pre resulted in good control of smallflower morningglory, Florida beggarweed, and Florida pusley, and excellent control of common ragweed. Norflurazon 2WAC gave severe early season peanut (Arachis hypogaea) injury; however, this early season injury was not reflected in yield. Imazapic and imazethapyr gave better weed control 2WAC than Pre, with imazapic at 2WAC giving good to excellent control of all weeds except common ragweed, Florida beggarweed, and Texas panicum; it was the only residual that gave good control of yellow nutsedge applied alone. In general paraquat+bentazon 2WAC improved weed control over the residual alone, and paraquat+bentazon 5WAC improved weed control over the 2WAC treatment. The only treatments that provided good to excellent control of all the weeds contained paraquat+bentazon 2+5WAC.

Weed Control and Peanut Tolerance to Selected Imidazolinone Herbicides. G.E. MacDONALD*, E.F. EASTIN, and D.L. COLVIN. Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793 and Agronomy Department, University of Florida, Gainesville, FL 32611.

In 1997, studies were conducted at the University of Georgia Agricultural Experiment Stations in Attapulgus, Tifton and Plains and in Archer, FL. Weed control and peanut tolerance were evaluated to varying rates and combinations of imazethapyr (Pursuit), imazapic (Cadre) and imazapyr (Arsenal) herbicides. Runner variety peanuts were planted at all locations and a Valencia variety was also planted in Archer. Treatments consisted of all herbicides alone at 0.016, 0.032, 0.047 and 0.063 lbs-ai/A and all combinations (in increments of 0.016 lbs-ai/A) of imazapic+imazethapyr, imazapic+imazapyr, or imazethapyr+imazapyr such that the total amount of herbicide equaled 0.063 lbs-ai/A. All treatments were applied early postemergence with 0.25% NIS. Visual assessment of injury and weed control (0 to 100% where 0 = no injury, no control; 100 = plant death, complete control) and yields were taken. At all locations, imazapic provided excellent control of most weeds at all rates but the 0.063 lb-ai/A rate was needed to achieve satisfactory control of Florida beggarweed and yellow nutsedge. Imazethapyr also provided good to excellent control of bristly starbur, wild poinsettia and cocklebur, but poor to moderate control of sicklepod, Florida beggarweed, Texas panicum and yellow nutsedge. There was no significant injury or yield decrease associated with either imazapic or imazethapyr at any location. Imazapyr did not provide acceptable control of yellow nutsedge at any location and poor control of Texas panicum at the Attapulgus station. However, imazapyr provided excellent control of Florida beggarweed at all rates. Imazapyr caused <20% visual injury at Attapulgus, Tifton and Plains but >40% was observed at Archer, regardless of rate or variety. Imazapyr significantly reduced yields at all locations, with higher rates causing concomitantly lower yields. Imazapic + imazethapyr resulted in reduced weed control (regardless of rates) as compared to imazapic alone. Imazapyr + imazapic or imazethapyr provided excellent control of Florida beggarweed, but decreased control of yellow nutsedge and Texas panicum as compared to imazapic. All combinations containing imazapyr caused significant visual injury at the Archer location, on both runner and Valencia varieties, and significantly lower yields at all locations.

An Economic Comparison of Weed Control Systems for Texas Peanut Production. E. P. PROSTKO*, Texas Agricultural Extension Service, Stephenville, TX 76401, W. J. GRICHAR and D. C. SESTAK, Texas Agricultural Experiment Station, Yoakum, TX 77995, R. G. LEMON, Texas Agricultural Extension Service, College Station, TX 77845.

Recent advances in herbicide chemistry have led to the development of broad-spectrum postemergence (POST) herbicides for use in peanut. However, these newer herbicides are more expensive than those historically used in peanut production. Consequently, many producers have questioned the need for using traditional soil-applied herbicides. A study was conducted in south Texas in 1997 to evaluate the effectiveness of weed management systems in peanut utilizing a combination of preplant incorporated (PPI) and POST herbicide treatments. A significant interaction between PPI and POST herbicides was observed for the control of Texas panicum (*Panicum texanum*), Palmer amaranth (*Amaranthus palmeri*), and citronmelon (*Citrullus lanatus*). Generally, a more consistent level of weed control was obtained when PPI applications of metolachlor (Dual), dimethenamid (Frontier), and ethalfluralin (Sonalan) were followed by POST applications of imazethapyr (Pursuit), imazapic (Cadre), pyridate (Tough), acifluorfen + bentazon (Storm), and 2,4-DB. Peanut yields and dollar return were higher with PPI/POST combinations than with either PPI or POST herbicides applied alone.

PROCESSING, UTILIZATION AND MYCOTOXIN

Effect of Pre-roast Moisture Content on Post-roast Shelf Life of Peanuts. T. H. SANDERS. USDA, ARS, Market Quality and Handling Research Unit, North Carolina State University, Raleigh, NC 27695-7624.

Roasting of peanuts to achieve and maintain optimum roasted flavor is critical to the peanut industry. Several studies have been conducted to evaluate the effect of time and temperature on roast quality but little attention has been given to the effect of moisture content on roast flavor or stability of roasted products. A study was conducted to evaluate the effect of peanut pre-roast moisture content on after-roast shelf life quality. Samples were cured to moisture contents ranging from 5.7-9.4 percent and stored for approximately one year in plastic containers. Moisture content was evaluated immediately before five 0.9 kg samples of each moisture content were roasted in a flame-heated, bi-directional oven. The temperature of roast was 163 C with an air flow of 175 CFM. All peanuts were roasted to Hunter L values of 49-51. Roasted samples were held in cold storage for two weeks then stored at 30 C and samples were taken at weekly intervals for peroxide value (PV) and oxidative stability index (OSI) analyses. Descriptive sensory analysis was conducted on the 0, 4, and 8 week samples. After-roast moisture content of samples ranged from 1.13-1.43. PV's for samples with high pre-roast moisture were higher immediately after roasting and the differences increased with storage time. Similarly, oxidative stability index values were lower for high moisture samples. PV's increased and OSI's decreased approximately two-fold after one week of storage. Initial roasted peanutty intensity of *ca.* 5.5 for all samples decreased to *ca.* 4.3 and 2.6 in low and high moisture samples, respectively, after 4 weeks. Initial painty intensity of 1.1 for low moisture samples increased to *ca.* 5.1 while the highest moisture sample changed from 1.6 to 11.6. These data suggest that the moisture content of peanuts going into the roaster directly influences the post-roast shelf life of peanuts. Data from another study in which peanuts of different moisture were roasted within two weeks of curing produced similar results.

Roasted Peanut Single Seed, Lot and Paste Color Relationships. L. R. CHRISTIE* and T. H. SANDERS. Department of Food Science and USDA, ARS, Market Quality and Handling Research Unit, North Carolina State University, Raleigh, NC 27695-7624.

Previous research indicated a parabolic relationship between paste color and mean roasted peanutty flavor intensity. This study investigated relationships among single seed roast color distribution, mean roast color, and paste color for peanuts roasted to various colors. Virginia ELK and medium runners were roasted to mean Hunter L values ranging from 60 to 40 using a modified Farberware electric roaster. For each 250 g sample from the range of colors, Hunter L value was measured for 100 individual seed (100 seed), a petri dish of seed (lot), and a petri dish of pasted seed (paste). Seed color distributions within each sample were calculated, and comparisons were made between average 100 seed color, lot color, and paste color among samples. Linear correlations existed between the measurements for medium runners as follows: average 100 seed vs. lot color, R= 0.94; lot vs. paste color, R= 0.95; average 100 seed vs. paste color, R= 0.97. These data analyses led to predictive equations allowing conversion between average 100 seed color and lot and/or paste color. The strong correlations from the medium runners study suggest that similar equations will hold true for the virginia ELKs and across other lots of peanuts. A similar relationship may exist between mean 100 seed color and roasted peanutty flavor.

Investigations into Sensory and Chemical Relationships in Roasted Peanuts. H.E. PATTEE*, T.G. ISLEIB, and F.G. GIESBRECHT. USDA-ARS, Crop Science Dept., and Statistics Dept., North Carolina State University, Raleigh, NC. 27695-7625

Certain roasted peanut quality sensory attributes have been shown to be heritable traits. Currently the only means of measuring these traits is the use of a trained sensory panel which is a very costly and time consuming process. It is highly desirable, from a cost, time, and sample size perspective, to find other methodologies for estimating these traits. Because sweetness is the most heritable trait and it has a significant positive relationship to the roasted peanut trait we have investigated possible relationships between carbohydrate components in peanuts and the heritable traits. Ion exchange chromatography was used to isolate 20 different carbohydrate components in 52 genotypes. Inositol, glucose, fructose, sucrose, raffinose, and stachyose were quantitated, 12 unknown peaks were evaluated by unknown peak height-to-internal standard peak height ratios, and peaks tentatively identified as verbascose and ajugose could not be properly integrated because of tailing. Of the 18 carbohydrates that were estimable, 9 exhibited significant variation between test environments, 17 among market types, 17 among genotypes within market types, and 17 some significant form of GXE interaction. Correlations of carbohydrate values with least square mean sensory scores for sweet, bitter, and roasted peanut attributes were generally weak although some were statistically significant. When the effects of market types were considered, the correlations with sweet were strongest in runner types, with roasted peanut in spanish types, and with bitter in virginia types.

Inhibition of Fungal Colonization of Stored Peanut with Products from some Medicinal/Culinary plants. R. T. AWUAH*. Department of Crop Science, University of Science & Technology, Kumasi, Ghana.

Products from five plants,. *Citrus aurantifolia* fruit peel oil, *Cymbopogon nardus* leaf oil, *Xylopia aetiopico* fruit powder, *Ocimum gratissimum* leaf powder and *Syzigium aromaticum* clove powder were tested for efficacies against fungal colonization of stored peanut. The natural kernel microflora was augmented by artificial infection with a Norsolorinic Acid (NOR) mutant *Aspergillus parasiticus* before treatment with the various plant products. Treated kernels were stored at 5.7% moisture in polyethylene bags for 11 months. After 4mn, a low colony forming unit (CFU) value of 0.601 log units of NOR *A. parasiticus* was recorded on kernels treated with the *Syzigium* powder. This is contrasted with significantly higher values ($P \leq 0.05$) associated with kernels that received no plant product (3.099 log units) and values ranging from 1.459 - 2.930 log units associated with kernels treated with the other plant products. CFU of total fungi, superficial fungal growth and internal kernel discoloration were also effectively suppressed by the *Syzigium* powder after 11mn. The *Citrus* fruit peel oil and the *Ocimum* leaf powder were moderately effective. In test tube experiments, the *Syzigium* and *Ocimum* powders were more effective when mixed with than when separated from the kernels with a piece of mosquito-proof screen. The optimal application rates of the two powders for preventing superficial fungal growth on 8% moisture kernels at 28°C were 15% (w/w) for *Syzigium* and 10% for *Ocimum*. At these application rates, 92.93% and 56.06% of kernels, respectively, treated with the *Syzigium* and *Ocimum* powders were free from superficial fungal growth after 4 months. These results point to the potential of the two powders for prevention of mouldiness and possibly aflatoxin synthesis in peanut during storage.

Peanut Alcohol Dehydrogenase and a Stress Protein-Maturity Marker Are Potential Allergens.

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Alcohol dehydrogenase (ADH) is an enzyme known to be induced under anaerobic conditions and during peanut maturation and curing. Using a polyclonal antibody against stress proteins, we have recently shown that a 24 kD protein is also induced during peanut maturation and curing. Both ADH and the 24 kD protein are considered maturation proteins or markers, and believed to be genetically expressed due to stresses (e.g., anaerobic and water stresses). Expression of these proteins could be a problem if they are allergenic. The objective of this study was to determine whether ADH and the 24 kD stress protein are allergenic. Before the determination, experiments involving the localization and identification of ADH after gel electrophoresis were carried out. This was achieved by staining the gels with a substrate solution containing ethanol, nitrobluetetrazolium (NBT), NAD^+, and phenazine methosulfate. ADH was further purified by gel excising and elution techniques. To determine whether ADH and the 24 kD stress protein are peanut allergens, western blot experiments were performed. The technique involved transfer of proteins from a peanut extract or purified materials to a polyvinylidene fluoride (PVDF) membrane after gel electrophoresis, probing the protein-bound membrane with IgE antibodies from the serum of a patient with peanut anaphylaxis, and then an enzyme-conjugated secondary antibody. A chromogenic substrate for the conjugated enzyme was finally added, and proteins (i.e., allergens) on the membrane were subsequently visualized as colored bands. Results showed that ADH and the 24 kD stress protein were reactive with IgE antibodies. A 32 kD stress protein was also recognized by IgE, and shown to be potentially the parent of 24 kD. It was concluded that ADH, 24 kD (the maturity marker) and 32 kD stress proteins are potential peanut allergens.

Performance of Sampling Plans to Detect Aflatoxin in Farmers' Stock Peanut Lots by Measuring Aflatoxin in High Risk Grade Components. T.B. WHITAKER*, W.M. HAGLER, JR., and F.G. GIESBRECHT. U.S. Department of Agriculture, Agricultural Research Service, Market Quality and Handling Research Unit, North Carolina State University, Raleigh, NC 27695-7625; Department of Poultry Science, North Carolina State University, Raleigh, NC 27695-7636; Department of Statistics, North Carolina State University, Raleigh, NC 27695-8203.

Five, 2-kg test samples were taken from each of 120 farmers' stock peanut lots contaminated with aflatoxin. Kernels from each 2-kg sample were divided into the following USDA grade components: sound mature kernels plus sound splits (SMKSS), other kernels (OK), loose shelled kernels (LSK), and damaged kernels (DAM). The kernel mass (g), aflatoxin mass (nanogram or ng), and aflatoxin concentration (ng of aflatoxin/g of peanuts) were measured for each of the 2,400 component samples. The variability associated with measuring aflatoxin mass (ng) in OK+LSK+DAM [A(OLD)ng], aflatoxin mass (ng) in LSK+DAM [A(LD)ng], aflatoxin concentration (ng/g) in OK+LSK+DAM [A(OLD)ng/g], and aflatoxin concentration (ng/g) in LSK+DAM [A(LD)ng/g] was determined. The variance associated with measuring aflatoxin in each of the four combinations of components increased with aflatoxin and functional relationships were developed from regression analysis. The coefficient of variation (CV) associated with estimating the aflatoxin for a lot with 100 ng/g was 90, 86, 96, and 98% when measuring aflatoxin mass in A(OLD) ng and A(LD)ng and aflatoxin concentration in A(OLD)ng/g, and A(LD)ng, respectively. The performance of aflatoxin sampling plans using the combination of A(OLD)ng and A(LD)ng components was evaluated using a 2-kg test sample and a 50 ng/g accept/reject limit.

Effects of Ten Years of Peanut Monoculture Under Irrigated and Nonirrigated Conditions on Peanut Yields, Diseases and Fungicide Performance. T.B. BRENNEMAN, Department of Plant Pathology, University of Georgia, Tifton, GA 31793.

Peanuts were grown from 1988 until 1997 in the same randomized pairs of irrigated (IRR) and nonirrigated (NON) blocks replicated five times. One to 1.5 inches of water was applied each week to the IRR plots unless the equivalent amount of rainfall was received. Mean Rhizoctonia limb rot (R. solani AG-4) severity ratings for all years in plots treated only with chlorothalonil were 27% and 18% for IRR and NON plots, respectively, and stem rot (Sclerotium rolfsii) incidence was 36% and 29%, respectively. In 1996, populations of S. rolfsii sclerotia in the soil were also found to be approximately five times higher in IRR versus NON plots. Mean pod yields were 3505 lb/A (sample S. D.=710) and 2800 lb/A (sample S. D.=918) for IRR and NON plots, respectively. Regression analysis demonstrated that yields declined by 214 lb/A and 148 lb/A for each additional year of monoculture in IRR and NON plots, respectively. In 1996 and 1997, 12 fungicide regimes were evaluated as sub-plots within each block. Fungicides evaluated were Folicur, Bravo Ultrex, Moncut, Abound and thifluzamide. The labeled fungicides were used at recommended rates and timings except for Abound 80WG used four times at 0.15 lb/A ai. Thifluzamide was applied twice at 0.25 lb/A ai. Early leaf spot was the primary foliar disease, and IRR plots had much higher disease levels. Folicur programs gave the best control of leaf spot. Stem rot control was greater for all fungicides under NON versus IRR conditions, and thifluzamide had the best activity. Folicur, Moncut and Abound gave somewhat lower but similar levels of control. Abound and thifluzamide were the most active on limb rot. Mean pod yields for Bravo treated plots were 2544 lb/A and 1724 lb/A for IRR and NON, respectively. Yield increases of 519-996 lb/A and 204-554 lb/A were documented with the other fungicides for IRR and NON, respectively. Application of fungicides in narrow bands with higher volumes of water did not alter their efficacy or the crop yields under IRR or NON conditions.

Integrated Disease Management Practices in Peanut. J.E. FAJARDO*, P.A. BACKMAN, and L.W. WELLS. Department of Plant Pathology, Auburn University, Auburn, AL 36849-5409; Alabama Agricultural Experiment Station, Wiregrass Substation, Headland, AL 36345.

A 3 x 3 x 2 factorial experiment in a split-split plot design was carried out using three varieties of peanut (Georgia Green, Florunner, and Andru 93) and three fungicides [chlorothalonil (24 fl oz/A) alone; chlorothalonil (24 fl oz/A) + tebuconazole (4.1 fl oz/A); and tebuconazole (4.1 fl oz/A) + azoxystrobin (4.8 fl oz/A)] applied on a 14-day spray schedule and on a weather advisory program (AU-PNUTS). Georgia Green consistently showed less tomato spotted wilt virus (TSWV). Florunner and Andru 93 were almost similar in response to TSWV. Florunner and Andru 93 had lower areas under the disease progress curve (AUDPC) for leaf spot-related defoliation and infection. At inversion, Andru 93 had less Southern stem rot (*S. rolfsii*) damage, fewer limb rot (*R. solani*) infections, and higher yield than Georgia Green or Florunner. Chlorothalonil alone had slightly lower AUDPC for leaf spot-related defoliation and infection but did not result in significantly different disease levels compared to other tank mixed fungicides. Almost all fungicides gave similar control of soilborne diseases, although tebuconazole + azoxystrobin yielded slightly higher. Defoliation and leaf spot infection and their AUDPC's were lower with the AU-PNUTS weather advisory program than the 14-day spray schedule. Southern stem rot incidence and limb rot severity were reduced and yield was greater with AU-PNUTS than the 14-day spray program. A significant interaction between varieties x fungicides x timings of fungicide application was observed for white mold and limb rot. The interaction of fungicides x application timing was significant for limb rot. In addition, a significant variety x fungicide interaction was noted on final defoliation and infection ratings. None of the factors and their interaction terms significantly contributed to total percent sound mature kernels, sound splits, and dollar per ton values on the yield of test samples.

Peanut Variety Response to Rhizoctonia Pod Rot and Early Leaf Spot Using Folicur, Abound and Fluazinam. B. A. BESLER*, A. J. JAKS, W. J. GRICHAR, and K. D. BREWER. Texas Agricultural Experiment Station, Yoakum, TX 77995.

Six commercial varieties were evaluated alone and in combination with peanut fungicides Folicur, Abound, and Fluazinam under moderate early leaf spot (*Cercospora arachidicola*) and heavy Rhizoctonia pod rot (*Rhizoctonia solani*) pressure. Tests were conducted in the South Texas peanut growing region on the Jimmy Seay and Floyd Royal Farms in 1996 and 1997. The Seay location included 4 applications of Folicur and 3 applications of Fluazinam at the recommended rates. The Royal location included 4 applications of Folicur and 2 applications of Abound also at recommended rates. Leaf spot severity was evaluated in 1996 at both test locations while in 1997, leaf spot was evaluated only at the Floyd Royal location. Rhizoctonia pod rot was evaluated immediately following inversion of plots at both locations each year. In 1996, only the Royal location had a reduction in Rhizoctonia pod rot severity with all six varieties when sprayed with either Folicur or Abound. At the Seay location, only Tamrun 96, when sprayed with either Folicur or Fluazinam and GK-7 sprayed with Fluazinam had a reduction in Rhizoctonia pod rot severity. The unsprayed plots of Tamrun 96 at both locations in 1996 were low in Rhizoctonia pod rot disease severity when compared to varieties sprayed with either fungicide. Leaf spot disease severity was reduced at both locations when sprayed with either fungicide. The Royal location in 1997 saw all six varieties significantly (P=0.05) lower in Rhizoctonia pod rot disease incidence when sprayed with either Folicur or Abound. Tamrun 96, when sprayed with 2 applications of Abound, had the largest reduction in Rhizoctonia pod rot disease. Due to heavy Rhizoctonia disease pressure at the Jimmy Seay location, only subtle reductions in disease were seen with 4 of the 6 varieties when sprayed with either fungicide. The unsprayed plots of Tamrun 96 had the lowest Rhizoctonia disease incidence. All six varieties at both locations each year responded with higher yields when sprayed with either fungicide. These studies indicate that there is certainly an advantage to applying these fungicides in fields that have potentially heavy Rhizoctonia pod rot and leaf spot disease incidence especially from the standpoint of increasing yields.

Early Leaf Spot Control in Peanuts with Azoxystrobin Formulations. J.N. LUNSFORD*, D. BLACK, and S. ROYAL. Zeneca Ag Products, Enterprise, AL 36330, Leland, MS 38756, Girard, GA 30426.

The fungicide azoxystrobin was evaluated in peanuts for the control of early leaf spot (Cercospora arachidicola) with the 80WG and 2SC formulations. Rates used were .112, .168, and .224kg/ha with no additional adjuvant. One rate at .168 kg/ha was evaluated with 1% crop oil concentrate (COC) for each formulation. Tebuconazole at .15kg/ha plus .25% NIS and chlorothanil at 1.26 kg/ha were used as the standards. Six foliar sprays were made on a 14 day interval starting 45 days after planting. Five central leader stems were collected from each plot 14 days after the last application. The top two leaflets were eliminated with the next 10 leaflets being evaluated (for a total of 40 leaves) for % leaf infection over the three trials ranged from 66.7% to 100& for the untreated and averaged 87.3%. The treatment with the lowest level of leaf infection over the three trials was azoxystrobin 80WG at .168 kg/ha plus 1% COC with 42%. This was followed closely with chlorothanil, azoxystrobin 2SC at .168 kg/ha plus 1% COC, and tebuconazole with averages of 53%, 52.5%, and 52.6% respectively. In the treatments without the addition of 1% COC, the 2SC formulation provided lower levels of leaf infection than the 80WG. The % leaf defoliation over the three trials ranged for 20% to 61.1% for the untreated and averaged 37.6%. The treatment with the lowest level of leaf defoliation was azoxystrobin 2SC at .168 kg/ha plus 1% COC with an average of 3%. This was followed by tebuconazole with 5.8%, azoxystrobin 2SC at .224 kg/ha without COC at 6.4%, and chorothanil with 7.1% defoliation. The rate of .168 kg/ha with no COC appears to provide similar leaf spot control to that of 1.26 kg/ha of chorothanil and .15 kg/ha of tebuconazole.

Large Plot Grower Trials with Azoxystrobin vs Tebuconazole in Peanuts. C.V. GREESON*, J.N. LUNSFORD, R. BURNETT, and S. ROYAL. Zeneca Ag Product, Pikeville, NC 27863, Enterprise, AL 36330, Sumter, SC 29150, Girard, GA 30426.

The fungicide azoxystrobin 2SC, recently registered for use in peanuts, was evaluated in large plot grower trials vs the standard tebuconazole program. Trials were initiated in AL, GA, FL, SC, NC, and VA. Azoxystrobin was applied at .336 kg/ha or .448 kg/ha at the B & D timing for control of early leaf spot (Cercospora arachidicola), southern stem rot (Sclerotium rolfsii), and peg & pod rot (Rhizoctonia solani). The remaining sprays were chlorothanil at 1.26 kg/ha. The tebuconazole program used the .226 kg/ha applied at the CDEF timing and the remaining sprays being chlorothanil at 1.26 kg/ha. In Alabama azoxystrobin at .336 kg/ha provided higher yields in 3 of the 4 trials with a total advantage of 931 kg/ha vs 388 kg/ha for tebuconazole. In Florida tebuconazole provided higher yields in 4 out of 4 trials with a total advantage of 1893 kg/ha. In Georgia azoxystrobin at .336 kg/ha provided higher yields in 12 of 13 trials with a total advantage of 5880 kg/ha vs 321 kg/ha for tebuconazole. With azoxystrobin at .448 kg/ha there was a total advantage of 1223 kg/ha in 3 of 4 trials vs tebuconazole with 55 kg/ha. In South Carolina azoxystrobin at .336 kg/ha or .448 kg/ha provided a total yield advantage of 2829 kg/ha in 6 of 6 trials. In North Carolina and Virginia the use of azoxystrobin was often in one or two applications vs similar applications with tebuconazole. In 7 trials azoxystrobin provided a total yield advantage of 1762 kg/ha in 6 of the seven trials vs tebuconazole with a total advantage of 432 kg/ha. In 40 trials conducted over the states listed, azoxystrobin provided higher yields in 33 with a total advantage of 10324 kg/ha which averages 312 kg/ha. This higher production can be related to a higher level of control for peg and pod rot (Rhizoctonia solani) with azoxystrobin vs tebuconazole.

Evaluation of low input systems for pest management in Alabama. J.R. WEEKS*, A.K. HAGAN, Depts. of Entomology and Plant Pathology, respectively, Auburn University, Auburn, AL 36849, and L. WELLS, Wiregrass Substation, Alabama Experiment Station System, Headland, AL 36345

A study was established in 1995 to evaluate three levels of insect and disease management for pest efficacy, peanut yield and economic return. Pests under evaluation are thrips, lesser cornstalk borer, various species of lepidopterous foliage feeders, leafspots, southern stem rot, and tomato spotted wilt virus. Most dollars spent in Alabama for insect and disease control include these major pests. Three management systems are being compared, low input, IPM, and high input. The low input system in this study can be defined as applying minimum rates of recommended pesticides to prevent pests from significantly reducing yields. The IPM system can be defined as a management system where treatments are applied based upon accepted Alabama extension thresholds. Disease management decisions were made using AUPnut leafspot advisory. The high input system utilized maximum recommended rates of pesticides on reduced intervals for leafspot/southern stem rot control. Preventative treatments for thrips and LCB were also included in this system. The study was conducted during 1995, 1996 and 1997 at the Wiregrass Substation in Headland, Alabama under rain fed conditions. Results indicate the severe effects that weather can have on peanut yield and pest populations. In 1996, late rains resulted in significantly more disease and less yield in the low input system. However, in 1997, a late season drought significantly reduced yields in all managment systems; thus, the low input system gave a $54.00/acre return over the other two management systems. Pest population levels did not differ significantly among management levels. In 1995, yields of low input and IPM systems were significantly lower than the high input, but pest population levels were not significantly different and net return of low input was $33.00/acre greater than the high input and $44.00/acre greater than the IPM management system.

Strategies for More Effective Insect Management of Peanuts in North Carolina. R. L. BRANDENBURG. Department of Entomology, North Carolina State University, Raleigh, NC 27695-7613.

Numerous insect pests attack peanuts in North Carolina and cause yield reductions through defoliation, pod feeding, sucking plant juices, and vectoring diseases. Our ability to effectively manage these pests is confounded by the need to seek means to produce overall reductions in peanut production costs. Studies conducted in North Carolina from 1992-1997 have evaluated the efficacy of numerous insect management strategies directed at reducing the overall cost of insect pest control. Efforts in reducing thrips control costs have included minimum tillage productions, the use of acephate in-furrow, and the option of scouting and applying on demand treatments rather than the traditional prophylactic approach. These efforts have been successful and have been accepted by some growers. Efforts to minimize the spread of tomato spotted wilt virus has been directed at variety selection and insecticide use. No real effect has been observed from the use of insecticides, but variety selection does appear to be a useful tool. Research on predicting southern corn rootworm outbreaks has allowed the development of a southern corn rootworm index in collaboration with Dr. Ames Herbert, VPI&SU. This index identifies higher risk fields and helps avoid unnecessary pesticide use on low risk fields. Recent studies have further documented a relationship between the use of rootworm insecticides and subsequent outbreaks of spider mites.

Peanut Response to Treatment of Corn Earworm Populations. J. W. CHAPIN* and J. S. THOMAS.
Edisto Research and Education Center, Clemson University, Blackville, SC 29817.

Corn earworm (*Helicoverpa zea*) is the most common foliage-feeding insect pest of peanut in the southeastern U. S. Despite this, there have been relatively few studies of the effect of corn earworm (CEW) feeding on peanut. In this study, naturally occurring CEW populations on Florunner peanut were controlled with foliar applied insecticides in 24 field tests over a 9-yr period. Each test consisted of 5 - 10 replicates of treated and untreated plots in a randomized complete block design. Larval populations were sampled weekly with a ground cloth over the infestation period; and measurements were taken of canopy size, percent defoliation, percent light interception, peg-feeding injury, yield, and grade. Larval populations ranging from 3 to 33 per row ft. peaked in the R5 growth stage, typically within a few days of Aug 1, and about 75 days after planting. Defoliation estimates were of no value in determining the need for treatment because larvae fed preferentially on terminal and axial meristems rather than simply removing existing leaf tissue. CEW feeding altered canopy development as measured by canopy dimensions and percent light interception. CEW also fed extensively on pegs, severing 20 - 65 % of the R-2 stage pegs present during peak larval populations. Canopy size and stress were important in determining yield response to CEW feeding. When canopy growth was slowed by drought or herbicide stress, yield losses were substantial (233 - 724 lb/ac). Under these stressed conditions, a larval population of 5/row ft. caused 6.5 % yield loss. A treatment cost to benefit ratio of 1 : 6 was calculated. Conversely, 10 larvae per row ft. caused no measurable yield reduction in unstressed fields with rapidly growing canopies. These tests document that there is substantial risk of economic loss from CEW feeding in fields where light interception is less than 90 % and canopy growth is likely to be slowed by stress factors such as low fertility, drought, or herbicide injury. Under such conditions, the conventional treatment threshold of 4 larvae/row ft. is not overly conservative, particularly since our results include small larvae which may not be detected by the grower.

Evaluation of Peanut Containing a *CryIA(c)* Gene from *Bacillus thuringiensis* for Activity Against the Lesser Cornstalk Borer, Corn Earworm and Fall Armyworm. ROBERT E. LYNCH* and PEGGY OZIAS-AKINS. Insect Biology and Population Management Research Laboratory, USDA-ARS, and Department of Horticulture, University of Georgia, Tifton, GA 31793-0748.

Bioassays were conducted with the lesser cornstalk borer *(Elasmopalpus lignosellus)*, corn earworm *(Helicoverpa zea)*, and fall armyworm *(Spodoptera frugiperda)* to determine efficacy of a *cryIA(c)* gene in peanut. Peanuts were grown in the greenhouse or field, and leaflets were removed from individual plants, placed in labeled zip-lock bags, and brought to the laboratory for bioassay. Several peanut lines were highly resistant to the corn earworm and lesser cornstalk borer with no larvae surviving after 4-7 days. Fall armyworm were much less susceptible to the *CryIA(c)* toxin, primarily showing a reduced weight at 10 days and increased developmental time.

A Risk-Returns Analysis of the Peanut Enterprise: Implications For Both the Present and Possible Life Without the Peanut Program. W. DON SHURLEY. Department of Agricultural and Applied Economics, University of Georgia, Tifton, GA 31793.

The current U.S. government peanut legislation began with the 1996 crop and extends through year 2002. This program contained major modifications including a 10% reduction in quota peanut price support which is fixed for the life of the program. This has caused a cost-price squeeze for peanut farmers. Costs for some peanut inputs continue to increase at a 2-3 percent annual rate. The new peanut program also eliminated the carry-forward of unproduced quota or undermarketings. Prior to the new farm program it was theorized that peanut quota lease rates would decline due to the reduction in support price. Evidence suggests, however, that rates have not declined. Crop enterprise budgets for peanuts were developed to incorporate price and yield risk and generate a range of possible net returns. The probability of various levels of net return was calculated. Returns and probabilities were determined for various levels of lease paid for rent of peanut quota. If due to below average yields the peanut quota was not produced, unproduced pounds were leased under fall transfer provisions. Results show that fall lease is more uncertain than under the previous peanut program due to across county transfers in the spring and increased use of the buybacks for additional peanuts which reducing demand and deflates value of fall transfer quota pounds. A risk-return analysis was conducted to compare current returns with expected returns at prices believed to be likely in the event of elimination of the peanut program. Results show net returns without the peanut program to be lower for owned quota production but similar or higher for rented quota.

Using a Windows 95® Program to Simulate the Impact of Crop Price and Yield on the Profitability of Investment in Irrigation

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Domestic peanut production costs must be reduced by a third to keep the current US world market share intact. Costly capital investments ranging from vehicles to irrigation systems must be scrutinized and unprofitable ones rejected. Switching to irrigated production is a costly investment that may not be profitable. While irrigation-fostered improvements in grade and yield may improve gross income, increases may be overshadowed by costs associated with purchasing, using, and maintaining the irrigation system. Acceptance of making an irrigation system investment must be linked to the likelihood of making a profit as well as the time value of money. Net present value (NPV) is a method that can be used to evaluate investment alternatives, which incorporates the opportunity cost of capital funds and the time value of money. Many factors and must be included in the investment analysis such as: life of the investment, acreage, equity capital rate of return, loan interest rate, and percent of firm equity funds used to finance the investment. Analyzing alternative investment scenarios is laborious and time consuming. The USDA/ARS National Peanut Research Laboratory has developed a Windows 95® program that can calculate the NPV of investment alternatives and investment structures with minimal computation time. Using an Excel 97 platform, the program simultaneously calculates, ranks, and plots the profitability of two or more capital investments. Annual cash flow for a single investment may also be quickly calculated and plotted. The program was used in this simulation to assess the impact of crop price and yield on irrigation system investment profitability.

Economic Decision Making for Fungicide Control in Peanuts. T.D. HEWITT*, and F.M. SHOKES. University of Florida, NFREC, Marianna, FL 32446, and University of Florida, NFREC, Quincy, FL 32351.

To successfully produce peanuts in the Southeast, fungicide treatments are necessary to control peanut leaf spot and stem rot. Risk and uncertainty are omnipresent in peanut production; however, peanut diseases are going to occur. Producers must decide when to initiate fungicide applications, how often to apply the fungicides and which fungicide to use. Costs for fungicides are different and the yields for different treatments will vary. The cost effectiveness of different fungicides must be evaluated to determine the treatment that would be most economical. A two-year study was conducted in which fungicides were applied on a schedule based on extension recommendations (seven applications at two-week intervals). The peanut cultivar Andru 93 was planted in two-row plots, 20 feet long on 36 inch centers. Each treated plot was bordered on one side by two untreated rows. Yield data were collected and leaf spot assessments were made using the Florida 1-10 scale. Six treatments were analyzed for cost effectiveness. Yields were averaged for the two years for each treatment. Cost differences were up to $36 per treatment for the best of the six treatments to the least cost effective. When considering yields and costs, the most economical was a treatment of chlorothalonil for applications 1, 6 and 7 with tebuconazole for applications 3-5 followed closely by chlorothalonil for seven applications. Disease ratings for leaf spot, using the Florida leaf spot rating system indicated a significant difference for the treatments that included the systemic fungicide, tebuconazole. The highest returns per acre of the six treatments were $710 per acre with lowest returns being $542 per acre. Average yields varied by 731 pounds per acre between the best and least cost effective treatments. The four best treatments were significantly higher than the other two treatments. Greatest cost effectiveness can be achieved with fungicide programs only if the proper choices are made.

Determination and Announcment of the National Poundage Quota for Peanuts for Marketing Years 1996 through 2002. Kenneth M. Robison. Tobacco and Peanuts Divisions, Farm Service Agency, United States Department of Agriculture, Washington, D.C. 20013-2415.

Section 358-1(a)(1) of the Agricultural Adjustment Act of 1938 (the 1938 Act) as amended by the Federal Agriculture Improvement and Reform Act of 1996 (the 1996 Act) states that the national poundage quota for peanuts for each of the 1996 through 2002 marketing years shall be established by the Secretary at a level that is equal to the quantity of peanuts (in tons) that the secretary estimated will be devoted in each such marketing year to domestic edible and related uses. Within the department of Agriculture (USDA), the estimate for domestic food use is set by the Interagency Commodity Estimates Committee for Peanuts. The committee has represenatives from The World Agricultural Outlook Board, National Agricultural Statistical Serice, Economic Research Service, Foreign Agriculture Service and Farm Service Agency. The committee is chaired by the world board represenative. The Director of the Tobacco and Peanuts Division, Farm Service agency then explains the domestic food use number, request public comment and prepares a decision memo.

Constraints to Peanut Production and Marketing in Selected Areas in Haiti. C.M. JOLLY* and E. PROPHETE. Department of Agricultural Economics, Auburn University, Auburn AL 36849 and Centre de Recherce et Documentation Agricole, Haiti.

Peanut contributes a large percentage of rural farm households income in peanut growing areas in Haiti. While peanut sales help households meet their immediate cash needs, many researchers think that the continuous cultivation of peanuts on steep Haitian slopes may have long-term, negative environmental effects. In this study, the importance of peanuts to Haitians, farms, and household welfare is evaluated. The constraints in production and marketing are also examined to determine the factors that limit peanut production in two major producing environmentally fragile areas in Haiti. Peanuts are produced on small parcels of land of less than 0.25 ha in the two selected areas, Plateau Central and Palmiste A Vin, in Haiti. The Valencia variety of peanuts is the most widely planted. The two areas of production differed in terms of cultural practices and methods of production. The average yield obtained in Plateau Central is estimated at 471±369 kg per ha for pure stands of peanuts, and 418±310 for peanuts planted in mixed culture. In Palmiste A Vin, the average yields were 205±145 and 181±112 for peanuts planted in mixed stands. The principal constraint for increasing production, as revealed by 26 percent of the farmers in Plateau Central and 36 percent for those in Palmiste A Vin, was drought. Peanut sale is the principal source of farm revenue for the majority of people in the two areas. About 90 and 86 percent of farmers in Plateau Central and Palmiste A Vin, respectively, indicated that they planted peanuts to earn an income. About 66 percent of the harvested peanuts in Plateau Central was designated for the market, while only 15 percent of peanuts from Palmiste A Vin farmers was produced for sale. The average price per kg of peanuts in Plateau Central was 10.4±4.3 gourdes (US$1.00=17 gourdes), while in Palmiste A Vin it was 13.1±2.6. Most farmers in Plateau Central (91 percent) sold their peanuts to wholesalers, while 96.4 percent of farmers in Palmiste A Vin sold to retailers. The difference in marketing channels and quantity supplied may account for the price gap between the two producing areas. Other than low prices, which 16 percent of the farmers in Plateau Central thought was a problem, transportation was the next major problem cited by only 5.0 percent of the farmers. Farmers stated that storage loss was a major concern in attempting to regulate supply and prices. Rats and rodents seemed to be the major cause of storage losses in peanuts. About 22 percent of farmers in Plateau Central said rats and rodents were responsible for storage losses, while 26 percent of farmers in Palmiste A Vin thought they were major storage pests. Since the production of peanuts generate much needed income to rural farm households, farmers will continue in its production, unless a better farm alternative becomes evident.

Creating Weather-based Disease Advisory Models. J.E. BAILEY. Department of Plant Pathology, North Carolina State University, Raleigh, NC 27695-7616.

Weather-based advisory models are used to anticipate when disease outbreaks may occur. They often are used to time fungicide sprays, in lieu of a calendar-based spray program, in order to minimize unnecessary use of fungicides and to improve the precision of their application. This poster is a demonstration of the hardware and software used to create and deploy advisories. Those who attend this poster session will have the opportunity to create an advisory model using a model developing template and view the advisory output using demonstration weather data. The inputs are categorized as moisture (rain, dew point, relative humidity, or leaf wetness), temperature (soil or air) and time (duration of favorable conditions necessary to spray, and fungicide longevity.). Participants may wish to bring the basic information outlined above so that a model can be created for their disease of interest. This software has been used to develop advisory models for multiple crops and diseases. Hardware used with this software will also be demonstrated and discussed. There are currently approximately 19 of these weather stations in use in the peanut growing areas of North Carolina and 10 more in use for other crops and diseases in the state.

Improving Grower and Industry Access to Peanut Disease and Other Crop Management Advisories. P. M. PHIPPS*, N. D. STONE, and D. A. HERBERT, JR. Tidewater Agr. Res. & Ext. Ctr., and Dept. of Entomology, Virginia Polytechnic Institute and State University, Suffolk, VA 23437.

Disease control and other crop management decisions in peanuts have become increasingly dependent upon weather-based advisories, insect monitoring, and scouting reports. With timely access to this information, management inputs are being performed according to need instead of a calendar schedule. This approach has improved the efficiency of disease and insect control, reduced pesticide input, and improved net profit. A key factor in the success of these programs has been the creation of avenues for county agents and clients to have 24-hr access to up-to-date information. Currently, technicians at the Tidewater Center are maintaining 13 solar-powered, weather monitors along with computers for data collection and information delivery. Each monitor records air and soil temperatures, rainfall, relative humidity, and dew point at 15 min. intervals. Soil temperatures are important in the timing of soil fumigation for control of cylindrocladium black rot, and the planting of peanut and cotton. In addition to daily weather summaries, the data are used to develop leaf spot and sclerotinia advisories, and heat unit reports for peanut and cotton. Data from each monitor are collected by a computer at the Tidewater Center between 1 AM and 2:30 AM each day and processed into advisories. Information is then transferred to an electronic bulletin board, called the Peanut/Cotton InfoNet. In addition to disease advisories, the InfoNet is used to deliver reports of corn earworm moth catches in light traps, and the incidence of earworm infestations in corn. These data are useful in predicting the movement of this pest into cotton, soybean and peanut. The InfoNet is accessible by personal computers through a toll-free, in-state, 800 number and an out-of-state, long-distance number. From September 20 until completion of harvest, frost advisories are issued daily in cooperation with a consulting meteorologist. The system logged 1060, 1163 and 1183 calls and downloaded 1678, 2062 and 3617 files to 60, 109, and 134 users in 1995, 1996, and 1997, respectively. A toll-free hotline was also maintained for delivery of daily recordings of regional disease, insect, and frost advisories to users without access to a computer. These recordings were also broadcast daily by an area-wide, radio station in Virginia. The hotline logged 2031, 1211, and 3067 calls in 1995, 1996 and 1997, respectively. Beginning in 1998, the InfoNet will be accessible on the internet at www.cals.vt.edu/infonet. Web pages describing diseases, insects, and advisory programs are being developed and linked to this site.

Efficacy of Spray Programs for Control of Web Blotch of Peanut. K. E. Jackson* and J. P. Damicone. Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078-3032.

Spray programs using tebuconazole, propiconazole, azoxystrobin and chlorothalonil were evaluated for the control of web blotch (*Phoma arachidicola)* of peanut in 1996 and 1997 on the susceptible spanish cultivar 'Tamspan 90'. Within a 6-spray calendar (14-d) program, tebuconazole and propiconazole were applied as a 4-spray block program (sprays 2 thru 5) and as a tank mix with chlorothalonil. Chlorothalonil and the tank mix treatments also were applied according to a an early leaf spot advisory program in 1996. Azoxystrobin was substituted for chlorothalonil on the second and fourth spray in a 6-spray program. These treatments were compared to a 14-d program with chlorothalonil and an untreated control. In 1996, frequent rains favored severe web blotch disease development. Disease incidence in control plots was 100 % and defoliation reached 95%. However in 1997, web blotch developed later in the season and was less severe. Three applications were made according to the advisory program in 1996. The advisory programs had a higher average disease incidence (92%) and a lower average yield (3241 kg/ha) than did the 14-d programs (78% and 3400 kg/ha). However, average yields for the advisory programs were higher (P=0.05) than the control (2455 kg/ha). In 1996, the lowest disease incidence and highest yields (kg/ha) respectively, were for 14-d programs with chlorothalonil (68%, 3303), the propiconazole + chlorothalonil tank mix (83%, 3497), the tebuconazole + chlorothalonil (73%, 3405), and the tebuconazole block program (84%, 3683). In 1997, the lowest disease incidences and highest yields (kg/ha) respectively, were for the 14-d programs with chlorothalonil (3%, 3427), propiconazole + chlorothalonil (10%, 2929), tebuconazole block program (30%, 2963), tebuconazole + chlorothalonil (9%, 3061) and azoxystrobin (2%, 3328). The propiconazole block program had the highest incidence of web blotch (66%) and a yield of 2799 kg/ha. The results from azoxystrobin varied between 1996 and 1997. In 1996, azoxystrobin had a high disease incidence (90%) but a low incidence in 1997 (2 %). High yields were obtained from azoxystrobin in 1996 (3778 kg/ha) and in 1997 (3328 kg/ha). This study demonstrates that web blotch is difficult to manage under heavy disease pressure and that the early leaf spot spray advisory was less effective than calendar programs for web blotch control.

Evaluation of Advisory and Calendar Spray Programs on Peanut Disease Control and Yield in Texas. A.J. JAKS,* W.J. GRICHAR and B.A. BESLER. Texas Agricultural Experiment Station, Yoakum, TX 77995.

Four advisory and two calendar-based spray schedules were compared for control of peanut diseases and effect on yield. Bravo Weather Stik (chlorothalonil) at 1.5 pt/A was used up to 50 days after planting (DAP) and as a final spray in all treatments. Folicur 3.6F (tebuconazole), was used without adjuvant after 50 through 104 DAP at 7.2 fl oz/A. The four advisory programs were AU-Pnuts (AU-P), AU-Pnuts without irrigation as an advisory-factor (AU-Pw/oIRR), and Neogen EnviroCaster® early (ENV-ELS) and late (ENV-LLS) leaf spot models, respectively. Calendar based sprays included 14 and 21-day schedules. The 14 and 21-day treatments were initiated at 34 DAP. Seven and five sprays were applied on the 14 and 21-day schedules, respectively. AU-P and AU-P w/oIRR initiated sprays at 47 and 50 DAP respectively, resulting in 4 and 3 sprays each. The ENV-LLS and ENV-ELS models initiated sprays at 47 and 12 DAP resulting in 4 and 5 sprays, respectively. Bravo Weather Stik was applied from two times in each of AU-P, AU-Pw/oIRR, ENV-LLS advisories and 21-day schedule to three times in the 14-day and ENV-ELS advisory. Folicur was applied once in the AU-Pw/oIRR, twice in the AU-P, ENV-LLS and ENV-ELS advisories, three times in the 21-day and four times in the 14-day treatment. Disease pressure was extremely heavy with late leaf spot *(Cercosporidium personatum)* and rust *(Puccinia arachidis)* at the final rating prior to digging. Southern blight *(Sclerotium rolfsii)* pressure was moderate. The 14-day seven spray treatment provided the best leaf spot control. The AU-P 4 spray and ENV-ELS 5 spray provided significantly better leaf spot control than any of the other remaining treatments. The 14-day seven spray treatment provided the best rust control but it was not significantly different from the ENV-ELS five spray treatment and this treatment was not significantly different from the 4 spray AU-P advisory. All treatments with the exception of AU-Pw/oIRR provided significantly better control of southern blight than the untreated control. There was no significant difference in yield between any of the advisory or calendar based sprays with the exception of AU-Pw/oIRR which was not significantly different from the untreated control.

Recovery of pod rot pathogens and pod rot incidence in peanuts treated with selective fungicides.

B.B. SHEW* and J.E. HOLLOWELL. Department of Plant Pathology, N. C. State University, Raleigh, NC 27695-7616.

Rhizoctonia solani and *Pythium spp.* were the fungi most frequently associated with pod rot symptoms in a recent survey of NC fields. The relative importance of the pathogens was studied with selective fungicides in three fields (PBRS, UCPRS, and CEFS) having different cropping histories. Peanuts were treated with tebuconazole, metalaxyl, tebuconazole + metalaxyl, or no fungicide. The CEFS field also included conventional and no-till treatments. Symptomatic pods were collected 2-3 weeks before digging and incidence of pod rot was estimated. Symptomatic pods were assayed for *Pythium, R. solani, Cylindrocladium parasiticum, Sclerotium rolfsii*, and *Sclerotinia minor*. At digging , inverted plants were examined and incidences of CBR, southern stem rot, and Sclerotinia blight were recorded. The highest rates of *R. solani* recovery were found at UCPRS, where it slightly exceeded recovery of *Pythium*. However, *C. parasiticum* was the predominant species recovered at UCPRS, which corresponded to high CBR incidence. Fungicides additively reduced recovery of target pathogens; the lowest rate of pathogen recovery was found from plants treated with both fungicides. Yields were low because of CBR, and were highest in plots treated with tebuconazole. At PBRS, *Pythium* predominated in pods and *C. parasiticum* was recovered more frequently than *R. solani*. None of the fungicides affected recovery of pod rot fungi, but tebuconazole treatments increased yields. High levels of southern stem rot were found on inverted plants. The marked suppression of southern stem rot by tebuconazole probably accounted for yield increases at PBRS and UCPRS. *Pythium* predominated in symptomatic pods from CEFS and only low levels of *R. solani* were found. Pod rot estimates were very low at CEFS probably because peanuts had never been grown in the field there. Tebuconazole reduced recovery of *R. solani* and metalaxyl reduced recovery of *Pythium*. Tillage did not affect pod rot or species of pathogen recovered.

Comparison of North Carolina, Georgia, and Florida *Cylindrocladium parasiticum* Isolates. J.E. HOLLOWELL* and B.B. SHEW. Department of Plant Pathology, North Carolina State University, Raleigh, NC 27695-7616.

Although CBR was first reported in GA in the early 1960's, epidemics since the 1970's were most serious in NC and VA, limiting peanut production. In the 1990's, CBR has been increasing in importance in GA and FL. Regional differences in disease occurrence and progress of epidemics caused by *Cylindrocladium* may be related to differences in peanut genotypes, climate of the area, soil temperature at planting, or physiology of isolates. Cultures of *Cylindrocladium* from NC and GA were grown on a temperature gradient plate. Attempts were made to determine if optimum growth rates differed for isolates from different locations. Thirteen isolates from NC and 11 from GA, were grown on plates of PDA at 20, 25, and 30 C. Culture diameters were measured daily for six days. There were no significant differences among isolates grown at 20 C and cultures were smaller overall compared with 25 and 30 C. At 25 and 30 C isolates varied consistently in growth, but not all differences were significant. Georgia isolates grew less than NC isolates. Generally NC isolates grew better at the warmer temperature. The apparent differences in temperature optima for disease occurrence do not appear to be related to the vegetative growth rate of *Cylindrocladium*. Three NC isolates were compared to four FL isolates. Significant differences in mean measurements showed that FL isolates grew faster than NC isolates, which indicates they may have adapted to higher temperatures. Isolates from the three geographic areas are being compared in their ability to cause root rotting at 25 and 30 C. Roots of plants grown in soil infested at a standard inoculum density in temperature controlled water bath tanks will be rated for CBR development. These data will help answer the question of possible adaptations for field cultures in GA and FL since the disease first occurred in the 1960's. NC field isolates do not appear to have changed in temperature optima since the 1970's.

Responses of Florunner Peanut to Irrigation Practices in the Texas Southern High Plains. A. M. SCHUBERT* AND F. D. MILLS, JR. Texas A&M University Agricultural Research and Extension Center, Lubbock, TX 79401-9757 and Department of Agriculture and Environment, Abilene Christian University, Abilene, TX 79699-7986.

Typically, peanuts in the Texas Southern High Plains are irrigated with center pivot systems with drop nozzles in spray mode on fields planted in straight rows. Responses of peanuts to irrigation application methods and quantity in large field experiments conducted near Lamesa, TX during the 1995 and 1996 crop years have been reported. Similar experiments were repeated in 1997. Yields, grades, and crop values were determined for the various experimental irrigation treatments. In addition, large samples from all replications in each irrigation treatment in each crop year were pooled. These samples were shelled and analyzed for selected quality factors in the laboratory at ACU. In these experiments, irrigation was by a center-pivot system with drop nozzles on a circular planting pattern. All irrigation applications prior to 60-70 days after planting (DAP) were equal and in the spray mode. Application of different irrigation quantities and methods began at 60-70 DAP. Irrigation frequency during the test period was short ranging from 2.5 to 3.5 days. Irrigation levels were those needed to replace 1.25, 1.00, 0.75, 0.50, and 0.25 times cotton evapotranspiration (ET) in 1995 and 1996, and 1.00, 0.75, and 0.50 in 1997. Application methods were Low Energy Precision Application (LEPA) mode (using drag socks) in alternate furrows, LEPA in every furrow, and spray mode in alternate furrows. Yields were highest in 1996, intermediate in 1997, and lowest in 1995. Across years and application methods, yields from 1.25, 1.00, and 0.75 ET plots were highest and statistically equal with significant yield losses at 0.50 and 0.25 ET replacement. There was no advantage to applying water to every furrow when using LEPA mode. Across all years tested, as quantity of irrigation water increased, O/L ratios declined, fat % increased, sugar % increased, peroxide value decreased, and aflatoxin, free fatty acid and flavor rating were unaffected. There were significant differences in aflatoxin, fat, flavor rating, and peroxide values among crop years.

Response of Florunner Peanut to Late Season Application of Nitrogen Fertilizer in the Texas Southern High Plains. F. D. MILLS, JR.* AND A.M. SCHUBERT. Department of Agriculture and Environment, Abilene Christian University, Abilene, TX 79699-7986 and Texas A&M University Agricultural Research and Extension Center, Lubbock, TX 79401-9757.

Historically, Texas Southern High Plains' farmers have applied nitrogen fertilizer to peanuts. Even though this practice is not common in other U.S. production regions, many TSHP farmers presume yield and grade respond positively to applied N. However, research conducted in Gaines County, TX by Onken (1985-87) and Colburn (1991-1993) showed no statistically significant benefit to yield or crop value/ac. The question of peanut's response to N recently resurfaced as peanut acres expanded rapidly into other THSP counties. Quantity and quality characteristics were measured in large field experiments conducted in Dawson County, TX from 1995-97. Applications of 100 lb. and 200 lb. of N in the form of urea fertilizer (46-0-0) 108 DAP were compared with a check of no applied N (all treatments received 25 lb. preplant). All other variables were held constant. Yield/ac., flavor, fat content, sugar content, the oleic/linoleic ratio, peroxide values and free fatty acids were measured using common commercial analysis methods. The data were analyzed statistically using ANOVA. In no instance was the null hypothesis rejected at the 0.05 level. This implies the means of the three treatments relative to each dependent variable were not significantly different. Therefore, as an example, assuming a cost of $0.27/lb. for N applied at a rate of 200 lb. in 1997, $54/ac. was spent needlessly. An extra 288 lb. of peanuts were needed to cover just the cost of N based on an additionals contract of $375/ton. In 1996 and 1997, the check yields equaled or exceeded those of the other two treatments. Also, even though means were not significantly different, it was observed as more N was applied, flavor rankings increased, fat and sugar contents declined and the oleic/linoleic ratio trended downward.

Development of EXNUT for West Texas Growers. J.I. DAVIDSON, JR.*, J. FARRIS, M. SCHUBERT, R. LEMON, R. HENNING, USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742, Dawson County Cooperative Extensison Service, Lamesa, TX 79331, Texas A & M University, Lubbock, TX 79401, Texas A & M University, College Station, TX 77843, DeLeon Peanut Co., Lamesa, TX 79331.

EXNUT, an expert system for managing peanut irrigation has been successfully developed for all major U. S. peanut growing regions except West Texas. Because of differences from other regions in climate, pest, and irrigation capacity, major revisions to the genesis version for West Texas are required. The climate in West Texas is more arid than other growing regions requiring more frequent and total amounts of irrigation. Freeze damage before maturity is a higher risk than for other regions. The pest pressure and irrigation capacities are lower than for other regions. The probability of rain is lower and the risk of drought stress is much higher than the risk of excessive soil moisture. EXNUT strategy requires that intensive irrigation be initiated earlier and the date be determined by irrigation capacity and accumulated heat units since planting. Beyond this date EXNUT strategy requires intensive irrigation until maximum geocarpsphere(GCS) temperature decreases below 80° F. Reduced amounts of irrigation are required until maximum GCS temperature drops below 75° F or accumulated heat units are sufficient to insure acceptable maturity. Irrigation is normally terminated when either of the latter conditions exist to prevent the buildup of pod rot organisms.

Validation of EXNUT for Scheduling Peanut Irrigation in North Carolina. W.J. GRIFFIN[1]*, J.I. DAVIDSON[2], M.C. LAMB[3], R.G. WILLIAMS[2], G. SULLIVAN[4]. [1]Bertie County Cooperative Extension Service, Windsor, NC 27983, [2]USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742, [3]Department of Agricultural Economics and Rural Sociology, Auburn University, Auburn, AL 36848, [4]NC State University (retired), Raleigh, NC 27695.

During crop years 1989-1992 EXNUT concepts and a version of EXNUT modified for North Carolina conditions were evaluated. This version was revised and evaluated on 20-25 peanut fields during crop year 1993, 1994, 1995, 1996, and 1997. Average yields of 4360, 4890, 4640, and 4530 and 4770 kg/ha were obtained during crop years 1993, 1994, 1995, 1996 and 1997, respectively. These yields were 1080 kg/ha higher than average yields produced on these irrigated fields prior to 1993. Farmers reported that EXNUT increased their yields at least 500 kg/ha. Using this 500 kg/ha and estimated cost of $5.14/ha, average net returns from using EXNUT to schedule irrigation was $272.76/ha. Average compliance of farmers with EXNUT recommendations was 85 and 75 percent for wet years (1994 and 1996) and dry years (1993, 1995, and 1997), respectively. On the average, a 71% or higher compliance with EXNUT recommendations on fields with sandy and medium type soils resulted in yields greater than 4480 kg/ha making irrigation of peanuts feasible in these fields at a world market price as low as $350 per metric ton. Every percentage point increase in compliance with EXNUT recommendations on these fields resulted in an increase in yield of 50 and 110 kg/ha during wet and dry years, respectively. Yields from fields with heavy type soils averaged only 3850 kg/ha, because of excessive disease and harvest losses. On the average peanuts could be produced on this type soil at world market prices of $410/metric ton if compliance with EXNUT recommendations is at least 80%. This 9 year study is an example of how expert systems can be transferred through cooperation of researchers, extension specialists and users.

Evaluation of Runner Market Type Peanut in North Carolina. D.L. JORDAN* and P.D. JOHNSON. Department of Crop Science, North Carolina State University, Raleigh, NC 27695-7620.

Changes in farm legislation has caused growers to closely consider economics of current production and pest management practices. Some growers in the Virginia-Carolina area are considering production of runner market types as an alternative to virginia market types. Little data exists in the Virginia-Carolina area relative to production of runner market types. Research was initiated in 1997 to compare yield and market grade of runner and virginia market types as influenced by variety selection, supplemental calcium, seeding rate, and pest management strategies. Maturity of several runner market types was similar to that of the virginia market types. Runner market types also yielded and provided economic value similar to the virginia market types. Georgia Green and AT 120 showed the most promise. The cultivar Andru 93 was very susceptible to sclerotinia blight. Georgia Green and GK 7 were somewhat less responsive to supplemental calcium than were the virginia market types NC 7 and Gregory. In other studies, seeding rate had a minimal impact on yield and economic value of runner and virginia market types. Runner market types produced under both IPM-based and preventive pest management strategies provided economic returns similar to virginia market types. Collectively, these data suggest that commercially available runner market types may offer growers in the Virginia-Carolina area an alternative to virginia market types when or if market demand exists.

A Screening Attachment for a Four Row or Six Row Amadas Combine. P.D. Blankenship*[1], J.W. White[2], and M.C. Lamb[3]. [1]USDA, ARS, National Peanut Research Laboratory, Dawson GA. 31742; [2]Indus. Eng., Amadas Industries, Inc., Suffolk, VA 23439; [3]Ag. Economist, Auburn Univ., Auburn, AL 36849.

Some farmers screen farmer stock (FS) peanuts after combining to remove undesired materials such as foreign materials, small pods, and loose shelled kernels for value and quality improvement prior to marketing. Screening is accomplished with low capacity, portable screens at the field after combining or with high capacity cleaners or screens at buying point cleaning facilities. An alternative method for FS peanut screening during harvest has been developed cooperatively by Amadas Industries and the USDA-ARS National Peanut Research Laboratory utilizing a screening attachment for a four or six row Amadas combine. The attachment is basically a hydraulic driven, rotating cylindrical screen (trommel) with the axis inclined less than 10 degrees from horizontal during operation. Peanuts are screened with the trommel just prior to entering the combine basket with smaller, unwanted materials being returned to the soil. Thirty-eight lots of FS peanuts averaging 2.7 t were combined during the field experiments developing and examining the performance of the experimental screening attachment. Comparisons of grade factors for control, screened, and differences between control and screened lots for runner type peanuts indicated that foreign materials for the screened lots averaged 2.8 % lower than the control lots ($P \leq 0.05$). Hulls were 0.6 % lower in the control lots ($P \leq 0.05$). None of the other grade factors or marketed values per hectare were significantly different for runner peanuts. Foreign materials for screened Virginia peanuts were 2.4 % lower than controls ($P \leq 0.01$). Loose shelled kernels were 0.4 % higher ($P \leq 0.05$), hulls 0.7 % lower ($P \leq 0.1$), and damage 0.6 % higher. None of the other grade factors or marketed values per hectare were significantly different for Virginia peanuts. Although most grade factors and values per hectare were not significantly different for screened and unscreened peanuts tested, foreign materials were decreased providing needed quality improvement. Also, possible cleaning costs could be reduced with the attachment.

SYMPOSIUM: ALTERNATIVE TILLAGE SYSTEMS FOR PEANUTS IN THE UNITED STATES

Effects of Tillage Systems on Peanut Grade, Yield, and Stem Rot (*Sclerotium* rolfsii) Development. W.J. GRICHAR*, B.A. BESLER, and R.L. LEMON. Texas Agricultural Experiment Station, Yoakum, TX 77995 and Texas Agricultural Extension Service, College Station, TX 77843.

Field studies were conducted from 1987 to 1996 to evaluate the effects of no-tillage, reduced-tillage, or full-tillage systems on grade, yield, and stem rot (*Sclerotium* rolfsii) disease development in a field continuously planted to peanut. In only one year was peanut yield better in no-tillage plots while in 3 of 10 years the full-tillage system outyielded the no-tillage system. Reduced-tillage was intermediate in peanut yield. No increase in the incidence of stem rot occurred in reduced or no-tillage plots when compared to full-tillage plots. In 3 of 10 years peanut grade was lower in no-tillage than full-tillage plots.

Reduced Tillage Systems for Peanut Production in Georgia. J.A. BALDWIN* and J. HOOK, Crop and Soil Science Dept., University of Georgia, Tifton, GA, 31793

Conservation tillage practices continue to increase for Georgia farmers looking for ways to reduce production cost by savings in time and labor. They are also seeking wind and water erosion control, better water holding capacity, and less run-off. They would like to obtain these benefits while maintaining or improving yield, grade, and quality of peanuts produced. Recent added benefits are an indication that tomato spotted wilt virus (TSWV) incidence is reduced when peanuts are planted by either strip tillage or no tillage methods. Surveys of ten producers using reduced tillage methods for producing peanuts ranging from one to twenty years, indicated that their ranking of research needs from most to least needed would be; 1. Weed control, 2. Diseases, 3. Cover crops, 4. Soil fertility, 5. Rotations, 6. Insects, 7. Equipment, and 8. Tillage. Varying soil types, drainage, slope of fields, and irrigated versus non-irrigated production present a challenge to research in this area. Also, limited information is available on cropping systems utilizing strip tillage or no-tillage management over several growing seasons. What will the long term effect be on each crop in the rotation when each is planted by reduced tillage methods? As with conventional tillage, a package approach for crop management will need to be developed for utilizing reduced tillage as part of a whole farm management plan.

Comparison of Peanut Yields Under No-Tillage, Strip-Tillage and Several Forms of Conventional Tillage. G.C. NADERMAN, Soil Science Department, NC State University, Box 7619, Raleigh, NC 27695-7619.

During 1991 through 1993 five on-farm tillage studies were conducted in North Carolina. The soils involved varied from being drought-prone to wetness-prone under conditions of the growing seasons tested. Tillage practices included in all studies were fluted-coulter no-till, strip-till with in-row subsoiling, and moldboard plow followed by disking. Additional tillage treatments were also included in each study, but were not common in all of the experiments. Yield averages by experiment varied from 1883 to 3266 kg of dry peanuts per hectare (1677 to 2909 lb/ac). None of the total of seven tillage treatments tested consistently ranked among the best half of treatments in yield across all experiments where it was included. The fluted-coulter no-till, even though it generally performed fairly well, was among the lower half of treatment yields among all studies. Stand establishment, weed control, insect control and harvesting were readily accomplished in all forms of conservation tillage used. Disease pressure was inconsistent by site and season, but was not statistically related to the tillage treatments studies.

Effects of Selected Practices for Reduced Tillage on Peanut Yield, Disease, Grade, and Net Revenue. E.J. WILLIAMS*[1], S. HILTON[2], M.C. LAMB[2], and J.I. DAVIDSON[2]. [1]Biological and Agricultural Engineering, University of Georgia, Tifton, GA 31793-0748, and [2]USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742.

Fourteeen experiments were conducted on medium to heavy textured soils, 1994-97, to develop and evaluate practices for reducing trips over the field in view of new equipment, varieties and fungicides for soilborne diseases. Basic tillage practices used throughout eleven of the fourteen experiments included fall paratill-bedding, spring strip-tillage, and spring deep turning. Other variables evaluated depended on the test, and included the use cover crop (with and without Northern rye), fungicides for soilborne diseases (Folicur or Bravo-Moncut), secondary tillage practices (between-row chiseling or deep slitting), in-row tillage depth (above or below plow pan), and residue management (with or without pulling cotton stalks). Observations of other strategies that substantially reduced field trips included combination implements (front-mounted stalk-puller and disk harrow/disk bedder) and fall incorporation of rye with stalk puller followed by spring strip-tilling. Experiments were either irrigated, first-year reduced tillage behind cotton or non-irrigated on rested or well-rotated land. The variety was GK-7, with the exception of two irrigated tests in which tillage was evaluated on eight varieties. In the irrigated experiments, yield responses to reduced tillage systems were slightly less than for conventional deep turning with the moldboard plow. In general, the yield response to chemicals for the control of soilborne diseases was greater than that for tillage. Positive responses to reduced tillage were generally associated with well-rotated or rested land, usually under moderate drought stress, and in which the alternative tillage system provided some means for greater water infiltration and soil moisture retention, such as the practice of fall paratill-bedding and rye cover crop. Likewise, systems which promoted good drainage in periods of excessive moisture, reduced diseases and improved plant health. Unless some form of compaction other than typical plow pans was problematic, these factors appeared to be of greater importance in peanut than deep in-row tillage. Another positive benefit of reduced tillage was a slight reduction in TSWV. Because of the weed pressures in some of the test fields, the lowered cost for reducing trips over the field were often offset by the additional costs for herbicides.

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

The Freedom to Farm bill passed by congress in 1996 reduced or eliminated the profit from peanut production on most farms in Southeast, Alabama. Except for fluctuations in price caused by natural disasters, or the likelihood the Secretary of Agriculture will set the quota below demand, growers are facing a set price of $672/Mg ($610.00/ton) for the next five years. Input costs are rising at the rate of 3-5 percent per year. Growers are trying to reduce input costs to stay profitable. One of the expenses growers are looking to cut is tillage costs. Experiments were conducted at the Wiregrass substation from 1995 to 1997 to determine if alternative tillage schemes with fungicides could maintain high yields. Whole plot tillage treatments consist of moldboard plow, disk, chisel, Ro-till, ripper-bedder and moldboard plow plus chiselvator. One experiment was in continuous peanuts with the other rotated annually with cotton. 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 and 1996, but yields were lower for the disk treatment in 1997. Folicur treatments had higher yields in all tillage treatments except in 1997 where there was no differences in yield due to fungicide treatments. However, Folicur did reduce whitemold and leafspot to a greater extent than Bravo, but it was not reflected in yield. TSMK were unaffected by fungicide treatment in 1995, 1996, and 1997. 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.

Economics of Alternative Tillage Systems for Peanuts. M.C. LAMB[1]*, W.J. GRICHAR[2], J.A. BALDWIN[3], G.C. NADERMAN[4], E.J. WILLIAMS[5], and D.L. HARTZOG[6]. [1] Dept. of Ag. Econ. and Rur. Soc., Auburn Univ., Auburn, AL 36849 and USDA-ARS-NPRL, Dawson, GA 31742, [2]Texas Ag. Exp. Station, Yoakum, TX 77995, [3]Crop and Soil Sci. Dept., Univ. of Georgia, Tifton, GA 31793, [4]Soil Sci. Dept., NC State Univ., Raleigh, NC 27695, [5]Biological and Ag. Eng. Dept., Univ. of Georgia, Tifton, GA 31793, and [6]Dept. of Agronomy and Soils, Auburn Univ., Headland, AL 36345.

Recent changes in peanut policy are prompting many peanut producers to look for practices to reduce production cost. As a result, research has been conducted in all peanut producing regions to address the impact of alternative tillage systems on peanut yield and quality. Research results from studies in Alabama, Georgia, North Carolina, and Texas varied in comparisons of peanut yield and quality in conventional and reduced tillage systems. Advantages to reduced tillage include reduced erosion and labor requirements, however, adoption of alternative tillage systems by producers hinges on expected net returns to the producer. Gross revenue per acre for each treatment were estimated based on peanut yield and percent SMKSS. Total variable cost per acre were estimated based on the labor, fuel, and repairs for each trip across the field and other variable input such as seed, nutrients, pesticides, etcetera as provided by each respective researcher. Returns above total variable cost were estimated for each treatment. If investment in equipment specific to treatments is required, the fixed cost per acre associated with such investment was be included. The central hypothesis tested is whether the net returns from alternative tillage in peanuts is significantly different from the net returns from conventional tillage systems.

Development and Validation of an Integrated Management System for Spotted Wilt Disease in Peanut.

J.W. TODD*, A.K. CULBREATH, S.L. BROWN, D.W. GORBET, F.M. SHOKES, H.R. PAPPU, J. A. BALDWIN, AND J.P. BEASLEY. University of Georgia, Coastal Plain Station, Tifton, GA 31793, and the North Florida Research and Education Center, Marianna, FL 32446.

Spotted wilt disease, caused by tomato spotted wilt tospovirus (TSWV), has become a major yield and profit limiting factor on numerous agronomic and horticultural crops worldwide. In 1995, spotted wilt became, for the first time, the most damaging disease in peanut in Georgia and Florida and caused an estimated loss of over $33 million in Georgia alone. Similar losses in peanut were sustained in 1996 and 1997. Recent research has shown that although no single practice has provided adequate suppression of TSWV in peanut, various combinations of cultural practices have significantly reduced incidence, severity and yield losses resulting from spotted wilt. Extensive collaborative research conducted in Georgia and Florida in 1996 and 1997 confirmed the utility of the package approach initially set-forth in the 1996 University of Georgia TSWV Risk Index. This paper reports the effects of various combinations of cultivar, planting date, plant population, and application of a systemic insecticide in-furrow at-planting, on final spotted wilt severity and peanut yield. Averaged over three locations, final spotted wilt severity ranged from 14.4 to 47.9% in the early-planted tests, and from 29.1 to 66.1% in the late-planting date tests in 1996, and from 12.8 to 61.6% in the early planted tests, and from 10.1 to 46.6% in the mid-(optimum) planting date tests in 1997. Additionally, yields varied from 2670 to 3851 lbs/acre in the early-planted tests, and from 2298 to 3779 lbs/ acre in the late-planted tests in 1996, and from 2357 to 4113 lbs/acre in the early-planted tests and from 2909 to 5044 lbs/acre in the mid- planting date (optimum) tests in 1997. Averaged over all locations and planting dates, peanut yields were reduced by ca. 250 lbs/acre in 1996, and by ca. 290 lbs/acre in 1997, for each 10% increase in TSWV final severity. Cultivar selection proved to be the most important factor, with planting date, plant populations, and insecticide contributing less, but still giving significant additional reductions in TSWV and resulting in higher yields. These results lend substantial experimental support for an integrated multi-factorial TSWV management system incorporating the following components: (1) use of a "resistant"cultivar (2) avoid very early and very late planting dates (3) plant to achieve a final stand of ca. 4 plants per 30 cm of row, and (4) use of Thimet® insecticide at-planting (except where other problems dictate otherwise).

Yield, Grade, and Tomato Spotted Wilt Virus Incidence of Four Peanut Cultivars in Response to Twin Versus Single Row Planting Patterns

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In 1997, studies were conducted at three locations in Georgia to compare yield, grade (Total Sound Mature Kernels: TSMK), and tomato spotted wilt virus (TSWV) incidence of four peanut cultivars when planted in 9.5 inch twin rows versus 36 inch single row spacings. Peanut cultivars 'Georgia Green', 'ViruGard', 'SunOleic 97R', and 'Flavor Runner 458' 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/foot of row in single rows to achieve the same plant population. All locations were irrigated and received similar management during the growing season. Averaged across cultivars and locations, the twin row pattern resulted in significantly increased yield and TSMK and significantly reduced other kernals (OK) and TSWV incidence. Cultivar response to twin versus single row spacing was 3760-3390 pounds/acre for yield, 73.4-72.0% for TSMK, 4.5-5.4% for OK, and 31-37% for TSWV incidence.

Development of a Method of Risk Assessment to Facilitate Integrated Management of Spotted Wilt Disease of Peanut in Georgia. S.L. BROWN*, J.W. TODD, A.K. CULBREATH, F.M. SHOKES, D.W. GORBETT, J.A. BALDWIN and J.P. BEASLEY. Department of Entomology, The University of Georgia, Tifton Campus, P. O. Box 1209, Tifton, GA 31793.
Several different factors combine to influence the risk of yield losses caused by spotted wilt of peanut. Some factors are more important than others, but no single factor can be used for effective control of the disease. Using available research data, a spotted wilt risk index was developed as a means of helping peanut growers assess risk levels associated with specific combinations of production practices and thereby minimize losses. Pertinent production practices were assigned point values that were weighted relative to their influence on final disease severity. Validation studies have shown that risk index values correlate with disease severity and negatively correlate with yield. A survey of county agents in Georgia indicated that 80% of peanut producers have changed at least one production practice because of the risk index.

Peanut Pests, Management Practices, and Chemical Use - A Survey of the Southwest Industry. D. T. SMITH*, M. G. NEW and J. T. CRISWELL. Department of Soil and Crop Sciences, Texas A&M University, College Station, TX 77843-2474 and Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078-0464.
Peanut growers throughout Texas and Oklahoma were asked to designate their weed, insect, and disease pests and chemical and non-chemical control methods, including information on scouting and production. About 14% of the growers responded, who represented 20% or more of the crop acreage. Attention to pest management and chemical use was consistently greater in irrigated fields than for dryland production. Essential every grower applied some herbicide, most commonly for preemergence control of annual weeds, with some follow up postemergence treatments. Prowl, Pursuit, Solan, Cadre, Poast Plus, and/or 2,4-DB were most commonly mentioned. A wide array of broadleaf and grassy annual and perennial weeds were cited as the weed problems. Key factors in weed management decisions were: field/weed history, past performance, and costs. Nearly all growers cultivated one or more times and about 20% hand hoed either "hot spots" or entire fields. Scouting time generally ranged from 20 to 40 minutes per 40-acre field and varied from "no cost" to $6/acre, depending on who scouted. Insect pests were monitored in nearly all irrigated fields but were not necessarily sprayed, depending on decision factors such as crop advisories, beneficial insects, economic thresholds, and overall benefit. Insecticide selection factors included costs, reentry intervals, and presence of beneficials. Southern corn rootworm, thrips, and southern cornstalk borer were common targets. Disease problems seemed highly variable with location. Tomato spotted wilt virus, leafspots, blights, and other problems were cited. Folicur, Bravo, and Temik were frequently mentioned and were applied on the basis of field scouting and costs. Some growers based cultivar selection on disease resistance but a greater portion tended to rotate fields for one year or more. The few growers who used a computer in their peanut operation were involved in market news, forecasts, and advisories but few maintained pesticide records electronically. Other data were gleaned on cultivar preferences, seeding rates and yields, and other cultural practices will be useful in research and Extension programs. Peanut grower groups in both states were extremely cooperative and encouraged grower participation.

Response of Four Runner Peanut Cultivars to Prohexadione Calcium Plant Growth Regulator.

J.P. BEASLEY, JR.*, G.E. MACDONALD, C.K. KVIEN and S. RUSHING. Crop and Soil Sciences Dept., University of Georgia, Tifton, GA 31793 and BASF Corp.

Prohexadione calcium (BAS 125) is a plant growth regulator being developed by BASF Corporation for use in peanut. Four runner cultivars, 'Georgia Runner', 'Georgia Green', 'Andru 93', and 'Southern Runner', were tested in crop years 1996 and 1997 at the Southwest Georgia Branch Experiment Station in Plains for response to prohexadione calcium. Parameters measured were yield, grade factors, main stem height, cotyledonary lateral branch length and canopy shape. Cultivars were planted in single and twin row spacings. Single row spacing was 91 cm between rows in 1996 and 1997. Twin row spacing was 26.7 cm between twins in 1996 and 24.1 cm in 1997. Seeding rate was 20 seed/m on single row spacing and 10 seed/m in each twin row. Planting dates were May 3 and May 7 in 1996 and 1997, respectively. In 1996, two timing of application treatments of BAS 125 were compared to an untreated check. In the first treatment, BAS 125 was applied at 0.14 kg a.i./ha at 50 percent row closure followed by 0.14 kg a.i./ha three weeks later. The second BAS 125 treatment was 0.14 kg a.i./ha at 50 percent row closure followed by two sequential applications of BAS 125 at 0.07 kg a.i./ha at three week intervals. In 1997, only the split application of 0.14 kg a.i./ha at 50 percent row closure and three weeks later was compared to an untreated check. All BAS 125 treatments contained 2.35 l/ha of 28 percent UAN and were applied at 329 l/ha carrier volume. Main stem height and lateral branch length were significantly reduced by both BAS 125 treatments in 1996 and 1997 and there was no difference betweeen the two BAS 125 application timing treatments in 1996. There was no affect of row spacing. There was no significant difference ($p \leq 0.05$) in yield between treatments when averaged over cultivars in 1996. In 1997, there was a significant cultivar by treatment interaction ($p \leq 0.05$). Andru 93 and Southern Runner had significantly higher yields when treated with BAS 125 while yields of Georgia Runner and Georgia Green were not affected by BAS 125.

Basline™ Plant Growth Regultor in Peanuts-Update.

T.E. MCKEMIE*and J. R. EVANS. BASF Corporation, 26 Davis Dr., Research Triangle Park, NC, 27709-3528.

Baseline ™ or prohexadione calcium is a plant growth regulator that acts within a plant to inhibit the late stages of gibberellin biosynthesis leading to reduced internode length. In peanuts, applications of Baseline result in clearly definable row shape at harvest which improves harvest efficiency. The use pattern for Baseline™ will call for the first application to be applied at 50% row closure and for repeated applications to occur at three to five week intervals as needed. Split applications will also increase the flexibility so applications can be based on growing conditions. Field tests have shown that Baseline applied twice at 0.125 lb. ai/A will provide canopy definition equal to or greater than that provided by sequential applications of daminozide at 0.85 lb. ai/A and then at 0.43 lb. ai/A.

Sources of Resistance to Preharvest Aflatoxin Contamination in Peanut. C. C. HOLBROOK[*1], D. M. WILSON[2], and M. E. MATHERON[3]. [1] USDA-ARS, Coastal Plain Exp. Sta., Tifton, GA; [2] Dept. of Plant Path., Univ. of GA, Tifton, GA; [3] Dept. of Plant Path., Univ. of AZ, Sommerton, AZ.

Preharvest aflatoxin contamination (PAC) is one of the most serious challenges facing the U. S. peanut industry. The objectives of this research was to identify sources of resistance to PAC. To facilitate the identification of resistant genes, a core collection was selected to represent the entire germplasm collection for peanut. All available data for accessions in the entire germplasm collection (7,400 accession) were used to cluster the accessions into genetically similar groups. Random sampling was then used to select ten percent from each group. The resulting 831 genotypes form the core collection for peanut. All accession in the core collection were first examined in a preliminary screen using five replications in a single environment. Genotypes that had low aflatoxin contamination levels in the preliminary screen were then retested. Fifteen core accessions (47, 66, 99, 147, 158, 174, 215, 276, 282, 287, 292, 299, 511, 522, 554) have showed low levels of aflatoxin contamination in multiple environments. These accession have exhibited a 70 to 90 % reduction in aflatoxin contamination in comparison to susceptible accessions in multiple environments.

Definition of Mechanism of Resistance to Aflatoxin Contamination in Peanut. , K. FRANKE*[1], C. KVIEN [1], M. FRANKE [2], C. HOLBROOK [3],K. INGRAM [4] [1]NESPAL, [2] Dept. of Plant Pathology Univ. of Georgia, Coastal Plains Experiment Station, Tifton, GA 31794, [3]USDA-ARS, Tifton, GA 31793, and [4] Crop and Soil Science, Griffin Station 30223.

Fifteen genotypes with potentially lower susceptibility to aflatoxin contamination were identified as a result of screening the core collection. These genotypes have shown 70 to 90% reduction in aflatoxin contamination in comparison to susceptible accession in at least three environments. Preliminary observations indicate that some of these genotypes may have lower aflatoxin contamination due to better drought tolerance. However, these genotypes may also have other mechanisms that reduce aflatoxin contamination. The primary objective of this study was to measure a number of easily measured traits in both resistant genotypes to susceptible genotypes and determine if any of these traits may be related to improved aflatoxin resistance. Traits measured included growth habit, maturity, plant size, hull thickness, hull weight, seed weight, pod surface area, volume, root length, root surface area, and root diameter. Analysis of variance indicated that the resistant genotypes had higher means than the susceptible genotypes in the surface to volume ratio and specific hull weight 5.4- 7.1 cm^2 and 036- .038 mg, respectively. The preliminary means for root length and root surface area with the resistant genotypes also exceeded the susceptible genotypes 1212 -1516 mm and 206-234 mm, respectively. Results from this work will be compared with data from field studies to determine if correlation between aflatoxin resistance and peanut physiology characteristics exist. This could lead to the development of a more efficient method for screening for resistance to preharvest aflatoxin contamination.

Partial Dominance, Pleiotropism, and Epistasis in the Inheritance of the High-Oleate Trait. T.G. ISLEIB*, R.F. WILSON, and W.P. NOVITZKY. Dept. of Crop Science, North Carolina State University, Raleigh, NC 27695-7629; and USDA-ARS, Raleigh, NC 27695-7629.

Industry demand for peanut cultivars with the high-oleate trait is driving programs of backcrossing of the trait into high-yielding or otherwise desirable recurrent parents. The high-oleate trait of peanut is reportedly controlled by two loci exhibiting duplicate gene action. Because the recessive allele at one of the loci is common in peanut cultivars in the virginia and runner market types, most conversions of cultivars or breeding lines require the transfer of only one recessive gene. This is achieved most efficiently by crossing high-oleate lines to the recurrent parent in the summer, selfing the hybrids in the winter, and testing individual seeds for the trait in the spring to identify selections for use in the next cycle of crossing. In the course of making such transfers into five virginia-type cultivars, it was observed that approximately half of all F_2 embryos harvested from Ol_1ol_1 hybrids exhibited linoleate levels intermediate to those of the high-oleate seeds and seeds of the recurrent parental type. The ratio of low: intermediate: high linoleate seeds fit a 1:2:1 ratio in each population. These intermediate levels were observed in the second and later cycles of backcrossing. The intermediate linoleate level may permit breeders to treat the high-oleate character as a dominant trait, identifying carriers of the recessive mutant allele in successive cycles of backcrossing without intervening generations of selfing, thereby decreasing the time required to achieve the desired number of backcrosses. Linoleate levels were used to classify F_2 embryos as Ol_1Ol_1 homozygotes, heterozygotes, and ol_1ol_1 homozygotes, then least squares procedures were used to estimate additive and dominance contrasts for the various fatty acid characteristics in the BC_3F_2 generation. Recurrent parent had a significant effect on all fatty acids except total saturates, demonstrating that loci other than ol_1 and ol_2 must influence fatty acid concentrations. The ol_1 gene had a significant pleiotropic effect on concentrations of palmitate (16:0), oleate (18:1), linoleate (18:2), total C_{18} species, eicosenoate (20:1), and total saturates. Epistatic gene action was evidenced by statistical interaction between the recurrent parental genotype and the ol_1 gene for palmitate, oleate, linoleate, total C_{18} fatty acids, eicosenoate, lignocerate (24:0), and total saturates.

Variation in Pod Color Characteristics in the Virginia-Carolina Peanut Variety and Quality Evaluation Program. R.W. MOZINGO, II, T.G. ISLEIB*, and R.W. MOZINGO. Dept. of Crop Science, North Carolina State University, Raleigh, NC 27695-7629; Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437.

Pod color is an important trait that influences the consumer in the decision to buy in-shell peanuts. Buyers prefer bright hulls to dark ones. A Hunter Laboratory colorimeter was used to measure pod color of fancy and jumbo pods harvested from the Virginia-North Carolina Peanut Variety and Quality Evaluation (PVQE) program in 1995, 1996, and 1997. The PVQE tests were conducted at four sites each year with separate two-rep RCB tests dug at early and late dates at each site. Pod brightness (Hunter L score), redness (Hunter a score) and yellowness (Hunter b score) exhibited significant variation due to environmental factors, genotypes, and genotype-by-environment interaction. Environmental effects were the largest source of variation for pod brightness. There was a significant inverse relationship between brightness and the amount of rainfall on peanuts between digging and harvest, particularly rain falling more than one day after digging. Jumbo pods were significantly brighter than fancy pods although there was some interaction between genotypes and pod size with some smaller-seeded genotypes exhibiting less of a difference. Although cultivars and breeding lines with larger average pod size generally had darker fancy pods, large-seeded lines with acceptably bright fancy pods were identified in the group tested. Of the cultivars included in the study that are currently available to growers, 'VA 93B' had the brightest jumbo and fancy pods while 'VA-C 92R' and 'Gregory' had the darkest pods . Weighting the pod brightness values by the relative proportions of fancy and jumbo pods in the sample provided a single value for comparison with other traits measured in the PVQE program. No single grade factor was strongly correlated with pod brightness.

Short-Term Effect of Seed Size Selection on Performance of Georgia Green and Florunner.

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In the U. S., runner market type peanut (*Arachis hypogaea* L. subsp. *hypogaea* var. *hypogaea*) seed are normally screened and sized after shelling into three commercial grade standards: jumbo runner, medium runner, and no. 1 runner. Genetic shift may result from the continued practice of planting the same seed size year after year. For three consecutive years, 1995-97, the short-term effect of continuous seed size selection pressure in the presence of high tomato spotted wilt virus (TSWV) severity was evaluated among two runner-type cultivars, Georgia Green and Florunner, at the University of Georgia, Coastal Plain Experiment Station. Both cultivars were equally divided by slotted screens into four different seed sizes (jumbo, medium, no.1, and the combined mill run check). Seed stock for planting each year were obtained from the corresponding seed size produced the previous year. The results from this study show that the newly released TSWV-resistant runner-type peanut cultivar, Georgia Green, significantly out-performed the past popular Florunner cultivar in yield, grade, and dollar value, and had significantly lower TSWV incidence. Georgia Green also had comparable percentage of jumbo runner seed, more medium runner seed, and fewer no. 1 seed than Florunner. These two runner-type cultivars (the pure-line Georgia Green and the multi-line Florunner) responded similarly to continuous seed size selection pressure. Small but significant changes in seed size distribution resulted from planting the same seed size within this relatively short-term.

Amplification of DNA Sequences for a Methionine Rich Protein (MRP) in Peanut.

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Peanut is an excellent source of plant protein, but is deficient in methionine, one of the essential amino acid. A methionine rich protein (MRP) from peanut seed has been identified, isolated and characterized. MRP was found to consist of six subunits (MRP1 to MRP6) with varying levels of methionine. Two of these subunits (MRP2 and MRP3) were sequenced for N-terminal amino acids. In order to isolate the MRP gene, degenerate oligonucleotide primers were synthesized based on the N-terminal amino acid sequence of MRP2 and MRP3. Primers were used to amplify MRP-DNA sequences from peanut seed cDNA library through polymerase chain reaction (PCR). The PCR amplified products were resolved through agarose gel electrophoresis. Two DNA bands of 400 bp and 300 bp were observed with MRP2 primers. Both the bands were cloned into the plasmid Bluescript SK+ to study their expression in developing peanut seed and to purify MRP cDNA clone. RNA gel blot analysis using these two amplified PCR fragments as probe in different seed maturity stage showed that 400 bp fragment is specific because positive hybridizing transcript signals are observed. The most abundant signals are in yellow maturity stage. The accumulation pattern of mRNA transcripts are in accordance with MRP protein accumulation suggesting that amplified fragment should confer for MRP. Further studies to isolate the cDNA clone and its characterization are under progress using 400 bp PCR fragment as probe.

Shade Avoidance in Peanut Cultivars Response Interferes with pod Setting. I.S. WALLERSTEIN* S. KAHN, I. WALLERSTEIN[1], G. WHITLAM[2]. Department of Field Crops and Natural Resources, [1]Department of Ornamenta Horticulture, Agricultural Research Organization the Volcani Center, P.O.B. 6, Bet Dagan, 50 250 Israel. [2]Department of Botany, University of Leicester, Leicester, LE1 7RH, UK.

Commercial peanut cultivars have indeterminate shoot growth and long reproductive periods, but under contemporary high-density cultivation practices the period of pod set is restricted to the beginning of the reproductive period. This restriction has long been attributed to the effect of growth density on photosynthesis, but our results indicate that shade avoidance reactions are responsible. Investigations of the responses of peanut cultivars to low red: far-red ratios (R:FR) in the laboratory have revealed considerable between-cultivar variation. Some cultivars exhibit a high sensitivity to R:FR, whilst other show low sensitivity that manifests itself as a negative response to low R:FR at early stages of growth. The variation between cultivars in shade avoidance response was found to correlate with pod-setting responses of those cultivars to planting density in field experiments (carried out in Israel). The characteristics of peanut growth can clarify this correlation. After pollination a gynophore starts to elongate from the axillary flower toward the soil. It will set pod only after penetration into the soil. The gynophore has a limited elongation period and therefore the distance between the flower and the soil is important for pod setting. High density conditions in the field cause erect growth and elongated internodes in both the "runner" and the "bunch" types of cultivar. In both types of cultivar, higher shade avoidance response under controlled conditions was in correlation with shorter reproductive period at high density in the field, but also with a high rate of gynophore production. These results demonstrate the potential for breeding for high or low sensitivity to R:FR as a means of improving crop plant performance. The data also suggest that lower density planting regimes might result in improved peanuts yields using appropriate cultivars. At the fundamental level, the demonstrated high variation in shade avoidance response between cultivars within a single species is intriguing from the standpoint of functional adaptation and plasticity.

Application of Color Image Analysis to Peanut Harvest Prediction. J. SIMUNOVIC* and T. H. SANDERS. Department of Food Science and USDA, ARS, Market Quality and Handling Research Unit, North Carolina State University, Raleigh, NC 27695-7624.

The hull-scrape method is the tool of choice for determination of peanut pod maturity distribution and harvest recommendations for certain peanut cultivars and growing regions. The method currently employs manual color sorting of a representative pod population sample into pre-determined color classes. General-use hardware and software components are commercially available for implementation of color image analysis to hull-scrape color sorting for harvest prediction. Customization and integration of these components is necessary to establish procedures and protocols for individual image analysis applications. The objective of this study was to design and test a color image acquisition and analysis system and establish and test a procedure for color classification of peanut pods based on the established hull-scrape methodology. A system prototype was assembled, using a CCD-based color video camera with RGB output coupled to a personal computer equipped with an RGB video input/output card for image acquisition. Commercial color classification software was used to build color reference classes based on manually generated color classes (yellow, orange A, orange B, brown and black). Generated color distributions were used to sort the test pods in sets of 50 by class comparison for a variety of pod arrangements and distributions. Resulting classification was generally within one color class relative to manually sorted samples when one visible surface of each pod was sampled. Image sampling and classification for a 50-pod sample were performed in under 1 second using an Intel 486 CPU based system. This objective color image analysis and classification methodology could significantly improve the accuracy, repeatability, and efficiency of hull-scrape methodology for peanut pod maturity determination. The application of the hull-scrape method could potentially be extended (to other cultivars and regions) using pod surface sub-sampling (generation and analysis of surface color class distributions within individual pods) and image acquisition and color classification for whole visible pod surfaces by rotation, mirroring, or mechanical segmentation (halving).

Peanut Response to Broiler Litter, Starter Fertilizer, and Fungicide in an Intensive Crop Rotation. G. J. Gascho*, T. B. Brenneman, and A. W. Johnson. University of Georgia and USDA-ARS, Coastal Plain Experiment Station, Tifton, GA.

A double-cropped, irrigated, three-year rotation was initiated on a Tifton loamy sand in 1996. The objectives were: 1.To determine the effects of rates of broiler litter application on peanut yield, grade, and value, 2. To determine fertilization needed to balance the nutrition supplied by the broiler litter, and 3.To determine if broiler litter affected either nematode populations or the need for fungicide application. Broiler rates were 0, 2, 4, or 6 ton/acre prior to each crop. For peanut the litter was incorporated to a depth of 5 in. two weeks before planting. Within each litter rate there were six subtreatments including starter fertilizers (nothing or 10 gal/acre of either 10-34-0 or 12-22-5 (2S)) with either Moncut or no Moncut. Broiler litter application tended to decrease pod yield, grade, and value of peanut. Averaged across all rates, pod yield decreased by 435 and 350 lb/acre in 1996 and 1997, respectively. Reductions in yield, grade, and value were mainly due to the application of the first two tons of litter. Starter fertilizers had little effect on yield, grade, or value. Moncut application decreased white mold hits and increased yield, grade and value. Nematode populations have not yet been affected by broiler litter application. Peanuts, unlike other crops in the rotation, responded negatively to broiler litter application.

Reduced Tillage for Peanuts. D.L. HARTZOG*, J.F. ADAMS, Depts. of Agronomy and Soils, Auburn University, Auburn, AL 36849, and BRYAN GAMBLE, Wiregrass Substation, Headland, AL 36345

Farmers have traditionally used a moldboard plow and disk to reduce disease pressure from unincorporated plant residue, for herbicide incorporation and seedbed preparation. Experiments were conducted at the Wiregrass substation from 1995 to 1997 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 two applications of Bravo, 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 and 1996, but yields were lower for the disk treatment in 1997. Folicur treatments had higher yields in all tillage treatments except in 1997 where there was no differences in yield due to fungicide treatments. On the other hand folicur did reduce whitemold and leafspot to a greater extent than Bravo, but it was not reflected in yield. TSMK were unaffected by fungicide treatment in 1995, 1996, and 1997. 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.

Peanut Production in China. Hu WENGUAG, Duan SHUFEN, Sui QINGWAL, Shandong Peanut Research Institute, Laixi, Shandong Province, P.R. China, and Thomas A. LEE, Jr.*, Texas Agricultural Extension Service, Stephenville, TX 76401, USA.

Peanuts have a cultural history of 500 years in China according to historical records. The varieties used first were Valencia type. Large-seeded varieties were introduced to the northern peanut producing area in the nineteenth century. Peanut is distributed in a wide area between 76-132' E, and 18-50° N in China. The average temperature per day and the cumulated temperature during the crop growing stage is 11°C and 2800°C, respectively, in his area with an annual average rainfall of 500mm. On the basis of varied geography and climate conditions and the difference of peanut types used in production, two peanut producing areas exist, i.e., a northern large-seeded peanut producing area and a southern small-seeded peanut producing area. Since the late 1950's, about 200 peanut varieties have been developed and released on the cumulated area of 40 million ha, realizing that peanut varieties have been replaced four times. Luhua 9, Luhua 11 and Luhua 14 with a high yield potential, Daisha 101C, Luhua 17, Luhua 10, and 130 with quality traits, and Zhonghua 3, Zhonghua 4, Yueyou 92 and Yueyou 256 with bacterial wilt and/or rust-resistance have been extensively adopted in recent years. The coverage of the improved varieties accounts for 90% of the total area under peanut in China. The technologies for a pod yield of 7500kg ha^{-1} in northern large-seeded peanut producing area an 6000kg ha^{-1} over unmulched peanut. A polythene-mulching machine has also been developed, which can make beds, sow the seeds, spray herbicide, and mulch polythene at the same time. The working efficiency of the machine is 40-50 times of that by hand labor. According to the China Agricultural Production Yearbook, the total peanut production was 10.24 million tons on an area of 3.81 million ha, and the average yield was 2686kg ha^{-1} in 1996.

Peanut production in Argentina. R. PEDELINI. Instituto Nacional de Tecnologia Agropecuaria. 5809. General Cabrera. Cordoba. Argentina.

The Province of Cordoba, in a region between 30° 30' S and 32° S, accounts for 99 percent of the peanut production in Argentina,. The area has light textured soils, loamy sand, and sandy loam, well drained, with good chemical fertility for peanut. The average rainfall during the growing season is 675 mm while the annual rainfall is 776 mm. The average temperature in summer is about 21°C with daily maximum up to 40°C and minimum down to 8°C. About 255 days are free from frost. The average land sown to peanut during the last 5 years was 205.000 has. The area planted to peanut in 1997/98 was 404.000 has. In 1975, Argentina began to export some edible peanut. As a result, peanut farmers increased their net income and were able to introduce technological changes that resulted since 1981 in a yield improvement of 22,7 $kg.ha^{-1}$.year. The average yield during the last 5 years was 2.200 $kg.ha^{-1}$. The technology which produced the main change in the yield trend was the introduction of the runner type varieties in 1980. Argentinean peanut growers use fertilized grass crops such as maize and sorghum preceding peanuts in the crop rotation. Peanut is planted after minimum tillage. Usually the peanut areas receive each season enough rainfall to produce a good crop. Irrigation is minimum, less than 2% of the area. All seeds are treated with recommended fungicides. Leafspot and soil diseases are major pests. Foliar diseases are controlled with 2 – 3 fungicide sprays. Pre and post emergence herbicides are used for weed control. Insecticide and nematicide are usually not used. Most of the peanuts are sown with a row spacing of 70 cm and 14-16 $seeds.m^{-1}$ the row during October-November. Lime or additional fertilizer are usually not needed. Runner type varieties require from 150 to 160 days to fully mature, and hence, they are ready to harvest during April or May. Researchers are working on shorter, high yielding runner varieties. As a result of the shorter growing season Argentinean peanuts have a different flavor and chemical composition than American peanut. All peanuts produced in Argentina are digged with digger-shaker-inverter which invert 4 rows in1windrow and combine harvested into bulk lots or bags directly from the windrow. Artificial drying facilities are not enough, but are increasing each year. Storage capacities have been increasing dramatically during the last few years. Shelling plants could be considered as the most modern in the world.

Breeding and Genetics II

Florida MDR 98 - A New Multiple-Pest Resistant Peanut Cultivar. D.W. GORBET*, F.M. SHOKES, A.K. CULBREATH, J.W. TODD, and E.B. WHITTY. University of Florida, NFREC, Marianna, FL 32446, University of Florida, NFREC, Quincy, FL 32351, University of Georgia, Plant Pathology Department, Tifton, GA 31793, University of Georgia, Entomology Department, Tifton, GA 31793, and University of Florida, Agronomy Department, Gainesville, FL 32611.

Diseases are major yield limiting factors on peanuts (*A. hypogaea*) around the world. The University of Florida program has put considerable emphasis on breeding for resistance to late leafspot (*C. personatum*), stem rot/white mold (*S. rolfsii*), tomato spotted wilt virus (TSWV), and other disease and pest problems. 'Southern Runner' was the first cultivar released (1986) from this program that had documented multiple pest resistance. Recently 'Florida MDR 98' was released with essentially the same "resistance package" as Southern Runner, but with improved levels of disease resistance and better agronomic characteristics. MDR 98 has shown moderate to good resistances to late leafspot, white mold, TSWV, and rust, with greater pod yields, larger seed size, and better grades than Southern Runner, and with mid-oleic (65%) oil chemistry. In 19 unsprayed (leafspot) yield tests at Marianna (1990-1996), MDR 98 showed a 16% yield advantage over Southern Runner, with TMSK values of 81.3 vs. 79.1% for Southern Runner. In the 1993-95 Uniform Peanut Performance Test (AL, GA, FL data), MDR 98 showed a 27% pod yield advantage over Florunner. In 1995-96 yield tests at Marianna treated with chlorothalonil for leafspot control and inoculated with *S. rolfsii*, MDR 98 gave a 43.6 and 224% yield advantage over Southern Runner and Florunner, respectively (4519, 3147, and 1396 kg ha^{-1}, respectively). MDR 98 has shown to be equal to or better than Southern Runner for resistance to TSWV in FL/GA tests, based on disease ratings and pod yields. In a 1997 test at Marianna with severe TSWV pressure, MDR 98 had a significant yield advantage over Southern Runner, 'Georgia Green', 'GK 7', and 'Tamrun 96' (23.6, 55.4, 43.2 and 116%, respectively), with MDR 98 yields of 4559 kg ha^{-1}. Similar results were noted in a test at Attapulgus, GA. Numerous breeding lines are currently in advance stages of testing for resistance to these diseases, as well as CBR. There is excellent potential for further improvement in resistance levels to several diseases in future cultivars.

Combining Ability for Four Components of Resistance to Early Leaf Spot in Peanut. Z.A. CHITEKA*, D.W. GORBET, F.M. SHOKES, and T.A. KUCHAREK. Department of Crop Science, University of Zimbabwe, Box MP167, Mt. Pleasant, Harare, Zimbabwe and Department of Agronomy, University of Florida, Gainesville, FL 32611.

Early leaf spot (ELS), caused by *Cercospora arachidicola* Hori, is a major yield reducing factor in peanut. Effective development of resistant cultivars requires a knowledge of the inheritance of resistance. Combining ability for four components of rate reducing resistance was 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 at 30 days after inoculation (MSP). General combining ability (gca) was significant ($P<0.05$) for most components in most environments. Specific combining ability (sca) was significant ($P<0.05$) for some components in a few environments. Significant reciprocal effects ($P<0.01$) were noted in two environments for LP tests and in one test for LD. The ratio of gca/sca ranged from 5 to 12 for LP, 2 to 3 for LD, 4 to 21 for SP and 6 to 34 MSP. Additive genetic effect are more important that nonadditive genetic effects in the control of partial resistance for LP, LD, SP, and MSP. Selection for resistant genotypes in early generations should be effective. A cytoplasmic factor may be involved in the inheritance of resistance to ELS.

EVALUATION OF VIRGINIA-TYPE PEANUT CULTIVARS AND BREEDING LINES FOR SCLEROTINIA BLIGHT RESISTANCE WITH AND WITHOUT FUNGICIDE INPUT. R. W. Mozingo. Tidewater Agricultural Research and Extension Center; Virginia Polytechnic Institute and State University, Suffolk, Virginia 23437.

A 2-year study was conducted at the Tidewater Research Farm in Suffolk, Virginia in 1996 and 1997 to determine susceptibility or resistance of eight commercial large-seeded, virginia-type cultivars and three breeding lines to Sclerotinia blight. Each year, the test site was on an Eunola loamy fine sand soil with a history of sclerotinia blight occurrence that had been planted to corn the previous two years. The test was planted around 10 May each year. Field plots were two 20 ft rows, spaced 36 inches apart and replicated four times in a split-block design. Plots treated with fungicide for sclerotinia blight received applications of IB11923 (Bravo and Fluazinam combination) at 2.25 pt/A at approximately 70, 90 and 110 days after planting (DAP). Treated plots also received Bravo Weather Stik at 1.5 pt/A at 50 and 130 DAP. Plots without fungicide input for sclerotinia blight did receive five applications of Bravo Weather Stik at 1.5 pt/A for control of leaf spot on the same dates as treated plots. Fungicide sprays were applied by a tractor mounted sprayer calibrated to deliver 23 gal/A at 60 psi using $D_3$23 (disc-core combination) nozzles spaced nine inches apart. In order to eliminate tractor wheel damage to the peanut vines, fungicide applications were applied across rows with an off-set broadcast boom operated from a tractor traveling in the alleyway. Excessive vine growth due to above normal rainfall during the 1996 growing season resulted in disease incidence of epidemic proportion by late September. Although the 1997 growing season was considered drier than normal, several heavy rains and irrigation resulted in heavy disease pressure by harvest. The number of sclerotinia blight hits per plot (40 maximum) were taken at digging. Peanuts were dug, combined, dried, weighed, and yields adjusted to a standard 7% moisture. Differences were observed among cultivars and breeding lines for disease incidence, yield, and dollar value. Tremendous increases in yield and significant suppression of disease incidence (according to t-test, P=0.05) for each cultivar and breeding line were recorded with fungicide input. These data indicate differences in disease susceptibility of these cultivars and breeding lines. Without fungicide input, the breeding lines VA 910954 and N91026E had higher yields and dollar values than the resistant cultivar VA 93B.

Arachis Praecox; Eighteen Chromosomes Present Challenges for Introgression of Early Maturity Genes. C.E. SIMPSON, Texas Agricultural Experiment Station, Texas A&M University, Stephenville, Texas 76401.

The wild species, *Arachis praecox* Krapov. and W.C. Gregory (VSGr-6416) was collected in the western part of Brazil, in central Mato Grosso, in 1981. We have reported previously on environmental and growing conditions which lead us to believe that the species contains genetic propensity for early maturity. I have also reported on attempts to begin an introgression program to get earliness genes from. *A. praecox* incorporated into cultivated peanut. Recent funding from the Peanut CRSP has revived the effort. Meanwhile, additional information on *A. praecox* helps explain the sterility problems encountered earlier. It has been confirmed that the species does only have 18 chromosomes. I still hold considerable hope for being able to transfer early maturity genes out of *A. praecox*, but the process is going to be more complicated than a conventional transfer like we have done with the root-knot nematode resistance. It is very likely that most, if not all, of the chromosomal complement of other closely related species with 20 chromosomes is present in *A. praecox*, and arms or portions of arms have been translocated to other chromosomes. A project has been initiated to determine if the complement is the same or not. Also, crosses with *A. praecox* are being attempted and made so we have interspecific hybrid material for the various types of studies to be conducted and to initiate the introgression. Additional sterility problems may occur, possibly preventing the introgression but there is cause for optimism because some of the crosses with section *Arachis* materials have now been accomplished. Although no hybrids were obtained using *A. praecox* as the male parent, hybridizations occurred with *A. batizocoi, A. diogoi, A. duranensis, A. helodes, A. valida,* and *Arachis* sp. VK-12080 when *A. praecox* was the female parent. Hybridization attempts with five other species have produced pegs, but the fruits have not reached harvest stage to determine if crosses were successful or not.

Improved TSWV Resistance in Peanut Breeding Lines: Hope for the Future. A. K. CULBREATH*, J. W. TODD, D. W. GORBET, and F. M. SHOKES. Coastal Plain Expt. Station, Tifton, GA 31793, North Florida Res. and Ed. Center, Marianna, FL 32446, and North Florida Res. and Ed. Center, Quincy, FL 32351.

Epidemics of spotted wilt, caused by tomato spotted wilt tospovirus (TSWV), were monitored in replicated field plots of eight runner- and four virginia-type peanut (*Arachis hypogaea*) breeding lines from the University of Florida, and in runner-type peanut cultivars, Georgia Green and Georgia Runner at Attapulgus, GA and Marianna, FL in 1997. Spotted wilt epidemics were severe at both locations. There was no significant location x genotype interaction for spotted wilt intensity ratings. Across both locations, final spotted wilt intensity (FI) ratings (reported as percent row length severely affected by spotted wilt) were 26.1% for F 84x47-10-1-1-2-b2-B, 28.5% for F 86x45A-12-1-1-b2-B, and 33.9% for F 87x8-2-1-1-b2-B among the virginia-type lines and 20.6% for F 86x43-1-1-1-1-1-b2-B, 26.1% for F 84x23-11-2-1-1-1-1-, 30.0% for F 84x9B-4-2-1-1-2-b2-B, 30.0% for F 84x9B-4-2-1-1-1-b2-B, 31.9% for F 86x43-1-2-1-2-1-b2-B, and 34.8% for F 84x28-5-4-1-2-1-2- among the runner-type lines, compared to 86.3% for Georgia Runner and 45.3% for Georgia Green (LSD = 7.4). All other genotypes had FI ratings similar to those of Georgia Green. Yields among the virginia lines ranged from 2001 to 2936 kg/ha, and yields among runner lines ranged from 2253 to 3270 kg/ha compared to 1939 kg/ha for Georgia Green and 1349 kg/ha for Georgia Runner (LSD = 481) at Attapulgus. At Marianna, yields among the virginia lines ranged from 4061 to 5899 kg/ha and yields among runner lines ranged from 3928 to 5134 kg/ha compared to 3799 kg/ha for Georgia Green and 1969 kg/ha for Georgia runner (LSD = 682). All 12 breeding lines had yield potential and apparent resistance to TSWV at least as good as that of Georgia Green. Several lines show promise for having significantly better field resistance to TSWV than available moderately resistant cultivars.

Resistance to Root-Knot Nematodes in TP262-3-5, a Candidate for Release as a Nematode Resistant Cultivar. J. L. STARR and C. E. SIMPSON*. Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX 77843 and Texas Agricultural Experiment Station, Stephenville, TX 76401.

Nine BC_3F_3 breeding lines were evaluated in field tests in 1996 for resistance to root-knot nematodes, grade factors, and yield potential. Four runner market-type lines that appeared to have good resistance and yields equal to Florunner in the absence of any root-knot nematodes were selected for further evaluation. In greenhouse tests, greater than 40% of the F4 individuals of three lines were susceptible and supported levels of reproduction of *Meloidogyne arenaria* that were not different from that on Florunner (P = 0.05). In the fourth breeding line, TP262-3-5, 98% of the individuals were resistant and supported only low levels of nematode reproduction. In one field test in 1997, TP262-3-5 supported final nematode population densities that ranged from 16% to 35% of the susceptible cultivars Florunner, NC-7, Tamrun 96, and Tamspan 90. When 10 seed from each of 40 individual TP262-3-5 ($BC_3F_{3:4}$) plants were examined in greenhouse tests for susceptibility to nematode reproduction, only two individuals were found to have any nematode-susceptible progeny. Based on these data, seed of TP262-3-5 were increased during the winter of 1997-98 in Puerto Rico for additional field evaluation and possible release as a nematode-resistant cultivar. Additional breeding lines of runner, spanish, and virginia market-types from the BC_6 and BC_7 generations are in initial stages of field evaluation and additional nematode-resistant cultivars are likely to be selected from these materials.

Minutes of the APRES Board of Directors Meeting
Omni Waterside Hotel
Norfolk, Virginia
July 8, 1998

The meeting was called to order by President Thomas (Chip) Lee at 7:00 p.m. Those present were: Chip Lee, Ron Sholar, Tom Stalker, John Beasley, Charles Swann, Dan Gorbet, Richard Rudolph, Fred Shokes, Jeannette Anderson, Randy Griggs, Carroll Johnson, Philip Utley, David Knauft, Peggy Ozias-Akins, Norris Powell, James Grichar, Bob Lynch, Doug Smyth, Bobby Walls, Tom Whitaker, Mike Schubert and James H. Young.

President Lee opened the meeting with general comments.

President Lee called on Executive Officer Ron Sholar to read the minutes of the last Board of Directors meeting held in San Antonio, Texas. Dr. Sholar reported that the minutes were published in the 1997 Proceedings, that the minutes had been available to the membership since December 1997, and moved that the minutes be approved as published. Motion carried.

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

Executive Officer Report – Ron Sholar

Dr. Sholar reported membership in APRES remains stable despite the decline in the number involved in the overall peanut industry. He also reported that the finance report would be presented by Dan Gorbet, chair of the Finance Committee.

American Society of Agronomy Liaison Report – Tom Stalker

The annual meetings of the joint American Society of Agronomy, Crop Society of America and Soil Science Society of America were held in Anaheim, California on October 26 to 31, 1997. More than 2500 scientific presentations were made. Of these, 11 were devoted to peanut research, including one symposium presentation on the genus *Arachis*. Sixteen members of APRES authored or co-authored presentations. The next annual meeting will be held in Baltimore, Maryland from October 18 to 22, 1998.

Southern Agricultural Experiment Station Directors – Philip Utley

Dr. Utley reported that the Southern Agricultural Experiment Station Directors hold APRES in high esteem and that APRES represents regional research at its best. APRES members are encouraged to become involved in regional research and Extension projects on peanuts. He offered the assistance of the Directors organization in any manner possible.

Council for Agricultural Science and Technology – David Knauft

Dr. Knauft reminded the Board of the makeup purpose of CAST. It is an umbrella organization that is composed of most of the major professional societies in agriculture and associated members that represent much of agribusiness. The purpose of CAST is to provide unbiased scientific information primarily for the media and policy makers in Washington, D.C. Dr. Knauft has been providing a CAST report for each issue of Peanut Research. The CAST Board of Directors meet twice per year. Dr. Knauft reported that he has been selected as President-elect of CAST. APRES needs to select a new representative for the CAST Board of Directors.

(See Dr. Knauft's report).

Special Report from Bayer Corporation – Richard Rudolph

Bayer Corporation has offered funding designed to increase County Extension Agent participation in the annual APRES meeting. Bayer proposes that they sponsor one county agent per peanut state provided this individual makes a presentation on his educational program in his county at the annual meeting. Each state would hold a competition to determine who participates in the annual meeting. Bayer will provide a set amount of funds for travel for the winning agents to the annual meeting. Bayer wishes to proceed with making a donation to APRES to fund this program. Funding would be on the order of $1000 per winning agent depending on where the meeting is held. The amount received by the agent will actually be a reimbursement of meeting expenses and will be equal to documented expenses.

John Beasley moved and it was seconded that this offer be accepted from Bayer. Motion carried unanimously. State Extension Specialists headed by John Baldwin will develop the guidelines and procedures for participating in this program.

Nominating Committee – Fred Shokes

The committee made the following nominations for APRES officers:

President-elect – Dr. Bob Lynch, USDA, University of Georgia, Tifton, GA
Industry Representative – Max Grice, Birdsong Peanuts, Gorman, TX
State Employee Representative – Dr. Pat Phipps, Virginia Tech University, Suffolk, VA
USDA Representative – Dr. Chris Butts, USDA, National Peanut Laboratory, Dawson, GA
CAST Representative – Dr. Stanley Fletcher, University of Georgia, Griffin, GA

The Board unanimously approved the slate. Nominations may be made from the floor during the Business Meeting and the membership will select the officers during that meeting.

Publications and Editorial Committee – Report made by Tom Stalker in place of Rick Brandenburg

The Publications and Editorial Committee met on July 7, 1998 at 2:00 p.m. Our Society's journal *PEANUT SCIENCE* only received 24 manuscripts during the past year. This is the lowest number in many years. 513 books of Advances in Peanut Science have been sold, but only 66 during the past year. There are 987 books left in the inventory. Tom Stalker will prepare a flyer to send to industry members, extension specialists, and international institutes. An ad will also be placed in Agronomy News. Corley Holbrook will forward a list of libraries to contact for possible book sales.

A motion was passed to allow Advances in Peanut Science to be translated into the Chinese language. A recommendation to raise the salary of the Peanut Science secretary to $14,000 was passed. This amount equals that of the administrative assistant to the Society's executive officer. The committee does not approve of interpretive abstracts being added to *PEANUT SCIENCE* manuscripts.

Corley Holbrook is resigning as editor of *PEANUT RESEARCH*. Another editor needs to be found to publish this newsletter. Corley will help publish the September-October issue and Duncan McClusky has agreed to continue performing library work for the newsletter.

Dr. John A. Baldwin has completed six years as an associate editor of Peanut Science and Robert Lemon has been asked to replace him. Dr. Mike Schubert has completed five years as an associate and Tim Williams has been asked to replace him.

There was general discussion on how to improve sales of *Advances in Peanut Science*. Tom Stalker indicated that he would develop a 'slick' flyer promoting *Advances in Peanut Science*. John Beasley said he would take some action to place a copy of this book in each county. Randy Griggs indicated that he and his counterparts would be pleased to promote the book if provided with materials to do this. Mike Schubert indicated that he had provided copies of *Advances in Peanut Science* and *Peanut Science* to the Texas Tech library. A general comment was made that a flyer should be sent to every chemical company and seed company representative in peanut states. Tom Stalker indicated that members should contact their libraries and request that they order a copy.

There was discussion about recruiting a replacement for Corley Holbrook as Editor of Peanut Research. Tom Stalker commented that since the library support and the assistance of Duncan McCluskey are available in Tifton, GA, these factors should be considered in selecting a replacement. The membership will be polled for interest in the position.

Peanut Quality Committee – Carroll Johnson

The APRES Peanut Quality Committee met at Norfolk, Virginia at 3:00 p.m. Chairman, Carroll Johnson called the meeting to order. An attendance sheet was distributed.

The major topic of discussion was the issue of MSMA use on peanut, arsenic residues in harvested peanut and possible regulatory action. Dr. David Bridges, Professor with University of Georgia, was invited to address the committee on this issue.

This issue is the result of MSMA being applied, illegally, to control escaped Florida beggarweed. A farmer in Georgia was reported to have treated peanut with MSMA. This triggered a series of discussions among peanut industry officials, EPA, FDA and USDA-Farm Service Agency.

There are two general statements that can be made concerning this difficult issue.

1) This is the result of an illegal pesticide application. Education efforts must be intensified to promote pesticide stewardship.

2) The means by which large quantities of peanut are purchased, stored and processed complicates segregation. Co-mingling of good peanut with tainted peanut is a serious issue for the processing industry.

Efforts will continue to determine what are acceptable levels of background arsenic in peanut.

Finance Committee – Dan Gorbet

Dr. Gorbet passed out copies of the proposed budget. The overall financial status of the society continues to be good. Costs for the society are increasing primarily in the area of secretarial services, postage, etc. The society also needs a new computer and printer. The 1998-99 budget was approved as proposed. The total amount of the budget will be $69,400.00.

Dr. Gorbet then discussed some items that were considered by the Finance Committee. The Executive Officer reported that APRES will be on a very tight budget in the coming year. The Finance Committee considered methods for increasing income to ensure a positive budget. The Finance Committee recommended that the Board of Directors consider raising individual membership dues to $40. This cannot happen immediately. Because this would require a change to the By Laws, this could not be proposed to the membership until the business meeting of the 1999 meeting. If approved by the membership, the new dues structure would take effect on July 1, 2000.

The following dues schedule was proposed and discussed:

Individual Membership - $40
Institutional Membership - $40
Sustaining Membership –$150
Organization Membership – $50
Student Membership - $10

There was also discussion about raising the annual meeting registration fee. The advantage of this method for raising funds would be that the registration fee could be raised immediately. Raising the membership dues would generate an additional approximately $7500 per year. Raising registration fees by $25 per participant with 300 attendees would raise the same amount of income.

The Board decided to meet on Friday morning, prior to the Business meeting, to finalize a recommendation for increasing funding in APRES.

Dan Gorbet discussed the potential for investing some of the APRES savings in savings instruments other than certificates of deposit. There was discussion about appointing an ad hoc committee to study investments but there was no action taken.

Public Relations Committee – Bob Sutter

Bob Sutter reported that Dr. Walton Gregory, died on May 28, 1998, and recommended that he be given a special recognition for his service to the society. The Board will recognize Dr. Gregory with a resolution in the Proceedings.

Bailey Award Committee – Tom Whitaker

The Bailey Award Committee evaluated seven papers. The committee recommended that the award go to Starr, Simpson, and Lee for their paper entitled, "Yield of Root–knot Nematode Resistant Peanut Lines in Small Field Plots".

Charles Swann reported that in 1997, President Fred Shokes appointed an ad hoc committee to study the procedure for selecting the Bailey Award winner. The ad hoc committee was chaired by Tim Brenneman of the University of Georgia. The committee met and made the following recommendations for the oral presentation for the Bailey Award. They suggested that in item four which addresses original research that a statement be added, "or new concepts in Extension or education." They suggested this criterion be added and that the guidelines be distributed to session chairs before paper presentations. The Board of Directors accepted the change and this will be part of the criteria for selecting the Bailey Award winner beginning with the 1999 annual meeting.

Fellows Committee – Norris Powell

The Fellows Committee received three nominations for recognition as Fellows. The nominations were reviewed by members of the committee and scored according to the guidelines. The three nominees were: Dr. John Baldwin, University of Georgia; Dr. Gene Sullivan, Global Agronomics and formerly Extension Agronomist at North Carolina State University; and Mr. William Birdsong, Birdsong Peanuts, Suffolk, Virginia. The committee members were unanimous in recommending that all be elected to Fellowship in the society.

Editor's note: These three nominations were submitted to the Board of Directors prior to the annual meeting and all were elected to Fellowship in APRES.

The committee wanted to reemphasize that Fellowship is the highest honor awarded by the society. This award is higher than the Coyt T. Wilson award.

President Chip Lee raised the issue that the guidelines for election to Fellowship preclude electing members of the Board of Directors. The Board voted to change the guidelines for election to Fellowship to read that "only voting members of the Board of Directors are ineligible for election to Fellowship in the society." The Executive Officer of the society is not a voting member of the Board of Directors and would be eligible for election if not already elected.

Coyt T. Wilson Distinguished Service Committee – Peggy Ozias Akins

The Coyt T. Wilson award is presented to a person who has contributed two or more years of distinguished service to APRES. The award was established in honor of Dr. Coyt T. Wilson who was an early leader in APRES and who continued to contribute of his time until his retirement in 1976.

The award committee reviewed the qualifications of Dr. Corley Holbrook and recommended that he be recognized for his outstanding contributions to APRES and the peanut industry. Dr. Holbrook was presented the Coyt T. Wilson Award for 1998.

The committee is concerned that the number of nominations have been very small. They discussed ways for increasing nominations. The committee discussed methods for getting reminders out that nominations are due. Electronic methods could be used or a message could be sent to state representatives and that they be asked to get the message out to the other members in their states.

Joe Sugg Graduate Student Award – James Grichar

Mr. Grichar reported that there will be eight papers in the Graduate Student session.

Site Selection Committee – Ames Herbert

The following meeting schedule will be followed:

Savannah, Georgia – July 13-16, 1999, Savannah Hyatt Regency
$92 room rate (single or double)
Point Clear, Alabama – July 11-14, 2000, The Grand Hotel
$125-130/night)
Oklahoma City, Oklahoma – 2001
North Carolina – 2002
Florida – 2003
Texas – 2004

Contracts are signed for both the Savannah Hyatt Regency and the Grand Hotel.

Dow AgroSciences Award – Randy Griggs – Randy Griggs reported for John Baldwin.

The APRES Dow AgroSciences awards committee consisted of Lance Peterson, J.W. Smith, Betsy Owens, Tom Kucharek and Chris Butts.

Nomination materials were received and found to meet award standards and qualifications.

Dr. Thomas B. Whitaker was selected to receive the award for excellence in research and Dr. John P. Beasley, Jr. was selected to receive the award for excellence in education.

Suggestions were made for soliciting and receiving more nominations for this award by deserving APRES members.

The committee made two recommendations to the Board of Directors:

1. That nominations carryover from one year to the next
2. That two members per state be identified to solicit nominations and ensure that a good pool of highly qualified nominees are available for selection

We wish to thank Dow AgroSciences for their generous support of these two prestigious awards.

Program Committee – Charles Swann

Ninety-one papers will be presented including 6 poster papers. There will be two major sponsored events during the meeting. Novartis will sponsor the coffee breaks.

Other Business

John Beasley reported that Frank McGill, former Extension Agronomist at the University of Georgia, has written a book on his experiences in the peanut industry. The book is available for sale by contacting Frank.

Randy Griggs, Alabama Peanut Producers Association reported that congress is frequently looking for amounts of funding that is now going into research compared to historical amounts. Randy said we should be responsive to any requests for such information.

The meeting was adjourned at 8:10 p.m.

OPENING REMARKS BY THE PRESIDENT
AT THE 1998 APRES BUSINESS MEETING
July 10, 1998

"United States Peanut Production"

Thomas A. Lee, Jr.

Peanut production has made great strides during the last fifty years. As a teenager in the late 1950's I remember my father making the excited announcement that we were going to sell $10,000.00 worth of peanuts that year. We were farming about 100 acres of peanuts at the time. In my 52 years, I also remember when we had no peanut herbicides and when defoliation due to leafspot just hurried maturity. Yes, things have truly changed. Most of us now believe that yields below 3,000 pounds per acre are often not profitable. When I was a boy my mother used to be proud of the fact that she could sack and sew all the peanuts that our new thresher could thresh in a day. That was about 12, 000 pounds on a good day. Today our new machines will thresh three times that many in one good hour. Where weed control was done with a hoe and a plow in my youth it is now almost totally done chemically. When I was a boy my father did not even think about peanut disease control and here I am a practicing plant pathologist. The varieties we farmed probably had 3,000 pounds per acre yield potential at best. Modern varieties have three times that with large fields exceeding 6,500#/acre. As a boy, China was a place on the other side of the world where people ate a lot of rice. We now know it as an emerging country that produces over 4 times as many peanuts as we do in the United States.

Yes, things are truly changing in the peanut world. With all this change what does the future hold? Please allow me the freedom to look into my mystical crystal ball and guess what the future might bring.

We as scientists, engineers, economists, manufacturers and consumers have accepted the challenge to make things better. Plant breeders with the help of the entomologist and plant pathologist are going to develop new lines of peanut that display resistance or tolerance to a host of disease and insect problems. Tolerance to herbicides and drought is also going to play a part in development of these new lines. A peanut plant better adapted to narrow rows and shorter growing seasons is going to emerge in the future. This will allow production areas to continue to change to better utilize available land and water resources. Agronomists are going to continue developing new environmentally friendly herbicides that reduce the impact of rotation considerations. In addition to working with breeders; plant pathologists, nematologists and entomologists are going to better understand pest control and chemical interactions as they affect the crop.

I must not leave out my engineer friends. Some one is going to have to develop the equipment to produce and harvest the narrow row peanut. Diggers on the front of tractors or at least a bi-directional tractor will be necessary. Combines that are more gentle on pods will be forth coming. Engineers are going to work more closely with breeders to develop harvesting and shelling ease into new lines.

Food technology will not be left out. The peanut industry will develop new peanut products to increase consumption of peanuts. After all, the peanut is a true health food.

The number crunchers past and future that we refer to an economists are not without a challenge. Our farm policy in the world is largely formulated by this group. New ideas are going to be needed to come up with an international food policy that will allow peanut production that is profitable to the producer and economically feasible for the consumer.

Many of these endeavors that have in the past been in the university realm are going to be products of private industry in the future. A reduced farm population and resultant loss of political clout is going to enhance this movement.

Change is inevitable but it is up to us as a closely allied group of peanut workers to see to it that all aspects of the peanut industry move forward in a positive manner. As individuals we will have little impact. As the American Peanut Research and Education Society we will have a great impact.

It has been my pleasure to serve as your president for the last year. Let us all challenge each other to accomplish great things in the future.

BUSINESS MEETING AND AWARDS CEREMONY
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY

Omni Waterside Hotel
Norfolk, Virginia
July 10, 1998

The meeting was called to order by President Thomas Lee, Jr. The following items of business were conducted:

1. President's Report – Thomas Lee, Jr.

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

   a. Fellows – Norris Powell

   b. Bailey Award – Thomas B. Whitaker

   c. Joe Sugg Graduate Student Competition – James Grichar

   d. Dow AgroSciences Awards for Research and Education – John Baldwin

   e. Coyt T. Wilson Distinguished Service Award – Peggy Ozias-Akins

   f. Past President's Award – Thomas Lee, Jr.

   g. Peanut Science Associate Editors – Ron Sholar (for 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 1997 Meeting - Ron Sholar

   b. Finance Committee – Dan Gorbet – presented a proposal to raise the annual meeting registration fee to $75 for members. The motion passed.

   c. Nominating Committee – Fred Shokes

   d. Publications and Editorial Committee – Ron Sholar (for Rick Brandenburg)

   e. Peanut Quality Committee – Carroll Johnson

   f. Site Selection Committee – Ames Herbert

   g. Program Committee – Charles Swann

4. Dr. Lee turned the meeting over to the new President, Charles Swann of Virginia, who then adjourned the meeting.

FINANCE COMMITTEE REPORT

The Finance Committee met at 4:00 p.m. on July 7th at the Omni Hotel in Norfolk, Virginia, where the 30th annual meeting of APRES was being held. Those present were: D. W. Gorbet, Pat Phipps, James H. Young, Hassan Melouk, Charles Swann, Tom Stalker and Ron Sholar.

The committee reviewed the 1997-98 budget and current financial records. All records indicate that APRES is currently in good financial condition. The Society has a total balance of $156,659.63, as of June 30, 1998, compared to $154,604.87 for June 30, 1997.

The Finance Committee discussed the proposed budget for 1998-99. Some increases in expenses were indicated, compared to 1997-98. A budget of $69,400 was recommended and approved for 1998-99.

Considerable discussion followed on the possible need for raising the annual APRES dues and/or registration fee to maintain a balanced budget in the future without depleting our reserves. The committee voted to recommend to the Board of Directors an increase in dues as follows: members and institutions (from $25 to $40); organizational (from $35 to $50); students (from $5 to $10); sustaining (from $125 to $150). The proposed increase for registration was from $0-55, as per the Boards wishes. The Board of Directors voted to bring this to a vote at the Friday business meeting and the dues increase was approved by unanimous vote of the membership. However, a final vote will be taken at the 1999 annual meeting. An increase of the registration fee from $55 to $75 was approved. These increases should keep APRES on a firm financial basis for several years.

Respectfully submitted,

D. W. Gorbet, Chair
Pat Phipps
James H. Young
Hassan Melouk
Ron Sholar, Ex-Officio

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
BUDGET 1998-99

RECEIPTS

Annual Meeting Registration	$17,000
Membership Dues	15,000
Special Contributions	12,500
Differential Postage	2,000
Peanut Science & Technology	500
Quality Methods	0
Proceedings and Reprint Sales	0
Peanut Science	13,400
Interest	6,000
Advances in Peanut Science	3,000
TOTAL RECEIPTS	**$69,400**

EXPENDITURES

Annual Meeting	$9,000
CAST Membership	600
CAST Travel	1,200
Office Supplies	3,630
Secretarial Services	14,000
Postage	3,000
Travel - Officers	2,000
Legal Fees	500
Proceedings	3,500
Peanut Science	26,600
Peanut Science and Technology	0
Peanut Research	1,750
Quality Methods	0
Bank charges	200
Miscellaneous	300
Advances in Peanut Science	0
Reserve	0
Corporation Registration	120
Coyt Wilson Awards	1,000
Dow AgroSciences Awards	2,000
TOTAL EXPENDITURES	**$69,400**

Excess Receipts over Expenditures	0

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
BALANCE SHEET FOR FY 1997-98

ASSETS	June 30, 1997	June 30, 1998
Petty Cash Fund	$ 631.48	$ 565.58
Checking Account	30,772.09	22,067.78
Certificate of Deposit #1	23,242.76	24,575.59
Certificate of Deposit #2	15,004.07	15,823.72
Certificate of Deposit #3	14,031.81	14,819.19
Certificate of Deposit #4	10,507.44	11,137.60
Certificate of Deposit #5	14,197.06	15,023.72
Certificate of Deposit #6	11,527.90	12,176.06
Certificate of Deposit #7		10,283.65
Money Market Account	3,147.79	1,727.49
Savings Account (Wallace Bailey)	1,017.19	1,044.21
Peanut Science Account (Wachovia Bank)	3,474.40	2,637.52
Inventory of PEANUT SCIENCE AND TECHNOLOGY Books	4,980.00	4,490.00
Inventory of ADVANCES IN PEANUT SCIENCE Books	22,070.88	20,687.52
TOTAL ASSETS	**$154,604.87**	**$157,059.63**
LIABILITIES		
No Liabilities	0.00	0.00
TOTAL LIABILITIES & FUND BALANCE	**$154,604.87**	**$157,059.63**

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

	June 30, 1997	June 30, 1998
RECEIPTS		
Advances in Peanut Science Book	$ 4,747.50	$ 2,930.65
Annual Meeting Registration	16,760.00	16,670.00
Contributions	11,900.00	9,960.02
Differential Postage	2,430.50	1,912.50
Dues	20,178.00	14,064.52
Interest	5,353.75	5,776.87
Peanut Research	32.00	48.00
Peanut Science	976.50	932.50
Peanut Science Page Charges	15,779.80	9,185.10
Peanut Science and Technology Book	380.00	372.50
Proceedings	99.00	26.00
Quality Methods	0.00	0.00
Spouse Registration	1,613.00	1,732.50
Other Income	0.00	80.35
CD Transfer	0.00	0.00
TOTAL RECEIPTS	**$80,250.05**	**$63,691.51**
EXPENDITURES		
Advances in Peanut Science Book	$ 0.00	$0.00
Annual Meeting	13,892.90	8,484.33
Bank Charges	159.75	92.75
CAST Membership	588.70	661.50
Corporation Registration	15.00	115.00
Federal Withholding	714.00	828.00
FICA	1,323.28	1,511.04
Legal Fees	400.00	450.00
Medicare	309.54	353.40
Miscellaneous	77.00	0.00
Office Expenses	1,756.01	1,237.91
Oklahoma Withholding	174.34	147.96
Peanut Research	1,100.38	1,560.36
Peanut Science	25,807.22	22,343.19
Peanut Science and Technology Book	0.00	120.00
Postage	1,939.47	3,718.48
Proceedings	4,525.07	3,524.71
Sales Tax	33.76	44.11
Secretarial Services	8,991.70	10,273.86
Spouse Program Expenses	2,152.17	1,902.50
Refund	130.00	0.00
Travel – Officers	330.47	1,994.29
TOTAL EXPENDITURES	**$64,420.76**	**$59,363.39**
EXCESS RECEIPTS OVER EXPENDITURES	**$15,829.29**	**$ 4,328.12**

PEANUT SCIENCE BUDGET
1998-99

INCOME

Page and reprint charges	$10,500.00
Journal orders	900.00
Foreign mailings	1,900.00
APRES member subscriptions	13,400.00
Library subscriptions	1,100.00
TOTAL INCOME	**$27,800.00**

EXPENDITURES

Printing and reprint costs	$10,500.00
Editorial assistance	14,000.00
Office supplies	100.00
Postage	3,200.00
TOTAL EXPENDITURES	**$27,800.00**

ADVANCES IN PEANUT SCIENCE
SALES REPORT AND INVENTORY ADJUSTMENT
1997-98

	Books Sold	Remaining Inventory
Beginning Inventory		1053
1st Quarter	23	1030
2nd Quarter	19	1011
3rd Quarter	16	995
4th Quarter	8	987
TOTAL	66	

66 books sold x $20.96 = $1,383.36 decrease in value of book inventory.

987 remaining books x $20.96 (book value) = $20,687.52 total value of remaining book inventory.

Fiscal Year	Books Sold
1997-98	66

PEANUT SCIENCE AND TECHNOLOGY
SALES REPORT AND INVENTORY ADJUSTMENT
1997-98

	Books Sold	Remaining Inventory
Beginning Inventory		498
1st Quarter	6	492
2nd Quarter	5	487
3rd Quarter	31	456
4th Quarter	37	449
TOTAL	49	

49 books sold x $10.00 = $490.00 decrease in value of book inventory.

449 remaining books x $10.00 (book value) = $4,490.00 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

PUBLIC RELATIONS COMMITTEE REPORT

The Public Relations Committee met and approved recognizing the contributions of three individuals who passed away this year. These individuals made many contributions to American Peanut Research and Education Society and the peanut industry.

Resolutions on each follow.

Dr. Walton Carlyle Gregory

Dr. Walton Carlyle Gregory died on May 28, 1998 at his home in Alva, Florida. Dr. Gregory was born on August 12, 1910, in Amherst, Virginia. He earned his Ph.D. degree from the University of Virginia in 1940 and worked as an Assistant Professor at Tennessee Polytechnic Institute for one year before joining the faculty at North Carolina State University in 1942 as a maize breeder. In the mid-1940's Dr. Gregory initiated the peanut breeding program at North Carolina State University, taught courses in plant breeding and in 1957 he became a named "Neals Reynolds Professor" of Crop Science. He retired from North Carolina State University in 1977 and in the early 1980's he moved to Alva where he continued breeding peanut species.

In 1952, Dr. Gregory released the first improved peanut cultivar, NC 2, to farmers in North Carolina. By the early 1960's this cultivar accounted for 80% of the acreage in the region. He also released NC 4x and co-released NC 5. Dr. Gregory was awarded the first Golden Peanut Research and Education Award in 1961 for his contributions to the peanut industry. He was nationally and internationally recognized for his research in mutation breeding with peanut.

In the mid-1960's Dr. Gregory initiated a wild species program to utilize wild peanuts. In addition to organizing many and extensive collection expeditions to South America, he played a major part in preserving the genetic resources of the genus *Arachis*. Dr. Gregory performed pioneering research to utilize wild peanut species for crop improvement and established biosystematic relationships among many peanut species. As a consultant to the International Crops Research Institute for the Semi-Arid Tropics, he greatly influenced the establishment and direction of the international peanut program. In 1994 he co-authored a monograph of the genus *Arachis* which described 69 species. He is survived by his wife, M. Ffluge Gregory, his children and many grandchildren.

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

Thurman Earl Boswell

Thurman Earl Boswell, 71, of Yoakum, died Thursday, July 23, 1998.

He was born January 30, 1927, in North Zulch, to the late Elbert Willis and Dora A. Taylor Boswell. He was a retired plant pathologist from Texas A&M Research Station where he worked for 34 years. He was a member of First Baptist Church where he served 38 years as a deacon.

Survivors: wife, Martha Jean Prince Boswell; daughter, Linda Sue Webb; son Don Earl Boswell of Yoakum; sisters, Ella Mae Schultz of Bryan, Louise Mosely of Channelview and Ethel Lampe of San Antonio; brothers, Olan Boswell of North Zulch and William Boswell of San Antonio; five grandchildren; and two step-grandchildren.

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

Mrs. Mildred T. Koenecke

Whereas Mrs. Mildred T. Koenecke, retired secretary at the Texas Agricultural Experiment Station at Yoakum was instrumental in providing support for the peanut research staff for 28 years, and

Whereas Mrs. Koenecke made numerous contributions to peanut research through her dedicated work, and

Whereas, Mrs. Koenecke served her church, family, profession, agriculture, and science in an exemplary manner, and

Whereas, Mrs. Koenecke passed away in Yoakum, Texas, on July 4, 1998,

Be it resolved that Mrs. Koenecke'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 7, 1998 at 2:00 p.m. Our Society's journal *PEANUT SCIENCE* only received 24 manuscripts during the past year. This is the lowest number in many years. 513 books of Advances in Peanut Science have been sold, but only 66 during the past year. There are 987 books left in the inventory. Tom Stalker will prepare a flyer to send to industry members, extension specialists, and international institutes. An ad will also be place in Agronomy News. Corley Holbrook will forward a list of libraries to contact for possible book sales.

A motion was passed to allow Advances in Peanut Science to be translated into the Chinese language. A recommendation to raise the salary of the Peanut Science secretary to $14,000 was passed. This amount equals that of the administrative assistant to the Society's executive officer. The committee does not approve of interpretive abstracts being added to *PEANUT SCIENCE* manuscripts.

Corley Holbrook is resigning as editor of *PEANUT RESEARCH*. Another editor needs to be found to publish this newsletter. Corley will help publish the September-October issue and Duncan McClusky has agreed to continue performing library work for the newsletter.

Dr. John A. Baldwin has completed six years as an associate editor of Peanut Science and Robert Lemon has been asked to replace him. Dr. Mike Schubert has completed five years as an associate and Tim Williams has been asked to replace him.

Respectively submitted,

Tom Stalker for Rick Brandenburg

PEANUT SCIENCE EDITOR'S REPORT

Volume 24 of PEANUT SCIENCE had 28 manuscripts totaling 139 pages. Volume 25, No. 1 will have 13 manuscripts. Galley proofs have been forwarded to five authors, seven manuscripts currently are being printed, and one manuscript is being formatted for submission to the printer. The membership should receive their copy of Volume 25, No. 1 in September 1998.

During the year July 1, 1997 to June 30, 1998, 24 manuscripts were submitted to PEANUT SCIENCE. This number is significantly fewer than in past years; for example, 42 manuscripts were submitted during the previous fiscal year. Of the 24 submissions, five have been accepted, 15 are still in review, and four have been released to the authors.

Last year's budget has been itemized and a proposed budget for the coming year has been completed. Both budgets can be found in these PROCEEDINGS.

Dr. John A. Baldwin has completed his six-year term as an Associate Editor of PEANUT SCIENCE. Sincere thanks are expressed to Dr. Baldwin for his service to the journal and to APRES.

Respectfully submitted,

H. Thomas Stalker, Editor
PEANUT SCIENCE

NOMINATING COMMITTEE REPORT

The nominations committee met on July 7, 1998, in the Montpelier Room, Omni Waterside Hotel, Norfolk, Virginia. Members present included; Fred Shokes, chair, Dallas Hartzog and Chip Lee (standing in for Jim Starr). Jay Chapin had not arrived yet and Jim Starr did not come to the meeting. 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 – Dr. Robert E. "Bob" Lynch, USDA, CPES, Tifton, Georgia
Industry Representative – G.M. "Max" Grice, Birdsong Peanuts, Gorman, Texas
State Employee Representative – Dr. Pat Phipps, Tidewater Agricultural Research and Extension Center, Suffolk, Virginia
USDA Representative – Dr. Christopher Butts, National Peanut Research Laboratory, Dawson, Georgia
CAST Representative – Dr. Stanley M. Fletcher, Georgia Agricultural Experiment Station, Griffin, Georgia

FELLOWS COMMITTEE REPORT

The Fellows Committee received three nominations for recognition as Fellow, American Peanut Research and Education Society, Inc. The nominations were reviewed by each member of the Fellows Committee and scored according to the guidelines. The committee members were unanimous in their recommendation that all three nominees be elected Fellows into the American Peanut Research and Education Society, Inc. with approval of the Board of Directors.

The committee was in agreement that the election to Fellow is the highest honor that can be bestowed upon a member by the Society.

Respectfully submitted,

Norris L. Powell, Chair

BIOGRAPHICAL SUMMARIES OF FELLOWS

Dr. John A. Baldwin is Extension Agronomist for peanut in Georgia and a Professor in the Department of Crop and Soil Sciences, University of Georgia College of Agricultural and Environmental Sciences and is located at the Rural Development Center in Tifton, Georgia. Dr. Baldwin has been active in peanut education for 24 years as both a county extension agent in Florida and now as Extension Agronomist for peanut in Georgia. He has authored or co-authored over 120 publications. He is recognized as a leader in the development of educational programs in peanut production and cropping systems throughout the United States and internationally. He has been recognized as a leading authority in technology transfer and the development of new and innovative program delivery methods for the Extension Service. His on-farm and applied research programs have included seeding rates, row patterns, tillage systems, rotational crops, seed size and seed quality evaluations.

Dr. Baldwin has contributed to APRES through his chairmanship and service on many committees, and efforts at improving the efficiency, quality, and profitability of peanut production. His service has also included that of Associate Editor of *Peanut Science*. Dr. Baldwin has contributed to the advancement of science and peanut education through his activities and assignments on many committees in the American Peanut Council, American Society of Agronomy, and the Southern Section of the American Society of Agronomy. He has served internationally through programs in Australia, Argentina and the Caribbean.

Dr. Baldwin's leadership abilities in extension programs relating to peanut production has been recognized by his receipt of the American Peanut Research and Education Society Dow AgroSciences Award for Excellence in Extension, The American Society of Agronomy Early Career Award in Technology Transfer, and the Distinguished Service Award presented by the National Association of County Agricultural Agents.

Dr. Baldwin is a leader in peanut production in Georgia, as well as nationally and internationally. Through his programs in extension, he has made a major contribution to the profitability and sustainability of the peanut industry in Georgia and the United States.

Dr. Gene Sullivan was elected as Fellow of the American Peanut Research and Education Society at the 1998 annual meeting. He has been an active member of the American Peanut Research and Education Society since 1970 and was nominated to receive the honor of fellowship by other active members, recommended by the Fellows Committee and elected by the American Peanut Research and Education Society Board of Directors. Election of Fellow is one of the most prestigious distinctions an American Peanut Research and Education Society member can achieve. The following is a brief biographical sketch of Dr. Sullivan's contributions

Dr. Sullivan served as Assistant and later as Associate County Agricultural Agent in Bladen County (North Carolina) from 1962-67 and later served as Assistant Professor (Seed Specialist) in the Crop Science Department at North Carolina State University from 1967-81. From 1981 through 1995, Dr. Sullivan served as Associate Professor and later Professor of Crop Science in the role of Peanut Specialist. Following his retirement from North Carolina State University in 1995, Dr. Sullivan has served as a consultant for several agribusiness groups and currently serves as Executive Secretary of the Crop Protection Association of North Carolina. Through Dr. Sullivan's many years of service to the peanut industry, he has become known as "Dr. Peanut" not only in North Carolina but nationally and internationally as well.

Dr. Sullivan has received many awards and honors over the years. Some of these include the DowElanco Award for Excellence (1995), National Peanut Council Research and Education Award (1990), State Distinguished Service Award – Epsilon Sigma Phi (1983), Outstanding Service Award for Promotion of Certified Seed – North Carolina Crop Improvement Association (1980), and Outstanding Author – Virginia-Carolina Peanut News (1978). Dr. Sullivan has published numerous articles in *Peanut Science*, Proceedings of the American Peanut Research and Education Society, and in various popular press and trade publications.

Dr. Sullivan is best known for his active extension and on-farm testing program in North Carolina. Through his efforts, peanut growers in North Carolina have benefited from cutting edge research that has allowed them to make informed decision relative to production and pest management practices. He has conducted over 400 on-farm experiments. These experiments and the recommendations derived from them range from land preparation to harvest and curing principles. Dr. Sullivan actively and successfully involved research

and extension faculty from Departments of Entomology, Plant Pathology, Agricultural Engineering, and Crop Science into multi-discipline approaches to answer questions pertaining to complex interactions that occur at the farm level. Dr. Sullivan was instrumental in developing the extension publication *Peanut Information* which is a comprehensive publication on peanut production in North Carolina. Producers in North Carolina rely heavily on "The Peanut Book" for up dates on new technology.

Dr. Sullivan has been actively involved in many aspects of the peanut industry. One of his major contributions involved his participation on the National Peanut Council's Peanut Quality Task Force charged with addressing several challenges associated with quality issues. Dr. Sullivan was a major contributor to the Planter's publication "Peanuts, A Grower's Guide to Quality" which has been used nationally and internationally. Dr. Sullivan has also served on the Board of Directors of the American Peanut Research and Education Society and on many committees within the society. He has served as chairman of the Peanut Quality Committee, the DowElanco Research and Extension Awards Committee, the Site Selection Committee, and the Local Arrangements Committee.

Dr. Sullivan, through his strong technical back ground, his eagerness to serve, and his easy-going and relaxing personality, has been a strong attribute to the peanut industry as a whole, and the American Peanut Research and Education Society.

Mr. William M. Birdsong, Jr., Vice President and General Manager, Birdsong Peanut, Franklin, Virginia, has been actively involved in promoting the peanut industry since 1958. He began his career with Birdsong Peanuts in Suffolk, Virginia. He has worked in all phases of plant operations becoming familiar with all aspects of peanut seed production, plant shelling operations, peanut storage and marketing and by-product (peanut hulls) utilization/disposal before being promoted to his present position. He has been active in promoting the agricultural industry in general and the peanut industry in particular through his services with the Peanut Improvement Working Group, American Peanut Research and Education Society, Inc., Virginia Crop Improvement Association, and Virginia Agribusiness Council.

At the Peanut Improvement Working Group meeting in Norfolk, Virginia in 1968 Mr. Birdsong made the motion, which was approved, that the Group be reorganized into the American Peanut Research and Education Association, Inc. This was later named the American Peanut Research and Education Society, Inc.

Mr. Birdsong promotes the peanut industry with his strong support of the research and extension programs of the universities. He has appeared before many boards and commissions on behalf of research and extension professionals in support of requests for needed funding for research and extension programs. Because of this strong support many projects have been funded which led to the development of new peanut cultivars, improved production practices, and educational training for farmers, extension personnel and research scientist. This has enhanced the production of high yielding, high quality virginia-type peanut in the Virginia-North Carolina peanut production area.

Mr. Birdsong is recognized as an outstanding businessman in peanut marketing and an established leader in the agricultural community. He has been a strong supporter of the American Peanut Research and Education Society, Inc. He has given many years of dedicated service on numerous committee assignments. He was elected to and served four years on the Board of Directors of American Peanut Research and Education Society. He has given much to the peanut industry through his ten years of active service on the American Peanut Research and Education Society Peanut Quality Committee. Because of his experience in the peanut industry he was able to be the industry spokesman concerning the quality challenges facing the industry. As a result of this the committee was able to develop industry standards that are in use today throughout the world. Mr. Birdsong served as Co-Chairman of the Local Arrangements Committee for the annual meetings in Norfolk, Virginia in 1992 and 1998.

Mr. Birdsong has given faithful service and strong leadership to the agricultural community in general through his service to the Virginia Agribusiness Council (ten years on the board of directors) and Virginia Crop Improvement Association (eight years on the board of directors). His creativeness and effectiveness as a leader has been recognized by his community as well. As a strong supporter of our youth Mr. Birdsong has been recognized for his contributions to the Boy Scouts of America where he was honored with the Silver Beaver Award. He has served in leadership positions within his church, the United Way, Rotary Club, Industrial Authority, and the Southampton Memorial Hospital.

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 committee evaluated seven manuscripts for the 1998 Bailey Award. Title of papers evaluated are attached.

The committee recommends the award go to J.L. Starr, C.E. Simpson and T.A. Lee, Jr. for their paper "Yield of root-knot nematode resistant peanut lines in small field plots".

Respectively submitted,

Thomas B. Whitaker, Chair

Papers Submitted for the 1998 Bailey Award

1) Estimates of free folic acid content of peanut seeds (*Archis hypogaea*) after either oil roasting or hot air roasting. D.A. Smyth

2) Comparison of metolachlor and dimethoenamid for nutsedge control and peanut injury. W.J. Grichar, R.G. Lemon, D.C. Sestak and T.A. Hoelewyn

3) Yield of root-knot nematode resistant peanut lines in small field plots. J.L. Starr, C.E. Simpson and T.A. Lee, Jr.

4) Identification and seasonal dynamics of tomato spotted wilt virus-transmitters in populations of tobacco thrips and western flower thrips in peanut. H.R. Pappu, J.W. Todd, A.K. Culbreath, M.D. Bandha and J.L. Sherwood

5) Two-stage batch dryer for curing farmer stock peanuts. C.L. Butts and M.S. Omary

6) A visual screen to detect *Aspergillus nidulans* mutants defective in *aflR* regulation. R.A.E. Butchko, T.H. Adams and N.P. Keller

7) Response of florunner peanut to high-frequency deficit irrigation in the Texas southern high plains. A.M. Schubert, W.M. Lyle and J.W. Keeling

BAILEY AWARD AD HOC COMMITTEE REPORT

Tim Brenneman, chair, John Damicone and Barbara Shew (absent Charles Swann and Bill Odle). The committee met at 3:00 p.m., July 7, 1998.

The committee made the following recommendations:

1) Revise Bailey Award Criterion as indicated

Second paragraph – The following should be considered for eligibility:
#4. Original research.
Change to
#4. Original research or new concepts in extension or education.

2) Distribute a copy of these criteria to each session chairman and judge prior to the paper session.

Respectfully submitted,

Tim Brenneman, 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 presentation of bookends will be made to the speaker and other authors appropriately recognized.

JOE SUGG GRADUATE STUDENT AWARD REPORT

Eight papers were presented in the session. Five judges scored the presentations based on presentation, visual aids, contribution to science, clarity of abstract and interaction with audience.

The five judges were: Ames Herbert, Barry Breck, Mike Kubicek, Robert Lemon and James Grichar. Robert Lemon took the place of Jack Bailey who had two graduate students in the contest. Two papers were identified by the judges to receive first and second place.

First place was awarded to M.D. Franke of the University of Georgia for his presentation entitled "Identification of peanut genotypes with resistance to Rhizoctonia limb rot and the correlation of resistance with hypocotyl infection of seedlings". The co-authors were T.B. Brenneman and C.C. Holbrook.

Second place was awarded to D.B. Langston of Virginia Tech for his presentation titled "Evaluation of new algorithms and fungicide spray thresholds for the Virginia sclerotinia blight advisory program". The co-authors were P.M. Phipps and R.J. Stipes.

The cash awards of $500 for first place and $250 for second place were presented by Mr. Bob Sutter on behalf of the North Carolina Peanut Growers Association and the American Peanut Research and Education Society.

Respectfully submitted,

W. James Grichar, Chair
Barry Brecke
Ames Herbert
Mike Kubicek
Robert Lemon

COYT T. WILSON DISTINGUISHED SERVICE AWARD REPORT

The Coyt T. Wilson award is presented to a person who has contributed two or more years of distinguished service to APRES. The award was established in honor of Dr. Coyt T. Wilson who was an early leader in APRES and who continued to contribute of his time until his retirement in 1976.

The award committee reviewed the qualifications of Dr. Corley Holbrook and recommended that he be recognized for his outstanding contributions to APRES and the peanut industry. Dr. Holbrook was presented the Coyt T. Wilson Award for 1998.

Respectfully submitted

Peggy Ozias-Akins, Chair

BIOGRAPHICAL SUMMARY OF COYT T. WILSON DISTINGUISHED SERVICE AWARD RECIPIENT

Dr. Corley Holbrook has devoted his entire professional career as a Research Geneticist with USDA-ARS to the improvement of cultivated peanut. Dr. Holbrook received his B.S. (1979) and M.S. (1981) degrees in Agronomy from the University of Florida, then went to North Carolina State University where he obtained his Ph.D. degree in Plant Breeding in 1985. In recognition of his early accomplishments, he received the USDA Award for Excellence and Achievement as an Early Career Scientist in 1989, only four years after joining the ARS. Dr. Holbrook has been an active member of APRES since 1985, regularly attending meetings as well as serving on many committees.

One of Dr. Holbrook's long-term contributions to APRES has been to serve for more than ten years as the primary Co-Editor of *Peanut Research*, the quarterly newsletter of the society. The newsletter contains information on events as well as a useful Literature Citation Section. Other significant contributions include serving as Chair of the Technical Program Committee for the 1990 Annual Meeting and as Chair of the APRES Peanut Quality Committee from 1995-1997. The Peanut Quality Committee provided a forum for the peanut industry to address quality issues such as pesticide residues, food allergies, and chemical standards among others. In addition, Dr. Holbrook has served on numerous standing and ad hoc committees, and has been an Associate Editor for *Peanut Science* for five years, an assignment that is very time-consuming.

Through his research, Dr. Corley Holbrook is recognized as an outstanding scientist who has contributed extensively to the selection and development of peanut germplasm with resistance to nematodes, foliar diseases, soil-borne discases, tomato spotted wilt virus, and aflatoxin. This germplasm will provide a broad base for the future development of improved peanut cultivars with multiple disease resistances. As a result of his excellence in research, Dr. Holbrook was a contributing author for a chapter in the recently published APRES book, *Advances in Peanut Science*. Dr. Holbrook's passion for peanut germplasm enhancement will continue to provide valuable genetic materials for the peanut industry that will enhance the productivity, safety and competitiveness of the crop.

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 AWARD COMMITTEE REPORT

The APRES Dow AgroSciences awards committee consisted of Lance Peterson, J.W. Smith, Betsy Owens, Tom Kucharek and Chris Butts.

Nomination materials were received and found to meet award standards and qualifications.

Dr. Thomas B. Whitaker was selected to receive the award for excellence in research and Dr. John P. Beasley, Jr. was selected to receive the award for excellence in education.

Suggestions were made for soliciting and receiving more nominations for this award by deserving APRES members.

1) Identify two individuals from each peanut producing state at the annual meeting and start developing their nomination packet.
    a. one in research
    b. second in education or from industry
2) Carry over nomination packets of those qualified but not selected as recipients.

We wish to thank Dow AgroSciences for their generous support of these two prestigious awards.

Respectfully submitted,

John Baldwin, Chair

BIOGRAPHICAL SUMMARY OF DOW AGROSCIENCES AWARD FOR EXCELLENCE IN RESEARCH RECIPIENT

Dr. Thomas B. Whitaker is an Agricultural Engineer, USDA-ARS and Professor of Biological and Agricultural Engineering, North Carolina State University located at North Carolina State University in Raleigh, North Carolina. Dr. Whitaker earned his B.S. and M.S. Degrees from North Carolina State University in Agricultural Engineering in 1962 and 1964 respectively. His Ph.D. was received from Ohio State University in Agricultural Engineering in 1967. He has served as USDA-ARS Agricultural Engineer from 1967 to the present.

Dr. Whitaker has a long and distinguished research career that has helped the peanut industry improve its aflatoxin detection and peanut grading system. Because of his singular efforts, the importance of aflatoxin testing errors and the necessity of developing accurate sampling plans for specific commodities have come to be recognized worldwide. He is the primary source of aflatoxin sampling/detection information for the peanut industry. His research has been the basis for development of many standards within the industry and countless proprietary decisions by growers, shellers, and manufacturers. Dr. Whitaker's research has made a significant difference in the peanut industry in the area of highest research priority – aflatoxin. His work is the basis for what the industry does to eliminate contaminated peanuts while maintaining an economic balance in peanut marketing. His recent involvement with CODEX, the U.S. peanut industry, and the international community in the harmonization of aflatoxin guidelines and sampling plans has resulted in a CODEX recommendation to accept the U.S. sponsored sampling plan and acceptance limits for raw peanuts tested for aflatoxin in the export market. The entire scientific basis for the recommendation was research conducted by Dr. Whitaker.

His research led to the first empirical estimates of errors associated with the test procedures used to measure the aflatoxin concentration in peanut products. Theoretical distributions were used to describe observations at buying points which then led to a standardized method being adopted by the USDA and then other international governmental agencies to sample grain lots for aflatoxin. Dr. Whitaker has made significant contributions to the transfer of technology outside the U.S. and to the design of aflatoxin sampling plans for inspecting commodities in export markets.

Dr. Whitaker has received numerous awards and honors during his distinguished career. He received the Golden Peanut Award from the National Peanut Council in 1980, The Bailey Award from APRES in 1975 and 1991, elected Fellow, American Society of Agricultural Engineers in 1995 and Fellow APRES in 1996 along with numerous other recognitions.

Colleagues from USDA-ARS and Industry praised his devotion to research and impact upon the entire peanut industry through his research efforts. One supporter wrote "The peanut industry, inclusive of growers, shellers, and manufacturers, understands the significant impact Tom's work has on the way they do business". Another says "There is no question that our industry's efforts-and successes- have been greatly enhanced by the scientific and technical information generated by Dr. Whitaker".

BIOGRPHICAL SUMMARY OF DOW AGROSCIENCES AWARD FOR EXCELLENCE IN EDUCATION RECIPIENT

Dr. John P. Beasley, Jr. is Professor and Extension Agronomist, Crop and Soil Science Department in the College of Agricultural and Environmental Sciences at the University of Georgia and is located at Tifton, Georgia. Dr. Beasley earned his B.S. degree in 1979 from Auburn University, his M.S. in 1981 from Oklahoma State University, and his Ph.D. from Louisiana State University in 1985. He began his professional career at the University of Georgia in 1985 and obtained the rank of Professor in 1996.

Dr. Beasley has put a major emphasis on input management and production efficiency as a part of his educational programs. Dr. Beasley has worked with county extension agents and producers in managing production inputs in order to maximize net profit. His production programs emphasize cultural practices that would improve peanut quality. He was one of three individuals who conceived the idea of conducting a peanut tour in Georgia highlighting the entire industry. Since becoming Extension Agronomist-peanuts in Georgia, he has strongly emphasized a "team approach" to helping county agents and producers in Georgia solve peanut production problems. A strong team effort has successfully implemented the Hull Scrape Method for maturity determination, adjusting seeding rates to maximize profit potential yet avoid complications from tomato spotted wilt virus, adaptation to new cultivars, and production input management for optimal profit potential. Dr. Beasley was a member of the Peanut Quality Task Force of the American Peanut Council and worked with all segments of the peanut industry to deliver the quality message from the producer level forward. His work is recognized both nationally and internationally and has given him the distinction of being one of the leading authorities on peanut production in the world.

Dr. Beasley has received numerous awards and honors including certificates of excellence for publications, newsletters and videos from the American Society of Agronomy, National Association of County Agricultural Agents Achievement award in 1994, American Society of Agronomy "Early Career Award in Technology Transfer" 1995 among others.

Dr. Beasley was nominated for this award by research and extension colleagues who characterize him as both a leader and a team player. One supporter wrote "Dr. Beasley has developed an international reputation in the area of peanut production technology not only because of his knowledge, but also because of his ability to communicate that knowledge". Another states "Dr. Beasley is very innovative in his approach to extension education and to adaptive research". Another points to his utilization of computers and the world wide web in new and unique technology transfer methods. Lastly, "He is a farmer-friendly scientist able to communicate research findings and assist farmers in the application of research to their farm to improve profitability".

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 _____

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 met at Norfolk, Virginia at 3:00 p.m. Chairman, Carroll Johnson called the meeting to order. An attendance sheet was distributed.

The major topic of discussion was the issue of MSMA use on peanut, arsenic residues in harvested peanut and possible regulatory action. Dr. David Bridges, Professor with University of Georgia, was invited to address the committee on this issue.

This issue is the result of MSMA being applied, illegally, to control escaped Florida beggarweed. A farmer in Georgia was reported to have treated peanut with MSMA. This triggered a series of discussions among peanut industry officials, EPA, FDA and USDA-Farm Service Agency.

There are two general statements that can be made concerning this difficult issue.

1) This is the result of an illegal pesticide application. Education efforts must be intensified to promote pesticide stewardship.

2) The means by which large quantities of peanut are purchased, stored and processed complicates segregation. Co-mingling of good peanut with tainted peanut is a serious issue for the processing industry.

Efforts will continue to determine what are acceptable levels of background arsenic in peanut.

The meeting adjourned at 4:10 p.m.

Respectfully submitted,

W. Carroll Johnson, III, Chair

PROGRAM COMMITTEE REPORT

The 30th annual meeting of the American Peanut Research and Education Society was held at the Omni Waterside Hotel, in Norfolk, Virginia, on July 7-10, 1998. Committee chairs were Ames Herbert and William Mac Birdsong for Local Arrangements, Norris Powell for Technical Program and Sharry Swann for Spouses Program. A complete listing of all committee members is included in the program section of these PROCEEDINGS.

There were 91 technical papers presented, including 5 papers in the graduate student competition and 6 papers in a symposium.

Rhone-Poulenc, Zeneca Ag Products, American Cyanamid, Bayer Corporation, Dow AgroSciences and BASF Corporation sponsored four special events. Many thanks to Novartis for sponsoring all coffee breaks. Additional financial assistance and peanut products were supplied by 17 other peanut industry firms. A complete listing of these is given in the program section of these PROCEEDINGS.

There were 506 persons in attendance at the 1998 meeting. This included 300 registered participants representing 21 states and 11 countries. Also in attendance were 206 spouse and children.

We all appreciate the work and effort of all committee members and registration personnel who helped to make this year's 1998 annual meeting a great success.

Respectfully submitted,

Charles W. Swann, Chair

CONTRIBUTORS TO THE 1998 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
Rhône-Poulenc AG Company
Zeneca AG Products

Regular Activities
Birdsong Peanuts
Colonial Farm Credit
Golden Peanut Company
Gustafson Incorporated
Hubbard Peanut Company
Peanut Growers Cooperative Marketing Association
Pert Laboratories, Inc.
The Ferguson Manufacturing Company
Tidewater Blanching Corporation
Virginia Crop Improvement Association
Valent USA Corporation

Breaks
Hershey Foods
Jimbos Jumbos
Lance, Incorporated
M&M Mars
North Carolina Peanut Growers Association
Northampton Peanut Company
Old Dominion Peanut Corporation
Planters Peanuts, Suffolk, VA
Virginia Peanut Growers Association

1998 PROGRAM

BOARD OF DIRECTORS
1997-1998

President ..... Thomas A. "Chip" Lee, Jr.
Past President ..... Fred N. Shokes
President-elect ..... Charles W. Swann
Executive Officer ..... J. Ronald Sholar
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- Virginia-Carolina ..... James H. Young
- Southeast ..... John P. Beasley, Jr.
- Southwest ..... A. M. Schubert

USDA Representative ..... Robert E. Lynch
Industry Representatives:
- Production ..... H. Randall Griggs
- Shelling, Marketing, Storage ..... Bobby Walls
- Manufactured Products ..... Douglas A. Smyth

American Peanut Council President ..... Jeanette Anderson

PROGRAM COMMITTEE
C. W. Swann, Chairman

Local Arangements

W. M. Birdsong, Co-Chm.
D. A. Herbert, Jr., Co-Chm
T. Lourens
R. W. Mozingo
P. M. Phipps
N. L. Powell

Technical Program

N. L. Powell, Chm.
T. G. Isleib
D. L. Jordan
G. L. Jubb
R. W. Mozingo
P. M. Phipps
B. B. Shew
C. W. Swann

Spouses' Program

Sharry Swann, Chm.
Debbie Ashburn
Dale Birdsong
Julee Herbert
Judy Mozingo
Janet Phipps

Program Highlights

Tuesday, July 7

Committee, Board, and Other Meetings

8:00-12:00	Crops Germplasm Committee	Montpelier Room
12:00-8:00	APRES Registration	4th Floor Hall
1:00-5:00	Spouses Hospitality	Riverview Room
1:00-2:00	Associate Editors, Peanut Science	Westover Room
1:00-2:00	Site Selection Committee	Montpelier Room
1:00-2:00	Fellows Committee	Greenway Room
1:00-2:00	Coyt T. Wilson Distinguished Service Award Committee	Eppington Room
2:00-3:00	Publications and Editorials Committee	Montpelier Room
2:00-3:00	Public Relations Committee	Westover Room
2:00-3:00	Bailey Award Committee	Greenway Room
2:00-3:00	DowElanco Awards Committee	Eppington Room
3:00-4:00	Nominating Committee	Montpelier Room
3:00-4:00	Joe Sugg Graduate Student Award Committee	Greenway Room
3:00-4:00	Peanut Quality Committee	Eppington Room
4:00-5:00	Finance Committee	Montpelier Room
4:00-6:00	Peanut System Working Group	Greenway Room
7:00-11:00	Board of Directors	Eppington Room
7:00-9:00	**ICE CREAM SOCIAL Rhône-Poulenc**	**Monticello Room**

Wednesday, July 8

8:00-4:00	APRES Registration	4th Floor Hall
8:00-5:00	Spouses Hospitality	Riverview Room
8:00-5:00	Press Room/Projector Room	Wilton Room
8:10-9:30	General Session	York Hall
9:30-10:00	**BREAK**	**Claremont Room**
9:30-4:30	Poster Session	Claremont Room
10:00-12:00	Graduate Student Competition	York Hall

1:15-3:00	Weed Science	Brandon Room
1:15-2:45	Processing, Utilization and Mycotoxins	Greenway Room
1:30-3:00	Plant Pathology I	York Hall
3:00-3:30	**BREAK**	**Claremont Room**
3:30-5:00	Plant Pathology II	York Hall
3:30-4:30	Entomology	Greenway Room
3:30-4:45	Economics	Brandon Room
6:00-9:00	**Reception/Evening Meal** **Zeneca AG Products**	**Providence & Stratford Halls**

Thursday, July 9

8:00-5:00	Spouses Hospitality	Riverview Room
8:00-5:00	Press Room/ Projector Room	Wilton Room
8:00-9:30	Plant Pathology III	York Hall
8:00-9:30	Production Technology I	Brandon Room
9:30-10:00	**BREAK**	**Claremont Room**
10:00 -12:00	Symposium: Alternative Tillage System for Peanuts in the United States	York Hall
1:15-3:00	Breeding and Genetics I	Brandon Room
1:30-3:00	Production Technology II	York Hall
3:00-3:30	**BREAK**	**Claremont Room**
3:30-3:45	Production Technology III	York Hall
3:30-5:00	Breeding and Genetics II	Brandon Room
6:15-9:15	**Spirit of Norfolk Cruise** **American Cyanamid** **Bayer Corporation**	Otter Berth (on Waterfront)

Friday, July 10

7:00-8:00	Awards Breakfast Dow AgroSciences BASF Corporation	Stratford Hall
8:00-10:00	APRES Awards Ceremony and Business Meeting Dow AgroSciences	Stratford Hall
10:00-12:00	PGCMA	Riverview Room
10:00-12:00	Peanut CRSP	Montpelier Room

1:00-5:00 Peanut CRSP Technical Committee — Riverview Room

SPECIAL EVENTS

Tuesday, July 7

7:00-9:00 p.m. **Ice Cream Social**
Rhône-Poulenc — Monticello Room

Wednesday, July 8

6:00-9:00 p.m. **Reception/Evening Meal** — Providence & Stratford Halls
Zeneca AG Products

Thursday, July 9

6:15-9:15 p.m. **Spirit of Norfolk Cruise** — Otter Berth (on waterfront)
American Cyanamid
Bayer Corporation

Friday, July 10

7:00-8:00 a.m. **Awards Breakfast** — Stratford Hall
Dow AgroSciences
BASF Corporation

GENERAL SESSION

Wednesday, July 8
York Hall

8:10 Call to Order ..... **Dr. Thomas A. "Chip" Lee, Jr.,** APRES President

8:20 Welcome to Tidewater Virginia..... **Mr. Delceno C. Miles,** Chair for Business Service, Hampton Roads of Commerce

8:30 Overview of Virginia Agricultural..... **Dr. Gerald "Skip" Jubb,** Associate Director, Virginia Agriculture Experiment Station and Assistant Dean, College of Agriculture and Life Science

8:50 Peanut Nutrition: from Pariah to Paragon..... **Mr. Jeff Johnson,** Senior Vice President, Birdsong Peanuts

9:20 Announcements:
Technical Program.....**Dr. Norris Powell**
Local Arrangements.....**Dr. Ames Herbert**

9:30 Break with exhibitors ..... Claremont Room

TECHNICAL SESSIONS

Wednesday, July 8

9:30-4:30 **Poster Session** **Claremont Room** (Authors Present 3:00-4:00 p.m.)

Coordinator: N. L. Powell, Virginia Tech, Suffolk , Va.

(1) Isolation of peanut cDNA encoding methionine-rich protein. **M. Ying*, H. Mazhar and S.M. Basha.** Florida A&M University, Tallahassee, FL.

(2) An improved capillary electrophoretic method for separation of native peanut seed proteins. **S.M. Basha*, J. Anwar and M. Ali-Ahmad.** Florida A&M University, Tallahassee, FL.

(3) Effect of chilling on peanut leaf composition. **M.A. Ali-Ahmad* and S.M. Basha.** Florida A&M University, Tallahassee, FL.

(4) Immunochemical characterization of a methionine-rich protein from peanut. **H. Mazhar and S.M. Basha.** Florida A&M University, Tallahassee, FL.

(5) Soil and aerial environments under a rain exclusion shelter used to screen peanut germplasm for resistance to aflatoxin contamination. **K. T. Ingram* and C.C. Holbrook.** University of Georgia, Griffin, GA.

Wednesday, July 8

(6) Interaction of in-furrow thrips insecticides and postemergence applied herbicides on growth and yield of virginia peanuts. **D.A. Herbert, Jr.* and C.W. Swann.** Virginia Polytechnic Institute and State University, Suffolk, VA.

Graduate Student Competition **York Hall**

Moderator: *G. L. Jubb, Virginia Tech, Blacksburg, Va.*

10:00 (7) High oleic oil roasting of partially defatted peanuts. **G.E. Bolton* and T.H. Sanders.** North Carolina State University, Raleigh, NC.

10:15 (8) Consumer analysis of commercial peanut butter. **K.L. McNeill* and T.H. Sanders.** North Carolina State University, Raleigh, NC.

10:30 (9) Identification of peanut genotypes with resistance to rhizoctonia limb rot and the correlation of resistance with hypocotyl infections of seedlings. **M.D. Franke*, T.B. Brenneman, and C.C. Holbrook.** University of Georgia, Tifton, GA.

10:45 (10) The management of sclerotinia blight (*sclerotinia minor*) on peanut (*arachis hypogaea*) with fluazinam, the systemic inducer actigard, and resistant genotypes. **A.V. Lemay* and J.E. Bailey**. North Carolina State University, Raleigh, NC.

11:00 (11) Evaluation of new algorithms and fungicide spray thresholds for the Virginia sclerotinia blight advisory program. **D.B. Langston, Jr.*, P.M. Phipps, and R.J. Stipes**. Virginia Polytechnic Institute and State University, Suffolk, VA.

11:15 (12) Adapting a weather based leafspot advisory on peanuts to partially resistant genotypes. **V. Aris* and J.E. Bailey**. North Carolina State University, Raleigh, NC.

11:30 (13) Weed management in North Carolina and virginia peanuts with diclosulam applied preemergence. **W.A. Bailey*, J.W. Wilcut, S.D. Askew, D.L. Jordan, C.W. Swann, and V.B. Langston**. North Carolina State University Raleigh, NC.

11:45 (14) Weed management in peanut with flumioxazin. **S.D. Askew*, J.W. Wilcut and J.R. Cranmer**. North Carolina State University, Raleigh, NC.

12:00 LUNCH

Plant Pathology I **York Hall**

Moderator: *B. B. Shew, North Carolina State University, Raleigh, N. C.*

1:30 (15) Reaction of runner cultivars and breeding lines of peanut to sclerotinia blight and their responses to fungicide treatment. **J. P. Damicone*, H.A. Melouk, and K.E. Jackson.** Oklahoma State University, Stillwater, OK.

1:45 (16) Reaction of peanut genotypes to *sclerotium rolfsii* under greenhouse conditions. **H.A. Melouk*, S.S. Aboshosha and C. Saude.** Oklahoma State University, Stillwater, OK.

2:00 (17) Efficacy of recommended fungicide treatment regimes for the control of foliar and soilborne diseases on three cultivars of peanut. **A.K. Hagan*, B. Gamble, and L.W. Wells**. Auburn University, Auburn, AL.

2:15 (18) Penetration of resistant and susceptible peanut roots by *meloidogyne arenaria*. **P. Timper* and C.C. Holbrook.** Coastal Plain Experiment Station, Tifton, GA.

2:30 (19) Development of southern stem rot in peanuts over three growing seasons. **K.L. Bowen***. Auburn University, Auburn, AL.

2:45 (20) Determining pod yield losses to stem rot of peanut. **F.M. Shokes* and D.W. Gorbet.** University of Florida, Marianna, FL.

3:00 BREAK **CLAREMONT ROOM**

Weed Science **Brandon Room**

Moderator: *V. B. Langston, Dow AgroSciences, Raleigh, N. C.*

1:15 (21) Performance of diclosulam in Texas peanut. **P.A. Dotray*, J.W. Keeling, W.J. Grichar, E.P. Prostko, R.G. Lemon, T.S. Osborne, and K.D. Brewer**. Texas Tech University, Lubbock, TX.

1:30 (22) Weed management in North Carolina and Virginia peanuts with diclosulam applied preplant-incorporated. **G.H. Scott*, J.W. Wilcut, S.D. Askew, D.L. Jordan, C.W. Swann, and V.B. Langston**. North Carolina State University, Raleigh, NC.

1:45 (23) Interactive effects of Temik and herbicides on peanut yield and quality. **R.G. Lemon*, W.J. Grichar, C.R. Crumley, and T.A. Hoelewyn**. Texas A&M University, College Station, TX.

2:00 (24) Effects of Cadre applications on runner, spanish and virginia peanut growth and yield. **W.J. Grichar*, R.G. Lemon, P.A. Dotray, T. Baughman, E.P. Prostko, K.D. Brewer, B.A. Besler, and T.A. Hoelewyn**. Texas Agricultural Experiment Station, Yoakum, TX.

2:15 (25) Residual herbicide systems for peanut weed management. **E.F. Eastin* and G.E. MacDonald**. University of Georgia, Tifton, GA.

2:30 (26) Weed control and peanut tolerance to selected imidazolinone herbicides. **G.E. MacDonald*, E.F. Eastin, and D.L. Colvin.** University of Georgia, Tifton, GA.

2:45 (27) An economic comparison of weed control systems for Texas peanut production. **E.P. Prostko*, W.J. Grichar, D.C. Sestak, and R.G. Lemon.** Texas A&M University, Stephenville, TX.

3:00 BREAK **CLAREMONT ROOM**

Processing, Utilization and Mycotoxin **Greenway Room**

Moderator: *D. A. Smyth, Nabisco, Inc. East Hanover, N. J.*

1:15 (28) Effect of pre-roast moisture content on post-roast shelf life of peanuts. **T.H. Sanders.** North Carolina State University, Raleigh, NC.

1:30 (29) Roasted peanut single seed, lot and paste color relationships. **L.R. Christie* and T.H. Sanders.** North Carolina State University, Raleigh, NC.

1:45 (30) Investigations into sensory and chemical relationships in roasted peanuts. **H.E. Pattee*, T.G. Isleib, and F.G. Giesbrecht.** North Carolina State University, Raleigh, NC.

2:00 (31) Inhibition of fungal colonization of stored peanut with products from some medicinal/culinary plants. **R.T. Awuah*.** University of Science & Technology, Kumasi, Ghana.

2:15 (32) Peanut alcohol dehydrogenase and a stress protein-maturity marker are potential allergens. **S.Y. Chung*, E.T. Champagne, G.A. Bannon and A.W. Burks.** USDA-ARS, New Orleans, LA.

2:30 (33) Performance of sampling plans to detect aflatoxin in farmers' stock peanut lots by measuring aflatoxin in high risk grade components. **T.B. Whitaker*, W.M. Hagler, Jr., and F.G. Giesbrecht.** North Carolina State University, Raleigh, NC.

3:00 BREAK **CLAREMONT ROOM**

Plant Pathology II **York Hall**

Moderator: *J. E. Bailey, North Carolina State University, Raleigh, N. C.*

3:30 (35) Effects of ten years of peanut monoculture under irrigated and nonirrigated conditions on peanut yields, diseases and fungicide performance. **T.B. Brenneman**. University of Georgia, Tifton, GA.

3:45 (36) Integrated disease management practices in peanut. **J.E. Fajardo*, P.A. Backman, and L.W. Wells**. Auburn University, Auburn, AL.

4:15 (38) Peanut variety response to rhizoctonia pod rot and early leaf spot using Folicur, Abound and fluazinam. **B.A. Besler*, A.J. Jaks, W.J. Grichar, and K.D. Brewer**. Texas Agricultural Experiment Station, Yoakum, TX.

4:30 (39) Early leaf spot control in peanuts with azoxystrobin formulations. **J.N. Lunsford*, D. Black, and S. Royal**. Zeneca Ag Products, Enterprise, AL.

4:45 (40) Large plot grower trials with azoxystrobin vs. tebuconazole in peanuts. **C.V. Greeson*, J.N. Lunsford, R. Burnett, and S. Royal**. Zeneca Ag Products, Pikeville, NC.

Entomology **Greenway Room**

Moderator: *S.L. Brown, University of Georgia, Tifton, Ga.*

3:30 (41) Evaluation of low input systems for pest management in Alabama. **J.R. Weeks* and A.K. Hagan.** Auburn University, Auburn, AL.

3:45 (42) Strategies for more effective insect management of peanuts in North Carolina. **R. L. Brandenburg.** North Carolina State University, Raleigh, NC.

4:00 (43) Peanut response to treatment of corn earworm populations. **J.W. Chapin* and J.S. Thomas**. Clemson University, Blackville, SC.

4:15 (44) Evaluation of peanut containing a Cryla(c) gene from *bacillus thuringiensis* for activity against the lesser cornstalk borer, corn earworm and fall armyworm. **R. E. Lynch* and P. Ozias-Akins**. University of Georgia, Tifton, GA.

Economics **Brandon Room**

Moderator: *S. G. Sturt, Virginia Tech Dinwiddie, Va.*

3:30 (45) A risk-returns analysis of the peanut enterprise: implications for both the present and possible life without the peanut program. **W. D. Shurley**. University of Georgia, Tifton, GA.

3:45 (46) Using a Windows 95(R) program to simulate the impact of crop price and yield on the profitability of investment in irrigation. **D.A. Sternitzke*, M.C. Lamb, J.I. Davidson, Jr.** USDA-ARS National Peanut Research Laboratory, Dawson, GA.

4:00 (47) Economic decision making for fungicide control in peanuts. **T.D. Hewitt*, and F.M. Shokes.** University of Florida, Marianna, FL.

4:15 (48) Determination and announcement of the national poundage quota for peanuts for marketing years 1996 through 2002. **K.M. Robison.** United States Department of Agriculture, Washington, D.C.

4:30 (49) Constraints to peanut production and marketing in selected areas in Haiti. **C.M. Jolly* and E. Prophete**. Auburn University, Auburn, AL

TECHNICAL SESSIONS

Thursday, July 9

Plant Pathology III **York Hall**

Moderator: *D. B. Langston, Virginia Tech, Blacksburg, Va.*

8:00 (50) Creating weather-based disease advisory models. **J.E. Bailey**. North Carolina State University, Raleigh, NC.

8:15 (51) Improving grower and industry access to peanut disease and other crop management advisories. **P.M. Phipps*, N.D. Stone, and D.A. Herbert, Jr.** Virginia Polytechnic Institute and State University, Suffolk, VA.

8:30 (52) Efficacy of spray programs for control of web blotch of peanut. **K.E. Jackson* and J.P. Damicone.** Oklahoma State University, Stillwater, OK.

8:45 (53) Evaluation of advisory and calendar spray programs on peanut disease control and yield in Texas. **A.J. Jaks*, W.J. Grichar and B.A. Besler**. Texas Agricultural Experiment Station, Yoakum, TX.

9:00 (54) Recovery of pod rot pathogens and pod rot incidence in peanuts treated with selective fungicides. **B.B. Shew* and J.E. Hollowell**. North Carolina State University, Raleigh, NC.

9:15 (55) Comparison of North Carolina, Georgia, and Florida *cylindrocladium parasiticum* isolates. **J.E. Hollowell* and B.B. Shew**. North Carolina State University, Raleigh, NC.

9:30 BREAK **CLAREMONT ROOM**

Production Technology I **Brandon Room**

Moderator: *S. Barnes, North Carolina Department of Agriculture, Lewiston, N. C.*

8:00 (56) Responses of Florunner peanut to irrigation practices in the Texas southern high plains. **A.M. Schubert* and F.D. Mills, Jr**. Texas A&M University, Lubbock, TX.

8:15 (57) Response of Florunner peanut to late season application of nitrogen fertilizer in the Texas southern high plains. **F.D. Mills, Jr.* and A.M. Schubert**. Abilene Christian University, Abilene, TX.

8:30 (58) Development of Exnut for west Texas growers. **J.I. Davidson, Jr.*, J. Farris, A.M. Schubert, R.G. Lemon, R. Henning**. USDA, ARS, National Peanut Research Laboratory, Dawson, GA.

8:45 (59) Validation of Exnut for scheduling peanut irrigation in North Carolina. **W.J. Griffin*, J.I. Davidson, Jr., M.C. Lamb, R.G. Williams, G. Sullivan**. Bertie County Extension Service, Windsor, NC.

9:00 (60) Evaluation of runner market type peanut in North Carolina. **D. L. Jordan* and P.D. Johnson.** North Carolina State University, Raleigh, NC.

9:15 (61) A screening attachment for a four row or six row Amadas combine. **P.D. Blankenship*, J.W. White, and M.C. Lamb**. USDA, ARS, National Peanut Research Laboratory, Dawson, GA.

9:30 BREAK **CLAREMONT ROOM**

Symposium: Alternative Tillage Systems for Peanuts in the United States **York Hall**

Moderator: *C.L. Butts, USDA, ARS National Peanut Research Laboratory, Dawson, Ga.*

10:00 (62) Effects of tillage systems on peanut grade, yield and stem rot (*sclerotium rolfsii*) development. **W.J. Grichar*, B.A. Besler, and R.G. Lemon**. Texas Agricultural Experiment Station, Yoakum, TX.

10:20 (63) Reduced tillage systems for peanut production in Georgia. **J.A. Baldwin* and J. Hook**. University of Georgia, Tifton, GA.

10:40 (64) Comparison of peanut yields under no-tillage, strip-tillage and several forms of conventional tillage. **G.C. Naderman**. North Carolina State University, Raleigh, NC.

11:00 (65) Effects of selected practices for reduced tillage on peanut yield, disease, grade, and net revenue. **E.J. Williams*, S. Hilton, M.C. Lamb, and J.I. Davidson, Jr.** University of Georgia, Tifton, GA.

11:20 (66) Alternative tillage systems for peanuts. **D.L. Hartzog*, and J.F. Adams**. Auburn Unversity, Headland, AL.

11:40 (67) Economics of alternative tillage systems for peanuts. **M.C. Lamb*, W.J. Grichar, J.A. Baldwin, G.C. Naderman, E.J. Willams, and D.L. Hartzog**. USDA, ARS, NPRL, Dawson, GA.

12:00 LUNCH

Production Technology II **York Hall**

Moderator: *R. W. Mozingo, Virginia Tech, Suffolk, Va.*

1:30 (68) Development and validation of an integrated management system for spotted wilt disease in peanut. **J.W. Todd*, A.K. Culbreath, S.L. Brown, D.W. Gorbet, F.M. Shokes, H.R. Pappu, J.A. Baldwin, and J. P. Beasley, Jr.** University of Georgia, Tifton, GA.

1:45 (69) Yield, grade, and tomato spotted wilt virus incidence of four peanut cultivars in response to twin versus single row planting patterns. **J.A. Baldwin*, J.P. Beasley, Jr., S.L. Brown, J.W. Todd, and A.K. Culbreath.** University of Georgia, Tifton, GA.

2:00 (70) Development of a method of risk assessment to facilitate integrated management of spotted wilt disease of peanut in Georgia. **S.L. Brown*, J.W. Todd, A.K. Culbreath, F.M. Shokes, D.W. Gorbett, J.A. Baldwin and J.P. Beasley, Jr.** University of Georgia, Tifton, GA.

2:15 (71) Peanut pests, management practices, and chemical use - a survey of the southwest industry. **D.T. Smith*, M.G. New and J.T. Criswell**. Texas A & M University, College Station, TX.

2:30 (72) Response of four runner peanut cultivars to prohexadione calcium plant growth regulator. **J.P. Beasley, Jr.*, G.E. MacDonald, C.K. Kvien and S. Rushing.** University of Georgia, Tifton, GA.

2:45 (73) Basline™ plant growth regulator in peanuts-update. **T.E. McKemie* and J.R. Evans**. BASF Corporation, Triangle Park, NC.

3:00 BREAK **CLAREMONT ROOM**

Breeding and Genetics I **Brandon Room**

Moderator: D. W. Gorbet, University of Florida, Marianne, Fl.

1:15 (74) Sources of resistance to preharvest aflatoxin contamination in peanut. **C.C. Holbrook*, D.M. Wilson, and M.E. Matheron**. USDA, ARS Coastal Plain Experiment Station, Tifton, GA.

1:30 (75) Definition of mechanism of resistance to aflatoxin contamination in peanut. **K. Franke*, C.K. Kvien, M.D. Franke, C.C. Holbrook**. University of Georgia, Tifton, GA.

1:45 (76) Partial dominance pleiotropism and epistasis in the inheritance of the high-oleate trait. **T.G. Isleib*, R.F. Wilson, and W.P. Novitzky**. North Carolina State University, Raleigh, NC.

2:00 (77) Variation in pod color characteristics in the Virginia-Carolina peanut variety and quality evaluation program. **R.W. Mozingo, II, T.G. Isleib*, and R.W. Mozingo**. North Carolina State University, Raleigh, NC.

2:15 (78) Short-term effect of seed size selection on performance of Georgia Green and Florunner. **W.D. Branch* and A.K. Culbreath.** University of Georgia, Tifton, GA.

2:30 (79) Amplication of DNA sequences for a methoionine rich protein (MRP) in peanut. **A. K. Jain* and S.M. Basha.** Florida A&M University, Tallahassee, FL.

2:45 (80) Shade avoidance in peanut cultivars response interferes with pod setting. **I.S. Wallerstein*, S. Kahn, I. Wallerstein, G. Whitlam and H. Smith.** Institute of Field & Garden Crops, Bet Dagan, Israel.

3:00 BREAK **CLAREMONT ROOM**

Production Technology III **York Hall**

Moderator: D. T. Jordan, North Carolina State University, Raleigh, N. C.

3:30 (81) Application of color image analysis of peanut harvest prediction. **J. Simunovic* and T.H. Sanders.** North Carolina State University, Raleigh, NC.

3:45 (82) Peanut response to broiler litter, starter fertilizer, and fungicide in an intensive crop rotation. **G.J. Gascho*, T.B. Brenneman, and A.W. Johnson.** University of Georgia, Tifton, GA.

4:00 (83) Reduced tillage for peanuts. **D.L. Hartzog*, and J.F. Adams.** Auburn University, Auburn, AL.

4:15 (84) Peanut production in China. **H. Wenguag, D. Shufen, S. Qingwal, T. A. Lee, Jr.*.** Texas A & M University System, Stephenville, TX.

4:30 (85) Peanut production in Argentina. **R. Pedelini.** Instituto Nacional de Tecnologia Agropecuaria, General Cabrera, Argentina.

Breeding and Genetics II **Brandon Room**

Moderator: T. G. Isleib, North Carolina State University, Raleigh, N. C.

3:30 (86) Florida MDR 98- a new multiple-pest resistant peanut cultivar. **D.W. Gorbet*, F.M. Shokes, A.K. Culbreath, J.W. Todd, and E.B. Whitty.** University of Florida, Marianna, FL.

3:45 (87) Combining ability for four components of resistance to early leaf spot in peanut. **Z.A. Chiteka*, D.W. Gorbet, F.M. Shokes, and T.A. Kucharek.** University of Zimbabwe, Harare, Zimbabwe.

4:00 (88) Evaluation of virginia-type peanut cultivars and breeding lines for sclerotinia blight resistance with and without fungicide input. **R.W. Mozingo.** Virginia Polytechnic Institute and State University, Suffolk, VA.

4:15 (89) *Arachis Praecox*: eighteen chromosomes present challenges for introgression of early maturity genes. **C.E. Simpson**. Texas A&M University, Stephenville,TX.

4:30 (90) Improved TSWV resistance in peanut breeding lines; hope for the future. **A.K. Culbreath*, J.W. Todd, D.W. Gorbet, and F.M. Shokes**. University of Georgia, Tifton, GA.

4:45 (91) Resistance to root-knot nematodes in TP262-3-5, a candidate for release as a nematode resistant cultivar. **J.L. Starr and C.E. Simpson***. Texas A&M University, College Station, TX.

Friday, July 10

7:00-8:00	Awards Breakfast Dow AgroSciences BASF Corporation	Stratford Hall
8:00-10:00	APRES Awards Ceremony and Business Meeting Dow AgroSciences	Stratford Hall
10:00-12:00	PGCMA	Riverview Room
10:00-12:00	Peanut CRSP	Montpelier Room
1:00-5:00	Peanut CRSP Technical Committee	Riverview Room

SITE SELECTION COMMITTEE REPORT

The following meeting schedule will be followed:

Savannah, Georgia – July 12-16, 1999, Savannah Hyatt Regency
$92 room rate (single or double)
Point Clear, Alabama – July 11-14, 2000, The Grand Hotel
$125-130/night)
Oklahoma City, Oklahoma – 2001
North Carolina – 2002
Florida – 2003
Texas – 2004

Contracts are signed for both the Savannah Hyatt Regency and the Grand Hotel.

Respectfully submitted,

Ames Herbert, Chair

AMERICAN SOCIETY OF AGRONOMY LIAISON REPRESENTATIVE REPORT

The annual meetings of the joint American Society of Agronomy, Crop Society of America and Soil Science Society of America were held in Anaheim, California on October 26 to 31, 1997. More than 2500 scientific presentations were made. Of these, 11 were devoted to peanut research, including one symposium presentation on the genus *Arachis*. Sixteen members of APRES authored or co-authored presentations. The next annual meeting well be held in Baltimore, Maryland from October 18 to 22, 1998.

Respectfully submitted,

H. Thomas Stalker

CAST REPORT

The CAST Board met in Chicago, November 1-2, 1997 and in Washington, D.C. on March 21-23, 1998. New officers were installed during the March 1998 meeting. David Lineback, Dean of the College of Agriculture at the University of Idaho is the new president. Sue Sullivan, Garst Seed, Hawaii, is past-President, and David Knauft, Associate Dean of Academic Affairs at the University of Georgia is president-elect. As president-elect, David serves on the Executive Committee and is no longer the APRES representative. A new representative will be chosen at the July 1998 APRES meeting.

CAST activities have been reported subsequent to each of these two meetings in Peanut Research.

CAST has undergone some personnel changes, including the hiring of a new development officer and a new administrative assistant.

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

The proceedings of the November 1997 food conference, Food Safety, Sufficiency, and Security are available in print or online.

Richard E. Stuckey testified before the "Second National Stakeholder Symposium on Priorities for Research, Education and Economics". In his prepared remarks, Dr. Stuckey addressed the topics of biotechnology, precision agriculture and food safety.

CAST will be providing written testimony for a CSREES hearing in Washington on July 9 regarding research priorities for future agriculture and food systems, based on Dr. Stuckey's earlier comments.

Mark Whalon, chair of a CAST project on EPA implementation of the Food Quality Protection Act, testified before the U.S. House Committee on Agriculture Subcommittee on Department Operations, Nutrition and Foreign Agriculture.

In a column in the May/June 1998 issue of Columbia Journalism Review, reporter Dan Wilson of the Appleton, Wisconsin Post-Current cites CAST's 1994 report Foodborne Pathogens: Risks and Consequences. Task Force co-chair Tanya Roberts, who was quoted in the column, wrote a letter to Marshall Loeb, editor.

A summary of the November 1997 American Bar Association Special Committee on Agricultural Management roundtable on Environmental Issues in Animal Feedlots is available online. The Special Committee on Agricultural Management and CAST are cooperating on a second roundtable in November 1998 to discuss developments on the issue.

CAST cooperated in Resistant Insects and Superweeds: Mechanisms for International Environmental Protection for Agricultural Biotechnology June 24, 1998. This the second biotechnology roundtable sponsored by the Special Committee on Agricultural Management of the American Bar Association.

Other news:

New reports are being prepared on Naturally Occurring Antimicrobials in Food, the Impact of EPA Implementation of the Food Quality Protection Act and the Benefits of Biodiversity.

The Conversations on Change program continues to evolve. A workshop was held in February at Tuskegee University. Information about CAST is available on their web site at www.cast-science.org and the Scientific Societies: Conversations on Change now has its own web site at www.societies.org.

CAST presented the 1998 Charles A. Black Award to Dr. Per Pinstripe-Anderson, director-general of the International Food Policy Research Institute (IFPRI), Washington, D.C., Stakeholder Symposium on Priorities.

Meyers and Associates, Washington, D.C., now serve as CAST's Washington representative. This organization has strong ties to the peanut community and also serve as representatives for the North Carolina Peanut Growers Association.

Respectfully submitted,

David Knauft

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:	$ 25.00
b.	Institutional memberships:	25.00
c.	Organizational memberships:	35.00
d.	Sustaining memberships:	125.00
e.	Student memberships:	5.00

(Dues were set at 1992 Annual Meeting)

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

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

ARTICLE V. MEETINGS

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

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

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

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

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

ARTICLE VI. QUORUM

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

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

ARTICLE VII. OFFICERS

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

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

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

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

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

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

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

ARTICLE VIII. BOARD OF DIRECTORS

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

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

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

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

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

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

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

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

ARTICLE IX. COMMITTEES

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

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

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

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

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

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

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

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

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

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

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

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

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

ARTICLE X. DIVISIONS

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

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

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

ARTICLE XI. AMENDMENTS

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

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

Amended at the Annual Meeting of the
American Peanut Research and Education Society
July 14, 1995, Charlotte, North Carolina

APRES MEMBERSHIP
1975-1998

	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

1998-99
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