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2003	D.C. Yoder	1993	P.D. Brune
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2003	John W. Wilcut	1995	Frederick M. Shokes
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2001	Harold E. Pattee and		Todd and James Demski
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2000	Timothy B. Brenneman	1992	Rodrigo Rodriguez-Kabana

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1996	P.D. Blankenship
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1994	W. Lord
1993	D.H. Carley and S.M. Fletcher
1992	J.C. Wynne
1991	D.J. Banks and J.S. Kirby
1990	G. Sullivan
1989	R.W. Mozingo
1988	R.J. Henning
1987	L.M. Redlinger
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2005	Now presented by: Peanut Foundation and renamed – Peanut Research and Education Award
1997	Changed to American Peanut Council Research and Education Award
1989	Changed to National Peanut Council Research and Education Award

ANNUAL MEETING PRESENTATIONS

Technical Sessions **Wednesday, July 16**

JOE SUGG GRADUATE STUDENT COMPETITION

Moderator: Robert C. Kemerait, Jr., University of Georgia, Tifton, GA
Meeting Room 16

POSTER SESSION I

Meeting Rooms 19 & 20

POSTER WILL BE DISPLAYED FROM 10:00 am – 3:30 pm ON WEDNESDAY

AUTHORS WILL BE PRESENT WITH PAPERS FROM 10:30 am UNTIL 12:00 noon ON WEDNESDAY, JULY 16

Afternoon

BREEDING, BIOTECHNOLOGY AND GENETICS I

Moderator: Kelly D. Chenault, USDA-ARS, Stillwater, OK
Meeting Room 16

3:00 BREAK

PRODUCTION TECHNOLOGY

Moderator: Chad Godsey, Oklahoma State University, Stillwater, OK
Meeting Room 18

3:00 BREAK

PROCESSING AND UTILIZATION
HARVESTING, CURING, SHELLING, STORING, AND HANDLING

Moderator: Chris Butts, USDA,ARS, National Peanut Research Laboratory, Dawson, GA
Meeting Room 17

3:00 BREAK

BREEDING, BIOTECHNOLOGY, AND GENETICS II

Moderator: Mark Burow, Texas AgriLife Research and Texas Tech University, Lubbock, TX
Meeting Room 17

WEED SCIENCE

Moderator: Peter Dotray, Texas AgriLife Research and Extension, Lubbock, TX
Meeting Room 18

PLANT PATHOLOGY, NEMATOLOGY, AND MYCOTOXINS

Moderator: John Damicone, Oklahoma State University, Stillwater, OK
Meeting Room 16

10:15 BREAK

EXCELLENCE IN EXTENSION EDUCATION
SPONSORED BY BAYER CROPSCIENCE

Moderator: Herb Young, Bayer CropScience
Meeting Room 17

POSTER SESSION II

Meeting Rooms 19 & 20

POSTER WILL BE DISPLAYED FROM 9:00 am – 3:30 pm ON THURSDAY

AUTHORS WILL BE PRESENT WITH PAPERS FROM 10:30 am UNTIL 12:00 noon ON THURSDAY, JULY 17

SYMPOSIUM

ADVANCES IN GENETICS AND BIOTECHNOLOGY

Moderator: Rich Wilson, Oilseeds & Bioscience Consulting, Raleigh, NC
Meeting Room 16

Freedom to Operate with Transgenic Traits Governing Sclerotinia Resistance and Folic Acid Levels in Peanut. ..... BETH GRABAU

Engineering Drought Tolerance in Crop Plants. ..... EDUARDO BLUMWALD

Developing Genetic and Genomic Resources in Cultivated and Wild Peanut Species: A Focus on Gene-Based SNP and Disease Resistance Genes. ..... DOUGLAS COOK

Transgenic Modification of Oilseed Composition. ..... MONICA SCHMIDT

Industry Perspectives on Biotechnology, Panel members: ..... JIM ELDER, PAT DONAHUE, VICTOR NWOSU

Discussion

Adjourn

JOE SUGG GRADUATE STUDENT COMPETITION

Improving Spray Deposition and Control of Peanut Diseases with Night Fungicide Applications. J. AUGUSTO* (1), T.B. BRENNEMAN (1), P. SUMNER (2), A.K. CULBREATH (1), A.S. CSINOS (1). (1) Department of Plant Pathology and (2) Department of Biological and Agricultural Engineering, The University of Georgia, Tifton, GA 31793.

Effective control of early leaf spot (*Cercospora arachidicola*) and southern stem rot (*Sclerotium rolfsii*) of peanut (*Arachis hypogaea* L.) relies mostly on fungicide penetration and deposition to the bottom of the peanut canopy where the infection initially occurs. Tebuconazole (0.53 kg/ha a.i., 4 applications) and azoxystrobin (1.34 kg/ha a.i., 2 applications) were sprayed on peanut during the day or at night when the leaves were folded to compare disease control and yield. Two experiments were conducted in 2007 with the cultivar Georgia Green in 2-row plots with six replications. Night and day sprays of both fungicides provided similar control of early leaf spot, but night sprays reduced southern stem rot incidence by 61% compared to day sprays. Although day sprays of both fungicides decreased southern stem rot compared to the control, neither one significantly increased pod yields. Night sprays of azoxystrobin and tebuconazole increased yield by 1752 kg/ha and 944 kg/ha, respectively, compared to the same treatments applied during the day. Two spray deposition experiments in 2007 with spray cards showed more than two-fold increase in deposition material at the bottom of the peanut canopy with night sprays compared to day applications. These results suggest that night sprays can improve spray deposition and increase fungicide efficacy on southern stem rot and peanut yield.

Evaluation of Biological and Other Novel Seed Treatments for Use in Organic Peanut Production. S.J. RUARK* and B.B. SHEW, Department of Plant Pathology, North Carolina State University, Raleigh, NC 27695.

Poor stands are a constraint on organic peanut production because stand losses of 50% or more are possible with untreated seed. Biological and other novel seed treatments, and soil amendments were tested for efficacy against pre- and post-emergence damping-off in greenhouse, microplot, and field plot trials. Seed of the lines Perry, GP-NC 343, and N03081T were planted in natural soil in all trials. A total of 22 treatments were tested in three greenhouse trials. Treatments included formulations of *Bacillus subtilis* (Kodiak, Serenade ASO, and Serenade MAX), *B. pumilus* (Yield Shield), *B. subtilis* and *B. amyloliquefaciens* (BioYield), *Trichoderma harzianum* (T-22 HC and T-22 PB), *Muscodor albus*, *Coniothyrium minitans* (Contans), copper hydrate (Champion), activated charcoal, two different isolates of binucleate *Rhizoctonia* spp., two commercial mycorrhizal innoculants (Plant Success Soluble and Bio-

Organics Micronized), three separate soil amendments of dried *Monarda* spp., various combinations of treatments, a commercial fungicide check (Vitavax PC), and an untreated control. In two tests, no treatment increased emergence or reduced damping-off compared to the untreated control. In the third test, Kodiak and Champion performed as well as a standard seed treatment fungicide on all seed lines and resulted in significantly higher seedling survival than the untreated check. Field microplot studies in Clayton, NC evaluated seed treated with Kodiak, T-22 PB, activated charcoal, a standard chemical fungicide, or untreated seed on the three peanut lines following wheat, oat, or triticale cover crops, soil amendment with *M. albus*, or a no cover control. In 2007, the incidence of damping-off depended on peanut line by treatment interactions. N03081T had high germination regardless of treatment. Emergence of GP-NC 343 and Perry was lowest with T-22 PB but no treatment was better than the untreated control. Cover crops did not affect emergence, but *M. albus* treatment suppressed emergence. In field studies at Lewiston, NC, the three peanut lines were treated with *M. albus*, Kodiak, T-22 PB, or were untreated. In the 2007 trial, stand varied among lines, but none of the treatments improved stands compared to the untreated check. The predominant pathogen was *Aspergillus niger*. Two additional greenhouse tests were conducted with natural soil or soil infested with field isolates of *A. niger*. Seed were treated with Kodiak, Champion, T-22 HC, Kodiak and T-22 HC combined, *Streptomyces griseoviridis* (Mycostop), hot water, a commercial fungicide check, or were left untreated. In the first trial, seedling emergence and survival was much lower in infested versus uninfested soil. In both infested and uninfested soils Kodiak, Kodiak with T-22, and Champion reduced damping-off compared to untreated seed, but none of the treatments were as effective as the chemical fungicide.

DNA Markers for Resistance to Post-harvest Aflatoxin Accumulation in Peanut (*Arachis hypogaea* L.). C.E. ROWE, S.R. MILLA-LEWIS, and T.G. ISLEIB. Dept. of Crop Science, Box 7629, N.C. State Univ., Raleigh, NC 27695.

Aflatoxins are toxic and carcinogenic secondary metabolites produced by *Aspergillus flavus* Link ex. Fries and *A. parasiticus* Speare, soil-borne fungi that colonize agricultural commodities. Pre- and post-harvest contamination of peanut by aflatoxin is a major problem worldwide, causing profit loss for the peanut industry and raising serious human and animal health concerns. Peanut genotypes with resistance to colonization by *Aspergillus* species or to aflatoxin accumulation should be part of an integrated aflatoxin management program. Aflatoxin content is expensive to measure and exhibits high environmental variation, thus, the use of molecular markers tightly linked to aflatoxin resistance genes would improve selection efficiency. Tetraploid (2n=4x=40) lines derived from an interspecific hybrid between the diploid

(2n=2x=20) wild peanut species *A. cardenasii*, a species on whose seeds *Aspergillus* species do not grow well and will not produce high levels of aflatoxin, and the *Aspergillus*-susceptible tetraploid (2n=4x=40) *A. hypogaea* that showed variation in their ability to support aflatoxin production were previously screened for AFLP polymorphisms. At the 5% significance level, 34, 39, and 34 markers were found to be significantly associated with reduced aflatoxin B1, aflatoxin B2, and total aflatoxin, respectively. The goal of this study was to evaluate these markers in two segregating F_2 populations derived from NC GP WS 2, the *cardenasii*-derived line exhibiting the lowest levels of aflatoxin production. The aflatoxin assay used to phenotype the F_2 plants was a destructive one, therefore, embryos were removed from the cotyledons and regenerated via tissue culture in order to maintain the lines for generation advancement. The populations were genotyped using 39 AFLP markers associated with reduced aflatoxin accumulation in NC GP WS 2. Genotypic and phenotypic data produced in these tests was analyzed in order to identify markers linked to reduced aflatoxin accumulation. Linked markers can be used in the future to improve the efficiency of selection when transferring the low aflatoxin production of the interspecific lines into elite peanut breeding materials.

Fall-raised Beds for Improved Digging Efficiency of Strip-till Peanut. J.L. JACKSON*, J.P. BEASLEY JR., R.S. TUBBS, R.D. LEE, and T.L. GREY, Department of Crop and Soil Science, The University of Georgia, Tifton, GA 31793-0748.

Most peanut production occurs under conventional tillage practices involving deep tillage and turning of the soil. With production costs rising on all fronts, many growers are looking towards reduced tillage as a method to reduce expenses. Strip-till is the form of reduced tillage most popular in peanut, but on some Georgia soils, especially those with finer texture and higher clay content, growers experience yield suppression due to increased difficulty harvesting the crop. The objective of this study was to determine if utilizing fall-raised beds could improve digging efficiency and yield of peanut in strip-till production. Trials were established in 2007 at the University of Georgia's Coastal Plain Experiment Station at Tifton on a Tifton loamy sand (Fine-loamy, kaolinitic, thermic Plinthic Kandiudults) and Southwest Georgia Research and Education Center near Plains on a Greenville sandy loam (Fine, kaolinitic, thermic Rhodic Kandiudults). Three methods of preparing beds (flat, raised, and rip and bed) were evaluated, each with and without a wheat cover. The experimental design was a factorial with six replications at Plains and eight replications at Tifton. At Plains, plots were arranged in a 3 x 2 x 2 factorial consisting of the three bed types, with and without a wheat cover, and single and twin row spacing. At Tifton, plots were arranged on a 3 x 2 factorial with the row spacing factor omitted. The cultivar, Georgia-02C, was planted May 14 at Tifton

and May 15 at Plains. Data collected included: wheat stand counts, wheat biomass, peanut stand counts, peanut width and height, soil moisture, soil temperature, tomato spotted wilt and soil-borne disease ratings, digging losses, yield, and grade. No differences were detected in wheat stand counts, wheat biomass, tomato spotted wilt severity, soil-borne disease incidence, or grade at either location. There were significant main effects of bed type, $p < 0.05$, at both locations on peanut stand counts and peanut widths and heights. At Plains, there was a significant main effect of bed type, $p < 0.01$, on digging losses. Flat beds, raised beds, and rip and beds exhibited losses of 1755, 1155, and 603 kg ha-1 respectively. Yield was significantly higher, $p < 0.05$, for rip and bed with 5246 kg ha-1 compared to 4755 and 4637 kg ha-1 for raised bed and flat bed respectively. At Tifton, no differences were detected in digging losses or yield as a result of bed type. Initial results suggest that fall-bedding can be beneficial on soils of finer texture with higher clay content, like those at Plains, compared to those of coarser texture and lower clay content like at Tifton.

Determination of Seed Size in Relationship to the Distance from the Main Axis in *Arachis* L. J.E. WILLIAMS*, C.E. SIMPSON, and D.H. KATTES. Texas AgriLife Research and Tarleton State University, Stephenville, TX 76401.

It has been proposed that in *Arachis*, the greater the distance from the main axis (N) that a pod is set, the larger the seed will be. Seed size and relative seed size is important to a peanut breeder in making selections for cultivar development, so if distance from the N axis affects seed size, the breeder's choices could be adversely affected. This study was designed to determine if the hypothesis was true: distance from the main axis affects size of the peanut seed. Observations were performed on the cultivars NC 7, NemaTAM, New Mexico Valencia A, Tamspan 90, Tamrun OL02 and *Arachis* species; *A*. *batizocoi*, *A*. *duranensis*, *A*. *ipaënsis*, *A*. *pusilla* and *A*. *stenosperma*. Field studies were conducted in 2006 and 2007at the Texas AgriLife Research and Extension Center in Stephenville. The study examined peanuts within five regions of plant growth to determine if any region set larger pods. Seeds were germinated and planted into a complete randomized block of four replications. Upon maturity, plants were harvested manually using rings made of 1/8th inch sheet metal cut and rolled into a ring with a radius of 15, 30, 45, 60, and >60 centimeters. Pods were harvested separately from each region for one plant from each replication. Samples were dried to 10 percent moisture and pods and seed were measured using digital calipers. Measurements were taken on pod length, pod width(s), seed length(s) and seed width(s) of apical and basal segments of 50 pods and their seed, per region. Measurements taken on the selected cultivated varieties were within expected ranges for pod and seed size for those cultivars. Our statistical analyses are not complete but means

evaluated at this point indicate that there are limited numerical differences within and among the cultivated varieties to support the original hypothesis that pod and seed size increases as the distance from the main axis (N) increases. However, there are numerical differences within and among the wild species that could result in statistical differences between the first three regions of plant growth, supporting the hypothesis.

Developing Breeding Populations of Peanuts (Arachis hypogaea L.) Through Introduction of Leaf Spot Resistance Genes from Interspecific Hybrids into Adapted Cultivars. N.N. DENWAR* Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409; J. AYERS, Texas AgriLife Research and Extension Center, Lubbock, TX 79403; C. SIMPSON, Texas AgriLife Research and Extension Center, Stephenville, TX 76401; P. SANKARA University of Ouagadougou, Ouagadougou, Burkina Faso AND M.D. BUROW, Texas AgriLife Research and Extension Center, Lubbock, TX 79403.

Early (caused by Cercospora arachidicola S. Hori) and late leaf spot [caused by Cercosporidium personatum (Berk. and Curtis) Deighton] diseases are two of the most limiting biotic factors known in peanut production worldwide, causing yield losses of over 50%. Since the development of a synthetic amphidiploid, TxAG-6, novel opportunities for peanut improvement have opened, making it possible to utilize resistance genes from wild relatives of A. hypogaea hitherto untapped due to ploidy and genomic barriers. In this experiment three BC_3F_6 backcross derivatives of TxAG-6 were used in a crossing experiment to introgress resistance genes into adapted cultivars. Seeds from 3 selected F_3 populations were tested in the field in Yoakum, TX during the summer of 2007 for their levels of tolerance/resistance to the leaf spot diseases using the Florida scale. Our results show that 33.3, 73.3 and 85.0% of the hybrids in populations one, two and three, respectively had early leaf spot scores significantly lower than the susceptible recipient parents. Cross 45-04-02-01 x 55-437 resulted in more resistant hybrids than 43-09-03-02 x TamrunOL02 and 63-04-02-02 x TamrunOL02. We conclude that as demonstrated in root-knot nematode resistance, levels of resistance to ELS in commercial peanuts can be improved through the introgression of resistance genes from wild relatives using TxAG-6 as a bridge. No significant variation among the progeny for late leaf spot was found.

Determining Optimal Conditions for Maximum Peanut Profitability Under Reduced Irrigation in West Texas. J.L. AYERS*, and M.D. BUROW, Texas AgriLife Research, Lubbock, TX 79403, and Texas Tech University, Department of Plant and Soil Science, Lubbock, TX 79409.

Eight commercial varieties representing all four market types of peanut

have been tested under three irrigation levels and three seeding rates in 2006 and 2007 at two locations in West Texas. Irrigation levels consisted of 75, 50 and 25% reference evapotranspiration replacement. Seeding rates were 100, 50 and 25% of the normal seeding rates based on market type. In 2006, average yield for runner and Virginia market types across varieties and seeding rates at the Brownfield, TX location was reduced by 38% and 57% for the 50% and 25% ET treatments respectively, relative to the 75% ET treatment. In 2006, at the Lubbock, TX location, the average yield for runner and Virginia market types across varieties and seeding rates was reduced by 4% and 49% for the 50% and 25% ET treatments respectively, relative to the 75% ET treatment. There was no difference between seeding rates at the Lubbock location in 2006, and there was only a significant difference between the 100 and 25% seeding rates at the Brownfield location. Varietal differences were only seen at the Brownfield location for runner and Virginia varieties in 2006. No significant differences were seen for the interaction of irrigation level and seeding rate at either location in 2006. The interaction of irrigation level, seeding rate and genotype was significant at the Lubbock location only in 2006.

Evaluating Oil Content of Bolivian Landraces. J.N. WILSON*, M.D. BUROW, AgriLife Research, Lubbock, TX 79403; C.E. SIMPSON, AgriLife Research, Stephenville, TX 76401; M.R. BARING, AgriLife Research, College Station, TX 77843.

Peanut cultivars and wild species collected in the six peanut centers of diversity in South America have been exploited as sources of genetic variability. Germplasm from these areas may contain unique alleles for oil that could increase oil content in adapted cultivars though transgressive segregation. The total oil content of over 100 landraces from the Bolivian center of diversity grown in Lubbock TX in 2005 has been examined using nuclear magnetic resonance spectroscopy (NMR) analysis. Percent oil content for all seeds tested ranged from 42.5 to 51.1%, with a mean of 47%. Seeds of seven landraces had oil content above 50%. Landraces with high oil content will be combined with adapted cultivars to determine if these selections contribute unique genes for yield, seed traits, or oil content.

Economic Feasibility Analysis of Transitioning to Organically Grown Peanuts. D.A. KEISER*, N.B. SMITH, Department of Agriculture and Applied Economics, The University of Georgia, Athens, GA 30602-7509 and Tifton, GA 31793; W.C. JOHNSON, Crop Protection and Management Research, United States Department of Agriculture, Tifton, GA 31793-0748; and R.S. TUBBS, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA 31793-0748.

The demand for organically grown foods has seen double-digit growth in

recent years. The market for organically grown peanuts is no exception. Private label and branded peanut butter sales are growing at a strong rate in the United States. While overall growth in organic sales is strong, organic consumption is a very small part of total peanut consumption, thus the potential for more growth is good. Several hurdles still exist in transitioning to an organic peanut production process in the Southeast. In particular, there is little research or information to help peanut growers economically manage the required 3-year transition period from the last application of a non-approved substance to the first organically certified crop. Two different growers are currently transitioning to organic peanut production. An economic analysis based on the first year of data, 2007, is performed to determine the returns on investment. Production costs and yields are collected from grower records and economic returns are analyzed for 2007.

POSTER SESSION I

Reaction of Selected Peanut Cultivars to Insects and Diseases in a Dry-land Production System in Southwest Alabama. H.L. CAMPBELL*, J.R. WEEKS, and A.K. HAGAN, Dept of Entomology and Plant Pathology, Auburn University, AL 36849; M.D. PEGUES, Gulf Coast Research and Extension Center, Fairhope, AL 36532.

In 2006 and 2007 eight commercial runner peanut cultivars were evaluated for reaction to insect pests as well as early and late leaf spot, stem rot (SR), and *Tomato spotted wilt virus* (TSWV) at the Gulf Coast Research and Extension Center in Fairhope, AL. Recommendations of the Alabama Cooperative Extension System for tillage, fertility, weed, and nematode control were followed. A 2-wk calendar fungicide program for the control of leaf spot diseases and SR was followed. A split plot design with cultivars as the main plot and soil insecticides as subplots in six replications was used. Plots consisted of four 30-ft rows spaced 38-in apart. Thrips damage ratings (TDR) were made at 8-10 weeks after planting. Incidence of TSWV was assessed at three different dates during the growing season. Leaf spot was rated using the Florida 1-10 leaf spot scoring system and rust was rated using the ICRISAT 1-9 rust rating scale. Hit counts for SR were taken immediately after plot inversion. Yields are reported at 10% moisture. In 2006 TDR were higher across all cultivars than that observed in 2007. Incidence of TSWV increased throughout the growing season with highest and lowest disease incidence on Georgia Green and AP-3, respectively. In 2007, overall incidence was lower; however the highest incidence was seen on C99-R and the lowest incidence was on GA-03L. Evaluation of at-planting rates of Temik 15G and Thimet 20G insecticides showed very little differences in TDR ratings but ratings for both were significantly better than non-treated plots. Incidence of TSWV followed a similar

pattern. Late leaf spot was the primary leaf spot disease observed. Differences in late leaf spot ratings were observed among cultivars in 2006 and 2007. Lowest leaf spot ratings were recorded for Ga. Green and GA-03L in 2006 and GA03L in 2007. GA02C had the highest ratings in 2006 and C99-R had the highest rating in 2007. Rust ratings also differed among cultivars. Lowest rust ratings were noted for AT 3081R in 2006 and AP-3 in 2007. Highest rust severity was observed on GA-02C in 2006 and AT 3085A in 2007. Incidence of SR remained relatively low on all cultivars in both years. Over two years, lowest SR incidence was noted on GA03L. Among the six peanut cultivars evaluated in both years, AP-3 had the highest average yield. The average yield for C99-R was lowest for both years. At-planting rates of Temik 15G and Thimet 20G had very little effect on disease control or peanut yield.

Evaluation of the Annual Peanut (*Arachis hypogaea* L.) as a Potential Forage Crop for the Southeastern USA. R.O. MYER*, A.R. BLOUNT, D.W. GORBET, and B.L. TILLMAN, University of Florida, NFREC, Marianna, FL 32446.

Livestock producers in the southeastern USA depend primarily on forage for feed. A three year, small plot, non-irrigated study using a randomized complete block design was conducted to evaluate forage production of 16 cultivars, breeding lines, and plant introductions of annual peanut. The plots were planted in May 2002 (year 1), and for the subsequent second and third years, plants emerged from seed that was self-seeded from the previous year's crop. Forage was clipped in early August for year 1 and during late July for years 2 and 3. All entries were selected for resistance to leaf spot, since most current foliar fungicides are not labeled for use in peanut grown as forage. Forage dry matter yield was affected by year ($P<0.01$) and genotype ($P=0.03$). Overall, average dry matter yield was highest for year 1 (5027 kg/ha: SE = 115), and declined for year 2 (3662 kg/ha) and year 3 (3434 kg/ha). There was no genotype by year interaction. The highest yielding annual peanut was with a plant introduction (PI 476156; 4595 kg/ha/yr) and second highest yielding peanut was the commercial variety 'C-99R' (4491 kg/ha/yr). Although a decline in yield occurred after the first season, annual peanut has some potential as a high-quality, short-term, self-seeding forage crop for the southeastern USA.

Variability for Oleic Acid to Linoleic Acid Ratio in Peanut Genotypes. N. SINGKOM, S. JOGLOY, P. JAISIL, A. PATANOTHAI, Department of Plant Science and Agriculture Resources, Faculty of Agriculture, Khon Kaen University, Khon Kaen, 40002, Thailand; P. SWATSITANG, Department of Biochemistry, Faculty of Science, Khon Kaen University, Khon Kaen, 40002, Thailand; N. PUPPALA*, Agricultural Science Center at Clovis, New Mexico State University, NM, USA.

Peanut seed quality is a major problem of peanut product worldwide. Peanuts with high O/L ratio have high seed quality and long shelf-life. The objectives of this study were to estimate O/L ratio contents and yield of 21 peanut genotypes and relationship between O/L ratio and pod yield. The experiment was conducted at the agronomy farm of KKU. Twenty-one peanut genotypes consisting of four germplasm lines, six promising lines in breeding pipeline and 11 released cultivars were evaluated in the rainy season 2006 and the dry season 2006/07. A randomized complete block design with two replications was used. Pod yield was recorded at harvest. Seed sample for each plot was analyzed for oleic and linoleic compositions by gas liquid chromatography (GLC) and then O/L ratio was determined. Significant effects of variety (V), season (S) and S x V interactions were found in the analyses of variances for oleic acid, linoleic acid content and O/L ratio. As S x V interactions were significant, the data were reported for two seasons separately. Out of 21, ten peanut genotypes were selected and the data of these selected lines were reported. The two germplasm lines (Georgia-02C and SunOleic 97R) had consistently high oleic acid, low linoleic acid and high O/L ratios (ranging from 21.0-26.6) across seasons. The released cultivars (Tainan 9, KKU 1, KK 60-3, KKU 72-1, KK 4 and Kalasin 2) and breeding lines ([(NC17090 X B1)-9-1 X KK60-3]F6-8-3 and [(NC17090 X B1)-9-1 X China97-2]F6-14) showed much lower O/L ratios than the germplasm lines with the ratios ranging from 1.0-5.3. It is interesting to note that all released cultivars and breeding lines in Thailand had very low O/L ratios compared to the elite germplasm lines. Correlations between O/L ratio and pod yield and between O/L ratio and seed size were not significant for both seasons, indicating independent segregation of these traits. To draw a firm conclusion and better utilization of the germplasm more extensive evaluations are required.

Haplotype Diversity and Nucleotide Diversity of RGH and COS Sequences in Peanut. G.H. HE[1]*, M. YUAN[2], B. ROSEN[3], R.V. PENMETSA[3], M.L. WANG[4], D. COOK[3]. [1]Department of Agricultural Sciences, Tuskegee University, AL 36088; [2] Shandong Peanut Research Institute, Qingdao 266100, China; [3]Department of Plant Pathology, University of California, Davis, CA 95616; and [4]USDA-ARS, Plant Genetic Resources Conservation Unit, Griffin, GA 30223.

Single-nucleotide polymorphisms (SNPs) are the most abundant type of DNA sequence polymorphism. In the current study, we investigated SNP and haplotype diversity in ninety-six peanut genotypes including both cultivated and wild species. In particular, we focused on resistance gene homolog (RGH) and conserved orthologous sequences (COS). Awide range of nucleotide diversity values was observed, with RGH alleles more diverse on average than COS alleles. Typical of most domesticated crop species, haplotype diversity in cultivated peanut was reduced

compared to its wild ancestors. This reduced diversity is presumably due to a domestication bottleneck(s), which may modify the distribution of genetic variation among loci. Our results suggest that SNP polymorphisms represent a promising source of genetic and genomic tools for peanut research, with utility for genetic map construction, genetic diversity studies, marker-assisted breeding, and potentially in association studies of agronomic traits.

Effect of Phenolic Compounds on the Allergenic Properties of Peanut Extracts and Peanut Butter Slurries. S.-Y. CHUNG*, Southern Regional Research Center, USDA-ARS, New Orleans, LA 70124.
Phenolic compounds (PCs) are phytochemicals and antioxidants with known health benefits. They are known to bind to proteins as soluble and insoluble complexes. As soluble complexes with major peanut allergens formed in the presence of polyphenol oxidase (PPO), PCs have been shown to be able to reduce the allergenic property of a peanut extract. The objectives of this study were to determine (1) if PCs/ PPO have a similar effect in peanut butter slurries as in peanut extracts, and (2) if PCs would form insoluble allergen complexes and reduce the allergenic properties of both peanut extracts and butter slurries. Three different PCs such as caffeic, chlorogenic and ferulic acids were examined and each added to the peanut extracts and peanut butter slurries at low and high concentrations for formation of soluble (in presence of PPO) and insoluble complexes. After stirring for 60 min, the mixtures were centrifuged and analyzed by SDS-PAGE and enzyme-linked immunosorbent assays (ELISA) for IgE binding. Results showed that proteins that formed insoluble complexes with PCs were mostly major peanut allergens, and a reduction in IgE binding of peanut extracts and peanut butter slurries was observed. The PCs/PPO treatment also led to a similar reduction in IgE-binding despite the formation of soluble allergen complexes or cross-links, which probably were less allergenic. The conclusion was that PCs were effective in reducing the allergenic properties of peanut extracts and peanut butter slurries.

Association between surrogate traits of drought tolerance and aflatoxin contamination in peanut cultivars under terminal drought. T. GIRDTHAI*, S. JOGLOY, N. VORASOOT, C. AKKASAENG, A. PATANOTHAI, Department of Plant Science and Agricultural Resources, Faculty of Agriculture, Khon Kaen University, Khon Kaen, 40002, Thailand; S. WONGKAEW, School of Crop Production Technology, Institute of Agricultural Technology, Suranaree University of Technology, Nakhon Ratchasima, 30000, Thailand; and C.C. HOLBROOK, Crop Genetics and Breeding Research Unit, USDA -ARS, Coastal Plain Experiment Station, Tifton, GA 31793-0748.
Terminal drought induces pre-harvest aflatoxin contamination. Drought

resistance traits are promising as indirect selection tools for improve peanut with aflatoxin resistance. The objectives of this study were to determine the effects of terminal drought on *Aspergillus* invasion and aflatoxin contamination and to investigate the association between surrogate traits of drought tolerance and aflatoxin contamination. Field experiments under rainout shelters were conducted in the dry seasons of 2004/05 and 2005/06. A split-plot design with four replications was used. Two water regimes (field capacity (FC) and 1/3 available soil water at 80 days after emergence to harvest (AW)) were assigned in main plots, and eleven peanut genotypes were assigned in subplots. Data were recorded for relative water content (RWC), chlorophyll density, specific leaf area (SLA), pod yield, drought tolerance index (DTI), *A. flavus* infection, and aflatoxin contamination. Traits related to drought resistance were associated well with those related to aflatoxin contamination under drought conditions, but not under well-watered conditions. The more drought tolerance the less aflatoxin contamination would be as indicated by negative and significant associations between DTI and aflatoxin contamination and between DTI and *A. flavus* infection. The higher leaf thickness the lower aflatoxin contamination would be as shown by high and positive correlations between SLA and aflatoxin contamination. Similarly, although weakly significant, there were negative correlations between chlorophyll density and aflatoxin contamination. The relationships were rather consistent across seasons. Multiple correlation coefficients between drought tolerance traits and aflatoxin contamination were much stronger than correlations for individual traits, and *A. flavus* infection alone accounted for the most portions of the correlation coefficients, indicating synergistic contribution of the traits to aflatoxin contamination. As breeding for resistance to aflatoxin has never been successful, breeding for drought resistance using these traits as selection criteria might help to lower aflatoxin contamination in peanut. Tifton-8 was identified as a genotype with low *A. flavus* infection and aflatoxin contamination.

Evaluating Incidence of Tomato Spotted Wilt Virus in Peanut. R.P. EDWARDS*, Cooperative Extension, University of Georgia, Ocilla, GA 31774-1401; S.L. BROWN, Department of Entomology, University of Georgia, Tifton, GA 31793

Research was conducted to evaluate the incidence of tomato spotted wilt virus (TSWV) in peanut. Peanut farmers have adjusted planting dates, row patterns, seed spacing, and now are looking to change variety selection to reduce incidence of TSWV. An on-farm irrigated variety trial was conducted using a randomized complete block experimental design. Each replication contained six varieties (Georgia Green, Georgia-O3L, Ap-3, Georgia-O1R, Georgia-O2C, and C-99R). The six row plots were planted in a twin row configuration with three seed per foot in each twin row with an average row length of 800 feet. Stand counts were taken

after emergence. Data was collected by visually rating each rep for TSWV during the mid point of the growing season. Yield was determined on each rep, and each variety was graded. There was no statistically significant difference among the varieties in the incidence of TSWV in the trial.

Comparison of Cultural of Practices that May Improve Weed Management in Organic Production Peanut Systems. G. PLACE, D.L. JORDAN*, C. REBERG-HORTON, T.G. ISLEIB, and M.G. BURTON. North Carolina State University, Raleigh, NC 27695.

Research was conducted in North Carolina in 2007 to compare weed control in programs consisting of three levels of herbicide (clethodim applied postemergence, cultivation and hand removal of weeds, clethodim and appropriate broadleaf herbicides applied postemergence), two levels of cultivar selection (NC 12C and VA 98R), and three levels of row pattern (single rows spaced 36 inches apart, standard twin rows spaced 8 inches apart on 36-inch centers, narrow twin row pattern including twin rows spaced 8 inches apart on 18-inch centers. Cultivar had no effect on weed control at harvest and pod yield. Row pattern and weed management program did interact for eclipta (*Eclipta prostrata*) control but not for prostrate spurge (*Euphorbia humistrata*) control. While weed management program did affect spurge control, row pattern did not. Control of both weeds was better when clethodim was followed by broadleaf herbicides. Weed control was intermediate when cultivation only was included when compared with clethodim alone or clethodim followed by broadleaf herbicides. Eclipta control was higher in single rows than standard or narrow twin row planting patterns due to more effective cultivation in the narrower planting patterns. Main effects of cultivar, row pattern, and herbicide program and interaction of these treatment factors did not affect pod yield. Weed program costs (herbicides, cultivation and hand weeding) were also compared. In a separate experiment, yield of the cultivars Phillips, VA 98R, NC 10C, NC-V 11, and NC 12C and the breeding lines N99027L, N02020J, and N01013T was compared when clethodim alone was applied or when diclosulam preemergence following by clethodim postemergence. Weed biomass and peanut biomass for these genotypes was determined in plots with no herbicide at 10 weeks after planting. Significant differences in weed biomass did exist between some genotypes, suggesting genetic differences in weed suppress ability. Cultivars with weed suppress ability could be one part of an organic weed management system. Ratios of weed-free yield to weedy yield were also compared to detect cultivars with weed tolerance ability. Weed free/weedy yield ratios were 1.2 to 1.28 for NC-V 11, Phillips, VA 98R, N99027L, and N01013T; 1.5 for N02020J and NC 12C; and 1.33 for NC 10C when the predominant weeds included annual morningglory (*Ipomoaea* spp.), common lambsquarters (*Chenopodium album*), and jimsonweed (*Datura*

stramonium).

Response of Peanut Genotypes with Partial Leafspot Resistance to Fungicide Programs. D.W. GORBET*, B.L. TILLMAN, M.W. GOMILLION, J.L. MCKINNEY, University of Florida, NFREC Marianna, FL 32446, and A.K. CULBREATH, Dept. Plant Pathology, University of Georgia, Tifton, GA 31793.
Leafspot diseases (LS) caused by *Cercospora arachidicola* and *Cercosporidium personatum* are major production problems on peanut (*Arachis hypogaea* L,) in the U.S. and worldwide. In the USA fungicides are widely used to control these diseases and are a significant production cost. Breeding for resistance to leafspot has been a major objective of the UF breeding program for over 35 years. Southern Runner (1986) was the first LS resistant cultivar released from this effort and is a parent of Georgia Green. Field studies were conducted in 2004-06 at Marianna and Gainesville, FL on selected breeding lines and cultivars with previously noted levels of resistance to LS to evaluate their disease and agronomic response to three fungicide programs. Entries included DP-1, C-99R, York, and Florida-07 along with selected breeding lines. Fungicides used were chlorothalonil, azoxystrobin, tebuconazole and pyraclostrobin on a program of: 1) no sprays; 2) 4 sprays, 21 days apart; and 3) 8 sprays, 14 days apart. Leafspot and tomato spotted wilt virus (TSWV) disease ratings were on the Florida 1-10 scale (1 = no disease). The combined ANOVA (2004-2006) indicated a highly significant response for pod yields, total sound mature kernels (TSMK), 100-seed weights, extra large kernels (ELK), tomato spotted wilt virus and LS ratings for genotypes and years. Fungicide programs were significant for all variables but TSWV and seed weights. Highly significant negative correlations were obtained between pod yields and LS ratings (r = -0.28) and TSWV ratings (r = -0.43). Pod yields were not significantly different between 4 and 8 sprays for many genotypes. Some entries had unsprayed pod yields that approached 4000 kg ha-1. Reduced fungicide programs could be used commercially for some of this material.

BREEDING, BIOTECHNOLOGY AND GENETICS I

Multiple Disease Resistance in Interspecific Hybrid Derived Peanut Breeding Lines. S.P. TALLURY*[1], T.G. ISLEIB[1], J.E. HOLLOWELL[2], W. DONG[3], S.R. MILLA-LEWIS[1], C.C. HOLBROOK[3] and B.B. SHEW[2]. [1]Dept. of Crop Science and [2]Dept. of Plant Pathology, N.C. State Univ., Raleigh, NC 27695. [3] Crop Genetics and Breeding Research, USDA-ARS, Tifton, GA 31793.
Disease control is necessary to obtain high yielding, good quality peanuts. In North Carolina, early leaf spot (ELS) and Tomato Spotted

Wilt Virus (TSWV) have been the most persistent disease problems that confront peanut growers annually although CBR, Sclerotinia blight and root-knot nematode (RKN, *Meloidogyne arenaria*) have also been damaging in favorable environments. Diploid wild species ($2n = 2x = 20$) have been documented as sources of disease resistance genes and several interspecific hybrid-derived breeding lines are available at NC State University. The objective of this research was to evaluate these breeding lines for the above diseases to identify lines with resistance to more than one disease. First, thirty-six interspecific hybrid-derived breeding lines along with 11 susceptible check cultivars were evaluated for leaf spot resistance in field tests at the Peanut Belt Research Station in Lewiston, NC from 2004 to 2006 without leaf spot fungicides using a proportional rating scale (1 = no defoliation to 9 = complete defoliation). Later, a selected set of the most resistant leaf spot lines were screened for resistance to TSWV, CBR, Sclerotinia blight and RKN in greenhouse tests. In the leaf spot test, the mean defoliation score of susceptible check cultivars was 6.9±0.1, compared to 5.3±0.1 for the interspecific hybrid derived breeding lines. Lines, SPT 06-06 and SPT 06-07, were highly resistant with mean defoliation scores of 3.0. Four weeks after mechanical inoculation with TSWV in the greenhouse, each of six breeding lines had 60% healthy plants (no TSWV symptoms) whereas the susceptible check, NC 9, had only 20% healthy plants. Again, the breeding line, SPT 06-07 was highly resistant with 80% healthy plants. Similarly, the greenhouse tests for *Sclerotinia minor* identified the same breeding line, SPT-06-07, with a high level of resistance. For CBR, four other lines with moderate levels of resistance were observed. RKN evaluations indicated intermediate levels of resistance in several breeding lines but none were as resistant as NemaTAM or Tifguard, the resistant checks. Although no single line had resistance to all of the above diseases, it is encouraging that some of the breeding lines, particularly, SPT 06-07, exhibited resistance to 3 of the 5 diseases. These results suggest that some of these breeding lines maybe useful as parents in peanut breeding programs or for direct use as cultivars.

Identification of QTL Markers for Pod and Kernel Traits in Cultivated Peanut by Bulk Segregant Analysis. S.M. SELVARAJ *, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409; N. MANIVANNAN, A.M. SCHUBERT, J.L. AYERS and M.D. BUROW, Texas AgriLife Research & Extension Center, 1102 East FM 1294, Lubbock TX 79403.

Bulked Segregant Analysis was used to identify Simple Sequence Repeat (SSR) markers associated with pod and kernel traits in cultivated peanut, as this would permit rapid selection of high yielding and superior quality genotypes in the breeding program. SSR markers linked to pod and kernel traits were identified in two DNA pools (High and Low), which were established using selected $F_{2:6}$ recombinant individuals resulting from a cultivated cross between TamrunOL01 and BSS56. To identify

the QTL for the pod and kernel related traits, parents were screened with 112 SSR primer pairs. The parental survey revealed 8.9% polymorphism between parents. Five SSR primers were polymorphic between the bulks and also co-segregated among the individual genotypes constituting the respective bulks. The association of putative markers identified based on DNA pools from selected recombinants was further confirmed by single marker analysis using 88 $F_{2:6}$ individuals in the RIL population for which bulk means were: seed length,13.00 - 18.11mm; pod length, 24.8-35.22 mm; 100 seed weight, 48.58-85.58 gram; number of pods,14.5-101.3; maturity, 18.03-94.99% and oil content, 41.5-50.63 %. SSR markers were associated with seed length, pod length, 100 seed weight, and number of pods, maturity and oil content in cultivated peanut. To the best of our knowledge this is the first report on the identification SSR markers linked to pod and kernel related traits in cultivated peanut.

Field Evaluation of Virginia-Type Peanut Germplasm for Resistance to Late Leaf Spot, Stem Rot, and Spotted Wilt Disease. J.W. CHAPIN*, J.S. THOMAS, Department of Entomology, Soils, and Plant Sciences, Clemson University, Edisto REC, 64 Research Road, Blackville, SC 29817; T.G. ISLEIB, Crop Science Department, North Carolina State University, Box 7629, Raleigh, NC 27695; F.M. SHOKES, Virginia Tech University, Tidewater AREC, 6321 Holland Road, Suffolk, VA 23437.

Peanut production in South Carolina has expanded from 11,000 acres in 2002 to a projected 65,000 acres in 2008. Approximately 80% of this acreage is in virginia market type varieties. The disease environment in South Carolina is different from the traditional virginia-type production area of North Carolina and Virginia in that the two most economically important fungal diseases for South Carolina producers are late leaf spot, *Cercosporidium personatum* (Berk. and Curt.) and stem rot, *Sclerotium rolfsii* Sacc. All of the currently available virginia-type varieties are highly susceptible to both of these diseases. The commercially available virginia-type varieties are also moderately to highly susceptible to tomato spotted wilt virus. Field experiments were conducted at Blackville, SC to evaluate the disease resistance of 22 and 30 virginia-type experimental breeding lines in 2006 and 2007, respectively. Comparisons were made to a virginia-type standard (NC-V11) and a disease resistant runner-type standard (Georgia 03L). Lines N03081T, N03088T, and N03090T were identified as having significantly less susceptibility to late leaf spot, stem rot, and spotted wilt than the NC-V11 standard. The level of susceptibility measured in these lines was comparable to that of the resistant runner-type standard. N03091T and N03089T also had significantly lower susceptibility to stem rot and spotted wilt, and narrowly missed the significance criterion for late leaf spot resistance. Several other lines were also identified as having reduced susceptibility to either stem rot or spotted wilt. Equally important, 17 of the advanced experimental lines were determined to

have greater susceptibility to late leaf spot than the current NC-V11 standard. These results will be useful in selecting releases for improved disease resistance under South Carolina production conditions.

Gene Expression Profiling in Peanut using Oligonucleotide Microarrays.
P. PAYTON*, K. KOTTAPALLI, USDA-ARS Cropping Systems Research Laboratory, Lubbock, TX 79415, D. ROWLAND, W. FAIRCLOTH, USDA-ARS National Peanut Research Lab, Dawson, GA 39842- 0509, M. BUROW, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409, N. PUPPALA, New Mexico State University Agricultural Science Center, Clovis, NM 88101, and M. GALLO, Institute of Food and Agricultural Sciences and the Genetics Institute, University of Florida, Gainesville, FL 32611-0300.
We have developed a high-density oligonucleotide microarray for peanut using 47,767 publicly available ESTs and tested the utility of this array for expression profiling in a variety of peanut tissues. To identify putatively tissue-specific genes and investigate the utility of this array, we compared transcript levels in pod to peg, leaf, stem, and root tissues. Results from this experiment showed a number of putatively pod-specific/abundant genes, as well as transcripts whose expression was low or undetected in pod compared to either peg, leaf, or stem. The transcripts significantly over-represented in pod include genes responsible for seed development and desiccation (late-embryogenesis proteins, aquaporins, legumin B), reactive oxygen scavenging, oil production, and dormancy. Additionally, almost half of the pod-abundant genes represent unknown genes allowing for the possibility of associating putative function to these previously uncharacterized genes. The peanut oligonucleotide array represents the majority of publicly available peanut ESTs and can be used as a tool for expression profiling studies in diverse tissues.

SSR Allelic Diversity changes in Virginia-type Peanut Cultivars released from 1943 to 2005.
S.R. MILLA-LEWIS* and T.G. ISLEIB, Department of Crop Science, North Carolina State University, Raleigh, NC 27695-7629.
Like many crop species that are based on a limited number of ancestors, US peanut (*Arachis hypogaea* L.) cultivars are vulnerable to outbreaks of diseases and insects as a result of genetic uniformity. Recent estimates place the average coancestry of two randomly chosen peanut plants at 0.72 in the Southeast, 0.40 in the Southwest, and 0.41 in the Virginia-Carolina production areas. Coancestry is a useful but imperfect method of predicting genetic uniformity because it addresses the probability of identity by descent but not the actuality of identity in state. The objective of this study was to assess allelic diversity changes among 47 Virginia-

type cultivars released from 1943 to 2005 using molecular assessment of allelic state. Twenty two simple sequence repeat (SSR) primers amplified a total of 87 alleles. The mean number of alleles per locus was four, ranging from two to eleven. The informational worth of each marker was evaluated by calculating the polymorphic information content (PIC) for each locus. Frequencies of scored alleles were calculated with respect to primer, breeding period, and breeding program. Changes in the average genetic diversity measured by two different band-sharing methods were analyzed over breeding periods and breeding programs. Results will be discussed in terms of their relevance to the impact of plant breeding in the diversity of peanuts.

Multiple Disease Resistances in a Medium-Maturity Peanut Cultivar. C.C. HOLBROOK[1*], A.K. CULBREATH[2], T.B. BRENNEMAN[2], W.B. DONG[2], P. TIMPER[1], and C.K. KVIEN[2]; [1]USDA-ARS, Tifton, GA 31793; [2]Univ. of Georgia, Tifton, GA 31793.

Several diseases limit peanut (*Arachis hypogaea*) production in the southeastern U.S. Runner-type peanut cultivars with multiple disease resistances have been developed; however, these cultivars have optimal maturity that is 2 to 3 weeks later than standard runner-type cultivars. Most growers prefer medium-maturing cultivars, and the late maturity of these disease resistant cultivars has limited their usefulness. There is a need for multiple disease resistant cultivars with medium maturity. 'Tifguard' was developed and released as a peanut cultivar with resistance to both the peanut root-knot nematode and tomato spotted wilt virus. We have been evaluating this medium-maturity cultivar for the past 2 years for resistance to other diseases. Field and greenhouse studies have indicated a level of resistance to Cylindrocladium black rot (CBR) similar to 'GA-02C'. Field studies have also revealed a significant level of resistance to late leaf spot (*Cercosporidium personatum)*. We anticipate that the medium maturity of this cultivar will provide growers with more flexibility in utilizing this cultivar in their disease control program.

Uniform Peanut Performance Test Data Documents Upward Creep of Seed and Pod Size of Recently Released Runner-Type Peanut Cultivars. T.G. ISLEIB* and S.C. COPELAND, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629.

Virginia-type peanuts generally have larger, heavier seeds than do runner-type peanuts. Shellers must pay the grower a small premium for extra large kernels (ELK) in virginia-type peanuts, *i.e.*, seeds that ride a 21.5/64" x 1" slotted screen while they pay no premium for jumbo runner kernels that ride a 21.5" x 3/4" slotted screen. In consequence, shellers can sell jumbo runner kernels at less than the ELK price, earning profit while saving the processor a small amount. Because of the popularity of jumbo runner kernels in the shelled goods market, breeders of runner-type peanuts have been selecting and releasing cultivars with increasing

average weight of 100 sound mature kernels (SMK). Most new public-sector cultivars are tested in the Uniform Peanut Performance Test (UPPT), a cooperative performance trial conducted at a total of ten locations by breeders and agronomists in eight states (VA, NC, SC, GA, FL, AL, TX, OK). UPPT data from 1985 through 2005 on breeding lines that were later released as cultivars were analyzed, and adjusted means values for ELK/jumbo content, weight of 100 SMK, and content of jumbo and fancy pods were plotted against the first year of testing. Across all locations, weight of 100 SMK increased by over 0.5 g per year ($r=0.49, P<0.01$) while in tests conducted in the Southeastern production region (GA, FL, AL), it increased by nearly 1 g per year ($r=0.69$, $P<0.01$). Increases in mean seed weight were still significant ($P<0.05$) but lower in magnitude in trials in the Virginia-Carolina ($b=0.37$ g/yr, $r=0.38$, $P<0.05$) and Southwestern ($b=0.52$ g/yr, $r=0.46$, $P<0.05$) production regions. Increases in jumbo kernel content averaged 0.91%/yr across all locations and ranged from 0.64%/yr in the VC region to 1.10%/yr in the Southeast. These increases in mean seed weight and jumbo kernel content were accompanied by increases in jumbo and fancy pod content: 0.91%/yr overall ($P<0.01$), 0.58%/yr in the VC region (ns), 0.89%/yr in the Southeast ($P<0.01$), and 1.64%/yrt in the Southwest ($P<0.05$). According to the USDA Agricultural Marketing Service, the demarcation between peanuts of the runner and virginia market types is that virginia market-type peanuts must have at least 40% jumbo and fancy pods. It is clear that several recently released "runner-type" cultivars exceed the 40% limit for the runner market type and are technically virginia-type cultivars.

Preliminary Heritability Estimates for Drought Resistance Related Traits in Cultivated Peanut (*Arachis hypogaea* L.). C.Y. CHEN, D. ROWLAND, W.H. FAIRCLOTH, M.C. LAMB, USDA/ARS National Peanut Research Laboratory, Dawson, GA 39842, and E. HARVEY, Dept. of Agronomy and Soil Sciences, Auburn University, Auburn, AL 36849.

Drought is a major factor in reduced productivity in peanuts. Cultivars that have high water-use efficiency have the potential to enhance the yield of the crop. Studies have shown that pod yield is a function of water transpired (T), water-use efficiency (WUE), and harvest index (HI). It is logistically difficult to measure WUE (the ratio of biomass by water transpired) in a field environment, making selection of high WUE genotypes in a breeding program challenging. However, WUE is often correlated with specific leaf area (SLA) and leaf carbon isotopic composition ($\delta^{13}C$) in peanuts. A good knowledge of the inheritance of SLA, $\delta^{13}C$, and HI may facilitate selection for drought resistant cultivars in peanut breeding programs. The objectives of this study were to estimate the heritability of SLA, $\delta^{13}C$, and HI traits in peanuts and investigate the relationships among these traits. Fifteen genotypes were selected to measure the heritability of these traits using the variance

component method based on an entry-mean basis. These 15 genotypes were planted in a randomized complete block design with three replications in 2007 at Headland, Alabama and Dawson, Georgia with and without irrigation. The leaf samples were taken at the 85th day after planting for measurements of SLA, and $\delta^{13}C$. The HI was calculated on mature plants at 135 days after planting. Analysis of variance (ANOVA) was conducted to evaluate the differences among genotypes, locations, and means of blocks.

Highly significant differences were found for location, genotype, and genotype x location for SLA and HI traits ($p= 0.01$). The results from variance component analysis demonstrated that the heritability for SLA and HI was 0.32 and 0.61, respectively. SLA and HI were negatively correlated and HI had a stronger association than SLA with pod yield. This implies that the selection for HI would result in a greater response to drought resistance and yield than the selection for SLA in breeding programs. The data for $\delta^{13}C$ will also be discussed.

Increase in Seed Size among Runner Market-Type Peanut Cultivars in the Southeastern USA. B.L. TILLMAN*, North Florida Research and Education Center, Agronomy Department, University of Florida, Marianna, FL 32446.

Seed size is important to many segments of the peanut industry including farmers, shellers, and manufacturers. For this reason, seed size is a focus of peanut breeding programs in the USA, and has been shown to be moderately heritable. As reflected by several measures, the seed size of runner market-type peanut cultivars developed in the Southeastern US is increasing. Seed size (as measured by the weight of 100 seeds) of most cultivars released prior to 1999 was similar to Florunner whose 100 seed weight was around 60 grams. However, more than half of cultivars released from 1999 forward had 100 seed weights in Florida tests of over 70 grams. Less than half of them had 100 seed weight between 55 and 65 grams and the 100 seed weight of a minority fell between 65 and 70 grams. It is unclear whether this increase is due to inherent pod yielding ability of larger seeded types, or simply to the choice of parents. Seed size would logically be a component of pod yield and breeders are aware of the importance of pod yield improvement in the commercial success of peanut cultivars. Interestingly, six out of eight cultivars released between 2005 and 2007 have the large seeded cultivar C-99R as a parent which most likely contributes to the increased seed size of new peanut cultivars. If large seeded cultivars are widely grown, they will have several implications within the peanut industry. For farmers, the cost of seed for planting will increase since peanut is usually planted based on a seeding density per unit area basis. For shellers and manufacturers, the ratio of medium seeds to jumbo seeds will change from a predomination of medium seeds to a closer balance between the two. The premium price

historically associated with jumbo seeds may erode if their supply becomes abundant.

Use of Capillary Electrophoresis to Determine Oleic and Linoleic Acid Content of Peanut Seed. K.D. CHENAULT*, USDA-ARS Wheat, Peanut and other Field Crops Research Unit, 1301 N. Western, Stillwater, OK, 74075; Y.C. BANNORE, Department of Chemistry, Oklahoma State University, Stillwater, OK 74078; Z. EL RASSI, Department of Chemistry, Oklahoma State University, Stillwater, OK 74078; and H.A. MELOUK, USDA-ARS Wheat, Peanut and other Field Crops Research Unit, 1301 N. Western, Stillwater, OK, 74075.
A common consumer complaint regarding peanut products is one involving short shelf life and rapid rancidity. Peanut cultivars with elevated oleic acid content (and decreased linoleic content) have been shown to have an increased shelf life and thus have become largely preferred by peanut processors. Consequently, peanut breeders often focus on pyramiding the high oleic trait with other desired traits, such as disease resistance, into newly developed breeding materials. Currently, two methods are in use for determining the oleic/linoleic ratio of peanut seed: Gas chromatography (GC) which is accurate but destructive, and near infrared reflectance (NIR) which requires expensive equipment and is limited to classifying seed as either high-oleic or not high-oleic. This study has shown for the first time the suitability of capillary electrophoresis (CE) with a partially aqueous electrolyte system for the analysis of free fatty acids (FFA´s) in small portions of single peanut seeds. The partially aqueous electrolyte system consisted of 40 mM Tris, 2.5 mM adenosine-5'-monophosphate (AMP) and 7 mM α–cyclodextrin (α–CD) in NMF-dioxane-water (5:3:2, v/v) mixture, pH 8-9. While AMP served as the background UV absorber for indirect UV detection of the FFA´s, the α–CD functioned as the selectivity modulator by affecting the relative effective electrophoretic mobilities of the various FFA´s due to their differential association with α–CD. This CE method allowed the non-destructive screening of peanut seeds for accurate content of oleic and linoleic acids, which is essential in breeding of peanuts of high oleic acid content. The extraction method of FFA´s from peanut seeds is very reproducible with high recovery approaching quantitative yield (~ 97% recovery).

Working with a Useful Bridge Species to Introgress Genes into *Arachis hypogaea* L. C.E. SIMPSON*, Texas AgriLIFE Research, Stephenville, TX 76401; M.D. BUROW, Texas AgriLIFE Research and Texas Tech University, Lubbock, TX 79403; and M.R. BARING, Soil and Crop Science Department and Texas AgriLIFE Research, College Station, TX 77843.
We have continuously made intra- and interspecific crosses in attempts to determine relationships between the various accessions of wild

Arachis which we have collected in South America. Previous work has identified *A. batizocoi* as an important bridge species for introgressing genes from species in section *Arachis* into the cultigen. More recently we have been emphasizing intersectional crosses in attempts to identify species and/or accessions which might allow us to introgress genes from other than the *Arachis* section. Research by Dr. J.F.M. Valls and his students in Brazil, and recently our work in the US, has identified the species, *A. vallsii* (VRGeSv-7635, type specimen), as a potential bridge species. Krapovickas and Gregory (1994) included *Arachis vallsii* in section *Procumbentes*, based on morphology but without cross-compatibility or molecular data. Dr. Valls' and our research cast some doubt on that classification because combined efforts from Brazil and Texas indicate that *A. vallsii* will cross with species of sections *Erectoides, Procumbentes,* and *Arachis*. The most likely scenario will be that *A. vallsii* will comprise a section of its own. Molecular analyses are pending on the parental types and their hybrids, but we hope to be able to clarify the status of this important species and use it as a bridge to introgress genes from both *Erectoides* and *Procumbentes*. These latter two sections contain species which exhibit such traits as resistance to: soil borne diseases, leafspot, lesser cornstalk borer, spider mites, TSWV, as well as drought tolerance, high oil content and determinate plant growth. Additional research will be required to ascertain an effective introgression pathway, but the success of the recent crosses will certainly strengthen our probability of success.

PRODUCTION TECHNOLOGY

Growing Runner Varieties in Different Environments in the Virginia-Carolina Growing Area. F.M. SHOKES*, P.M. PHIPPS, D.A. HERBERT, Tidewater Agric. Res. and Ext. Center, Suffolk, VA 23437; and T.G. ISLEIB, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695.

For many years virginia-market-type peanut varieties have predominated in the peanut-growing areas of Virginia and North Carolina (V-C). At least one large sheller in the V-C area has shown an interest in increased production of runner-type peanuts so that the shelling plants can keep operating after the demand is met for the virginia-types. Therefore, researchers have been looking at runner varieties to determine those that are productive in the V-C area. In 2007 eight runner varieties (Georgia Green, Georgia 02C, Georgia 03L, AP-3, McCloud, Florida 07R, AT-215, and Tamrun OL 07) were tested in four different environments. Varieties were selected based on opinions of the breeders relative to potential for maturing in the V-C area. One test location was in Virginia (Suffolk), and three were in North Carolina (Martin County, Duplin County, and Bladen County). Two of the tests had early and late digging dates; Suffolk (142 & 156 Days after planting

(DAP)), and Martin (132 & 146 DAP). The Duplin and Bladen tests were each dug at 140 DAP. Environments differed in soil types and rainfall distribution. Each location accumulated more than 2700 heat units, and this was not a constraining factor on maturity or yield. The only disease of any note was tomato spotted wilt virus (TSWV), and it became a significant factor only at the Duplin location. Overall yields were best at Suffolk (mean for dig I - 6001 lb/A, dig II - 6318 lb/A). Although the Martin site received more total rainfall than Suffolk (18.0 vs. 14.9 in.), supplemental irrigation was applied at the latter site in two critical dry periods giving a total of 16.7 in. of water. This application evidently made a difference in the overall yield of the crop at Suffolk. The variety AT 215 had the highest yield (6233 lb/A) and %SMK (75%) for the first digging at Suffolk and Tamrun OL 07 was best for the second digging (6795 lb/A, 76% SMK). Tamrun OL 07 was best for both digging dates at Martin (4884 lb/A, 73% SMK and 5299 lb/A, 70% SMK, respectively). Florida 07R was the leading variety at Duplin with 5453 lb/A and 66% SMK. McCloud surpassed the other varieties at Bladen with 5067 lb/A and 70% SMK. Yields of the top varieties ranged from 231 to 1126 lb/A better than the check variety Georgia Green across all tests. The only site exhibiting any maturity problems was the Duplin location. Late maturity at this site as indicated by %SMK values possibly was due to a late spray of Apogee™ that was applied because of excessive vine growth. It appears that several runner varieties have the potential to do well in the V-C area. Tamrun OL 07 appears to be very promising in this area but more years of testing are needed to ascertain how well it holds up across environments in years with high disease pressure.

Tillage, Cultivar, and Row Pattern Effects on Pod Yield and Tomato Spotted Wilt Incidence. R.S. TUBBS*, J.P. BEASLEY, JR., and J.E. PAULK, III, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA 31793-0748.

There are numerous variables that can impact pod yield and tomato spotted wilt virus (TSWV) in peanut (*Arachis hypogaea* L.), but three of the most influential agronomic factors are tillage, cultivar, and row pattern selection. These three effects were evaluated for yield and TSWV in an irrigated factorial study in Tifton, GA from 2005-2007 after a cover crop of wheat (*Triticum aestivum* L.). Newer cultivars replaced older cultivars each year as they became available. Ratings for TSWV did not take place in 2006. Tillage differences were noted in two years (2006: $p = 0.058$; 2007: $p = 0.007$). Strip-till (ST) yields (5352 lb/A) were higher than conventional tillage (CT) (4424 lb/A) for 2006. In 2007, CT (5766 lb/A) yielded more than ST (4944 lb/A), but ST reduced TSWV incidence (ST = 5.6%, CT = 6.6%). The twin row pattern had preferred results over single row for yield (2007 = 5423 lb/A twin, 5286 lb/A single) and % TSWV (2005 = 8.0% twin, 10.8% single; 2007 = 5.5% twin, 6.7% single). Differences between cultivars occurred in all cases. In 2005, 'GA-03L', 'AT 3081R', 'AT 3085RO', and 'GA-01R' had equal yields

(4471 – 4728 lb/A) while 'GA Green' (3807 lb/A) and 'GA-02C' (3987 lb/A) yielded less. The highest TSWV incidence was also GA Green (18.5%) while GA-03L, GA-02C, and AT 3085RO were the most resistant (4.4 – 5.5%). For 2006, 'AP-3' (5749 lb/A) yielded the most, followed by AT 3081R, AT 3085RO, and GA-03L (4846 – 5091 lb/A), with 'Attaboy' (4338 lb/A) and GA Green (4322 lb/A) yielding the least. The largest 2007 yield was 'GA-06G' (6512 lb/A), while GA-02C, GA Green, GA-03L, and AP-3 (4684 – 5096 lb/A) had the lowest yields. The cultivars 'AP-4', AT 3081R, and AT 3085RO (5208 – 5684 lb/A) were not among the highest or lowest yielding cultivars that year. Like 2005, GA Green was the most susceptible to TSWV in 2007 (17.8%), followed by AP-4 (10.5%). The remaining cultivar comparisons for TSWV were equal with the exception of reduced incidence in GA-06G (2.0%) compared to AT 3081R (5.8%). Tillage effects gave mixed results for yield while the twin row pattern provided better results than single rows. Some new cultivars are available with improved yield potential and disease resistance than the most abundant commercially available cultivars.

Reduced Tillage Practices for Oklahoma Peanut Production. C.B. GODSEY*, Dept. of Plant and Soil Sciences, Oklahoma State University, Stillwater, OK 74078; P.G. MULDER, J.P. DAMICONE, C.R. MEDLIN, K. SEUHS, Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078.
Reduced till in the form of stale seedbed planting (no-till) or strip-till has become popular in southwest peanut production due to moisture conservation and reducing environmental impact. A long-term study was initiated in 2004 at the Fort Cobb, OK Research Station. The objectives were to identify changes in disease, insect, and weed complexes over time in continuous peanut production. Treatments evaluated included strip-till, no-till, and conventional till (CT). All treatments were planted to peanut through 2006. In 2007, plots were split and crop rotation was added as a sub-plot. Corn (*Zea mays* L.) and switchgrass (*Panicum virgatum* L.) were introduced as rotational crops. Since 2004, weed populations and number of volunteer peanut plants have increased in no-till plots compared to strip-till and CT. No consistent differences between tillage treatments have been observed in incidence of common diseases. No consistent differences have been observed between treatments in insect complexes or peanut yield. Tillage practice seems to have minimal impact on peanut yield when grown continuously.

Further Investigations Into the Suitability of Peanuts for Biodiesel Production. W.H. FAIRCLOTH*, D.L. ROWLAND, USDA/ARS National Peanut Research Laboratory, Dawson, GA 49842; G.L. HAWKINS, and C. PERRY, Univ. Georgia, Tifton, GA 31793.
Field studies were conducted during 2007 at multiple locations to continue investigations into the suitability and practicality of peanut (*Arachis hypogaea* L.) as a biodiesel feedstock. An evaluation was

conducted at Dawson, GA, to assess 24 peanut cultivars for performance under low input growing conditions. Low input systems used neither fungicides nor insecticides and limited use of herbicides in order to minimize production costs, thereby making an oil feedstock of minimal cost. Cultivars were subjected to each of four irrigation regimes although only dryland and fully irrigated will be discussed. Treatments were replicated three times in small research plots. Dryland peanut yield ranged from 427 to 2004 lb/A while irrigated yield ranged from 606 to 2888 lb/A. The 2007 growing season exposed peanuts to higher than normal temperatures, drought, moderate TSWV pressure, and high pressure from both late leafspot and whitemold. Four cultivars yielded in the top 25% under both irrigation regimes: TifGuard, DP-1, Andru II, and Georgia-03L. Dryland peanut oil yield for these four cultivars was 81 to 94 gal/A, while irrigated yields were 140 to 144 gal/A. Average cost per unit of oil for the four cultivars was $1.98 and $1.59/gal for dryland and irrigated, respectively. Preliminary data from a biodiesel pilot refinery suggests processing B100 (100% biodiesel) from farmer stock peanuts costs approx. $0.92/gal, thus average cost of on-farm biodiesel from these top four cultivars was $2.90 and $2.51/gal for dryland and irrigated, respectively. A study located near Camilla, GA, evaluated eight superior cultivars isolated from 2005 and 2006 biodiesel trials in larger 0.15 A plots. The eight cultivars were subjected also to each of four irrigation regimes and each of two tillage systems: conventional tillage (CT) and strip-tillage (ST). This eight x four x two factorial treatment arrangement was replicated three times. For brevity only the dryland and fully irrigated portions will be discussed herein. ANOVA revealed significant main effects of cultivar ($p<0.0001$) and tillage ($p=0.0038$), but not irrigation ($p=0.1571$). CT increased yield versus ST (3650 and 3450 lb/A, respectively). Peanuts at this location were affected by timely rainfall which mitigated irrigation effects and light to moderate leafspot incidence. A cultivar x irrigation interaction was significant ($p=0.0108$). Yields ranged from 2607 to 4549 lb/A. Oil and cost analyses will be completed in spring of 2008 and presented.

Equipment for Soil and Water Conservation in Peanut Production. [1]R.C. NUTI*, [2]C.C. TRUMAN, [1]R.B. SORENSEN, and [1]M.C. LAMB. [1]USDA-ARS National Peanut Research Laboratory. Dawson, GA 39842. [2]USDA-ARS Southeast Watershed Research Laboratory. Tifton, GA 31793.

Agricultural production in the southeast is traditionally rainfed. Irrigation, when available, is meant to be supplemental to stabilize production during periodic drought. Rainfall during the production season is generally high intensity and is characterized with high rates of runoff and poor infiltration. Improving the efficiency of rainfall capture during the production season will reduce the need for supplemental irrigation preserving fresh water resources and the energy used to apply irrigation.

Furrow diking is a cost effective management practice that creates a series of basins and dams in the furrow between crop rows to catch and retain surface applied water (rainfall or irrigation). The objective of this research was to compare water capture and soil erosion characteristics of various furrow diking equipment and soil surface conditions by measuring infiltration, runoff, and soil loss. In 2005-2007, field studies were established near Dawson, GA with furrow diked and non-diked conventional tilled systems. Simulated rainfall was utilizing on furrow diked and non-diked plots. Runoff and soil loss were measured continuously from each rainfall simulator plot. Furrow diking reduced runoff and soil loss by 3.5 times compared to the non-diked treatment. Furrow diking increased infiltration by 38% resulting in 7 days of estimated plant available water compared to 4 days in the non-diked treatment.

Fertilization of Peanut with Selenium. R.B. SORENSEN*, R.C. NUTI, and C.L. BUTTS USDA-ARS-National Peanut Research Laboratory, PO Box 509, 1011 Forrester Dr. SE, Dawson, GA 39842

Selenium (Se) has been identified as an antioxidant and anti-carcinogenic. Increasing Selenium in the peanut kernel and plant could benefit human and animal health, respectively. Se was applied to soil at two locations and at four concentrations to determine the resultant Se concentration in the peanut plant. Se was applied at rates of 0.5, 1.0, 5.0 and 10 mg Se/kg soil and watered into the soil. Normalized difference vegetative index (NDVI) was collected during the growing season to document plant response. Prior to harvest, plant samples were collected, washed, partitioned, dried, and ground to pass through a 2 mm sieve and analyzed for Se concentration. Composite soil samples were taken prior to peanut digging, air dried, and analyzed. There was no difference in NDVI between sites or treatments. In general, the higher the concentration of Se applied to the soil the higher the concentration of Se in the peanut leaf, stem, root, peg, kernel, or hull. There was a difference in Sites for Se concentration with hulls and kernels which may be attributed to soil series. Data pooled over both sites show that the control treatment had 0.495 mg Se/kg of peanut. The 0.5Se and 1Se treatments showed an average Se concentration in the kernel of 3.97 mg Se/kg. Treatments 5Se and 10Se averaged 16.1 mg Se/kg of peanut kernels. Adding Se to the soil can increase Se in the peanut kernel and plant which could be beneficial to human and/or animal health. Adding high grade Se to peanut land at the 0.5 mg Se/kg would cost just over $700/ha.

Peanut Yield Response and Economic Benefits of Fungicide and Phosphorus in Farmer-Managed Trials in Ghana. J.B. NAAB*, S.S. SEINI, OSMAN GYASI, Savannah Agricultural Research Institute, Wa, Ghana; K.J. BOOTE, Agronomy Dept., Univ. of Florida, Gainesville, FL 32611-0500; and J.W. JONES, Dept. of Agric & Biol. Engr., Univ. of Florida, Gainesville, FL 32611-0570.

Prior on-station research on sowing dates, sowing density and

applications of fungicide and phosphorus increased peanut pod yield by 60 to 80%. Farmer-managed trials were conducted in the Wa district of the Upper West Region of Ghana during 2004 to 2007 to test the yield response to sowing density, fungicide and phosphorus, and to assess economic returns of these technologies to farmers. An early maturity peanut cultivar, Chinese, was sown at farmers' density without fungicide and without P application (control), or with application of fungicide sprays alone, or with fungicide and phosphorus application. A fourth treatment was Chinese sown at recommended (higher) density with fungicide and P application. A fifth treatment was a full season cultivar, Manipinter, with fungicide and P application. Soil fertility, sowing density, dates of weeding, weed density, incidence and severity of leafspot disease and plant population at final harvest were recorded. Relative to farmers' practice, pod yield of Chinese was significantly increased by 30 to 43% with fungicide sprays alone, 60 to 82% with fungicide and P application, and 36 to 81% with fungicide and P application at higher sowing density. Manipinter treated with fungicide and phosphorus gave 45 to 106% increase in pod yield. Correlation and stepwise regression analyses suggested that the major determinants of peanut pod yield in farmer fields were plant density, leafspot disease, and P availability. The increase in yield with fungicide and P application translated into a significantly higher marginal rate of return and profit for farmers in the region.

The Number of Years Between Peanut Plantings is Not a Good Indicator of Peanut Response to Inoculation. S. UZZELL*, D.L. JORDAN, J.S. BARNES, C.R. BOGLE, T. MARSHALL, and P.D. JOHNSON, North Carolina Cooperative Extension State University, Raleigh, NC 27695 and North Carolina Department of Agriculture and Consumer Services, Raleigh, NC 27601.

Four experiments were conducted in North Carolina to determine peanut response to in-furrow inoculation with *Brady rhizobium* when a range of years and crops including corn (*Zea mays*), cotton (*Gossypium hirsutum*), soybean [*Glycine max* (L.) Merr.], and tobacco (*Nicotiana tobacum*) separated peanut plantings. Rotations varied from continuous peanut in some experiments to as many as five years of a non-peanut crop separating peanut plantings. The interaction of crop rotation by inoculation treatment (no inoculation versus in-furrow application of *Brady rhizobium*) was not significant for pod yield in any of the experiments. However, the main effect of rotation was significant in 3 of 4 experiments while the main effect of inoculation was significant in 2 of 4 experiments. Increasing the number of years a non-peanut crop was planted between peanut plantings increased yield in 3 of 4 experiments. Results from these experiments indicate that using the number of non-peanut crops were included between peanut plantings does not consistently define whether or not a positive yield response to in-furrow

inoculation with *Brady rhizobium* will be realized.

2007 Field Trials to Evaluate Management Options for Peanut Insect Pests. D.A. HERBERT, JR*, Department of Entomology, Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.

Research was conducted on southern corn rootworm, *Diabrotica undecimpunctata howardi* Barber, and potato leafhopper, *Empoasca fabae* (Harris), at the Virginia Tech Tidewater Agricultural Research and Extension Center (TAREC) in Suffolk, VA, and on growers' fields in Isle of Wight and Surry Counties, VA. Because of a local infestation, lesser cornstalk borer, *Elasmopalpus lignosellus* (Zeller), was also monitored at the Isle of Wight County location. Split-plot trials were established in areas that suffered poor performance from chlorpyrifos in recent years. Main plots were variety, which varied by location ('CHAMPS' and 'Wilson' at TAREC; 'Phillips' and 'Wilson' at Isle of Wight County; and 'Gregory' and 'Wilson' at Surry County). Sub-plots were insecticide treatments of Lorsban 15G at 13 lb/acre with single (flowering in mid-June) and double applications (flowering and again at pegging in mid-July) and an untreated control. Leafhopper damage was based on visual percent damage estimates after all treatments had been applied (mid-July) and sweep net samples. To evaluate soil insect damage, 100 pods were collected per plot after digging and the number of scarred and penetrated pods (or pods with lesser cornstalk borer damage) was recorded. Yields were recorded at TAREC. Results at TAREC showed that a single Lorsban application was effective in minimizing pod damage by rootworm in both 'Wilson' and 'CHAMPS' but there was no effect on yield. Leafhopper damage was greatest in untreated 'Wilson'. In Isle of Wight County, the single application was equal to the double application in minimizing rootworm pod damage and leafhopper damage, but there was no advantage to the double application. Neither single nor double Lorsban applications reduced lesser cornstalk borer pod damage relative to the untreated control; however, 'Phillips' had approximately six times less pod damage due to lesser cornstalk borer than 'Wilson'. In Surry County, the single application was effective but the double application was no better than the untreated control in reducing rootworm pod damage. Single and double applications resulted in a similar reduction of leafhopper damage.

Two field trials were conducted to evaluate insecticide efficacy against corn earworm, *Helicoverpa zea* (Boddie), and beet armyworm, *Spodoptera exigua* (Hübner). Active ingredient groups (based on IRAC mode of action classification) included: indoxacarb, rynaxypyr, flubendiamide, spinosad, pyrethroid, organophosphate+pyrethroid, and carbamate (beet armyworm trial only). Three-foot beat cloth samples were taken at 3, 7, and 14 days after treatment (corn earworm trial) and 2, 5, and 7 days after treatment (beet armyworm trial). Numbers of

small, medium, and large larvae were recorded. In both trials the best control was achieved with rynaxypyr, flubendiamide, and indoxacarb.

Two split-plot trials at TAREC evaluated five virginia-type (Trial 1) and 14 virginia and runner-type (Trial 2) peanut varieties for incidence of tomato spotted wilt virus (TSWV), thrips damage, and yield. Main plots were insecticide/no insecticide treatment and sub-plot was variety. Insecticide-treated plots received Temik 15G at 7 lb/acre in-furrow with an application of Orthene 97 at 6 oz/acre at late ground cracking (June 1). In both trials, insecticide-treated plots had significantly lower thrips damage and TSWV incidence, and higher yields. Combined across main plots (insecticide treatment), there were no differences among varieties in thrips damage or TSWV incidence, but there were differences in yield ranging from 5753 ('NC-V 11') to 5060 ('Perry') lb/acre in Trial 1 and from 5118 ('NC-V 11') to 2716 ('Brantley') lb/acre in Trial 2.

Economics of Tillage and Row Pattern on Different Cultivars for Peanut.

A.R. ZIEHL*, N.B. SMITH, Department of Agricultural and Applied Economics, R.S. TUBBS, J.P. BEASLEY, JR., J.E. PAULK, III, Department of Crop and Soil Sciences, and E.J. WILLIAMS, Department of Biological and Agricultural Engineering, The University of Georgia, Tifton, GA 31793.

Peanut producers continue to look for production methods and cultivars that provide the best economic returns. Besides choosing appropriate cultivars, producers use methods such as tillage and row pattern to reduce costs and improve yields. In Georgia, there were an estimated 160,000 acres of peanut under strip-tillage production during 2007. Strip tillage is believed to save time and lower machinery costs while also conserving water and improving soil quality. Planting peanuts in a twin-row pattern, as compared to single, is said to increase yields, especially in those cultivars more susceptible to tomato spotted wilt virus. There were an estimated 250,000 acres planted in twin rows in Georgia during 2007. Research data was collected on several cultivars from a tillage and row pattern study from 2005 through 2007 at the Coastal Plains Experiment Station in Tifton, GA. The objective of the study was to analyze the costs and returns of several cultivars under conventional and strip tillage production and single versus twin row spacing. There were a total of ten cultivars planted during the three-year study, but four cultivars were kept in the study each year: Georgia Green, Georgia-03L, AT3081 and AT3085RO. Results indicate that in 2007, conventional tillage had significantly higher net returns per acre than strip tillage across all cultivars. There was no significant difference in net returns per acre for row pattern in any year. Among cultivars in 2005, Georgia Green had significantly lower net returns per acre than Georgia-03L, AT3081, and AT3085RO.

PROCESSING AND UTILIZATION
HARVESTING, CURING, SHELLING, STORING, AND HANDLING

Different Physical Properties Found in Snack Peanuts based on Plant Growing Region. D. SMYTH*, L. DE BLAKER, JR., M. KWEON, L. SLADE, H. LEVINE, M. FRANKE, Kraft Foods EHTC-103, Research & Development, 200 DeForest Ave., East Hanover, NJ 07936.

Peanut seed composition is known to be influenced by the environment where the plants were grown. Stressful plant growing conditions such as excessive heat, cold, or limiting water have been shown to increase kernel sugar content, and to increase frequency of off flavors in roasted snacks made from the kernels. Here kernels from different growing regions were evaluated by differential scanning calorimetry and buoyant density to describe physical factors important in roasting snack peanuts and optimizing finished product texture. Extra Large virginia grade kernels (ELK) from the 2004 crop were purchased from mills in the Virginia/Carolina (V/C) growing region and from mills in the southwest U.S. (SW). Jumbo Runner grade kernels (JR) from the 2005 and 2006 crops were purchased from mills in the southeast U.S. (SE) and the SW. Sucrose content was higher in the SW seed versus seed from the eastern growing region, but there was no indication of extreme plant stress in the SW lots such as off flavor. A lab oil fryer was used to roast 500 g batches of blanched ELK from raw to overcooked state. Screening sensory tests for Roasted Peanutty and Dark Roast attributes showed that both V/C and SW kernels had good roasted flavor under similar roasting conditions. Both V/C and SW ELK samples darkened at the same rate as measured by CIELAB L* methodology. Nonetheless, SW kernels retained more moisture and had a higher relative humidity during the roasting process than V/C kernels. Calorimetry showed that the heat-sensitive conarachin proteins were denatured more quickly in the SW ELK than the V/C ELK under the same roasting conditions. The SW kernels retained only 7% native conarachin after 2 minutes of roasting at 325 degrees F, whereas the V/C kernels had 27% native conarachin left. Appropriate conarachin processing is an important factor in the generation of good peanut flavor, textural crunchiness, and oxidative stability in the finished snack product. Hardness of texture is another snack peanut attribute which influences consumer preference. Density testing of single cotyledons on stepped salt gradients showed that both SW ELK and SW JR were denser than kernels from the eastern growing region.

Hydrophilic and Lipophilic Antioxidant Activities of Commercially Available Peanut Flours and Peanut Seed Roasted to Differing Intensities. J.P. DAVIS*, K.M. PRICE, L.L. DEAN and T.H. SANDERS, USDA ARS Market Quality and Handling Research, Raleigh NC 27695

Peanut flours are commercially available, high protein ingredients prepared from partially defatted roasted peanut seed. Peanut flours have differing roast intensities and residual fat contents, which allows for these ingredients to be utilized in a variety of food formulations. Antioxidant properties of an ingredient are important in both human nutritional considerations and in predicting food product shelf stability; however, no antioxidant information for peanut flours has been published. Accordingly, four classes of peanut flours: light roast-12% fat, dark roast-12% fat, light roast-28% fat and dark roast-28% fat were evaluated for both hydrophilic and lipophilic antioxidant capacity using the Oxygen Radical Adsorption Capacity (ORAC) assay. Flours were extracted according to standard procedures using a Dionex 200 Accelerated Solvent Extractor. Hydrophilic antioxidant capacities were significantly ($P < 0.05$) higher for low fat flours (approximately 6900-7400 μMol Trolox/100 g) as compared to high fat flours (approximately 5500-6200 μMol Trolox/100 g). Lipophilic ORAC's ranged from approximately 600 to 1100 μMol Trolox/100 g; values that were an order of magnitude lower than the hydrophilic scores, which is typical of most foods and ingredients. High fat flours had significantly ($P < 0.05$) higher lipophilic ORAC scores. Peanut flour ORAC data was compared with ORAC data for whole peanut seed that had been roasted to differing intensities to better understand the effects of Maillard browning chemistry on peanut antioxidant properties. Both hydrophilic and hydrophobic ORAC scores significantly ($P < 0.05$) increased with increasing roast intensity; however, the relative rates of these increases were not equivalent. Total phenolic content, GC, HPLC and SDS PAGE analyses of the various extracts will be discussed to suggest potential compounds and mechanisms for these antioxidant phenomena.

In Vitro Digestibility of Perennial and Annual Peanut Forages for Horses. J.V. ECKERT, L.K. WARREN, and J.H. BRENDEMUHL, Dept. of Animal Sciences, University of Florida, Gainesville, FL 32611; R.O. MYER*, A.R. BLOUNT, and J.L. FOSTER, University of Florida, NFREC, Marianna, FL 32446.

Legume forages that can produce horse-quality hay are scarce in the lower southeastern USA. Alfalfa (*Medicago sativa*) is difficult to grow, but two warm season legumes, perennial peanut (*Arachis glabrata*) and annual peanut (*Arachis hypogaea*) can be grown in this region. An *in vitro* procedure, specifically designed to simulate digestion by horses, was used to measure digestibilities of perennial and annual peanut hays as well as dried fresh forage samples taken from the same fields. Samples of six varieties of perennial peanut from a variety trial were also evaluated. Commercially available, horse-quality alfalfa hay was included for comparison. Digestibility of perennial peanut hay was similar to alfalfa hay, but annual peanut hay was lower than alfalfa hay ($P<0.05$; 65 vs. 71%). However, as fresh dried samples, annual peanut

was more digestible than perennial peanut hay (P<0.05; 78 vs. 71%). Thus it appears that annual peanut loses more potential nutritive value when hayed than perennial. All the perennial varieties had high digestibility, but there were some differences (P<0.05) due to variety. Results indicate that perennial and annual peanut forages are highly digestible, but perennial peanut would be better suited as hay for horses.

Variation in Peanut Sensory Quality Associated with U.S. Production Regions and Breeding Programs Submitting Entries to the Uniform Peanut Performance Test. H.E. PATTEE*, Dept of Biological and Agricultural Engineering, N.C. State Univ., Raleigh, NC 27695-7625; T.G. ISLEIB, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629; T.H. SANDERS, L.O. DEAN, and K.W. HENDRIX, USDA-ARS, Market Quality and Handling Res. Unit., Raleigh, NC 27695-7624.

Sensory quality of peanuts (*Arachis hypogaea* L.) is influenced by environment and also by genotype. Environmental effects can be partitioned into parts associated with years, production regions, and locations within regions while genotype is largely a function of the breeding program whence a particular line originated. Data collected on sized peanut samples from the Uniform Peanut Performance Test (UPPT) provide the opportunity to examine the effects of these various factors. Orthogonality of the data, *i.e.*, having the same breeding lines grown at all UPPT test locations in a given year, allows separation of the effect of production region from the effect of genotype. Lines entered in the 2001-2006 UPPT were categorized as to the breeding program of origin, then sensory data were subjected to analysis of variance, and adjusted means for production regions and breeding programs were estimated. Variation associated with production region was detected for the sensory attributes roasted peanut, sweet aromatic, sweet, fruity/fermented and raw/beany. Differences among regions were statistically significant but smaller than the 0.5 flavor intensity unit (fiu) generally deemed to be the threshold perceptible to a consumer. Intensities of the roasted peanut and sweet aromatic attributes were higher in the Virginia-Carolina (VC) region than in the Southeast (SE) or Southwest (SW) regions. Roasted peanut intensities of samples from the SE and SW regions were not different while intensity of the sweet aromatic attribute in the SW was greater than that in the SE region. Sweet attribute intensity was highest in the SW, followed by the VC and SE regions. Although the intensity of the fruity/fermented attribute was low on average, it was highest in samples from the SW compared with the SE and VC regions. Samples from the SE were lower in raw/beany intensity than were samples from the SW and VC regions. Variation associated with breeding program was greater than that associated with production region, being statistically significant for the previously listed sensory attributes as well as for dark roast, bitter, and cardboard. Averaged across all UPPT locations, UPPT entries submitted by the

breeding programs at Texas A&M Univ. and the Univ. of Florida had the best overall sensory profiles, followed by entries submitted by the Univ. of Georgia and N.C. State Univ. programs. It must be acknowledged that the number of lines representing a given breeding program in the UPPT is small due to restrictions on the annual number of test entries. Interaction between the production region in which the lines were tested and the breeding program of origin was not significant for any of the sensory attributes measured.

Evaluation of Warm Season Legume Forages for Livestock: I. Hay. J.L. FOSTER and A.T. ADESOGAN, Dept. of Animal Sciences, and L.E SOLLENBERGER, Dept of Agronomy, University of Florida, Gainesville, FL 32611; and R.O. MYER*, J.N. CARTER and A.R. BLOUNT, University of Florida, NFREC, Marianna, FL 32446.
High nutritional quality legume forages for livestock that can be grown during the warm season are scarce for the lower southeastern USA. A study was conducted to evaluate the nutritional value of several potential warm season legumes, harvested as hay, in supplementing low quality bahiagrass hay (*Paspalum notatum*) for growing lambs. Forty-two crossbred lambs (30 ± 5 kg avg. initial wt.) were fed ad libitum BGH (74% neutral detergent fiber (NDF), 7% crude protein (CP)) alone (neg. control) or BGH supplemented with soybean meal (50% CP) (pos. control), or supplemented with annual peanut (*Arachis hypogaea* L.; 46% NDF, 13% CP), cowpea (*Vigna unguiculata*; 62% NDF, 11% CP) perennial peanut (*Arachis glabrata*; 43% NDF, 14% CP), pigeon pea (*Cajus cajan*; 78% NDF, 11% CP), or forage soybean (*Glycine max*; 59% NDF, 12% CP) hay. Diets fed were formulated to be equal in CP (9.3%) and fed to six lambs per treatment for two, consecutive 21-d periods. Dry matter intake was greatest in lambs fed either of the peanut hay diets and lowest ($P<0.01$) in lambs fed pigeon pea diet. Apparent dry matter digestibility also was greatest in lambs fed either of the peanut hay diets and lowest ($P<0.01$) for pigeon pea. Apparent CP digestibility was highest in lambs fed perennial peanut hay diet and lowest ($P<0.01$) for the negative control. Perennial and annual peanut hays were the most promising of the warm-season legumes evaluated.

Effects of Starting Moisture on Characteristics of Oil Roasted Peanuts. L.L. DEAN*, J.P. DAVIS, K.W. HENDRIX, M.T. DeBRUCE, T.H. SANDERS, Market Quality and Handling Research Unit, USDA, ARS, SAA, Raleigh, NC 27695-7624.
Previous research has shown that the moisture content of peanuts before dry roasting affects the quality of the finished product. This study demonstrates the effects of the starting moisture content of the raw product on peanuts that were oil roasted. Scanning Electron Microscope images taken before and after oil roasting showed distinct cellular differences between moisture levels. The amount of oil uptake was determined by gravimetric measurement. The oil exchange between the

peanuts and the matrix was determined by using peanut oil containing 10% coconut oil as the roasting matrix. The coconut oil contained high levels of lauric acid that served as a marker for the oil exchange. Quantification of the fatty acids expressed from the roasted peanuts was done using profiles obtained using Gas Chromatography. Physical measurements such as interfacial tension, viscosity and density were determined for the roasting oil and the oils expressed from the roasted peanuts. The changes in the texture of the peanuts before and after roasting as a function of moisture will also be presented. These physical properties will be used to explore the oil uptake phenomena

Evaluation of Warm-Season Legume Forages for Livestock: II. Haylage.
J.L. FOSTER, A.T. ADESOGAN, Dept. Animal Sciences, and L.E. SOLLENBERGER, Dept. of Agronomy, University of Florida, Gainesville, FL 32611; and R.O. MYER*, J.N. CARTER and A.R. BLOUNT, University of Florida, NFREC, Marianna, FL 32446.
Legume forages for livestock that can be grown during the warm-season are scarce in the lower southeastern USA. Conserving these forages as haylage is a good option in this humid region. This study evaluated the nutritional value of several potential warm-season legumes, harvested as haylage, in diets of growing lambs. Forty-two crossbred lambs (28 ± kg initial wt.) were fed ad libitum bahiagrass haylage (*Paspalum notatum*; 68% neutral detergent fiber (NDF), 9% crude protein (CP)) alone (negative control), or supplemented with soybean meal (51% CP; positive control) or haylages of annual peanut (*Arachis hypogaea*; 40% NDF, 17% CP), cowpea (*Vigna unguiculata*; 44% NDF, 15% CP), perennial peanut (*Arachis glabrata*; 40% NDF, 14% CP) or pigeon pea (*Cajanus cajan*; 65% NDF, 13% CP). Legumes were supplemented at 50% of the diet and SBM was fed to the average CP concentration (12%) of the legume diets. Each diet was fed to seven lambs for 21 d, and then to four lambs for 21 d. Haylages were harvested, wilted to 45% dry matter, baled, wrapped in polyethylene plastic, and ensiled for 180 d. Intake of dry matter was greatest ($P<0.01$) in lambs fed annual peanut haylage and SBM diets and least in lambs fed the pigeon pea haylage diet. Apparent digestibility of organic matter was greatest ($P<0.01$) for the positive control, either of the peanut haylage diets and cow pea haylage diet, and least for pigeon pea. Apparent digestibility of CP was greatest ($P<0.01$) for the positive control and when annual or perennial peanut haylages were fed, and least when pigeon pea haylage was fed. Retention of N (gld) was greatest ($P<0.01$) for lambs fed annual peanut and least for pigeon pea. Results indicated that the two peanut species were the most promising warm-season legumes for haylage.

Evaluation of Whole, In-Shell Peanuts as a Supplement Feed for Beef Cattle Cows.
R.O. MYER*, G.R. HANSEN, D.W. GORBET, University of Florida, NFREC, Marianna, FL 32446; and G.M. HILL, University of Georgia, Coastal Plain Exp. Sta., Tifton, GA 31793.

Two trials, a digestion trial and a feeding trial, were conducted to evaluate the suitability of using whole raw, in-shell peanuts as an energy and protein supplement feed for beef cows. The digestion trial utilized 18 growing beef cattle steers with an average initial weight of 265 kg. The steers were fed hay (bermudagrass) plus one of three supplement treatments 1) corn and cottonseed meal mix (50:50), 2) corn and whole peanut mix (50:50), or 3) whole peanuts. The supplements were fed at 1.4 kg/head/day. The steer trial was designed to mimic expected usage of whole peanuts by beef cows. Hay and diet dry matter consumption, and apparent digestibility of dry matter were slightly reduced ($P<0.05$) for steers on the whole peanut treatment compared to the corn and cottonseed meal mix and the corn and whole peanut mix; while the corn and cottonseed meal mix and corn and the whole peanut mix were similar (87, 86 and 82% for corn and cottonseed meal mix, corn and whole peanut mix, and whole peanuts, respectively for dry matter digestibility). Digestibility of crude protein of the whole peanut treatment was similar to corn and cottonseed meal mix. The cow trial utilized 80 mature late gestating, late winter calving cows (573 kg average initial body weight; 3 to 11 yr old) to determine the effects of interval feeding of whole peanuts on performance of the cows and their progeny. The cows were fed free-choice bermudagrass hay and 3x weekly either corn and cottonseed meal mix or whole peanuts to provide an average of 1.1 kg/head/day. The trial was conducted for two consecutive years (40 cows/year) and lasted for 84 days from mid-Nov. to early Feb. of each year. Supplement treatment did not affect body condition score (5.5 vs. 5.5), but body weight gain over the 84-day periods tended to be lower for whole peanuts vs. corn and cottonseed meal mix ($P=0.09$; 36 vs. 49 kg). Subsequent calf birth weight, survival rate and weaning weight, and subsequent cow artificial insemination conception rate were not affected by treatment. The whole peanuts used in the cow trial averaged (n=4) 93% dry matter, 21% crude protein, 38% crude fat, 27% crude fiber, 2.8% ash, 0.17% Ca and 0.33% P. Results indicate that whole peanuts may be a suitable, easy to feed energy and protein supplement for wintering mature beef cows, however, as noted from the steer digestibility trial, some decrease in total diet digestibility may occur.

Digging Peanuts Utilizing an RTK System. K.B. BALKCOM, Agronomy and Soils Department, Auburn University, Auburn, Alabama 36849. Real-Time Kinematic (RTK) systems are increasing in popularity across the southeastern United States due to economic savings from reducing overlap of inputs, such as, fertilizers, lime, seed, and pesticides. Peanut (*Arachis hypogea* L.) producers have relied on tractor operator skill without RTK to correctly dig peanuts. However, peanuts have moved into new growing regions, particularly in AL, and new producers find digging peanuts difficult, which may be attributed to their lack of experience with peanut digging. In addition, new peanut varieties with more disease tolerance are harder to dig even for experienced growers

due to rank peanut vines that stay green at maturity. The green vines make it difficult for an operator to stay right over the row and invert peanuts properly. Plots were established in Headland, AL on a Dothan sandy loam (fine, loamy siliceous, thermic Plinthic Kandiudults) from 2005 to 2007 to compare peanut yields after digging with an RTK system set exactly (0.0 inches) over the row, 3.5 inches off the row, and 7.0 inches off the row planted in both conventional and conservation tillage systems with twin and single row patterns. The RTK system did provide a benefit by staying right over the row with statistical differences observed among the different variations off the row and between tillage systems. More peanuts were also lost from twin rows the further you deviated from the row. The yield loss was less with the conventional tillage system compared to the conservation tillage system. However soil moisture played an important role in the amount of digging losses no matter what tillage method was used.

A Low Cost Moisture Meter to Measure Moisture Content in Corn and In-Shell Peanuts. C.V.K. KANDALA* and C.L. BUTTS. National Peanut Research Laboratory, ARS, USDA, Dawson, GA 39842.

A low cost impedance meter that measures the impedance and phase angle of a parallel-plate capacitor, embedded in a non-conducting cylinder, and estimates the moisture content of grain samples placed in the cylinder is described here. Impedance and phase angles were measured at 1 and 5 MHz and capacitance values were computed from the impedance values. A semi-empirical equation was developed and calibration constants were determined using the values of impedance, capacitance and phase angle of samples of corn of known moisture contents. Moisture contents of samples of corn that were not used in the calibration were predicted using this equation, and compared with their standard air-oven values. The predicted values of corn samples in the moisture range between 7% and 18% were all found to be within 1% of the air-oven values. Similarly, another empirical equation was developed for in-shell peanuts and predictions were made and compared with their standard air-oven values. For over 93% of the peanut samples tested in the moisture range between 9% and 20%, the moisture content values were within 1% of the standard air-oven values. This method could be extended to other types of grain such as wheat and barley. Ability to determine the average MC of in-shell peanuts without shelling and cleaning them, with a low-cost instrument, will be of considerable use in the peanut industry.

Response of Six Peanut Cultivars to Timing of Harvest. J.P. BEASLEY, JR.*[1], E.J. WILLIAMS[2], J.E. PAULK, III[1], R.S. TUBBS[1], and J.A. BALDWIN[3]. [1]Crop and Soil Sciences Dept., Univ. of Georgia, Tifton, GA, [2]Dept. of Biological and Agricultural Engineering, Univ. of Georgia, Tifton, GA, [3]Cooperative Extension Service, University of Florida, Gainesville, FL.

Optimal yield and grade of peanut is affected by timing of harvest. When harvested too early or too late, yield and percent total sound mature kernels are reduced. Research in the 1980's on the cultivar 'Florunner' indicated a potential yield reduction of 500-700 lbs acre^{-1} when harvested

two weeks early or late. Trials were conducted in crop years 2005-2007 to determine the response of six peanut cultivars to harvesting ten days early, on time, and ten days late. Cultivars were 'Georgia Green', 'Carver', 'AP-3', 'C-99R', 'Georgia-01R', and 'Georgia-02C'. Georgia Green, Carver, and AP-3 have a medium maturity range while C-99R, Georgia-01R, and Georgia-02C are late maturing, approximately three weeks later than the medium maturity range. The experimental design was a split plot with cultivars as the main plots and harvest timing as the sub-plot. Individual plots were two rows, six feet wide by 40 feet in length. Each cultivar was planted at the rate of six seed per row-foot in the single row pattern. There were four replications. Harvest timing for each cultivar was determined using the Hull-Scrape Maturity Profile method. The initial digging date was determined when each cultivar was ten days prior to optimal maturity. Subsequent digging dates were at optimal and ten days late. Data collected included yield, grade factors, and flavor analysis. In 2005, there was a significant interaction for yield and percent total sound mature kernels. In 2006, there was no interaction between harvest dates and cultivars for yield or percent total sound mature kernels. There was a significant difference among harvest dates with optimal harvest and ten days late having a significantly higher yield and percent total sound mature kernels than ten days early. In 2007, there was a significant interaction between harvest date and cultivar for both yield and percent total sound mature kernels. All cultivars in 2007 had their highest yield when harvested at optimal maturity.

In-field Peanut Processing for Biodiesel Production. C.L. BUTTS*, R.B. SORENSEN, R.C. NUTI, M.C. LAMB, and W.H. FAIRCLOTH. USDA, ARS, National Peanut Research Laboratory, Dawson, GA 39842.

The costs and environmental impact for using petroleum-based fuels such as diesel, has triggered considerable interest in the development of sustainable, on-farm biodiesel production systems. Field studies have demonstrated that a peanut (*Arachis hypogaea* L.) can produce 1138 kg/ha of peanut oil at a cost of $0.38/kg ($0.35/L). If off-road diesel costs $0.92/L, then $0.57/L may be invested in combining, curing, storing, shelling, and crushing the peanuts, then processing the oil into a methyl ester. The average cost of combining ($124/ha), curing ($74/t), and shelling ($148/t) farmer stock peanuts results in an approximate processing cost of $0.66/L of available peanut oil. In an attempt to reduce these processing costs, a grain combine was used to harvest and shell peanuts from the 2007 crop that had been dug, inverted, windrowed, and allowed to cure in the windrow until a the kernel moisture content was less than 10%. Peanut plants were pitched into the corn header of the combine which then fed them into the threshing cylinder. Peanut material that was transferred into the grain tank was captured in a polypropylene bag, weighed, and analyzed. Cylinder speed

(3 speeds), concave opening (3 settings), fan speed (5 speeds), and various sieve openings were used to thresh and shell peanuts in two separate tests. In test 1, the fan speed and sieve openings were held constant while cylinder speed and concave settings were varied. Concave setting had no significant effect on the proportion of peanuts that were shelled. The percent peanut kernels that were shelled and removed from the hulls increased as cylinder speed increased and ranged from 42 to 82%. Foreign material ranged from 8 to 25%. In the second test, the highest cylinder speed and the smallest concave setting were selected while fan speed and sieve settings were varied. The shelled peanut kernels ranged from 76 to 91% during these second series of tests with no apparent effect of fan speed or sieve opening. Percent foreign material tended to decrease as the fan speed increased and reach a lower limit of 7%. The maximum amount of foreign material obtained during the fan speed/sieve opening tests was 13%. Based on a visual observation, the vast majority of peanut kernels were split or broken with very few whole kernels. This is acceptable and may be desirable for oil production. Based on these performance tests, it may be feasible to use a grain combine with minimal modification to harvest and shell field-cured peanuts for use in the production of biodiesel. The typical operating cost for a grain combine is approximately $74/ha. Allowing peanuts to cure in the windrow, then harvesting with a grain combine will reduce the cost of harvesting, curing, and shelling from $0.66/L of available peanut oil to approximately $0.06/L.

BREEDING, BIOTECHNOLOGY, AND GENETICS II

Characterization of Early-Maturing Runner Peanut Breeding Lines. M.D. BUROW* and J.L. AYERS, Texas AgriLife Research, Texas A&M System, Lubbock, TX 79403, and Texas Tech University, Department of Plant and Soil Science, Lubbock, TX, 79409; A.M. SCHUBERT, Texas AgriLife Research, Texas A&M System, Lubbock, TX 79403; C.E. SIMPSON, Texas AgriLife Research, Texas A&M System, Stephenville, TX 79403; and M.R. BARING, Texas AgriLife Research, Texas A&M System, College Station, TX 77843.

We have identified a high-yielding, early-maturing runner line that has in 2006 and 2007 consistently yielded as well as or better than FlavorRunner 458 and Tamrun OL02 and matures earlier by approx two weeks. Seeds have a high oleic:linoleic fatty acid composition and are slightly smaller than seeds of the check cultivars. The line is susceptible to Sclerotinia blight (*Sclerotinia minor* Jagger) and early leafspot (*Cercospora arachidicola* S. Hori). Several related lines yield well also but do not mature as early. Runner lines of a different population have demonstrated high yield, excellent shellout, and early maturity. These lines have good potential but are segregating for the high-oleic trait and will require reselection and further screening.

Characterization of Three Different Texas Breeding Lines for Disease Resistance. M.R. BARING* and C.E. SIMPSON, Soil and Crop Sciences Department, AgriLIFE Research, College Station, Texas, 77843-2474.

The Texas peanut breeding program has developed breeding line Tx901639-3 with resistance to Sclerotinia blight caused by *Sclerotinia minor* and partial resistance to *Tomato spotted wilt virus*, and Southern blight caused ratings of 0.59a, 5.06b, and 6.66c respectively ($p \leq 0.0001$), using a scale of 0 to 10 (0=no infection; by *Sclerotium rolfsii*. A past plant row screening which included 32 replications of three check cultivars (Tx901639-3, Florunner, and Langley) resulted in mean Sclerotinia blight infection 10=completely dead). Agronomic traits such as wrapped cotyledons, large pod beaks and low oleic:linoleic fatty acid ratios prevented the release of this line as a commercial cultivar. We have also developed two breeding lines, Tx964120 and Tx964117 that have resistance to early leafspot caused by *Cercospora arachidicola*. Florida scale ratings on replicated yield test with no fungicide treatments have shown differences for early leafspot infection of 4.5a for Tx964120 and 5.2b for Tx964117 vs. 8.6c for Florunner just prior to harvest ($p \leq 0.05$). Again, agronomic traits such as low oleic:linoleic fatty acid ratios, and significantly lower grade and yield potential than current cultivars have prevented the release of this line as a commercial cultivar. Both of these breeding lines are currently being used in the disease resistance project for the Texas peanut breeding program. The recently released variety 'Tamrun OL07' had breeding line Tx901639-3 in its pedigree and thousands of early generation F_2 progeny have recently been developed using breeding lines Tx964120 and Tx964117 for early leafspot resistance.

Transcriptional Response to Thermal and Water-Deficit Stress in Divergent Accessions from the U.S. Peanut Mini-core Collection. K. KOTTAPALLI*, P. PAYTON, USDA-ARS Cropping Systems Research Laboratory, Lubbock, TX 79415, D. ROWLAND, W. FAIRCLOTH, USDA-ARS National Peanut Research Lab, Dawson, GA 39842-0509, M. GALLO, Institute of Food and Agricultural Sciences and the Genetics Institute, University of Florida, Gainesville, FL 32611-0300, N. PUPPALA, New Mexico State University Agricultural Science Center, Clovis, NM 88101, and M. BUROW, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.

Our group has initiated research investigating the effects of thermal and water-deficit stress on physiology, gene expression, and plant development. As part of this research, we are screening the U.S. mini-core collection for divergent stress response phenotypes. Screening of the core collection revealed significant differences between tolerant and susceptible germplasm with respect to basal thermotolerance, photosynthesis, and gene expression in response to slow-onset water-

deficit and thermal stresses. We selected two lines, COC041 (tolerant) and COC166 (susceptible) for gene expression profiling studies. Two time-course profiles were generated for early responses to water deficit (1, 3, 5, and 7 days) and thermal stress (0.5, 1, and 2 days). We have identified putatively stress-specific responses and general stress response pathways in these two genotypes. The results of this detailed study on peanut physiological genomics will be reported at this meeting.

Silencing Ara h 2 in Peanut Reduces IgE Binding but Does Not Enhance Fungal Growth. Y. CHU[1*], P. FAUSTINELLI[1], L. RAMOS[1], P. OZIAS-AKINS[1] Department of Horticulture, University of Georgia Tifton Campus, Tifton GA 31793; J.J. THELEN, Department of Biochemistry, University of Missouri-Columbia, Columbia, MO 65211 and S.J. MALEKI, USDA-ARS-SRRC, New Orleans, LA 70124

Ara h 2, a major peanut (*Arachis hypogaea*) allergen, induces IgE mediated allergic response in 90% of peanut-allergy patients. An RNA interference construct targeting the coding region of *ara h 2* was stably integrated into peanut by microprojectile bombardment. Three independent transgenic lines were recovered. Southern blot analysis shows that two lines have a single copy insertion of the *ara h 2* silencing construct while the third line has multiple copies. All lines show significantly suppressed Ara h 2 expression by Coomassie-stained SDS-PAGE gels and western blots. Reduction of Ara h 2 expression was further confirmed by 2D gel electrophoresis. Due to the sequence similarity between *ara h 2* and *ara h 6*, two transgenic lines also demonstrate significant suppression of Ara h 6 expression. The expression of other peanut allergens such as Ara h 1 and 3 was not affected. Global protein expression pattern in the Ara h 2-silenced lines was not affected. Two of the transgenic lines were tested for IgE binding with sera from peanut allergic patients. Significant reduction of IgE-binding Ara h 2 was also observed. Seed weight and germination data from two transgenic lines show no significant effect of Ara h 2 silencing. Functionally, Ara h 2 has been suggested to act as a trypsin inhibitor; therefore, silencing Ara h 2 could potentially promote fungal growth in the transgenic lines. Data collected from in vitro *Aspergillus flavus* infection indicate that Ara h 2 silencing does not enhance fungal growth. Taken together, our data suggested that silencing Ara h 2 is a feasible approach to produce a potentially less allergenic peanut.

Use of Yield Trial Data to Estimate Maturity of Peanut Breeding Lines. S.C. COPELAND, T.G. ISLEIB*, and D.L. JORDAN, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629; F.M. SHOKES and H. PITTMAN, Va. Polytech. Inst. & State Univ. Tidewater Agric. Res. & Ext. Ctr., Suffolk, VA 23437.

Estimation of maturity in peanut breeding lines is problematic, especially when there is a need to estimate it for the large numbers of lines under

development in a breeding program. Williams and Drexler's "pod-blasting" method, based on the statistical distribution of pod mesocarp color, is the current standard used to determine maturity, but it is labor-intensive and must be performed near harvest, a time during which most breeders have numerous other tasks to perform. An alternative method is proposed, one that does not require additional resources beyond those already expended in the measurement of yield and grade in the course of a testing program conducted over locations and years, programs that are common features of all peanut breeding programs. Because of peanut's indeterminate maturation, yield and crop value are expected to follow a downwardly concave curve during a period bracketing the time of optimum maturity. After fitting a quadratic regression equation for yield or value regressed on duration expressed as days after planting, the equation is solved to find the number of days to the point of maximum yield or value. Data from the Peanut Variety and Quality Evaluation (PVQE) program were used to estimate maturities of virginia-type cultivars and breeding lines tested during 1985-2007. At most PVQE test sites during this period, two separate replicated tests were grown and dug approximately 14 days apart. Estimates of maturity for cultivars conformed to estimates obtained by pod-blasting, and with some exceptions the relative maturities of breeding lines conformed to expectation. Inclusion of class variables reflecting year-by-location combinations did not improve the resolution of the method. A potential improvement would be to express season duration as growing degree days to account for variation in temperature across tests.

Discovery of Aquaporins or Major Intrinsic Proteins (MIPS) Transcripts from Peanut ESTs. P.M. DANG*, USDA-ARS, National Peanut Research Laboratory (NPRL), Dawson, GA 39842; B.Z. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793.

Aquaporins are channel forming membrane proteins that have the ability to provide high flux and, at the same time, very selective for the transport of water and other small molecules across biological membranes. They belong to a conserved and ancient family of proteins called major intrinsic proteins (MIPS) with molecular weights around 26-34 kDa, and its members are represented in nearly all living organisms. Aquaporins show a tremendous diversity in plants and they are multifunctional proteins, allowing some small neutral solutes such as glycerol, CO_2, ammonia (NH_3), urea, boron, and hydrogen peroxide across cell membranes. Differential gene expression of aquaporins in different organs and membranes has implicated its importance in regulating water movement in normal development as well as under certain stress, such as drought or high salt. The objectives of this study were to search for the presence of peanut aquaporins or MIPS nucleotide sequences in a set of expressed sequence tags (ESTs), to identify possible new aquaporins, and to study gene expression profiles on these proteins. We

have sequenced a total of 44,064 clones from 10 peanut cDNA libraries, derived from developing seeds at three reproduction stages (R5, R6 and R7) and from leaf tissues of a resistant and a susceptible cultivated peanuts, ''Tifrunner'' (a runner type, resistant to TSWV and leaf spots) and ''GT-C20'' (a Spanish type, susceptible to TSWV and leaf spots but resistant to Aspergillus/aflatoxin, bacteria wilt and rust). Resulting sequence data were searched against NCBI Translated Protein Database (BLASTx). A total of 181 transcripts matched to aquaporins which represent a 0.41% against total sequences. This corresponds to different members of aquaporins including 5 unknown Tonoplast Intrinsic Proteins (TIPs) and 11 unknown Plasma Membrane Intrinsic Proteins (PIPs) from peanuts. Future experiments will ascertain different aquaporin gene expression in peanut plants in response to drought. This information will be applied in peanut breeding program to develop or select peanut varieties that will have enhanced drought tolerance.

Putative peanut TSWV resistance gene(s) and development of markers for breeding selection. X. CHEN, A. CULBREATH, T. BRENNEMAN, Department of Plant Pathology, the University of Georgia, Tifton, GA 31793; C.C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; B. GUO*, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793.

Tomato spotted wilt virus, transmitted to plant via thrips, is a destructive pathogen with a worldwide distribution. TSWV has caused a very serious problem in peanut (*Arachis hypogaea* L.) producing areas in US. In past decades, different tactics (resistant cultivars, chemical, crop rotation and other field practices) have been employed to control spotted wilt. The most promising solution for managing spotted wilt is development of resistant cultivars. Resistance genes to TSWV have been found in tomato and pepper, named *Sw-5* and *Tsw*, respectively. We have discovered 41 gene fragments originally from peanut expressed sequence tags (ESTs) with significant homology to two tomato BAC sequences (AY007366 and AY007367), which spanned 5 different resistance candidate sequences. Reverse northern-blots have identified eighteen clones with significant levels of expression. Out of these clones, we identified one, named *Ahsw,* with approximately 37% of amino acid identity to tomato *Sw-a* that has been further characterized. Southern blot indicated that there are at least 4 copies of *Ahsw* gene in the cultivated peanut genome. Three restriction enzymes, *Hin*dIII, *Eco*RI and *Rsa*I were used to examine whether the restriction fragment length polymorphism exists in these entries, which are resistant or susceptible to TSWV, using *Ahsw* as a probe. The results showed that different number and length of restriction fragments were observed in different genotypes, suggesting its potential use as a marker. Two mapping

populations have been developed. Northern blots revealed different expression patterns of *Ahsw*, but further experiments are needed to confirm an association of this gene with resistance to TSWV.

Variation in Seed Protein Composition among Advance Breeding Lines from Tamil Nadu Agricultultural University. E. KOKILADEVI, MEHBOOB B. SHEIKH*, RAMESH KATAM, Plant Biotechnology Lab, Center for Viticulture and Small Fruits Research, Florida Agricultural and Mechanical University, FL 32317.

Advance peanut breeding lines from Tamil Nadu Agricultural University, India, differering in their characteristics for drought and aflatoxin tolerance, and quality characters were used in this study. The objective of this research was to develop protein markers for selecting peanut genotypes tolerant to drought. Total seed protein was isolated from 20 peanut genotypes procured from US and India (Tamil Nadu Agricultural University) and subjected to two-dimensional gel electrophoresis. The results showed significant quantitative and qualitative differences in seed protein composition among the genotypes. In VG9816 and TNAU 9971/1 (India), the protein bands at a pI value of 5.0 having approximate MW of 40kDa were totally absent whereas it is present in other genotypes. Some proteins in the acidic pI region were uniquely present in Indian genotypes but are absent in other genotypes. We could also observe several quantitative differences in other genotypes. The protein bands which are uniquely present in drought tolerant or susceptible genotype could be used as a marker to screen peanut genotypes for drought tolerance /susceptibility in breeding program.

Outcrossing in Virginia-type Peanut Cultivars (NC7, Perry and Wilson) Using the Transgene Oxalate Oxidase as a Marker. S.M. CHRISCOE*[1], J. HU[2], D.E. PARTRIDGE[2], P.M. PHIPPS[2], and E.A. GRABAU[1]. [1]Department of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, Virginia 24061; and [2]Tidewater Agricultural Research & Extension Center, Virginia Tech, Suffolk, Virginia 23437.

We have introduced the barley oxalate oxidase gene into the VA-type peanut cultivars NC7, Perry and Wilson. This gene confers resistance to *Sclerotinia minor* by catalyzing the degradation of oxalic acid, a fungal pathogenicity factor. Before the transgenic varieties can be released, it is important to determine the potential for gene flow to adjacent plants through cross pollination. The enzyme oxalate oxidase is easily detectable by a colorimetric assay and therefore is an excellent marker to assess outcrossing. Previous studies have used cultivars with easily discernable dominant traits such as the crinkled leaves in the Spanish variety Krinkle to assess the percentage of outcrossing. The natural cross pollination rates in *Arachis hypogaea* have been reported to be as high as 12% but are highly variable depending upon the cultivar and the

environmental conditions. The highest reported outcrossing rate for Virginia-type peanuts is 2.81% in the cultivar Florigiant. The most likely mode of natural cross pollination in *A. hypogaea* is by bees. Many different species of bees in four different families have been observed visiting peanut flowers. In our fields in Holland, VA, we have identified *Bombus terrestris* L. as the major bee species in peanut fields and the likely pollinator. We have completed two years of outcrossing studies. In the center of each plot, one non-transgenic row was planted and flanked by a row of the corresponding transgenic on each side. The transgenic rows were followed by 24 rows of the non-transgenic parent variety in order to estimate the distance that the transgenic pollen moved. Rows were 3 m long and 0.9 m apart. These plots were cultivated under normal growing conditions and the pods from each row were harvested with a stationery picker and seeds were bulked. Embryos of at least 276 seeds from each row were excised and tested for the presence of oxalate oxidase by enzyme activity assay. With the exception of the Perry cultivar in the 2006 trial, our results have shown less than 2.5% outcrossing. We have observed outcrossing as far 17.4 m (19 rows) from the closest transgenic row. These results indicate that the likelihood of transgene escape is minimal and growers will not need to use the extensive measures to control gene flow that are required in other transgenic crops such as corn and rice.

WEED SCIENCE

Peanut Tolerance to KIH-485 in Georgia. E.P. PROSTKO* and T.L. GREY, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31793-0748.

KIH-485 is a new preemergence herbicide from Kumiai Chemical Industry Co. that is currently being developed for use in field corn and soybeans. Limited research has been conducted on its potential to be used in peanut. Two field trials (Tifton, Plains) were established in 2007 to evaluate the tolerance of peanut to preemergence (PRE) and postemergence (POST) applications of KIH-485. The treatments were arranged in a factorial design that included timing (PRE or POST) and KIH-485 85WG rates (0, 2, 4, 6, and 8 oz/A). All treatments were replicated four times and all data were subjected to ANOVA (P = 0.10). POST treatments of KIH-485 were applied between 44 and 51 days after peanut planting and included a non-ionic surfactant (0.25% v/v). The plot areas were maintained weed-free throughout the season and yield data were obtained using traditional peanut harvesting equipment. There was no interaction between KIH-485 timing and rate at either location. No significant visual crop injury symptoms were observed from KIH-485 (≤ 10% stunting). When averaged over rates, timing had no effect on peanut yield. When averaged over timing, rate had no effect on peanut yield. Additionally, KIH-485 had no effect on the expression of

tomato spotted wilt virus. These results suggest that peanut has acceptable tolerance to KIH-485. Similar studies are being conducted in 2008 to confirm these results.

Peanut Response to Paraquat and S-Metolachlor Applied in Tank Mix Combinations. P.A. DOTRAY*, Texas Tech University, Texas AgriLife Research, and Texas AgriLife Extension Service, Lubbock; W.J. GRICHAR, Texas AgriLife Research, Beeville; T.A. BAUGHMAN, Texas AgriLife Extension Service, Vernon, and L.V. GILBERT, Texas AgriLife Research, Lubbock.

Gramoxone Inteon is a relatively new formulation of paraquat dichloride that contains 2 pounds of paraquat ion per gallon. The Gramoxone Inteon formulation reduces oral toxicity while maintaining rapid, effective, and economical weed control. Gramoxone Inteon may be applied from 0.125 to 0.25 lb ai/acre (8 to 16 ounces of product per acre) from ground-crack to 28 days after ground-crack, and up to 2 applications may be made per year. For ground-crack use, Gramoxone Inteon may be tank mixed with Dual Magnum for residual weed control. The objective of this research was to examine peanut response to Gramoxone Inteon plus Dual Magnum in tank mix combinations when applied at ground crack (AC) and up to 28 days after crack (DAC) and to examine the tolerance of individual runner and Virginia market types to postemergence tank mix combinations. Field trials were conducted in 2006 and 2007 in peanut producing regions of the Texas High Plains (Dawson Co.) and in south Texas (Lavaca Co.). Plots were 2 rows by 25 or 30 feet with three replications and applications were made at a carrier volume of 10 (Dawson Co.) to 20 (Lavaca Co.) gallons per acre (GPA) using a CO2-pressurized backpack sprayer containing 110015 TurboTee (Dawson Co.) or 11002 Drift Guard (Lavaca Co.) spray tips. Peanut injury was evaluated using a scale of 0 to 100% throughout the growing season. Plots were kept weed free during the course of the growing season to ensure that any visible injury and yield loss could be attributed to the herbicide treatments. Peanuts were dug based on maturity of untreated control plots, allowed to field dry for 5 to 7 days, and were harvested with a small plot combine. In Dawson Co., peanut injury 7 days after treatment (DAT) ranged from 3 (AC) to 29% (7 DAC) when averaged across Gramoxone Inteon and Dual Magnum treatments at various application timings. There was no difference in peanut injury (approximately 18%) following applications made at 14, 21, and 28 DAC. When averaged across application timings for the various Gramoxone Inteon and Dual Magnum treatments, peanut injury 7 DAT ranged from 12 to 23%. Gramoxone Inteon at 8 and 16 oz injured peanut 12 and 18%, respectively. The addition of Dual Magnum at 16 oz to Gramoxone Inteon at 8 or 16 oz did not increase peanut injury. The elimination of NIS (non-ionic surfactant) to the Gramoxone Inteon plus Dual Magnum tank mixture did not reduce peanut injury. When Dual Magnum rate increased from 16 to 24 oz, no increase in peanut injury was observed.

When averaged across Gramoxone Inteon and Dual Magnum treatments at various application timings, peanut injury 14 DAT ranged from 2 (AC) to 16% (21 DAC). The least degree of peanut injury was observed in the AC applications, followed by (fb) applications made 7 and 14 DAC fb applications made 21 and 28 DAC. When averaged across application timings for the various Gramoxone Inteon and Dual Magnum treatments, peanut injury 14 DAT ranged from 6 to 15%. Gramoxone Inteon at 8 and 16 oz injured peanut 6 and 12%, respectively. The addition of Dual Magnum at 16 oz did not increase peanut injury. The elimination of NIS to the Gramoxone Inteon plus Dual Magnum tank mixture did not reduce peanut injury. When Dual Magnum rate increased from 16 to 24 oz, no increase in peanut injury was observed. Peanut yield decreased following applications made AC to 28 DAC when averaged across Gramoxone Inteon and Dual Magnum treatments at various application timings. Peanut yield ranged from 5053 lb/A (28 DAC) to 5391 lb/A (AC). When averaged across application timings, peanut yield ranged from 5063 to 5529 lb/A. The addition of Dual Magnum or NIS had no adverse affects on peanut yield. In Lavaca Co., peanut leaf burn with Gramoxone Inteon was more severe early in the growing season and gradually decreased with later applications. However, peanut stunting seemed to increase with Gramoxone Inteon applied 7 or 14 DAC (2006) or as applications were delayed (2007). In 2006, Gramoxone Inteon applied AC resulted in 2% or less peanut stunting while applications at 7 and 14 DAC resulted in 3 to 14% peanut stunting. Interestingly, most Gramoxone Inteon treatments applied 21 and 28 DAC resulted in peanut stunting which ranged from 0 to 9%. Only Gramoxone Inteon plus Dual Magnum applied at 28 DAC resulted in significant peanut stunting. In 2007, Gramoxone Inteon applied AC resulted in peanut stunting from 0 to 18% while Gramoxone Inteon applied 28 DAC caused peanut stunting which ranged from 8 to 18%. The rate of peanut stunting did not increase but there seemed to be more consistent stunting across all treatments. In 2006, no reduction in peanut yield were noted from the untreated check with any Gramoxone Inteon application. In 2007, peanut yields were reduced from the untreated check with Gramoxone Inteon at 8 oz plus Dual Magnum at 16 oz plus Induce at 0.25% v/v applied 14 DAC or Gramoxone Inteon at 8 oz plus Dual Magnum at 24 oz applied 28 DAC. Peanut grade was reduced from the untreated check with Gramoxone Inteon at 16 oz plus Induce at 0.25% v/v or Gramoxone Inteon at 16 oz plus Dual Magnum at 24 oz in AC applications. No other reductions in peanut yield or grade from the untreated check were noted with any herbicide treatment. In a Virginia tolerance test (NC-7), Gramoxone Inteon at 8 oz (plus NIS) injured peanut 10 and 5% when rated 7 and 14 DAT. The addition of Dual Magnum at 24 oz (plus NIS) injured peanut 13 and 8% when rated 7 and 14 DAT, respectively. No difference in peanut yield was observed following Gramoxone Inteon applied in tank mixture with Dual Magnum

relative to Gramoxone Inteon applied alone. Peanut yield ranged from 4641 to 4680 lb/A. Similarly, in a runner peanut market type (Flavorrunner 458), no enhanced peanut injury nor yield reduction was observed when Dual Magnum was added in a tank mix combination with Gramoxone Inteon compared to Gramoxone Inteon applied alone. Dual Magnum at 16 oz appears to be a safe tank mix partner with Gramoxone Inteon at 8 or 16 oz. Early applications (AC or 7 DAC) appear to be the safest timing. The elimination of NIS to the Gramoxone Inteon plus Dual Magnum tank mixture did not reduce peanut injury.

Physiological Affects of Late Season Glyphosate Applications on Peanut (*Arachis hypogaea*) Seed Development and Germination. T.L. GREY* and E.P. PROSTKO. Department of Crop & Soil Sciences, The University of Georgia, P.O. Box 748, 6 Weed Science Annex, Tifton, GA 31794.

Due to the increased volume of glyphosate that is used on most farms today, problems have increased with off target drift and sprayer contamination issues. The response of runner peanut to glyphosate is not well documented in the southeastern US.

Field studies were used to determine peanut response to glyphosate applied at 75, 90, and 105 days after planting (DAP) at Plains and Tifton in 2006 and 2007. Rates were 0, 0.08, 0.16, 0.24, 0.32, and 0.47 kg ae/ha. Data collected included peanut injury, seed size, peanut pod yield, and seed germination. Data indicated that peanut was tolerant to glyphosate at low doses early in the season and actually increased yield at 0.08 kg/ha. At 75 DAP peanut was susceptible to 0.24 kg/ha and greater. At 90 and 105 DAP peanut was tolerant to rates of 0.24 kg/ha and less. Injury from the 75 DAP treatments was reflected in peanut seed size. As glyphosate dose increased, peanut seed size decreased at Tifton and Plains. This trend was also true for the 90 and 105 DAP glyphosate applications at Plains, but not as pronounced for Tifton. Peanut seed size was reduced 6-8% when glyphosate was applied at 0.32 and 0.47 kg/ha. Germination was not affected by glyphosate application at either location. Peanut yield was reflective of the reductions in seed size: increased glyphosate rate reduced yield at 75 DAP. Reductions in yield occurred linearly for applications made at 75 DAP with up to 50% losses for Plains and Tifton at 0.47 kg ae/ha. This could be attributed to the timing of that application, when peanut was in bloom, or R1 stage of development. By delaying application until 90 or 105 DAP in 2006 or 2007, yield was reduced 15% or greater by 0.24 kg/ha and higher at Tifton, and 18% or greater by 0.24 kg/ha and higher at Plains.

Cultivation Strategies for Weed Control in Organic Peanut Production. W.C. JOHNSON, III*, USDA-ARS, N.B. SMITH, D.A. KEISER, University of Georgia, Tifton, GA 31793; and M.A. BOUDREAU,

Hebert Green Agroecology, Asheville, NC 28806.
Weed management in organic peanut production is difficult and costly. Previous research demonstrated limitations of propane flaming and OMRI-approved herbicides suitable use in organic production. Furthermore, related studies clearly showed the inability to manage weeds in reduced-tillage organic peanut. The only production input that consistently improved weed management in organic peanut production was cultivation. Studies were initiated in 2006 to refine systems of cultivation using a tine weeder. A tine weeder is a light-weight, high-speed cultivator that has multiple gangs and rows of adjustable-spring tines. Tines centered in row middles are set for aggressive cultivation, while tines centered over the drill are set for less-aggressive or no action, depending on stage of peanut growth. Research trials evaluated row patterns (wide rows and twin rows), frequency of cultivation (semi-weekly and weekly), and duration of cultivation (non-cultivated, 3-wk, 4-wk, and 5-wk). Results showed that peanut seeded in wide rows and cultivated weekly or semi-weekly for 5-wk were the most effective regimes evaluated. Even in plots with the most effective cultivation regimes, a 'light' handweeding was needed to control escapes. None of the cultivation regimes effectively controlled weeds when peanut were seeded in twin row patterns. Peanut seeded in wide rows had greater in-row peanut seedling density than peanut seeded in twin rows and this improved competition of peanut with weeds. It was noted that cultivation needed to be initiated before weed emergence, which coincided with peanut emergence ('cracking'). Weeds already emerged were not consistently controlled with the tine weeder, regardless of the duration or frequency of cultivation. The most effective cultivation regime from these research trials was validated on a certified organic farm in 2007. Weeds were effectively controlled in the on-farm demonstration, with minimal use of handweeding. Trials in 2008 continued to study combinations of row patterns, cultivation regimes, and seeding rates for weed control in organic peanut. In addition, a brush-hoe cultivator using gangs of rotating stiff-bristle brushes, was evaluated for early season 'cultivation' in the peanut drill.

Weed Management in 15-Inch Row Spacing Peanut. B. BRECKE*, West Florida Research and Education Center, University of Florida, Jay, FL 32565; and D. STEPHENSON, IV, Northeast Research and Extension Center, University of Arkansas, Keiser, AR 72351.
A new system utilizing 15-inch row spacing was recently introduced for cotton production in the southeastern U.S. Since many cotton growers also produce peanuts, it would be economically advantageous if growers could use the same planting equipment for peanuts and cotton. Studies were conducted at the University of Florida, West Florida Research and Education Center, Jay, FL from 2005 to 2007 to compare weed management in a 15-inch planting pattern with the same herbicide systems applied to peanut planted using a conventional row spacing.

Treatments were arranged as a split-plot with planting pattern as main plots and 13 herbicide systems as split plots. Results varied with year but weed control was often better in the 15-inch rows than in the conventional rows. When results were averaged over all herbicide treatments Florida beggarweed control improved 5%, tropical spiderwort 5 to 10%, browntop millet 15 to 20%, and pitted morningglory and yellow nutsedge 10% with 15-inch rows compared to conventional rows. Peanut yield was also 5 to 10% higher with the 15-inch row system.

PLANT PATHOLOGY, NEMATOLOGY, AND MYCOTOXINS

Resistance to *Cercosporidium personatum* in Medium-Maturity Runner-Type Peanut Cultivars. A.K. CULBREATH*1, T.B. BRENNEMAN1, W.D. BRANCH2, and C.C. HOLBROOK3. 1Dept. of Plant Pathology, The University of Georgia, Tifton, GA 31793-0748; 2Dept. of Crop and Soil Science, The University of Georgia, Tifton, 31793-0748; and 3USDA-ARS, Coastal Plain Experiment Station, Tifton, GA, 31793-0748.

Several peanut (*Arachis hypogaea* L.) cultivars have been released with moderate resistance to *Cercospora arachidicola* Hori (early leaf spot) and/or *Cercosporidium personatum* (Berk. & M. A. Curtis) Deighton (late leaf spot). However, in the southeastern U.S., resistance to these pathogens in runner-type cultivars has typically been limited to cultivars that mature 2 to 3 weeks later than the standard runner-type cultivar Georgia Green. Multiple field experiments were conducted in 2005-2007 in which disease progress and/or final disease severity of late leaf spot were compared among the medium-maturity runner-type cultivars (ca. 135 days to maturity) Georgia Green, Georgia-03L, and Tifguard (tested as C724-19-15) grown using no fungicides or reduced fungicide regimes. In 2005, in an experiment in which plots received only three early season applications of chlorothalonil for leaf spot control, final leaf spot (Florida 1-10 scale) ratings were 6.8 for Georgia Green and 5.1 for Tifguard (LSD = 1.1). Averaged across similar experiments conducted in 2006 and 2007, final leaf spot ratings were 5.6, 3.9, and 3.3 (LSD = 0.9) for Georgia Green, Georgia-03L, and Tifguard, respectively. In a field experiment in 2005, factorial combinations of Georgia Green, Georgia-03L, C-99R, and Georgia-01R with applications of 0, 2, 3, and 6 fungicide sprays of regimes that included pyraclostrobin, tebuconazole, and chlorothalonil were evaluated for control of late leaf spot. In the nontreated plots of that experiment, disease progress of late leaf spot was suppressed in Georgia-03L compared to Georgia Green, and was comparable to that of C-99R and Georgia-01R during the period when all were in the field. A similar experiment was conducted in 2006, but leaf spot epidemics developed much later. However, averaged across fungicide treatments, final leaf spot severity was lower in Georgia-03L than in Georgia Green. In 2007, Georgia Green, Georgia-03L, Tifguard,

Georgia-01R, and York were compared in a field experiment in which cultivars were factorially arranged with 0, 3, 4, and 6 applications of fungicides that included pyraclostrobin, mixtures of prothioconazole + tebuconazole, or prothioconazole + tebuconazole + chlorothalonil, and chlorothalonil. In nontreated plots, disease progress of late leaf spot was suppressed in Georgia-03L and Tifguard, compared to Georgia Green, with standardized area under the disease progress curve values of 4.0, 3.8 and 5.4 (LSD = 0.3) respectively for the three cultivars. Disease progress was similar for Georgia-03L, Tifguard, Georgia-01R, and York, for the time in which all were in the field. However, both Georgia-03L and Tifguard had final leaf spot severity ratings that were lower than final ratings for Georgia-01R and York that remained in the field 14 days longer. Georgia-03L is the first medium-maturity runner-type cultivar with appreciable resistance to either leaf spot pathogen. The recently released cultivar Tifguard has a similar level of resistance. The components of resistance responsible for the suppression of epidemics have not been determined for either cultivar. The combination of moderate levels of leaf spot resistance in Georgia-03L and Tifguard, which have shorter time to maturity than other leaf spot resistant cultivars, could allow production of either of these cultivars with greatly reduced fungicide inputs for leaf spot control compared to requirements for susceptible cultivars.

Field Performance of Three Peanut Entries in Oklahoma. H. MELOUK*[1], C. GODSEY[2], K. CHENAULT[1], and J. DAMICONE[3]. [1]USDA-ARS, Stillwater, OK 74075; [2]Department of Plant and Soil Sciences, Oklahoma State University (OSU), Stillwater, OK 74078; [3]Department of Entomology and Plant Pathology, OSU, Stillwater, OK 74078.

Peanut entries (Tamrun 96, Tamrun OL02, and TX 994313) were among peanut lines included in four tests in 2006 and 2007. Plots were planted during May and harvested in late September to mid October to attain a growing season of 155 days. Plots were arranged in a complete randomized block design with 4 replications, and irrigated as needed to ensure good growth. Pest management practices were followed to manage foliar diseases and weeds according to extension service recommendations for Oklahoma. In 2006, plots were planted at two locations in Caddo County and one location in each of Beckham and Major Counties. In 2007, plots were planted at two locations in Caddo County and one location in each of Beckham and Tillman Counties. Mean yield or grade for each entry by year and location was considered as a random individual event. Data were subjected to standard analysis of variance. There was no entry by year interaction for yield and grade, and therefore, data from the two years were combined for analysis. Yields of 4194, 3931, and 4317 pounds per acre for Tamrun 96, Tamrun OL02, and TX 994313, respectively, were not significant ($LSD_{0.05}$ =619). Grades of 68.9, 68.3, and 72.8 for Tamrun 96, Tamrun OL02, and TX

994313, respectively, were significant ($LSD_{0.05}$ =3.7). These data showed that the high oleic advanced peanut breeding line TX 994313 exhibited superior grade over Tamrun 96 and Tamrun OL02 under Oklahoma conditions.

Suppression of Cylindrocladium Black Rot of Peanut with Seed Treatment Fungicides, Proline Fungicide In-Furrow, and Foliar Sprays of Provost Fungicide. P.M. PHIPPS* and J. HU, Tidewater Agricultural Research & Extension Center, Virginia Tech, Suffolk, VA 23437.

Seed treatments with Trilex Optimum, Trilex Star, Dynasty CST and Vitavax PC were applied at 4 oz/cwt of seed and planted with and without Proline at 5.7 fl oz/A applied by a microtube to the seed furrow in a volume of 5 gal/A. Plots were two, 35-ft rows spaced 3-ft apart and treatments were replicated in four randomized complete blocks. Recommended practices for production of virginia-type peanuts were followed throughout the growing season. The variety Phillips (germ. 66%) was planted on 25 Apr and peanuts were harvested on 4 Oct. All treatments improved stand counts significantly ($P \leq 0.05$). Gaps caused by missing plants in rows averaged up to 4.3 ft of row in plots planted to untreated seed but no more than 1.8 ft of row in fungicide-treated plots. Numbers of plants with above ground-symptoms and signs of Cylindrocladium black rot (CBR) and Sclerotinia blight were low through 23 Aug. Numbers of dead plants on 28 Sep were associated with below-ground disease caused by CBR and southern stem rot. All seed treatments except Vitavax PC increased yield significantly. Seed treatments with Trilex Star and Dynasty PD were superior to Vitavax PC for stand count on 30 May and yield. Proline in furrow improved stand counts and yield significantly for seed treated with Trilex Optimum, but not other seed treatments.

Two fields were established to test the efficacy of Proline 480SC in furrow and Provost 433SC in foliar sprays for control of CBR. One trial site had a history of low CBR incidence (Lo-I) and the other site had a history of high CBR incidence (Hi-I). Vapam 42% at 7.5 gal/A was injected 8 in. under rows as a standard treatment or CBR control. All plots were treated with Temik 15G in furrow when planting the variety VA 98R (germ. 80%) on 9 May in both trials. Treatments with Proline at 5.7 fl oz/A in furrow were as defined above. Three $D_3$23 nozzles/row and a spray volume of 15 gal/A at 48 psi were used to deliver foliar sprays of either Provost 433 SC at 8 or 10 fl oz/A, or Echo 720 1.5 pt/A. The first spray was applied at beginning pod (R3) and thereafter sprays were applied according to weather-based advisories for a total of four applications. Echo was applied to all plots on the fourth spray. The Lo-I field was irrigated four times and the Hi-I field was irrigated three times during dry weather stress. Plots were four 40-ft rows spaced 3-ft apart and treatments were replicated in four randomized complete blocks. The

Lo-I field was harvested on 9 Oct and the Hi-I field was harvested on 4 Oct. Stand counts on 21 Jun and CBR incidence on 23 Aug were not affected significantly ($P \leq 0.05$) by treatments in either trial. CBR incidence on 20 Sep in plots without Vapam in the Lo-I trial was reduced significantly by foliar sprays of Provost at 8 and 10 fl oz/A with and without Proline in furrow. No significant increase in disease control resulted from use of Vapam in addition to Proline in furrow followed by sprays of Provost at 8 or 10.7 fl oz/A. All treatments with Proline in furrow and/or Provost sprays at 8 or 10.7 fl oz/A increased yield significantly; yields were not improved significantly by Vapam in addition to Proline in furrow and Provost sprays in the Lo-I trial. CBR incidence on 22 Sep in the Hi-I trial was reduced significantly only by treatments with Vapam plus Proline in furrow and three sprays of Provost at 8 or 10.7 fl oz/A. CBR incidence in plots treated with Proline in furrow and foliar sprays of Provost at 10.7 fl oz/A suppressed CBR incidence by 45%, but levels were not significantly different from the Echo standard. Yields were increased significantly by all treatments with Proline and Provost with and without Vapam in the Lo-I trial, whereas yields in the Hi-I trial were increased significantly by treatments with Proline in furrow plus three sprays of Provost at 10.7 fl oz. The greatest yield response occurred in plots treated with Vapam plus Proline in furrow and foliar sprays of Provost in the Hi-I trial. The results of these trials provided evidence that Proline in-furrow followed by foliar sprays with Provost can suppress CBR and increase yield.

Evaluation of Host Resistance and Fungicides for Late Leaf Spot Control in North Carolina. B.B. SHEW*, Department of Plant Pathology, and T.G. ISLEIB, Department of Crop Science, North Carolina State University, Raleigh, NC 27695

Early and late leaf spot are the most important foliar diseases of peanut in North Carolina, but historically early leaf spot has predominated and has been the main focus of control efforts. However, late leaf spot has become more serious in the last five years and is now the predominant foliar disease in most NC locations. The objectives of this project were to: 1) evaluate relative efficacy of common fungicides against early and late leaf spot; 2) rank peanut cultivars and lines for resistance to late leaf spot; and 3) evaluate integrated control of leaf spots with resistance and fungicides applied according to various schedules. For the first objective, Gregory, a cultivar that is highly susceptible to late leaf spot, was planted in irrigated field plots at Lewiston in 2006 and 2007. Plots were sprayed five times on a calendar schedule. Five fungicides commonly used in NC were applied three times consecutively in mid-season. In both years, late leaf spot was the predominant foliar disease and was best controlled by Headline or Tilt/Bravo. Folicur provided relatively poor control of late leaf spot. Yields appeared to reflect a composite of losses caused by leaf spots and stem rot. For the second objective, selected peanut cultivars and breeding lines were planted at Lewiston in 2007 and

2008 to characterize their relative resistance or susceptibility to leaf spots and defoliation. Gregory, Perry, NC 12C, and CHAMPS were among the cultivars most susceptible to late leaf spot. No virginia-type cultivar was consistently superior in late leaf spot resistance. Several breeding lines were much more resistant to late leaf spot than any of the cultivars. For the third objective, the germplasm line GP-NC 343, the breeding line N03081T, and the susceptible cultivar Gregory were planted in irrigated plots at Lewiston in 2007. Plots were not sprayed, or were sprayed five, four, or three times according to calendar schedules. The first or the first and second fungicide applications were skipped in the four- or three-spray schedules. All treatments provided better disease control (total leaf spot, late leaf spot, defoliation, and stem rot) than untreated, but three sprays were as effective as five sprays for disease control on GP-NC 343 and N03081T. On Gregory, disease control was reduced with three fungicide applications compared to four or five. N03081T had less stem rot than Gregory or GP-NC 343. Fungicide treatments did not affect stem rot or yield, indicating that only a minimal spray program was necessary for maintaining yield under the drought conditions of 2007.

Delivery and Performance of a Weather-Based Leaf Spot Advisory Program in Oklahoma. J.P. DAMICONE*, Department of Entomology and Plant Pathology, and A.J. SUTHERLAND, Department of Biosystems and Agricultural Engineering, Oklahoma State University, Stillwater, OK 74078-3033.

A weather-based spray advisory for scheduling fungicide applications to control early leaf spot has been recommended for use by peanut producers in Oklahoma since the early 1990's. This program is based on the model developed by Cu and Phipps (Phytopathology 83:195-201) in Virginia. The program uses the cumulative duration of temperature and wetness periods favorable for disease development in recommending sprays. A web-based delivery system (http://agweather.mesonet. org) has been developed using the Oklahoma Mesonet, a network of automated weather stations. The weather network is comprised of 110 stations across the state with at least one station located in each county. Spray advisories can be obtained interactively from any weather station by entering planting date and/or the date of the previous fungicide application, or from tables of cumulative infection periods. General risk assessments can be made using graphical interfaces such as 14-day graphs of cumulative infection periods, and seasonal maps of cumulative infection periods. A recent addition for risk assessment is an infection period forecast based on the 84-hour National Weather Service North American Model. In 34 trials using the advisory program in fields planted with peanuts following peanuts, leaf spot incidence for the advisory program was intermediate (34%) between the 14-day calendar program (11%) and the untreated

control (78%; LSD=8). However yields were similar among the advisory (3,515 lb/A) and calendar (3463 lb/A) programs, but greater than the untreated control (2890 lb/A; LSD=177). The advisory programs recommended over two fewer sprays per season compared to the full season program. The program has been used by up to 30% of the growers in the state. Adoption has been limited by the use of fungicides that control both soilborne and foliar diseases. Fungicides such as azoxystrobin and tebuconazole are best applied at specific timings for soilborne disease control.

In-furrow Provost Application Enhances CBR Control in Peanut. A.K. HAGAN*, H.L. CAMPBELL, and K.L. BOWEN, Dept. of Entomology and Plant Pathology, Auburn University, AL 36849; and L. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345.

On 18 May 2007, peanut cultivars AP-3 and GA03L were sown in a Dothan fine sandy loam prepared for planting using conventional tillage practices in a field maintained in a peanut–cotton–peanut rotation. The study was watered as needed. A split-plot design with peanut cultivars as whole plots and fungicide program as sub-plots was used. Whole plots were randomized in four blocks. Individual subplots consisted of four 30-ft rows spaced 3-ft apart. Provost 480 was applied at planting to selected plots over the exposed seed in an open seed furrow. Post-plant fungicide applications were made on a 14-day calendar schedule on 2 July, 17 July, 1 Aug., 15 Aug., 30 Aug., 11 Sept., and 25 Sept. using a tractor- mounted sprayer with three TX-8 nozzles per row delivering a 15 gal/A spray volume at 45 psi. Early and late leaf spot were rated together on 25 Sept. using the 1-10 Florida scale. Cylindrocladium black rot (CBR) loci counts (1 locus was defined as $\leq$ 1 ft of consecutive CBR-damaged plants per row) were made after plot inversion on 8 October. Yields are reported at 7% moisture. Significance of treatment effects were tested by ANOVA and Fisher's protected least significant difference (LSD) test (P=0.05). Since the cultivar x treatment interaction for leaf spot, CBR, and yield were not significant; data for each variable were pooled across cultivars. Despite frequent irrigation events, summer-long hot and often dry weather patterns suppressed leaf spot development. The highest leaf spot ratings were recorded for the Folicur program. The block four-application Proline and Provost programs gave better leaf spot control than the Abound program. Proline applied in-furrow did not enhance leaf spot control with the block four-application Provost and Proline programs. Proline in-furrow in combination with the block four-application of either the Provost and Proline programs were equally effective in controlling CBR. The CBR loci counts for the block four-application Provost program alone and with Proline in-furrow were lower than the season-long Bravo program. When compared with the Bravo program, Bravo+Moncut , Abound, and Folicur programs did not reduce CBR incidence. Yield response with the Provost program that included Proline in-furrow was significantly higher than the Bravo+Moncut,

Abound, and Bravo programs, but not the Folicur program. Despite better CBR control, yield responses with the block four-application Provost or Proline programs, with and without Proline in-furrow, were similar.

Impact of Winter Cover Crop on Aflatoxin Contamination of Peanut. K.L. BOWEN*, A.K. HAGAN, and H.L. CAMPBELL, Dept. Entomology and Plant Pathology, Auburn University, AL 36849.

Dryland peanut, which was planted following rye, oats, wheat or winter fallow (bare soil), was sampled for a number of diseases and yield as well as aflatoxin contamination of peanut seed. Previous years' results indicate that the fallow treatment has the lowest peanut root-knot nematode (*Meloidogyne arenaria*) populations, and, in 2007, peanuts following fallow had the lowest root-knot damage ratings. Although not significant among winter cover crops, the fallow treatment tended to have the lowest incidence of stem rot (caused by *Sclerotium rolfsii*). Despite apparently lower disease pressure, yields were highest from plots which had the oats winter cover crop and lowest from those maintained as fallow treatments. Despite hot, dry summer weather in 2007, pod samples from peanuts grown following these winter cover crops had low levels of aflatoxin contamination (0 to 89 ppb; average = 15.6 ppb) in 2007. Samples from peanuts planted following wheat tended to have the lowest levels of contamination, while those from oats tended to have higher levels of contamination. Additional data will be presented to evaluate these relationships.

Validation of Prescription Fungicide Programs Based Upon Peanut Rx. R.C. KEMERAIT*[1], A.K. CULBREATH[1], T.B. BRENNEMAN[1], N. SMITH[1] A. HAGAN[2], J.E. WOODWARD[3], H. MCLEAN[4], J. HADDEN[4], and E. ANDREWS[5] .[1]University of Georgia, [2]Auburn University, [3]Texas AgriLife Extension, [4]Syngenta Crop Protection, [5]University of Georgia Cooperative Extension.

In this study "Peanut Rx" (formerly known as the University of Georgia's Peanut Disease Risk Index) was the basis for assessment of reduced-input fungicide programs. The reduced-input fungicide programs were compared to a full-season fungicide program for disease control, yield, and value to the grower. In 2008 three field studies were conducted in Georgia and two studies were conducted in Alabama. A standard full-season program from Syngenta Crop Protection (Tilt/Bravo (1.5 pt/A) applications 1 and 2, Abound (18 fl oz/A) applications 3 and 5, and Bravo WeatherStik (1.5 pt/A) applications 4, 6, and 7) was compared to a moderate-risk 5-spray program and a low-risk 4-spray fungicide program. These reduced-input programs included applications of Tilt/Bravo, Abound, and Bravo WeatherStik and were endorsed by Syngenta Crop Protection for use in fields where risk was calculated to be either moderate or low based upon Peanut Rx. Risks at each research site for

leaf spot diseases, stem rot, and limb rot were typically assessed as "high" or "moderate" based primarily on short crop rotation and variety selection. It was estimated that a grower could save $11.94/A and $31.07/A each season if able to spray five or four times, respectively, rather than seven times. In these trials, low-risk, moderate-risk, and high-risk fungicide programs from Syngenta did not differ in control of leaf spot, rust, or soilborne diseases nor did they differ in yield. Thus, specific reduced-input fungicide programs can be beneficial to growers when used in appropriate situations.

Yield and Market Quality of Virginia-Type Peanut Cultivars Engineered with the Oxalate Oxidase Gene for Resistance to Sclerotinia Blight. J.H. HU*, P.M. PHIPPS, D.E. PARTRIDGE, Tidewater Agricultural Research & Extension Center (AREC), Virginia Tech, Suffolk, VA 23437; S.M. CHRISCOE, and E.A. GRABAU, Dept. of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, VA 24061; and B.B. SHEW, Dept. Plant Pathology, North Carolina State Univ., Raleigh, NC 27695.

Three virginia-type cultivars (Perry, Wilson, NC 7) and two lines of each cultivar transformed with a barley oxalate oxidase gene were evaluated in a field with a history of Sclerotinia blight at the Tidewater AREC in Suffolk, Virginia. A split-plot design was used with fungicide treatment in main plots and cultivars in subplots. Four randomized complete blocks of main plots were treated or not treated with Omega 500 at 1 pt/A for control of Sclerotinia blight. Subplots were planted to six transgenic lines and three corresponding non-transformed cultivars in eighteen plots of two 25-ft rows spaced 3 ft apart. The field site was Kenansville loamy sand and previously planted to corn in 2006, cotton in 2005, and peanut in 2004. All plots were planted on 14 May at a rate of 3.5 seed/ft of row. Assays of a 5-mm leaf disk from ten randomly selected plants of each line on 26 Jul and 18 Sep confirmed gene expression in all six transgenic lines. The incidence of Sclerotinia blight and other diseases was recorded at 2-wk intervals until harvest by counting disease foci in each plot. Disease appeared first in non-transformed parent cultivars but reached only low to moderate levels at harvest. According to area under the disease progress curve (AUDPC), the six transgenic lines had an average of 97% less disease than their non-transformed parents. Main plots treated or not treated with Omega fungicide were not significantly different in disease incidence, AUDPC, or yield. Peanuts were dug on 17 Oct and harvested on 23 Oct. Yield was determined after drying and adjusting the weight of whole pods to 7% moisture. Yields of transgenic lines were either similar or increased significantly as in W73-27-B-B-B compared to its non-transformed parent. Grade, blanching, and nutrient characteristics were determined in sub-samples of pods and kernels harvested from three transgenic lines and their non-transformed parents. P39-7-9-B-B and W73-27-B-B-B had significantly increased percentages of fancy pods and N70-8-24-B-B had significantly increased percentages of jumbo pods. All three transgenic lines had an increased value of $29 to 120/A based on grade characteristics and the government loan rate. There were no differences in blanching of extra large kernels and medium-size kernels for N70-8-24-B-B, P39-7-9-B-B and their corresponding non-transformed parents, but both medium-size kernels and extra large kernels of W73-27-B-B-B showed significantly increased percentages of whole kernels blanched compared to its

non-transformed parent. No significant differences were found in levels of Ca, K and S in kernels of transgenic lines compared to their corresponding non-transformed parents. However, kernels of all three transgenic lines had higher levels of Mg compared to their non-transformed parents. P39-7-9-B-B showed a significant increase in levels of P, whereas no significant difference was observed in other transgenic lines compared to their non-transformed parents. Aflatoxin levels in all transgenic and non-transformed parental controls were below detection limits of the commercial assay kit (less than 5 ppb).

Response of Runner-Type Peanut Cultivars to Verticillium Wilt. J.E. WOODWARD*, and M.A. BATLA, Texas AgriLife Extension Service, Lubbock TX 79403; T.A. WHEELER, Texas AgriLife Research, Lubbock TX 79403; and T.A. BAUGHMAN, Texas AgriLife Extension Service, Vernon TX 76385.

Verticillium wilt, caused by the soilborne fungus *Verticillium dahliae* Kleb., is increasing in importance throughout the southern High Plains of Texas. Five field studies were conducted in 2007 to evaluate the performance of ten commercially available runner peanut cultivars (Flavorrunner 458, Tamrun OL01, Tamrun OL02, Tamrun OL07, Tamnut OL06, ACI 48, ACI 51, ANorden, McCloud, and Florida-07) in fields with varying soil populations of *V. dahliae*. Population densities of *V. dahliae* ranged from 0 to 8.5 propagules/cc of soil. Verticillium wilt symptoms were apparent late season and incidence was assessed through mid-October. Verticillium wilt incidence was greatest for the cultivars McCloud (25%) and Tamnut OL06 (23%), and lowest for Florida-07 (16%) and ACI51 (19%). Final incidence ratings were negatively correlated with grade (r = -50%; $P \leq 0.0001$), but positively correlated with pod yields (r = 0.72; $P \leq 0.0001$). Yield was highest for Tamrun OL02 (ranging from 3804 to 6063 lb/A), and lowest for Florida-07 (ranging from 3876 to 4346 lb/A). Grades ranged from 75.5 to 79.0% and were highest and lowest for ACI 51 and Tamnut OL06, respectively. These results suggest that differences in Verticillium wilt susceptibility occur in commercially available runner-type peanut cultivars; however, additional studies are needed before recommendations will be made to growers.

Field Test Evaluations for Combined White Mold and Tomato Spotted Wilt Disease Resistance among Peanut Genotypes. W.D. BRANCH*, Dept. of Crop and Soil Sciences; and T.B. BRENNEMAN. Dept. of Plant Pathology; University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793-0748.

White mold or stem rot caused by *Sclerotium rolfsii* Sacc. and tomato spotted wilt caused by *Tomato spotted wilt virus* (TSWV) are two major disease problems in Georgia peanut (*Arachis hypogaea* L.) production. Current fungicides are very effective but expensive for white mold control, and insecticides usually have little effect on TSWV, which is transmitted by thrips. Consequently, the objective of this study was to evaluate different peanut genotypes for resistance to both of these

pathogens. Field test evaluations were conducted for four consecutive years (2004-07) at a site on the agronomy research farm near the Coastal Plain Experiment Station which has a long history of continuous peanut production and a high incidence of white mold and TSWV. Results from these field tests showed significant differences among the peanut genotypes evaluated for combined resistance to both diseases. Several genotypes showed low TSWV incidence at midseason and mid to late season. However by late season and after digging, the best combination of white mold and TSWV disease resistance and highest consistent yield over years was found in recently released runner-type peanut cultivars 'Georgia-07W', 'Georgia-03L', and 'AP-3'.

Peanut Cultivar Susceptibility to *Lasiodiplodia theobromae* and Effect of Seed Treatments on Isolation Frequencies from Shells and Seed. T.B. BRENNEMAN* and R.C. KEMERAIT, JR., Department of Plant Pathology, University of Georgia, Tifton, GA 31794.

Collar rot is a disease of peanut that occurs sporadically in the southeastern Unites States, occasionally causing significant yield loss during very hot years. Resistance to the disease has been reported, but little is known regarding susceptibility of currently grown cultivars. In 2007, a total of 19 cultivars were screened in the greenhouse for susceptibility to *L. theobromae.* Potted plants (8-wk-old) were wounded at the crown and inoculated with a 1-cm-dia. plug of the pathogen actively growing on PDA. Each cultivar was replicated 5 times and the test was repeated. Lesions developed rapidly at wounds, followed by wilting of stems and sometimes plant death. Symptoms were rated 8 days after inoculation on a scale of 0 (no disease) to 5 (dead plant), and mean ratings ranged from 2.1 to 4.4 in two trials, but relative rankings were not completely consistent between trials. Among the more susceptible cultivars were McCloud, York, AT-3081R, and Georgia-02C, and among the least susceptible were Carver, Gregory, Tifrunner, Tifguard, and Georgia-05E. In another study, 200 peanut pods from a heavily infested field were plated on APDA, and this test was also repeated. The pathogen was recovered from 32% of the shells and 4-7% of seeds with no fungicide treatment. The incidence of *L. theobromae* recovered from seed was reduced to zero by Vitavax PC and Dynasty, and to $\leq$ 1% by Trilex Star and Trilex Optimum (all treatments applied at 249 g / 100 kg seed). Seed treatment with Kodiak had no effect on isolation frequency of *L. theobromae*.

Climate Change Impacts on Aflatoxin Contamination in the Australian Peanut Crop. G.C. WRIGHT*, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; Y.C. CHAUHAN and R.C.N. RACHAPUTI, Plant Science, Department of Primary Industries and Fisheries, Kingaroy, Queensland, Australia, 4610.

Aflatoxin contamination is a major issue for rain fed peanut growers throughout Queensland, Australia, when crops are subjected to high soil temperatures and end-of-season drought. Price penalties of up to $450 AUD/tonne for aflatoxin positive product have provided strong pricing signals back to growers to try and minimise contamination 'on-farm'. It has been suspected that climate change in this region over the past few

decades has led to an increase in the frequency of end-of-season drought along with higher ambient temperatures, which may have exacerbated the aflatoxin problem. To test this hypothesis, a fully calibrated peanut aflatoxin risk model developed within the Agricultural Production Simulator (APSIM) peanut model was used to simulate aflatoxin risk using climate data available from 1890 to the present time. This analysis showed there has been a substantial increase in aflatoxin risk over the past 30 years. Thus, while high aflatoxin risk (i.e. an Aflatoxin Risk Index > 20%) occurred in about 1 in 11 years during the period from 1890 to 1980, it increased significantly to nearly 1 in 3 years during the period from 1980 to 2007. Climate data shows that since 1980, rainfall has decreased by 8%, maximum temperature was 2% (+0.6^{o}C) higher, and minimum temperature was 7% (1.1^{o}C) higher compared to the previous 90 years. Radiation has more or less remained unchanged. The modelling study was also able to assess potential solutions to adapt to the negative effects of the observed climate change. For example, our analysis showed that aflatoxin contamination could be minimised by growing shorter duration cultivars that avoid significant drought stress, as well as through a late planting strategy that helps the crop to avoid high temperatures during the pod filling stage. These strategies can ensure improved food safety in peanut products despite the negative effects of the current climate change occurring in this region.

EXCELLENCE IN EXTENSION EDUCATION SPONSORED BY BAYER CROPSCIENCE

Research Plots to Address Nitrogen Utilization in Virginia Market Type Peanuts. C.E. ESTIENNE* Virginia Cooperative Extension, Virginia Tech, Emporia, VA 23847, W.C. ALEXANDER, Virginia Cooperative Extension, Virginia Tech, Courtland, VA 23837, and J.C. FAIRCLOTH Dow AgroSciences

Peanut roots infected with rhizobium bacteria can convert atmospheric nitrogen (N) into a form utilized by the plant. Inoculant can be applied at planting to provide a source of these bacteria, and should be in fields that have not been planted to peanuts in three or more years. Another typical method for supplying N to peanuts in Southeast Virginia has been the application of 200 lbs of ammonium sulfate (40 lbs N/acre) to their peanut crop in mid June. Three on-farm, and one on-station, research trials were designed to address N utilization in southeast Virginia peanut fields. In the three on-farm trials, four rates of N (0, 50, 100, and 150 lbs N/acre) were applied to three fields in Southampton County. In these trials other fertility and pest management practices followed Virginia Cooperative Extension recommendations. Treatments were applied in 12 by 48 ft plots in a randomized complete block design with four replications. In one field an increase in yield was obtained in response to

100 lb N/acre and 150 lb N/acre (P= .05). There was not a significant increase in yield with the 50 lb N/acre over the untreated control. This field demonstrated visual signs of nitrogen deficiency. In the two remaining fields that did not exhibit N deficiency symptoms, there was no significant yield increase at any N rate over the control. The second trial measured the effect of inoculation of peanuts at planting with Peanut Special™ (6.6 oz/100 lb of seed) in a field that had not been planted to peanuts for the last four years. Twelve by forty foot plots were planted in a randomized complete block design with three replications on May 15, 2007. Fertility and pest management followed Virginia Cooperative Extension recommendations. Peanuts were harvested on October 9, 2007 and there was no significant difference in yield between inoculated peanuts (4820 lb/acre) and the uninoculated control (4880 lb/acre) (P=.05). On-farm research plots are a valuable tool both to help producers evaluate effectiveness of current practices specific to their area, and to demonstrate concepts already proven through small plot research.

Summary of Production and Pest Management Practices by Top Growers in North Carolina. R. RHODES*, L. SMITH, M. WILLIAMS, P. SMITH, F. WINSLOW, A. COCHRAN, B. SIMONDS, A. WHITEHEAD, Jr., C. ELLISON, J. PEARCE, C. TYSON, S. UZZELL, R. HARRELSON, C. FOUNTAIN, M. SHAW, T. BRIDGERS, D.L. JORDAN, R.L. BRANDENBURG, and B.B. SHEW, North Carolina Cooperative Extension State University, Raleigh, NC 27695.

The North Carolina Peanut Growers Association and the North Carolina Cooperative Extension Service recognizes the highest yielding peanut producers each year at annual production meetings. Growers (n = 133 from 2001-2007) were asked to complete a survey of their production and pest management practices in the application process. Total number over growers across the seven seasons is provided. Eighty-one of the growers planted May 1-15 and 42 planted after May. Seeding rates of 100-120 lb/acre (40), 121-140 lb/acre (53), and >140 lb/acre (18) were listed; 21 seeded at 4-6 seed/ft of row. Twenty-three growers irrigated and 122 planted in single row planting patterns whereas 11 planted in twin rows. Tillage included disking (112), chisel plow (27), moldboard plow (25), field cultivate (83), bedding (59), ripping and bedding (56), strip tillage (22), and no till (2). The number of growers with one, two, three, and at least four crops between peanut plantings was 1, 19, 36, and 77, respectively. All but 3 growers applied gypsum while 105 applied fertilizer (N-P_2O_5-K_2O) shortly before planting. Boron, manganese, and inoculant were included by 112, 94, and 102 farmers, respectively. The number of growers planting one, two, three, or four or more cultivars was 21, 36, 34, and 23, respectively. Popular varieties included NC-V 11 (69), Perry (63), Gregory (40), VA 98R (38), and Wilson (22). NC 12C and Phillips were planted by 17 and 15 growers

respectively, and 8 or fewer growers planted AP-3, Brantley, CHAMPS, Georgia Green, Georgia Runner, NC 7, VA-C 92R, and ViruGuard. Temik (88), Thimet/Phorate (29), and Orthene (10) were applied in the seed furrow while postemergence applications of insecticides included Lorsban (79), Asana XL (57), Karate Z (42), and Orthene/Acephate (16). Baythroid, Comite, Danitol, Lannate, and Larvin were applied by no more than seven growers for each insecticide. Twenty-three, 57, and 26 growers applied 4, 5, or 6 sprays, respectively, during the season for leaf spot/southern stem rot control. Eight or fewer growers applied less than four or more than 6 fungicide treatments for these diseases. The total number of fungicide applications across all growers and years were chlorothalonil, 233; (Folicur, 205; Headline, 98); Abound, 74; and Tilt, 37. Other fungicides applied 12 or fewer times included Artisan, Provost, Stratego, Tencop, and Topsin. Eighty-one farmers fumigated for *Cylindrocladium* black rot and 44 sprayed for Sclerotinia Blight on at least a portion of their acreage. Herbicide applications across all methods and timings were Dual or Dual Magnum (110), 2,4-DB (83), Prowl or Pendimax (69), Storm (55), glyphosate (50), paraquat (48), Basagran (45), Cadre (41), Valor SX (35), Strongarm (29), and Pursuit (25). The herbicides Blazer/Ultra Blazer, Cobra, Frontier/Outlook, Intensity, Sequence, Sonalan, Touchdown, Tough, and 2,4-D were applied no more than 19 times.

Delivery of Pertinent Information to Peanut Growers and Associated Industry by North Carolina Cooperative Extension Service Agents. M. WILLIAMS*, L. SMITH, M. RAYBURN, C. ELLISON, A. WHITEHEAD, D. MORRISON, D.L. JORDAN, B.B. SHEW, and R.L. BRANDENBURG. North Carolina Cooperative Extension State University, Raleigh, NC 27695.

Cooperative Extension field faculty deliver a wide range of information to peanut growers and the supporting industry to address key issues. County newsletters, personal contacts, farm tours, and county production meetings were the most common methods used to deliver information. Newspaper articles, county extension homepages, e-mail, and fax machine were considered secondary methods of information dissemination. Major issues associated with peanut addressed by agents included pod maturity assessments and recommendations on digging dates, weather forecasts for disease development and implementation of spray programs, and pest identification and management. Developing and discussing variety selection, cost of production, and peanut price structure and government policy were also important items addressed by Cooperative Extension field faculty.

Comparison of Aldicarb and Phorate in Numerous Peanut Cultivars for Yield Response and Tomato Spotted Wilt Virus Incidence (2005 to 2007). D.E. MCGRIFF*, University of Georgia Extension, Douglas, GA 31533; and M.D. VON WALDNER, University of Georgia

Extension, Pearson, GA 31642.
The use of phorate, an at-plant in-furrow insecticide, has been noted in previous research to give a reduction in tomato spotted wilt virus (TSWV) incidence. New cultivars with greater resistance to TSWV than the cultivars previously tested have since been released. These cultivars have not been adequately tested with phorate compared to aldicarb, a commonly used at-plant in-furrow insecticide that also provides nematode control, for yield response and TSWV incidence. This three-year study compared phorate to aldicarb in numerous cultivars for yield response and TSWV incidence. There was no significant difference in either yield response or TSWV incidence in the study.

Validation of Current Calcium Recommendations on Peanuts. M.D. VON WALDNER*1, D.E. MCGRIFF2, J.P. BEASLEY3, E.J. WILLIAMS4, F.J. CONNELLY5, J.T. FLANDERS6, and S.I. UTLEY7. 1University of Georgia Extension, Pearson, GA 31642, 2University of Georgia Extension, Douglas, GA 31533, 3Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793, 4Biological and Agricultural Engineering, University of Georgia, Tifton, GA 31793, 5University of Georgia Extension, Nashville, GA 31639, 6University of Georgia Extension, Nashville, GA 31639 and 7University of Georgia Extension, Ashburn, GA 31714.
Previous research in the 1980's has established Georgia's recommendation of 500 lbs/acre of calcium(Ca) in the pegging zone for Florunner and GK-7 cultivars. This recommendation has not been validated on newer peanut cultivars.

Three locations were randomly replicated in Georgia from 2003-2007 with two peanut cultivars-Georgia Green, a small seeded runner cultivar, and C-99R, a large seeded runner cultivar. Three Ca treatments on each cultivar (0, 800, 1600 lbs/acre) were applied at bloom stage. Soil samples to a depth of three inches were collected on all plots at planting, during pod development and prior to harvest. They were analyzed for pH, K, Ca and Mg. Pod yield was obtained and samples were collected for grade. Seed was saved and analyzed for Ca content and germination.

Current recommendations are still valid on new peanut cultivars. There was no yield or grade increase by gypsum applications when soil Ca levels are above 500 lbs/acre and more than a 3:1 Ca:K ratio.

The Effects of Certain Fungicides and Combinations of Fungicides on the Incidence of Disease in Peanut. P.D. WIGLEY*, Calhoun County Extension, University of Georgia, Morgan, GA 39866; and R.C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA 31793-0748.
Field experiments were conducted in 2007 to evaluate seven fungicide systems for control of peanut diseases. The systems that were evaluated included a four-block Tebuzol program (sprays 3 - 6) and Bravo (sprays

1,2,& 7); Tilt Bravo (sprays 1 & 2), Abound (sprays 3 & 5), and Bravo (sprays 4, 6, & 7); Headline (sprays 1 & 4), Provost (sprays 3 & 5), and Bravo (sprays 6 & 7); Headline (spray 1), Provost (sprays 3 - 6), and Bravo (spray 7); Headline (spray 1), Provost (sprays 3 &4), Abound (spray 5), and Bravo (sprays 6 & 7); Artisan (sprays 3 & 5), Tilt-Bravo (sprays 1 & 2), and Bravo (spray 4, 6 & 7); and Bravo (sprays 1 -7). Treatments were applied according to manufacture recommendation. Disease control ratings were taken from each plot. Disease control ratings for leaf spot and white mold showed some statistical differences while Rhizoctonia ratings and yield were not statistically different.

Efficacy of Fungicides in West Texas Peanut. S.A. RUSSELL*1, C.R. CRUMLEY2, J.E. WOODWARD3, and T.A. BAUGHMAN4; Texas Agrilife Extension Service, Brownfield1, Seminole2, Lubbock3, and Vernon4.

PROVOST™ 433 SC is a broad-spectrum systemic fungicide labeled for the control of early leaf spot, late leaf spot, leaf rust, and web blotch. Provost is also labeled for several soil borne diseases, including Rhizoctonia limb rot, peg rot, pod rot, and stem rot. West Texas peanut production is primarily limited by water, however disease occurrences impact yields significantly most years. During the 2007 growing season, the region received significant rainfall and diseases were widespread. Producers made multiple fungicide applications for leaf spot and pod rot. Provost 433 fungicide (Bayer Crop Science; prothioconazole + tebuconazole) was evaluated for control of pod rot. Multiple foliar applications at two rates were applied to plots consisting of eight rows by 75 feet. The two middle rows of each plot were harvested to determine yield. There were no differences in the amount of pod rot nor were there differences in yield between treatments.

POSTER SESSION II

Effects of Foliar Spray Products on Peanut Performance in Texas. T.A. BAUGHMAN*, J.E. WOODWARD, P.A. DOTRAY, L.V. GILBERT, S.A. RUSSELL, C.R. CRUMLEY, and K.T. SIDERS. Texas Agrilife Extension Service, Vernon, Lubbock, Brownfield, Seminole, and Levelland.

Producers annually apply various combinations of yield enhancing agents including foliar fertilizers and other plant growth regulators in the hopes of improving plant growth and performance. The products often include the addition of a micronutrient (especially iron). Iron chlorosis (in response to calcareous soils) is commonly observed across the peanut growing region of Texas. Growers will apply a foliar fertilizer containing iron and in many cases other micronutrients. In addition, plant growth regulators may be applied to boost early season plant vigor and growth. While these applications may temporarily improve plant growth and/or

appearance they may not benefit peanut yield or quality. Many of these products have never been tested in a replicated experiment by an unbiased representative, especially over multiple years and locations. Therefore, there is little or no data to determine if the products actually improve a producer's bottom line. As peanut profitability continues to tighten it is imperative that each input applied by a producer provides an economical return. Location and environment will most likely effect the performance of these products. Therefore the goal of this project through multiple year and location testing is to determine when and where these products might be most economically and effectively applied. Field studies were conducted during the 2005, 2006, and 2007 growing seasons. Runner market-type was planted in Dawson, Gaines, and Terry Counties. Spanish market-type was planted in Lamb County. Valencia market-type was planted in Hockley County. Virginia market-type were planted in Wilbarger County. All peanut were planted in late April to early May, irrigated, and typical production practices were used. Plot size was 4, 40-inch rows wide by 50 feet long and consisted of four replications. Locally available foliar growth enhancers were selected from various commercial retailers. Twelve treatments were applied at each location: untreated (no foliar product, Peanut Gro 4-2-1 at 1 qt pr/A, CoRoN at 3 gal pr /A, Elemax Nutrient Concentrate at 1 qt pr/A + CoRoN at 1 gal pr/A, Tracite Iron 5% 1 qt pr/A, Cotton & Peanut Mix 1 gal pr/A, Quick Boost Ultra at 1 gal pr/A, Humic Acid at 1 gal pr/A, Fulvic Acid at 1 gal pr/A, Liquid Chicken Manure at 1 gal pr/A, Humic Acid at 0.6 gal pr/A + Fulvic Acid at 0.1 gal pr/A + Liquid Chicken Manure at 0.3 gal pr/A, Humic Acid at 1 gal pr/A + Foliar (varied by location). All products were applied postemergence three times starting at early bloom on a 7-14 day interval. The exception being CoRoN alone, Elemax Nutrient Concentrate + CoRoN twice each year; and Humic Acid, Fulvic Acid, Liquid Chicken Manure and the combination of each were applied ten times in 2005. Peanut were dug and harvested with commercial equipment, cleaned, shelled, and graded. Peanut grades [which included sound mature kernels (SMK) and sound split kernels (SS)] were determined using the procedure described by the Federal-State Inspection Service. Environmental conditions varied over the three years that these experiments were conducted and yields varied tremendously by location (1240 lb/A to 6900 lb/A). A slight visual difference in color was noticed for treatments containing foliar iron at one Lamb county location in 2005 and Hockley county in 2006 (visual observation). These were the only visual differences observed in the three years of the study. Peanut yields and peanut grade were not affected by treatments at any of the twelve locations in any of three years that these studies were conducted. This was the case regardless of peanut market-type or yield level observed. Since yield and grade were not improved with any of the treatments applied an economical return would not be expected. Growers interested in using some type of foliar fertilizer or growth

enhancer should check with their local extension service to determine if these products have been researched and if there is an advantage to the application.

Weed Response to Herbicide-Fungicide Combinations. W.J. GRICHAR*, P.A. DOTRAY, and J.E. WOODWARD. Texas AgriLife Research and Texas AgriLife Extension Service, Beeville and Lubbock, TX, respectively.

Field studies were conducted during the 2007 growing season in the southern High Plains (near Lamesa) and in south Texas (near Yoakum) to investigate weed control when postemergence herbicides were applied alone or in combination with fungicides commonly used to control diseases in peanut. Annual grasses evaluated included southern crabgrass [*Digitaria ciliaris* (Retz.) Koel] and Texas panicum (*Panicum texanum* L.) while broadleaf weeds evaluated included Palmer amaranth (*Amaranthus palmeri* S. Wats) and smellmelon (*Cucumis melo* L.). For annual grass control, Select and Poast Plus were applied alone or in combination with the fungicides, Headline, Folicur, or Provost. For broadleaf weed control, Cadre, Cobra, Pursuit, Ultra Blazer, and 2,4-DB were applied alone or in combination with Headline, Folicur, and Provost.

Southern High Plains. Peanut injury following Select and Poast Plus applied alone or in tank mixture with Headline or Folicur caused up to 5% peanut injury 14 days after treatment (DAT). When these herbicides were mixed with Provost or when Provost was applied alone, injury ranged from 8 to 12%. Peanut injury declined throughout the growing season, and no more than 4% injury was observed late-season. Texas panicum control 14 days after Select applications, alone or in tank mixture with a fungicide, ranged from 93 to 98%. No fungicide antagonized Select activity. Late-season Texas panicum control following Select treatments ranged from 78 to 94%. At the Sept 5 observation date, Select plus Headline did not control Texas panicum as well as Select alone. Texas panicum control 14 days after Poast Plus applications, alone or in tank mixture, ranged from 63 to 90%. All fungicides reduced Poast Plus efficacy at this early observation date. Late-season Texas panicum control ranged from 76 to 88%. Similar control between Poast Plus alone and Poast Plus tank mix combinations was observed late-season.

South Texas. *Annual grass control*. When Select or Poast Plus was applied alone, southern crabgrass and Texas panicum control was at least 99 and 95%, respectively when rated 27 and 68 DAT. When applied in combination with either Headline, Folicur, or Provost, only Headline reduced southern crabgrass control when rated 27 DAT and there was no difference in control when rated 68 DAT. When applied in combination with a fungicide, Texas panicum control was reduced from

Select alone and with the combination of Select plus either Headline or Folicur when rated 27 DAT. No difference in Texas panicum control was observed with Select plus fungicide combinations when rated 68 DAT; however, Poast Plus tank-mixed with Headline did result in reduced Texas panicum control over Poast Plus applied alone.
Broadleaf weed control. When rated 27 DAT, Cadre, Cobra, and Ultra Blazer alone controlled Palmer amaranth greater than 90% while 2,4-DB or Pursuit alone controlled 83 and 68%, respectively. No antagonism was noted when Cadre or Pursuit was mixed with any fungicide. Cobra in combination with Folicur reduced Palmer amaranth control from Cobra alone. Ultra Blazer in combination with either Folicur or Provost controlled Palmer amaranth less than Ultra Blazer alone while 2,4-DB in combination with either Folicur or Provost provided better Palmer amaranth control than the combination of 2,4-DB plus Headline. When rated 68 DAT, Cadre, Cobra, Pursuit, or 2,4-DB in combination with any fungicide did not result in any antagonism. Only the combinations of Ultra Blazer with either Folicur or Provost reduce control over Ultra Blazer alone. When rated 27 DAT, Cadre, Cobra, and 2,4-DB alone controlled smellmelon at least 95% while Pursuit and Ultra Blazer alone provided 87 and 75% control, respectively. Only 2,4-DB plus Headline resulted in any reduced control over a broadleaf herbicide alone. When rated 68 DAT, Cadre provided 100% control of smellmelon while Pursuit, Cobra, and 2,4-DB provided 79 to 85%. Ultra Blazer provided 65% control. No antagonism for smellmelon control was noted with any herbicide plus fungicide combinations at the later rating date.

Summary of Peanut Production Practices in Northern Mozambique in 2008. G. PLACE and D.L. JORDAN*, North Carolina State University, Raleigh, NC 27695; M. MASON and S. GUDZCLUSA, Nampula, Mozambique; S. BOAHEN, IITA, Nampula, Mozambique; F. CHITIRIO, IIMA, Nampula, Mozambique; and S. BEHLING, Washington State University, Pullman, WA.

A survey of 50 farmers in Nampula and Zambezia provinces of northern Mozambique was conducted during January-February, 2008. Ninety-six percent of farmers were members of farmer associations supported by the non-governmental organization CLUSA (Cooperative League of the USA) and the farmer-driven marketing group IKURU. Average farm size was 4.5 ha with 1.8 ha devoted to peanut. Burned lime was applied by 25% of farmers. Eighty four percent of farmers planted the cultivar Nematil while 14% planted the locally-derived cultivar Rasco. The majority of farmers cleared natural vegetation the year before planting peanut. Peanut, cassava, and cowpeas were the major crops grown in rotation with peanut. Average yield loss was associated with late weeding, late planting, and lack of pest management. Fifty percent of farmers included no pest management techniques other than weeding. None of the farmers applied pesticides. All farmers weeded at least

once and over half of the famers weeded fields twice during the season. Farmers reported that at least 160 people/days were needed to harvest 1 ha. The majority of farmers used yellowing and falling leaves as indicators of when to initiate harvest. The majority of peanut was harvested 112-120 days after planting. Fifty nine percent of farmers dried peanut in the field on the ground, and peanut was stored for 4-5 weeks prior to delivery to association facilities. Production cost averaged $84/ha. Price of peanut varied from $0.28/kg to $0.60/ka depending upon the time of year and supply. Over half of the respondents indicated that peanut was utilized in some form for every meal. Concern over presence of aflatoxin exists. Information on peanut production was provided by CLUSA (64%), local farmer association (18%), local traditions (10%), CARE (8%), and the local farmer market (2%). Farmers indicated that row spacing/plant density (85%), use of fertilizers (62%), and improved techniques for peanut drying (24%) and storage (3%) had positively influenced their production.

Preliminary Screening Oil Content of Peanut Germplasm in the U.S. Collection for Biodiesel Production. MING LI WANG*, ROY N. PITTMAN, USDA-ARS, Plant Genetic Resources Conservation Unit, 1109 Experiment Street, Griffin, GA 30223, and MANJEET CHINNAN, Department of Food Science, University of Georgia, 1109 Experiment Street, Griffin, GA 30223.

Biodiesel (fatty esters), which is produced from vegetable oils or animal fats by a simple process of transesterification, is one of the most promising alternative renewable fuels in the world. Utilization of biodiesel will benefit environment and agricultural economy, reduce costly petroleum imports, and promote long-term independence of fuel-supply. Currently, over 90% of the consumed biodiesel in the U.S. is from soybean oil. In contrast to soybean (50 gallons/per acre), peanut yields 123 gallons on the same amount of land. This unique feature makes peanut an ideal oil crop for biodiesel production. The peanut germplasm in the U.S. collection is maintained by USDA-ARS, PGRCU in Griffin, Georgia. In order to develop peanut cultivars with high oil content, fifty peanut accessions were randomly selected from the field. Peanut seeds were ground in a coffee bean grinder and then dried in a forced air convection oven at 130˚C for 6 hours. The oil was extracted with ether solvent in ANKOM (XT15 Ankom Extractor, Macedon, NY) at 90˚C for 30 minutes. The percentage of oil content in the seeds was calculated. Seed-coat color, seed weight and seed water content were also recorded. The data were collected from repeated experiments. The oil content ranged from 42.6% to 53.8%. There were significant variations in oil content among these accessions. There was a significant negative correlation between oil content and water content in the seeds. No significant correlation was found between oil content and seed weight. There was no clear correlation observed between oil content and seed-coat color. Since fatty acid composition may affect the conversion

rate of oil to fatty esters, the fatty acid composition of some selected accessions will be determined using standard gas chromatographic techniques. Additional peanut germplasm accessions in the U.S. collection will be selected and screened for oil content to support peanut biodiesel research and production in the future study.

Abiotic Stress Proteomics in Peanut: A comparison of two Peanut Mini-core Accessions. N. PUPPALA *, New Mexico State University Agricultural Science Center, Clovis, NM 88101, K. KOTTAPALLI, G. BUROW, P. PAYTON, J. BURKE, USDA-ARS Cropping Systems Research Laboratory, Lubbock, TX 79415, R. RAKWAL, J. SHIBATO, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan 305-8569, and M. BUROW, Department of Plant and Soil Science,Texas Tech University, Lubbock, TX 79409.

Peanut (*Arachis hypogaea* L.) accessions from the US mini core collection were analyzed for differentially expressed leaf proteins in response to water-deficit and heat stress. Accessions showing tolerant and susceptible responses to stress were selected based on a bioassay involving chlorophyll fluorescence yield under elevated respiratory demand, water use efficiency, photosynthesis, and specific leaf area. A total of 22 and 79 protein bands/spots from 1- D and 2- D gels, respectively, were analyzed by matrix-assisted laser desorption/ionization-time-of-flight mass spectrometry (MALDI-TOF MS) and by MS/MS analysis, and 48 non-redundant proteins were identified. Acetyl-CoA carboxylase, a key enzyme of lipid biosynthesis, was induced only in the tolerant accession indicating a novel fatty acid mediated mechanism of drought tolerance. Additionally, key proteins involved in both inter- and intracellular drought signaling including lipoxygenase, an enzyme of jasmonic acid biosynthesis along with aldolases, myo-inositol, and lectins were induced in the tolerant accession under stress conditions. We will discuss our findings on proteins involved in a variety of cellular functions like cell wall strengthening, signal transduction, energy metabolism, cellular detoxification, and proposed models demonstrating how novel pathways may impinge on the molecular mechanism of drought tolerance in peanut plants.

Reduction of Peanut Lipid Oxidative Rancidity by Sonication and Edible Coatings Containing Natural Extracts. P. WAMBURA*, W. YANG. Department of Food and Animal Sciences, Alabama A&M University, Normal, AL 35762.

The end of storage stability of peanuts is determined by unacceptable aroma, appearance, and color, which are affected by lipid oxidation. Sonication in combination with edible coatings such as carboxymethyl cellulose (CMC) added with natural extracts may extend the shelf life of

roasted peanuts. The objective of this study was to evaluate the effects of carboxymethyl cellulose (CMC) coatings mixed with natural extracts in delaying lipid oxidation of roasted and roasted-sonicated coated peanuts. Georgia green runner peanuts were roasted at 178°C for 15 min, subjected to sonication in hexane for 10 min and then coated with CMC solution mixed with jujube, pomegranate, rosemary and tea extracts and stored at 35°C for 12 weeks. The oxidative stability of the samples was investigated by measuring the oxidative stability index (OSI) (AOAC Method Cd 12 B-92) using an OSI instrument (Omnion, Rockland, MA).The reduction in oxidation of 14.5, 19.7, 66.1 and 10.4% was observed for samples roasted coated with extracts of jujube, pomegranate, rosemary and tea, respectively as compared to uncoated sample. However, the oxidative stability of samples roasted-sonicated coated with extracts of jujube, pomegranate, rosemary and tea was improved by 24.8, 31.8, 100.7 and 28.1%, respectively in relation to the control. Sonication treatment beyond coating improved the storage stability of the samples mixed with jujube, pomegranate, rosemary and tea extracts by 10.3, 12.1, 34.6, and 17.7%, respectively. A combination of sonication treatment, CMC coating and probably the synergistic effects of phenolic compounds in the natural extracts could be credited for delaying the oxidation of lipids and extending storage stability of peanuts.

Identification and Characterization of Peanut Oxalate Oxidase Genes and Development of Peanut Cultivars Resistant to Stem Rot. X. CHEN*, T. BRENNEMAN, A. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793; C.C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793.

In the southeastern U.S., stem rot (*Sclerotium rolfsii*) is a common and destructive disease of peanut. Research has suggested the enhancement of resistance to *Sclerotinia minor* in peanut by expressing a barley oxalate oxidase gene. Oxalate oxidase belongs to the germin family of proteins and acts as a source of hydrogen peroxide (H_2O_2) in certain plant-pathogen interactions. We have identified and cloned two peanut endogenous oxalate oxidase genes, *AhOxOl*, originating from peanut leaf libraries, and *AhOxOs* from seed libraries. The goal is to characterize these two genes in resistance to *S. rolfsii*. The *AhOxOl* including 991 bp cDNA sequence encodes a 219 amino acid protein with a 21-residue signal peptide. After cleavage of the signal peptide, it has a mass of 20.84 kDa. The *AhOxOs* comprised of 744 bp cDNA encodes a protein with 220 amino acid residues containing a putative signal peptide of 24 residues, with a mass of 20.63 kDa after removal of the signal peptide. The two proteins both contain three motifs, Q/NDL/FCVAD, $G(X)_5HXH(X)_{11}G$ and $G(X)_5P(X)_4H(X)_3N$, which are characteristic to germin-like proteins. Furthermore, the deduced protein of *AhOxOl*

consists of the “germin box” (HI/THPRATEI), which is a conserved sequence shared by germins within the motif $G(X)_5HXH(X)_{11}G$. Searches of GenBank database indicate that *AhOxOl* and *AhOxOs*, with approximately 37% of amino acid similarity to each other, exhibit respectively up to 76% and 82% amino acid identity to certain plant germin-like proteins. Southern blot analysis showed that the two genes possibly exist in at least four copies in the peanut genome. Northern blots conducted with total RNA from seed and leaf tissues of resistant and susceptible genotypes indicated that *AhOxOs* is mainly expressed in peanut seed. Further functional characterization will be conducted.

Cloning and Characterization of a Peanut MADS-box Gene Isolated from Flower Bud. M. YUAN*, S.L. LI, Y. REN, H. WANG, Y.M. SHI, and S.L. YU, Shandong Peanut Research Institute, Qingdao 266100 China; and G.H. HE, Department of Agricultural Sciences, Tuskegee University, Tuskegee, AL 36088.

MADS box genes encode transcription factors that play prominent roles in plant development. Particularly, the MADS-box genes in flowering plants are considered as the “molecular architects” of flower morphogenesis. With the aim of identifying genes involved in peanut flower development, a degenerate primer pair was designed based on the MADS domain, and was used to amplify total RNA of peanut flower bud. Combined with 3’-RACE approach, a full length of cDNA with 1007 bp was obtained, which contained an open reading frame of 720 bp, coding a polypeptide of 239 amino acids. The isolated cDNA is a typical MADS box gene with an integral Mads-box and K-box, showing high identity with the MADS-box gene of *Glycine max* and *Lotus corniculatus* on nucleotide and protein level. Its expression was detected in petal, stamen, carpel and pod, not in root and leaf based on semi-quantitative RT-PCR. It can be speculated that this MADS-box gene may be associated with flower and pod development in peanut.

MINUTES OF THE BOARD OF DIRECTORS MEETING
40th Annual Meeting, Renaissance Hotel
Oklahoma City, Oklahoma
July 18, 2008

President Austin Hagan called the meeting to order and welcomed everyone. Present were: T. Baughman, J. Beasley, J. Brinkley, C. Butts, J. Chapin, K. Chenault, A. Culbreath, C. Holbrook, C. Johnson, R. Kemerait, R. Myers, E. Prostko, N. Smith, J. Starr, H. Valentine.

Pres. Hagan called on J. Starr, Executive Officer, to present the minutes of the last Board of Directors meeting, conducted at the 2007 Annual Meeting held in Birmingham, Alabama. The minutes were approved as reported in the 2007 Proceedings, Vol. 39.

The following reports were presented and approved by the Board.

Old Business -

Executive Officer Report – J. Starr reviewed the financial status of the society and reported that the society remains in sound financial condition.

CAST Report – CAST representative J. Sherwood was unable to present a verbal report but has submitted a written report to be published in the annual proceedings of the society.

New Business -

Finance Committee - Chair C. Johnson reviewed the current finances of the society, income from all sources for 2007-08 was $109,689.91, whereas expenditures for 2007-08 were $103,043.43 The financial assets of the society were $184,201.21 on June 30, an increase of $6,170.83. A motion to remove from the list of assets the remaining volumes of *Advances in Peanut Science* and *Peanut Science and Technology* was seconded and approved.

Nominating Committee – The following individuals were nominated to the APRES Board of Directors for elective offices.

Barbara Shew for President.
Jason Woodward for University Employee for the Southwest.
Victor Nwosu for the Manufactured Products Representative.

These nominations were accepted by the Board and will be presented to the members at the Friday morning Business meeting.

Publications and Editorial Committee - The Publications and Editorial Committee conducted business throughout the year via email and conference calls. The committee also met on Tuesday, July 15, 2008 at the annual meeting.

The committee initiated and had oversight of the development of the new APRES

web site now located at www.apresinc.com. Jason Woodward has led the effort and served as the main contact with our web developer located in Albany, GA. The committee discussed whether the P&E committee or the Public Relations committee is now the proper committee to continue oversight and upgrades to the website.

The Board of Directors instructed the Publications and Editorial Committee to continue oversight of the APRES website in coordination with the Public Relations Committee.

The committee solicited applicants for Peanut Science Editor. Tim Brenneman led the subcommittee in its review of the applicants and recommended a candidate to the Board of Directors to serve for a three-year term. If the editor's performance is acceptable and the editor desires, the term may be extended. The Board accepted the committee's recommendation that Chris Butts serve as Editor of Peanut Science for a three-year term ending December 30, 2010.

The committee sought proposals for scanning, converting, and publishing all articles contained in Volumes 1-34 (1974-2004) to electronically searchable documents. The committee recommended to the Board of Directors that Allen Press perform this service for $9700. After the Board approved the recommendation, Allen Press directed us to contact the Biodiversity Heritage Library about performing this service free of charge. Chris Butts contacted the Smithsonian National Library as the lead contact for the Biodiversity Heritage Library project and they have agreed to scan and publish all of the articles contained in Volumes 1-34 of Peanut Science at no cost to APRES. An agreement has been signed allowing the BHL and its member libraries royalty free access to all Peanut Science articles published in these volumes. The committee anticipates on-line access to these searchable documents by the 2009 annual meeting.

The committee discussed the inventory and storage of the two monographs published by APRES, **Peanut Science and Technology** and **Advances in Peanut Science and Technology**. Sales have been very slow over the last several years and storage space for the texts is limited. The committee discussed disposal of the texts by sales at greatly reduced price or donating to libraries or other repositories such as ICRISAT.

Recommendation: The Publication and Editorial Committee recommends that the monographs, **Peanut Science and Technology** and **Advances in Peanut Science and Technology**, be sold to members at $5.00 each for individual copies or $3.00 each for case lots, individual copies given to graduate students attending the annual meeting. These prices do not include shipping and will be continued through the 2009 Annual Meeting. Copies not sold by that time will be given to institutions such as ICRISAT that promote the production and use of peanuts in developing countries.

Finally, the committee discussed the current state of **Peanut Science**. The journal has been published on-time during FY08 with Volume 35(1) being published May 5, 2008. Thirteen articles have been accepted for Volume 35(2) and are under production for final publication before November 2008. Peanut Science articles are now catalogued in the European abstract database, CAB,

and at the National Agricultural Library (NAL). Access to AGRICOLA is questionable due to financial concerns of the database.

Based on limited statistics, authors receive the first review within 133 d of submission. The goal is 60 d. The average time from submission to decision is 129 d. The average time between acceptance and publication is 172 d.

The journal expenses exceeded its income by $3044. This represents 10.4% of the individual membership dues. Page charges averaged $90/page published and actual publication charges averaged $85/page. A detailed financial report is attached. The budget for FY 09 projects expenses exceeding income by $810.

The committee recognized and expressed well deserved appreciation to the Associate Editors whose terms are ending December 30, 2008. These are Mark Burow (8 years), Jay Chapin (8 years), Kelly Chenault (9 years), Tom Whitaker (6 years), James Grichar (5 years), and David Jordan (3 years). The committee also thanks the reviewers that have spent time reviewing the 40 manuscripts received during FY08.

Peanut Quality - The committee met in Oklahoma City to discuss issues surrounding the overall quality of USA peanuts and peanut products. Persons attending the meeting included. Branch, J. Brinkley, M. Burow, T. Cea, P. Donahue, J. Elder, W. Faircloth, M. Fenn, M. Franke, T. Isleib, V. Nwosu, H. Pattee, and T. Sanders. Chair W. Faircloth opened the meeting with a recap of issues discussed in 2007. Topics for discussion in 2008 included:

1. T. Sanders shared that the issues surrounding peanut spotting of exports to the EU had been resolved through testing at USDA-ARS labs in Raleigh and Dawson.
2. T. Cea started discussion of issues surrounding variable oil characteristics in oil roasted peanuts. Of primary concern were peanuts that would not allow adhesion of salt to the kernel surface.
3. V. Nwosu began discussion of peanut use as a biofuel in regards to sustainability of farms. Concerns of attendees included competitiveness of fuel peanuts and edible peanuts, quality/segregation of lesser quality fuel peanuts, and an overall interest in the project. In general, peanut use for oil/biodiesel was supported by those present with emphasis that traditional markets be maintained and not compromised.
4. M. Fenn and V. Nwosu generated discussion regarding ways to building consumer demand based on the positive health aspects of peanuts

Public Relations Committee – see official report in committee report section of the Proceedings

Bailey Award Committee – The Bailey Award winner from 2007 Annual Meeting is Ye Chu from her presentation and paper titled "Development of Molecular Markers to Facilitate Pyramiding Genetic Traits in Peanut Cultivars." Y. CHU*, L. RAMOS, P. OZIAS-AKINS, Horticulture Department, The University of Georgia Tifton Campus and C.C. HOLBROOK, USDA-ARS, Tifton.

Fellow Committee – In 2008 the APRES Fellows Award Committee received two nominations for the Fellow Award; however, the Fellows Committee does not

recommend that any Fellows Awards be presented at the 2008 annual meetings. Both individuals have made significant contributions to the peanut industry, but there was little evidence of active participation in the society other than attending meetings.
This has been a difficult committee assignment for the first time because of the few nominations submitted and the candidates' little apparent service to the Society. During most years in the past the Fellows candidates have been ordered and awards given to the top group as allowable in the bi-laws. Because there are no guidelines for the committee concerning an acceptable level of 'yes' votes for the award we spent a great deal of time trying to determine what percentage of the committee is needed for a positive recommendation. Although after all the votes were tabulated, neither of this year's candidates had a majority vote, there could easily have been a situation where 4/7 (57%) or 5/7 (71%) of the committee voted 'yes' and there was not a consensus among us as to the acceptable level. Future committees' will have an easier assignment if clearer guidelines are established before the committee receives the nomination packages (and these guidelines should be published in the Proceedings. I recommend that the Board of Directors discuss the policy and decide on a minimum percentage of 'yes' votes by the committee to be elected Fellow. A motion to require at least a two thirds majority vote by the committee in favor of a candidate before that name is presented to the Board of Directors for approval was passed.

Site Selection Committee – Barry Tillman reviewed the quotations from the hotel sites bidding for the 2010 APRES annual meeting. All sites could schedule the meeting during the period of July 12 to July 16, 2010. Criteria for all proposed sites were discussed. The committee voted to recommend the Clearwater Beach Hilton to the APRES Board of Directors as the site for the 2010 APRES annual meeting.

Rick Brandenburg reviewed the contract for the 2009 APRES annual meetings that is scheduled to be held at from July 13 to July 17 at the Raleigh City Center Marriott. The pre-tax room rate is $149 with $18 for parking.

The 2009 APRES annual meeting will conflict with the Southeastern Farmer Federation Meeting. Barry Tillman noted that these two meetings will not conflict in 2010 through 2013 but will overlap in 2014 and 2015 if the present meeting schedules hold.

Attendance at the Friday Dow AgroSciences Breakfast and Award Ceremony and the following Business meeting remains low. Modification of the meeting agenda to allow for proper recognition of individuals receiving awards as well as enhancing participation in APRES governance was discussed. Options include scheduling an award dinner and presentation ceremony on Thursday night and an early afternoon business meeting or adding an awards ceremony to the existing Wednesday evening dinner function and scheduling a member's luncheon and business meeting on Thursday. Changes in the meeting agenda should be finalized for the 2010 annual meeting.

Coyt T. Wilson Distinguished Services Award Committee – Two nominations were received by the Coyt T. Wilson Distinguished Service Award Committee for evaluation. Dr. Frederick M. Shokes was selected as recipient of the 2008

award. This recommendation was approved by the Board of Directors

J**oe Sugg Graduate Student Award Committe**e – The Joe Sugg Graduate Student Committee met from 3:00-4:00 PM, Tuesday 8 July 2008 in the Huckins Room of the Renaissance Hotel in Oklahoma City. Present at the meeting were Dr. Jason Woodward, Dr. Susana Milla Lewis, Dr. Roy Pittman, and Dr. Bob Kemerait.
Dr. Kemerait reported that there had originally been nine papers submitted to the student competition session, but that one had been withdrawn leaving eight total papers in the session to be held on Wednesday morning.

During the meeting, the possibility of developing a student poster competition to compliment the Paper session was discussed. There was concern expressed by some that such a competition could reduce the participation in the traditional paper session. However others argued that the poster competition could draw from a separate pool of students, primarily those who had not yet completed two years worth of research. The value of a poster competition was noted as a) increasing the participation (and hopefully attendance) at APRES by students, and b) providing a structured review of posters which are quickly becoming an important part of scientific meetings. It was agreed that the chair of the committee, Bob Kemerait, would bring this discussion to the APRES Board and ask that a preliminary poster competition be scheduled for the 2009 APRES meeting to determine if this session was appropriate or not.

Dow Agrosciences Awards Committee – Two nominations were received for the Research Award, and one nomination was received for the Education Award. Six of the seven committee members returned their evaluation, and based on the evaluations by the committee members, the committee recommends that the Research award be presented to Dr. Barbara Shew and that the Education award be presented to Dr. Jay Chapin. The committee recommendations were approved by the Board.

Program Committee – The committee met at l in Oklahoma City, OK on July 15, 2008. Members present were: Kelly Chenault (chair), Chad Godsey, Hassan Melouk and John Damicone. It was discussed that the meeting was running smoothly and assignments were made for setting up equipment for technical and general sessions the following day. C. Godsey and K. Chenault were to set up all computers and projectors prior to each technical session. J. Damcone was to set up the equipment for the general session. John reported that we had received 98 abstracts thus far; 18 were for posters, 5 were for the special symposium on genetics and biotechnology and 75 were for technical presentations.

Other New Business

Howard Valentine requested that the “Seed Summit” which has traditionally met in conjunction with the annual APRES meeting be recognized as a standing committee of APRES. This recommendation was seconded and approved by the Board of Directors.

There was discussion relating to the conflict between the annual APRES meeting and the annual meeting of the Southern Peanut Farmers Federation that

occurred in 2008 and will also occur in 2009. The Board of Directors acknowledged the need to improve communications with our colleagues in the SPFF so as to avoid further conflicts. Additionally, there was discussion of the possible need to alter the traditional APRES meeting schedule due to the recent history of poor attendance at the Friday morning sponsored breakfast, business meeting and awards program. This later item will be discussed further at the business meeting for input from the general membership.

The meeting was adjourned at 7:30 pm.

OPENING REMARKS BY THE PRESIDENT
AT THE 2008 GENERAL SESSION of APRES
President Austin Hagan
July 18, 2008

Welcome to the 39th annual meeting of the American Peanut and Education Society and to Oklahoma City, Oklahoma. I want to take this opportunity to bring you up to date on several issues relating to APRES operations.

Last year, our past president Albert Culbreath reported that John Wilcut, whose untimely passage occurred last summer, had gotten the publication of Peanut Science on schedule. Chris Butts, who served as interim Editor, is now the Senior Editor for Peanut Science. Within the past few months, the board approved a proposal from Allen Press to scan, format, and publish all legacy issues (Volumes 1-32) of Peanut Science on the web. The only difference between the current issues and these legacy issues would be that the full article would only be readable in pdf, whereas the full articles of the current issues are readable in XML format and pdf. The above process probably will be completed sometime in the fall. Members will have password access to legacy issues, while non-members will be able to purchase individual articles.

Society membership has been slowly declining for more than a decade. A combination of factors including a drop in the number of university professionals, regional and county extension staff with peanut production responsibilities, as well as a loss of personnel in allied industries, particularly Ag-Chemical sector, is responsible. Member participation at the annual APRES Meeting, as indicated by fairly stable abstract numbers, remains strong. In addition, APRES is fiscally sound, so overall health of the society is good. Members, particularly those of us that are university employees, need to make the effort to get new hires with peanut responsibilities to become active APRES members.

Issues relating to the meeting schedule and agenda have arisen. Unfortunately, the annual meetings of The Southeastern Peanut Farmers Federation and APRES overlapped this year. A fair number of university and industry personnel from Alabama, Florida, and Georgia participate in both meetings. This scheduling conflict, which was not recognized until earlier this winter, will be repeated in 2009. The 2010 APRES meeting scheduled for Clearwater Beach will not conflict nor should any future APRES meetings. That means future meetings will pretty well be locked into the second week of July.

Also, attendance at the Dow AgroSciences Awards Banquet and Business Meeting has always been spotty. Typically, APRES pays for a lot more breakfast plates than are actually served. In light of this waste of funds as well as declining meeting registrations, the Executive Director and I have requested that the program chair for the 2010 meeting to eliminate the Friday morning breakfast function and business meeting. While the awards ceremony will likely be rescheduled to the Wednesday dinner function, the business meeting will likely be held in conjunction with a member's luncheon on Thursday. If any of you have any other ideas as to how to restructure the annual meeting agenda, please discuss the matter with the Executive Director Jim Starr or a member of the APRES Board of Directors.

This year, APRES has taken another step into the 21st century. Credit cards can now be used to pay registration and membership fees. For the 2009 meeting, on-line registration and payment will be available.

There is plenty of great science to be discussed over the next two days. I want to thank Kelly Chenault and other Oklahoma folks as well as our sponsors and product donors for putting together the 2008 Annual Meeting of the American Peanut Research and Education Society.

BUSINESS MEETING AND AWARDS CEREMONY
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
The Renaissance Hotel
Oklahoma City, Oklahoma
July 18, 2008

1. **President's Report** ..... Austin Hagan

2. **Awards Committee Reports and Presentations**

   a. Coyt T. Wilson Distinguished Service Award ..... Thomas Whitaker
   b. Fellows Award ..... Tom Stalker
   c. Bailey Award ..... Nathan Smith
   d. Joe Sugg Graduate Student Competition ..... Bob Kemerait
   e. Dow AgroSciences Awards ..... Hassan Melouk
      for Research and Education
   f. Past President's Award ..... Austin Hagan

3. **Reading of Minutes of Previous Meeting**

4. **New Business**

   a. Nominating Committee ..... Austin Hagan
   b. Peanut Science Report ..... Chris Butts
   c. Finance Committee ..... Carroll Johnson
   d. Grower Advisory Committee ..... Committee Chair
   e. Public Relations Committee ..... John Beasley
   f. Peanut Quality Committee ..... Wilson Faircloth
   g. Site Selection Committee ..... John Damicone
   h. Publications and Editorial Committee ..... Chris Butts
   i. Program Committee ..... Kelly Chenault
   j. Other Business

5. **Adjourn**

FINANCE COMMITTEE REPORT

The annual meeting of the APRES Finance Committee was conducted at the Oklahoma City Renaissance Hotel on 15 July 2008. Present were Carroll Johnson (Chairman), Todd Baughman, Charles Simpson, David Jordan, and Jim Starr (Ex officio).

The final budget for FY 2007/2008 was presented and discussed.

Receipts for FY 2007/2008 were $510.09 less than projected. Items of significant that affected receipts in FY 2007/2008 were:

- Receipts from the 2007 meeting registration were $6,250 less than projected.
- The $5,500 contribution from Dow was received too late for posting on the FY 2007/2008 budget.
- The contributions from Bayer, Syngenta, and National Peanut Board were more than projected, some of which are contributions that were received too late to be posted for the previous fiscal year.
- General contributions were $3,300, which were more than projected.
- Receipts from Peanut Science page charges were $3,451.55 less than projected.

Expenditures in FY 2007/2008 were $4,756.57 less than projected. Items of significance that affected expenditures were:

- The cost of the 2007 annual meeting exceeded projections by $6,458.58.
- Awards exceeded projections by $1,444.83.
- Salary for the Peanut Science Editor was $16,166.66 less than projected.
- Peanut Science publishing costs were $1,640.63 less than projected.
- Travel for APRES employees was $3,380.66 more than projected.

The final budget for FY 2007/2008 showed APRES receipts exceeded expenditures by $6,646.48.

The proposed budget for FY 2008/2009 was presented and discussed. Membership dues and meeting registrations were altered to reflect fewer members. Receipts from Peanut Science page charges reflected the trend of increasing submissions to the journal. For expenditures, there was no Peanut Science Editor compensation. This is due to Dr. Chris

Butts not being compensated for his service as Editor. Expenditures for travel were increased to $4,500, which includes travel for the Executive Secretary, Administrative Assistant, and Peanut Science Editor.

The final FY 2008/2009 budget proposed by the Finance Committee has receipts exceeding expenditures by $9,789.00.

Based on the final and proposed budgets, the Finance Committee finds APRES to be in sound financial condition.

The Finance Committee authorized Jim Starr to remove un-sold books from the assets of APRES. Inventory of un-sold books will be systematically liquidated by bulk sale at reduced prices.

Respectively Submitted;
W. Carroll Johnson, III, Chair

2008-09 BUDGET

RECEIPTS	
Registration	$ 36,000.00
Membership Dues	25,000.00
Contributions – Ice Cream Social	10,000.00
Contribution – Dow AgroScience	5,500.00
Contribution – Bayer Fund Replenishment	4,000.00
Contribution – Syngenta	5,000.00
Contribution – National Peanut Board	2,000.00
Interest	3,200.00
Peanut Science & Page Charges	15,440.00
Advances in Peanut Science	0.00
Peanut Science & Technology	0.00
Quality Methods	0.00
Proceedings	0.00
Peanut Research	0.00
Spouse Program	0.00
Misc Income	0.00
Total Receipts	**$106,140.00**
EXPENDITURES	
Annual Meeting	$ 22,000.00
Awards (Coyt Wilson, Dow AgroScience, Joe Sugg)	3,500.00
Bank Charges	0.00
CAST Membership	700.00
Corporation Registration	300.00
Legal Fees (tax preparation)	800.00
Peanut Science – publishing	12,750.00
Peanut Science – scanning back issues	2,000.00
Professional Services – Executive Officer	19,400.00
Professional Services – Secretarial Services	21,851.00
Proceedings	300.00
Travel – Officers	4,500.00
Office Expenses	3,000.00
Postage	0.00
Travel – Bayer – Prog for Ext Agents	4,000.00
Spouse Program	250.00
Web site maintenance	1,000.00
Total Expenditures	**$ 96,351.00**

2007-08 BALANCE SHEET

ASSETS	June 30, 2007	June 30, 2008
Petty Cash Fund	$ 633.56	$ 582.35
Checking Account	90,971.14	53,339.19
Certificate of Deposit #3	10,864.81	11,794.48
Certificate of Deposit #4	15,110.03	15,946.26
Certificate of Deposit #6	16,505.91	17,429.60
Certificate of Deposit #7	13,976.99	14,757.23
Certificate of Deposit #8	6,215.97	11,562.97
Certificate of Deposit #9	0.00	10,000.00
Money Market Account	1,884.34	27,539.19
Savings Account (Wallace Bailey)	40.92	Closed
Bayer Account	12,092.49	11,991.37
Computer and Printer	1,234.22	723.68
Peanut Science Account (Wachovia Bank)	3.784.05	0.00
Prior Period Adjustment	- 3,784.05	0.00
Inventory of PEANUT SCIENCE & TECHNOLOGY Books	1,810.00	1,780.00
Inventory of ADVANCES IN PEANUT SCIENCE Books	6,690.00	6,660.00
TOTAL ASSETS	**$178,030.38**	**$184,106.32**
Liabilities		
No Liabilities	0.00	0.00
Fund Balance	$178,030.38	$184,106.32
TOTAL LIABILITIES & FUND BALANCE	**$178,030.38**	**$184,106.32**

STATEMENT OF ACTIVITIY FOR YEAR ENDING 06/30/07

RECEIPTS	**June 30, 2007**
Advances Book	$ 0.00
Ann Mtg Reg	40,000.00
Contribution	25,400.00
Differential Postage	512.50
Dues	26,704.00
Interest	2,396.98
Misc Income	820.00
Peanut Science	238.00
Peanut Science Page Charges	32,280.00
Peanut Science & Technology	0.00
Proceedings	23.00
Quality Methods	0.00
TOTAL RECEIPTS	**$128,374.48**

EXPENDITURES	
Annual Meeting (Program-66.70/AV-1,780.80/Awards-2,964.00 Supplies/Equip-77.18/Breaks/Meals-17,520.21/Reg-516.31)	22,925.20
Bank Charges	59.00
CAST Membership	629.00
Corporation Registration	130.00
Exec Off	18,019.66
APRES portion of FICA/Medicare	2,821.18
Prof Services – Admin Assist	18,857.52
Legal Fees	625.00
Oklahoma Withholding	1,653.00
Oklahoma Withholding – Exec Off	- 1,200.00
Oklahoma Withholding – Admn Asst	- 453.00
Office Expenses	4,104.54
Peanut Science (CrossRef-250/Wilcut-19,400.04/Allen Press-16,211.49)	35,861.53
Postage	637.08
Prior Period Adjustment (close PS Wachovia Acct)	3,784.05
Proceedings	200.00
Sales Tax	20.00
Travel, Bayer	3,954.37
Travel, Officers	934.60
TOTAL EXPENDITURES	**$113,562.73**
2007 EXCESS RECEIPTS OVER EXPENDITURES	**$ 14,811.75**

STATEMENT OF ACTIVITIY FOR YEAR ENDING 06/30/08

Receipts	
Advances Book	$ 32.50
Ann Mtg Reg	33,750.00
Contributions	32,650.00
Differential Postage	
Dues	27,971.23
Interest	4,592.73
Misc. Income (R Sholar's gift & rebate)	115.00
Peanut Science	68.45
Peanut Science Page Charges	10,480.00
PS&T Income	30.00
TOTAL RECEIPTS	**$109,689.91**
Expenditures	
Annual Meeting	$30,902.41
(Program-622.44/AV-12,935.23/Awards-4,443.83/ Breaks/Meals-9,181.83/Reg-331.36/Breakfast-3,387.72)	
Proceedings	
Bank Charges	43.75
CAST Membership	643.00
Corporation Registration	130.00
Legal Fees	644.00
Misc., retirement gifts for R Sholar	829.84
Office Expenses	3,161.54
Peanut Science	15,592.71
Postage	705.63
(bulk=182.72/publications=15.05/general=507.86)	
Proceedings Expenses	200.00
Refund – Total Library Solutions dues	630.00
Prof Services - Exec Off	18,021.02
FICA/Medicare – APRES portion	2,870.18
Prof Services – Admin Assist	19,496.88
Oklahoma Withholding	678.00
Oklahoma Withholding (Exec Off)	- 200.00
Oklahoma Withholding (Admin Asst)	- 478.00
Travel (Exec Off, Admin Asst)	3,980.66
Travel, Bayer	5,191.81
TOTAL EXPENDITURES	**$103,043.43**
2008 EXCESS RECEIPTS OVER EXPENDITURES	**$6,646.48**

ADVANCES IN PEANUT SCIENCE SALES
REPORT 2007-08

Beginning Inventory		669
1st Quarter	2	667
2nd Quarter	0	667
3rd Quarter	0	667
4th Quarter	1	666
TOTAL	**3**	

REMAINING BOOKS 666 X $10.00 (BOOK VALUE) = $6,660.00 total value of remaining book inventory.

Fiscal Year	Books Sold
1995-96	140
1996-97	99
1997-98	66
1998-99	34
1999-00	45
2000-01	33
2001-02	27
2002-03	35
2003-04	37
2004-05	69
2005-06	8
2006-07	0
2007-08	3

PEANUT SCIENCE AND TECHNOLOGY
SALES REPORT 2007-08

Beginning Inventory		181
1st Quarter	3	178
2nd Quarter	0	178
3rd Quarter	0	178
4th Quarter	0	178
TOTAL	**3**	

REMAINING BOOKS 178 x $10.00 (book value) = $1,780.00 total value of remaining book inventory.

Fiscal Year	Books Sold
1985-86	102
1986-87	77
1987-88	204
1988-89	136
1989-90	112
1990-91	70
1991-92	119
1992-93	187
1993-94	85
1994-95	91
1995-96	50
1996-97	33
1997-98	49
1998-99	37
1999-00	30
2000-01	22
2001-02	7
2002-03	26
2003-04	33
2004-05	53
2005-06	31
2006-07	0
2007-08	

PUBLIC RELATIONS COMMITTEE REPORT

The Public Relations Committee of the American Peanut Research and Education Society met via e-mail and telephone prior to the 2008 annual meeting. Members of the PR Committee for 2008 are: John Beasley (Chair), Mike Kubicek, Joyce Hollowell, Amanda Huber, and Lee Campbell. Issues covered by the committee included promoting the society and its annual meeting and ways to encourage new membership. Mike Kubicek, with the Oklahoma Peanut Commission, developed and disseminated a press release concerning the annual meeting. The press release was picked up by the Radio Oklahoma Network as a part of the Oklahoma Farm News Update. It was broadcast statewide on Oklahoma radio stations numerous times.

In regards to new members, the committee recommends that all members encourage scientists and county agents working in peanut to join the society.

Another role of the committee is to recognize members or prominent individuals in the peanut industry that have passed a way with a resolution that honors their contributions. The following four individuals were recognized at the annual meeting with a resolution and a moment of silence: Stanley Drexler from Tifton, GA; John Phillips from Albany, GA; Dr. D.A. Emery from North Carolina State University; and Dr. John Wilcut from North Carolina State University. There resolutions are included below.

2008 APRES Resolutions

J. Stanley "Stan" Drexler
J. Stanley Drexler attended Abraham Baldwin Agricultural College and the University of Georgia. He retired as department head for Field Research Services, University of Georgia, Coastal Plain Experiment Station, Tifton, Georgia.

Whereas J. Stanley Drexler recognized the need for an objective method to determine maturity for accurate evaluation of peanut varieties, and

Whereas J. Stanley Drexler studied the anatomy of the peanut pod and observed the color and structural changes in the middle hull correlated to maturation, and

Whereas J. Stanley Drexler initiated tests to delineate relationships among blooming, pod set, and time of pod development as related to the middle hull colors, and

Whereas from these studies J. Stanley Drexler co-developed the method known as the hull scrape method and pod maturity profile chart for determining the best time to dig peanut, and

Whereas J. Stanley Drexler was co-recipient of the Bailey Award in 1980 and 1982; the Tifton Sigma Xi Research Award, the Georgia Peanut Commission Research and Education Award, and the National Peanut Council Golden Peanut Research Award in 1985, and

Whereas J. Stanley Drexler was named Man of the Year in 1991 by *Progressive Farmer Magazine* for service to agriculture, and

Whereas J. Stanley Drexler served his country, agriculture, his Church and family in an exemplary manner, and

Whereas J. Stanley Drexler passed away in Tifton, Georgia, on June 24, 2008,

Be it resolved on this 18th day July 2008, that the American Peanut Research and Education Society honor J. Stanley Drexler and his accomplishments in the development of the hull scrape method and peanut profile chart, and the impact it has had on the peanut industry.

John T. Phillips, Jr.
Whereas, John T. Phillips, Jr. was former President of Lilliston Implement Company and Lilliston Corporation, makers of Lilliston Peanut Combines, and

Whereas, John T. Phillips, Jr. was honored by the Equipment Manufacturers Institute for two of the top 100 Contributions to the Mechanization of Agriculture for the 100 year period of 1883-1993 for the peanut combine and the rolling cultivator, and

Whereas, John T. Phillips was a native of Suffolk, Virginia, attended Virginia Polytechnic Institute, and in 1937 moved to Albany, Georgia to head up the Lilliston Implement Company, and

Whereas, Mr. John T. Phillips, Jr. committed his life to serving the peanut industry as an advisor and consultant until his death at age 92 in December 2007,

Be it here resolved this 18th day of July, 2007, that the American Peanut Research and Education Society recognizes and honors the lifetime of contributions of John T. Phillips, Jr. to the peanut industry and peanut mechanization.

Dr. D.A. Emery
Whereas, Donald A. Emery was born on Dec. 22, 1928, in South Berwick, Maine, was educated at Berwick Academy in South Berwick and held degrees from the University of New Hampshire and the University of Wisconsin, and

Whereas, he was a veteran of the Korean conflict, serving in the U.S. Army from 1951 to 1953, lived in Raleigh, N.C. from 1958 to 2000, and

Whereas, while living in North Carolina, he was a longtime member, deacon and Sunday School Teacher at Ridge Road Baptist Church in Raleigh, and

Whereas, he was a Professor of Crop Science, and Associate Dean of the Graduate School at North Carolina State University, recognized nationally as a classroom teacher, student adviser, plant breeder, and co-developer of six

peanut cultivars and six peanut germplasm lines, won many awards and honors including National Peanut Council Research and Education Award, Fellow of American Society of Agronomy, Fellow of Crop Science Society of America, and

Whereas, upon his retirement from North Carolina State University in 1991, Dr. and Mrs. Emery continued to have a strong interest in both cultivated and wild plants, and since retirement, they spent at least part of each year in the gardens, fields and woodlands surrounding their home in South Berwick, and

Whereas, he passed away April 24, 2008, at the Dover Rehabilitation and Living Center in Dover, N.H., after many years of failing health,

Be it resolved that The American Peanut Research and Education Society remembers the life and contributions of Donald A. Emery.

Dr. John W. Wilcut

Whereas, John William Wilcut was born in Farmington, MO and grew up in Missouri and Illinois, was an avid St. Louis Cardinal fan, and

Whereas, he received his BS and MS degrees at Eastern Illinois University, then went to Auburn University to receive his Doctorate in Weed Science, where the Auburn Tigers were added to his list of favorite teams, and

Whereas, having worked at research stations at Virginia Tech University and the University of Georgia, his desire to be on a main campus to teach and work with students led him to North Carolina State University, where he was a Professor in the Crop Science Department and taught an outstanding undergraduate weed science course, and

Whereas, John was Editor of Peanut Science and will be especially remembered by many for his efforts to convert Peanut Science into an electronically published journal, and

Whereas, he was Weed Scientist of the Year, Southern Weed Science Society, 2003, Fellow, Weed Science Society of America, 2003, received Dow AgroSciences Award for Excellence in Research, American Peanut Research and Education Society, 2003, Bailey Award, 2005, and

Whereas, he dedicated his life to being a mentor to other weed scientists and helping farmers find weed control solutions to maximize crop yields, he was nationally and internationally recognized for his contributions to Agriculture and Weed Science, but his greatest satisfaction came from working with students as they embarked on their careers, he had many more sons and daughters than his own two, and

Whereas, he was strongly devoted to his family, and his first priority was to take care of each of them in the best way he could, he was a thoughtful, romantic man who cherished his wife and children, his impact is profound and he will be sorely missed, and

Whereas, John at the age of 52, passed away August 24, 2007 at his home after

a valiant battle with adrenal cancer,

Be it resolved that The American Peanut Research and Education Society remembers the life and contributions of John William Wilcut.

Respectfully submitted,
John Beasley, Chair

PUBLICATIONS AND EDITORIAL COMMITTEE REPORT

The Publications & Editorial Committee conducted business throughout the year via email and conference calls. The committee also met on Tuesday, July 15, 2008 at the annual meeting.

The committee initiated and had oversight of the development of the new APRES web site now located at www.apresinc.com. Jason Woodward has led the effort and served as the main contact with our web developer located in Albany, GA. The committee discussed whether the P&E committee or the Public Relations committee is now the proper committee to continue oversight and upgrades to the website.

The Board of Directors instructed the Publications and Editorial Committee to continue oversight of the APRES website in coordination with the Public Relations Committee.

The committee solicited applicants for Peanut Science Editor. Tim Brenneman led the subcommittee in its review of the applicants and recommended a candidate to the Board of Directors to serve for a three-year term. If the editor's performance is acceptable and the editor desires, the term may be extended. The Board accepted the committee's recommendation that Chris Butts serve as Editor of Peanut Science for a three-year term ending December 30, 2010.

The committee sought proposals for scanning, converting, and publishing all articles contained in Volumes 1-34 (1974-2004) to electronically searchable documents. The committee recommended to the Board of Directors that Allen Press perform this service for $9700. After the Board approved the recommendation, Allen Press directed us to contact the Biodiversity Heritage Library about performing this service free of charge. Chris Butts contacted the Smithsonian National Library as the lead contact for the Biodiversity Heritage Library project and they have agreed to scan and publish all of the articles contained in Volumes 1-34 of Peanut Science at no cost to APRES. An agreement has been signed allowing the BHL and its member libraries royalty free access to all Peanut Science articles published these volumes. The committee anticipates on-line access to these searchable documents by the 2009 annual meeting.

The committee discussed the inventory and storage of the two monographs published by APRES, **Peanut Science and Technology** and **Advances in Peanut Science and Technology**. Sales have been very slow over the last several years and storage space for the texts is limited. The committee discussed disposal of the texts by sales at greatly reduced price or donating to

libraries or other repositories such as ICRISAT.

Recommendation: The Publication and Editorial Committee recommends that the monographs, **Peanut Science and Technology** and **Advances in Peanut Science and Technology**, be sold to members at $5.00 each for individual copies or $3.00 each for case lots, individual copies given to graduate students attending the annual meeting. These prices do not include shipping and will be continued through the 2009 Annual Meeting. Copies not sold by that time will be given to institutions such as ICRISAT that promote the production and use of peanuts in developing countries.

Finally, the committee discussed the current state of **Peanut Science**. The journal has been published on-time during FY08 with Volume 35(1) being published May 5, 2008. Thirteen articles have been accepted for Volume 35(2) and are under production for final publication before November 2008. Peanut Science articles are now catalogued in the European abstract database, CAB, and at the National Agricultural Library (NAL). Access to AGRICOLA is questionable due to financial concerns of the database.

Based on limited statistics, authors receive the first review within 133 d of submission. The goal is 60 d. The average time from submission to decision is 129 d. The average time between acceptance and publication is 172 d.

The journal expenses exceeded its income by $3044. This represents 10.4% of the individual membership dues. Page charges averaged $90/page published and actual publication charges averaged $85/page. A detailed financial report is attached. The budget for FY 09 projects expenses exceeding income by $810 (see attached).

The committee recognized and expressed well deserved appreciation to the Associate Editors whose terms are ending December 30, 2008 are: Mark Burow (8 years), Jay Chapin (8 years), Kelly Chenault (9 years), Tom Whitaker (6 years), James Grichar (5 years), and David Jordan (3 years). The committee also thanks the reviewers that have spent time reviewing the 40 manuscripts received during FY08.

Respectfully submitted,
Christopher L. Butts, Chair

PEANUT SCIENCE EDITOR'S REPORT

Peanut Science continues to progress toward becoming the preferred journal for publishing peanut research.

The July-December 2007 issue (Volume 34:2) was published November 9, 2007 with a lead note commemorating the contributions of the late John Wilcut to Peanut Science. The January-June 2008 issue (Volume 35:1) was published May 5, 2008. There were 40 manuscripts submitted to Peanut Science for review between September 1, 2007 and June 30, 2008. There were 27 manuscripts under review prior to September 1, 2007. During FY 08, 21 manuscripts have been published, 3 manuscripts were rejected, 11 manuscripts

accepted, 14 manuscripts have been reviewed and are awaiting author revisions, 5 manuscripts awaiting final decision, and 13 manuscripts under review. There are currently 9 articles totaling 59 pages ready for publication in the July-December 2008 issue (Vol. 35:2) and 3 articles accepted and awaiting production of proofs.

The Editorial Board has a goal of providing the first review back to the authors within 60 days of submission. Based on data captured from the reviews of 6 manuscripts, the average time for the first review is 133 days. Based on data for 15 manuscripts, the time required for the accept/reject decision is 129 d from submission, indicating that the actual time required for reviews is less than the observed 133 days. Allen Press is producing pdf proofs in an average of 15 d, and authors are taking an average of 6 d to review and return the proofs. The average time from acceptance to publication is 172 d.

The following Associate Editors will complete their current terms of service December 30, 2008:

Mark Burow (8 years).....Jay Chapin (8 years)
James Grichar (5 years)..... David Jordan (3 years)
Tom Whitaker (6 years)

The following Associate Editors will remain on the Editorial Board (terms expiring)
Tim Brenneman (2009) ..... Manjeet Chinnan (2009)
Wilson Faircloth (2009) .....Tim Grey (2009)
Tom Isleib (2009) ..... Peggy Ozias-Akins (2009)
John Damicone (2010) ..... Maria Gallo (2010)
Diane Rowland (2010)..... Barry Tillman (2010)

Recruiting for Associate Editors whose terms will expire in 2011 is underway and will be completed no later than December 30, 2008.

The annual financial report for FY 2008 and the budget for FY 2009 for Peanut Science are attached as separate documents.

Respectfully submitted,
Christopher L. Butts, Chair

NOMINATING COMMITTEE REPORT

The following individuals have been nominated to the APRES Board of Directors. I assume that the membership votes on these individuals at the business meeting.

Barbara Shew for President.
Jason Woodward for University Employee for the Southwest.
Victor Nwosu for the Manufactured Products Representative.

Respectively submitted,
Austin Hagan, Chair

FELLOWS COMMITTEE REPORT

In 2008 the APRES Fellows Award Committee received two for the Fellow Award. After reviewing the nomination packages, the committee held an electronic vote and the results are as follows:
Candidate 1: 2 Yes, 5 No
Candidate 2: 3 Yes; 4 No

Therefore, the Fellows Committee does not recommend that any Fellows Awards be presented at the 2008 annual meetings. Both individuals have made significant contributions to the peanut industry, but there was little evidence of active participation in the society other than attending meetings. They are highly deserving of other awards presented by APRES, and I hope that the nominators will be advised of this and that they prepare the nomination packages for other awards in the future that are more focused on their contributions to the science and/or industry.

This has been a difficult committee assignment for the first time because of the few nominations submitted and the candidates' little apparent service to the Society. During most years in the past the Fellows candidates have been ordered and awards given to the top group as allowable in the bi-laws. Because there are no guidelines for the committee concerning an acceptable level of 'yes' votes for the award we spent a great deal of time trying to determine what percentage of the committee is needed for a positive recommendation. Although after all the votes were tabulated, neither of this year's candidates had a majority vote, there could easily have been a situation where 4/7 (57%) or 5/7 (71%) of the committee voted 'yes' and there was not a consensus as to the acceptable level. Future committees' will have an easier assignment if clearer guidelines are established before the committee receives the nomination packages (and these guidelines should be published in the Proceedings. It is recommended that the Board of Directors discuss the policy and decide on a minimum percentage of 'yes' votes by the committee to be elected Fellow.

Respectfully submitted,
Tom Stalker, Chair.

BIOGRAPHICAL SUMMARIES OF FELLOWS RECIPIENTS

No recipients for the year 2008.

GUIDELINES for AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY FELLOW ELECTIONS

Fellows

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

Eligibility of Nominators

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

Eligibility of Nominees

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

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

Nomination Procedures

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

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

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

Deadline. Six (6) copies of the nomination are to be received by the

chairman of the Fellows Committee by March 1 each year.

Basis of Evaluation

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

Processing of Nominations

The Fellows Committee shall evaluate the nominations, assign each nominee a score, and make recommendations regarding approval by April 1. The President of APRES shall mail the committee recommendations to the Board of Directors for election of Fellows, maximum of three (3), for that year. A simple majority of the Board of Directors must vote in favor of a nominee for election to fellowship. Persons elected to fellowship, and their nominators, are to be informed promptly. Unsuccessful nominations will be reconsidered the following year and nominators will be contacted and given the opportunity to provide a letter that updates the nomination. After the second year unsuccessful nominations will be reconsidered only following submission of a new, complete nomination package.

Recognition

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

Distribution of Guidelines

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

FORMAT for AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY FELLOW NOMINATIONS

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

DATE SUBMITTED:

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

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

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

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

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

I. Personal Achievements And Recognition (10 points)

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

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

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

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

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

D. Administration or Business

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

III. Service to The Profession (30 Points)

A. Service to APRES including length, quality, and significance of service.
   1. List appointed positions.
   2. List elected positions.
   3. Briefly describe other service to the Society.

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

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

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

BAILEY AWARD COMMITTEE REPORT

The Bailey Award winner from 2007 Annual Meeting is Ye Chu from her presentation and paper titled "Development of Molecular Markers to Facilitate Pyramiding Genetic Traits in Peanut Cultivars." Y. CHU*, L. RAMOS, P. OZIAS-AKINS, Horticulture Department, The University of Georgia Tifton Campus, Tifton, GA 31794, and C.C. HOLBROOK, USDA-ARS, Tifton, GA 31793, USA.

Respectfully Submitted by:
Nathan Smith, Chair

GUIDELINES for AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY BAILEY AWARD

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

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

1. The presenter of a nominated paper, whether the first or a secondary author, must be a member of APRES.
2. Graduate students being judged for the Joe Sugg Award are also eligible for the Bailey Award if they meet all other criteria for eligibility.

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

1. Well organized.
2. Clearly stated.
3. Scientifically sound.
4. Original research or new concepts in extension or education.
5. Presented within the time allowed.

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

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

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

1. Appropriateness of the introduction, materials and methods, results and discussion, interpretation and conclusions, illustrations and tables.
2. Originality of concept and methodology.
3. Clarity of text, tables and figures; economy of style; building on known literature.
4. Contribution to peanut scientific knowledge.

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

a) notify session moderators for the upcoming meeting of their

responsibilities in relation to judging oral presentations as set in the guidelines in APRES PROCEEDINGS,

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

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

JOE SUGG GRADUATE STUDENT AWARD REPORT

The Joe Sugg Graduate Student Committee met from 3:00-4:00 PM, Tuesday 15 July 2008 in the Huckins Room of the Renaissance Hotel in Oklahoma City. Present at the meeting were Dr. Jason Woodward, Dr. Susana Milla Lewis, Dr. Roy Pittman, and Dr. Bob Kemerait. Due to flight delays, Dr. Pat Phipps was unable to attend this meeting.

Dr. Kemerait reported that there had originally been nine papers submitted to the student competition session, but that one had been withdrawn leaving eight total papers in the session to be held on Wednesday morning. Dr. Kemerait also reported that he had contacted each student via e-mail discussing the session with them and also attaching a copy of the judging sheet with the e-mail.

Dr. Kemerait gave a copy of each student abstract along with copies of the judging forms to each of the committee members.

During the meeting, the possibility of developing a student poster competition to compliment the Paper session was discussed. There was concern expressed by some that such a competition could reduce the participation in the traditional paper session. However others argued that the poster competition could draw from a separate pool of students, primarily those who had not yet completed two years worth of research. The value of a poster competition was noted as a) increasing the participation (and hopefully attendance) at APRES by students, and b) providing a structured review of posters which are quickly becoming an important part of scientific meetings. It was agreed that the chair of the committee, Bob Kemerait, would bring this discussion to the APRES Board and ask that a preliminary poster competition be scheduled for the 2009 APRES meeting to determine if this session was appropriate or not.

Respectfully submitted,
Robert C. Kemerait, Jr., Chair

COYT T. WILSON DISTINGUISHED SERVICE AWARD REPORT

Two nominations were received by the Coyt T. Wilson Distinguished Service Award Committee for evaluation. Dr. Fredrick M. Shokes was selected as recipient of the 2008 award. The committee thanks those who nominated members of the society for consideration. The Board voted to approve the committee recommendation.

Respectfully submitted by,
Thomas B. Whitaker, Chair

BIOGRAPHICAL SUMMARY OF COYT T. WILSON
DISTINGUISHED SERVICE AWARD RECIPIENT

Dr. Fred M. Shokes earned a B.S. degree in Plant and Soil Sciences in 1974, and an M.S. degree in Plant Physiology in 1975, from Texas A&M University. In 1978 he received a Ph.D. degree in Plant Pathology from the University of Georgia before going to serve the University of Florida as the Research Pathologist at the North Florida Research and Education Center (NFREC) in Quincy. He served in that capacity for over 20 years before going to the Virginia Tech Tidewater Agricultural Research and Extension Center to become the director where he has served for the past nine years. In addition to his job as director, he assumed leadership of the Peanut Variety Quality Evaluation Program z9PVQE) as the Interim Coordinator for two years.

Dr. Shokes's first introduction to peanut research came as an undergraduate, working on a research project at Texas A&M. As a result of his contributions to that project he became a co-recipient of the very first Bailey Award in 1975. Later in Florida, Dr. Shokes became part of the research team with the Peanut Breeding Program of Dr. Daniel W. Gorbet on a research project dealing with the partitioning of photosynthate in disease resistant peanut breeding lines. This work led to Dr. Shokes again becoming a co-recipient of the Bailey Award in 1985. Dr. Shokes's interest in disease assessment methods led him to aid Dan Gorbet in developing and refining the Florida 1-10 scale for leaf spot assessment. His research work with two Ph.D. students led to the characterization of late leaf spot resistance of several breeding lines as rate-reducing resistance. Further work with the breeding program led to his becoming a co-developer of Southern Runner, the first of several multiple-disease-resistant peanut varieties. Southern Runner, the first peanut line ever released for its resistance to late leaf spot disease, proved to also have partial resistance to tomato spotted wilt virus and Southern stem rot. Although Southern Runner never gained wide acceptance in the market place, it proved to be a good parent and was later used as a parent of Georgia Green. While working with the Florida Peanut Breeding Program, Dr. Shokes developed methods for field testing of breeding lines for resistance to stem rot and he and Dr. Gorbet worked out the schemes for effective screening for resistance to TSWV, a disease that was increasing in importance. As a researcher, Dr. Shokes made major contributions to the industry while authoring several chapters and co-editing the book 'Peanut Health Management'. Other significant contributions included co-authorship of chapters in the Compendium of Peanut Diseases and chapters in seven other books on peanut topics. A significant treatise was published in 1989 on the azoles as peanut fungicides. Of Dr. Shokes's 47 journal series publications, 32 of them deal with peanut and 78% of the 193 other publications deal with peanut or related topics. In 1996, Dr. Shokes worked with Dr. Tim Williams to initiate and organize the highly successful U.S.-Bolivia Peanut CRSP project.

Dr. Shokes has been an active member, serving the American Peanut Research and Education society for 29 years, attending 27 annual meetings and giving research presentations 22 times, authoring or co-authoring 59 abstracts, and 13 other manuscripts in Peanut Science. His service to APRES includes membership on the Bailey Award Committee, the Dow AgroSciences Award Committee (2 terms), the Coyt T. Wilson Distinguished Service Award Committee, Finance Committee, Site selection Committee (Chair in 04-05),

Nominating Committee (Chair 97-98), Program Committee (Chair 95-96), and the Ad Hoc Committee on Improving the Financial Status of APRES. Dr. Shokes also served on the Editorial Board of Peanut Science as an Associate Editor from 1986-92. He served as an officer of APRES as President Elect (95-96), President (96-97), and as Past-President (97-98). He played a major role in organizing the 28th Annual Meeting in Orlando, Florida. As chair of local arrangements for the 37th Annual Meeting of APRES in Portsmouth, Virginia, Dr. Shokes worked with the Board of Directors of APRES and the National Peanut Board to organize the first joint meeting of both organizations in Portsmouth, Virginia. This meeting featured several outstanding events and attracted a large number of growers from Virginia and North Carolina. Overall, the meeting was highly successful in attendance and the drawing of local and national support through donations of funds and products.

In addition to being a co-recipient of the Bailey Award on two occasions, he was honored with the Dow/Elanco Award for Research Excellence in 1998 and honored as a Fellow of the society in 2000. Dr. Fred Shokes has a solid record of service and contributions to the American Peanut Research and Education Society that span his entire career of 33 years as a plant pathologist and Director of programs at Experiment Stations in Florida and Virginia. His many significant contributions an a member of several committees, leadership as chair of key committees, and President of APRES makes it clear that Dr. Fred M. Shokes is deserving of the Coyt T. Wilson Distinguished Service Award.

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

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

Eligibility of Nominators

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

Eligibility of Nominees

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

Nomination Procedures

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

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

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

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

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

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

Qualifications of Nominee

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

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

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

IV. Re-consideration of nominations. Unsuccessful nominations will be reconsidered the following year and nominators will be contacted and given the opportunity to provide a letter that updates the nomination. After the second year unsuccessful nominations will be reconsidered only following submission of a new, complete nomination package.

Award and Presentation

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

DOW AGROSCIENCES AWARDS COMMITTEE REPORT

Two nominations were received for the Research Award, and one nomination was received for the Education Award. Six of the seven committee members returned their evaluation, and based on the evaluations by the committee members, the committee recommends that the Research award be presented to Dr. Barbara Shew and that the Education award be presented to Dr. Jay Chapin.

Respectfully submitted by:
Hassan Melouk

BIOGRAPHICAL SUMMARY OF DOW AGROSCIENCES AWARD FOR EXCELLENCE IN RESEARCH RECIPIENT

Dr. Barbara Shew is a native of Colorado and received her B.S. degree in Plant Pathology from Colorado State University (1976). She received her doctoral research under the direction of Marvin Beute, a long time member and Fellow of APRES, and earned her Ph.D. degree in Plant Pathology from North Carolina State University in 1983. She continued for several years as a post-doctoral researcher in Dr. Beute's program and took over peanut disease research responsibilities upon his retirement. Currently, she is responsible for peanut disease research and extension in North Carolina. She also teaches epidemiology, host resistance, and disease forecasting in a graduate course in plant disease epidemiology and control. Her research interests include epidemiology; disease advisories and forecasting; disease resistance; conventional, integrated, and organic disease control methods; and pathogen ecology.

BIOGRAPHICAL SUMMARY OF DOW AGROSCIENCES AWARD FOR EXCELLENCE IN EDUCATION RECIPIENT

Dr. Jay Chapin received his B.S. (Biology) from Dickinson College in 1971, his M.S. (Biology) from East Carolina University in 1975, and his Ph.D. (Entomology) from Clemson University in 1978. Jay also served from 1970-72 in the US Army's 82nd Airborne Division as an infantryman. Dr. Chapin, Extension Peanut Specialist at Clemson University, has had a long and productive career. While Dr. Chapin works with several important crops and his expertise crosses several disciplines, his contributions to the peanut industry in South Carolina and surrounding states in noteworthy. Many of his activities incorporate several disciplines including pathology, weed science, and entomology, as well as basic agronomic principles into production strategies for peanut growers in South Carolina. He is the quintessential agronomist and go-to person for answers to peanut-related questions and issues. He has a broad understanding of all aspects of peanut production and pest management. His services as a Peanut Extension Specialist in South Carolina are invaluable. Not only has Jay's contributions to South Carolina been noteworthy, research and extension personnel as well as practitioners respect his program and often include his

recommendations in their educational materials. While Jay has always had a visible and productive extension program, his talent and efforts have become very apparent over the past decade in peanut. Most notably, peanut production in South Carolina increased from 10,000 acres in the early 2000s to approximately 60,000 acres at the current time. Expansion in peanut acres required a solid and responsive extension program, and Dr. Chapin has led this effort and deserves much of the credit for the successful implementation of production and pest management practices at the farmer level. Jay has also been involved in the three state PVQE (Peanut Variety and Quality Evaluation) program in the Virginia-Carolina Region that involves evaluation of breeding lines and cultivars. Jay has demonstrated excellent leadership in developing and implementing the annual Peanut Forum in South Carolina.

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. An individual may receive either award only once as an individual or as a team member. 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 must 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. Unsuccessful nominations will be reconsidered the following year and nominators will be contacted and given the opportunity to provide a letter that updates the nomination. After the second year unsuccessful nominations will be reconsidered only following submission of a new, complete nomination package.

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.

DATE:

Nominee(s): _____

Address _____

Title _____ Tel No. _____

II. Nominator:

Name _____ Signature_____

Address _____

Title _____Tel No._____

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

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

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

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

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

PEANUT QUALITY COMMITTEE REPORT

The committee met in Oklahoma City to discuss issues surrounding the overall quality of USA peanuts and peanut products. Persons attending the meeting included. Branch, J. Brinkley, M. Burow, T. Cea, P. Donahue, J. Elder, W. Faircloth, M. Fenn, M. Franke, T. Isleib, V. Nwosu, H. Pattee, and T. Sanders. Chair W. Faircloth opened the meeting with a recap of issues discussed in 2007. Topics for discussion in 2008 included

1. T. Sanders shared that the issues surrounding peanut spotting of exports to the EU had been resolved through testing at USDA-ARS labs in Raleigh and Dawson. Fungal growth in storage (after shipping) was determined to be the primary causal agent, due to lengthy storage in negative environments. Sanders cited a report from C. Butts, USDA-ARS Dawson, issued earlier that year that presented said findings.
2. T. Cea started discussion of issues surrounding variable oil characteristics in oil roasted peanuts. Of primary concern were peanuts that would not allow adhesion of salt to the kernel surface. After some discussion T. Sanders cited work at USDA-ARS Raleigh correlating salt adherence to moisture content at roasting. It was brought forth that the problem occurred during 2007 and it was likely that the peanuts in question were carry-out from 2005, thus age was issue
3. V. Nwosu began discussion of peanut use as a biofuel in regards to sustainability of farms. Concerns of attendees included competitiveness of fuel peanuts and edible peanuts, quality/segregation of lesser quality fuel peanuts, and an overall interest in the project. W. Faircloth, USAD-ARS Dawson shared with the group an overview of the research project and detailed plans to encourage biofuel producers to keep these products segregated from traditional markets. In general, peanut use for oil/biodiesel was supported by those present with emphasis that traditional markets be maintained and not compromised.
4. M. Fenn and V. Nwosu generated discussion regarding was to build consumer demand based on the positive health aspects of peanuts. It was suggest that the industry was not moving quickly enough in stacking multiple traits in new germplasm to satisfy consumer demands (ie, high oleic plus lower saturated fats). It was noted that fragmentation within the industry, too many producers/industry groups competing, sometimes prevents progress. Others contributed that yield is still the primary concern of peanut producers and until value –added traits can be segregated and premiums paid, growers have no reason to select these varieties.

Respectfully submitted by:
Wilson Faircloth, Co-chair

PROGRAM COMMITTEE REPORT

The committee met at 4 pm in the Grand room at the Renaissance Hotel in Oklahoma City, OK on July 15, 2008. Members present were: Kelly Chenault (chair), Chad Godsey, Hassan Melouk and John Damicone. It was discussed that the meeting was running smoothly so far and assignments were made for setting up equipment for technical and general sessions the following day. Chad and Kelly were to set up all computers and projectors prior to each technical session.

John was to set up the equipment for the general session. John reported that we had received 98 abstracts thus far; 18 were for posters, 5 were for the special symposium on genetics and biotechnology and 75 were for technical presentations. The meeting adjourned at 4:30 pm.

Respectively submitted by:
Kelly Chenault, Chair

CONTRIBUTORS TO 2008 APRES MEETING

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

Bayer CropScience – Wednesday Reception/Dinner

BASF – Wednesday Reception/Dinner

Dow AgroSciences – Awards Breakfast

Syngenta – Daily Breaks

Ice Cream Social

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40th ANNUAL MEETING
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
OKLAHOMA CITY, OKLAHOMA
JULY 15-18, 2008
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Tuesday, July 15

APRES Golf Outing **8:00 am** **Winter Creek Golf and Country Club**

Committee and Other Meetings

12:00-6:00	APRES Registration	2nd Floor Pre-function West
1:00-5:00	Spouses' Hospitality Room	Egbert
1:00-5:00	Exhibitor Setup	MR 19 & 20
1:00-2:00	Associate Editors, *Peanut Science*	Kingkade
1:00-2:00	Site Selection Committee	Grand
1:00-2:00	Fellows Committee	Huckins
1:00-2:00	Coyt T. Wilson Distinguished Service Award	Biltmore
2:00-3:00	Publications and Editorials Committee	Kingkade
2:00-3:00	Public Relations Committee	Grand
2:00-3:00	Bailey Award Committee	Huckins
2:00-3:00	Dow AgroSciences Awards Committee	Biltmore
3:00-4:00	Nominating Committee	Kingkade
3:00-4:00	Joe Sugg Graduate Student Award Committee	Huckins
3:00-4:00	Peanut Quality Committee	Grand
3:00-4:00	Membership *Ad hoc* Committee	Biltmore
3:30-6:00	Presentation Loading	Native American Room
4:00-5:00	Grower Advisory Committee	Kingkade
4:00-5:00	Program Committee (Local Arrangements and Technical)	Grand
4:00-5:00	By Laws *Ad hoc* Committee	Biltmore
4:00-5:00	Finance Committee	Huckins
7:00-9:00	**"Welcome to Oklahoma" Ice Cream Social**	**Great Hall A&B**

Wednesday, July 16
Morning

8:00-4:00	APRES Registration	2nd Floor Pre-function West
8:00-5:00	Spouses' Hospitality Room	Egbert
8:00-9:30	General Session	Great Hall D&E
8:00-9:45	Poster Session I Setup	MR 19 & 20
9:30-9:45	**Break**	
10:00-12:00	Joe Sugg Graduate Student Competition	MR 16
10:00-3:30	Poster Session I (displayed)	MR 19 & 20
10:30-12:00	Poster Session I (with authors)	MR 19 & 20

Program Highlights

Wednesday, July 16
Afternoon and Evening

1:30 - 4:15	Breeding, Biotechnology and Genetics I	MR 16
1:30 - 4:00	Production Technology	MR 18
1:30 - 4:30	Processing, Utilization, Harvesting, Curing, Shelling, Storage and Handling	MR 17
3:00-3:15	**Break**	
3:30-6:00	Presentation Loading	Native American Room
5:00-6:30	Board of Directors	MR 21
7:00-9:00	**Dinner**	**Great Hall A&B**
		Bayer Crop Science and BASF

Thursday, July 17

8:00-12:00	APRES Registration	2nd Floor Pre-function West
8:00 - 9:45	Poster Session II Setup	MR 19 & 20
8:00-12:00	Spouses' Hospitality Room	Egbert
8:00-10:00	Breeding, Biotechnology, and Genetics II	MR 17
8:00-9:15	Weed Science	MR 18
8:00-11:15	Plant Pathology, Nematology and Mycotoxins	MR 16
9:00 - 3:30	Poster Session II (displayed)	MR 19 & 20
10:15-10:30	**Break**	
10:30-11:45	Excellence in Extension Education	MR 17
10:30-12:00	Poster Session II (with authors)	MR 19 & 20
1:00-3:00	Symposium-Advances in Genetics and Biotechnology	MR 16
1:00-3:00	Crop Germplasm Committee	MR 17
3:00-5:00	Seed Summit	MR 18
3:30- 3:45	**Break**	
5:00-6:00	Peanut Genomics Initiative	MR 16

Dinner on your own

Friday, July 18

7:00-8:00	**Awards Breakfast**	**Great Hall A&B**
		Dow AgroSciences
8:00-10:00	APRES Awards Ceremony and Business Meeting	Great Hall A&B
10:00-12:00	Peanut CRSP Project	MR 14

General Session

Wednesday, July 16 - Morning

Great Hall D&E

8:00 Call to Order ..... **Kelly D. Chenault**
APRES President-Elect

8:05 Welcome to Oklahoma! ..... **Jari Askins**
Oklahoma Lieutenant Governor

8:15 A University Administrator's Perspective on Peanuts ..... **Robert E. Whitson**
Vice President, Dean, and Director
Agricultural Sciences and Natural Resources
Oklahoma State University

8:30 NPB George Washington Carver Award Presentation..... **Jack Brinkley**
Research Chairman
National Peanut Board

8:35 Understanding the changing consumer and meeting their needs to increase peanut consumption and demand..... **Raffaela Marie Fenn**
President and Managing Director
National Peanut Board

8:50 Food Safety in Agriculture..... **Astri Wyandande**
Assistant Professor & Assistant Director of NIMFFAB
Oklahoma State University

9:10 State of the Society Address ..... **Austin K. Hagan**
APRES President

9:25 Announcements ..... **John P. Damicone**
Chair, Technical Program
Chad Godsey
Chair, Local Arrangements

Morning

JOE SUGG GRADUATE STUDENT COMPETITION

Moderator: Robert C. Kemerait, Jr., University of Georgia
Meeting Room 16

10:00 (1) Improving Spray Deposition and Control of Peanut Diseases with Night Fungicide Applications. J. AUGUSTO*, T.B. BRENNEMAN, P. SUMNER, A.K. CULBREATH, and A.S. CSINOS, University of Georgia, Tifton.

10:15 (2) Evaluation of Biological and Other Novel Seed Treatments for Use in Organic Peanut Production. S.J. RUARK* and B.B. SHEW, North Carolina State University, Raleigh.

10:30 (3) DNA Markers for Resistance to Post-harvest Aflatoxin Accumulation in Peanut (*Arachis hypogaea* L.). C.E. ROWE*, S.R. MILLA-LEWIS, and T.G. ISLEIB, North Carolina State Univiversity, Raleigh.

10:45 (4) Fall-raised Beds for Improved Digging Efficiency of Strip-till Peanut. J.L. JACKSON*, J.P. BEASLEY JR., R.S. TUBBS, R.D. LEE, and T.L. GREY, University of Georgia, Tifton.

11:00 (5) Determination of Seed Size in Relationship to the Distance from the Main Axis in *Arachis* L. J.E. WILLIAMS*, C.E. SIMPSON, D.H. KATTES and C.L. HIGGINS. Texas AgriLife Research and Tarleton State University, Stephenville.

11:15 (6) Developing Breeding Populations of Peanuts (*Arachis hypogaea* L.) Through Introduction of Leaf Spot Resistance Genes from Interspecific Hybrids into Adapted Cultivars. N.N. DENWAR* Texas Tech University, Lubbock; J. AYERS, Texas AgriLife REC, Lubbock; C. SIMPSON, Texas AgriLife REC, Stephenville; P. SANKARA University of Ouagadougou, Ouagadougou, Burkina Faso; and M.D. BUROW, Texas AgriLife REC, Lubbock.

11:30 (7) Determining Optimal Conditions for Maximum Peanut Profitability Under Reduced Irrigation in West Texas. J.L. AYERS* and M.D. BUROW, Texas AgriLife Research and Texas Tech University, Lubbock.

11:45 (8) Evaluating Oil Content of Bolivian Landraces. J.N. WILSON*, M.D. BUROW, Texas AgriLife Research, Lubbock; C.E. SIMPSON, Texas AgriLife Research, Stephenville; and M.R. BARING, Texas AgriLife Research, College Station.

12:00 (9) Economic Feasibility Analysis of Transitioning to Organically Grown Peanuts. D.A. KEISER*, N.B. SMITH, University of Georgia, Athens and Tifton; W.C. JOHNSON, USDA, Tifton, GA; and R.S. TUBBS, University of Georgia, Tifton.

POSTER SESSION I

Meeting Rooms 19 & 20

POSTER WILL BE DISPLAYED FROM 10:00 am – 3:30 pm ON WEDNESDAY.

AUTHORS WILL BE PRESENT WITH PAPERS FROM 10:30 am UNTIL 12:00 noon ON WEDNESDAY, JULY 16

(10) Reaction of Selected Peanut Cultivars to Insects and Diseases in a Dry-land Production System in Southwest Alabama. H.L. CAMPBELL*, J.R. WEEKS, and A.K. HAGAN, Auburn University, AL; and M.D. PEGUES, Gulf Coast Research and Extension Center, Fairhope, AL.

(11) Evaluation of the Annual Peanut (*Arachis hypogaea* L.) as a Potential Forage Crop for the Southeastern USA. R.O. MYER*, A.R. BLOUNT, D.W. GORBET, and B.L. TILLMAN, University of Florida, NFREC, Marianna.

(12) Variability for Oleic Acid to Linoleic Acid Ratio in Peanut Genotypes. N. SINGKOM, S. JOGLOY, P. JAISIL, A. PATANOTHAI, and P. SWATSITANG, Khon Kaen University, Khon Kaen, Thailand; and N. PUPPALA*, New Mexico State University, Clovis.

(13) Haplotype diversity nucleotide diversity of RGH and COS sequences in peanut. G.H. HE*, Tuskegee University, AL; M. YUAN, Shandong Peanut Research Institute, Qingdao, China; B. ROSEN, R.V. PENMETSA, D. COOK, University of California, Davis; and M.L. WANG, USDA-ARS, Griffin, GA.

(14) Effect of Phenolic Compounds on IgE Binding to Peanut Allergens. S.-Y. CHUNG*, Southern Regional Research Center, USDA-ARS, New Orleans, LA.

(15) Association between surrogate traits of drought tolerance and aflatoxin contamination in peanut cultivars under terminal drought. T. GIRDTHAI*, S. JOGLOY, N. VORASOOT, C. AKKASAENG, and A. PATANOTHAI, Khon Kaen University, Khon Kaen, Thailand; S. WONGKAEW, Suranaree University of Technology, Nakhon Ratchasima, Thailand; and C.C. HOLBROOK, USDA-ARS, Tifton, GA.

(16) Evaluating Incidence of Tomato Spotted Wilt Virus in Peanut. R.P. EDWARDS*, Georgia Cooperative Extension, Ocilla; and S.L. BROWN, University of Georgia, Tifton.

(17) Comparison of Cultural of Practices that May Improve Weed Management in Organic Production Peanut Systems. G. PLACE, D.L. JORDAN*, C. REBERG-HORTON, T.G. ISLEIB, and M.G. BURTON. North Carolina State University, Raleigh.

(18) Response of Peanut Genotypes with Partial Resistance to Leaf Spots to Fungicide Programs. D. GORBET*, B. TILLMAN, M. GOMILLION, J. MCKINNEY, University of Florida, Marianna; and A. CULBREATH, University of Georgia, Tifton.

Afternoon

Breeding, Biotechnology and Genetics I

Moderator: Kelly D. Chenault, USDA-ARS, Stillwater, OK
Meeting Room 16

1:30 (19) Multiple Disease Resistance in Interspecific Hybrid Derived Peanut Breeding Lines. S.P. TALLURY*, T.G. ISLEIB, J.E. HOLLOWELL, S.R. MILLA-LEWIS, and B.B. SHEW. N.C. State Univ., Raleigh; W. DONG and C.C. HOLBROOK, USDA-ARS, Tifton, GA.

1:45 (20) Identification of QTL Markers for Pod and Kernel Traits in Cultivated Peanut by Bulk Segregant Analysis. S.M. SELVARAJ *, Texas Tech University, Lubbock; N. MANIVANNAN, A.M. SCHUBERT, J.L. AYERS and M.D. BUROW, Texas AgriLife Research & Extension Center, Lubbock.

2:00 (21) Field Evaluation of Virginia-Type Peanut Germplasm for Resistance to Late Leaf Spot, Stem Rot, and Spotted Wilt Disease. J.W. CHAPIN* and J.S. THOMAS, Clemson University, Blackville, SC; T.G. ISLEIB, North Carolina State University, Raleigh; and F. M. SHOKES, Virginia Tech University, Tidewater AREC, Suffolk.

2:15 (22) Gene Expression Profiling in Peanut using Oligonucleotide Microarrays. P. PAYTON*, K. KOTTAPALLI, USDA-ARS, Lubbock, TX; D. ROWLAND, W. FAIRCLOTH, National Peanut Research Lab, Dawson, GA; M. BUROW, Texas Tech University, Lubbock; N. PUPPALA, New Mexico State University, Clovis; and M. GALLO, University of Florida, Gainesville.

2:30 (23) SSR Allelic Diversity Changes in Virginia-Type Peanut Cultivars Released from 1943 to 2005. S.R. MILLA-LEWIS* and T.G. ISLEIB, North Carolina State University, Raleigh.

2:45 (24) Multiple Disease Resistances in a Medium-Maturity Peanut Cultivar. C.C. HOLBROOK* and P. TIMPER, USDA-ARS, Tifton, GA; A.K. CULBREATH, T.B. BRENNEMAN, W. B. DONG, and C.K. KVIEN, University of Georgia, Tifton.

3:00 BREAK

3:15 (25) Uniform Peanut Performance Test Data Documents Upward Creep of Seed and Pod Size of Recently Released Runner-Type Peanut Cultivars. T.G. ISLEIB* and S.C. COPELAND, North Carolina State University, Raleigh.

3:30 (26) Preliminary Heritability Estimates for Drought Resistance Related Traits in Cultivated Peanut (*Arachis hypogaea* L.). C.Y. CHEN*, D. ROWLAND, W.H. FAIRCLOTH, M.C. LAMB, USDA/ARS National Peanut Research Laboratory, Dawson, GA; and E. HARVEY, Auburn University, Auburn, AL.

3:45 (27) Increase in Seed Size among Runner Market-Type Peanut Cultivars in the Southeastern USA. B.L. TILLMAN*, University of Florida, Marianna.

4:00 (28) Use of Capillary Electrophoresis to Determine Oleic and Linoleic Acid Content of Peanut Seed. K.D. CHENAULT* and H.A. MELOUK, USDA-ARS, Stillwater, OK; Y.C. BANNORE and Z. EL RASSI, Oklahoma State University, Stillwater.

4:15 (29) Working with a Useful Bridge Species to Introgress Genes into *Arachis hypogaea* L. C.E. SIMPSON*, Texas AgriLife Research, Stephenville; M.D. BUROW, Texas AgriLife Research and Texas Tech University, Lubbock; and M.R. BARING, Texas AgriLife Research, College Station.

PRODUCTION TECHNOLOGY

Moderator: Chad Godsey, Oklahoma State University, Stillwater, OK
Meeting Room 18

1:30 (30) Growing Runner Varieties in Different Environments in the Virginia-Carolina Growing Area. F.M. SHOKES*, P.M. PHIPPS, D.A. HERBERT, Tidewater Agric. Res. and Ext. Center, Suffolk, VA; and T.G. ISLEIB, N.C. State Univ., Raleigh.

1:45 (31) Tillage, Cultivar, and Row Pattern Effects on Pod Yield and Tomato Spotted Wilt Incidence. R.S. TUBBS*, J.P. BEASLEY, JR., and J.E. PAULK, III, University of Georgia, Tifton.

2:00 (32) Reduced Tillage Practices for Oklahoma Peanut Production. C.B. GODSEY*, P.G. MULDER, J.P. DAMICONE, C.R. MEDLIN, and K. SEUHS, Oklahoma State University, Stillwater.

2:15 (33) Further Investigations Into the Suitability of Peanuts for Biodiesel Production. W.H. FAIRCLOTH*, D.L. ROWLAND, USDA/ARS Dawson, GA; G.L. HAWKINS and C. PERRY, University of Georgia, Tifton.

2:30 (34) Equipment for Soil and Water Conservation in Peanut Production. R.C. NUTI*, R.B. SORENSEN, M.C. LAMB, USDA-ARS, Dawson, GA; and C.C. TRUMAN, USDA-ARS, Tifton

2:45 (35) Fertilization of Peanut with Selenium. R.B. SORENSEN*, R.C. NUTI, and C.L. BUTTS, USDA-ARS, Dawson, GA.

3:00 BREAK

3:15 (36) Peanut Yield Response and Economic Benefits of Fungicide and Phosphorus in Farmer-Managed Trials in Ghana. J.B. NAAB*, S.S. SEINI, OSMAN GYASI, Wa, Ghana; K.J. BOOTE and J.W. JONES, University of Florida, Gainesville.

3:30 (37) The Number of Years Between Peanut Plantings is Not a Good Indicator of Peanut Response to Inoculation. S. UZZELL*, D.L. JORDAN, J.S. BARNES, C.R. BOGLE, T. MARSHALL, and P.D. JOHNSON, North Carolina Cooperative Extension Service and North Carolina Department of Agriculture and Consumer Services, Raleigh.

3:45 (38) 2007 Field Trials to Evaluate Management Options for Peanut Insect Pests. D.A. HERBERT, JR*, Virginia Tech Tidewater Agric. Res. and Ext. Center, Suffolk.

4:00 (39) Economics of Tillage and Row Pattern on Different Cultivars for Peanut. A.R. ZIEHL*, N.B. SMITH, R.S. TUBBS, J.P. BEASLEY, JR., J.E. PAULK, III, and E.J. WILLIAMS, University of Georgia, Tifton.

PROCESSING AND UTILIZATION HARVESTING, CURING, SHELLING, STORING, AND HANDLING

Moderator: Chris Butts, USDA, ARS, National Peanut Research Laboratory
Meeting Room 17

1:30 (40) Different Physical Properties Found in Snack Peanuts based on Plant Growing Region. D. SMYTH*, L. DE BLAKER JR., M. KWEON, L. SLADE, H. LEVINE, M. FRANKE, Kraft Foods, East Hanover, NJ.

1:45 (41) Hydrophilic and Lipophilic Antioxidant Capacities of Commercially Available Peanut Flours. J.P. DAVIS*, K.M. PRICE, L.L. DEAN and T.H. SANDERS, USDA-ARS, Raleigh NC.

2:00 (42) In Vitro Digestibilities of Perennial Peanut and Annual Peanut Forages for Horses. J.V. ECKERT, L.K. WARREN, J.H. BRENDEMUHL, J.L. FOSTER, University of Florida, Gainesville; R.O. MYER*and A.R. BLOUNT, University of Florida, NFREC, Marianna.

2:15 (43) Variation in Peanut Sensory Quality Associated with U.S. Production Regions and Breeding Programs Submitting Entries to the Uniform Peanut Performance Test. H.E. PATTEE*, T.G. ISLEIB, N.C. State Univ., Raleigh; T.H. SANDERS, L.O. DEAN, and K.W. HENDRIX, USDA-ARS, Raleigh, NC.

2:30 (44) Evaluation of Warm-Season Legume Forages for Livestock: I. Hay. J.L. FOSTER, A.T. ADESOGAN, University of Florida, Gainesville; R.O. MYER*, and A.R. BLOUNT, University of Florida, NFREC, Marianna.

2:45 (45) Effects of Starting Moisture on Characteristics of Oil Roasted Peanuts. L.L. DEAN*, J.P. DAVIS, K.W. HENDRIX, M.T. DeBRUCE, T.H. SANDERS, Market Quality and Handling Research Unit, USDA, ARS, SAA, Raleigh, NC.

3:00 BREAK

3:15 (46) Evaluation of Warm-Season Legume Forages for Livestock: II. Haylage. J.L. FOSTER, A.T. ADESOGAN, University of Florida, Gainesville; R.O. MYER*, and A.R. BLOUNT, University of Florida, NFREC, Marianna.

3:30 (47) Evaluation of Whole, In-Shell Peanuts as a Supplement Feed for Beef Cattle Cows. R.O. MYER*, G.R. HANSEN, D.W. GORBET, University of Florida, NFREC, Marianna; and G.M. HILL, University of Georgia, Tifton.

3:45 (48) Digging Peanuts Utilizing an RTK System. K.B. BALKCOM*, Auburn University, Auburn, AL.

4:00 (49) A Low Cost Moisture Meter to Measure Moisture Content in Corn and In-Shell Peanuts. C.V.K. KANDALA* and C.L. BUTTS. ARS-USDA, Dawson, GA.

4:15 (50) Response of Six Peanut Cultivars to Timing of Harvest. J.P. BEASLEY, JR.*, E.J. WILLIAMS, J.E. PAULK, III, R.S. TUBBS, Univ. of Georgia, Tifton, and J.A. BALDWIN, University of Florida, Gainesville.

4:30 (51) In-field Peanut Processing for Biodiesel Production. C.L. BUTTS*, R.B. SORENSEN, R.C. NUTI, M.C. LAMB, and W.H. FAIRCLOTH. USDA/ARS Dawson, GA.

Morning

BREEDING, BIOTECHNOLOGY, AND GENETICS II

Moderator: Mark Burow, Texas AgriLife Research and Texas Tech University, Lubbock
Meeting Room 17

8:00 (52) Characterization of Early-Maturing Runner Peanut Breeding Lines. M.D. BUROW*, J.L. AYERS, and A.M. SCHUBERT Texas AgriLife Research and Texas Tech University Lubbock; C.E. SIMPSON, Texas AgriLife Research, Stephenville; and M.R. BARING, Texas AgriLife Research, College Station.

8:15 (53) Characterization of Three Different Texas Breeding Lines for Disease Resistance. M.R. BARING* and C.E. SIMPSON, Texas AgriLife Research, College Station.

8:30 (54) Transcriptional Response to Thermal and Water-Deficit Stress in Divergent Accessions from the U.S. Peanut Mini-core Collection. K. KOTTAPALLI *, P. PAYTON, USDA-ARS, Lubbock, TX; D. ROWLAND, W. FAIRCLOTH, USDA-ARS Dawson, GA; M. GALLO, University of Florida, Gainesville; N. PUPPALA, New Mexico State University, Clovis; and M. BUROW, Texas Tech University, Lubbock.

8:45 (55) Silencing Ara h 2 in Peanut Reduces IgE Binding but Does Not Enhance Fungal Growth. Y. CHU*, P. FAUSTINELLI, L. RAMOS, and P. OZIAS-AKINS, Univ. of Georgia, Tifton; J.J. THELEN, University of Missouri, Columbia; and S.J. MALEKI, USDA-ARS-SRRC, New Orleans, LA.

9:00 (56) Use of Yield Trial Data to Estimate Maturity of Peanut Breeding Lines. S.C. COPELAND, T.G. ISLEIB*, and D.L. JORDAN, N.C. State Univ., Raleigh; and F.M. SHOKES and H. PITTMAN, VPI and State Univ., Suffolk, VA.

9:15 (57) Discovery of Aquaporins or Major Intrinsic Proteins (MIPS) Transcripts from Peanut ESTs. P.M. DANG*, USDA-ARS, Dawson, GA; and B.Z. GUO, USDA-ARS, Tifton, GA.

9:30 (58) Putative peanut TSWV resistance gene(s) and development of markers for breeding selection. X. CHEN, A. CULBREATH, and T. BRENNEMAN, University of Georgia, Tifton; C.C. HOLBROOK and B. GUO*, USDA-ARS, Tifton, GA.

9:45 (59) Variation in Seed Protein Composition among Advance Breeding Lines from Tamil Nadu Agricultultural University. E. KOKILADEVI, MEHBOOB B. SHEIKH*, and RAMESH KATAM, Florida Agricultural and Mechanical University, Tallahassee.

10:00 (60) Outcrossing in Virginia-type Peanut Cultivars (NC7, Perry and Wilson) Using the Transgene Oxalate Oxidase as a Marker. S.M. CHRISCOE, J. HU, D.E. PARTRIDGE, P.M. PHIPPS, and E.A. GRABAU*, Virginia Tech, Blacksburg and Tidewater Agricultural REC, Suffolk, VA.

WEED SCIENCE

Moderator: Peter Dotray, Texas AgriLife Research and Extension, Lubbock
Meeting Room 18

8:00 (61) Peanut Tolerance to KIH-485 in Georgia. E.P. PROSTKO* and T.L. GREY, University of Georgia, Tifton.

8:15 (62) Peanut Response to Paraquat and S-Metolachlor Applied in Tank Mix Combinations. P.A. DOTRAY*, Texas AgriLife Research and Extension, Lubbock; W.J. GRICHAR, Texas AgriLife Research, Beeville; and T.A. BAUGHMAN, Texas AgriLife Extension, Vernon; and L.V. GILBERT, Texas AgriLife Research, Lubbock.

8:30 (63) Physiological affects of late season glyphosate applications on peanut (*Arachis hypogaea*) seed development and germination. T.L. GREY* and E.P. PROSTKO. University of Georgia, Tifton.

8:45 (64) Cultivation Strategies for Weed Control in Organic Peanut Production. W.C. JOHNSON, III*, USDA-ARS, N.B. SMITH, D.A. KEISER, University of Georgia, Tifton; and M.A. BOUDREAU, Hebert Green Agroecology, Asheville, NC.

9:00 (65) Weed Management in 15-Inch Row Spacing Peanut. B. BRECKE*, University of Florida, Jay; and D. STEPHENSON, IV, University of Arkansas, Keiser.

9:15 Weed Science Discussion

PLANT PATHOLOGY, NEMATOLOGY, AND MYCOTOXINS

Moderator: John Damicone, Oklahoma State University
Meeting Room 16

8:00 (66) Resistance to *Cercosporidium personatum* in Medium-Maturity Runner-Type Peanut Cultivars. A.K. CULBREATH, T.B. BRENNEMAN, W.D. BRANCH, University of Georgia, Tifton; and C.C. HOLBROOK, USDA-ARS, Tifton, GA.

8:15 (67) Field Performance of Three Peanut Entries in Oklahoma. H. MELOUK*, K. CHENAULT, USDA-ARS, Stillwater, OK; C. GODSEY and J. DAMICONE, Oklahoma State University, Stillwater.

8:30 (68) Suppression of Cylindrocladium Black Rot of Peanut with Seed Treatment Fungicides, Proline Fungicide In-Furrow, and Foliar Sprays of Provost Fungicide. P.M. PHIPPS* and J. HU, Tidewater Agric. Res. & Ext. Ctr., Virginia Tech, Suffolk, VA.

8:45 (69) Evaluation of Host Resistance and Fungicides for Late Leaf Spot Control in North Carolina. B.B. SHEW* and T.G. ISLEIB, North Carolina State Univ., Raleigh.

9:00 (70) Delivery and Performance of a Weather-Based Leaf Spot Advisory Program in Oklahoma. J.P. DAMICONE* and A.J. SUTHERLAND, Oklahoma State University, Stillwater.

9:15 (71) In-furrow Provost Application Enhances CBR Control in Peanut. A.K. HAGAN*, H.L. CAMPBELL, and K.L. BOWEN, Auburn University, AL; and L. WELLS, Wiregrass Research and Extension Center, Headland, AL.

9:30 (72) Impact of winter cover crop on aflatoxin contamination of peanut. K.L. BOWEN*, A.K. HAGAN, and H.L. CAMPBELL, Auburn University, AL.

9:45 (73) Validation of Prescription Fungicide Programs Based upon Peanut Rx. R.C. KEMERAIT*, T.B. BRENNEMAN, A.K. CULBREATH, University of Georgia, Tifton; J. WOODWARD, Texas AgriLife Extension, Lubbock; H. MCLEAN and J. HADDEN, Syngenta Crop Protection, Tifton, GA.

10:00 (74) Yield and Market Quality of Virginia-Type Peanut Cultivars Engineered with the Oxalate Oxidase Gene for Resistance to Sclerotinia Blight. J.H. HU*, P.M. PHIPPS, D.E. PARTRIDGE, Tidewater Agric. Res. Ext. Ctr., Virginia Tech, Suffolk; S.M. CHRISCOE, and E.A. GRABAU, Virginia Tech, Blacksburg; and B.B. SHEW, N.C. State Univ., Raleigh.

10:15 BREAK

10:30 (75) Response of Runner-Type Peanut Cultivars to Verticillium Wilt. J.E. WOODWARD*, and M.A. BATLA, Texas AgriLife Extension, Lubbock; T.A. WHEELER, Texas AgriLife Research, Lubbock; and T.A. BAUGHMAN, Texas AgriLife Extension, Vernon.

10:45 (76) Field Test Evaluations for Combined White Mold and Tomato Spotted Wilt Disease Resistance among Peanut Genotypes. W.D. BRANCH* and T.B. BRENNEMAN. University of Georgia, Tifton.

11:00 (77) Peanut Cultivar Susceptibility to *Lasiodiplodia theobromae* and Effect of Seed Treatments on Isolation Frequencies from Shells and Seed. T.B. BRENNEMAN* and R.C. KEMERAIT, JR., University of Georgia, Tifton.

11:15 (78) Climate Change Impacts on Aflatoxin Contamination in the Australian Peanut Crop. G.C. WRIGHT*, Peanut Company of Australia, Kingaroy, Queensland; Y.C. CHAUHAN and R.C.N. RACHAPUTI, Dept. of Primary Industries and Fisheries, Kingaroy, Queensland, Australia.

EXCELLENCE IN EXTENSION EDUCATION SPONSORED BY BAYER CROP SCIENCE

Moderator: Herb Young, Bayer Crop Science
Meeting Room 17

10:30 (79) Research Plots to Address Nitrogen Utilization in Virginia Market Type Peanuts. C.E. ESTIENNE*, Virginia Cooperative Extension, Emporia; W.C. ALEXANDER, Virginia Cooperative Extension, Courtland, VA, and J.C. FAIRCLOTH, Dow AgroSciences.

10:45 (80) Summary of Production and Pest Management Practices by Top Growers in North Carolina. R. RHODES*, L. SMITH, M. WILLIAMS, P. SMITH, F. WINSLOW, A. COCHRAN, B. SIMONDS, A. WHITEHEAD, Jr., C. ELLISON, J. PEARCE, C. TYSON, S. UZZELL, R. HARRELSON, C. FOUNTAIN, M. SHAW, T. BRIDGERS, D.L. JORDAN, R.L. BRANDENBURG, and B.B. SHEW, North Carolina Cooperative Extension State University, Raleigh.

11:00 (81) Delivery of Pertinent Information to Peanut Growers and Associated Industry by North Carolina Cooperative Extension Service Agents. M. WILLIAMS*, L. SMITH, M. RAYBURN, C. ELLISON, A. WHITEHEAD, D. MORRISON, D.L. JORDAN, B.B. SHEW, and R.L. BRANDENBURG. North Carolina Cooperative Extension State University, Raleigh, NC.

11:15 (82) Comparison of Aldicarb and Phorate in Numerous Peanut Cultivars for Yield Response and Tomato Spotted Wilt Virus Incidence (2005-07). D.E. MCGRIFF*, University of Georgia Extension, Douglas; and M.D. VON WALDNER, University of Georgia Extension, Pearson.

11:30 (83) Validation of Current Calcium Recommendations on Peanuts. M.D. VON WALDNER*, University of Georgia Extension, Pearson; D.E. MCGRIFF, University of Georgia Extension, Douglas; J.P. BEASLEY, E.J. WILLIAMS, University of Georgia, Tifton; F.J. CONNELLY, J.T. FLANDERS, University of Georgia Extension, Nashville; and S.I. UTLEY, University of Georgia Extension, Ashburn.

11:45 (84) The Effects of Certain Fungicides & Combinations of Fungicides on the Incidence of Disease in Peanut. P.D. WIGLEY*, Calhoun County Extension, University of Georgia, Morgan; and R.C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton.

POSTER SESSION II

Meeting Rooms 19 & 20

POSTER WILL BE DISPLAYED FROM 9:00 am – 3:30 pm ON THURSDAY.

AUTHORS WILL BE PRESENT WITH PAPERS FROM 10:30 am UNTIL 12:00 noon ON THURSDAY, JULY 17

(85) Effects of Foliar Spray Products on Peanut Performance in Texas. T.A. BAUGHMAN*, P.A. DOTRAY, J.W. WOODWARD, L.V. GILBERT, and M.A. BATLA, Texas Agrilife Extension Service, Vernon and Lubbock.

(86) Weed Response to Herbicide-Fungicide Combinations. W.J. GRICHAR*, P.A. DOTRAY, and J.E. WOODWARD. Texas AgriLife Research and Extension, Beeville and Lubbock.

(87) Summary of Peanut Production Practices in Northern Mozambique in 2008. G. PLACE and D.L. JORDAN*, North Carolina State University, Raleigh; M. MASON, S. GUDZCLUSA, S. BOAHEN, and F. CHITIRIO, Nampula, Mozambique; and S. BEHLING, Washington State University, Pullman.

(88) Preliminary Screening Oil Content of Peanut Germplasm in the U.S. Collection for Biodiesel Production. MING LI WANG* and ROY N. PITTMAN, USDA-ARS, Griffin, GA; and MANJEET CHINNAN, Dept. of Food Science, University of Georgia, Griffin.

(89) Abiotic Stress Proteomics in Peanut: A comparison of two Peanut Mini-core Accessions. N. PUPPALA*, New Mexico State University, Clovis; K. KOTTAPALLI, G. BUROW, P. PAYTON, and J. BURKE, USDA-ARS, Lubbock, TX; , R. RAKWAL and J. SHIBATO, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan; and M. BUROW, Texas Tech University, Lubbock.

(90) Reduction of Peanut Lipid Oxidative Rancidity by Sonication and Edible Coatings Containing Natural Extracts. P. WAMBURA* and W. YANG. Alabama A&M University, Normal.

(91) Identification and Characterization of Peanut Oxalate Oxidase Genes and Development of Peanut Cultivars Resistant to Stem Rot. X CHEN*, T. BRENNEMAN, and A. CULBREATH, University of Georgia, Tifton; C.C. HOLBROOK and B. GUO, USDA-ARS, Tifton.

(92) Cloning and Characterization of a Peanut MADS-box gene isolated from flower bud. M. YUAN*, S.L. LI, Y. REN, H. WANG, Y.M. SHI, S.L. YU, Shandong Peanut Research Institute, Qingdao, China; and G.H. HE Tuskegee University, Tuskegee, AL.

Afternoon

SYMPOSIUM

ADVANCES IN GENETICS AND BIOTECHNOLOGY

Moderator: Rich Wilson, Oilseeds & Bioscience Consulting, Raleigh, NC
Meeting Room 16

1:00 (93) Freedom to Operate with Transgenic Traits Governing Sclerotinia Resistance and Folic Acid Levels in Peanut. BETH GRABAU, Virginia Tech University, Blacksburg VA

1:20 (94) Engineering Drought Tolerance in Crop Plants, EDUARDO BLUMWALD, University California, Davis, CA

1:40 (95) Developing Genetic and Genomic Resources in Cultivated and Wild Peanut Species: A Focus on Gene-Based SNP and Disease Resistance Genes, DOUGLAS COOK, University California, Davis.

2:00 (96) Transgenic Modification of Oilseed Composition. MONICA SCHMIDT, Danforth Plant Science Center, St. Louis MO

2:20 (97) Industry Perspectives on Biotechnology, Panel members: JIM ELDER, J.M. Smucker Co.; PAT DONAHUE, Kraft Foods Inc.; VICTOR NWOSU, MARS Inc.

2:40 Discussion

3:00 Adjourn

Technical Program Changes:

Tuesday, July 15, 2008

The Crop Germplasm Committee will meet in MR 17 from 9:00 – 11:00 am instead of on Thursday, July 17, 2008 from 1:00 – 3:00 pm.

Wednesday, July 16, 2008

Paper number (38), 2007 Field Trials to Evaluate Management Options for Peanut Insect Pests. D.A. Herbert, Jr*, Virginia Tech Tidewater Agric. Res. and Ext. Center, Suffolk, has been moved to Poster Session II, Thursday, July 17, 2008, 9:00 am – 3:30 pm.

Thursday, July 17, 2008

An additional paper entitled "Pest Management in West Texas Peanut" SCOTT A. RUSSELL*, CLYDE CRUMLEY, JASON WOODWARD, and TODD BAUGHMAN, Texas AgriLife Extension Service" will be presented at noon after paper (84) in the Excellence in Extension session.

Thursday, July 17, 2008

The Spouse's Hospitality Room will be open from 8:00 am to 5:00 pm.

SITE SELECTION COMMITTEE REPORT

Barry Tillman reviewed the quotations from the hotel sites bidding for the 2010 APRES annual meeting. All sites could schedule the meeting during the period of July 12 to July 16, 2010. Criteria for all proposed sites were discussed. The committee voted to recommended the Clearwater Beach Hilton to the APRES Board of Directors as the site for the 2010 APRES annual meeting.

Rick Brandenburg reviewed the contract for the 2009 APRES annual meetings that is scheduled to be held at from July 13 to July 17 at the Raleigh City Center Marriott. The pre-tax room rate is $149 with $18 for parking.

The 2009 APRES annual meeting will conflict with the Southeastern Farmer Federation Meeting. Barry Tillman noted that these two meetings will not conflict in 2010 through 2013 but will overlap in 2014 and 2015 if the present meeting schedules hold.

Attendance at the Friday Dow AgroSciences Breakfast and Award Ceremony and the following Business meeting remains low. Modification of the meeting agenda to allow for proper recognition of individuals receiving awards as well as enhancing participation in APRES governance was discussed. Options include scheduling an award dinner and presentation ceremony on Thursday night and an early afternoon business meeting or adding an awards ceremony to the existing Wednesday evening dinner function and scheduling a member's luncheon and business meeting on Thursday. Changes in the meeting agenda should be finalized for the 2010 annual meeting.

Respectfully submitted by:
John Damicone, chair

CAST REPORT

CAST – During the last year, CAST has released a number of papers addressing important issues in agriculture. Topics include disposal of swine carcasses, animal vaccine development using recombinant DNA technology, water quality and quantity for turfgrasses, gene flow in use of biotechnology-derived crops, biofuel crops as invasive species, avian influenza vaccination, cellulosic biomass for biofuels, and the biological processes and physiological benefits of probiotics. Many of these items are at no charge to download (http://www.cast-science.org/). Upcoming publications will cover issues related to air, water and land issues associated with animal agriculture in North American; animal biotechnology; and bioenergy. Dr. John Bonner, Executive Vice President, continues to be a strong and active proponent of the role of CAST "to assemble, interpret, and communicate credible science-based information regionally, nationally, and internationally to legislators, regulators, policymakers, the media, the private sector, and the public." Membership in CAST in support of this mission is encouraged.

Respectfully submitted by:
John Sherwood, CAST Representative

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:
   1. Regular, this is considered to be a maximum which can be expected since membership dues are not reimbursed by many academic and government organizations.
   2. Retired, this status would require a letter from the Department Chairman the first year of eligibility to document retired status. Because of their past status as individual members and service to the society, retired member would retain all the right and privileges of regular individual membership.
   3. Post-Doc and Technical Support, these members would also have full membership privileges to encourage participation. Membership approval will require appropriate documentation from the Department in which the member is working.
   4. Student, it is recommended that Student members have clearly defined rights and privileges and that they be the same as for regular individual members except service on the Board of Directors be restricted to a non-voting capacity. Since these members are the primary candidates for the future membership and leadership of the Society, experience in Society service and decision making will be helpful to them and the Society.

b. 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.

1. Silver Level, this maintains the current level and is revenue neutral. Discounted meeting registration fees would result in revenue loss with no increase in membership fee. Registration discounts can be used as an incentive for higher levels of membership.
2. Gold Level, the person designated by the sustaining member would be entitled to a 50% discount on annual meeting registration. This benefit cannot be transferred to anyone else.
3. Platinum Level, the person designated by the sustaining member would be entitled to a 100% discount on annual meeting registration. This benefit cannot be transferred to anyone else.

c. 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.

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.

Section 8. The editor is responsible for timely publication and distribution of the Society's peer reviewed scientific journal, Peanut Science, in collaboration with the Publications and Editorial Committee.

Editorial responsibilities include:

1. Review performance of associate editors and reviewers. Recommend associate editors to the Publications and Editorial Committee as terms expire.
2. Conduct Associate Editors' meeting at least once per year. Associate Editors' meetings may be conducted in person at the Annual Meeting or via electronic means such as conference calls, web conferences, etc.
3. Establish standard electronic formats for manuscripts, tables, figures, and graphics in conjunction with Publications and Editorial Committee and publisher.
4. Supervise Administrative/Editorial assistant in:
    a. Preparing routine correspondence with authors to provide progress report of manuscripts.
    b. Preparing invoices and collecting page charges for accepted manuscripts.
5. Screen manuscript for content to determine the appropriate associate editor, and forward manuscript to appropriate associate editor.
6. Contact associate editors periodically to determine progress of manuscripts under review.
7. Receive reviewed and revised manuscripts from associate editor; review manuscript for grammar and formatting; resolve discrepancies in reviewers' and associate editor's acceptance decisions.
8. Correspond with author regarding decision to publish with instructions for final revisions or resubmission, as appropriate. Follow-up with authors of accepted manuscripts if final revisions have not been received within 30 days of notice of acceptance above.
9. Review final manuscripts for adherence to format requirements. If necessary, return the manuscript to the author for final format revisions.
10. Review final formatting and forward compiled articles to publisher for preparation of first run galley proofs.
11. Ensure timely progression of journal publication process including:
    a. Development and review of galley proofs of individual articles.
    b. Development and review of the journal proof (proof of all revised articles compiled in final publication format with tables of contents, page numbers, etc.)
    c. Final publication and distribution to members and subscribers via electronic format.
12. Evaluate journal publisher periodically; negotiate publication contract and resolve problems; set page charges and subscription rates for electronic formats with approval of the Board of Directors.
13. Provide widest distribution of *Peanut Science* possible by listing in various on-line catalogues and databases.

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 University representatives - these directors are to be chosen based on their involvement in APRES activities, and knowledge in peanut research, and/or education, and/or regulatory programs. One director will be elected from each of the three main U.S. peanut producing areas (Virginia-Carolinas, Southeast, Southwest).
e. United States 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 Industry representatives - these directors are (1) the production of peanuts; (2) crop protection; (3) grower association or commission; (4) the shelling, marketing, and storage of raw peanuts; (5) 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 or a representative of the President as designated by 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.
i. National Peanut Board representative, will serve a three year term.

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.

Section 8. Should a member of the BOD resign or become unable or unavailable to complete his or her term, the president shall request that the Nominating Committee nominate a qualified member of the same category to fill the remainder of the term of that individual and submit the nominee's name to the BOD for approval.

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 by June 15 prior to the year's annual meeting. The president then distribute those nominations to the BOD for their review. 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.

The following actions are to be completed two years prior to the annual meeting for which a host city and hotel decision are being made. The Site Selection Committee members representing a host state will recommend a city, solicit hotel contract proposals, and submit proposals with their recommendations for evaluation by the entire committee. The Site Selection Committee will then recommend a host city and hotel to the BOD. The BOD and the Executive Officer will review the recommendation, make the final decision, and direct the Executive Officer to negotiate and sign the contract with the approved hotel.

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, 2006, Portsmouth, Virginia

MEMBERSHIP (1975-2006)

	Individuals	Institutional	Organizational	Student	Sustaining	Total
1975	419	--	40	--	21	480
1976	363	45	45	--	30	483
1977	386	45	48	14	29	522
1978	383	54	50	21	32	540
1979	406	72	53	27	32	590
1980	386	63	58	27	33	567
1981	478	73	66	31	39	687
1982	470	81	65	24	36	676
1983	419	66	53	30	30	598
1984	421	58	52	33	31	595
1985	513	95	65	40	29	742
1986	455	102	66	27	27	677
1987	475	110	62	34	26	707
1988	455	93	59	35	27	669
1989	415	92	54	28	24	613
1990	416	85	47	29	21	598
1991	398	67	50	26	20	561
1992	399	71	40	28	17	555
1993	400	74	38	31	18	561
1994	377	76	43	25	14	535
1995	363	72	26	35	18	514
1996	336	69	24	25	18	472
1997	364	74	24	28	18	508
1998	367	62	27	26	14	496
1999	380	59	33	23	12	507
2000	334	52	28	23	11	448
2001	314	51	34	24	11	434
2002	294	47	29	34	11	415
2003	270	36	30	23	10	369
2004	295	43	22	19	11	390
2005	267	38	28	15	8	356
2006	250	33	27	25	7	342

MEMBERSHIP (2007, 2008)

	2007	2008
Individual, Regular	228	185
Individual, Retired	13	13
Individual, Post Doc/Tech Support	6	9
Individual, Student	20	16
Sustaining, Silver	7	8
Sustaining, Gold	1	2
Sustaining, Platinum	1	
Institutional	6	21
TOTAL	280	254

NAME INDEX