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TABLE OF CONTENTS

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Ames Herbert	(1998)
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1995 J.S. Richburg and J.W. Wilcut
1994 T.B. Brenneman and A.K. Culbreath
1993 A.K. Culbreath, J.W. Todd and J.W. Demski
1992 T.B. Whitaker, F.E. Dowell, W.M. Hagler, F.G. Giesbrecht and J. Wu
1991 P.M. Phipps, D.A. Herbert, J.W. Wilcut, C.W. Swann, G.G. Gallimore and T.B. Taylor
1990 J.M. Bennett, P.J. Sexton and K.J. Boote
1989 D.L. Ketring and T.G. Wheless
1988 A.K. Culbreath and M.K. Beute
1987 J.H. Young and L.J. Rainey
1986 T.B. Brenneman, P.M. Phipps and R.J. Stipes
1985 K.V. Pixley, K.J. Boote, F.M. Shokes and D.W. Gorbet
1984 C.S. Kvien, R.J. Henning, J.E. Pallas and W.D. Branch
1983 C.S. Kvien, J.E. Pallas, D.W. Maxey and J. Evans
1982 E.J. Williams and J.S. Drexler
1981 N.A. deRivero and S.L. Poe
1980 J.S. Drexler and E.J. Williams
1979 D.A. Nickle and D.W. Hagstrum
1978 J.M. Troeger and J.L. Butler
1977 J.C. Wynne
1976 J.W. Dickens and Thomas B. Whitaker
1975 R.E. Pettit, F.M. Shokes and R.A. Taber

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1996 M.D. Franke
1995 P.D. Brune
1994 J.S. Richburg, III
1993 P.D. Brune
1992 M.J. Bell
1991 T.E. Clemente
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1989 R.M. Cu

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1995 Dr. Clyde T. Young
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1991 Dr. Leland Tripp
1990 Dr. D.H. Smith

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1996 John A. Baldwin
1995 Gene A. Sullivan
1994 Charles W. Swann
1993 A. Edwin Colburn
1992 J. Ronald Sholar

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1996 R. Walton Mozingo
1995 Frederick M. Shokes
1994 Albert Culbreath, James Todd and James Demski
1993 Hassan Melouk
1992 Rodrigo Rodriguez-Kabana

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1994 W. Lord
1993 D.H. Carley and S.M. Fletcher
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1991 D.J. Banks and J.S. Kirby
1990 G. Sullivan
1989 R.W. Mozingo
1988 R.J. Henning
1987 L.M. Redlinger
1986 A.H. Allison
1985 E.J. Williams and J.S. Drexler
1984 Leland Tripp
1983 R. Cole, T. Sanders, R. Hill and P. Blankenship
1982 J. Frank McGill
1981 G.A. Buchanan and E.W. Hauser
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1973 A.J. Norden
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ANNUAL MEETING PRESENTATIONS

SYMPOSIUM PAPERS

Peanut Profitability in the Twenty-first Century

PAPERS

Graduate Student Competition

Biotechnology/Mycotoxins

Breeding and Genetics

<u>Economics</u>

Extension Technology/Entomology

Industry-Pathology

Physiology and Seed Technology

Plant Pathology

Processing and Utilization

Production Technology

Weed Science

POSTERS

Peanut Profitability in the 21st Century

Economic Impacts of the New Farm Bill on Peanut Production. M. C. LAMB*, J. W. CHILDRE, J. I. DAVIDSON, N. R. MARTIN. Dept. of Agricultural Economics and Rural Sociology, Auburn University, Auburn, AL 36849, Federal-State Inspection Service, Albany, GA 31701, USDA-ARS-National Peanut Research Laboratory, Dawson, GA 31742

The peanut program in the new farm bill will have significant impacts on the production and marketing of peanuts in the United States over the next seven years. Reduction of the quota support price to $610.00 per ton, the reduction of the quota poundage and other provisions will have immediate impacts on per acre profits and farm incomes. The quota support price being fixed at $610.00 per ton over the 7-yr program and increases in the per acre cost of production due to inflation will continue to erode future profits to peanut production and farm incomes. Surveys were conducted with peanut farmers in Alabama and Georgia to examine the effects of the peanut program on peanut profitability and farm incomes. Survey results indicated that at a 3% rate of inflation and no cost reducing technology implemented, profits to peanut production will be diminished by the year 2000. The survey also provided an itemized dataset on production input levels and cost for identifying areas in which production cost might be decreased without decreasing peanut yield and quality. Based on the new provisions in the peanut program and inflation adjusted production cost, new production practices which reduce the per unit cost of producing peanut must be implemented by the 2000 crop year.

Peanut IPM for the Southeast. J. R. WEEKS*, A. K. HAGAN, Depts. of Entomology and Plant Pathology, respectively, Auburn University, Auburn, AL 36849; and S. L. BROWN, Dept. of Entomology, The University of Georgia, Tifton, GA 31794.

Peanut growers have found themselves in the midst of tremendous technological, political and economic change. All of these factors have converged at one point in time. Growers, if they are to survive will have to adapt to these changes. Insect and disease management programs in the Southeast peanut production belt constitute major expenditures by growers. There is evidence that refinements and flexibility in these management programs may lower cost inputs while maintaining yields. However, in order to adopt this philosophy an increased level of management will be required. Growers must make decisions on a field by field basis. The success of this approach depends upon the availability and the utilization by growers of unbiased technical assistance at the field level. Managing pests must take a multi-faceted approach where several strategies are employed to effect control. Use of resistant peanut cultivars, optimum planting dates, crop rotation, tillage practices and pesticides when threshold levels are exceeded can reduce the costs of managing destructive diseases, nematodes and insect pests. Increased adoption of field by field scouting, soil sampling, mapping pest problem areas and use of disease forecasting systems are the keys to successfully implementing a sound and cost-effective pest management program.

Sustaining the Profitability of Peanut Through Prescription Management of Pests in Virginia and North Carolina. P. M. PHIPPS*, D. A HERBERT, JR., J. E. BAILEY, and R. L. BRANDENBURG. Tidewater Agricultural Research & Extension Center, Virginia Polytechnic Institute & State University, Suffolk, VA 23437, and North Carolina State University, Raleigh, NC 27695.

Historically, chemicals have been an essential component of pest management in peanut production. The cost of fungicides, nematicides, insecticides, and acaricides for peanut production in 1996 could average between 160 and 218 dollars per acre according to estimates in the Virginia/Carolina region. While the use of pesticides protects the crop from losses of yield and quality, the high cost may be increasingly difficult to justify with the expected downward pressure on peanut prices in world markets. Since chemical expenses including herbicides can account for up to 50% of the total operating cost, growers are likely to target these inputs as a means to reduce expenses. To be successful, growers must have access to historical records of pest problems, carry out an active scouting program, and use all available technology to make wise decisions on a field-by-field basis. Nematode assays, diagnostic services, and advisory programs for control of leaf spot, Sclerotinia blight, corn earworm and southern corn rootworm will be increasingly important for making judicious decisions on use of chemicals. Growers must also evaluate the spectrum of activity of each pesticide with respect to target and nontarget effects before selecting chemicals. For example, the use of acephate in place of aldicarb for thrips control where metam sodium or 1,3-dicloropropene is applied for nematode control can reduce input costs up to $12/A with little or no risk for loss of yield or quality. Without a soil fumigant, however, aldicarb may produce the highest return through its early season control of both thrips and nematodes. Furthermore, the choice of insecticide and decision to treat for corn earworm or other insects should be made only after assessing the risk for damage by spider mites, and determining that the number of insects is at or above the recommended economic threshold. Likewise, chlorothalonil should be applied according to the leaf spot advisory program to avoid an increased risk for losses to Sclerotinia blight. Applications of propiconazole or tebuconazole should be in tank mixtures or block spray programs with chlorothalonil to minimize the risk of fungi developing resistance to the DMI fungicides. Ultimately, the most effective and economical strategies for pest control will integrate the benefits of sanitation, crop rotation, resistant varieties, scouting, and pest advisories for managing risk and sustaining maximum profits.

Increasing the Efficiency of Peanut Pest Management in the Southwest. J. P. DAMICONE*, P. G. MULDER, M. C. BLACK, T. A. LEE, and C. R. CRUMLEY. Depts. of Plant Pathology and Entomology, Okla. State Univ., Stillwater, OK, Dept. of Plant Pathology and Microbiology, Texas A&M Univ., Uvalde and Stephenville, TX, and Texas Agric. Ext. Serv., Seminole, TX.
Reducing costs of pest management in the Southwest will require changes in production practices, an increased level of crop management, and development and adoption of new technologies. Inadequate crop rotation is a problem across the region that increases dependency of growers on fungicides and nematicides for disease management. Changes in the farm program and increased profit potential for crops such as cotton may increase adoption of rotation systems known to reduce southern blight and nematode diseases. In Oklahoma, where early leaf spot is an endemic problem, the early leaf spot advisory will increase the efficiency of fungicide usage for foliar disease management. State-wide implementation of the program utilizes weather monitoring stations in each county in the state. Levels of adoption within select counties has reached 65%. Disease resistant cultivars will continue to play an important role in reducing production costs. Where Sclerotinia blight is a problem in Oklahoma, the resistant cultivar Tamspan 90 is planted on more than 90% of problem fields without the additional cost of fungicides. The resistant cultivar Southwest Runner has the potential to increase yields 15% above Tamspan 90, but is unacceptable to shellers. In south Texas where tomato spotted wilt virus (TSWV) is a problem, the resistant cultivar GK-7 has gained wide acceptance and reduced the impact of this disease. Cultivars with greater levels of resistance, yield potential, and commercial acceptability are being developed, and may be released shortly by the Texas Agric. Exp. Sta. Use of precision planters will permit growers in south Texas to reduce seeding rates by up to 40% without increasing TSWV or reducing yield. Refinements in a novel form of biological control that utilizes organic amendment to stimulate microbial antagonism to several soilborne diseases may further reduce the use of fungicides. Routine application of systemic insecticides for preventive control of thrips is a widespread practice in the region. Reductions in this practice appear warranted based on available cost/benefit data. The use of scouting programs and economic thresholds for key insect pests such as the lesser cornstalk borer and minor pests such as lepidopterous foliage feeders, leafhoppers, and thrips will eliminate unproductive insecticide usage. Research and education programs will be imperative to lower production costs without compromising yield and quality.

Maintaining Peanut Profitability in the Southwest. R.G. LEMON*, T.A. LEE, J.R. SHOLAR and W.J. GRICHAR. Texas Agricultural Extension Service, College Station, TX 77843; Texas Agricultural Extension Service, Stephenville, TX 76401; Department of Agronomy, Oklahoma State University, Stillwater, OK 74078 and Texas Agricultural Experiment Station, Yoakum, TX 77995.
Due to the reduction in quota support price and the elimination and/or modification of other program provisions, peanut growers will find it necessary to reevaluate current management systems in order to maintain profitability. A hands-on, intensive management approach will provide the key to a successful enterprise. Maintaining production and quality, while eliminating certain inputs, will be a difficult task. Utilizing and practicing an effective 3-year crop rotation will become increasingly important. Enhanced field scouting activities for weeds, disease and insects and use of weather forecasting will insure timely and effective use of crop protection chemicals. This approach should replace calendar-based spray programs. Soil fertility should be based on field history and comprehensive soil testing. Plant residue from corn, grain sorghum, cotton and small grains can be surface mulched and moldboard plowing should be reserved for certain circumstances, such as peanut following peanut. Utilization of resistant varieties should be practiced where possible and seeding rates can be reduced, especially when using vacuum planters. Problem fields that produce marginal yields due to high disease incidence, poor soil conditions, noxious weed populations, etc. should be taken out of production.

Peanut Profitability as Influenced by Tillage Systems, Peanut Variety Selection and Soil Fertility. D. L. HARTZOG*, Auburn University, Alabama Cooperative Extension System, Auburn University, AL, J. A. BALDWIN, J. P. BEASLEY, JR., The University of Georgia, Cooperative Extension Service, Tifton, GA, and E. B. WHITTY, The University of Florida, Gainesville, FL.

The cost of production escalator clause in past peanut legislation allowed peanut growers to recoup some of the increased production costs through increased price for their product. The escalator clause dictated the price received by farmers could go up, but not down. Also, import restrictions that were in place guaranteed the quantity of peanuts coming into the U. S. would be carefully regulated. Peanut farmers are now operating under GATT, NAFTA, a reduction in price, a reduction in quota and a profit squeeze. Some of these factors are beyond a grower's control, however, there are some areas where input costs can be reduced while maintaining relatively high yields. Growers should examine each individual input to ensure that it is profitable. Areas growers should examine include tillage systems, seeding rates, soil fertility management, variety selection and pest management.

Research and Extension Recommendations for Reducing Irrigation Costs on Peanut in the Southeastern United States. J.P. BEASLEY, JR.*, K.A. HARRISON, T.W. TYSON, J.I. DAVIDSON, D.L. HARTZOG, E.B. WHITTY, M.C. LAMB, M.J. BADER, J.A. BALDWIN, A.W. TYSON, W.D. SHURLEY, J.E. HOOK, C.K. KVIEN, Crop & Soil Sciences Dept., The University of Georgia, Tifton, GA 31793, Biological & Agricultural Engineering Dept., The University of Georgia, Tifton, GA 31793, Alabama Cooperative Extension Service, Auburn University, Auburn, AL 36849,USDA-ARS National Peanut Research Laboratory, Dawson, GA 31742, Alabama Cooperative Extension Service, Auburn University, Headland, AL 36345, Agricultural & Applied Economics Dept., The University of Georgia, Tifton, GA 31793.

Peanut producers across the United States are faced with a 10% reduction in support price on quota peanut beginning with the 1996 crop. Although the new Farm Bill established this reduction, producers must deal with production input costs remaining the same or, possibly, increasing. Peanut has a water requirement of approximately 60 cm per crop year to produce a high yielding, high quality crop. Approximate percentage of peanut acreage irrigated in the southeastern United States is: Georgia - 50%, Alabama - 15%, Florida - 35%. Percentage of total acreage in the Southeast under irrigation is approximately 40%. Studies on the most efficient methods to irrigate peanut have focused on replacing worn out equipment, new equipment options, new application methods, timing of applications, and amount of water per application. In one study comparing different sprinkler packages, water application efficiency was increased 13 to 15% with nozzles placed closer to the soil surface and at less pressure (psi) at delivery compared to impact sprinklers on top of the pivot. Other studies in the Southeast include the comparison of expert system scheduling programs such as EXNUT and MOISNUT. Both of these systems focus on the risk and economic benefit of water applications. Other considerations for reducing irrigation production costs include crops grown in rotation with peanut. An economic analysis must be made comparing peanut acres to be irrigated versus acreage of other cash crops. Studies of timing of applications indicate peanut does not respond in yield to irrigation prior to fruit set except when needed for stand establishment. Lowest yield resulted when drought was imposed at 50-80 or 80-110 days after planting.

Peanut Weed Control vs. Peanut Weed Management - Is There a Difference?

G. E. MacDONALD, Dept. of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.

Peanut weed control is one of the most diverse and controversial subjects ever discussed by growers, researchers, extension and industry personnel. The architecture of the peanut crop lends itself to massive weed control efforts, particularly for above-the-canopy broadleaf weeds. Crop physiologists report that peanut is extremely competitive, with high leaf area index and nitrogen fixation. Conversely, plant pathologists have established that peanut is extremely susceptible to a host of diseases and adequate spray coverage (i.e. free of spray-intercepting weeds) is essential to a quality crop. Agricultural engineers are also quick to point out the advantages of a weed-free peanut crop to maximize harvest efficiency. Clearly there are several reasons for weed control in peanuts, but the bottom line is profitability. There have been several suggestions, theories, and experimentation to develop alternative and potentially cost-reducing weed control methods. These have included banded herbicide treatments, hooded spray applications, cultivation, rotation, reduced rates, ropewick applications, herbicide resistant varieties, precision farming techniques, proper weed size/herbicide application timing, field scouting and herbicide/weed management modeling. For example, research has shown that ropewick treatments of paraquat resulted in greater that 85 percent control of Florida beggarweed in peanut. Research has also reported that mechanical removal of Florida beggarweed (i.e. mowing) in peanut resulted in no significant yield loss as compared to herbicidal control. We have the tools to effectively control weeds in peanut but the real question lies in the amount of weed pressure that peanut can withstand without an economic loss. In peanut, weeds impact several areas of production. The key to reducing weed control costs for peanut is a better understanding of the ways weeds impact all phases of production and resurrection of the use of integrated pest management.

Peanut Profitability - Agronomic and Weed Science Considerations in the V/C Area. C. W. SWANN and R. W. Mozingo. Tidewater Agricultural Research and Extension Center, VPI & SU, Suffolk, VA 23437.

Recent changes in farm policy will result in a substantial impact on profitability of peanut production in all production areas of the United States. With a drop in value of quota peanut from $678 per ton in 1995 to $610 per ton in 1996, 3000 lb/A producers are confronted with an approximate drop of $100 per acre in value for the 1996 crop relative to the 1995 crop. To compensate for this loss of value and subsequential loss of profit, producers must increase yield, reduce production costs or strive for a combination of these factors. Items that offer considerable potential to reduce cost of production include (1) reduced seeding rates, (2) soil testing and use of fertility inputs only as required, (3) band application of pesticides as crop production conditions permit, (4) utilization of pest control advisories and threshold information in pest management and, (5) elimination of unnecessary practices such as excessive use of fertility inputs, tillage operations, etc. Low cost or no cost items that offer opportunity for increasing yield include (1) variety selection, (2) utilization of good rotations, (3) land selection, (4) improved timeliness of planting, pest control, irrigation, harvest and overall management of the crop. To sustain peanut production, close attention to all aspects of production will be essential in the future. Prospects remain bright for top level managers, however, prospects for producers with average or less than current state-wide average yield is open to question.

Graduate Student Competition

Damage Functions for Three Species of Root-Knot Nematode on Florunner Peanut, and Their Reproduction on some Resistant Peanut Genotypes. S. M. ABDELMOMEN*, J. L. STARR, and C. E. SIMPSON. Department of Plant Pathology and Microbiology, Texas A & M University, College Station, TX 77843-2132, and Texas Agricultural Experiment Station, Stephenville, TX 76401.

Meloidogyne arenaria is the predominant root-knot nematode attacking peanut in Texas. Two additional species with limited distribution, *M. javanica* and an undescribed species (93-13a), also parasitize peanut in Texas. The objectives of this study were to compare the damage functions of *M. javanica* and 93-13a with that of *M. arenaria*, and to determine if resistance of some peanut genotypes to *M. arenaria* also is effective against these two species. Damage functions were determined from field microplots, using a 3 X 7 factorial design. Treatments were 3 nematode species and 7 initial population densities (Pi) with 6 replications/ treatment. Results from this experiment indicate that the relationship between yield and log (Pi + 1) fits a linear model. The slope for 93-13a was more negative than that for *M. javanica* ($P \leq 0.01$) but not than the slope for *M. arenaria*. Thus, 93-13a is more aggressive than *M. javanica*, but 93-13a and *M. javanica* were similar to *M. arenaria* ($P \leq 0.05$). TxAG-7 and TP-223 are peanut genotypes resistant to *M. arenaria* based on nematode reproduction. The resistance of these genotypes against *M. javanica* and 93-13a was determined in a greenhouse test. Reproduction (as eggs per gram roots)on resistant genotypes for *M. javanica* and 93-13a was less than 10% of their reproduction on the susceptible Florunner. Thus, TxAG-7 and TP-223, which are resistant to *M. arenaria*, are also resistant to *M. javanica* and 93-13a. From this study,it appears that *M. javanica* and 93-13a are potential problems to the peanut industry in Texas.

Peanut Response to Poultry Litter and Sewage Sludge Application K.S. BALKCOM*, J.F. ADAMS, and D.L. HARTZOG. Department of Agronomy and Soils, Auburn University, AL 36849

Land application of poultry litter and sewage sludge has increased as the poultry industry grows and landfill space decreases and becomes more costly. The objective of this study was to evaluate these materials as a source of nutrients, compared to commercial fertilizers. Poultry litter and sewage sludge were used in two on-farm experiments conducted in the summer of 1995, at rates of 3.8 and 7.6 Mg ha^{-1} and 2.0, 4.0, and 8.1 Mg ha^{-1}, respectively. Commercial fertilizer was applied at 179.2, 39.2, and 74.4 kg ha^{-1} for N, P, and K, respectively. Peanuts (*Arachis hypogaea* L.) at both sites showed a yield increase. Poultry litter treatments at site A produced higher yields than fertilizer and sludge treatments except for the 4.0 Mg ha^{-1} sludge rate. Poultry litter and fertilizer were not significantly different, but were greater than the control at site B. Sound mature kernels (SMKs) were increased at site B for all treatments while site A showed no significant increases except for 4.0 and 8.1 Mg ha^{-1} sludge treatments were higher than 3.8 and 7.6 Mg ha^{-1} litter treatments. Mehlich-1 soil test values, and elemental composition were only slightly affected by treatments. These experiments suggest that poultry litter has beneficial effects beyond that of commercial fertilizers.

Consistency of Some Components of Resistance to Early Leaf spot in Peanut. Z. A. CHITEKA*, D. W. GORBET, F. M. SHOKES, and T. A. KUCHAREK. Department of Agronomy, University of Florida, Gainesville Fl 32611.

Components of resistance to early leaf spot were evaluated in the field at Gwebi Variety Testing Center, Harare, Zimbabwe over four seasons, 1990/91, 1991/92, 1992/93, and 1993/94. Also, one greenhouse test was conducted on F_1 progeny in Gainesville in 1995. The genotypes were F_1, F_2 and F_3 generations derived from diallel crosses among four peanut genotypes which varied in the levels of resistance to early leaf spot caused by *Cercospora arachidicola* Hori. The parents involved in the crosses were 97/8/4, 148/7/25, (moderately resistant), Southern Runner (susceptible) and one intermediate (Flamingo). The components of resistance evaluated were incubation period, defined as the number of days from inoculation to the first visible lesion; latent period, defined as the number of days from inoculation to the first sporulating lesion; lesion diameter; sporulation score, with a 1 to 5 scale where 1 = little or no sporulation; and 5 = more than 50% of lesion covered with stromata with heavy sporulation, and percent sporulating lesions at 30 days after inoculation. Incubation period showed significant differences among crosses only in the greenhouse test ($P \leq 0.05$). Significant differences among crosses ($P \leq 0.05$) were noted for all the other components in three or more tests. Significant differences were noted among crosses ($P \leq 0.05$) for latent period in all tests in all seasons except in the F_1 in 1990/91. Percent sporulating lesions was significantly and positively correlated with amount of spore production score for all tests in all seasons ($P \leq 0.05$). The correlation coefficients ranged from 0.313 to 0.824. Amount of spore production, latent period and percent sporulating lesions were the most consistent components for evaluating genotypes for resistance.

Variability in Fungicide Sensitivity of *Sclerotium rolfsii* from Peanut in Georgia. M.D. FRANKE*[1], T.B. BRENNEMAN[2], and K.L. REYNOLDS[1]. Dept. of Plant Pathology, Univ. of Georgia, [1]Athens, GA 30602-7274 and [2]Coastal Plain Experiment Station, Tifton, GA 31793-0748.

This study determined the fungicide sensitivity of *S. rolfsii* from 11 peanut fields, representing a wide geographic distribution and a variety of exposure histories to tebuconazole, flutolanil, or PCNB. Sample sizes and discriminatory doses necessary to detect differences in sensitivities were determined for each fungicide from baseline sensitivity studies conducted in 1994. Sample sizes needed to detect a 10% difference in sensitivity ($P \leq 0.05$) were 20, 35 and 78 isolates per location for flutolanil, tebuconazole and PCNB, respectively. Sample sizes of 32-50 isolates were actually evaluated. Isolates were grown on potato dextrose agar (PDA) amended with one discriminatory dose of fungicide (technical grade active ingredient). The discriminatory doses for tebuconazole, flutolanil, and PCNB were 0.02, 0.03, and 2.0 ppm, respectively. Isolates were incubated at 26 C for three days. Radial growth after three days was measured in mm. Percent inhibition [100-(colony diameter on amended medium/colony diameter on controls X 100)] was calculated for each isolate, and a mean percent inhibition was calculated for each location. Differences in sensitivities among locations were determined using Fisher's Protected LSD. Of the locations sampled, most of the populations were significantly more sensitive than the population which had been exposed to the fungicides the longest. Percent inhibition for all isolates were combined and tested for cross-resistance using a Pearson Correlation Coefficient. Of the three fungicides tested, sensitivity to tebuconazole and flutolanil demonstrated the strongest correlation ($r=0.401$, $p \leq 0.0001$), flutolanil and PCNB were weakly correlated ($r=0.158$, $p \leq 0.001$), and tebuconazole and PCNB were not correlated ($r=-0.040$, $p \leq 0.405$). The differences in sensitivities among locations indicate that fungicide sensitivity among populations varies throughout Georgia. The differences also indicate that repeated exposure over a prolonged period of time may reduce the *in vitro* sensitivity. This was true for all fungicides, but was most apparent for PCNB. However, the relationship between *in vitro* sensitivity and field efficacy must be elucidated.

The Effect of Host Development and Environment on Control of Sclerotinia Blight. D. B. LANGSTON, JR.*, and P. M. PHIPPS. Tidewater Agricultural Research & Extension Center, Virginia Polytechnic Institute & State University, Suffolk, VA 23437.

Vine growth and foliar canopy in combination with environmental factors have been associated with the onset and severity of Sclerotinia blight of peanut. Planting dates from 20 April until *ca.* 20 May were used in 1994 and 1995 to create varying degrees of host development each year. Planting dates were main plots and fungicide treatments with either fluazinam at 0.58 kg/ha or iprodione at 1.12 kg/ha were subplots. Treatments were applied according to the VA FDI 32 advisory program. Tests were planted to NC 9 and NC-V11 in 1994 and 1995, respectively, and managed by standard practices. Weather data were collected adjacent to each test and included air and dew point temperature, soil temperature (5-cm depth), and rainfall. Disease onset occurred on 3 August across all planting dates in 1994 . Plants at this time had a foliar canopy that shaded >95% of the soil surface and vines were lapped between adjacent rows. Cumulative rainfall in the preceding 5 days totaled 3.96 cm and soil temperature averaged 27.4 C. A split-plot analysis indicated that planting date and the treatment by planting date interaction were not significant for disease incidence, area under the progress curve (AUDPC) or yield. However, treatments had a significant effect on each parameter. Disease onset in 1995 occurred on 30 June in plots planted up to 9 May. Plots planted on 20 April shaded >75% of the soil surface at disease onset and vines were *ca.* 10 cm from overlapping between rows. Plots planted on 1 May and 9 May shaded *ca.* 70% of the soil surface at disease onset and vines were *ca.* 27 cm from overlapping. Rainfall in the 5 days preceding disease onset totaled 2.77 cm and soil temperature averaged 76 C. Disease onset was delayed until 9 July in plots planted on 22 May. These plots shaded *ca.* 70% of the soil surface at this time and vines were *ca.* 20 cm from overlapping. Planting date and treatment were significant for AUDPC, while only treatment had a significant effect on yield. The interaction of planting date and treatment was not significant for any factor. Yields were improved significantly by fluazinam across all planting dates in 1994 and 1995. The yield increase with iprodione was significant for the 10 May and 20 May planting dates in 1994, and all planting dates in 1995. Yields across all planting dates averaged 1172 and 742 kg/ha greater with fluazinam compared to iprodione in 1994 and 1995, respectively. These results provided additional evidence that both host and environmental parameters in the VA FDI 32 algorithm are valuable determinants for disease onset and fungicide application.

Effect of Roast Temperature of Virginia and Runner Type Peanuts On Total Volatiles as Measured by Headspace Analysis. J. C. STRYKER* and Clyde T. YOUNG. Department of Food Science, North Carolina State University, Raleigh, NC 27695.

The use of peanuts in confections, butters, and snack foods depends on the development of a quality roast flavor. In general, total headspace volatiles and quality exhibit an inverse relationship. The purpose of this study was to evaluate the effect of roast temperature on total volatiles measured by a rapid headspace analysis method over a storage time of 16 weeks. Three grades of Runner and Virginia type peanuts were obtained from 2 crop years and roasted at 145, 160, 175, and 190°C to a roast color with a CIE L* value of 58 ± 1.5. For storage, peanuts were sealed in plastic laminate pouches of 100 g each and kept at room temperature (23°C). At 0, 2, 4, 8, 12 and 16 weeks new pouches were opened and used for gas chromatographic analysis. For each analysis, 1.5 g ground peanuts were placed in a 12 ml vial and heated for 12 min at 150°C. Two ml of the headspace volatiles were transferred to a Shimadzu GC-15A fitted with a 60-80 mesh Tenax GC packed column and flame ionization detector. Output was integrated using EZChrom data analysis software and statistically analyzed by a general linear models procedure. Upon analysis, using roast color (CIE L*) as a covariate, roast temperature was found to be a highly significant factor ($P \leq 0.05$) with means of 3.03×10^6, 3.46×10^6, 4.36×10^6, and 4.85×10^6 for total volatile peak areas at 145, 160, 175, and 190°C roast temperatures, respectively. These data displayed a linear trend as roast temperature increased with a regression equation of Total Headspace Volatiles = -3.196 + 0.043 x Roast Temperature. To fully understand these data, higher order significant interactions (roast temp•type•storage time and roast temp•grade) were examined. Overall, data indicated that a longer low temperature generated a better quality roasted peanut than a faster high temperature.

Selection for Early Leaf Spot Resistance and High Yield within Interspecific Breeding Lines of Peanut. J. C. TUGGLE*, O. D. SMITH, J. L. STARR, and B. A. BESLER. Department of Plant Pathology and Microbiology, Texas A&M University, Department of Soil and Crop Science, Texas A&M University, Department of Plant Pathology and Microbiology, Texas A&M University, College Station, Tx, 77843, and Texas Agricultural Experiment Station, Yoakum, Tx, 77995.

Early Leaf Spot (*Cercospora arachidicola*) causes significant yield losses to peanut in Texas each year. Fungicides are the primary management tool for controlling the disease. Early Leaf Spot resistant breeding lines were selected, based upon restricted selection, in populations originating from a recurrent selection breeding program. Restriction thresholds were used to maintain or increase yield while selecting for Leaf Spot resistance. Eight lines were selected following this criteria. Individual plant populations (200 plants per line) were grown in a replicated test at the Plant Disease Research Station, Yoakum, Texas. Leaf Spot pressure was augmented by spraying plots with spore suspensions of 2.5 x 10^4 spores/mL (3 liters per plot) in August after successive irrigations to create the microclimate necessary for infection. Individual plants were scored 4 times using the Florida scale (1-10) rating system. Five percent selection pressure was exercised per replication (2 replications) identifying the 5 upper and lower plants based upon area under the disease progress curve (AUDPC). High selection pressure was necessary to identify differences in resistance while also maintaining or selecting for higher yields. Differences ($P < .001$) were present among and within lines for AUDPC values. Values of AUDPC ranged from 3.0 (Tx95Y7910-72) to 14.0 (Florunner). No differences ($P < .05$) were determined for yield among lines based upon means, which indicates the linkage between low yield and Leaf Spot resistance has been broken. Individual plant yields varied within lines from 21.0 grams (Tx95Y7908-70) to 160 grams (Tx95Y7921-7), with Florunner yielding a high of 96 grams (values expressed in total seed weight). In conclusion, individual F_5 plants were identified that possessed resistance, high yield (compared to Florunner and Southern Runner), tan seed color, and acceptable plant type.

Changes of the Methionine-Rich Protein Polypeptides during Peanut (Arachis hypogaea) L. Germination. L.A. VELASQUEZ*, and S.M. BASHA. Division of Agricultural Sciences, Florida A&M University, Tallahassee, FL 32307.

A major event on a storage tissue during seed germination is the mobilization of stored reserves to the growing axis. An initial hydrolysis of proteins occurs providing free amino acids for synthesis of enzymes. These enzymes are required for conversion of various, insoluble reserve substances into forms suitable for transport. There is then a bulk hydrolysis of the main reserve proteins to provide amino acids to the growing seedling. Finally, during the senescence of the reserve depleted storage tissues, cellular proteins are broken down to provide amino acids to the seedling before the start of autotrophic growth. A methionine rich-protein (MRP) from Florunner peanut (*Arachis hypogaea*) L. has been identified, isolated and found to have six different polypeptides. These are the only polypeptides with a significant amount of methionine in peanut and have been found to accumulate at different rates during seed maturation. It was of interest to determine the breakdown pattern of the six MRP subunits during seed germination. In this study MRP from germinating seeds was collected, and the changes in the pattern of MRP polypeptides was determined. Cotyledons from germinating seeds were collected, ground into a meal and defatted with hexane. Defatted peanut meal (2g) was extracted with 2 M NaCl, 0.01 M Tris-HCl, pH 8.2 and 0.002% (w/v) sodium azide with a Polytron homogenizer. The homogenate was centrifuged at 20,000g for 20 min. The supernatant was collected and used for protein fractionation using a Sephacryl S-300 column equilibrated with 0.5 M NaCl, 0.01 M Tris-HCl (pH 8.4) and 0.002% (w/v) sodium azide. Column eluents were collected in 5 ml fractions, and their protein content was determined measuring absorption at 280nm. MRP peak was identified, pooled, and dialyzed against dd H_2O. The MRP was subjected to polyacrylamide gel-electrophoresis and HPCE to determine compositional changes in polypeptides during seed germination. Preliminary data revealed that MRP gradually decreased after 4 to 6 days of germination. In addition, high molecular weight storage protein content decreased greatly after 6 days of germination. The MRP fraction is being analyzed by 2-D PAGE to determine the depletion of the specific protein subunits during germination.

Biotechnology/Mycotoxins

Expression of GUS Under the Control of a Soybean Promoter Modulated by Carbohydrates, Wounding, and Other Factors in Transgenic Peanut. P. OZIAS-AKINS*, H. FAN, AND A. WANG. Department of Horticulture, University of Georgia Coastal Plain Experiment Station, Tifton, GA 31793-0748.

Our transformation protocol uses microprojectile bombardment of embryogenic peanut tissues (Ozias-Akins et al. 1993, Plant Sc. 93:185). This protocol has been refined to 1) allow a complete plant cycle from initiation of embryogenic cultures, through transformation and regeneration, to production of numerous pods in 18 months or less; 2) reduce the total time required for the transformation process and production of pods to approximately 12 months; 3) increase the efficiency of recovery of transgenic cell lines approximately 25-fold relative to our published experiments. We have introduced a β-glucuronidase (GUS) gene controlled by a promoter from a soybean vegetative storage protein gene (*vsp*). This gene is inducible by either wounding, methyl jasmonate, carbohydrates, or water deficit in soybean. The vegetative storage protein accumulates to high levels in immature soybean pod walls. When the *vsp* promoter-GUS gene fusion is inserted into peanut, expression of the gene follows expected temporal and spatial patterns as would be predicted from soybean. There is lower expression in leaves than in stems. Expression in both organs increases in response to excision (wounding) and treatment with jasmonic acid. Expression appears highest around the vascular tissue which probably reflects carbohydrate-induced expression. Expression is particularly high in young peanut pods. This pattern of expression might be significant for engineering of Bt toxin-producing lines where our target pest is lesser cornstalk borer (LCB; *Elasmopalpus lignosellus*). LCB attacks primarily the stem and pod wall, two locations where expression of *vsp*-GUS is highest in peanut. The *vsp* promoter might also be useful for engineering expression of broad-spectrum antifungal/antibacterial compounds such as lytic peptides. Expression of GUS controlled by the *vsp* promoter is very low to undetectable in roots where the natural symbiosis with *Rhizobium* should not be disturbed by antifungal strategies. Over 1000 seeds from *vsp*-GUS transgenic plants have been recovered and will be used for inheritance studies.

Effect of Water stress on Protein and Peptide Composition of Peanut Suspension Cultures.

M. ALI-AHMAD* and S. M. BASHA. Division of Agricultural Sciences, Florida A&M University, Tallahassee, FL 32307.

Water stress is known to enhance aflatoxin contamination of peanut (*Arachis hypogaea* L.). However, the mechanism of stress induced aflatoxin contamination is unclear. In other crops, water stress has been reported to induce significant changes in plant composition. Determining the response of peanut to water stress will be useful in understanding the mechanism involved in drought-induced aflatoxin contamination of peanut. Studies aimed at monitoring water stress induced changes using *in vivo* systems are laborious and expensive, especially for screening a large number of genotypes. In this study an attempt was made to determine water stress-induced compositional changes in peanut using an *in vitro* culture system. For this purpose we have established a cell culture system using the peanut (*Arachis hypogaea* L. cv. Marc1) cotyledon tissue. Water stress was induced using various concentrations (0, 0.25 M, 0.5 M, 0.75 M and 1 M) of mannitol. The stressed cells were harvested and centrifuged to separate the cells and media. The cell proteins were extracted with 0.01 M Tris-HCl, 0.001 $MgCl_2$, pH 8.3 using a Polytron homogenizer. The protein composition of the cell extracts was monitored using High Performance Capillary Electrophoresis and SDS-PAGE. The data showed quantitative differences in between the water stressed cells unstressed cells. Likewise, the protein composition of the culture media also changed greatly following water stress. These data indicate that water stress accelerated protein accumulation in the peanut cell. The *in vitro* responses will be compared with that of *in vitro* plant responses to assess the applicability of an *in vitro* system for use in aflatoxin research.

Enhanced Regeneration and Transformation of Valencia A Peanut with the Osmotin Gene. L.A.URBAN* and A.K. WEISSINGER. Department of Crop Science, North Carolina State University, Raleigh, N.C. 27695.

The cultivar Valencia A is one of only two peanut cultivars in which regeneration from leaflets has been achieved. We have modified a protocol from Cheng and Demski(1994) which gives us 25% frequency of shoot regeneration. Ten-day-old leaflets are disinfested and the proximal half plated on MS salts + B5 vitamins + 3% sucrose (LMS) + 25 mg/l benzyladenine(BA) + 1 mg/l napthalene acetic acid(NAA). When a swelling occurs at the vein end, it is removed to LMS + 4 mg/l BA + 0.1 mg/l NAA for shoot elongation. Shoots are then rooted on 1/2 strength LMS + 1 mg/l indole acetic acid. Using Burley 21 tobacco callus feeder layers during co-cultivation, efficiency of *Agrobacterium* infection by the wild type strain A281 was increased from 30% to greater than 80%. Utilizing these enhanced regeneration and transformation procedures, the osmotin gene from tobacco was introduced into Valencia A. Osmotin is a member of the group 5 tobacco pathogenesis related or PR proteins and has been shown to have antifungal activity. Three transformation experiments were performed to introduce the osmotin gene into peanut using the strain EHA105(disarmed version of A281). Two experiments were performed without selection and the third using 40mg/l kanamycin in all regeneration media. Frequency of transformation ranged from 2-3%. Fifty R0 plants have been recovered and 76% were polymerase chain reaction(PCR)+ for the osmotin gene. Eighty-five percent of R1 plants tested thus far were also PCR+ for the osmotin gene. Transgenic Valencia A will be introduced into breeding programs where transgenes can be transferred through hybridization with locally adapted genotypes.

Transformation of Peanut cv. NC7 with the Cecropin Anolog D5C by Microprojectile Bombardment

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A family of synthetic genes encoding cecropin analogs have been acquired from Demeter Biotechnologies, Ltd. The cecropins are a family of low molecular weight peptides first found in the hemolymph of silk moth pupae, where they accumulate in response to bacterial infection. A secreted cecropin analog "D5C", known to be effective against *Cercospora arachidicola* and *Aspergillus flavus in vitro*, has been reengineered into a vector carrying the selectable marker hygromycin phosphotransferase (HPT) to facilitate transformation of peanut by microprojectile bombardment. Somatic embryos derived from dry seed of NC7 were bombarded with 1µm gold particles at a pressure of 1800 psi. One µg of DNA was used per bombardment. Twenty-one hygromycin resistant plants have been recovered using an improved regeneration protocol from at least 12 independently transformed cell lines bombarded with the D5C plasmid. The transformation efficiency was approximately 1% based on the total number of embryos bombarded. Fourteen of the twenty-one recovered plants tested positive for the presence of the hygromycin gene by Polymerase Chain Reaction (PCR) analysis. All but one of the plants have flowered and set seed. An average of 27 seeds/plant were recovered. Ninety-three R1 plants representing 18 R0's have been analyzed by PCR for the presence of the hygromycin gene. Fifteen of the 18 R0 lines tested have produced PCR positive progeny. Three RO's that were negative for hygromycin have PCR positive progeny, suggesting the possibility of chimeric R0 plants. Thus far, 42 R1's have been transplanted to the greenhouse. Southern and northern analyses on R1 progeny are being conducted and will be discussed.

Cloning of Markers for Root-Knot Nematode Resistance. M. D. BUROW*, J. L. STARR, C. E. SIMPSON, and A. H. PATERSON. Department of Soil and Crop Sciences, Texas A&M University, College Station, TX 77843; Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX 77843; and Texas Agricultural Experiment Station, Stephenville, TX 76401.

Resistance to the root-knot nematode *Meloidogyne arenaria* was introgressed into *Arachis hypogaea* from wild, diploid species. The three wild, resistant species used as donor parents were *A. batizocoi*, *A. cardenasii*, and *A. diogoi*. Three RAPD (randomly amplified polymorphic DNA) markers to one resistance gene were identified. In order to characterize better the species origin of resistance and develop a rapid and accurate method of screening large numbers of plants for resistance, we have attempted to clone all three markers. Marker DNA was excised from agarose gels, and cloned into the vector pBluescript. Insert-bearing colonies were obtained from two of the three markers to date. Insert sizes were approximately 600 and 400 bp, as expected. Linkage of clones to resistance and species origin will be tested by hybridization analysis, and clones will be sequenced to determine unique marker sequences.

Calcium and pH Effects on *Aspergillus flavus* Invasion and Aflatoxin Contamination of Peanut.

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Soil calcium deficiencies have been associated with greater seed invasion by *Aspergillus flavus*. Calcium sources are used to amend soil acidity, so higher aflatoxigenic fungal activity may be due to decreased soil acidity. A greenhouse trial was conducted to separate the effects of soil calcium from soil acidity on seed invasion by *A. flavus*. Peanut cv. Florunner was grown in containers in which the fruiting zone was separated from the roots. *Aspergillus flavus* was added to the soil used in the fruiting zone. Three levels of soil calcium (0, 50, and 200 mg/kg) and two levels of soil acidity (pH 4.5 and 5.5) were established in the fruiting zone beginning at mid-peg. Soil acidity and calcium levels were maintained by weekly applications of appropriate nutrient solutions. Containers were arranged in a randomized block design with four replications. Drought was imposed on the fruiting zone only. At 135 days after planting, plants were harvested, and pegs and pods counted and weighed. Incidence of aflatoxigenic fungal invasion of seed and levels of aflatoxins were determined. No significant correlations of soil calcium or acidity in the fruiting zone to seed invasion by *A. flavus* or aflatoxin levels were calculated in this study. However, seed invasion by *A. flavus* tended to be inversely related ($r = -0.68$) to soil calcium while aflatoxin levels in seed from treatments with 200 mg/kg calcium were 80% lower than in seed with 50 mg/kg calcium. Soil calcium levels significantly affected numbers and weights of pods more than did soil acidity. In soil with pH 4.5, numbers of pods on plants was 35% lower ($P \leq 0.053$) than in soil with pH 5.5, but there was no difference in weights of individual pods. Pod numbers were 75% lower and individual pod weights were 50% lower ($P \leq 0.005$) from no calcium treatments than from 200 mg/kg calcium treatments.

Efficiency of the Blanching and Electronic Color Sorting Process in Removing Aflatoxin from Raw Shelled Peanut Lots.

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Raw shelled peanut lots produced in the United States are inspected for aflatoxin using a sampling plan designed by the Peanut Administrative Committee (PAC) which administers the USDA Peanut Marketing Agreement. Since 1990, most peanut lots rejected by the PAC sampling plan have been decontaminated using a blanching process that includes removing the red skin from the kernel (called blanching) and removing damaged or discolored kernels from the lot using electronic color sorters. Comparing PAC aflatoxin test results on lots before and after blanching and sorting indicate that the blanching process is an effective method of reducing aflatoxin in contaminated lots. The average aflatoxin reduction among the 5,492 lots blanched in 1990 was 90.6%. Sorting the 5,492 lots marketed in 1990 by peanut market type and grade indicated that the blanching process was equally efficient in reducing aflatoxin for all peanut market types and grades. The average aflatoxin reduction was greater than 81% for all peanut market types and grades studied. The percentage aflatoxin reduction achieved with the blanching process was a function of the aflatoxin concentration of unblanched lots. As the aflatoxin concentration among unblanched lots decreased, the blanching efficiency decreased. For example, the percentage reduction for unblanched lots at 200, 50 and 16 ng/g was 95, 90, and 82%, respectively.

Effect of Biological Control Inoculum Rate on Preharvest Aflatoxin Contamination of Peanuts.

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Studies were conducted during 1994 and 1995 in the Environmental Control Plot Facility at the NPRL to determine the effect of different inoculum rates of biological control agents on preharvest aflatoxin contamination of Florunner peanuts. Biocontrol agents were non-toxigenic color mutants of *Aspergillus flavus* and *A. parasiticus* that were grown on rice for use as soil inoculum. Three replicate plots (4m X 5.5m) were treated with 0, 20, 100, or 500 lb/A of an equal mixture of the color mutants at 23 days after planting (DAP) in 1994. The same plots received identical treatments in 1995 with inoculation occurring at 47 DAP. Aflatoxin analyses of all peanuts were made by HPLC and showed a treatment-related effect with a reduction of aflatoxin in peanuts from all treatments compared with the untreated controls. In 1994 treatment means were 338, 74, 35, and 33 ppb for the 0, 20, 100, and 500 lb/A treatments, respectively. The 1995 means were 718, 184, 36, and 0.4 ppb for the same treatments. Compared with untreated controls, the 20, 100, and 500 lb/A treatments produced reductions in aflatoxin of 78.1, 89.6 and 90.2%, respectively, in 1994 and 74.4, 95.0, and 99.9%, respectively, in 1995. These data indicate that excellent control of preharvest aflatoxin contamination of peanuts is possible with this strategy.

Aspergillus flavus and *A. parasiticus* used as Peanut Plot Inoculum to Study Preharvest Aflatoxin Contamination.

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Florunner and Pronto peanut plots were inoculated at midbloom with a corn matrix containing either *Aspergillus flavus* or *A. parasiticus* or a mixture of these fungi in 1992, 1993 and 1994 in Tifton, GA and Yuma, AZ. Soil samples were taken each year one week after inoculation, 4 1/2 weeks after inoculation and at harvest. For each plot soil dilution plates were prepared using an agar medium (dextrose peptone yeast medium) on which we could presumptively distinguish *A. flavus* and *A. parasiticus* based on colony color. Aflatoxins were determined by HPLC in harvested peanuts. *A. flavus* survived well in the soil in both GA and AZ. *A. parasiticus* could not be detected in soil at harvest in AZ while it survived well in GA. The relative incidence of aflatoxins B_1 and B_2 was not affected by the inoculum whereas the incidence of G_1 and G_2 was. Aflatoxins G_1 and G_2 were increased in plots inoculated with *A. parasiticus* in GA while almost no G_1 or G_2 was seen in AZ. *A. parasiticus* survived well in GA and poorly in AZ, while *A. flavus* survived well in both environments.

Breeding and Genetics

Recent Plant Exploration in Ecuador Fills Important Gaps in Collections. K.A. WILLIAMS*, D.E. WILLIAMS, and C. TAPIA. USDA-ARS National Germplasm Resources Laboratory, Beltsville, MD 20705 USA; IPGRI-Americas, c/o CIAT, Cali, COLOMBIA; and INIAP-DENAREF, Est. Exp. Santa Catalina, Quito, ECUADOR.

A joint U.S. Department of Agriculture/International Plant Genetics Resources Institute/Instituto Nacional Autónomo de Investigaciones Agropecuarias plant exploration for *Arachis hypogaea* L. was conducted in Ecuador in October and November, 1995. The purpose of the exploration was to establish the basis of a comprehensive Ecuadorian national peanut collection and to fill outstanding gaps in international collections. The principal target area of the exploration was the Ecuadorian Amazon, where a special effort was made to collect traditional landraces currently conserved *in situ* by the various indigenous groups that inhabit the lowland provinces of Sucumbios, Napo, Pastaza, Morona Santiago, and Zamora Chinchipe. Other areas visited during this exploration included the intermontane valley provinces of Loja and El Oro, the Pacific lowland province of Manabi, and the highland province of Pichincha. A total of 47 accessions of peanut landraces were collected, including germplasm of the botanical varieties *hypogaea*, *hirsuta*, *fastigiata*, *peruviana*, and *aequatoriana*. Many of the landraces collected are believed to be new to science, adding significantly to known peanut diversity, especially of the botanical variety *aequatoriana* of which only two landraces had been previously reported. Other noteworthy accessions include some of the botanical variety *hirsuta* collected at altitudes over 2680 m, some of the highest locations ever recorded for peanut collections. A second exploration is planned for August, 1996, to collect in areas of Ecuador that were not visited on this trip.

Collection and Characterization of Peruvian Peanut Landraces. C. A. SALAS* and T. G. ISLEIB. Dept. of Crop Science, North Carolina State University, Raleigh, NC 27695-7629.

Early and late leafspots (*Cercospora arachidicola* Hori and *Cerosporidium personatum* [Berk. & Curt] Deighton) and rust (*Puccinia arachidis* Speg.) are the most important foliar fungal diseases of peanut (*Arachis hypogaea* L.) worldwide. Resistance to these diseases is sought in developing nations where chemical control of the diseases may not be practical and in developed nations where cost and environmental impact drive programs to reduce chemical control programs. Some landrace cultivars collected over the past 40 years from the Peruvian center of genetic diversity are resistant to leafspots and rust. A collection trip was made in the summer of 1994 to collect additional germplasm from three distinct agroecological regions of Peru. The itinerary was planned to avoid areas previously collected by earlier expeditions. Passport data were obtained at the time of collection. A total of 250 landraces were collected from coastal river valleys, interandean valleys, and Amazonian forest. Accessions were grown at research stations of the Peruvian National Institute for Agricultural Research (INIA) in 1994, 1995, and 1996 to characterize the new accessions and evaluate the genetic diversity in the collection. Data were collected on plant morphology, agronomic value, and resistance to foliar pathogens. A sample population is presented with data on 35 variables from 115 fastigiate landraces planted in two environments. Principal component analysis was used to reduce the total variation to a few composite variables. The first three principal components accounted for 40% of the total variation. Accessions did not cluster into discrete groups, although accessions from common agroecological regions tended to group together in loose, overlapping clusters. Two accessions exhibited excellent resistance to late leafspot. Information on descriptors, agronomic performance, and disease reactions is available to all scientists interested in utilizing Peruvian germplasm for cultivar development.

New Findings on the Geographic Distribution of Wild *Arachis* Species in Central and Western Brazil 1995. R.N. PITTMAN*, J.F.M. VALLS, C.E. SIMPSON, G.P. SILVA, and A.P.S. PEÑALOZA. USDA, ARS, SAA, Griffin, GA. 30223 USA; CENARGEN/EMBRAPA, Brasilia, Brazil; Texas Agric. Exp. Stn., Texas A&M Univ., Stephenville, TX 76401 USA; CENARGEN/EMBRAPA, Brasilia, Brazil; and CENARGEN/EMBRAPA, Brasilia, Brazil.

The known geographic distribution of several *Arachis* species changed dramatically with germplasm collected in Central Brazil and the western Mato Grosso in 1995. At least 120 new accessions of wild *Arachis* were collected during the year, some which were species not previously known to be in Brazil. Several of the collections were probable new species and will need to be described. For the first time, A. *magna* was collected in Mato Grosso. The three accessions appear to be the same as the GKSSc-30097, collected in San Ignacio, Bolivia, 165 km to the west. *In addition, Arachis glandulifera* was collected in the same region for the first time. We are confident that this accession is A. *glandulifera* based on plant morphology and because chromosome slide preparations show subtelocentric chromosomes. This collection was made 205 km east of the 30098/99 and 315 km east of 30091. Other materials collected include five new *A. simpsonii* accessions as well as materials which appear intermediate to *A. simpsonii, A. cardenasii,* and *A. magna*. Also of great interest are five new accessions of *A. stenosperma* and a new representative of section *Arachis,* collected at the Rio Araguaia in the city and at the airport of Luis Alves, in the state of Goias. An *Arachis* section species of unknown affinity was collected at Rio Pau Seco, between Rio Araguaia and Alvorada, in the state of Tocantins. Several new populations of *A. lutescens* and *A. prostrate* were found in Mato Grosso, Goias, and Tocantins. Many of the 1995 collections were threatened with extinction from agricultural development.

Pollen Storage for Cross Pollinations in *Arachis*. C.E. SIMPSON. Texas Agricultural Experiment Station, Texas A&M University, Stephenville, TX 76401-0292.

The peanut breeder's goal of developing improved cultivars or breeding lines is often dependent upon generating variability from cross pollinations of selected parents in which desired characters have been identified. Likewise, the taxonomist's objective of determining species relationships of *Arachis* materials may hinge upon cross-compatibility data between two or more accessions. Often in crossing programs, plants designated as male or female do not flower on the same day, and since *Arachis* flowers do not last more than six to ten hours without wilting, the number of days it takes to make a desired number of pollinations on a given cross can be extended. To overcome this problem, studies were conducted to determine the viability of pollen stored under refrigeration. Extensive literature is available regarding pollen longevity and storage for crop plants. In recent years much has been written regarding germplasm preservation through pollen storage. Our original studies included only *Arachis hypogaea* L., but after our first attempts were successful, we used various pollen sources. Several species, sub-species and varieties were used as female receptors. Pollen flowers were stored in a household refrigerator in glass vials with a small amount of water to immerse the lower end of the calyx tube. Temperature in the refrigerator was maintained between 4° and 6°C. In almost all cases some pollen viability has been retained for one 24-h storage period; however, results have been variable with longer storage times. In one study, pollen was stored each day for six days. Pollinations resulted in seed production from each day. In another study, pollen was stored for a period of 13-d in the freezer compartment of the same refrigerator at -18°C. What appeared to be normal seed and plants resulted from 30% of the pollinations with this pollen. In *A. hypogaea* crosses with fresh pollen, we expect a 95% success rate with pollinations. With one-day-old stored pollen the average has been approximately 50%, but varied among lines. The percentage of single-seeded pods in *A. hypogaea* crosses does not appear to be greater with stored pollen. In interspecific crosses the success of stored pollen has varied with species. Crosses which are easy to make within section *Arachis* respond similarly to *A. hypogaea*; most difficult crosses have not responded to pollen storage.

Possible Approaches for Breeding Peanut with Resistance to Preharvest Aflatoxin Contamination. C. C. HOLBROOK[1*], D. M. WILSON[2], M. E. MATHERON[3], K. S. RUCKER[2], C. K. KVIEN[2], J. E. HOOK[2], and W. F. ANDERSON[4]. [1]USDA-ARS, Tifton, GA; [2]Univ of GA, Tifton, GA; [3]Univ. of AZ, Sommerton, AZ; [4]AgraTech Seeds Inc., Ashburn, GA.

Preharvest aflatoxin contamination (PAC) is one of the most serious challenges facing the U.S. peanut industry. The development of peanut cultivars with resistance to PAC would be a valuable tool in reducing this problem. The objectives of this research were to identify sources of resistance to PAC and to identify indirect selection techniques that can be used to develop resistant cultivars. All accessions from the peanut core collection were evaluated for resistance to PAC under drought stressed field conditions at either Yuma, AZ or Tifton, GA. Accessions with relatively low aflatoxin contamination were evaluated for a second year. Over 20 accession have exhibited low aflatoxin in multiple environments. For example, CC 108 and CC 299 have been examined in three environments and have consistently showed a 90% reduction in aflatoxin contamination in comparison to Florunner. Three accessions that have previously been documented to have drought tolerance also have consistently showed a 90% reduction in aflatoxin contamination in comparison to Florunner. A significant positive correlation between leaf temperature and PAC and between visual drought stress rating and PAC indicates that these measurements may be valuable indirect selection tools. The use of leaf temperature or visual stress ratings for preliminary screening of breeding populations for resistance to PAC would greatly reduce the expense of developing resistant cultivars.

Genetics of an Unusual Peanut Pod Trait. W. D. BRANCH*, D. E. WILLIAMS, and E. J. WILLIAMS. Dept. of Crop and Soil Sciences, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793; International Plant Genetics Research Institute, c/o CIAT, A. A. 6713, Cali, Colombia; and National Peanut Research Lab, USDA-ARS, 1011 Forrester Drive, Dawson, GA 31742; respectively.

An atypical peanut (*Arachis hypogaea* L.) germplasm was recently collected in South America. This particular accession exhibits a black color on the outer pod surface. Crosses were made at the University of Georgia, Coastal Plain Experiment Station between the black podded accession and normal colored pod types to study the genetics involved in the expression of this trait. Results from these cross populations in the F_1, F_2, and F_3 generations showed that the black podded characteristic was controlled by a single dominant gene. Furthermore, no linkage was detected between it and krinkle-leaf or dominant red testa color. Subsequent evaluations also found that the black outer pod color was positively correlated with the inner pod color change during maturation. Thus, the utilization of this unusual peanut pod trait in future cultivars would allow for quick and easy determination of maturity without the hull-scrape method. Peanut quality would likewise be enhanced by digging each crop at optimum maturity.

Genetics of Resistance to Root-Knot Nematodes in Peanut. K. CHOI, C. E. SIMPSON*, M. D. BUROW, A. H. PATERSON, AND J. L. STARR. Department of Plant Pathology & Microbiology, Texas A&M University, College Station, TX 77843; Texas Agricultural Experiment Station, Stephenville, TX 76401; and Department of Soil & Crop Sciences, Texas A&M University, College Station, TX 77843.

Resistance to the root-knot nematodes *Meloidogyne arenaria* and *M. javanica*, defined as inhibition of nematode reproduction, has been introgressed into *Arachis hypogaea* from wild species by a diploid route. Three randomly amplified polymorphic DNA (RAPD) markers linked to a single gene for resistance to *M. arenaria* have been identified. The objective of this study was to determine if the resistance gene linked to these molecular markers was the only resistance gene present in three nematode-resistant genotypes. Forty to 50 individuals from each of three BC5F2 lines having the RAPD markers were screened for resistance in greenhouse tests. Chi-square analysis indicated resistance segregated in a 3:1 ratio consistent with each line having a single dominant resistance gene. Conversely, chi-square analysis indicated that resistance did not segregate in ratios consistent with traits governed by two dominant genes. In separate greenhouse tests, four BC4F3 lines susceptible to *M. arenaria* were screened for resistance to *M. javanica*. Resistance to *M. javanica* was identified in each *M. arenaria*-susceptible line, indicating that different genes condition resistance to each of these root-knot species.

Breeding Tomato Spotted Wilt Virus Resistant Peanut Varieties for South Texas. O.D. SMITH*, M.C. BLACK, and M.R. BARING. Department of Soil & Crop Sciences, College Station TX 77843-2474, and Department of Plant Pathology and Microbiology, Uvalde TX 78802-1849, Texas A&M University.

Spotted wilt, caused by the tomato spotted wilt virus, is a devastating disease in South Texas that results in heavy crop losses and occasionally complete crop destruction. Cultural and chemical approaches to control the disease have been inadequate. Commercially acceptable resistant varieties are needed. Significant progress has been made in the development of putatively acceptable varieties with useful resistance. Plant selection for good agronomic features were effected in early generation populations segregating for partial resistance to virus in the absence of disease pressure. The F_3, F_4, and later generation progenies, grown under heavy natural disease pressure, augmented by the frequent insertion of susceptible disease spreader rows, have been selected on a family basis in replicated plots at one location per season. Family selections were based on multiple criteria involving disease reaction, yield, grade, plant form, fruit traits, and other characteristics. Families with resistance equal to or better than resistant parents have been selected. Yields of resistant selections have exceeded those of the susceptible cultivars by more than 50% when disease incidence was high. Grades are competitive with commercial varieties.

Characterization of Resistance to Multiple Diseases in Interspecific Peanut. W.F. ANDERSON*, G. KOCHERT, M. GIMENES, C.C. HOLBROOK, H.T. STALKER, D.W. GORBET and K.M. MOORE. U. of Georgia, USDA-ARS, N.C. State Univ., U. of Florida, and AgraTech Seeds, GA.

Approximately 130 peanut lines derived from interspecific crosses between tetraploid domesticated peanut and twelve different wild diploid peanut accessions were evaluated for resistance to diseases in 1994 and 1995. Susceptibility to peanut root-knot nematode (*Meloidogyne arenaria*) and Cyclindrocladium black rot (CBR) (*Cylindrocladium parasiticum*) was evaluated in the greenhouse. Early leafspot (*Cercospora arachidicola*), Southern stem rot (*Sclerotium rolfsii*) and tomato spotted wilt virus (TSWV) occurrence was observed in the field at Ashburn, Georgia. Late leafspot (*Cercosporidium personatum*) and peanut rust (*Puccinia arachidis*) were evaluated over all lines in at the Green Acres Research facility at Gainesville, Florida. High levels of resistance were observed to root-knot nematodes in four lines (H29, H95, H97 and H99) and to late leafspot in four lines (H76, H94, H104, H107). Moderate resistance was observed in three lines to CBR, four lines to early leafspot and four lines to TSWV. DNA was isolated from lines with potentially useful resistance. Amplified fragment length polymorphisms (AFLPs) were used to identify introgressed wild species genome segments and to screen for potential genetic markers for resistance genes. Such markers will be used to tag resistance genes in segregating populations, which are under development, and to map resistance genes relative to the existing peanut molecular map. Usefulness of AFLP technology related to peanut genetic markers will be discussed.

Quantitation of Pod Brightness for the In-Shell Virginia Peanut Market. T. G. ISLEIB*, H. E. PATTEE, and R. W. MOZINGO. Dept. of Crop Science and USDA-ARS, North Carolina State University, Raleigh, NC 27695-7629; Virginia Polytechnic Institute and State University, Tidewater Agricultural Research and Extension Center, P.O. Box 7099, Suffolk, VA 23437.

Pod brightness is an important characteristic that influences consumers to purchase in-shell peanuts. Three studies were conducted to evaluate the use of a colorimeter for quantitation of pod brightness. In the first study, pod samples from 48 virginia-type peanut genotypes were separated into jumbo and fancy fractions using a standard Federal-State Inspection Service grading peanut sizer. Pod color was measured for three subsamples of each fraction using a Hunterlab D25-PC2 colorimeter equipped with the D25M-2RAL Reduced Area Viewing for L optical sensor (51 mm diameter sample area). The 96 fancy and jumbo samples were also were rated by 11 Virginia-Carolina area shellers for pod size, shape, and color. Sheller ratings for the three traits were highly correlated, indicating that the shellers tended to combine their visual impressions into a single desirability score that influenced their ratings for size, shape, and color. Mean sheller color ratings were significantly correlated with L scores (brightness) and b scores (yellowness) measured with the colorimeter. In the second study, the 48 jumbo fractions used in the first study were re-evaluated using the D25L Area Viewing with a 95 mm aperture. L, a, and b scores obtained using the larger aperture were highly correlated with those obtained using the smaller aperture and had significantly lower error variances and CVs. In the third study, jumbo and fancy pod samples from the 1995 Peanut Variety and Quality Evaluation program were measured by colorimeter. Samples were obtained from 48 virginia-type breeding lines and cultivars grown at four locations with two digging dates at each location and two reps per digging date. Locations, digging dates, and their interaction accounted for 46% of the total variation in L scores and 45% of the total in b scores. Total rainfall between digging and picking accounted for nearly half of the environmental variation. Genotypes exhibited significant variation, and genotype-by-pod size interaction was significant. The difference in L and b scores for fancy and jumbo pods was pronounced in some genotypes and negligible in others. VA 93B had the brightest pods of the cultivars evaluated while NC 7 had the darkest pods. The colorimeter is a useful tool for measuring pod brightness as an adjunct to breeding for improved pod brightness. If pod sample size is adequate, the colorimeter should be equipped with a larger aperture to reduce the effects of variable pod color within samples. There is significant variation among genotypes for colorimeter scores, and selection for improved brightness should be effective.

Evaluations of Selected Peanut Germplasm Accessions for Multiple Pest Resistance.

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Peanut germplasm accessions with desirable phenotypic characteristics were selected from the USDA Plant Introduction Collection for evaluation of resistance to certain insect species and foliar diseases. Accessions with appropriate growth habit, canopy structure, seed size, testa color and yield, and which also possess heritable qualities imparting pest resistance, are highly desirable for use in classical plant breeding approaches and in molecular genetic transformations. Field resistance of the selected accessions was evaluated each year from 1987 to 1995 at Tifton and/or Attapulgus, GA. Visual ratings of insect damage and disease incidence were made along with samples of pest population densities as appropriate. Pests evaluated included corn earworm, *Helicoverpa zea* (Boddie), potato leafhopper, *Empoasca fabae* (Harris), three cornered alfalfa hopper, *Spissistilus festinus* (Say), tobacco thrips, *Frankliniella fusca* (Hinds), western flower thrips, *Frankliniella occidentalis* (Pergande), fall armyworm, *Spodoptera frugiperda* (J. E. Smith), sweetpotato whitefly, *Bemisia argentifolii* (Gennadus), peanut leafspot (early and/or late), *Cercospora arachidicola* S. Hori and *Cercosporidium personatum* (Berk and M. A. Curtin) Deighton and tomato spotted wilt tospovirus (TSWV). A total of almost 2000 accessions have been evaluated during the period. Thrips resistance (antizenosis) was noted in only 37 plant introduction accessions out of a group of 1206 lines screened. Fifteen accessions selected for multiple disease and insect resistance have been tested yearly in addition to individual plant selections.

Combined Effect of Resistance to the Peanut Root-Knot Nematode and Reduced Rates of Nematicide on Root Galling and Yield.

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The peanut root-knot nematode [*Meloidogyne arenaria* (Neal) Chitwood race 1] causes significant economic losses throughout the peanut (*Arachis hypogaea* L.) production area of the southern United States. Chemicals for control of this pest are becoming increasingly limited, and there are no peanut cultivars with resistance. We have identified moderate levels of resistance in *A. hypogaea* and have developed breeding lines with moderate levels of resistance. The objective of this study was to examine the combined effect of reduced rates of nematicides with moderate levels of resistance. Florunner and three breeding lines with resistance to peanut root-knot nematode were planted in a field known to be heavily infested with nematodes. A factorial design was used with four rates of Temik. Although rates of Temik resulted in significant differences in the amount of root galling, no differences in yield were evident. The three resistant breeding lines (UF 81206, UF 93105, and UF 93111) exhibited significantly less root galling and significantly greater yield than Florunner.

Screening for Low Oil Peanut Lines Derived from Mexican *Hirsuta* Type Landraces. L. BARRIENTOS-PRIEGO*, H. E. PATTEE, T. G. ISLEIB, H. T. STALKER and S. SANCHEZ-DOMINGUEZ. Department of Crop Science, USDA-ARS, North Carolina State University, Raleigh, NC 27695-7629 and Universidad Autonoma de Chapingo, Edo. de Mexico, Mexico.

Consumers presently prefer low-fat foods, and this has encouraged the search of peanut lines with low oil content. A collector's note on the low oil content of PI 576616, a Peruvian-type peanut (*Arachis hypogaea* subsp. *hypogaea* var. *hirsuta* Köhler), promoted screening of similar landraces from Mexico. In 1993, PIs 576633, 576634, 576635, 576636, 576637, and 576638 were collected and imported to the U.S. for evaluation. Preliminary evaluation identified low oil content in PIs 576634 and 576635 (Puebla). Seeds from the six landraces were field grown and harvested individually in 1994. Progenies of plants selected from the 1994 planting, based on yield potential, were grown in the field in a replicated test in 1995 to evaluate agronomic traits and oil content. Seed harvested from individual plants were screened for oil content using nuclear magnetic resonance (NMR). The oil content range of the individual plants within the Puebla landraces was 38.9 to 53.2%. Five selections with low oil content were identified in the 1994 lines, ranging from 38.9 to 42.3%. In comparison, only three lines in the N. C. State University germplasm collection of 580 entries were identified with oil contents within this range. Overall, NMR analysis of these lines showed that the ranking of oil content among landraces did not change significantly from 1994 to 1995. Variation among selections shows their potential use for developing low oil breeding lines.

Economics

Economic Analyses of Leaf Spot Fungicide Spray Initiation Dates on Peanut Cultivars. T. D.

HEWITT*, F. M. SHOKES and D. W. GORBET. University of Florida, NFREC, Marianna, FL 32446 and NFREC, Quincy, FL 32351.

Studies were conducted at Marianna, Florida to determine the effect of 4 different leaf spot fungicide spray initiation dates on late leaf spot development and yields of 12 commercial peanut cultivars in a dryland test. Pod yields and leaf spot ratings were taken for each treatment, and these data were used to estimate the economic returns. A strip-split-plot design was used with genotypes as 4-row subplots. The main plot treatments were spray initiation dates with chlorothalonil applied as Bravo 720 at a rate of 1.5 pints per acre on 14-day intervals once the treatment schedule was initiated. Four initiation dates were used each year at: 35, 49, 63, and 77 DAP. The treatments resulted in 4, 5, 6, and 7 applications. Eight runner and 4 virginia type cultivars were tested. Late leaf spot assessments were made, and yields were recorded for each cultivar with 2 harvests. 'Southern Runner' had the best resistance to leaf spot, and 'Marc I' was the most susceptible. For runner types, yields ranged from 3337 pounds per acre for Marc I at 4 applications to 4846 pounds per acre for Southern Runner at 7 applications. Each chlorothalonil application cost $8.50, including equipment application costs. Cost differences were $34 on a per acre basis for 4 applications up to $59.50 per acre for 7 applications. An average price of peanuts for the 3 years was estimated at $.28 per pound. In order for the additional chlorothalonil application to be economical, a yield response of over 35 pounds per application is needed. Disease ratings for leaf spot, using the Florida leaf spot rating system, indicated a significant difference for each application, with leaf spot being decreased with each additional spray application. For yield, the genotype and number of fungicide applications were the most important factors. Overall, the tests indicated that the most economical treatment was 6 applications for both runner and virginia types. The highest returns per acre were $598 at 6 applications for runner types and $629 per acre at 6 applications for virginia types. The largest response for both types was from 4 to 6 applications of chlorothalonil. Full season sprayings did not always produce higher net returns. For the runner types, 5 of the 8 cultivars were most economical at 6 applications and 2 of the 4 virginia type cultivars were most economical at 6 applications.

The New Peanut Title: Implications to the Peanut Industry. S.M. FLETCHER,* D.H. CARLEY, C.P. CHEN and W.D. Shurley. Department of Agricultural and Applied Economics, The University of Georgia, Griffin, GA 30223-1797.

The new peanut title is a major change from the previous peanut titles in the past Farm Bills. Some of the key differences are as follows: 10% reduction in price support; elimination of the support price escalator; removal of minimum national quota level; elimination of undermarketings; allowing spring sale, lease and transfer within limits within a state; unlimited fall transfer within a state; modification of the disaster transfer provision; and quota producers guaranteeing a no-net-cost program to the government. Given these changes, each region will be impacted differently with the Southwest region impacted the most. The Southwest generally had 20 to 30 percent of their basic quota in undermarketings while the Southeast and the Virginia-Carolina area had less than 10 percent. Thus, the Southwest could have approximately a 30 percent reduction in quota in 1996 from their 1995 effective quota level. The Southeast and the Virginia-Carolina could have between 15 and 18 percent reduction in quota from 1995 effective quota levels. Based on the quota reduction, planted acreage is predicted to decline to 1.462 million acres from 1.539 million acres in 1995. With the removal of the minimum quota floor and a continual decline in peanut consumption, the predicted peanut planted acreage needed in 2002 (last year of the peanut title) could be 1.287 million acres. The disaster transfer provision does not appear to be a satisfactory safety net given the no-net cost provisions in the new peanut title. If a producer has a 100 percent loss to segregation 2 and 3, their average price for the peanuts would be $250 per ton. For a 50 percent loss, the average price would be approximately $280 per ton and the average price for all tons produced would be $430 per ton. These average prices are below a producers cost of production. Producers with segregation 2 problems will need to shift to earlier maturing varieties and types while producers with segregation 3 problems will need to consider irrigation. With a 10 percent decrease in price support and frozen for seven years, many peanut producers will become vulnerable. Using the new support price ($610 per ton), the residual return to quota, management and risk on a per acre basis ranged from a low of $2 per acre for Oklahoma to $240 per acre for Florida. Given the changes in the new peanut title, some geographical shifts within states, especially Texas and Oklahoma, should occur. Farm income and land values will likely decline causing economic hardship to producers and rural communities.

Lowering of Peanut Support Price and the Extent of Consumers' Gain. S.Y. DEODHAR and S.M. FLETCHER.* Department of Agricultural and Applied Economics, The University of Georgia, Griffin, GA 30223-1797.

Supporters of the reform in the Peanut Program claim that high support price of farmers' stock peanuts is costing the U.S. consumers up to $500 million a year. However, opponents point out that reduction in peanut support price may not be passed on to final consumers by manufacturers of peanut products. Clearly, there is a need to evaluate the impact of a reduction in the peanut price on final consumers. A model was developed that incorporates imperfect competition and vertically related market structure of the peanut industry. Using conjectural variations approach, it is shown that the degree of price pass-through, and the resultant change in consumers' gain will be lower for higher degrees of market imperfection in the peanut industry. This study focuses mainly on the peanut butter industry, since more than 50% of the total quota peanut production in the U.S. is used in manufacturing peanut butter. The consumers' gain depends on a number of factors: i) the number of firms involved in shelling peanuts and manufacturing peanut butter, ii) firms' conjectures about the behavior of other firms, iii) the proportion of peanuts used in manufacturing peanut butter, and iv) the amount by which the support price is lowered. If the support price is lowered to $610, the potential consumers' gains would be $36.77 million, $23.59 million or $ 9.15 million, if market structure was competitive, Cournot-Nash, or collusive, respectively. If the support price is lowered to $450, the gains would be $127.59 million, $80.86 million or $30.95 million, respectively. The corresponding values will be even lower if firms produce the low fat peanut spread which has a lower peanut content. Allowing for the additional consumers' gain in peanut candy and snack peanuts, the total consumers' gain is not likely to be anywhere near the $500 million mark. Moreover, to the extent that national brands of peanut butter differentiate themselves, and create brand loyalty, the degree of price transmission will be lower, and therefore, our results can be taken as the upper bound on the changes in consumers' welfare.

Impacts of Peanut Program Changes on Quota Lease and Purchase Decisions. W. DONALD SHURLEY. Department of Agricultural and Applied Economics, Cooperative Extension Service, University of Georgia, Tifton, GA. 31793.

The 1996 farm bill (FAIR) makes significant modifications in the U.S. government peanut program. These changes include a reduction in the quota price support level and elimination of the annual cost of production price support adjustment mechanism. The result of these changes will likely be a producer cost-price squeeze over the 7-year life of the farm bill. This will increase risk, reduce the average price received per ton, and lower net returns. These impacts have significant implications for peanut producers leasing quota from non-producer quota owners. Per acre economic returns to land and quota are expected to decline by 20 to 25 percent or more. Lease rates on quota may not decline in the short term, however, depending on local supply/demand conditions and bid aggressiveness by producers. Unless lease rates decline, income losses to producers will be even greater. In the longer term, lease rates will likely decline due to a reduction in demand at higher levels of rent and due to economic alternatives in other crops. Quota purchase decisions must be evaluated carefully due to lower net returns and future reductions in quota which would effectively raise the purchase price per pound. The quota purchase decision is further complicated by new peanut program provisions on "quota eligibility" and across-county-line transfer of quota. Although returns to land and quota decline, this may not be singularly sufficient to cause a reduction in land and quota values due to the renewed 7-year life of the program. When evaluating quota purchase decisions, producers must consider the impacts of future cost-price squeeze, possible further quota reduction, and alternative enterprise net returns. Failure to consider these factors would likely result in bidding of quota sales above the true economic value.

Peanuts Policy Reform and Political Preference Functions in the 1995 Farm Bill. R.H. MILLER. Economic Consultant, Alexandria, VA.

The political process that produced the 1995 Farm Bill was quite different from that which produced the 1990 and other recent farm bills. In 1995, the free-market-minded Congress and the congressional budget process combined to replace Depression-era programs for major crops. Over the next seven years, producers would receive fixed payments that gradually decline. However, regional farming interests apparently were sufficient to defeat efforts to eliminate supports for peanuts and sugar. The November 1994 elections not only dramatically altered the leadership in Congress involved in the making of the 1990 farm bill but gave stimulus for a balanced budget and government program elimination. The farm philosophy of the Clinton administration centered on reauthorization of conservation programs and traditional commodity programs yet maintained a safety net for producers and allowed certain program flexibility and only modest reduction in program outlays. Despite the impending expiration of the 1990 legislation after the 1995 crops, committee markup and floor action was delayed throughout the summer and fall. The farm bill was incorporated as a title of the Omnibus Reconciliation Act which was vetoed by the President in December 1995. The House and Senate passed separate farm bills in February 1996, but the conferees had yet to meet as of mid-March 1996. The two farm bills adopted several provisions supported by peanut growers, but reduced support to $610 a ton from $678 a ton. Also, growers would be assessed to cover any program loss and certain quota holders would be required to sell or otherwise forfeit their quotas. Models of political-economic-seeking transfer policies are examined and applications to the peanut program are examined. Attention is paid to the wealth transfers between producers and first buyers.

Costs, Yield, and Returns of Producing Peanuts: U.S. vs. China. C.P. CHEN and S.M. FLETCHER. Department of Agricultural and Applied Economics, The University of Georgia, Griffin, GA 30223-1797.

World trade liberalization and domestic debate over the 1995 Peanut Title symbolize that the U.S. peanut industry is entering a new era characterized as a more open market economy. To understand the competitive advantage and disadvantage of U.S. peanuts in the international and domestic market, this study analyzed economic costs, per acre yield, and net returns to farm management and risk using a nonparametric statistical method for the U.S. and its export rival, China, over the 1988-93 period. Results based on official statistics and primary surveys indicate that economic costs in peanut production was significantly higher for the U.S. than for China. While U.S. peanut production was capital intensive due to the large expenses of using and maintaining peanut farm equipment, Chinese peanut production was labor intensive because of its abundant cheap labor. U.S. peanut production tends to have larger expenses in seed, chemicals, and other expenses than Chinese peanut production. There was no statistical difference in per acre yield at the national average between the U.S. and China, but per acre yield was significantly higher for Shandong province in China than the Southeastern region in the U.S. Peanut production was more profitable using domestic prices in the U.S. than in China if quota rent and land value were excluded from U.S. economic costs (because land value and quota rent did not exist in China). However, no statistical difference in the net returns based on the Rotterdam world shelled peanut prices was found between the U.S. and China if quota rent and land value were excluded from U.S. economic costs. All this taken together suggests that the U.S. peanut industry is competitive relative to China's peanut industry in terms of net returns to farm management and risk if land value and quota rent were not included. Otherwise, U.S. peanut production is not as competitive as Chinese peanut production. The U.S. peanut industry has a competitive advantage in the infrastructures of production, processing, and transportation, while China's peanut industry has a competitive advantage of free land and cheap labor in peanut production. Improving production economic efficiency and reducing production costs should be a primary focus for the American peanut growers and processors in order to ensure a competitive position in the world and domestic market.

Extension Technology/Entomology

Development and Validation of a Method to Determine Relative Risk of Losses Due to Tomato Spotted Wilt Virus in Peanut. S. L. Brown*, and J. W. Todd, Entomology Department, A. K. Culbreath and B. Padgett, Plant Pathology Department, The University of Georgia, Tifton, GA 31793.

In Georgia, losses due to tomato spotted wilt virus (TSWV) have increased since the disease was first diagnosed in 1986. Aside from the moderate resistance seen in Southern Runner and more recently in Georgia Browne and Georgia Green, there have been no reliable control measures for TSWV. While insecticides may mitigate secondary spread by thrips, they are ineffective at reducing primary spread, which appears to be the most important method of transmission. While research has failed to find a single solution to the TSWV problem, several production practices have been shown to affect the incidence of TSWV in peanut fields. In addition to varietal resistance; planting date, at-plant phosphate applications, geographic locations within Georgia and volunteer plant population have been observed to influence incidence of TSWV. Some of these practices appear to have more impact than others. The University of Georgia TSWV Risk index attempts to identify the relative risk of TSWV losses associated with a given combination of production practices. It is intended to be used as a planning tool for growers concerned about TSWV losses. If a grower determines that his production plan is at high risk for TSWV, the index can be helpful in making adjustments that will lower his level of risk. Although individual components of the index are supported with research data, the index itself has not been validated. Validation will begin in 1996. Small plot research at Tifton and Attapulgus, Georgia and at Marianna, Florida will test the interaction of various index components. Also, observation of TSWV incidence and yield will be made at 30 - 40 randomly selected fields and regressions will be performed to analyze how well risk index values correlate with field observations. Adjustments in the index will be made as necessary.

Performance of EXNUT in Scheduling Irrigation for Peanut Production in North Carolina. *W. J. GRIFFIN, Jr., J. I. DAVIDSON, Jr., R. WILLIAMS, M. C. LAMB, J. POWELL, and G. SULLIVAN. Bertie County Extension Service, Windsor, NC 27983, USDA, ARS, NPRL Dawson, GA 31742, FSIS, Dawson, GA 31742, Dept. Agricultural Economics and Rural Society, Auburn University, Auburn, AL 36849, UGA, Dawson, GA 31742, and Crop Science Dept., NC State, Raleigh, NC 27695.

The GA version of EXNUT was modified for NC conditions and evaluated on 22-28 peanut fields during crop years 1993, 1994, and 1995. Excellent results were obtained. An average yield of 3940 lbs/A was obtained for 22 fields during crop year 1993 that had an expected attainable yield of 4000 lbs/A. Yields for non-irrigated fields averaged 2082 lbs/A. Based upon the results of crop year 1993 the EXNUT program was modified to initiate the first irrigation at 45 days after planting which was a ± 5 day difference than prescribed by the 1993 version. Modifications were also made to delay the second drying out period by 3 weeks. Average yield for 1994 for 22 fields having an expected attainable yield potential of 4000 lbs./A was 4673 lbs./A as compared to 3142 lbs./A for non-irrigated fields. Prior to crop year 1995, soils were grouped into 3 classes (sandy, medium, heavy) instead of 2 classes (sandy, medium-heavy). A Windows based program was developed to improve user friendliness. During crop year 1995, yields on 28 fields managed by EXNUT having expected yield potentials of 3000-4000 lb./A averaged 4086 lbs./A as compared to 2432 lbs./A for non-irrigated fields. Cost of running the program was estimated at $3.71/A. Analysis of the data indicates that EXNUT can be improved by including one to two additional drying out periods to provide better control of cool, wet weather pests such as sclerotinia, CBR and southern cornroot worm. Estimates of cost benefits and risk assessments for each recommendation are also being introduced in the program. This three year study is good example of how technology contained in expert systems can be transferred and expedited through the close cooperation of research, extension and users.

The Virginia Peanut/Cotton InfoNet for Electronic Transfer of Crop Advisories and Other Management Information. S. H. DECK*, and P. M. PHIPPS, Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437.

The Peanut/Cotton InfoNet, an electronic bulletin board system (BBS), was developed, tested and made available to the public during the 1995 growing season at the Tidewater Center in Suffolk. Information on the BBS included EnviroCaster® weather station data, frost advisories, and weekly corn earworm counts. EnviroCaster units supplied early leaf spot advisories, sclerotinia advisories, heat unit reports, crop maturation advisories and weather summaries to the BBS. A data processing computer at the Tidewater Center automatically retrieved weather station data at the conclusion of each day. This computer also maintained a running archive of weather data, prepared daily weather summaries, and uploaded information to the BBS computer. EnviroCasters were positioned at farm cooperator shops and were equipped to record air temperature, relative humidity, dew point, rainfall and soil temperatures at 5 and 10 cm below the soil surface. Eight of the twelve weather station sites were equipped with external modems, surge protectors and telephone service. Microsoft® Visual Basic computer language was used in conjunction with The Norton pcANYWHERE™ communication software to develop programs for data retrieval, processing, and transfer to the BBS. *Wildcat!*™ BBS software provided a user-friendly interface. The InfoNet was accessible by personal computers through a toll-free, in-state 800 number. The BBS was open to county agents from 15 May to 31 October and to the general public from 24 August through 31 October. There were a total of 60 county agent, grower, industry and unspecified users. The system logged 984 calls and 1678 file downloads to users. The mean user age was 39. The minimum age was 13 and maximum age was 63. For the 1996 growing season, more EnviroCaster weather stations will be brought online and the Peanut Production Guide will be available on the InfoNet. Marketing and training efforts for new users will also continue.

Fertilizing Peanuts in Consideration of the New Farm Bill. G.H. HARRIS*, J.A. BALDWIN and J.P. BEASLEY. Crop and Soil Sciences Department. University of Georgia, Tifton, GA 31793.

The reduction and freeze of the peanut quota price in the 1996 U.S. Farm bill has generated interest among growers in reducing input costs to remain competitive and profitable. Fertilization is one area where input costs can be saved. However, certain inputs and practices should not be eliminated. Therefore, wise decisions need to be made when adjusting peanut fertilization in consideration of the new farm bill. An extension education program was developed that identifies fertilizer inputs and practices that can reduce production costs without sacrificing yield and quality. This program was presented at grower meetings in context of an overall fertilization strategy. Fertilizer inputs and practices evaluated in the strategy include: 1) soil testing, 2) P and K fertilization, 3) soil pH and liming, 4) inoculation, 5) pegging zone calcium test, 6) boron fertilization, and 7) tissue testing. Growers are encouraged to soil test once a year. According to a 1993 survey of Georgia peanut farmers, 70 % soil sample every year. If soil test P and K are maintained at levels adequate for other crops in rotation, direct fertilization of these nutrients to peanut is not recommended. Maintaining proper soil pH with lime and inoculating if out of peanut four years or more should also eliminate any need for nitrogen fertilizer. Applying lime after deep turning and before planting can provide both a soil pH adjustment and calcium to the pegging zone. A pegging zone calcium test is recommended for every peanut field in Georgia. However, the 1993 survey showed that only 27 % of the peanut acreage in Georgia was tested for pegging zone calcium, while 53 % received applications of landplaster. Including boron in pre-bloom fungicide sprays is recommended as an economical and convenient method of providing this essential nutrient. Sulfur sprays, however, are currently discouraged due to lack of fungicidal or nutritional benefits. Tissue analysis during the season is encouraged for checking the nutritional status of the peanut crop and correcting any deficiencies, especially micronutrients. The success of this program will be evaluated in part by results of another survey conducted after the 1995 growing season. Questions concerning liming after deep turning, P and K fertilization, sulfur sprays and use of poultry litter have been added to the new survey.

Peanut Fungicides: Effect on Defoliating Insects. R. E. LYNCH, USDA-ARS, Insect Biology and Population Management Research Laboratory, Tifton, GA 31793-0748

The fungicides chlorothalonil, tebuconazole, and propiconazole, commonly used for control of peanut diseases, were evaluated for activity against the corn earworm (*Helicoverpa zea* (Boddie)), fall armyworm (*Spodoptera frugiperda* (J. E. Smith)), and velvetbean caterpillar (*Anticarsia gemmatalis* Hübner). Two types of assays were used to evaluate the effects of the fungicides on insects. In the first, 'Florunner' peanut terminals were collected from the field, brought to the laboratory, and dipped in fungicide solutions before being fed to insects. In the second, fungicides were incorporated at different concentrations in the meridic diet of the insect, and neonate larvae were allowed to feed and develop on the diet. Chlorothalonil adversely affected early establishment and survival of neonates of all three insect species on peanut terminals. Chlorothalonil also decreased the weights of larvae of all three species at 10 days and extended the time to pupation for fall armyworm and velvetbean caterpillar larvae. Similarly, tebuconazole adversely affected early survival and establishment, decreased 10-day weights and extended time to pupation of corn earworm and velvetbean caterpillar larvae, but had little effect on fall armyworm larvae. Propiconazole had no effect on establishment and survival of corn earworm and fall armyworm larvae on peanut terminals, and actually increased weights of 10-day-old larvae. Orthogonal comparisons of the activity of five chlorothalonil-based fungicides against the fall armyworm showed that the activity was due to chlorothalonil rather than formulation. At concentrations used in the field, Bravo Ultrex was significantly more active against larvae of the fall armyworm than was a comparable concentration of Bravo 720. However, regression lines did not differ for the two fungicides for any of the developmental parameters measured when larvae of all three species were fed different concentrations of Bravo 720 and Bravo Ultrex in their meridic diet. These data suggest that chlorothalonil-based fungicides applied to peanut for disease control adversely affect establishment and development of corn earworm, fall armyworm, and velvetbean caterpillar larvae. The sterol-inhibiting fungicides propiconazole and tebuconazole were less active against these insects and may result in greater survival of lepidopterous larvae on peanut.

A Southern Corn Rootworm Risk Index for Determining the Need for Insecticide Treatment of Peanut Fields. D. A. HERBERT, JR.[1]*, W. J. PETKA[1], AND R. L. BRANDENBURG[2]. [1]Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437, and [2]Department of Entomology, North Carolina State University, Raleigh, NC 27695.

With cost of peanut production becoming more critical each year, efforts are increasing to develop least-cost programs for pest management. Management of southern corn rootworm (*Diabrotica undecimpunctata howardi* Barber) is a major expenditure for peanut producers in the Virginia-Carolina peanut area. Surveys conducted in the early 1990s indicated that about 90% and 50% of the total peanut acreage in Virginia and North Carolina, respectively, was treated with insecticide for rootworm, at a cost of almost $25 per acre. Research has shown that economic infestations are occurring on a much smaller portion of the acreage, and on many fields, producers are not recuperating treatment cost. An index has been developed to aid in determining the risk to rootworm damage and need for insecticide treatment. The index utilizes factors that affect pod damage and risk to pod damage and ranks these factors relative to the associated risk, as determined from past laboratory, greenhouse and field experiments. Numerical values indicating level of probable risk are assigned to each factor, and the levels within each factor. Risk factors and associated values include soil texture (loamy sand – 5, fine sandy loam – 15, loam – 30); drainage class (well drained – 5, moderately well drained – 10, somewhat poorly drained – 25, poorly drained – 20); cultivar susceptibility (resistant, NC 6 only – 5, susceptible, all other Virginia-type cultivars – 15); cultivar maturity rate (early – 5; medium – 10; late – 15); planting date (before April 25 – 5, April 26 to May 15 – 10, after May 15 – 15); and previous history of rootworm damage (no – 5, yes – 20). A cumulative value of ≤50 for a particular field indicates low risk, 55-85 indicates medium risk, and ≥90 indicates high risk to rootworm damage. A field can be indexed prior to planting so that, if necessary, insecticide can be applied in a timely manner.

ABOUND (ICIA5504): A New Fungicide for Peanut. S. H. NEWELL* and J. N. LUNSFORD, Zeneca Ag Products, Statesboro, GA and Enterprise, AL.

Abound (code number ICIA5504) is a new broad spectrum fungicide with a novel mode of action. The proposed common name is Azoxystrobin. Abound was synthesized based on the chemical structure of a group of naturally occurring fungicides called stobilurins found in various wood decaying fungi. Abound is a beta-methoxyacrylic acid derivative and the first fungicide to be developed from the strobilurin chemistry. Abound has a favorable toxicological, environmental and ecological profile. Abound has been shown to control many of the most important pathogens from all four major classes of pathogenic fungi: Oomycetes, Ascomycetes, Basidiomycetes and Deuteromycetes. In peanut Abound has shown excellent control of early and late leaf spot, white mold and Rhizoctonia peg rot. Abound will be formulated as an 80WG (wettable granule), with use rates ranging from 0.20-0.40 lb ai/acre applied as a foliar spray at early pegging (60 DAP) and again at nutfill (90 DAP). Full season applications for control of the peanut leaf spot complex with Abound at 0.2 lb ai/acre vs chlorothalonil at 1.0 lb ai/acre resulted in defoliation ratings of 2.5% for Abound vs 5.3% with chlorothalonil and untreated control had 70 % defoliation. For control of white mold, applications of Abound at 0.3 lb ai/acre at 60 DAP and 90 DAP resulted in 6.8 hits per plot vs 7.8 hits per plot for tebuconazole at 0.23 lb ai/acre applied 60, 75, 90 and 105 DAP. Peanut yields reflected the disease control ratings. Data from 11 trials gave chlorothalonil an average yield of 2260 pounds of peanuts per acre, tebuconazole applied four times an average yield of 3151 lbs per acre and Abound at 0.2, 0.3 and 0.4 lb ai/acre applied twice an average yield of 2884, 3230 and 3344 pounds of peanuts per acre, respectively.

Peanut Disease Control Programs with Cyproconazole. H. S. MCLEAN*, B. R. DELP, AND J. S. FICKLE. Sandoz Agro, Inc, Des Plaines, IL 60018.

Cyproconazole is a triazole fungicide that has been field tested throughout the Peanut Belt since 1986. Excellent control of early leafspot, late leafspot, peanut rust, Southern blight, and Rhizoctonia limb rot has been consistently observed with almost all application programs. Control of soilborne diseases requires higher rates of cyproconazole compared to foliar diseases. Two primary application systems have been developed for commercialization. A traditional scheduled, 14 day spray interval with seven or more applications beginning 30 to 45 days after planting and continuing until 14 days prior to harvest is an excellent system for applying cyproconazole. The minimum rate of cyproconazole required for foliar disease control and soilborne disease suppression is 0.055 pounds active ingredient per acre (lbs. ai/A). Rates of cyproconazole should be increased to 0.088 lbs. ai/A to provide optimum control soilborne diseases. Full season application of cyproconazole regardless of rate should always include a tankmix of chlorothalonil at a rate of approximately 0.55 lbs. ai/A. Tankmixing with reduced rates of chlorothalonil provides a solid resistance management strategy and has been shown to result in synergistic control of late leafspot. An alternative application regime uses two early season applications of chlorothalonil at full rate followed by a mid-season block of four applications at 0.154 lbs. ai/A cyproconazole followed by one application of the full rate of chlorothalonil. This regime provides excellent foliar and soilborne disease control, but requires a fixed number of applications to achieve resistance management compliance. Control of soil borne diseases is dependent on application timing and seasonal rate of cyproconazole. The maximum seasonal rate of cyproconazole is 0.62 lbs. ai/A. Cyproconazole may be used in advisory or forecast programs. However, delivery of the seasonal rate needed to achieve adequate soilborne disease control becomes more complicated due to the uncertain number of applications. The rate of cyproconazole should be adjusted to the expected number of applications. Regardless of application program, cyproconazole delivers excellent disease control with application flexibility. Consistent increases in peanut yield have been observed with cyproconazole throughout the testing program.

Grower Economic Benefits Associated with the use of Tebuconazole (Folicur ® 3.6F) Fungicide on Peanut. R. D. RUDOLPH, Bayer Corporation, Atlanta, GA, 30349

Control of the peanut leaf spot pathogens *Cercospora arachidicola* Hori and *Cercosporidium personatum* (Berk. & Curt.) Deighton and the soil-borne diseases *Sclerotium rolfsii* Sacc. (southern stem rot) and *Rhizoctonia solani* Kuehn AG4 (limb rot) are well documented benefits growers receive from using Folicur 3.6 F fungicide. Yield increases exceeding 500 lbs/A and improved grade (SMK+SS) averaging 2% has also been commonly reported following Folicur 3.6F treatment. Calculations of potential grower returns on investment indicate a significant increase in net crop value per acre after adjusting production costs to include increases associated with treatment cost and increased costs associated with harvesting, drying and selling more pounds of peanuts per acre. The four application block spray Folicur 3.6F treatment between chlorothalonil applications theoretically should return over $100 per acre with a 500 pound per acre yield increase (based on $0.30 per pound). Calculations were done using data from the 1996 South Georgia Crop Enterprise Cost Analysis. Actual field data correlate closely with the calculated net returns per acre. In six years of Clemson University testing, an average yield increase of 518 pounds per acre has resulted in net returns of $181.00 more than the standard Bravo program. A three year University of Georgia study indicated a $284/A advantage for the Folicur program, with yield increased 758 lbs/A and grade improved 1.6% compared to full season Bravo. Eight tests by Texas A&M University since 1991 suggest a $258/A advantage for a Folicur program of 3 or 4 applications per year. Grower benefits are directly related to improved disease control resulting in improved yield and grade. These factors result in a reduction in the cost of producing a ton of peanuts and increased grower profits when the four application block spray of Folicur 3.6F is used. The 1996 introduction of Folicur CL improves the economic situation for growers by increasing disease control and yields without increasing fungicide costs in comparison to the four application block spray Folicur 3.6F program currently in use. University tests indicate 15% less leaf spot incidence, 29% less white mold incidence, and 5.6% better yields with the full season Folicur + chlorothalonil tank-mix. Economical leaf spot resistance management is another benefit of Folicur CL that growers will realize.

Evaluation of Fungicide Treatment Rates for the Control of Stem Rot on Two Peanut Cultivars. J. F. HADDEN*, ISK Biosciences Corporation, Omega, GA 31775 and T. B. BRENNEMAN, Dept. of Plant Pathology, Coastal Plain Experiment Station, Tifton, GA 31793.

Recently several peanut cultivars have been released that show an increased level of resistance to infection by *Sclerotium rolfsii*. Field studies were conducted in 1994 and 1995 to evaluate the comparative efficacy of various rates of fluazinam 500F for the control of stem rot on cultivars with different inherent levels of resistance. The cultivars, Florunner and Georgia Browne, were planted in mid-May and treated with fluazinam 500 F (0, 0.33, 0.67, 1.0, 1.33, 1.67, 2.0, 2.33, and 2.67 pt/A) at 50 and 80 days after planting. The incidence of stem rot (SR) was higher in Florunner as compared to Georgia Browne with a range of 11.0 - 59.5 disease loci/ 100 row ft and 4.5 - 23.5 disease loci/ 100 row ft, respectively. A negative linear relationship between disease incidence and dosage was observed in both test years for both cultivars. For Florunner, regression equations were SR = -9.3X+ 57.8 in 1994 and SR = -8.0X+ 34.0 in 1995 with r = 0.95 and r = 0.96, respectively. For Georgia Browne, regression equations were SR = -3.5X + 22.6 in 1994 and SR = -2.7X+ 11.9 in 1995 with r = 0.95 and r = 0.73, respectively. In 1994, no significant effect of dosage on yield was observed with either cultivar. In 1995, regression of yield vs. dosage gave the regression equations were Yield = 256X + 2378 and Yield = -114X + 3192 for Florunner (r = 0.87) and Georgia Browne (r = 0.77), respectively.

Maintaining Leaf Spot and Soilborne Disease Control while Managing for Leaf Spot Resistance: Options with an Echo + Folicur Tank-mix. A. ASSAD*. Sostram Corporation, Roswell, GA 30376.

The introduction of sterol inhibiting fungicides like Folicur (tebuconazole) into the peanut industry created an awareness of resistance management. The peanut leaf spot diseases, *Cercospora arachidicola* Hori and *Cercosporidium personatum* (Berk. & Curt.) Deighton have already shown the ability to develop resistance to fungicides with a single site mode of action. Since no evidence of DMI resistance in peanut leaf spots exists, resistance management is an important concept for growers to adopt immediately. Options available include using fungicides of different chemistry and modes of action as alternate applications, block spray alternate applications, or tank-mixes. The protectant fungicide Echo (chlorothalonil) and the systemic fungicide Folicur are excellent partners for any of these resistance management strategies. Maintaining the control of the soilborne diseases *Sclerotium rolfsii Sacc.*(white mold) and *Rhizoctonia solani* AG4 (limb rot) with Folicur is an important part any leaf spot resistance management program. Alternate sprays, alternate block sprays, and tank-mixing of Echo and Folicur have all provided excellent control of *C. arachidicola, C. personatum, S. rolfsii,* and *R. solani.* Data from 15 University trials in Georgia and Florida during 1994-1995 indicate a slight, non-significant, performance advantage for the full season tank-mix option . Echo + Folicur full season had 29% less white mold incidence and 5.6% (192 lbs/A) better yields than the corresponding amounts of active ingredient applied as alternate blocks of Echo (applications 1,2,7) and Folicur (applications 3-6). Echo + Folicur as a tank-mix is an excellent option to manage fungicide applications for avoiding or delaying leaf spot resistance. In 1996, Sostram Corporation and Bayer Corporation jointly introduced Folicur CL to increase grower awareness of resistance management and to facilitate grower acceptance of tank-mixing. A single package contains both Folicur and chlorothalonil.

Control of Rhizoctonia Pod Rot of Peanut with Tebuconazole (Folicur 3.6F). D. A. KOMM. Bayer Corporation, 8313 Bells Lake Rd., NC 27502.

Folicur 3.6F is known to control *Rhizoctonia* limb rot caused by *Rhizoctonia solani* Kuehn AG4 (RHIZSO) on peanut. Documentation of RHIZSO pod rot control by Folicur on peanut was previously unknown. RHIZSO pod rot is widespread on Virginia type peanuts in North Carolina and Virginia. In 1994 and 1995, tests were conducted to document Folicur efficacy against RHIZSO pod rot of peanut. In 1994, a demonstration comparing seven applications of 1.5 pts/A Bravo 720 on 14 day intervals to 1.5 pts/A Echo 720 (applications 1,2,7) and 7.2 fl oz /A Folicur 3.6F (applications 3-6) was evaluated for control of RHIZSO pod rot. The test was conducted using standard grower practices. In 1995, four tests were conducted utilizing a complete randomized block design with four replications. Treatments were applied with a CO_2 backpack sprayer with a hand- held boom with D2-13 hollow cone nozzles at 50 PSI and 15 gals/A. Folicur 3.6F at 7.2 fl oz/A + Induce at 8 fl oz/100 gal was applied in 2, 3, or 4 applications in a block spray in a seven application spray program. Echo 720 at 1.5 pt/A was used as needed (3 to 5 times) to fill the seven application program. Other treatments were, Bravo 720 at 1.5 pts/A, Moncut 50 WP at 0.6 lb/A + Bravo Ultrex 82.5 DF at 1.3 lbs/A, Folicur 3.6F at 7.2 fl oz/A + Echo 720 at 8 fl oz/A and an untreated. RHIZSO pod rot was evaluated by counting RHIZSO infected pods after digging. In one test, pods were counted before harvest by hand digging. Compared to the untreated, Folicur 3.6F at 2, 3, or 4 applications provided 80, 82, and 87% control of RHIZSO pod rot with yields of 3750, 4040, and 4103 lbs/A respectively. Folicur + Echo had similar results to Folicur alone. Bravo Ultrex 82.5 DF + Moncut provided 55% control of RHIZSO pod rot with a yield of 3670 lbs/A. Bravo 720 had 20% control with a yield of 2795 lbs/A. In tests with high levels of RHIZSO, there was a yield increase of 200 to 300 lbs/A for each application of Folicur as applications increased from two to four. Hand dug RHIZSO pod counts were 2 to 10 fold higher than counts on mechanically harvested peanuts. In the 1994 test , SMK was 75% for FOLICUR and 74% for Bravo. Folicur had excellent control of RHIZSO. Counting RHIZSO infected pods on plants after digging was an accurate method for rating for RHIZSO pod rot.

Physiology and Seed Technology

<u>Response of Georgia Red Peanut to CO_2 Enrichment when Grown in Nutrient Film Technique (NFT), or in Combination with a Solid Substrate</u> . D.G. MORTLEY*, J.H. HILL, P.A. LORETAN, C.E. MORRIS, P.P. DAVID, AND A.A. TROTMAN. G. W. Carver Agricultural Experiment Station, Tuskegee University, AL 36088.

'Georgia Red' peanut was grown in reach-in growth chambers to determine response to CO_2 enrichment. The CO_2 treatments were ambient (400 ppm) and 700 ppm. Growth chamber conditions included 700 umols m^{-2} s^{-1} irradiance, 28/22C, 70% RH, and 12/12 h photoperiod. Four standard Tuskegee University nutrient film technique (NFT) channels (Gray PVC-1 with dimensions of 0.15 x 0.15 x 1.2 m) were used in each treatment. Four 2-week old seedlings were transplanted in each growth channel supplied by a modified half strength Hoagland nutrient solution. Commercial JiffyMix was placed to a depth of 7.5cm in the gynophore zone at the onset of flowering for NFT+aggregate grown plants. Beginning 21 days after planting (DAP) and every 2 weeks thereafter, the second leaf from the growing axis (main stem) was detached to determine CO_2 effect on leaf area and dry weight. Plants were harvested 97 DAP, at which time total leaf area, leaf number, plant and root weights in addition to pod production data were taken. Results show a definite enhancement of growth from CO_2 enrichment. Number of pods/plant, pod fresh and dry weight, fibrous root and plant dry weight were higher with increased CO_2 compared to ambient grown plants. Number of leaves/plant and total leaf area/plant were higher for ambient grown plants compared to those under enrichment. Generally, area per leaf increased for all plants with time regardless of enrichment except that the magnitude was greater with enrichment. Dry weight per leaf also increased up to 42 DAP and seemed to decline thereafter. Specific leaf area (SLA) tended to decline with time regardless of enrichment. Seed yield was higher for plants grown in NFT supplemented with JiffyMix than without, regardless of enrichment.

<u>Effects of Temperature on Vegetative and Reproductive Growth of Peanut</u>. K. J. BOOTE. Agronomy Department, University of Florida, Gainesville, FL. 32611-0500.

Seasonal variation in temperature has important effects on peanut growth and yield. Therefore, literature review, model analysis, and experiments were conducted to evaluate effects of temperature on peanut growth processes, life cycle, and pod yield. Experiments were conducted on Florunner peanut sown in four temperature-gradient greenhouses (TGGs) controlled to near-ambient temperature and at +4.5 C above ambient temperature, and also in natural, outside field plots. At 2 to 3 day intervals, plants were observed for dates of flowering, beginning peg, and beginning pod (50% occurrence of these phenological events). During summer, temperature was already quite warm in the coolest end of the TGGs and increasing temperature by 4.5 C did not accelerate time to first flower. Surprisingly, elevated temperature consistently delayed time from flowering to beginning peg and beginning pod. Outdoor plants were cooler and were delayed 3 to 6 days in life cycle stages. Plants were sampled every 1-2 weeks for vegetative stage, plant height, leaf area, and plant biomass. Peanut plants grown in the TGGs were warmer and grew more rapidly, with taller and larger plants than outside. Within the TGGs, the 4.5 C higher temperature treatment caused greater early plant growth, greater leaf area expansion, and greater node production. However, by final harvest at 146 days, there was no significant temperature enhancement of total biomass, but there was a major 47% decrease in pod yield caused by the higher temperature. Pod harvest index decreased from 0.48 to 0.26 for the 4.5 C increase in temperature. The normal Florida field environment is probably just on the verge of damage to pod yield during hot weather seasons. The PNUTGRO model was used to evaluate temperature effects on life cycle, biomass accumulation, pod yield, pod harvest index, and seed size. Simulations were compared to experimental data and to literature reports on peanut response to temperature. Based on our results and on published literature, the PNUTGRO model was further modified to account for above-optimum temperature effects on partitioning to pods versus vegetation.

Influence of Kernel Size and Maturity on Peanut Seed Quality. J. F. SPEARS. Department of Crop Science, North Carolina State University, Raleigh, NC 27695-7620.

The most common means of upgrading commercial peanut seed lots is to remove the small immature seed using a series of screens. The indeterminate growth of peanut, however, leads to immature seed that are frequently the same screen size as mature seed. This study was initiated to determine the individual and combined effects of kernel size and maturity on the quality of large-seeded virginia-type peanut seed. VA-C 92R peanuts, harvested in 1993 and 1994, were separated into maturity classes based on hull mesocarp color: yellow (Y) pods were immature, followed by orange (OR), brown (BR), and finally black (BL) as pods reach maturity. Seed within each maturity class were further separated by size, using a series of slotted screens with perforations ranging in size from 7.1 to 9.6 mm wide x 19 mm long. Seed weight and quality were slightly higher for peanuts grown in 1994 than those produced in 1993. Regardless of the year of production, seed weight, germination, and vigor increased significantly as the peanut crop matured. Seed of the same screen size but different maturity levels differed significantly in weight, germination, and vigor. The weight of seed produced in 1993 for seed of size 7.9 mm was 576, 698, 769, and 874 mg/seed for Y, OR, BR, and BL pods, respectively. Germination of 7.9 mm seed was 30, 32, 40, and 84% for these respective maturity classes. Seed vigor, as measured by conductivity of seed soak water, showed a similar response. Seed of size 7.9 mm from Y, OR, BR, and BL pods, had conductivity values of 126, 93, 92, and 38 μmhos/cm/g, respectively. The weight of size 7.9 mm seed produced in 1994 was 670, 730, 810, and 851 mg/seed for Y, OR, BR, and BL pods, respectively. Seed germination for the same size seed was 70, 88, 98, and 100%, while conductivity was 87, 56, 39, and 27 μhos/cm/g. Similar results were found with seed of size 7.1, 8.6, and 9.6 mm. This study clearly shows that seed of the same screen size can vary in seed weight, germination, and vigor potential, depending upon the maturity level of the seed. Immature seed that are the same screen size as mature seed, weigh less and have lower germination and vigor potential.

Comparison of Climatic and Geographic Features of Existing and Potential Peanut Growing Areas in Northwest Texas. A. M. SCHUBERT. Texas A&M University Agricultural Research & Extension Center, Lubbock TX 79401-9757.

Climatic and geographic features for selected sites in northwest Texas were compared and contrasted. Climatic features compared included air temperature extremes, patterns of peanut heat unit (PHU) accumulation, and soil temperatures. PHU accumulation is featured in this presentation. Geographic features compared included latitude and elevation. Some of the sites studied have had peanut production for many years. Some sites in northwest Texas experienced large increases in peanut acreage during the 1980's and early 1990's and increases are predicted in other areas. There was little difference in accumulated PHU's when calculated using instantaneous versus hourly average air temperatures, because of the 95 F ceiling used for peanut. Research by other scientists has indicated changes in the physiology of the peanut plant following extended periods of night air temperatures below 50 F. Others have reported that heat units have less relevance during periods when there are many hours with temperatures lower than the base temperature for that crop. We found marked differences in accumulated PHU's calculated using actual daily minimum air temperatures and those calculated with the 55 F lower limit commonly used. Differences became more pronounced where late season night temperatures were coolest. For example, there was a 129 PHU-difference in October 1995 alone at the coldest site. Latitude is often used in comparing existing and potential production sites. This research compared the relationship of elevation, as well as latitude, to climatic data important to peanut production decisions. For example, a 778 PHU difference accompanied a 1700 ft elevation change at similar latitudes, while a 326 PHU difference accompanied a 1°21' latitude change at similar elevations during the period 01 May to 31 Oct 1994. PHU accumulation patterns for several years indicated that 15 May is the latest that runner peanuts can be planted at most northwest Texas sites, while 01 May is more appropriate in some areas. The coldest site (34°13' N, 3500' el) appears to be unsuitable for production of current runner cultivars.

Plant Pathology

Beyond Southern Runner: The Next Generation of Field Resistance to Tomato Spotted Wilt Virus. A. K. CULBREATH*, J. W. TODD, D. W. GORBET, W. D. BRANCH, and F. M. SHOKES. Coastal Plain Experiment Station, Tifton, GA 31793, and North Florida Research and Education Center, Marianna, FL 32446.

Epidemics of spotted wilt, caused by tomato spotted wilt tospovirus (TSWV), were monitored in peanut (*Arachis hypogaea* L.) breeding lines from Georgia and Florida at Attapulgus, Georgia in each year during 1990 through 1995 and at Marianna, Florida in 1994 and 1995. Among genotypes evaluated were breeding lines that have been released as cultivars, Georgia Browne and Georgia Green. Both of these cultivars have levels of field resistance to TSWV similar to that found in the resistant cultivar Southern Runner. With the increase in severity of spotted wilt epidemics in 1995, additional breeding lines were identified that have levels of resistance to TSWV at least as good as Southern Runner. In replicated plot tests in 1995, final incidences of spotted wilt were 51.1, 29.5, 48.1, 28.8, and 27.6% (LSD = 12.2) at Attapulgus, and 86.7, 72.4, 72.3, 62.6, and 44.6% (LSD = 19.8) at Marianna for Florunner, Southern Runner, GA T-2844, UF 91108, and F 84x9B-4-2-1-1-2-b2-B, respectively. Final severity ratings were 41.3, 12.5, 32.9, 12.1, and 12.9% (LSD = 8.8) row feet affected at Attapulgus, and 79.6, 46.3, 48.8, 27.5, and 20.0% (LSD = 15.1) row feet affected at Marianna for those respective genotypes. Across two separate tests, in 1995, final incidences in Florunner, Southern Runner, GA 931305, F 79x4-6-2-1-1-b3-B-Z16-b2-B, and F 84x23-11-1-1-1-b2-B were 62.8, 38.2, 47.2, 43.5, and 30.5% (LSD = 11.4) respectively. Final severity ratings for those respective genotypes were 51.3, 21.5, 25.0, 17.3, and 12.1% (LSD = 10.6) row feet affected. Results from tests in 1995 with high spotted wilt intensity indicate that there is potential for development of additional peanut cultivars with field response to TSWV as good as or possibly better than that of Southern Runner.

Molecular Characterization of Tomato Spotted Wilt Tospovirus Isolates in Georgia. H.R. PAPPU*[1], A.K. CULBREATH[1], AND J.W TODD[2]. Departments of [1]Plant Pathology and [2]Entomology; University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793-0748.

Tomato spotted wilt tospovirus (TSWV), a member of the genus *Tospovirus* of family *Bunyaviridae*, has become a major constraint to peanut production in Georgia. The disease epidemics in Georgia can be largely attributed to the presence of two vector species, *Frankliniella occidentalis* (Pergande) and *F. fusca* (Hinds). The fact that the virus multiplies in its insect vector makes managing the disease even more difficult. A multidisciplinary approach is being pursued in understanding the virus biology, molecular biology, epidemiology and host resistance with a view to developing an effective disease management program. Little or no molecular information is available on the various strains of the virus that infect peanut, tobacco, and vegetables in Georgia. Symptomatic peanut leaf samples were collected from various parts of the state and also from north Florida and Alabama. Total nucleic acid extracts were prepared and the nucleocapsid protein genes (N gene) of the TSWV isolates were obtained by reverse transcription-polymerase chain reaction. The N genes were either directly sequenced or cloned into pUC118 vector prior to sequencing. The N gene was 775 nucleotides long and can potentially code for a 258 amino acid protein, which was in agreement with previously reported TSWV isolates. Western blot analysis of TSWV-infected peanut leaf tissue confirmed the size of the N-protein. Comparison of the N gene sequences of peanut isolates with those reported from other parts of the world and those that infect flue-cured tobacco, and tomato in Georgia showed a high degree of similarity (94 to 99%) at both nucleotide and amino acid levels.

Effect of Time Interval prior to Rainfall on the Efficacy of Tebuconazole against *Cercosporidium personatum*. S. TAYLOR*. Bayer Corporation, Stilwell, KS 66085

During wet summers peanut farmers often have only a narrow window of time in which to make fungicide applications. It has been documented that efficacy of tebuconazole (Folicur 3.6 F ™ Bayer Corporation) against soilborne fungi is enhanced when plants are irrigated or receive rainfall shortly after application. However, the effect immediate rainfall or irrigation has on efficacy against foliar diseases is not known. Therefore, a chemical assay was conducted to determine the amount of tebuconazole that is dislodged by simulated rainfall. A greenhouse bioassay was also conducted to determine what effect the loss of dislodged tebuconazole has on the control of late leaf spot (*C. personatum*). Potted peanut plants were treated with a tank-mix combination of Folicur 3.6 F (3.24 ounces tebuconazole/acre) and the adjuvant Induce (™ Helena Chemical Company, 0.5 pint/100 gallons). Plants were treated with Folicur 4 hours, 2 hours, 1 hour, 0.5 hour, or immediately prior to receiving 0.5 inch simulated rainfall. Additional plants, which did not received simulated rainfall, were treated with chemical at the same time as the rain-treated plants. All plants were harvested and then analyzed for gross tebuconazole residues. Samples subjected to rain 1, 2, and 4 hours after treatment contained higher levels of tebuconazole compared to samples that received rain 0.5 hour and immediately after treatment. With the exception of drying times, the application and rainfall methods for the chemical assay were duplicated for the greenhouse bioassay. Bioassayed plants were treated with Folicur 4 hours, 3 hours, 2 hours, or 1 hour prior to receiving rainfall. Comparative treatments of chlorothalonil (Bravo 720 FL ™ ISK Biotech Corporation), applied at 18 ounces a.i./acre, were also included. Plants were inoculated with a conidial suspension of *C. personatum*. After three weeks incubation, the number of leaf spot lesions per plant was recorded. With the exception of the plants that were treated with tebuconazole 1 hour prior to receiving rain, no differences were observed between the tebuconazole and chlorothalonil treated plants, regardless of rain treatment. The tebuconazole loss from plants receiving less than 2 hours drying time reduced efficacy by approximately 22%. Two hours or more of drying time following tebuconazole applications appear to be ideal when controlling foliar diseases.

Evaluation of Folicur 3.6F for Stem Rot Management on Four Valencia Cultivars. G.B. PADGETT*, T.B. BRENNEMAN, AND W.D. BRANCH. Dept. of Plant Pathology and Crop and Soil Sciences, Cooperative Extension Service and Coastal Plain Experiment Station, University of Georgia, Tifton, GA 31973.

Tests were conducted during 1994 and 1995 to evaluate the effectiveness of Folicur 3.6F (tebuconazole) for stem rot (*Sclerotium rolfsii*) management in four Valencia peanut (*Arachis hypogaea* L.) cultivars (New Mexico Valencia A, New Mexico Valencia C, Valencia McRan, and Georgia Red). Folicur was applied two or four times (252 g a.i./ha/application) to two row plots (1.8 x 7.6 m) on 6, 20 July and 3, 17 August in 1994; and 27 June, 12, 27 July, and 10 August in 1995. The test was treated with chlorothalonil for leaf spot management according to Georgia Extension Service recommendations. A CO_2-charged back pack sprayer delivering 186 l/ha, configured with three D2-23 nozzles per row was used to apply Folicur treatments. Treatments were arranged as a randomized complete block design with four replicates. Stem rot pressure was most severe in 1995. While overall stem rot incidence was not as high in 1994 as in the 1995 test, stem rot incidence was reduced in all four cultivars by the four application Folicur treatment. In 1995, compared to the nontreated controls, Folicur did not significantly reduce stem rot incidence in New Mexico Valencia A, New Mexico Valencia C, and Georgia Red; however, levels of stem rot were reduced ($P=0.05$) in Valencia McRan. In the 1994 test, yield increases were recorded in Georgia Red and Valencia McRan with the four application Folicur treatment. Folicur also increased yields in 1995 in Georgia Red, New Mexico C, and Valencia McRan cultivars. These results indicate that Folicur is beneficial in reducing stem rot and increasing yields of valencia-type peanut cultivars.

Occurrence of Pod Rot Diseases in North Carolina. J. E. HOLLOWELL* and M. K. BEUTE.
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Incidence of pod rot diseases has been an important aspect of peanut production in NC during the last three decades. Changes in cultural practices appeared to have minimized losses in years since 1979. A multiyear study was initiated to determine whether a resurgence of pod rot diseases was occurring state-wide, as several growers have recently suggested, and whether changes in tillage practices contribute to pod rot incidence. A preliminary survey was made of selected farms in the fall of 1994 to identify specific pod rot pathogens associated with problem fields. From collected partially-rotted pods, 50 pods per field were assayed to identify various pod-rotting pathogens. Isolations for pathogens were attempted by cutting three small pieces (1 cm^2) from every pod and placing one piece each on semi-selective medium for isolation of *Pythium, Rhizoctonia,* and *Cylindrocladium*; the remaining portion of the pod was incubated in a plastic chamber for recovery of *Sclerotium rolfsii* and *Sclerotinia minor*. *Rhizoctonia* spp. were identified from all 15 fields (26% of total pods); *Pythium* spp. had 25% incidence; *Cylindrocladium* 17% incidence; *S. rolfsii* 2% incidence; and *S. minor* 1% incidence. Combinations of pathogen-types were identified in 12% of rotted pods. The most frequent association occurred with *Pythium* and *Rhizoctonia*. In 1995, 55 farms from 11 peanut-growing counties were surveyed for incidence of pod rotting; pods were collected and pathogens isolated as described above. As in 1994, *Pythium* and *Rhizoctonia* continue to be the major causes of pod rotting in NC, although pod rot incidence, caused by either or both pathogens, varied widely between farms. Five farms had a predominance of *Cylindrocladium* pod rot. Incidence of pod-rotting ranged from <1% to 25% across the 55 farms; the average rotting observed for all fields surveyed was 6.5%. Although the fungicide Folicur (tebuconazole) is promoted as a potential control of peanut pod rotting, our data indicates that 27 growers who used Folicur actually had a slight increase in pod rot incidence (7% average incidence vs. 5.6% with no Folicur). Incidence of *Rhizoctonia*-induced pod rotting, however, was reduced slightly by use of Folicur; the increase in pod rot on these farms resulted from increased incidence of *Pythium* in pods.

Evaluation of Fungicides for Peanut Pod Rot. A. S. CSINOS* and W. D. ROGERS.
Department of Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793-0748 and Bayer Corporation, Tifton, GA.
A randomized complete block plot design with six replications was used to evaluate the effect of chlorothalonil, tebuconazole and metalaxyl on the reduction of peanut pod rot. Pod rot levels on 'NC-V11' were established by band application of $CaSO_4$ at 1120 kg/ha at flowering, no soil amendment, and $MgSO_4$ at 1120 kg/ha at flowering in order of increased pod rot severity. Fungicide treatments were chlorothalonil at (1.26 kg/ha) full season, chlorothalonil for sprays 1, 2 and 7 plus tebuconazole at (0.23 kg/ha) for sprays 3-6, and chlorothalonil at 1.26 kg/ha for sprays 1, 2 and 7 and tebuconazole and metalaxyl at 0.14 kg/ha tank mixed for sprays 3-6. All applications of tebuconazole were accompanied by a nonionic surfactant. Statistical analysis across fungicide treatments indicated a pod rot increase and yield decrease with $MgSO_4$ and a decrease in pod rot with $CaSO_4$ compared to no soil amendment. None of the fungicide treatments reduced pod rot, but a trend in reduction was noted with the use of tebuconazole. Yields across soil amendments were increased with the use of tebuconazole, although numbers of disease loci of *Sclerotium rolfsii* were not different among treatments. Isolations from pods yielded primarily *Rhizoctonia solani, Fusarium* spp. and *Pythium* spp. Effects of fungicides for soilborne disease control were minimized by the extreme heat and drought.

Effects of Crop Rotation and Aldicarb on Northern Root-Knot Nematode and Peanut Pod Yield.

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Crop rotation systems were compared at Ft. Cobb, OK from 1991 - 1994. The systems consisted of continuous cropping of 'Tamspan 90' (T-90), T-90/rotational crop (RC)/T-90, and RC/RC/T-90. The rotational crops were grain sorghum (GS), wheat (W), and sudan (S). In 1995, all plots were cropped to T-90, and one half (sub-plot) of each was treated with aldicarb nematicide in a band at planting (1.7 kg ai/ha). Soil samples were acquired each year before planting and at late season to determine the population densities of *Meloidogyne hapla*. Nematodes were extracted using a modified Christie-Perry method. Plant vigor and the severity of galls on peanut roots were also assessed. In 1993, (at the end of the peanut crop season), nematode population densities were higher (181/100 cm^3 soil) in the continuous peanut cropping system than in two-year (not detectable) and one-year (0 - 3/100 cm^3 soil) rotations (P = 0.05). In 1994, nematode population densities increased on peanut to high levels (151 - 718/100 cm^3 soil) in the following cropping systems: S/S/T-90, W/W/T-90, T-90/GS/T-90, and T-90/S/T-90. Low nematode population densities (2 - 15/100 cm^3 soil) were recovered from the cropping system of GS/GS/T-90, T-90/W/T-90, and T-90/T-90/T-90. These nematode population densities did not reduce yields in 1994. However, yields were reduced in 1995 since the aldicarb treatment increased pod yields (460 kg/ha), increased plant vigor by 31%, and decreased the severity of root galling by 38% (P = 0.05). Aldicarb also reduced the nematode population densities in the soil by 63%. Grain sorghum was the best rotational crop for *M. hapla* control, although all three rotational crops reduced nematode population densities. For fields with a history of *M. hapla*, increased nematode population densities are likely after one year of peanut. A rotational crop should be planted or a nematicide applied to avoid yield losses after one year of peanut.

Effects of Yellow Cornmeal on Control of Pod and Root Rotting Diseases of Peanut.

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Cornmeal from whole-kernel yellow dent corn when applied over peanut 30-50 days after plant has been shown to stimulate naturally occurring *Trichoderma* species. The *Trichoderma spp.* builds rapidly on the cornmeal and then feeds on and destroys certain species of *Sclerotinia*, *Sclerotium*, and *Rhizoctonia*, which cause pod, stem and root rots. In 1995, plots were planted in five widely separated areas of Texas in fields with a history of these diseases. Plots received cornmeal at the rate of 73.5 and 147 kg/ha at 45 and 75 days after plant with an easy- flow type fertilizer applicator. The 45 day after plant application timing produced yields and disease control statistically superior to the 75 day timing. Peanut value in all treated plots increased at last $200.00 per acre over untreated plots. The 147 kg/ha rate applied 75 days after plant produced the smallest yield increase of all rates and timings. *Rhizoctonia* spp. and *Sclerotinia minor* combined to produce an average of 17.5 infection sites per 30.8 meters of row in the untreated checks. All cornmeal treated plots ranged between 5.3 and 12.8 infection sites per 30.8 meters of row. *S. rolfsii* at two locations initially increased to 100% infection within 10 days after cornmeal applications. *S. rolfsii* was then parasitized by *Trichoderma spp.*, and at harvest did not cause a yield decrease below untreated controls.

Effect of Storage Duration on Seed Quality and Viability of *Cylindrocladium parasiticum* in Peanut Seed.

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Recent evidence that *Cylindrocladium parasiticum* (CP) can be transmitted through treated seed prompted this investigation to determine the effect of typical storage on the survival of CP in seed and to determine if CP affects seed quality. Seed were collected at digging, after air drying, and after combining from two North Carolina peanut fields highly infested with CP (Bertie Co., Chowan Co.). Seed (NC 7,VA-C 92R, respectively) were visually sorted into asymptomatic and speckled subsamples and analyzed for CP viability during drying and storage, and for seed quality during storage using standard germination and electrical conductivity. Survival of CP was analyzed by submerging surface disinfested (5% Clorox for 1 min.; sterile distilled water rinse for 1 min.; air dried) seed into reduced agar CBR medium. Germination tests were conducted following AOSA Rules for Testing Seed. Electrical conductivity measures seed vigor by assessing electrolyte leakage, an indication of membrane integrity. Electrical conductivity was measured on 10 replications of 10 seed soaked for 24 hrs in 75 ml distilled water at 25C. Survival of CP declined over time with a significant decline occurring during December for the NC 7 seed source and January for the VA-C 92R seed source. Speckled seed consistently yielded a higher percentage of viable CP, as earlier studies indicated. Speckled seed also had significantly higher electrical conductivity levels, indicating the vigor of the speckled seed to be significantly lower than the asymptomatic seed. Germination of speckled seed was lower, but not significantly lower than that of asymptomatic seed from the VA-C 92R seed source. The difference between speckled and asymptomatic seed from the NC 7source was significant.

Suppression of Cylindrocladium Black Rot of Peanut with Tebuconazole in Florida.

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Cylindrocladium black rot (CBR) of peanut, caused by Cylindrocladium parasiticum (CYP), was first found in Florida in Alachua County in 1975. The distribution of CBR is now in 13 counties throughout the peanut-growing areas of Florida, with the highest severities consistently occurring in Santa Rosa County, located in the western part of the panhandle. Several sprayable fungicides have been tested in the field for suppression of CBR. All treatments were applied with a CO_2 backpack sprayer in 234 L of water/ha along the row center in a 0.51-m band with one LE 6 flat fan nozzle/row. Tests from 1990 to 1992 and the one in 1995 had five and four replications, respectively. Of the labelled compounds, tebuconazole (Folicur) provided the most consistent suppression. Benomyl also provided some suppression and was used commercially against CBR until tebuconazole acquired labelling for use on peanuts. In 1990, tebuconazole reduced wilt of CBR by 51% and increased yield by as much as 71% (P=0.05). In 1991, tebuconazole reduced wilt and black pods by as much as 71 and 49%, respectively (P=0.05). In 1992, tebuconazole reduced black pods and increased yield by 54, and 49%, respectively (P=0.05). In 1995, tebuconazole reduced wilt and black pods and increased yield by as much as 71, 70, and 54%, respectively (P=0.01). Initiating a three or four spray program early (19-21 DAP) or late (34-48 DAP) did not significantly affect disease or yield. Tebuconazole totally inhibited mycelial growth of two isolates of CYP at 50 ppm in vitro.

Effects of Planting Date on Peanut Stem Rot Development and Fungicide Efficacy. T.B. BRENNEMAN*, Dept. Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793 and J.F. HADDEN, ISK Biosciences Corporation, Omega, GA 31775.

Florunner peanut was planted on 21 April, 10 May, or 20 May in 1994 and 1995. Plots were either not treated for soilborne diseases or received fluazinam 500F (3 pt/A) applied at 40, 60, or 80 days after planting (DAP). Pod yields were 3769, 3368, and 2368 for the early, middle and late planting, respectively, even though stem rot incidence was generally higher in the earlier plantings. Mean percentage stem rot control for all planting dates ranged from 27% to 37% for fluazinam applied at 40, 60, or 80 DAP. Pod yields were increased by an average of 442, 372, and 170 lb/A, respectively, with the 40, 60, and 80 DAP applications. Fluazinam treatments were more effective on stem rot in early than in late planted peanuts. The mean percentage stem rot control for all application dates was 63, 31, and 4%, respectively, for the early, middle, and late plantings. Pod yields were increased by 551, 367, and 66 lb/A, respectively, for the early, middle, and late plantings with fluazinam. Signs and symptoms of stem rot appeared first in the earlier plantings, generally in early July. High incidence of disease did not occur until peanut stems grew across the row middles.

Fall or Spring Applications of Telone II for the Control of Peanut Root-knot Nematode on Peanut. A. K. HAGAN*, J. R. WEEKS, and L. WELLS. Auburn University, AL 36849-5624.

Fall or spring applications of Telone II at 57 and 85 lb a.i./ha were made with a three bottom flip plow with one emitter on each moldboard. Peanut, cv. Florunner, was sown in late April. Temik 15G was applied at 1.7 kg a.i./ha at-plant in a 12 inch band over the open seed furrow and again at 40 DAP. Moncut 50W and Folicur 3.6F were applied in 1994 and 1995 respectively to control southern stem rot. The hull scrape method was used to determine optimum digging date. After plot inversion, soil samples were collected for a nematode assay and Meloidogyne arenaria-incited damage on the roots and pods was assessed. The center four of eight rows were harvested. In both years, numbers of M. arenaria juveniles were lower ($P \leq 0.05$) in plots treated in the fall or spring with the high rate of Telone II, Temik 15G, and Telone II + Temik 15G combination as compared with the untreated control. In 1995, juvenile numbers were suppressed ($P \leq 0.05$) 56% and 68%, below those in the control plots, with fall and spring applications, respectively, of the low rate of Telone II. No differences in juvenile numbers were observed either year with any treatment of Telone II. Damage to the roots and pods was reduced from 35 to 85% in 1994 ($P \leq 0.05$) and 23 to 48% in 1995 ($P \leq 0.05$) in all nematicide-treated plots. No consistant relationship between Telone II application rate or timing, and level of nematode damage was noted. Damage in Temik 15G-treated plots was similar to levels in plots treated with Telone II. In both years, yield was increased ($P \leq 0.05$) by all nematicide treatments as compared with the untreated control. Yield response to the Telone II + Temik 15G combination in 1994 and 1995 was 252 to 414 kg/ha, respectively, above that obtained with any Telone II treatment. Although yield gains in all Telone II-treated plots did not significantly differ, only the fall-treated plots yielded both years as high as those receiving Temik 15G. All Telone II application rates or timing generally were equally effective in reducing juvenile numbers and damage levels as well as increasing peanut yield.

Processing and Utilization

A Quick Oil Cooking Procedure for Screening Raw Peanuts for Flavor Quality. Clyde T. YOUNG. Department of Food Science, North Carolina State University, Raleigh, NC 27695-7624.
Peanuts can vary in their roasted flavor potential with some giving an off flavored consumer product. If this off flavor is not identified subsequent to processing, one may have a large increase in consumer complaints and a costly recall of product. Therefore, a simple and fast screening method is needed to eliminate these problem lots. Raw peanuts (100 gms, often from the sample taken for the aflatoxin test) are cooked in coconut oil (160C) in a Presto baby fryer to the normal roast level, drained for 1 minute, cooled, and tasted by a panel trained to detect off flavors in peanuts. The coconut oil should be changed often, especially after cooking a bad sample. If off flavors are tasted, then the potential is there for off flavors to be in the finished consumer product. Coconut oil tends to trap these off flavors in the peanuts thus giving higher levels of off flavors than found in the commercial roasting processes. It is very important that the people selected for tasting the roasted peanuts be able to detect the common off flavors such as musty, musty/moldy aftertaste, old age, bitter, stale, rancid, etc. It is not necessary that every person taste every flavor; but, it is very important that all off flavors be tasted by someone within this small group. When off flavors are found, processors may confirm the nature of the off flavor(s) using headspace analysis. Additionally, the time needed to cook samples can be correlated with roaster temperature and then used to set the initial temperature of the roaster; this is very helpful when roasting Argentine peanuts with varying amounts of sugar.

Genotype-by-Environment Interaction in Sweet and Bitter Sensory Attributes. H. E. PATTEE*, T. G. ISLEIB, and F. G. GIESBRECHT. USDA-ARS, Crop Science Dept., and Statistics Dept., North Carolina State University, Raleigh, NC. 27695-7625.

Little is known about the sweet and bitter sensory attributes of roasted peanut flavor or how they are influenced by cultivar, environment, and their interaction. From 1986 to 1994, 480 peanut samples were obtained from the Southeast, Southwest, and Virginia-Carolina regions. Roasted paste samples were assessed for selected sensory attributes by a trained sensory panel. CIELAB L^* was used as a covariate to adjust for slight differences in roast color. The most common runner and virginia market-type cultivars were present among the 17 genotypes. Forty-two environments were represented. Genotypes, years, and locations within years and production regions exhibited significant variation for sweet, bitter, and roasted peanut attributes. Regional variation was not significant for any of the three traits, but year-by-region interaction was significant for the sweet and bitter attributes. Components of variance were estimated in order to predict s_d. Experimental error was the largest component of s_d for all three traits. For sweet and roasted peanut attributes, location-by-genotype interaction within year and region was the second largest contributor to s_d; for bitter attribute, it was year-by-genotype interaction. Because of the relatively large magnitude of year-by-genotype interaction for sweet and bitter, it is important to assess those attributes from samples grown in different years to attain good precision in comparing genotypes.

High Oleic Oil Roasting to Improve Shelf-Life of Peanuts. T.H. SANDERS*, USDA, ARS, Department of Food Science, Box 7624, North Carolina State University, Raleigh, NC 27695-7624 and D.W. GORBET, University of Florida, North Florida Research and Education Center, Marianna, FL 32446-7906.

Shelf-life is a critical factor in quality of peanuts and peanut products. High oleic acid peanut lines have extended shelf-life due to the unique fatty acid profile. High oleic peanut oil was used to determine the shelf-life improvement imparted to conventional peanuts during oil roasting. ELK, Medium and No. 1 commercial sizes of NC-9 peanuts were roasted in processed high oleic peanut oil (82.6% oleic) and commercial peanut oil (47.6% oleic). Peanuts were oil roasted to obtain a roast color of Hunter L 50 ± 1. Roasted peanuts were stored at 30 C for 6 weeks and sampled at weekly intervals. Oil uptake during roasting varied from 1.7 to 3.6% and changes in oleic acid percentage in peanuts ranged from 3.6 to 4.7%. Peanuts roasted in high oleic acid oil had consistently lower peroxide values (PV) and higher oxidative stability index (OSI) values than peanuts roasted in commercial oil. PV of ELK, Medium, and No. 1 peanuts roasted in commercial oil were 15.3, 14.3, and 29.4% higher after six weeks than peanuts roasted in high oleic oil. After storage, OSI values were 18.8, 20.0, and 25.4% higher in ELK, Medium, and No. 1 peanuts, respectively, roasted in high oleic peanut oil. Roasted peanutty intensity scores decreased more quickly in commercial oil roasted peanuts. The intensity of the painty sensory descriptor, indicative of lipid degradation, increased rapidly in peanuts roasted in commercial oil but was significantly delayed in peanuts roasted in high oleic oil.

Non-Conventional Uses of Peanut Flour Providing Increased Levels of Essential Vitamins and Minerals as a Natural Component.

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Utilizing a special process, raw peanuts are processed to remove approximately 85% of the native oil. The resultant peanut solids are neutral in flavor, low in oil(<10%), high in protein (>50%), free from microorganisms, with the natural vitamins and minerals concentrated almost twofold. A protein dispersibility index of approximately 90% and a significant increase in folate activity (w/w) confirms the non-destructive process conditions, providing a nutritious peanut based ingredient suitable for a vast range of food grade applications. The peanut solids are ground to produce a fine, ivory white flour for direct incorporation into food products. Due to the unique functional properties and nutritional attributes, the finished flour is a suitable ingredient in meat and seafood products, extruded snack products, dairy substitutes, beverages, bakery products, soups, cereals, and protein/vitamin enriched foods. Non-traditional applications in pharmaceutical and cosmetic products are also suggested.

Identification of Polypeptide Precursors of Roasted Peanut Flavor.

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The production of many peanut flavor compounds during roasting results from the reaction of sugars and amino acids in a Maillard-type browning reaction. The degradation of polypeptide precursors during roasting has been implicated as one source of amino acid reactants. A study was undertaken to isolate and characterize these polypeptide precursors. We have developed a model system to roast peanut protein fractions and GC/MS-based assay to measure the production of volatile flavor compounds. Volatile flavor compounds, including pyrizines and aldehydes, have been identified in peanut seed proteins fractionated by a variety of methods; size-exclusion, ion-exchange and affinity chromatography. Differences in the protein/polypeptide compositions within peanut maturity classes and between peanut breeding lines have been seen. This information is being used to determine if differences in polypeptide components established correlates with flavor differences

Monitoring Changes in Polypeptide Composition of Peanut During Roasting. M. YING*[1], M. SHEIKH BASHA[1], and C.T. YOUNG[2]. [1]Division of Agricultural Sciences, Florida A&M University, Tallahassee, FL 32307, and [2]Department of Food Science, North Carolina State University, Raleigh, NC 27695.

It is believed that free amino acids and free sugars are the major flavor precursors in roasted peanuts (*Arachis hypogaea* L.). The free amino acids involved in roasted flavor development originate following thermal breakdown of unknown proteins during roasting. The objective of this study was to identify the polypeptides undergoing thermal breakdown during roasting. Peanut seed and flours were roasted at 125°C and 150°C for six different periods. Following roasting the samples were ground into powders and the polypeptides were extracted with 0.1 M sodium phosphate buffer, pH 2.3. The polypeptide extracts were filtered and loaded on HPCE (High Performance Capillary Electrophoresis) columns and separated with 0.1 M sodium phosphate buffer, pH 2.1. The results showed that following HPCE the peanut peptides resolved into one major and three minor components. During roasting, the amount of one of the slow migrating minor components significantly increased, while that of the major peak decreased. In addition, several slow moving peaks appeared with increasing roasting period. The change in polypeptide composition occurred more rapidly at higher temperature (150°C) and with flour. Significant changes in polypeptide profiles were observed between 6 and 12 min in both the flour and seed at 150 °C. In contrast, changes were minimal in peanut seed roasted for 4 to 24 min at 125°C. Unlike the whole seed, heating of peanut flour at 150°C caused relatively rapid changes in polypeptide profiles. Likewise heating of the flour at 125°C also showed changes in polypeptide profiles after 16 min of roasting. Loss in the amount of the major polypeptides was found to be negatively correlated with that of n-methyl pyrrole which is known to be responsible for off-flavor of roasted peanut. The polypeptide extracts from the roasted peanuts are being examined by SDS-PAGE to determine the nature of the polypeptide(s) that disappear during roasting.

Production Technology

Development of Precision Farming Technologies for Peanut Production. C.K. KVIEN*, B. BOYDELL, H. GREEN, C. PERRY, S. POCKNEE, D. THOMAS, G. VELLIDIS and D. WATERS, National Environmentally Sound Production Agriculture Laboratory (NESPAL), University of Georgia, Coastal Plain Experiment Station, Tifton, Georgia 31793.

Precision farming offers growers a system to better manage their resources. Precision farming is an information and technology based management system now possible because of several technologies currently available to agriculture. These include global positioning systems (GPS), geographic information systems (GIS), yield monitoring devices, soil, plant and pest sensors, remote sensing and variable rate technologies for application of inputs. Under the umbrella of NESPAL, a research team of industry and university scientists is working together to develop, evaluate and introduce precision farming technologies into a peanut production system. This project directly involves growers who will be using the technologies and companies that will be marketing many of the precision farming technologies to growers. From intensive soil samplings we noted significant variations in soil nutrients and pH within a field. For example, in one study field topsoil pH ranged from 4.5 to 6.7. Using a height selective sprayer we were able to cut post-emergence herbicide use by 86% while still controlling the Texas panicum scattered throughout the field. Tomato Spotted Wilt Virus incidence in this same field was nearly uniform; however aflatoxin occurrence tended to be more spatially discrete. Variance in yield within the field ranged from 1000 to over 4000 kg/ha. Information gained through this intense coupling of spatial information promises to improve our knowledge of the system while benefitting agriculture both economically and environmentally.

Diagnosis of Manganese Nutritional Requirements for the Large-Seeded Virginia-Type Peanut. N. L. POWELL* and R. W. MOZINGO. Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437.

Production of large-seeded virginia-type peanut (*Arachis hypogaea* L.) on some Atlantic Coastal Plain soils in Virginia is often limited by manganese deficiency. Likewise, excessive application of manganese, when not needed, may cause a decrease in yield. The objective of this study was to develop a simple, inexpensive method to determine if manganese fertilization of the peanut is required. A procedure was developed using soil test data (soil pH and extractable Mn) in combination with peanut tissue testing to determine if the peanut crop requires additional manganese for optimum production. Using the new soil test calibration for peanut developed for the coastal plain soils of Virginia, decisions can be made, within limits, regarding the need for manganese fertilization. When soil tests do not provide a specific yes or no decision as to the need for manganese then tissue testing can be initiated. Crop value data can be applied to the results of tissue testing to determine if manganese is needed by the crop. With a soil pH of 6.5 manganese fertilization of the peanut crop would be required if the extractable soil Mn is 8.4 mg kg^{-1} or less. Manganese fertilization would not be required if the extractable soil Mn is 12.0 mg kg^{-1} or greater. With the extractable soil Mn level between 8.4 and 12.0 mg kg^{-1}, tissue testing would be required to determine Mn requirements. Similarly, at soil pH 6.0 tissue testing would be required to determine Mn requirements if the extractable soil manganese level were between 5.9 and 9.4 mg kg^{-1}. With tissue testing the expected crop value can be used as a final determination of whether manganese should be applied. Cost of manganese application compared to expected increased returns could be considered. This type of soil testing and tissue analyses offers the opportunity to make sound decisions as to whether manganese fertilization of peanut is required. Over-fertilization could cause yield suppression because of Mn toxicity.

Some Effects of Subsoil Fertility and Subsoil Physical Characteristics on Peanut Yield and Quality.

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During 1995, a study was conducted to evaluate three irrigation treatments on sandy (Americus) and medium (Tifton) type soils. The experimental design on each type soil consist of three treatments (two computerized scheduling treatments and one non-irrigated treatment) and six replications. The soil samples taken in the topsoil prior to planting indicated no fertility problems and soil maps and information obtained on the soil characteristics indicated no problems with water infiltration or root penetration. After planting, the peanut roots were not penetrating the subsoil in the sandy type soil. Soil sample analyses were taken at depths of 6", 12", 24" and 36". Analyses of these data showed that fertility problems in the subsoil were the reason for the poor rot growth. Similarly, root and water penetration problems due to the plenthite soil layer were discovered in the subsoil of the medium type soil. Fertility variations in the subsoil of the sandy soil and variation in depth of water and root restricting layers allowed a study of the effects of subsoil characteristics on yield and quality for each of the irrigation treatments. Regression analyses showed that low pH and high zinc in the subsoil of the sandy soil produced shallow root systems that resulted in excessive irrigation, high disease pressure, low yields and poor quality. Similar analyses of the data from the experiment on the medium type soil showed that the yield and quality of the peanuts were directly proportional to the depth of the root and water restricting layer for the non-irrigated peanuts. For irrigated peanuts, the relationships were more complex because of the effects of runoff and water infiltration. These relationships indicate the importance of the subsoil characteristics in managing peanut production.

Evaluation of Crop Rotation on Peanut Production.

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Field experiments were conducted from 1990 to 1995 to investigate the effects of various rotation systems on peanut (*Arachis hypogaea* L.). Pod yield, grade (% Total Sound Mature Kernels), and disease reaction for a spanish cultivar, 'Spanco' and a runner cultivar, 'Okrun' were compared. Peanut grown in one or two year rotations with corn (*Zea mays* L.) or cotton (*Gossypium hirsutum* L.) was compared to continuous peanut. The experiment was conducted on a Minco fine sandy loam soil and commercially available field implements were used to perform tillage operations. In 1995, all plots were planted to peanut to evaluate the rotations. Rotations of either one or two years of corn or one or two years of cotton followed by one year of peanut produced higher yields than continuous peanut. Rotations of two years of corn or two years of cotton followed by one year of peanut produced higher pod yields than the one year rotations. Grade was unaffected by rotations. Southern blight (*Sclerotium rolfsii* Sacc.) was more severe in continuous peanut as compared to peanut in the various rotations.

Effect of Rotations and Nematicide Treatments on Yield and Grade of Peanut. J. A. BALDWIN, G. B. PADGETT and A. W. JOHNSON, Dept of Crop and Soil Sciences, Plant Pathology, and USDA-ARS, Univ. of Georgia, Tifton, GA 31793.

A study was conducted from 1990-1995 to determine the effects of six rotational sequences with or without a nematicide treatment on peanut root-knot nematode (RKN) (*Meloidogyne arenaria*, race 1), yield, and grade of peanut (*Arachis hypogaea L.*).The study was conducted in a field with a nine-year cropping history of a peanut-rye-fallow-rye-peanut rotation. Preliminary counts indicated high levels of peanut RKN. Crops evaluated were peanut, bahiagrass (Tifton 9 and Pensacola), Alicia bermudagrass, and tropical corn (Pioneer 304C). A weed fallow was also included in one sequence. Each plot was split with a nematicide treatment of 6 gals/A of 1,3-dichloropropene (Telone II) 2 weeks prior to planting plus 10 lbs/A of aldicarb (Temik 15G) at pegging. 'Florunner' was grown during 1990 and 1992, and 'Georgia Green' during 1995. Rotational sequences and nematicide treatments were replicated three times. In 1995, pod yields ranged from 5985 lbs/A in the nematicide-treated peanut following four years of Alicia bermudagrass to 3650 lbs/A in the non-treated peanut following fallow-peanut-Tifton 9-Tifton 9. Nematicides increased yield only in three year rotational sequences. When averaged over all rotations, the nematicide treatments increased yields by 675 lbs/A and grades (TSMK) by two percent (73 vs. 75) and reduced other kernels (OK) by one percent. RKN populations and root-knot index ratings (1-5) were lowest when peanut followed four years of Alicia bermudagrass or Pensacola bahiagrass.

Reduced Tillage for Peanuts. D.L. HARTZOG*and J.F. ADAMS, Agronomy and Soils Department, Auburn University, AL.

Farmers have traditionally used a moldboard plow and disk to reduce disease pressure from unincorporated plant residue and for herbicide incorporation and seedbed preparation. An experiment was conducted at the Wiregrass Substation to determine if alternative tillage schemes with different fungicides could maintain high yields. Whole plot treatments consisted of moldboard plow, disk, chisel, Ro-till and ripper-bedder. One subplot treatment was two applications of Bravo, followed by four applications of Folicur and concluded with one application of Bravo. The other subplot treatment was seven applications of Bravo alone. There were no differences in yield or TSMK for the tillage treatments. Folicur treatments had higher yields in each tillage treatment, but TSMK were unaffected by fungicide treatment. Conservation tillage practices can be adopted without yield reduction or increased disease pressures.

Most Economical Seed Spacing for VA-C 92R Peanut. R. W. MOZINGO. Tidewater Agricultural Research and Extension Center, Virginia Tech, Suffolk, VA 23437.

Seed costs account for approximately 17 percent of the total variable input costs of production (based on an intrarow seed spacing of 7.6 cm) for the large-seeded virginia-type peanut (*Arachis hypogaea* L.) grown in the Virginia-Carolina production area. A 3-yr (1993-95) field study was conducted to determine if the current intrarow seed spacing of 7.6 cm could be increased (thereby reducing seed costs) without affecting agronomic characteristics. Field tests were conducted at four locations (two each in North Carolina and Virginia). Intrarow seed spacings of 5.1, 7.6, 10.2, 12.7, 15.2 and 25.4 cm were used in a randomized complete block design with four replications. The 3-yr averages across all locations show main stem height increases as intrarow seed spacing decreases. Intrarow seed spacings had no effect on sound mature kernels, total kernels, or \$/cwt. Fancy pod percentage was significantly lower for the 25.4 cm seed spacing compared to the other five spacings. Extra large kernel percentage was higher for the 5.1 cm spacing compared to the 25.4 cm spacing. However, spacings of 7.6, 10.2, 12.7, and 15.2 were not significantly different from the 5.1 or 25.4 cm spacings for extra large kernel percentage. For yield and gross value, the 5.1 cm spacing was significantly higher ($P \leq 0.05$) than all other spacings except it was not different from the 7.6 cm spacing. No differences were observed among the 7.6, 10.2 or 12.7 cm spacings which were higher than the 15.2 and 25.4 cm spacings. The 15.2 cm spacing was also higher than the 25.4 cm spacing which produced the lowest yield and gross value. However, when the net value (gross value minus seed costs for each treatment) was analyzed, no significant difference was found among the 5.1, 7.6, 10.2, or 12.7 cm spacings and all of these were significantly higher than either the 15.2 or 25.4 cm spacing. Based on this 3-yr study, the intrarow seed spacing for VA-C 92R peanut can be increased from 7.6 cm, currently used, to 10.2 or 12.7 cm without significantly affecting agronomic characteristics or net value.

Weed Science

A Preliminary Study with Pyridate Herbicide for Broadleaf Weed Control in Peanut. M.W. EDENFIELD*, D.L. COLVIN, and B.J. BRECKE, Agronomy Department, University of Florida, Gainesville, H.S. McLean, Sandoz Agro, Cordele, GA, and G. Wilson, Sandoz Agro, Lakelend, FL.

Field experiments were conducted near Archer, FL and Vienna, GA in 1995 to investigate pyridate and pyridate tank mixes for postemergence (POE) broadleaf weed control in peanut. Cultivars used in these studies were Sunrunner and GK-7 at the Florida and Georgia locations, respectively. All treatments in both tests received a pre-plant incorporated (PPI) treatment of pendimethalin at 1.0 lb A.i./ac. Each POE application was applied 4 weeks after cracking (WAC) and received 2,4-DB and non-ionic surfactant at 0.2 lb A.i./ac and 0.25% v/v, respectively. A randomized complete block experimental design was used. Treatments were analyzed using analysis of variance and data means were separated using Fisher's Least Significance Difference Test ($P \leq 0.05$). Visual weed control and crop injury ratings, as well as peanut yield, were taken as a measure of evaluation. Herbicide systems evaluated included pyridate at 0.94 lb A.i./ac, Storm (bentazon + acifluorfen) at 0.75 lb A.i./ac, pyridate + Storm, and paraquat + bentazon at 0.125 and 0.5 lb A.i./ac. Paraquat + bentazon is hereinafter referred to as the standard treatment. System variables included dimethenamid at 1.5 lb A.i./ac PPI, dimethenamid PPI followed with dimethenamid at 0.75 lb A.i./ac POE, or no dimethenamid. Weeds evaluated at the Florida location included hairy indigo (Indigofera hirsuta), sicklepod (Senna obtusifolia), and yellow nutsedge (Cyperus esculentus). Weeds evaluated at the Georgia location were smallflower morningglory (Jacquemontia tamnifolia) and yellow nutsedge. Summarized data from both locations indicate minimal, if any, crop injury with pyridate + 2,4-DB. At the Florida location 80% season long control of sicklepod and yellow nutsedge was achieved with pyridate + 2,4-DB, while this standard treatment provided 60% control of hairy indigo. However, 80% control of hairy indigo was achieved using dimethenamid PPI followed by POE tank mix of pyridate + 2,4-DB + Storm. At the Georgia location pyridate + 2,4-DB resulted in 95% control of smallflower morningglory, while providing 90% control of yellow nutsedge. Incorporating dimethenamid POE into POE systems resulted in no significant advantage at either location with respect to weed control or yield. Pyridate systems as compared to the standard treatment showed no significant differences with respect to peanut yield at either location.

Control of Broadleaf Weeds in Peanut. W. J. GRICHAR*, D. C. SESTAK, and R. G. LEMON. Texas Agricultural Experiment Station, Yoakum, TX 77995 and Texas Agricultural Extension Service, College Station, TX 77843.

In 1995, a trial was set up in south Texas to evaluate soil-applied and postemergence herbicides for control of Palmer amaranth (Amaranthus palmeri S. Wats.), sicklepod (Cassia obtusifolia L.) and yellowtop (Verbesina encelioides L.) in peanut (Arachis hypogaea L.). A postemergence (POST) application of Cadre at 0.063 lb ai/A following a preplant incorporated (PPI) treatment of a yellow herbicide (Prowl or Sonalan) provided 100% control of all three weeds. Prowl plus Pursuit (PPI) followed by Blazer plus Butoxone (POST) provided comparable control to a yellow herbicide followed by Cadre. Neither Dual nor Frontier at 1.5 lb ai/A controlled sicklepod or yellowtop (>70%) but both herbicides controlled Palmer amaranth (≥87%). Pursuit at 0.063 lb ai/A applied either in combination with Sonalan or Prowl (PPI) or POST following a PPI Sonalan or Prowl application controlled Palmer amaranth (100%) and provided variable control of yellowtop (58-78%) and sicklepod (77-98%). POST applications of Cadre alone at 0.032 to 0.063 lb ai/A controlled Palmer amaranth (82-85%) and sicklepod (99-100%). However, Cadre did not control yellowtop (<30%). A split application of Cobra controlled yellowtop (100%) and Palmer amaranth (83%) but did not control sicklepod (58%). Butoxone and Tough controlled yellowtop (88%) but not Palmer amaranth or sicklepod (<70%), while Storm controlled yellowtop and sicklepod (≥90%) but not Palmer amaranth (40%). Blazer at 0.25 to 0.375 lb ai/A provided good Palmer amaranth and yellowtop control (79-93%) but poor sicklepod control (≤70%). Pursuit at 0.063 lb ai/A or a split application provided good Palmer amaranth control (≥85%) fair sicklepod control (73-90%) and poor yellowtop control (≤35%).

Mowing as an Alternative Means of Peanut Weed Control.

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Mowing of weeds that extend above the peanut canopy was evaluated over a three-year period as an supplement to standard herbicide-based weed control programs. A series of treatments, that utilized standard herbicide inputs and/or cultivation were selected. The degree of intensity ranged from what would be deemed sub-adequate to adequate. These treatments were supplemented with either 0, 1, 2 or 3 mowings. Mowings occurred whenever weeds had extended above the peanut canopy and mowing was visually judged necessary. Data collected included weed and disease control, and yield. Net returns also were calculated. Consistently high yields were only obtained with herbicide/ cultivation weed control inputs that were considered adequate. And with these treatments, mowing was not necessary. While mowing readily increased weed control in sub-adequate treatments, a corresponding increase in yield and net return was not consistently obtained. Results indicated that the ability of mowing to serve as a substitute weed control input does exist, however its utility is limited. Disease incidence was not enhanced by mowing.

Imazameth (Cadre) Weed Control in Peanut and Behavior in Florida beggarweed.

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Field studies were conducted to compare weed control, peanut tolerance, and yield from EPOST application of imazameth either alone or in combinations with paraquat, and followed by POST applications of paraquat, 2,4-DB, and/or bentazon in logical combinations. Maximum yield was achieved with imazameth applied alone, at either 2 or 4 oz/A, followed by a three-way tank mixture of paraquat+2,4-DB+bentazon. These two treatments provided at least 87% control of all the pertinent weeds (ACNHI, DEDTO, CASOB, CYPES, and PANTE). The 2 and the 4 oz/A rates of imazameth were equally effective. Among EPOST treatments, paraquat alone was less effective than imazameth alone (either rate) in terms of ACNHI control and yield. Adding paraquat to imazameth EPOST offered no improvement in overall weed control and yield compared to imazameth alone. Maximum weed control and yield generally required that both an EPOST and POST application be utilized; the need for a POST application was most evident when imazameth was applied alone EPOST at only 2 oz/A. Greenhouse studies were conducted to evaluate the ability of imazameth to control Florida beggarweed as influenced by rate, weed growth stage, and exposure. Rates were 0, 1, 2, 3, 4, and 5 oz/A; growth stages were 10, 20, 30, and 40 days of age from germination; and the three exposures were foliar only, soil only, and foliar + soil combination. The most significant overall factor in achieving control was growth stage, with adequate control only obtained at the 20 day stage or less. Foliar + soil was the most effective exposure; and soil only was generally the least effective. A rate response was not clearly evident above 2 oz/A.

Sharppod *(Ipomoea trichocarpa)* and Red Morningglory *(Ipomoea coccinea)* Control in Peanut using Postemergence Herbicides. R.G. LEMON*, W.J. GRICHAR, and D.C. SESTAK. Texas Agricultural Extension Service, College Station, TX 77843; Texas Agricultural Experiment Station, Yoakum, TX 77995.

Red morningglory is a very troublesome weed in the west Texas production region and sharppod morningglory has been found in central Texas fields. Field studies were conducted in 1995 in Gaines and Comanche Counties to evaluate numerous postemergence herbicides for effectiveness in controlling these weeds. Herbicides were applied with a compressed-air bicycle sprayer using Teejet 11002 flat fan nozzles, delivering a water spray volume of 20 gal/A at 26 psi. The experimental design was a randomized complete block with four replications. Plots were two rows wide and 30 feet in length. Each location was equipped with a center pivot irrigation system. Herbicide treatments were applied early-postemergence (EPOST) to morningglory in the cotyledon stage to 4 inches tall, and late-postemergence (LPOST) to morningglory 4 to 8 inches tall at the sharppod site and LPOST (morningglory 4 to 8 inches tall) at the red morningglory location. The most effective treatment for sharppod was a sequential application of Cadre (0.0315 lb ai/A EPOST followed by 0.0315 lb ai/A LPOST). This treatment provided 94% control compared to the next best treatment which was Cadre at 0.063 lb ai/A EPOST (70% control). Pursuit applied EPOST provided only 57% control. All other treatments showed < 70% control. Cadre and Pursuit provided the greatest measure of control for red morningglory. Cadre applied at 0.063 lb ai/A gave excellent control (>90%); Pursuit showed 59% control. All other compounds demonstrated very poor control. Cadre applied with either crop oil concentrate or nonionic surfactant additives provided similar results. Several flushes of red morningglory were observed in the field and the residual activity of Cadre was evident.

Effect of Stale Seedbed Tillage Implements on Viable Weed Seeds and Weed Densities in Peanut. W. C. JOHNSON III*, and B. G. MULLINIX, JR. USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793-0748.

Studies were conducted in 1995 near Tifton, GA to evaluate the effects of stale seedbed tillage implements and frequency of operation on numbers of viable weed seeds and weed densities in peanut. Tillage implements evaluated were a power tiller, disk harrow, field cultivator, sweep cultivator, and a nontilled control. Plots for each implement were tilled once or twice prior to planting peanut. Soil cores (15.2 by 15.2 by 15.2-cm) were taken immediately after the last tillage operation, but prior to planting, and partitioned into 0 to 7.6 cm and 7.6 to 15.2 cm sub-samples according to depth. Sub-samples were placed in greenhouse flats. Viable weed seeds were measured by counting and removing emerged weeds at tri-monthly intervals for 12 months. Weeds present in the samples were Texas panicum (Panicum texanum Buckl.), southern crabgrass [Digitaria sanguinalis (L.) Scop.], crowfootgrass [Dactyloctenium aegyptium (L.) Willd.], goosegrass [Eleusine indica (L.) Gaertn.], Florida pusley (Richardia scabra L.), Florida beggarweed [Desmodium tortuosum (Sw.) DC], smallflower morningglory [Jacquemontia tamnifolia (L.) Griseb.], and carpetweed (Mollugo verticillata L.). In general, the power tiller was the most effective implement in reducing viable weed seeds in the plow layer, with the field cultivator and disk harrow slightly less effective. The sweep cultivator was the least effective implement in reducing viable weed seeds in the plow layer. There were no differences in numbers of viable weed seeds between stale seedbeds shallow tillage, either once or twice before planting. Results from mid-season weed counts and peanut yield showed similar responses to implements and frequency of tillage. These results indicate that the preferred implement for stale seedbed tillage is the power tiller, with only one timely operation necessary to sufficiently deplete viable weed seeds in the plow layer before planting. Companion studies are determining if peanut production systems can be altered to accommodate stale seedbed tillage as a possible new standard practice for cultural weed control.

Poster Session

Similarity And Variability Among Commercial Peanut Butters. B. VARDHANABHUTI* and Clyde T. YOUNG. Department of Food Science, North Carolina State University, Raleigh, NC 27695-7624.

About 60% of the U.S. peanut production enters domestic food use, and the major end product is peanut butter. Peanut butter has been a traditional American food for decades. In this study, 39 different brands or types of freshly opened commercial peanut butters (2 date coded jars from each) were analyzed using headspace gas chromatography to investigate the similarity and variability among commercial products. Samples (1.5 g in 12 ml vial) were heated at 150oC for 12 mins in a Tekmar Autosampler. The headspace volatiles were injected into a Shimadzu 15A GC fitted with Porapak P column and containing the flame ionization detector. The output was integrated by EZchrom and statistically analyzed using cluster analysis (Minitab). The results showed that the major brands of peanut butter, Jif and Peter Pan, were very similar (~99% similarity) while creamy Skippy peanut butters varied among themselves (96-99%) and were different from others (~92%). Reeses' was in the same cluster as Jif and Peter Pan. The private label such as Kroger in plastic jars resembled the Jif, Peter Pan, and Reese's group. Other private brands varied and did not relate much to the major brands. Peanut butters packaged in glass jars (except Deep South), though different types and different brands, formed 2 clusters with the similarity range from 98-99%. Another interesting point is that some of the pair samples which were supposed to be similar (same brand and same type but different code dates) were not clustered together implying that the products were not consistent. It was speculated that the ingredients played an important role in the way different brands formed the same or different clusters.

Effects of Postemergence Applications of 2,4-DB on Runner Peanut Growth and Development. B. A. BESLER*, W. J. GRICHAR, AND R. G. LEMON. Texas Agricultural Experiment Station, Yoakum, TX 77995 and Texas Agricultural Extension Service, College Station, TX 77843.

Field studies were conducted from 1992 through 1995 near Yoakum, Texas to evaluate the effects of postemergence applications of 2,4-DB on Florunner or GK-7 peanut growth and development. The 2,4-DB (0.4 lb ai/A) was applied at 30, 45, 60, 90, and 120 days after planting (DAP) and at various combinations of these dates. Data collected included yield, grade, weight per 100 pods, as well as shell weight and nut weight. Timing of 2,4-DB applications did not effect yield, grade, pod weight or shell weight. This study demonstrates that 2,4-DB can be applied to runner type peanuts at various times during the season without incurring any harmful effects. Previous research on spanish peanut indicated that 2,4-DB applied at flowering caused enlarged pods and pops.

Separation of Peanut Proteins and Polypeptides by High Performance Capillary Electrophoresis.

S.M. BASHA. Division of Agricultural Sciences, Florida A&M University, Tallahassee, FL 32307.

The emergence of biotechnology which utilizes recombinant DNA techniques and protein and polypeptides synthesis, has increased the demand for sophisticated analytical instrumentation and methodologies. HPLC and HPCE (High Performance Capillary Electrophoresis) are the two such complementary methods which provide reliability in the analytical results. Peanut seed proteins have been extensively characterized using HPLC, PAGE and Column Chromatography. In this study, attempts were made to test the feasibility of using HPCE to resolve peanut proteins and peptides. Proteins were extracted from peanut seed using sodium borate buffer pH 8.3, and the peptides were extracted with 0.1 M sodium phosphate buffer, pH 2.5. The resulting protein and peptide extracts were filtered and injected into HPCE. HPCE was performed on a Beckman PACE 2100 HPCE system controlled by a computer equipped with System Gold software. The samples were resolved in uncoated fused silica capillaries (75 μm i.d. x 57 cm). Electrophoretic separations were conducted at 25°C and a voltage of 10 to 20 KV. The detector was set at 214 nm, and the injection was for 10 to 20 sec. Proteins were separated using 0.3% sodium borate buffer, pH 8.3 while peptides were separated with 0.1 M sodium phosphate buffer, pH 2.5. The results showed that HPCE separated peanut seed proteins, leaf proteins, and callus proteins into 10 to 20 components while the peptides were resolved into more than 20 components. The data showed that the HPCE can be effectively used to monitor compositional changes in peanut proteins and peptides.

Increase of Glycolytic Enzymes in Peanuts During Peanut Maturation and Curing: Evidence of Anaerobic Metabolism. S.Y.CHUNG*[1], J.R.VERCELLOTTI[2], and T.H.SANDERS[3]. [1]USDA, ARS, Southern Regional Research Center, P.O. Box 19687, New Orleans, LA 70179. [2]V-Labs, Inc., 423 Theard St., Covington, LA 70433. [3]USDA-ARS, Marketing Quality Handling Research, North Carolina State University, P.O. Box 7624, Raleigh, NC 27695-7624.

Recently, we have reported an increase in the activity of alcohol dehydrogenase (ADH) during peanut maturation and curing. To understand further the mechanism for the increase of ADH, we developed colorimetric assays (all utilizing NAD^+ and *p*-iodonitrotetrazolium violet as the color precursor) for detection of the following glycolytic enzymes which precede ADH sequentially in the Embden-Meyerhoff or alcohol fermentation pathway (an anaerobic condition): (1) aldolase; (2) glyceraldehyde-3-phosphate dehydrogenase; and (3) pyruvate decarboxylase. All of the above enzymes, in addition to ADH, were shown to increase significantly in activity during peanut maturation and curing. This finding suggests that anaerobic metabolism of carbohydrates occurs during peanut maturation and curing, and that under the anaerobic conditions, the above enzymes are activated, accounting for the increase of ADH (the last step in the fermentation pathway) as previously reported.

Concepts for Reduced Tillage in Peanut. E. J. Williams*, J. I. Davidson, and M. C. Lamb. USDA, ARS, NPRL and Auburn University, 1011 Forrester Drive, S. E., Dawson, Ga. 31742.

Moldboard plowing has been historically practiced to partially control soilborne diseases, weeds, and to improve digging efficiency. The urgent need to reduce the cost of production and to incorporate water and soil conservation, mandate that we investigate alternative management strategies. Fall/winter paratill/subsoil-bedding, winter cover crops, and new controls for soilborne disease, provide promising alternatives to moldboard plowing. These strategies, as well as cover crops and conventional strip-tillage, are being investigated for reducing trips over the field. Reduced tillage main plots in 1994 were planted into killed wheat stubble on a well-rotated, sandy loam soil and included treatments for strip-tillage (subsoiled 9" and 13" deep), paratill (w/o bedding) + planted 'no-till', and planted 'no-till'. Inter-row tillage subplots include subsoiling between alternate rows, chisel-cultivating between each row, and no inter-row tillage. In 1995, on a sandy loam soil having peanut and cotton in prior years, two tests were conducted, each under full and reduced irrigation strategies, and included main tillage treatments for paratill/bedding, bedding w/o subsoiling, and strip-tilling (two-depths). Subplots for the two tests included the above inter-row tillage and chemical (Folicur 6.3F) control for soilborne diseases. A third study in 1994-95 compared Fall paratill/bedding + rye cover with Spring moldboard plowing, w/ and w/o Folicur, in a well-rotated, non-irrigated, loamy sand field. Results in the latter study showed a significant ($P \leq .05$) increase in yield for the reduced (4454 lb/A) compared to the conventional (3692 lb/A) tillage, and differences were attributed to low disease pressure, rye, improved soil structure and soil moisture retention. In the former field, yields ranged from 3700 lb/A for the best reduced tillage to 3300 lb/A for the moldboard plowed. Moldboard plowed land was planted flat and resulted in more digging losses than the reduced tillage plots which had been bedded. Folicur increased yields from 140 lb/A to 673 lb/A, depending on the degree of disease pressure. Except for the above mentioned test, no tillage management strategy came close to producing these results, and chemical control of soilborne diseases may needed to be an integral part of reduced tillage strategy for peanut. The lowered cost of reducing trips over the field was often offset by additional costs of pesticides and relative net revenues were affected by the variable yield results. Economics of typical reduced and conventional tillage strategies are noted.

Storing Peanut in Modular Containers. F.S. WRIGHT[1*], C.L. BUTTS[1], M.C. LAMB[2], and J.S. CUNDIFF[3]. [1]USDA, ARS, NPRL, Dawson, GA 31742, [2]Dept. of Agricultural Economics and Rural Sociology, Auburn University, Auburn, AL 36849, and [3]Dept. of Biological Systems Engineering, Virginia Tech, Blacksburg, VA 24061-0303.

The peanut harvesting rate increased significantly with the introduction of the 4-row and 6-row combines. An 8-row self propelled combine to be marketed in 1996 will add to the handling problems already being experienced at the buying/drying points. With the modular concept, the peanuts are placed in the module at the field location, cured and dried, stored, and delivered to the shelling/processing point in the same container. The modular container will hold approximately 9 Mg (size approximately 1.8 m deep x 2.3 m wide x 7.3 m long) so two units will make a semi-trailer load. In 1995, three 4.3 m standard wagons and three 4.3 m modules were used to assess handling damage and concerns involved with moving the modular units. Temperature and relative humidity within the units were monitored for 140 days from the field to unloading at the buying point. Peanut moisture content was measured at intervals during storage. The maximum and minimum temperatures in the middle of the modular units lagged the ambient temperature 6.4 and 4.3 hrs, respectively, whereas, the relative humidity did not fluctuate with the daily ambient fluctuations. The peanut moisture content decreased from about 11 % at the end of curing to the equilibrium moisture content of 6 to 7 % at the end of storage. Transferring the peanuts through an elevator was insufficient to simulate handling damage in a warehouse system. An economic analysis indicates the modular concept is a feasible handling system compared to the current handling and warehousing system. The expected results of using the modular concept are: moving the peanuts out of the field faster, transporting the peanuts on the highway with less liability, reducing the damage caused by handling the peanut in and out of the bulk warehouses, maintaining varietal and grower identifications and quality information for the manufacturer to provide a higher value product to the consumer.

Curing Peanuts Using Drying Rate Control In Georgia. C.L. BUTTS[a*], F.S. WRIGHT[a], and T.H. Sanders[b], [a]USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742, [b]USDA, ARS, Market Quality and Handling Research, Raleigh, NC 27695-7624.

Previous research defined a specific range of temperatures and relative humidities acceptable for curing peanuts. Virginia researchers developed three linear equations for the upper boundary of the acceptable temperature and humidity region, then used them to implement a drying rate control (DRC) strategy for virginia type peanuts. Curing times were comparable to conventional control (CC) strategies and reduced skin slippage in the extra large kernels. A single equation relating the humidity ratio (H) of the ambient air to the maximum allowable temperature (T_{max}) was developed and tested during the 1995 peanut harvest. The expression for T_{max} was: $T_{max} = 15.699 - 201.46H*\ln(H)$. A similar equation for the lower boundary of the acceptable range of temperatures and humidities was developed: $T_{min} = 9.415 - 247.92H*\ln(H)$. Temperatures exceeding T_{max} usually indicate excessive drying rates and have been shown to decrease peanut milling quality. Curing temperatures below T_{min} indicate slow drying rates and may result in the unacceptable microbial growth. A microprocessor was programmed to control two conventional peanut dryers using the T_{max} equation. Six batches of peanuts weighing approximately 4.4 Mg each, were cured during the 1995 harvest. Initial moisture content of the peanuts averaged 21.8 and ranged from 24.8 to 18.6%. The curing time ranged from 33.5 to 16.5 h and averaged 25.7 h. Split kernels in the official grade averaged 1.8% and ranged from 0 to 3%. Samples shelled on the Model 4 sheller showed split and bald kernels averaged 10.5 and 0.8 % of all kernels, respectively. A theoretical comparison of the DRC to the CC showed that the CC would have increased LP consumption for each bin by approximately 43 L.

Variability of Peanut Kernel Moisture Contents Compared at Harvest and After Six Months Storage in West Texas. P.D. BLANKENSHIP*, C.L. BUTTS, and J.W. DORNER. USDA-ARS National Peanut Research Laboratory, Dawson, GA 31742.

Moisture control is a major factor for quality preservation of farmer stock peanuts during harvest and subsequent storage. Quality loss can be attributed to high peanut moisture contents during storage. Average kernel moisture contents below 10.5 % are generally recommended for proper moisture control after harvest. Limited data have been published relative to the variability of moisture contents within moisture samples. Peanuts were dug and placed in inverted windrows for drying. After combining, 82 samples were extracted randomly from approximately 1 t of peanuts for single kernel moisture evaluation before and after storage. Forty-one of the samples were shelled and evaluated before storage and the other 41 samples in mesh bags were placed at strategic locations in the cross-section of peanuts in a farmer stock warehouse during loading. After 6 mo storage, the samples were recovered and single kernel moistures were conducted. Single kernel moistures varied from 6 to 34.1 % prior to storage with average moisture of the samples varying between 8.5 % and 10.2 %. After storage, single kernel moistures varied from 2.4 % to 13.1 % with average moisture ranging between 4.3 % and 11.4 %. These data indicate that perhaps control of peanut moisture content by average moisture should be reexamined because of the potential for quality loss from high moisture kernels throughout farmer stock storage.

Minutes of the APRES Board of Directors Meeting
Omni Rosen Hotel
Orlando, Florida
July 9, 1996

President Harold Pattee called the meeting to order at 7:00 p.m. Those in attendance were: Max Bass, Tim Brenneman, Danny Colvin, Kim Cutchins, Austin Hagan, Corley Holbrook, David Knauft, Chip Lee, Hassan Melouk, Bill Odle, Wil Parker, Harold Pattee, Mike Schubert, Robert Scott, Fred Shokes, Ron Sholar, Charles Simpson, Jan Spears, Tom Stalker, Bobby Walls, John Wilcut, and Jim Young.

<u>Approval of the 1995 Minutes of the APRES Board of Directors Meeting</u> - Ron Sholar

The minutes of 1995 Board of Directors Meeting were approved as published in the 1995 PROCEEDINGS.

<u>Executive Officer Report</u> - Ron Sholar

The Society's membership is stable. We maintain about 575 members and have been there for the past several years. We are seeing a slight decrease in membership since there are fewer industry people. The Society is still extremely strong financially as will be shown in the Finance Report.

<u>American Society of Agronomy Liaison Report</u> - Tom Stalker

The annual meetings of the joint American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America were held in St. Louis, Missouri, October 29 - November 3, 1995. More than 3000 scientific presentations were made. Of these, 11 were devoted to peanut research and 22 members of APRES authored or co-authored presentations. Dr. Janet F. Spears was the 1995 chair of the Crop Science Society of America's C-4 Division--Seed Physiology, Production, and Technology. The next annual meeting will be held in Indianapolis, Indiana, from November 3-8, 1996.

<u>Southern Association of Agricultural Experiment Station Directors Report</u> - Max Bass

Max Bass reported that Gale Buchanan has undergone surgery for colon cancer and has been taking chemotherapy. Gale is back to work and is feeling good. The Board had a moment of silence on Dr. Buchanan's behalf.

Our tax dollars are being reduced, but we need to look at the revenues coming in, which are better than last year at this time. Our problem is not that tax revenues are short but that our revenues are not going into agricultural research.

CAST Report - David Knauft

The CAST Board of Directors met in October and then again in March. The Society continues to grow and continues to publish a number of reports on topics of national interest; i.e., Quality of U.S. Agricultural Products, Diversifying U.S. Crop Production, and Radiation Pasteurization of Food. Publications will be coming in the near future regarding The Future of Irrigated Agriculture and Integrated Animal Waste Management.

One of the highlights for CAST this past year has been the CAST-Coordinated Leadership Workshop for Professional Societies. Five APRES representatives attended the workshop--Harold Pattee, Fred Shokes, Chip Lee, David Knauft, and Ron Henning. Jan Spears also attended, representing another Society. Phase 2 and Phase 3 workshops will be planned in the near future, and David Knauft has been asked to serve on the planning committee for Phase 2.

CAST serves as a brokerage for taking agricultural information and providing it to the public and to the legislature. CAST continues to work on many different fronts, and its work at providing correct information to Washington, D.C. is very important to agriculture.

Membership Survey for Future Planning - Chip Lee

Bill Odle was commended for his efforts in organizing the membership survey done last year. Bill Odle, Jan Spears, Kim Cutchins, and Chip Lee evaluated the 1995 APRES Opinion Survey. There were 34 returned questionnaires; 70-90% of the returned surveys thought our Society was in good shape. Four points came out of the survey:

1) Additional involvement is needed from growers and County Extension Agents.

2) More interest should be generated in the annual meeting by "taking risks". APRES could serve as a forum for the discussion of any and all points that may or may not affect the peanut industry.

3) We should be more active in promoting committee involvement so that new people are becoming involved in the Society's working committees.

4) We should consider changing the annual meeting timetable to take advantage of reduced airfares that result from a Saturday night stay.

A motion was made to appoint an ad-hoc committee to study the implementation of the above-mentioned four points in a timely manner and report to next year's Board of Directors meeting. Motion was seconded and passed. However, the Board would prefer to have as many of the above-stated points taken care of as soon as possible instead of waiting a year before recommendations are made.

Discussion evolved concerning APRES information getting to growers and County Extension Agents. The National Peanut Council expressed an interest in helping with this promotion; also the Public Relations Committee has some ideas to promote APRES within the grower community and the County Extension Agent population.

It was questioned what to do with excess funds in APRES accounts and whether or not an ad-hoc committee should be charged with finding ways to use our money for the advancement of APRES. An ad-hoc committee will not be charged with this responsibility.

Special Committee Report on ADVANCES IN PEANUT SCIENCE - Harold Pattee

Kim Cutchins was commended for her input in choosing the cover for ADVANCES IN PEANUT SCIENCE. Sales are going slowly. We will be looking to the Publications and Editorial Committee to help publicize and promote the sale of ADVANCES IN PEANUT SCIENCE.

Finance Committee - Charles Simpson

The Proposed Budget was presented to the Board of Directors. A motion was made to accept the proposed budget for 1996-97 in the amount of $74,000. The motion was seconded and approved unanimously.

Nominating Committee - Bill Odle

Committee members Bill Odle, Walt Mozingo, Paul Blankenship, and Doyle Welch communicated via telephone and FAX and developed the following slate of nominations:

Industry Representative (Manufactured Products) - Doug Smyth
State Employee Representative (SE) - John Beasley
President-Elect - Chip Lee
State Employee Representative (SW) - Mike Schubert

This slate will be presented to the membership for their approval during the 1996 business meeting. Other nominations will be accepted at that time.

Publications and Editorial Committee - Tim Brenneman

Tom Stalker was commended on his fine job as Editor of PEANUT SCIENCE. PEANUT SCIENCE is in good shape financially and otherwise. New guidelines to authors have improved uniformity of the journal, and turnaround time on manuscripts has also been improved. Two Associate Editors, Jay Williams and Joe Funderburk, have served their term and will be stepping down. New Associate Editors coming in will be Chris Butts, Gary Kochert, and Tim Sanders.

The Publications and Editorial Committee will help promote the sale of ADVANCES IN PEANUT SCIENCE.

Corley Holbrook and Keith Rucker are serving as co-editors for PEANUT RESEARCH.

Peanut Quality Committee Report - Corley Holbrook

The committee would like to develop a published set of chemical quality standards. During the coming year, all segments of the peanut industry will be surveyed to obtain acceptable ranges for these standards. The National Peanut Council will be asked to assist in the survey and the publication of survey results. The Peanut Quality Committee hopes to approve a final version of quality standards for publication in 1997.

Public Relations Committee Report - Jan Spears

The Public Relations Committee focused on ways to increase membership. The following suggestions were made: 1) contact state Extension Specialists and enlist their help in contacting agents for APRES membership; 2) encourage specialists and agents to provide APRES brochures at meetings; 3) with the help of NPC, contact shellers regarding APRES membership; 4) contact universities with active peanut research/extension programs to encourage students to join APRES.

The Public Relations Committee also discussed the possibility of an APRES Homepage on the Internet and offering a membership roster broken down into areas of expertise. Also for promotion of APRES, the committee would like to publish award recipients from this meeting in appropriate newsletters and newspapers.

Editor's Note: APRES now has a homepage on the WWW:
http://clay.agr.okstate.edu/apres/welcome.htm

Bailey Award Committee Report - Austin Hagan

The award for this year is going to Tom Stalker and his co-authors for a paper entitled "*Meloidogyne arenaria* resistance in advanced-generation *Arachis hypogaea x A. cardenasii* hybrids", which was presented last year. There were a total of nine papers submitted.

It was moved and seconded that an ad-hoc committee be appointed to study the guidelines for the scoring of the Bailey Award. The motion was approved.

Fellow Award Committee Report - Harold Pattee (for Pat Phipps)

Nominations for recognition for APRES Fellows were received on or before March 1, 1996, as required. Nomination packets and evaluation forms for each nominee were sent to committee members. The chair and all five members of the committee evaluated the nominations according to the guidelines as published in the 1995 PROCEEDINGS. Results of the evaluations were sent to the APRES President on April 2, 1996. Three individuals were selected for 1996 Fellowship: Charles W. Swann, Thomas B. Whitaker, and H. Thomas Stalker.

Site Selection Committee Report - Danny Colvin

The 1997 Annual Meeting will be held at San Antonio's Hyatt Regency July 8-11. Room rates are secured at $89. The Site Selection Committee for Texas is Mark Black and Kurt Warnken. For the 1998 meeting, July 7-10, a hotel contract has been signed with the Omni Waterside Hotel in Norfolk, Virginia, at $85 per room, with a possibility of a 5% increase. Charles Swann, Ames Herbert, and Bill Birdsong make up the Virginia Site Selection Committee. The 1999 meeting will be held in Georgia, either in Savannah or Atlanta. The 2000 meeting will be held in Alabama.

Kim Cutchins asked if there would be interest in combining the annual meetings of the National Peanut Council and APRES. A motion was made and seconded that an ad-hoc committee be appointed to investigate the feasibility of combining the NPC and APRES annual meetings. Motion passed.

It was proposed that an ad-hoc committee be appointed for writing up guidelines for hotel negotiations. Motion was made, seconded, and passed. Committee members suggested were: Harold Pattee, Fred Shokes, Danny Colvin, Kim Cutchins, and Mark Black.

Coyt T. Wilson Distinguished Service Award Committee Report - John Wilcut

The Committee recommended that this year's award go to Dr. Olin D. Smith.

Joe Sugg Graduate Student Award Committee Report - Hassan Melouk

Nine papers will be presented for this year's competition, which is a 50% increase over last year's number of presentations. Five individuals will serve as judges. First and second place winners will be announced at the business meeting on Friday morning.

DowElanco Awards Committee Report - Mike Schubert

Three nominations were received for the Excellence in Research award and one nomination for the Excellence in Extension award. Walt Mozingo is this year's recipient for the Excellence in Research and John Baldwin is the recipient of the Excellence in Extension award.

Beginning in 1997, the name of the DowElanco Excellence in Extension Award will be changed to the DowElanco Excellence in Education Award.

Program Committee Report - Fred Shokes

This year's working committees were co-chaired by Danny Colvin, Ken Muzyk, Jerry Bennett, and Dan Gorbet. Contributions were headed up by Barry Brecke. Six major contributors (Rhone-Poulenc, ISK Biosciences, American Cyanamid, Bayer, DowElanco, and Valent) will support four social events, and numerous other organizations have given financial assistance. A complete listing of contributors is in the program section of these PROCEEDINGS.

For this meeting there are 8 poster papers scheduled, 8 papers in the graduate student competition, 9 symposium papers, and 75 volunteered papers.

With no further business to discuss, the meeting adjourned.

Respectfully submitted,

James Ronald Sholar
Executive Officer

OPENING REMARKS BY THE PRESIDENT AT THE 1996 APRES BUSINESS MEETING
July 12, 1996

"Challenges of a Changing Peanut Industry and APRES's Role and Stake in Those Changes"

Harold Pattee

The topic I have chosen to address comes from the perspective of 33 years of poking around in peanut research and attending 30 meetings of PIWG, APREA, and APRES. It has been my pleasure to attend every meeting since 1964 when PIWG met at Auburn University. In the early years of PIWG the meetings were only held every two years. I can remember the feeling of being so new and wondering how I would fit into the group. For a few years I just attended the meetings and did not really get involved except to voice my feelings around the lunch and dinner sessions. As with many of you I served on the program committee when the meetings came to North Carolina and did some other things but had no major involvement. I can always remember there was one thing about PIWG and APREA that bothered me and that was the printing of non-refereed papers in the PROCEEDINGS. In the early 1970s that became a much discussed topic and there were strong feelings on both sides of the issue. Through the leadership of Joe Sugg, who for many years served as Chairman of the Publications Committee, and the involvement of several individuals (some of whom are here today), PEANUT SCIENCE came into being. For my part the rest is history, but the history is not complete and I interject the plea to each of you to help promote our new book - ADVANCES IN PEANUT SCIENCE. It has also been my privilege to serve in many different capacities and I sincerely consider the benefits of that service to be a two-way avenue. In reality I have gained far more than I have given because the reviewing and editing of the many articles, book chapters, and technical bulletin chapters that have passed through my hands and before my eyes has provided an unequaled opportunity to keep abreast of the many advances in peanut research and technology that have taken place over this span of time.

It is nice to look behind and see where we have been. However, it is essential that we look ahead and try to envision the challenges that lie ahead of us both in the peanut industry and in APRES. In striving to look ahead I am awestruck by the vastness of the unknowns that lie ahead. In ten years we know that the peanut industry will not be the same as it is now, but what will be its form and how will it function? How will peanuts be graded and marketed? What will be the grading and marketing standards? How will these standards affect the production practices of the peanut grower? Can the growers change their production practices in the U.S. in such a way to obtain a reasonable return on their investment to grow a peanut crop? If a U.S. grower cannot obtain a reasonable return on his investment, will there be a U.S. peanut crop to be marketed, shelled, and processed?

What are we in the American Peanut Research and Education Society going to do? Let me list several ideas that might be constructive and challenging to those who next take the leadership positions of the society.

First let us ask ourselves - who are the consumers of the information presented at the annual meetings, in our journal, and in our newsletter?

I would suggest that the consumers should be:

a. Our peer scientists
b. State Peanut Extension Specialists
c. Agrochemical companies
d. The county Extension agents
e. The peanut producer
f. The peanut handler (warehousemen) and sheller
g. The peanut processor and marketer

Are we, as a society, effective in getting the information to our consumers?

Peer Scientists, Extension Specialists, Agrochemical Groups: I would evaluate that we do a superior job in getting the information to these groups. They are highly involved, meeting programs are designed to fit needs, and society publications are focused to these groups.

Society Challenge - These groups are all downsizing. We must improve our ability to retain and draw in the membership potential of the group. The complete "how" is left to the next generation but we must provide a better opportunity for these individuals to feel wanted. We must develop a way in which individuals can feel free to volunteer for service in APRES.

The County Extension Agents, Peanut Producers: I believe we are only moderately successful in providing the information for which these groups feel they have a need. As a result we are only moderately successful in involving individuals from these groups in APRES. I suggest that we develop new avenues for information delivery to these individuals.

The Peanut Handlers (warehousemen) and Shellers, Peanut Processors and Marketers: As a Society I do not believe we meet the needs of this consumer group. There are individuals who are members of APRES and who are highly effective in communicating with this group. However, if APRES is to meet the needs of this group and attract new members from this group, more effective means of meeting their information needs must be found. From my own past experiences the most effective way APRES can meet these information needs is through holding symposiums developed through the Quality Committee and then publishing a symposium proceedings. To be most effective all phases, organization, presentation, and publishing must have active group representation.

What Has Been Done Recently To Begin The Change?

- Membership Survey in 1995 by Bill Odle.

  This survey provided an opportunity for members to express themselves about APRES.

- Ad-hoc Committee Appointed to Study Survey Results.

  This committee is chaired by Chip Lee and he has reported his conclusions to date.

- Five APRES Representatives attended a CAST Workshop on Changes Facing Scientific Societies.

  In October 1995, Fred Shokes, Chip Lee, Dave Knauft, Ron Henning, and I attended the Phase I Leadership Workshop sponsored by CAST in St. Louis, Missouri. Dave Knauft, as our CAST Board of Director representative, has reported on that workshop. Dave Knauft has been appointed as a member of the Steering Committee to plan Phase II.

- Changing the DowElanco Award for Excellence in Extension name to the DowElanco Award for Excellence in Education.

  This was done to better communicate the purpose of the award which is to recognize significant educational contributions. The proposal to make this change was a result of brainstorming sessions held during the CAST workshop. It is hoped that the membership will take an active role in nominating those Society members who deserve special recognition for their teaching contributions, educational activities, etc.

Challenge to The Officers and Board of Directors

Although we have undertaken a few things to begin to meet the upcoming changes such as configuration of the peanut industry, funding limitations, etc., there is still much to do. I challenge the officers and Board of Directors to be proactive in looking for new ways to meet the challenges that are before us. We must be looking for ways to improve the manner in which we communicate information to our consumers. We must be receptive to trying new ways that we have not tried before. In working closely with Fred Shokes during this past year I know that he is committed to meet the challenges that lay before us and I ask you to support him and the other officers.

Challenge to the Membership

We, as individuals, tend to value more those things to which we make an investment. I challenge you as members to make an investment in APRES by taking the time to develop current, attractive symposium topics for meetings and be willing to put a team together to organize the symposium if accepted by the Program Chairman, taking the time to work out a solution to getting it published. It can be done and I cite the quality symposium held in 1986. The idea for the symposium sprouted while a group was having lunch together during the 1985 meeting in San Antonio, Texas. After the meeting Sam Ahmed worked with the Florida Agricultural Experiment Station to have it printed as a bulletin and the first printing was distributed at the 1987 meeting in Orlando. The first printing was exhausted within six months and a second printing was done in April 1988. That printing has been exhausted except for a few copies I keep for special occasions.

Be proactive in attending open committee meetings, such as the Peanut Quality Committee, or the Publications and Editorial Committee. You, as I, may have something about APRES that bothers you. Indicate your interest in serving on a committee that deals with that area and put some effort into your committee membership. If you wait to be asked, who will know about your interest or your feelings? Be willing to nominate someone that you think desires special recognition. Encourage associates to be involved in APRES.

In closing I wish to express appreciation to all those who gave of their time and talents over the past two years to assist me and the Society in carrying on its business. There are many who went the extra mile in giving service and the Society is indeed fortunate to have members who will give so unselfishly of their time and talents.

BUSINESS MEETING AND AWARDS CEREMONY
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY

Omni Rosen Hotel
Orlando, Florida
July 12, 1996

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

1. President's Report - Harold Pattee

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

   a. Fellows - Pat Phipps

   b. Bailey Award - Austin Hagan

   c. Joe Sugg Graduate Student Competition - Hassan Melouk

   d. DowElanco Awards for Research and Extension - Mike Schubert and Lance Peterson

   e. Coyt T. Wilson Distinguished Service Award - John Wilcut

   f. Past President's Award - Harold Pattee

   g. Peanut Science Associate Editors - Tom Stalker

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

   a. Executive Officer Report and Reading of Minutes of 1995 Meeting - Ron Sholar

   b. Special Committee Report (Advances in Peanut Science) - Harold Pattee and Tom Stalker

   c. Finance Committee - Charles Simpson

   d. Nominating Committee - Bill Odle

   e. Publications and Editorial Committee - Tim Brenneman

   f. Peanut Quality Committee - Corley Holbrook

   g. Public Relations Committee - Jan Spears

   h. Site Selection Committee - Danny Colvin

   i. Program Committee - Fred Shokes

4. Dr. Pattee turned the meeting over to the new President, Fred Shokes of Florida, who then adjourned the meeting.

FINANCE COMMITTEE REPORT

The Finance Committee met in Salon 1 and 2 of the Omni Rosen Hotel in Orlando, Florida, on July 9, 1996, at 3:30 p.m. Those present were: Roger Bunch, Ron Weeks, Jim Young, Dan Gorbet, Ron Sholar, Tom Stalker, Harold Pattee, and Charles Simpson.

The Committee briefly reviewed the previous year's financial records. The records indicate that the Society is in good financial condition. We began the 1995-96 year with $136,000 in total assets. We completed the new book, ADVANCES IN PEANUT SCIENCE, paid for it, conducted all of the normal activities of the Society, and at the beginning of the 1996-97 year have total assets of $139,000 which includes the new book inventory.

The Committee discussed the proposed budget for 1996-97 and made a few changes in figures to be recommended to the Board of Directors for their consideration. The final budget of $74,000 approved by the Board of Directors is shown in their report in these PROCEEDINGS. The Committee recommended to the Executive Officer that he consider investing some of the Certificates of Deposit in longer-term instruments if the interest rates are favorable to do so when they individually mature.

The Chairman thanked all for attending and thanked the committee members for their service to the Society. The meeting adjourned at 4:10 p.m.

Respectfully submitted,

Charles E. Simpson, Chair

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
BUDGET 1996-97

RECEIPTS

Annual Meeting Registration	$15,000
Membership Dues	15,000
Special Contributions	9,000
Differential Postage	2,500
Peanut Science & Technology	500
Quality Methods	0
Proceedings and Reprint Sales	0
Peanut Science Page Charges & Reprints	18,000
Interest	5,000
Advances in Peanut Science	9,000
TOTAL RECEIPTS	**$74,000**

EXPENDITURES

Annual Meeting	$13,500
CAST Membership	600
Office Supplies	2,000
Secretarial Services	12,800
Postage	5,000
Travel - Officers	1,200
Legal Fees	500
Proceedings	4,000
Peanut Science	27,100
Peanut Science and Technology	0
Peanut Research	1,500
Quality Methods	0
Bank charges	200
Miscellaneous	300
Advances in Peanut Science	0
Reserve	5,300
TOTAL EXPENDITURES	**$74,000**

Excess Receipts over Expenditures	0

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
BALANCE SHEET FOR FY 1995-96

ASSETS	June 30, 1995	June 30, 1996
Petty Cash Fund	$ 662.09	$ 508.85
Checking Account	25,343.38	21,815.12
Certificate of Deposit #1	20,755.92	22,007.82
Certificate of Deposit #2	13,418.81	14,211.01
Certificate of Deposit #3	12,540.18	13,290.14
Certificate of Deposit #4	32,734.23	9,943.23
Certificate of Deposit #5	12,332.18	13,406.19
Certificate of Deposit #6	10,000.00	10,898.34
Money Market Account	2,945.66	3,045.19
Savings Account (Wallace Bailey)	1,141.89	1,100.17
Inventory of PEANUT SCIENCE AND TECHNOLOGY Books	7,080.00	5,310.00
Inventory of ADVANCES IN PEANUT SCIENCE Books	________	24,145.92
TOTAL ASSETS	**$138,954.34**	**$139,681.98**

LIABILITIES		
No Liabilities	0.00	0.00
TOTAL FUND BALANCE	**$138,954.34**	**$139,681.98**

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

	June 30, 1995	June 30, 1996
RECEIPTS		
Advances in Peanut Science Book		$ 11,332.52
Annual Meeting Registration	$15,005.00	14,575.00
Contributions	16,975.00	8,900.00
Differential Postage	2,237.50	1,909.00
Dues	15,235.00	9,779.00
Interest	4,677.08	7,344.53
Peanut Research	90.00	34.00
Peanut Science	690.00	697.50
Peanut Science Page Charges	13,866.30	26,377.24
Peanut Science and Technology Book	1,127.50	400.00
Proceedings	26.00	160.00
Quality Methods	30.00	0.00
Spouse Registration	243.00	1,451.00
Other Income	220.76	1,912.63
CD Transfer		25,000.00
TOTAL RECEIPTS	**$70,423.14**	**$109,872.42**
EXPENDITURES		
Advances in Peanut Science Book		$ 31,738.95
Annual Meeting	$11,920.15	12,580.53
Bank Charges	91.50	173.50
CAST Membership	478.40	1,059.15
Corporation Registration	100.00	115.00
Federal Withholding	666.00	732.00
FICA	1,330.32	1,383.84
Legal Fees	315.00	350.00
Medicare	311.04	323.76
Miscellaneous	0.00	190.00
Office Expenses	1,693.42	534.73
Oklahoma Withholding	270.60	297.36
Peanut Research	6,681.19	1,200.00
Peanut Science	25,284.83	33,569.70
Peanut Science and Technology Book	80.00	0.00
Postage	3,620.99	4,896.59
Proceedings	3,410.06	3,852.63
Sales Tax	35.60	83.80
Secretarial Services	8,970.72	9,276.84
Spouse Program Expenses	1,028.76	3,377.22
Travel - Officers	348.21	1,172.00
TOTAL EXPENDITURES	**$66,636.79**	**$106,907.60**
EXCESS RECEIPTS OVER EXPENDITURES	**$ 3,786.35**	**$ 2,964.82**

PEANUT SCIENCE BUDGET
1996-97

INCOME

Page and reprint charges	$18,000.00
Journal orders	690.00
Foreign mailings	1,100.00
APRES member subscriptions (470 x $13.00)	6,110.00
Library subscriptions (80 x $15.00)	1,200.00
TOTAL INCOME	**$27,100.00**

EXPENDITURES

Printing and reprint costs	$13,000.00
Editorial assistance	12,000.00
Office supplies	300.00
Postage	1,800.00
TOTAL EXPENDITURES	**$27,100.00**

ADVANCES IN PEANUT SCIENCE
SALES REPORT AND INVENTORY ADJUSTMENT
1995-96

	Books Sold	Remaining Inventory
Beginning Inventory		1413
1st Quarter	42	1371
2nd Quarter	110	1261
3rd Quarter	30	1231
4th Quarter	79	1152
TOTAL	261	

261 books sold x $20.96 = $5,470.56 decrease in value of book inventory.

1152 remaining books x $20.96 (book value) = $24,145.92 total value of remaining book inventory.

Fiscal Year	Books Sold
1995-96	261

PEANUT SCIENCE AND TECHNOLOGY
SALES REPORT AND INVENTORY ADJUSTMENT
1995-96

	Books Sold	Remaining Inventory
Beginning Inventory		581
1st Quarter	11	570
2nd Quarter	19	551
3rd Quarter	1	550
4th Quarter	19	531
TOTAL	50	

The 1994-95 Sales Report shows an ending inventory of 708. This does not correspond with the beginning inventory number on this report since the number of PEANUT SCIENCE & TECHNOLOGY books was adjusted at the beginning of FY 1995-96 to reflect the quantity of salable books on hand (many books were printed incorrectly).

50 books sold x $10.00 = $500.00 decrease in value of book inventory.

531 remaining books x $10.00 (book value) = $5,310.00 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

PUBLIC RELATIONS COMMITTEE REPORT

The Public Relations Committee met on July 9, 1996. Five members were present.

The committee discussed ways to increase membership. The following suggestions were made:

1. The committee will contact the State Extension Specialists with peanut responsibilities and enlist their help in contacting agents. The Specialists will be encouraged to mail membership brochures to agents.

2. Specialists and agents will be encouraged to tell growers about APRES and provide membership brochures at county production meetings.

3. The committee would like to work with the National Peanut Council (NPC) and contact shellers about APRES membership. We would also like for Kim Cutchins (NPC President) to include APRES membership information in the NPC newsletter.

4. The committee will also contact universities with active peanut research and extension programs to encourage graduate and undergraduate students to join APRES.

The committee also discussed the need for an APRES Homepage on the Internet. This should be handled through Ron Sholar's office and should be tied into other peanut home pages. The newsletter could be put on the Internet along with APRES membership information.

The committee also considered offering members a complete membership roster broken down into areas of expertise.

The committee suggests that the Board consider moving the annual meeting to facilitate weekend travel.

The Public Relations Committee would like for the chair of each awards committee to furnish us with a short written document describing the award and the award recipient. This will be used for local newspapers, national newsletters, etc.

Since our 1995 meeting, the peanut industry lost three valuable members. Resolutions will be printed in the PROCEEDINGS.

Respectfully submitted,

Jan Spears, Chair

RESOLUTIONS

Whereas Dr. Lawrence I. Miller, retired professor of Plant Pathology at Virginia Polytechnic Institute & State University, was a pioneer in research on the biology and control of leaf spot, stem rot, and nematodes in peanuts, and

Whereas Dr. Miller received awards and honors, including the National Peanut Council Golden Peanut Award in 1966, the Distinguished Service Award from the Potomac Division of the American Phytopathological Society in 1987, President of the Society of Nematologists in 1977, and President of the Society of Mexican Nematologists in 1994, and

Whereas Dr. Miller served his country, agriculture, professional societies, and science in an exemplary manner, and

Whereas Dr. Miller passed away in Blacksburg, Virginia, on March 8, 1996,

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

Whereas Dr. Kenneth H. Garren, retired USDA-ARS Research Leader and Plant pathologist at the Tidewater Agricultural Research and Extension Center, was a leader in peanut disease research, and

Whereas Dr. Garren made numerous contributions in his research on diseases of peanut and through his dedicated service to the American Peanut Research & Education Society (APRES) and the peanut industry, and

Whereas Dr. Garren received awards and honors such as the National Peanut Council Golden Peanut Award in 1974 and Fellow of APRES in 1982, and

Whereas Dr. Garren served his country, agriculture, professional societies, and science in an exemplary manner, and

Whereas Dr. Garren passed away in Franklin, Virginia, on October 19, 1995,

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

Whereas Dr. John C. Smith, retired Entomologist from Virginia Polytechnic Institute and State University located at the Tidewater Agricultural Research and Extension Center in Suffolk, Virginia, was a leader in peanut entomology, and

Whereas Dr. Smith made numerous contributions to science and education through his research on insect control of peanut and his dedicated service to the American Peanut Research and Education Society, Inc. (APRES) and the peanut industry, and

Whereas, Dr. Smith served his country, agriculture, professional societies, and science in an exemplary manner, and

Whereas, Dr. Smith passed away in Franklin, Virginia, on January 1, 1996,

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

PUBLICATIONS AND EDITORIAL COMMITTEE REPORT

The Publications and Editorial Committee of APRES met July 9, 1996, in Orlando, Florida. Members present were Jim Kirby, Tim Brenneman, W.C. Johnson III, and Dave Knauft. Harold Pattee, Corley Holbrook, and Tom Stalker were also present.

Old Business:

The committee received Tom Stalker's PEANUT SCIENCE Editor's report. Volume 21 of PEANUT SCIENCE had 35 manuscripts totaling 174 pages. There has been a decline in the past year in numbers of manuscripts submitted, possibly related to declining membership. Although postage rates have gone up, PEANUT SCIENCE has shown a net profit of $1,666.70 for the last two years of publication.

The revised guidelines for authors approved at last year's meeting have been printed in PEANUT SCIENCE and are resulting in a more uniform, professional format. Methods of decreasing our turn-around time on manuscripts were discussed with ideas including contacting reviewers prior to sending them manuscripts and seeking three reviews from the start.

Retiring from the PEANUT SCIENCE editorial board after six years of service are Jay Williams (Engineering) and Joe Funderburk (Entomology). Replacements recommended are Chris Butts (Engineering), Gary Kochert (Molecular Genetics), and Tim Sanders (Food Science). The shift in disciplines reflects the relative number of papers submitted to the journal.

The new book ADVANCES IN PEANUT SCIENCE is ready and is being sold and distributed. Various means of promoting the book were discussed. Corley Holbrook volunteered to contact libraries that currently receive PEANUT SCIENCE. Carroll Johnson and Tim Brenneman will contact state commodity commissions for peanuts to purchase and donate copies to county extension offices, and efforts will continue with Kim Cutchins (National Peanut Council President) to investigate advertising in grower and industry publications.

PEANUT RESEARCH is now co-edited by Corley Holbrook and Keith Rucker, both from Tifton. Keith replaces Marie Griffin who resigned last year.

New Business:

It was brought to the attention of the committee that the section on peanuts in the Grolier Multimedia Encyclopedia on CD-ROM was badly outdated. The committee instructed Tim Brenneman to contact the publisher and volunteer to rewrite this section.

Respectfully submitted,

Tim Brenneman, Chair

PEANUT SCIENCE EDITOR'S REPORT

Volume 22 of PEANUT SCIENCE had 35 manuscripts totaling 174 pages. Volume 23, #1, will have 13 manuscripts. Galley proofs for all but one of these manuscripts have been returned to the printer, and the next journal should be received by the membership in early August.

During the year 07/01/95 - 06/30/96, 31 manuscripts were submitted to PEANUT SCIENCE. Of these, 6 have been accepted, 18 are still in review, and 7 have been released to the authors. Two manuscripts have been accepted for Volume 23, #2. The number of manuscripts submitted in 1995-96 was significantly fewer than during the previous year and may reflect the continuing decrease in Society membership.

The guidelines approved during the 1995 business meeting, and since printed in PEANUT SCIENCE, have helped to standardize the format of the journal. The font size for Abstract and Materials and Methods has been increased for easier readability, but this has not resulted in significant page charges to authors.

Last year's budget has been itemized and a proposed budget for the coming year has been completed and can found in these PROCEEDINGS. Postage rates increased during 1995, and the journal has experienced an increased financial burden. However, during the past year PEANUT SCIENCE had a net profit of $3,213.71 (over the past two years the profit was $1666.70). This was partially due to carry-over receipts from the previous year when a net loss was recorded.

Because checks from authors and bills for printing for the spring issue of PEANUT SCIENCE are not received until after the annual meetings, the Editorial and Publications Committee and the Finance Committee may want to consider future reporting on a volume basis (i.e. calendar year) in addition to, or in place of, reports for a budget year. This would allow the committees to assess actual costs for publication and better compare receipts for page charges, reprints, and foreign mailings with printing costs and postage charges.

Another budgetary item is discrepancies in reporting procedures by the editor and the official books kept by the APRES Secretary. For example, the secretary's records show expenses for funds forwarded to the editor during the year funds are transferred, but the editor reports actual expenses drawn from this amount over several years. The sum averages out over several budget cycles, but it is difficult to tell the exact cost of the journal activities at the APRES office. Secondly, the Secretary's records do not indicate the amount allocated to the journal from membership dues or excess postage charged to foreign members. This results in a net loss posted in the official accounting books. These are simply bookkeeping issues but ones which an auditor may question in the future.

After contacting the APRES Secretary's office, all printing bills for PEANUT SCIENCE will now pass through the Editor's office so they can be verified prior to payment. This will also allow the Editor to better manage page and reprint charges to assure costs of the journal are covered.

Several authors have contacted the Editor concerning excessive time for reviews and subsequent publication of articles in the journal. Manuscripts need to be returned to authors within six months. Requesting three versus two reviews by associate editors may help this situation because problems arise when a reviewer does not return manuscripts as requested or when evaluations are vastly different. Sometimes both situations occur and long delays result. Contacting potential reviewers prior to sending the manuscript may also speed up the process of returning manuscripts to authors in a reasonable time frame. Associate editors can also serve as one of the reviewers.

Finally, all members of the editorial staff must be careful to give completely unbiased reviews of manuscripts based on scientific merit, conformity of style for the journal, and proper use of the English language. At least one author expressed an opinion during the past year about delays incurred for manuscript reviews being used for personal gain by an Associate Editor and/or the Editor. I am unaware of any manuscript being held up for publication or rejected based on conflicts of interest versus for reasons of scientific merit. Manuscripts are sent to Associate Editors outside the state from which a paper was written to obtain unbiased reviews, and several Associate Editors have returned manuscripts when they thought a problem may arise. Although the Editor reads and edits all manuscripts before acceptance, he has not rejected a manuscript after the Associate Editor recommended acceptance for publication (even ones with major revisions still needed). However, the editorial staff should be aware that at least one member of the Society may view this as a problem, and conflicts of interest must be avoided at all times.

Dr. E. Jay Williams and Dr. Joe E. Funderburk have completed six-year terms as Associate Editors of PEANUT SCIENCE. Sincere thanks is expressed to these individuals for their service to the journal and to APRES.

Respectfully submitted,

H. Thomas Stalker, Editor
PEANUT SCIENCE

NOMINATING COMMITTEE REPORT

The 1995-96 Nominating Committee members were as follows: Bill Odle, Chairman; Walt Mozingo; Paul Blankenship; and Doyle Welch.

After numerous communications among the committee members and other appropriate members from the states and industry areas, the following list of nominees was submitted to the Board for 1996-97:

President-Elect	Chip Lee
State Employee Representative (SE)	John Beasley
State Employee Representative (SW)	Mike Schubert
Industry Representative (Manufactured Products)	Doug Smyth

This slate was also presented to the membership during the 1996 business meeting and was approved.

Respectfully submitted,

William C. Odle, Chair

FELLOWS COMMITTEE REPORT

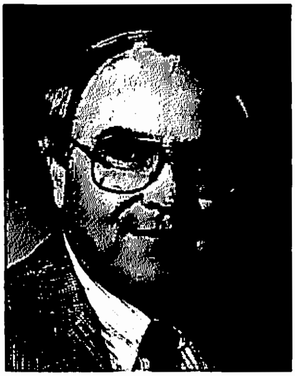
Nominations for recognition as APRES Fellow were received on or before March 1, 1996, as required. Nomination packets and evaluation forms for each nominee were sent to the Committee members by overnight carrier on March 4, 1996. The chair and all five members of the committee evaluated each nomination according to the guidelines as published in the PROCEEDINGS of APRES Volume 27, pages 95-99. Scores were compiled and compared with respect to the total points and ranking of each nominee. A tabulation and summary of the results were sent by overnight carrier to the APRES president, Dr. Harold Pattee, on April 2, 1996.

The chair and four members of the committee met at 1:00 p.m. on July 9, 1996, to review work completed in 1995-96 and responsibilities in 1996-97. Discussions were held on: 1) criteria for evaluation of candidates, and 2) nomination format and support documents.

Respectfully submitted,

Patrick M. Phipps, Chair

BIOGRAPHICAL SUMMARIES OF FELLOWS



Dr. Thomas B. Whitaker, Agricultural Engineer, USDA-ARS and Professor of Biological and Agricultural Engineering, North Carolina State University, has distinguished himself as an expert in aflatoxin sampling and detection. He developed methods to evaluate the reliability of procedures to remove aflatoxin contaminated commodities from the food chain and has advanced new strategies for measuring quality and grade factors in peanut. His research led to the first empirical estimates of errors associated with the test procedures used to measure the aflatoxin concentration in peanut products. Theoretical distributions were used to describe observations at buying points which then led to a standardized method being adopted by the USDA and then other international governmental agencies to sample grain lots for aflatoxin. Because the grading sample size had to be increased to reduce sample preparation errors, Dr. Whitaker proceeded to develop a water slurry method to extract aflatoxins from peanuts. The slurry method reduces the amount of toxic solvents used for extractions and has been adopted as a standard procedure by USDA aflatoxin laboratories. His current research efforts are providing new insights and statistical designs for reducing aflatoxin and improving the quality of farmers stock peanuts.

Dr. Whitaker has made significant contributions to the transfer of technology outside the U.S. and to the design of toxin-sampling plans for inspecting commodities in export markets. He has actively participated on several international committees to reduce the number of U.S. peanut export lots rejected in foreign markets. His work with the Food and Agricultural Organization, World Health Organization and the United Nations has helped to standardize aflatoxin sampling plans among trading nations. Dr. Whitaker has advised graduate students at NCSU and provided training to FAO trainees from many foreign countries. He provides technical assistance on a continuing basis to numerous food processors and manufacturers.

In addition to aflatoxin research, Dr. Whitaker's mathematical models were used to evaluate the moisture content of peanut kernels and hulls. This work led to the establishment of an Official ASAE standard for oven methods to measure moisture content of peanuts. His research on drying time and temperature schedules has helped to minimize drying costs and maximize peanut quality. His research on peanut quality and aflatoxin has led to more than 60 scientific articles and book chapters.

Dr. Whitaker has been very active in APRES since 1969. He has served as an associate editor of PEANUT SCIENCE for six years, a member of the Board of Directors for three years, and as chairman of the Quality, Golden

Peanut Research and Extension Award, and New Book Ad-Hoc Committees. He received the Golden Peanut Research Award from the National Peanut Council in 1980, the Bailey Award from APRES in 1975 and 1991, and was elected as Fellow, American Society of Agricultural Engineers in 1995.

Dr. Charles W. Swann is the extension specialist for peanut in Virginia and a Professor of Crop and Soil Environmental Sciences, Virginia Polytechnic Institute and State University, Suffolk, Virginia. Dr. Swann has been active in peanut research and education for 28 years and has authored or co-authored more than 168 publications. He is recognized as a leader in development of educational programs for peanut production and weed management in peanut and its rotational crops. Dr. Swann has developed and implemented extension programs to introduce new technology and information for efficient, safe, environmentally sound and effective weed management systems for peanut and crops grown in rotation with peanut (corn, cotton, soybean). His research has included studies on agronomic management of peanut production and the response of the virginia-type peanut to supplemental calcium applications.

Dr. Swann has contributed to APRES through his service on many committees and dedication to improving the efficiency of peanut production. His service has included that of associate editor of PEANUT SCIENCE for six years and member of the Board of Directors for three years. Dr. Swann has contributed to the advancement of science and peanut research and education through his activities and assignments as chairman of many committees in the Weed Science Society of America, the National Peanut Council, the Southern Weed Science Society, and the Virginia-Carolina Peanut Advisory Committee. He has served internationally through special assignments to Paraguay, Brazil, the Caribbean, France, Germany, and Switzerland.

Dr. Swann's leadership ability in extension programs in peanut production and weed management has been recognized by his receipt of the American Peanut Research and Education Society DowElanco Award for Excellence in Extension, the Weed Science Society of America Outstanding Extension Worker Award, the University of Georgia D. W. Brooks Distinguished Service Award, and the Virginia Tech Alumni Distinguished Service Award for Excellence in Extension.

Dr. Swann is a leader in the agricultural community in the Virginia-North Carolina peanut production area, as well as nationally and internationally.

Through his programs in extension and applied research, he has made a major contribution to the profitability of the peanut industry in Virginia and the U.S.

Dr. H. Thomas Stalker, Professor of Crop Science and Biotechnology, North Carolina State University, is internationally known for his work with wild species of peanut and particularly in the genetics and introgression of valuable genes into cultivated peanut. He has presented numerous invited talks and papers, including nine international presentations. Dr. Stalker has an exceptionally strong research program, as evidenced by 85 refereed articles, review articles, and book chapters as well as over 80 published abstracts of presentations at professional meetings.

Dr. Stalker's work has included evaluation of wild species for chemical composition, resistance to economically important insect pests, fungal and viral diseases, and molecular marker variability. He has carried out important physiological work to understand the barriers to interspecific hybridization in peanut and to develop means for overcoming these barriers. Through this work, he has been instrumental in providing a better understanding of the evolutionary beginnings of the peanut. Recently, Dr. Stalker and a graduate student identified the first RFLP marker associated with an economically important trait in peanut, in this case nematode resistance. His work in collaboration with Dr. Gary Kochert has provided the basis for the first molecular maps in peanut, and he continues to use molecular markers to characterize variability within species and to trace the transfer of chromosome segments from wild to cultivated species.

Dr. Stalker has contributed his insight, organizational skills, communication skills, and dedication to APRES in many ways. He has organized technical sessions on four occasions, coordinated several symposia, and provided ideas for annual meeting reorganization, graduate student competitions, and the Bailey Award. He represents APRES to the American Society of Agronomy. Dr. Stalker has served for eight years as associate editor and is entering his third year as editor of PEANUT SCIENCE. Along with Dr. Harold Pattee, he edited the new peanut book, ADVANCES IN PEANUT SCIENCE. These two publications are the major form for dissemination of new information in peanut science, and their high quality attests to many long hours of editing by Dr. Stalker to insure accuracy and readability.

Dr. Stalker's scientific and service contributions to the peanut community make him most deserving of an APRES Fellow Award.

Guidelines for

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY FELLOW ELECTIONS

Fellows

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

Eligibility of Nominators

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

Eligibility of Nominees

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

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

Nomination Procedures

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

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

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

Basis of Evaluation

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

Processing of Nominations

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

Recognition

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

Distribution of Guidelines

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

Format for

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY FELLOW NOMINATIONS

TITLE: Entitle the document "Nomination of ____________ for Election to Fellowship by the American Peanut Research and Education Society", inserting the name of the nominee in the blank.

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

NOMINATOR: Include the typewritten name, signature, mail address (with zip code) and telephone number (with area code).

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

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

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

I. PERSONAL ACHIEVEMENTS AND RECOGNITION (10 points)

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

II. ACHIEVEMENT IN PRIMARY (50 points) AND SECONDARY (10 points) FIELDS OF ACTIVITY

A. Research

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

B. Extension

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

C. Service to Industry

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

D. Administration or Business

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

III. SERVICE TO THE PROFESSION (30 points)

A. Service to APRES

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

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

B. Service to the profession outside the Society

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

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

EVALUATION: Identify in this section, by brief reference to the appropriate materials in sections II and III, the combination of the contributions on which the nomination is based. The relevance of key items explaining why the nominee is especially well qualified for fellowship should be noted. However, brevity is essential as the body of the nomination, excluding publication lists, should be confined to not more than eight (8) pages.

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

BAILEY AWARD COMMITTEE REPORT

A total of nine manuscripts were submitted and evaluated by the members of the Bailey Award Committee. Candidate papers are listed below.

The Bailey Award in 1996 is awarded to H.T. Stalker, B.B. Shew, G.M. Garcia, M.K. Beute, K.R. Barker, C.C. Holbrook, J.P. Noe, and G.A. Kochert for their paper titled "*Meloidogyne arenaria* resistance in advanced generation *Arachis hypogaea* x *A. cardenasii* hybrids".

The Bailey Award Committee meeting, which was held on July 9, 1996, was attended by three committee members.

Respectfully submitted,

Austin Hagan, Chair

<u>Papers Submitted for the 1996 Bailey Award</u>

1) *Meloidogyne arenaria* resistance in advanced generation *Arachis hypogaea* x *A. cardenasii* hybrids. H.T. Stalker, B.B. Shew, G.M. Garcia, M.K. Beute, K.R. Barker, C.C. Holbrook, J.P. Noe and G.A. Kochert.

2) Effects of band width and timing of chlorpyrifos granule applications on white mold incidence and wireworm damage to irrigated peanut. S.L. Brown and T.B. Brenneman.

3) Thrips populations and spotted wilt disease progress on resistant/susceptible cultivars treated with various insecticides. J.W. Todd and A.K. Culbreath.

4) Effects of a cotton-peanut rotation with and without rye on diseases, nematodes, and crop yields. T.B. Brenneman, N.A. Minton, S.H. Baker, G.A. Herzog and G.J. Gascho.

5) Stability of sweet and instability of roasted peanut and other attribute intensities in long-term sensory studies using freezer-stored roasted peanut paste. H.E. Pattee and F.G. Giesbrecht.

6) Evaluation of classic and PGR-IV as growth regulators for peanut. A.C. York and W.E. Mitchem.

7) Detection of polymorphic DNA markers in cultivated peanut. G. He, M. Watts and C.S. Prakash.

8) An algorithm for predicting outbreaks of Sclerotinia blight of peanut and improving the efficacy of fungicide sprays. P.M. Phipps.

9) Southern stem rot inoculation techniques. F.M. Shokes, K. Rozalski, D.W. Gorbet and T.B. Brenneman.

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.

5. Presented within the time allowed.

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

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

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

2. Originality of concept and methodology.

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

4. Contribution to peanut scientific knowledge.

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

JOE SUGG GRADUATE STUDENT AWARD REPORT

Eight presentations were made in the paper session. The competition among the students was keen, and all presentations were excellent. Marvin Beute skillfully moderated the paper session which created a friendly and relaxed environment during the session.

Five judges scored the papers based on clarity of presentation, quality of visual aids, originality and contribution to peanut science, overall quality and clarity of abstract, and response to questions. The five judges were: James Grichar of Texas A&M, Ames Herbert of VPI, William Odle of ISK, Paul Backman of Auburn University, and Hassan Melouk, USDA-ARS in Oklahoma.

The first place award went to M.D. Franke, University of Georgia, for his presentation titled "Variability in fungicide sensitivity of *Sclerotium rolfsii* from peanut in Georgia". The paper was co-authored by T.B. Brenneman and K.L. Reynolds. The second place award goes to D.B. Langston of VPI for his presentation titled "The effect of host development and environment on control of Sclerotinia blight". The paper was co-authored by P.M. Phipps. The first place winner received a check for $200. The second place winner received a check for $100. Hassan Melouk presented the checks on behalf of Robert Sutter and the North Carolina Peanut Growers Association.

Respectfully submitted,

Hassan A. Melouk, Chair

COYT T. WILSON DISTINGUISHED SERVICE AWARD REPORT

Dr. Olin D. Smith was recognized for a long career of outstanding contributions to APRES and the peanut industry and received the 1996 Coyt T. Wilson Distinguished Service Award.

Respectfully submitted,

John W. Wilcut, Chair

BIOGRAPHICAL SUMMARY OF
COYT T. WILSON DISTINGUISHED SERVICE AWARD RECIPIENT

Dr. Olin D. Smith is Professor of Soil and Crop Science at Texas A&M University, College Station, Texas. He received his Ph.D. in Plant Breeding in 1969 from the University of Minnesota. He also holds M.S. and B.S. degrees from Oklahoma State University in Agronomy (Plant Breeding and Field Crops). Dr. Smith teaches graduate level plant breeding in the Soil and Crop Science Department, trains graduate students and does research as a peanut breeder. He has helped train more than 60 graduate students from the USA and several other countries.

Dr. Smith's research has centered on developing peanut germplasm materials which were resistant to disease organisms. To that end he has produced numerous breeding lines which have excellent pod rot resistance, and three new varieties have been released--Toalson, Tamspan 90, and Tamrun 96. Toalson carried genes for much more than pod rot resistance and, being a parent of Tamspan 90, passed on many of those desirable traits. Tamspan 90 has proven to possess excellent resistance to sclerotinia blight, caused by *Sclerotinia minor*. Conservative estimates of the value of Tamspan 90 for the peanut growers of Texas and Oklahoma in 1995 exceeded $10 million, an estimated 30 times the cost of development of the variety, in one year. Dr. Smith has been active in the transfer of the sclerotinia resistance of Tamspan 90 into agronomically acceptable runner lines.

Dr. Smith has been much concerned with stable production in his variety development efforts. Three varieties were released for higher yield, early maturity, and better grades--Tamnut 74, Langley, and Tamrun 88. These varieties have contributed much to the economy of the peanut growers in the Southwest.

Recently Dr. Smith has become very active in the search for resistance to the tomato spotted wilt virus (TSWV) which has been so devastating to the peanut crop in South Texas for several years and has become a major constraint in Alabama, Florida, and Georgia. Dr. Smith's most recent variety release, Tamrun 96, far exceeded any commercial varieties in yield and value per acre under heavy TSWV pressure in 1995. This new variety also has a moderate level of sclerotinia resistance and out yields Florunner from 11 to 44%, depending upon disease infection.

Dr. Smith has played a major role in the Peanut CRSP, serving as a Project Leader and on the Technical Committee of CRSP. He was chair of the Technical Committee from 1987 to 1992.

Dr. Olin Smith's contributions to the peanut industry of the USA and the world the past 26 years have been very significant. He has published 46 refereed journal articles, 10 non-refereed journal articles, 16 Texas Agricultural Experiment Station publications, two book chapters, two review articles, 65 popular articles, and more than 50 grant reports. He has released six new peanut varieties and six germplasm lines. His work on disease resistance in peanut will be utilized for many years to come.

Dr. Smith has been a member of APRES and APREA since 1970. He served as President, he has served on numerous standing and ad hoc committees, and he played key roles in the publication of the first two books and in getting the PEANUT SCIENCE journal started. Dr. Smith was elected Fellow of APRES in 1986.

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 Soceity is critical. The nominee may assist in order to assure the accuracy of the information needed. The documentation should be brief and devoid of repetition. Six copies of the nomination packet should be sent to the committee chair.

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

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

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

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

Qualifications of Nominee

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

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

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

Award and Presentation

The award shall be a bronze and wood plaque purchased by the Society and presented at its annual business meeting.

DOWELANCO AWARD COMMITTEE REPORT

The APRES DowElanco Awards Committee consisted of Lance Peterson, Barry Brecke, Rick Brandenburg, J.W. Smith, Jr., Betsy Owens, and Mike Schubert.

One nomination was received for the DowElanco Award for Excellence in Extension and three nominations were received for the DowElanco Award for Excellence in Research. Nomination materials were distributed to committee members. After examining the materials, committee members voted for their choice for the award. Votes were tabulated and award recipients identified. All nominees had excellent credentials.

Dr. John A. Baldwin was selected to receive the Award for Excellence in Extension and Mr. R. Walton Mozingo was selected to receive the Award for Excellence in Research.

The APRES Board of Directors has voted to change the name of the extension award to the DowElanco Award for Excellence in Education. As stated in their proposal, the new name better reflects "the broad purpose of APRES (research and education)" and provides "a mechanism for recognizing APRES members whose major contributions to the peanut industry are not covered by Extension. Extension does not represent all areas of education but use of the title 'Education' would include extension, teaching, etc." This name change will be effective with the 1997 award. There will be no change in the guidelines because the current guidelines read that "the award will recognize an individual or team for excellence in educational programs".

Respectfully submitted,

Mike Schubert, Chair

BIOGRAPHICAL SUMMARY OF
DOWELANCO AWARD FOR EXCELLENCE IN EXTENSION RECIPIENT

Dr. John A. Baldwin is Extension Peanut Specialist with the University of Georgia Cooperative Extension Service. He received his B.S. degree in Animal Science from Colorado State University in 1969, his M.S. degree in Animal Science from the University of Florida in 1973, and his Ph.D. in Agronomy from the University of Florida in 1985. Dr. Baldwin began his extension career as Extension Agent for 4-H and Agriculture in Florida in 1973. He was a County Extension Director in Florida from 1975 to 1987. In 1987 he became an Assistant Professor and Extension Agronomist--Peanuts for the University of Georgia, Crop and Soil Sciences Department, located at Tifton, Georgia. He was promoted to Associate Professor and Extension Agronomist--Peanuts in 1993.

Dr. Baldwin is recognized for developing and implementing an outstanding statewide educational program for peanut production. He is co-leader of the University of Georgia extension peanut team that consists of seven members. Dr. Baldwin is recognized as one of the leading authorities on peanut production and cropping systems that include peanut. Nominators emphasize particular success in peanut quality and production management. Dr. Baldwin has developed educational programs that stress the point that peanut quality begins on the farm. Educational programs for managing peanuts for high quality have included proper irrigation to minimize aflatoxin and to improve maturity and potential flavor. He has emphasized use of the hull scrape method for assuring crop maturity and timely harvest.

Dr. Baldwin coordinated a series of peanut quality programs in cooperation with Planters LifeSavers Company and peanut agronomists in Florida and Alabama that were attended by more than 800 producers. His educational programs on peanut production management have provided in-service training and producer education concerning seed quality, planting management, production efficiency, rotations, and harvest efficiency. He has conducted on-farm demonstrations and tours, written and co-authored bulletins, chapters in industry publications, a training video on using the hull scrape method, and a video entitled "Georgia the Peanut State". Dr. Baldwin has served as a member and chairman of the University of Georgia Peanut Commodity Committee. As a member of the tour subcommittee, he has helped organize and conduct the Georgia Peanut Tour during the past eight years. More than 1600 people have attended this tour.

Dr. Baldwin has received numerous awards and honors including certificates of excellence for publications and videos from the American Society of Agronomy, Early Career Award in Technology Transfer from the Southern Section of the American Society of Agronomy, nomination for the Bailey Award, and the Peanut Research/Extension Award from the Georgia Peanut Commission. He has been active in APRES, American Society of Agronomy, and National Association of Agricultural County Agents.

John Baldwin was nominated for this award by research and extension colleagues who characterize him as both a leader and a team player. One colleague wrote, "He is able, dedicated and innovative, and he is not hesitant to stand up for what he believes in. He is a 'people person' and a 'peanut person'. . .". Another colleague wrote, "John has unusual depth, conveyed in a friendly manner. His heart and thoughts are always toward the good of the industry."

BIOGRAPHICAL SUMMARY OF DOWELANCO AWARD FOR EXCELLENCE IN RESEARCH RECIPIENT

Mr. R. Walton Mozingo is an Associate Professor with Virginia Polytechnic Institute and State University, located at the Tidewater Agricultural Experiment Station at Suffolk, Virginia. Mr. Mozingo earned the Bachelor of Science (1963) and Master of Science (1968) degrees from North Carolina State University in Crop Science. He served as an instructor at Virginia Tech from 1968 to 1974. He became an Assistant Professor in 1974 and Associate Professor in 1985.

Walt Mozingo has conducted a highly successful peanut research program through which he has evaluated yield potential, quality, and environmental stability of advanced peanut breeding lines for the Virginia-North Carolina peanut production area. He has developed management systems for field testing and improved laboratory testing methodology for evaluation of new peanut breeding lines. Mr. Mozingo developed and coordinates the Peanut Variety and Quality Evaluation (PVQE) program, in which advanced peanut breeding lines and cultivars are evaluated for field performance and quality. The field trails are located in a variety of soil and environmental conditions. Peanuts harvested from these trials are evaluated for agronomic traits, grade and its components, and crop value, and quality parameters (blanchability, fatty acid composition, iodine value, oleic/linoleic ratio, polyunsaturated/saturated ratio, roasted peanut flavor, and peanut butter flavor). This program has provided for evaluation of advanced breeding lines for milling and product quality in a timely manner in advance of cultivar release. Forty-eight peanut lines were evaluated in the PVQE program in 1995. More than 340 cultivars and advanced peanut breeding lines have been evaluated since 1968. Of these, 22 cultivars and 8 germplasm lines have been released.

Mr. Mozingo has also conducted research on calcium levels and seed spacing in peanut. He has cooperated with agricultural engineers to design and build a research-scale peanut dryer and a laboratory device for peanut skin removal from small samples. He was the lead scientist in the release of the new cultivar VA-C92R. He has been actively involved in training peanut producers and other industry personnel.

Walt Mozingo has received numerous honors and awards, including the National Peanut Council Research and Education Award. He is a Fellow of the American Peanut Research and Education Society and has served as its president. He has been active on numerous APRES committees and as Associate Editor of PEANUT SCIENCE and QUALITY METHODS. He has been a nominee for the Bailey Award for an outstanding paper delivered at an annual APRES meeting.

Colleagues from Virginia Tech, other universities, and industry praised his effective leadership and team-building qualities that are reflected in his research activities. One supporter writes that Walt Mozingo ". . .is innovative, intelligent and a fine person. Walt is an excellent representative of Virginia Tech, the state of Virginia and the entire peanut industry." Another writes, "In summary, R. Walton Mozingo has developed a research program that is nationally and internationally recognized. He has truly established himself as a leader in the peanut industry."

Guidelines for

DOWELANCO AWARDS FOR EXCELLENCE IN RESEARCH AND EDUCATION

I. DowElanco Award for Excellence in *Research*

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

Eligibility of Nominees

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

II. DowElanco 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 DowElanco Awards Committee are not eligible for the award while serving on the committee.

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

DowElanco 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 DOWELANCO AWARDS

General Instructions: Listed below is the information to be included in the nomination for individuals or teams for the DowElanco 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:

___ DowElanco Award for Excellence in Education

___ DowElanco Award for Excellence in Research

****

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

Nominee ______________________________

Address ______________________________

Title ______________ Tel No. ______________

II. Nominator:

Name ______________ Signature ______________

Address ______________________________

Title ______________ Tel No. ______________

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

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

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

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

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

PEANUT QUALITY COMMITTEE REPORT

The annual meeting of the Peanut Quality Committee convened at 3:04 p.m. on Tuesday, July 9, 1996. There were 18 people in attendance.

The meeting began with a discussion on the development of a published set of chemical quality standards. The committee agreed that the development of a set of quality standards would be a valuable reference tool for many individuals in the peanut industry. The committee also believes that the standards could serve as a valuable tool in documenting and promoting the quality attributes of U.S. grown peanuts. The standards should also be of use in obtaining a more accurate grade for peanut samples than simply relying on a grade based on physical characteristics.

The chair of the subcommittee to develop a set of quality standards, Debbie Miener, led a brainstorming session to generate a list of important chemical quality parameters. During the coming year all segments of the peanut industry will be surveyed to obtain acceptable ranges for these standards. The assistance of the National Peanut Council will be requested in order to make this an anonymous survey. The committee encourages all who are contacted to respond to this survey.

The committee plans to review the survey results prior to next year's committee meeting. Our plan is to approve a final version for publication in 1997.

The final part of the meeting was devoted to a discussion of pesticide residues. This discussion was led by Craig Kvien. The discussion centered on chemicals registered for use on peanuts and currently under review by the EPA.

The meeting was adjourned at 4:21 p.m.

Respectfully submitted,

Corley Holbrook, Chair

PROGRAM COMMITTEE REPORT

The 28th annual meeting of the American Peanut Research and Education Society was held at the Omni Rosen Hotel in Orlando, Florida, on July 9-12, 1996. Committee chairs were Ken Muzyk and Dan Colvin for Local Arrangements, Jerry Bennett and Dan Gorbet for Technical Program, and Pat Shokes and Marianne Whitty for Spouses Program. A complete listing of all committee members is included in the program section of these PROCEEDINGS.

There were 101 technical papers presented, including 8 papers in the graduate student competition, 9 papers in a symposium, and 8 poster presentations.

Four special events were sponsored by Rhone-Poulenc, ISK-Biosciences, American Cyanamid, Bayer Corporation, DowElanco, and Valent Corporation. Additional financial assistance and peanut products were supplied by 43 other peanut industry firms. A complete listing of these is given in the program section of these PROCEEDINGS.

There were 520 persons in attendance at the 1996 meeting. This included 266 registered participants representing 20 states and 7 countries other than the U.S. There were also 254 spouses and children.

Appreciation is due to all committee members and registration personnel who helped to make the 1996 meeting a great success.

Respectfully submitted,

Fred M. Shokes, Chair

1996 PROGRAM

BOARD OF DIRECTORS
1995-96

President .... Harold Pattee
President-Elect .... Fred M. Shokes
Past President .... William Odle
Executive Officer .... J. Ron Sholar
State Employee Representatives:
    (VC Area) .... Jim Young
    (SE Area) .... Danny Colvin
    (SW Area) .... Thomas (Chip) Lee
USDA Representative .... Robert Lynch
Industry Representatives:
    Production .... Robert E. Scott
    Shelling, Marketing Storage .... Bobby Walls
    Manufactured Products .... Wilbur Parker
National Peanut Council President .... Kim Cutchins

PROGRAM COMMITTEE

Local Arrangements
Danny Colvin, Co-chair
Ken Muzyk, Co-Chair
Barry Brecke
Ken Buhr
Tim Hewitt
Lance Peterson
Brian Tison
Ben Whitty

Technical Program
Jerry M. Bennett, Co-chair
Dan W. Gorbet, Co-chair
Ken J. Boote
Don W. Dickson
Tom Kucharek
Jim R. Rich
Joe E. Funderburk
Richard K. Sprenkel

Spouse Program
Pat Shokes, Chair
Marianne Whitty
Jan Peterson
Trudy Kucharek
Lucia Csinos

PROGRAM HIGHLIGHTS

Tuesday, July 9

08:00	Golf Tournament	Cypress Creek Golf Course
08:00 - 12:00	Peanut CAC Meeting	Salon 19
12:00 - 08:00	APRES Registration	Permanent Desk
12:00 - 08:00	Spouse's Hospitality/Registration	Salon 22
01:00 - 02:00	Peanut Science Associate Editors	Salon 5
	Site Selection Committee	Salon 6
	Fellows Committee	Salon 7
	Coyt T. Wilson Award Committee	Salon 8
02:00 - 03:00	Publications and Editorial Committee	Salon 5
	Public Relations Committee	Salon 6
	Bailey Award Committee	Salon 7
	DowElanco Awards Committee	Salon 8
03:00 - 04:00	Nominating Committee	Salon 5
	Joe Sugg Graduate Student Award Committee	Salon 6
	Peanut Quality Committee	Salon 7
03:00 - 05:00	Finance Committee	Salon 8
04:30 - 06:00	Peanut Systems Group	Salon 5
07:00 - 11:00	Board of Directors	Salon 19
08:00	Rhone-Poulenc Ice Cream Social	Ballroom A

Wednesday, July 10

07:50 - 09:40	General Session/Revitalizing the U.S. Peanut Industry	Junior Ballroom F
08:00 - 04:00	APRES Registration	Permanent Desk
08:00 - 11:00	Spouse's Hospitality	Salon 22
08:00 - 05:00	Industry Exhibits	Salon 9 & 10
09:40	Break	Foyer
10:00 - 06:00	Preview Room	Salon 12
10:00 - 12:15	Symposium - Peanut Profitability in the 21st Century	Junior Ballroom F
11:00 - 03:00	Local Arrangements	Salon 22
01:15 - 03:30	Graduate Student Competition	Salon 1 & 2
01:15 - 03:00	Economics	Salon 5 & 6
03:15	Break	Salon 9 & 10
03:45 - 05:15	Industry-Pathology	Salon 1 & 2
03:45 - 05:00	Physiology and Seed Technology	Salon 5 & 6
06:20	ISK-Biosciences Appreciation Dinner	King Henry's Feast

Thursday, July 11

08:00 - 12:00	APRES Registration	Permanent Desk
08:00 - 11:00	Spouse's Hospitality	Salon 22
08:00 - 09:00	Poster Setup	Salon 9 & 10
08:00 - 09:45	Production Technology	Salon 8
08:00 - 10:00	Breeding and Genetics I	Salon 5 & 6
08:00 - 10:15	Biotechnology/Mycotoxins	Salon 7
10:00	Break	Salon 9 & 10
10:15 - 12:00	Breeding and Genetics II	Salon 5 & 6
10:15 - 11:45	Extension Technology/Entomology	Salon 7
10:15 - 11:45	Processing and Utilization	Salon 8
11:00 - 03:00	Local Arrangements	Salon 22
01:15 - 03:00	Plant Pathology I	Salon 5 & 6
01:15 - 02:45	Weed Science	Salon 7
01:00 - 04:45	Poster Session	Salon 9 & 10
02:45	Break	Salon 9 & 10
03:15 - 04:30	Plant Pathology II	Salon 5 & 6
05:00	American Cyanamid/Bayer Appreciation Dinner	Planet Hollywood

Friday, July 12

07:30 - 08:30	DowElanco/Valent Awards Breakfast	Salon 1 & 2
08:30 - 10:00	APRES Awards Ceremony and Business Meeting	Salon 1 & 2

SPECIAL EVENTS

Tuesday, July 9

08:00 ICE CREAM SOCIAL
Rhone-Poulenc . . . . Ballroom A

Wednesday, July 10

06:20 APPRECIATION DINNER
ISK-Biosciences . . . . King Henry's Feast

Thursday, July 11

05:00 APPRECIATION DINNER
American Cyanamid/Bayer . . . . Planet Hollywood

Friday, July 12

07:30 - 08:30 AWARDS BREAKFAST
DowElanco and Valent . . . . Salon 1 & 2

SPOUSES' EVENTS

Wednesday, July 10

09:00 - 03:00 Winter Park/Morse Museum Tour

Thursday, July 11

09:45 - 02:30 Belz Outlet Mall Shopping Spree

GENERAL SESSION

Wednesday, July 10

7:50 - 9:40 . . . . Junior Ballroom F

7:50 Call to Order
Harold Pattee
APRES President

8:00 Welcome to Orlando
Tom Staley
County Commissioner
Orange County

8:10 The Future of Research, Teaching, and Extension in the Land Grant University
James M. Davidson
Vice President for Agriculture and Natural Resources
University of Florida

8:40 Revitalizing the U.S. Peanut Industry--The Key to Future Survival
H. Randall Griggs
Chairman
National Peanut Council, and
Executive Secretary
Alabama Peanut Producers Association
and
Allen Blouch
Hershey Chocolate USA

9:30 Announcements
Fred M. Shokes
APRES Program Chair

9:40 Break . . . . Foyer

TECHNICAL SESSION

Note: Professional affiliation and location are given only for the indicated speaker in all technical session.

Wednesday, July 10

Peanut Profitability in the 21st Century .... Junior Ballroom F
Moderator: Austin Hagan

10:00 (1) Economic impacts of the new Farm Bill on peanut production. **M.C. Lamb*, J.W. Childre, J.I. Davidson and N.R. Martin.** National Peanut Research Laboratory, Dawson, GA.

10:15 (2) Peanut IPM for the Southeast. **J.R. Weeks*, A.K. Hagan and S.L. Brown.** Auburn University, Headland, AL.

10:30 (3) Sustaining the profitability of peanuts through prescription management of pests in Virginia and North Carolina. **P.M. Phipps*, D.A. Herbert, Jr., J.E. Bailey and R.L. Brandenburg.** Tidewater Agricultural Research and Extension Center, Suffolk, VA.

10:45 (4) Increasing the efficiency of peanut pest management in the Southwest. **J.P. Damicone*, P.G. Mulder, M.C. Black, T.A. Lee and C.R. Crumley.** Oklahoma State University, Stillwater, OK.

11:00 (5) Maintaining peanut profitability in the Southwest. **R.G. Lemon*, T.A. Lee, J.R. Sholar and W.J. Grichar.** Texas A&M University, College station, TX.

11:15 (6) Peanut profitability as influenced by tillage systems, peanut variety selection and soil fertility. **D.L. Hartzog*, J.A. Baldwin, J.P. Beasley, Jr. and E.B. Whitty.** Auburn University, Headland, AL.

11:30 (7) Research and extension recommendation for reducing irrigation costs on peanut in the southeastern United States. **J.P. Beasley, Jr.*, K.A. Harrison, T.W. Tyson, J.I. Davidson, D.L. Hartzog, E.B. Whitty, M.C. Lamb, M.J. Bader, J.A. Baldwin, A.W. Tyson, W.D. Shurley, J.E. Hook and C.K. Kvien.** University of Georgia, Tifton, GA.

11:45 (8) Peanut weed control vs. peanut weed management - Is there a difference? **G.E. MacDonald.** University of Georgia, Tifton, GA.

12:00 (9) Peanut profitability - Agronomic and weed science considerations in the V/C area. **C.W. Swann.** Tidewater Agricultural Research and Extension Center, Suffolk, VA.

Graduate Student Competition .... **Salon 1 & 2**

Moderator: Marvin K. Beute

1:15 (10) Damage functions for three species of root-knot nematode on Florunner peanut, and their reproduction on some resistant peanut genotypes. **S.M. Abdelmomen*, J.L. Starr and C.E. Simpson.** Texas A&M University, College Station, TX.

1:30 (11) Peanut response to poultry litter and sewage sludge application. **K.S. Balkcom*, J.F. Adams and D.L. Hartzog.** Auburn University, Auburn, AL.

1:45 (12) Consistency of some components of resistance to early leaf spot in peanut. **Z.A. Chiteka*, D.W. Gorbet, F.M. Shokes and T.A. Kucharek.** University of Florida, Gainesville, FL.

2:00 (13) Variability in fungicide sensitivity of *Sclerotium rolfsii* from peanut in Georgia. **M.D. Franke*, T.B. Brenneman and K.L. Reynolds.** University of Georgia, Athens, GA.

2:15 (14) The effect of host development and environment on control of Sclerotinia Blight. **D.B. Langston, Jr.* and P.M. Phipps.** Tidewater Agricultural Research and Extension Center, Suffolk, VA.

2:30 (15) Effects of repeated herbicide applications and cultivation on nutsedge population in peanuts. **G.F. Stabler*, D.T. Gooden, E.C. Murdock and K.E. Kalmowitz.** Clemson University, Clemson, SC.

2:45 (16) Effect of roast temperature of Virginia and runner type peanuts on total volatiles as measured by headspace analysis. **J.C. Stryker* and Clyde T. Young.** North Carolina State University, Raleigh, NC.

3:00 (17) Selection for early leaf spot resistance and high yield within interspecific breeding lines of peanut. **J.C. Tuggle*, O.D. Smith, J.L. Starr and B.A. Besler.** Texas A&M University, College Station, TX.

3:15 (18) Changes of the methionine-rich protein polypeptides during peanut (*Arachis hypogaea*) germination. **L.A. Velasquez* and M.B. Sheikh.** Florida A&M University, Tallahassee, FL.

Economics .... **Salon 5 & 6**

Moderator: Foy Mills

1:15 (19) Economic analysis of leafspot fungicide spray initiation dates on peanut cultivars. **T.D. Hewitt*, F.M. Shokes and D.W. Gorbet.** University of Florida, Marianna, FL.

1:30 (20) The new peanut title: Implications to the peanut industry. **S.M. Fletcher*, D.H. Carley and C.P. Chen.** University of Georgia, Griffin, GA.

1:45 (21) Lowering of peanut support price and the extent of consumers gain. **S.Y. Deodhar* and S.M. Fletcher.** University of Georgia, Griffin, GA.

2:00 (22) Impacts of peanut program changes on quota lease and purchase decision. **W. Donald Shurley.** University of Georgia, Tifton, GA.

2:15 (23) Peanuts policy reform and political preference functions in the 1995 Farm Bill. **R.H. Miller.** Economic Consultant, Alexandria, VA.

2:30 (24) Costs, yield, and returns of producing peanuts: U.S. vs. China. **C.P. Chen and S.M. Fletcher*.** University of Georgia, Griffin, GA.

2:45 (25) Analysis of peanut quota rental rates using recursive strategic linear programming. **M.C. Lamb and N.R. Martin, Jr.** National Peanut Research Laboratory, Dawson, GA.

Industry-Pathology .... **Salon 1 & 2**

Moderator: Gary Cloud

3:45 (26) Abound (ICIA5504): A new fungicide for peanuts. **Sandy Newell* and J.N. Lunsford.** Zeneca Ag Products, Statesboro, GA.

4:00 (27) Peanut disease control programs with Cyproconazole. **H.S. McLean*, B.R. Delp and J.S. Fickle.** Sandoz Agro, Inc., Cordele, GA.

4:15 (28) Grower economic benefits associated with the use of Folicur® 3.6F fungicide on peanut. **R.D. Rudolph.** Bayer Corporation, Atlanta, GA.

4:30 (29) Evaluation of fungicide treatment rates for the control of stem rot on two peanut cultivar. **J.F. Hadden* and T.B. Brenneman.** ISK Biosciences Corporation, Omega, GA.

4:45 (30) Maintaining leaf spot and soilborne disease control while managing for leaf spot resistance: Options with an Echo +Folicur tank-mix. **A. Assad.** Sostram Corporation, Roswell, GA.

5:00 (31) Control of Rhizoctonia pod rot of peanut with FOLICUR 3.6F. **D.A. Komm.** Bayer Corporation, Apex, NC.

Physiology and Seed Technology .... Salon 5 & 6

Moderator: Craig Kvien

3:45 (32) Response of Georgia Red peanut to CO_2 enrichment when grown in nutrient film technique (NFT), or in combination with a solid substrate. **D.G. Mortley*, J.H. Hill, P.A. Loretan, C.E. Morris, P.P. David and A.A. Trotman.** Tuskegee University, Tuskegee, AL.

4:00 (33) Effects of temperature on vegetative and reproductive growth of peanut. **K.J. Boote.** University of Florida, Gainesville, FL.

4:15 (34) Producing small seeds from very large pod peanut (*Arachis hypogaea* L.) cultivars. **I.S. Wallerstein* and S. Kahn.** ARO-Volcani Center, Bet Dagan, Israel.

4:30 (35) Influence of kernel size and maturity on peanut seed quality. **J.F. Spears.** North Carolina State University, Raleigh, NC.

4:45 (36) Comparison of climatic and geographic features of existing and potential peanut growing areas in northwest Texas. **A.M. Schubert.** Texas A&M University, Lubbock, TX.

Thursday, July 11

Breeding and Genetics I .... Salon 5 & 6

Moderator: James S. Kirby

8:00 (37) Recent plant exploration in Ecuador fills important gaps in collections. **K.A. Williams*, D.E. Williams and C. Tapir.** USDA/ARS, Beltsville, MD.

8:15 (38) Evaluation and characterization of native Peruvian peanut landraces. **C.A. Salas* and T.G. Isleib.** North Carolina State University, Raleigh, NC.

8:30 (39) New Findings on the geographic distribution of wild *Arachis* species in central and western Brazil, 1995. **R.N. Pittman*, J.F.M. Valls, C.E. Simpson, G.P. Silva and A.P.S. Penaloza.** USDA-ARS-SAA, Griffin, GA.

8:45 (40) Pollen storage for cross pollinations in *Arachis*. **C.E. Simpson.** Texas A&M University, Stephenville, TX.

9:00 (41) Possible approaches for breeding peanut with resistance to preharvest aflatoxin contamination. **C.C. Holbrook*, D.M. Wilson, M.E. Matheron, K.S. Rucker, C.K. Kvien, J.E. Hook and W.F. Anderson.** USDA-ARS, Tifton, GA.

9:15 (42) Genetics of an unusual peanut pod trait. **W.D. Branch*, D.E. Williams and E.J. Williams.** University of Georgia, Tifton, GA.

9:30 (43) Genetics of resistance to root-knot nematodes in peanut. **K. Choi, C.E. Simpson*, M.D. Burow, A.H. Paterson and J.L. Starr.** Texas A&M University, College Station, TX.

9:45 (44) Peanut genetic improvement in China. **Qui Qingshu and Liao Boshou*.** Shandong Peanut Research Institute, Republic of China.

Biotechnology/Mycotoxins .... Salon 7

Moderator: Maria Gallo-Meagher

8:00 (45) Expression of GUS under the control of a soybean promoter modulated by carbohydrates, wounding, and other factors in transgenic peanut. **P. Ozias-Akins*, H. Fan and A. Wang.** University of Georgia, Tifton, GA.

8:15 (46) Effect of waterstress on protein and peptide composition of peanut suspension cultures. **M. Ali-Ahmad* and S.M. Basha.** Florida A&M University, Tallahassee, FL.

8:30 (47) Enhanced regeneration and transformation of Valencia A peanut with the osmotin gene. **L.A. Urban* and A.I. Weissinger.** North Carolina State University, Raleigh, NC.

8:45 (48) Transformation of peanut cv. NC7 with the cecropin anolog D5C by microprojectile bombardment. **R.M. Cade*, L.A. Urban and A.K. Weissinger.** North Carolina State University, Raleigh, NC.

9:00 (49) Cloning or markers for root-knot nematode resistance. **M.D. Burow*, J.L. Staff, C.E. Simpson and A.H. Paterson.** Texas A&M University, College Station, TX.

9:15 (50) Calcium and pH effects on *Aspergillus flavus* invasion and aflatoxin contamination of peanut. **K.L. Bowen*, J.F. Adams and L. Bahaminyakamwe.** Auburn University, Auburn, AL.

9:30 (51) Efficiency of the blanching and electronic color sorting process in removing aflatoxin from raw shelled peanut lots. **T.B. Whitaker.** USDA-ARS and North Carolina State University, Raleigh, NC.

9:45 (52) Effect of biological control inoculum rate on preharvest aflatoxin contamination of peanuts. **J.W. Dorner*, R.J. Cole and P.D. Blankenship.** USDA-ARS and NPRL, Dawson, GA.

10:00 (53) *Aspergillus flavus* and *A. parasiticus* used as peanut plot inoculum to study preharvest aflatoxin contamination. **D.M. Wilson*, C.C. Holbrook and M.E. Matheron.** University of Georgia, Tifton, GA.

Production Technology .... Salon 8

Moderator: John Beasley, Jr.

8:00 (54) Development of precision farming technologies for peanut production. **C.K. Kvien*, B. Boydell, H. Green, C. Perry, S. Pocknee, D. Thomas, G. Vellidis and D. Waters.** University of Georgia, Tifton, GA.

8:15 (55) Diagnosis of manganese nutritional requirements for the large-seeded Virginia-type peanut. **N.L. Powell* and R.W. Mozingo.** Virginia Polytechnic Institute and State University, Suffolk, VA.

8:30 (56) Some effects of subsoil fertility and subsoil physical characteristics on peanut yield and quality. **James I. Davidson, Jr.*, Jerry Pilkinton, Marshall Lamb and Tommy Bennett.** USDA-ARS, NPRL, Dawson, GA.

8:45 (57) Evaluation of crop rotation on peanut production. **J.R. Sholar*, J.K. Nickels, S. Maher, J.L. Baker, J.P. Damicone, K.E. Jackson and J.S. Kirby.** Oklahoma State University, Stillwater, OK.

9:00 (58) Effect of rotations and nematicide treatments on yield and grade of peanut. **J.A. Baldwin*, G.B. Padgett and A.W. Johnson.** University of Georgia, Tifton, GA.

9:15 (59) Reduced tillage for peanuts. **D.L. Hartzog* and J.F. Adams.** Auburn University, Headland, AL.

9:30 (60) Most economical seed spacing for VA-C 92R peanut. **R.W. Mozingo.** Virginia Polytechnic Institute and State University, Suffolk, VA.

Breeding and Genetics II . . . . Salon 5 & 6

Moderator: H. Thomas Stalker

10:15 (61) Breeding tomato spotted wilt virus resistant peanut varieties for South Texas. **O.D. Smith*, M.C. Black and M.R. Baring.** Texas A&M University, College Station, TX.

10:30 (62) Characterization of resistance to multiple diseases in interspecific peanut. **W.F. Anderson*, G. Kochert, M. Gimenes, C.C. Holbrook, H.T. Stalker, D.W. Gorbet and K.M. Moore.** AgraTech Research, Ashburn, GA.

10:45 (63) Quantitation of pod brightness for the in-shell Virginia peanut market. **T.G. Isleib* and H.E. Pattee.** North Carolina State University, Raleigh, NC.

11:00 (64) Evaluations of selected peanut germplasm accessions for multiple pest resistance. **J.W. Todd*, A.K. Culbreath and R.N. Pittman.** University of Georgia, Tifton, GA.

11:15 (65) Combined effect of resistance to the peanut root-knot nematode and reduced rates of nematicide on root galling and yield. **M.G. Stephenson*, C.C. Holbrook and D.W. Gorbet.** USDA-ARS, Tifton, GA.

11:30 (66) Screening for low oil peanut lines derived from Mexican *Hirsuta* type landraces. **L. Barrientos-Priego*, H.E. Pattee, T.G. Isleib, H.T. Stalker and S. Sanchez-Dominguez.** North Carolina State University, Raleigh, NC.

11:45 (67) Resistance to bacterial wilt in Chinese dragon peanuts: Resources, inheritance and application. **Liao Boshou*, Duan Naixiong, Tan Yujun, Jiang Huifang, Shan Zhihui and Tang Guiying.** University of Delaware, Newark, DE.

Extension Technology/Entomology .... Salon 7

Moderator: Joe Funderburk

10:15 (68) Development and validation of a method to determine relative risk of losses due to tomato spotted wilt virus in peanut. **S.L. Brown*, J.W. Todd, A.K. Culbreath and B. Padgett.** University of Georgia, Tifton, GA.

10:30 (69) Performance of EXNUT in scheduling irrigation for peanut production in North Carolina. **William J. Griffin, Jr.*, James I Davidson, Jr., Ron Williams, Marshall Lamb, Jim Powell and Gene Sullivan.** Bertie County Extension Service, Windsor, NC.

10:45 (70) The Virginia peanut/cotton InfoNet for electronic transfer of crop advisories and other management information. **S.H. Deck* and P.M. Phipps.** Tidewater Agricultural Research and Extension Center, Suffolk, VA.

11:00 (71) Fertilizing peanuts in consideration of the new Farm Bill. **G.H. Harris*, J.A. Baldwin and J.P. Beasley.** University of Georgia, Tifton, GA.

11:15 (72) Peanut fungicides: Effect on defoliating insects. **R.E. Lynch.** USDA-ARS, IBPMRL, Tifton, GA.

11:30 (73) A southern corn rootworm *risk index* for determining the need for insecticide treatment of peanut fields. **D.A. Herbert, Jr.*, W.J. Petka and R.L. Brandenburg.** Tidewater Agricultural Research and Extension Center, Suffolk, VA.

Processing and Utilization .... Salon 8

Moderator: Rachel Shireman

10:15 (74) A quick oil cooking procedure for screening raw peanuts for flavor quality. **Clyde T. Young.** North Carolina State University, Raleigh, NC.

10:30 (75) Genotype-by-environment interaction in sweet and bitter sensory attributes. **H.E. Pattee*, T.G. Isleib and F.G. Giesbrecht.** North Carolina State University, Raleigh, NC.

10:45 (76) High oleic oil roasting to improve shelf-life of peanuts. **T.H. Sanders* and D.W. Gorbet.** North Carolina State University, Raleigh, NC.

11:00 (77) Non-conventional uses of peanut flour providing increased levels of essential vitamins and minerals as a natural component. **R.C. Boyce* and W.A. Parker.** Pert Laboratories/Seabrook Enterprises, Edenton, NC.

11:15 (78) Identification of polypeptide precursors of roasted peanut flavor. **Robert W. McMichael, Jr.* and Timothy H. Sanders.** North Carolina State University, Raleigh, NC.

11:30 (79) Monitoring changes in polypeptide composition of peanut during roasting. **M. Ying*, M. Sheikh Basha and C.T. Young.** Florida A&M University, Tallahassee, FL.

Plant Pathology I . . . . Salon 5 & 6

Moderator: Barbara Shew

1:15 (80) Beyond Southern Runner: The next generation of field resistance to tomato spotted wilt virus. **A.K. Culbreath*, J.W. Todd, D.W. Gorbet, W.D. Branch and F.M. Shokes.** University of Georgia, Tifton, GA.

1:30 (81) Molecular characterization and epidemiology of tomato spotted wilt Tospovirus isolates in Georgia. **H.R. Pappu*, A.K. Culbreath, J.W. Todd and J.L. Sherwood.** University of Georgia, Tifton, GA.

1:45 (82) Effect of time interval prior to rainfall on the efficacy of Tebuconazole against *Cercosporidium personatum.* **S. Taylor*.** Bayer Corporation, Stilwell, KS.

2:00 (83) Evaluation of Folicur 3.6F for stem rot management on four valencia cultivars. **G.B. Padgett*, T.B. Brenneman and W.D. Branch.** University of Georgia, Tifton, GA.

2:15 (84) Occurrence of pod rot diseases in North Carolina. **J.E. Hollowell* and M.K. Beute.** North Carolina State University, Raleigh, NC.

2:30 (85) Evaluation of fungicides for peanut pod rot. **A.S. Csinos* and W.D. Rogers.** University of Georgia, Tifton, GA.

2:45 (86) Effects of crop rotation and aldicarb on northern root-knot nematode and peanut pod yield. **K.E. Jackson*, H.A. Melouk and J.P. Damicone.** Oklahoma State University, Stillwater, OK.

Weed Science . . . . **Salon 7**

Moderator: Greg McDonald

1:15 (87) A preliminary study with pyridate herbicide for broadleaf weed control in peanut. **M.W. Edenfield*, D.L. Colvin and B.J. Brecke.** University of Florida, Gainesville, FL.

1:30 (88) Control of broadleaf weeds in peanuts. **W.J. Grichar*, D.C. Sestak and R.G. Lemon.** Texas Agricultural Experiment Station, Yoakum, TX.

1:45 (89) Mowing as an alternative means of peanut weed control **G. Wehtje*, L. Wells, J.H. Choate, N.R. Martin, Jr. and J. Curtis.** Auburn University, Auburn, AL.

2:00 (90) Imazameth (Cadre) weed control in peanut and behavior in Florida beggarweed. **D. Padgett* and G. Wehtje.** Auburn University, Auburn, AL.

2:15 (91) Sharppod (*Ipomoea trichocarpa*) and red morningglory (*Ipomoea coccinea*) control in peanut using postemergence herbicides. **R.G. Lemon*, W.J. Grichar and D.C. Sestak.** Texas A&M University, College Station, TX.

2:30 (92) Effect of stale seedbed tillage implements on viable weed seeds and weed densities in peanut. **W.C. Johnson, III* and B.G. Mullinix, Jr.** USDA-ARS, Tifton, GA.

Poster Session . . . . **Salon 9 & 10**

1:00-4:45 (Authors Present 2:45-3:45)

Coordinator: Richard Sprenkel

(93) Similarity and variability among commercial peanut butter. **B. Vardhanabhuti* and Clyde T. Young.** North Carolina State University, Raleigh, NC.

(94) Effects of postemergence applications of 2,4-DB on runner peanut growth and development. **B.A. Besler*, W.J. Grichar and R.G. Lemon.** Texas Agricultural Experiment Station, Yoakum, TX.

(95) Separation of peanut proteins and polypeptides by high performance capillary electrophoresis. **S.M. Basha.** Florida A&M University, Tallahassee, FL.

(96) Increase of glycolytic enzymes in peanuts during peanut maturation and curing: Evidence of anaerobic metabolism. **S.Y. Chung*, J.R. Vercellotti and T.H. Sanders.** USDA-ARS, SRRC, New Orleans, LA.

(97) Concepts for reduced tillage in peanut. **E.J. William*, J.I. Davidson and M.C. lamb.** USDA-ARS, NPRL, Dawson, GA.

(98) Storing peanut in modular containers. **F.S. Wright*, C.L. Butts, M.C. Lamb and J.S. Cundiff.** USDA-ARS, NPRL, Dawson, GA.

(99) Curing peanuts using drying rate control in Georgia. **C.L. Butts* and F.S. Wright.** USDA-ARS, NPRL, Dawson, GA.

(100) Variability of peanut kernel moisture contents compared at harvest and after six months storage in west Texas. **P.D. Blankenship* and C.L. Butts.** USDA-ARS, NPRL, Dawson, GA.

Plant Pathology II .... Salon 5 & 6

Moderator: Alex Csinos

3:15 (101) Effects of yellow cornmeal on control of pod and root rotting disease of peanuts. **T.A. Lee, Jr.*, J.A. Wells and K.E. Woodard.** Texas A&M University, Stephenville, TX.

3:30 (102) Effect of storage duration on seed quality and viability of *Cylindrocladium parasiticum* in peanut seed. **B.L. Randall-Schadel*, J.E. Bailey and J.F. Spears.** North Carolina Department of Agriculture Seed Section, Raleigh, NC.

3:45 (103) Suppression of Cylindrocladium Black Rot of peanut with Tebuconazole in Florida. **T.A. Kucharek*, J. Atkins and R. Hoover.** University of Florida, Gainesville, FL.

4:00 (104) Effects of planting date on peanut stem rot development and fungicide efficacy. **T.B. Brenneman* and J.F. Hadden.** University of Georgia, Tifton, GA.

4:15 (105) Fall and spring applications of Telone II for the control of peanut root-knot nematode on peanut. **A.K. Hagan*, J.R. Weeks and L. Wells.** Auburn University, Auburn, AL.

CONTRIBUTORS TO THE 1996 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:

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SITE SELECTION COMMITTEE REPORT

Members present at the July 9, 1996, meeting were: Chairperson D.L. Colvin (Florida), Mark Black (Texas), Charles Swann (Virginia), Bill Birdsong (Virginia), Don Shurley (Georgia), and Emory Murphy (Georgia).

The meeting was called to order at 1:00 p.m. to consider meeting sites for the 1997, 1998, and 1999 APRES meetings. The 1997 meeting will be held at the Hyatt Regency Hotel in San Antonio, Texas, July 8-11, 1997. The 1998 meeting will be held at the Omni Hotel in Norfolk, Virginia, July 7-10, 1998. Delegates from Georgia reported on possible cities for the 1999 meeting. The Georgia cities under consideration are Atlanta and suburbs or Savannah. Georgia will report back at the 1997 meeting with a city, facility, and proposed contract. With no further business the committee adjourned at 2:00 p.m.

Respectfully submitted,

D.L. Colvin, Chair

AMERICAN SOCIETY OF AGRONOMY LIAISON REPRESENTATIVE REPORT

The annual meetings of the joint American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America were held in St. Louis, Missouri, from October 29 to November 3, 1995. More than 3000 scientific presentations were made. Of these, 11 were devoted to peanut research and 22 members of APRES authored or co-authored presentations. Dr. Janet F. Spears was the 1995 chair of the Crop Science Society of America's C-4 Division–Seed Physiology, Production, and Technology. The next annual meeting will be held in Indianapolis, Indiana, from November 3-8, 1996.

Respectfully submitted,

H. Thomas Stalker

CAST REPORT

The CAST Board of Directors met in St. Louis, Missouri, on October 13-14, 1995, and in Washington, D.C., on March 15-17, 1996. New officers were installed during the March 1996 meeting. Victor Lechtenberg, Purdue University, is the new President; Sue Sullivan, Ames, Iowa, is President-elect; and Warren Schwecke, Plymouth, Minnesota, is Past President. David Knauft is a member of the Science Education work group and is Vice-Chair of the Plant Sciences Work Group.

CAST is growing rapidly in stature, visibility, representation, and level of activity. The Entomological Society of America rejoined CAST and many other societies and organizations of importance to APRES are considering membership.

Publications on topics of national importance have increased in frequency as well as impact. Several of the most recent publications that may interest APRES members are "Quality of U.S. Agricultural Products", "Diversifying U.S. Crop Production", "Radiation Pasteurization of Food", and the upcoming publication of "Future of Irrigated Agriculture", and "Integrated Animal Waste Management".

A CAST-coordinated Leadership Workshop for Professional Societies was held in St. Louis during 1995. Five members of APRES participated in this workshop--David Knauft, incoming president Fred Shokes, current president Harold Pattee, Chip Lee from Texas, and Ron Henning, representing the National Peanut Council. The role of APRES and the future of the peanut industry will be the focus of a symposium at the 1996 APRES annual meeting as well as the focus of Harold Pattee's presidential address. CAST will conduct a second phase of the workshop. David Knauft is on the steering committee for that phase. The workshop will include among its goals an examination of methods for expanding the influence of member societies, increasing the level of networking among societies, and development of Phase III.

CAST will celebrate its 25-year anniversary by conducting an international conference with the provisional title "Food Safety and Food Security: Domestic and International Dimensions". The conference will be at the Hyatt Regency in Chicago on November 2-4, 1997. The coordinator is Lester Crawford, American Association of Veterinary Colleges, and the Program Committee is chaired by David Lineback, American Association of Cereal Chemists.

The Board meeting in March 1996 included presentations from several affiliated organizations. Each group can be contacted via Richard Stuckey at CAST (telephone 515-292-2125; FAX 515-292-4512; EMAIL cast@netins.net; http://www.netins.net). "Food Land and People" (FLP) is constructing an international agricultural education center at the Presidio in San Francisco. The focus of FLP is on K-12 agricultural education. Liaisons between FLP and the peanut industry is encouraged.

Terry Nipp, AESOP Enterprises, reported on recent activities in Congress prior to signing of the Farm Bill. Insights were reported for political activities intended to abolish the USDA and/or House Committee on Agriculture.

In February 1996 CAST sponsored two briefings for Congressional staff, USDA staff, and the media. AESOP Enterprises coordinated the briefings. An exceptionally large number of congressional staff and agency scientists participated in a combined briefing on competitiveness of U.S. agriculture and the quality of agricultural products. The second briefing addressed biological pest control and diversification of crops. Feedback and news broadcasts on these topics increased in response to the briefings. Two additional briefings are planned: waste management, and the future of irrigated agriculture and grazing.

The Charles A. Black Award was presented to Luther Tweeten, an agricultural marketing professor at Ohio State University. His lecture addressed topics involving the health and competitiveness of American agriculture, and the role it must play as world population expands.

Several CAST-affiliated societies sponsor Congressional Fellows. Three current Fellows related their experiences. Their impact is significant. Some Fellows have active leadership or participatory roles in writing bills and interpreting position papers for congressional staff unfamiliar with science. Former fellows often become permanent staffers. Several societies often team up to reduce the financial burden for sponsoring a Congressional Fellow.

The CAST Board continues to grow as more societies join. Participants in meetings now include 52 Board members, 4 CAST staff, and invited speakers. Some members feel that the size of the Board has become cumbersome. A committee is re-examining Board membership, travel expenses, society dues structure, and related issues. Changes will not be made without input from member societies. David Knauft's travel to the board meetings is partially funded by CAST and the remaining by North Carolina State University Crop Science Department.

The CAST Board will meet in Dallas on November 15-17, 1996, and in Washington, D.C., on April 4-6, 1997.

Respectfully submitted,

David Knauft

SPECIAL REPORT:
AD-HOC OPINION SURVEY COMMITTEE REPORT

The results of the 1995 APRES Opinion Survey were tabulated and reviewed. Four points came forward from the survey for consideration by the Board of Directors:

1) Obtain additional involvement in APRES from Growers and County Extension Agents;

2) Generate more interest in the annual meeting and "take risks" by serving as a forum for the discussion of any and all points that might or might not affect the peanut industry;

3) Increase advertisement of committee involvement to the membership. Follow this up with the appointment of committees;

4) Consider changing the annual meeting timetable to take advantage of reduced airfares that result from a Saturday night stay.

A motion was made to the Board of Directors that an Ad-Hoc Committee be appointed to study the possible implementation of these points.

Respectfully submitted,

Thomas A. Lee, Jr., Chair

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

ARTICLE I. NAME

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

ARTICLE II. PURPOSE

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

ARTICLE III. MEMBERSHIP

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

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

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

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

d. Sustaining memberships: Industrial organizations and others that pay dues as fixed by the Board of Directors. Sustaining members are those who wish to support this Society financially to an extent beyond minimum requirements as set forth in Section 1c, Article III. Sustaining members may designate one representative who shall have individual member rights. Also, any organization may hold sustaining memberships for any or all of its divisions or sections with individual member rights accorded each sustaining membership.

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

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

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

ARTICLE IV. DUES AND FEES

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

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

(Dues were set at 1992 Annual Meeting)

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

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

ARTICLE V. MEETINGS

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

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

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

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

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

ARTICLE VI. QUORUM

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

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

ARTICLE VII. OFFICERS

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

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

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

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

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

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

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

ARTICLE VIII. BOARD OF DIRECTORS

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

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

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

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

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

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

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

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

ARTICLE IX. COMMITTEES

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

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

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

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

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

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

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

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

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

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

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

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

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

ARTICLE X. DIVISIONS

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

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

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

ARTICLE XI. AMENDMENTS

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

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

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

APRES MEMBERSHIP
1975-1996

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

1996-97
MEMBERSHIP ROSTER

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