

*Ray O. Hammon*



# 1992 PROCEEDINGS

**APRES**

*Ray O. Hammon*

**American Peanut Research  
and  
Education Society, Inc.**

**Volume 24**

*Ray O. Hammons*

Volume 24



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## BOARD OF DIRECTORS

1992-93

President ..... Walton Mozingo (1993)

Past President ..... Charles E. Simpson (1993)

President-elect ..... Dallas Hartzog (1993)

Executive Officer ..... J. Ron Sholar (1993)

**State Employee Representatives:**

(VC Area) ..... Charles Swann (1995)

(SE Area) ..... David Knauft (1993)

(SW Area) ..... Edwin Colburn (1994)

USDA Representative ..... Thomas Whitaker (1995)

**Industry Representatives:**

Production ..... Clifton L. Stacy (1994)

Shelling, Marketing, Storage ..... Doyle Welch (1995)

Manufactured Products ..... John Haney (1993)

National Peanut Council President ..... Kim Cutchins (1993)

## ANNUAL MEETING SITES

1969 - Atlanta, Georgia	1981 - Savannah, Georgia
1970 - San Antonio, Texas	1982 - Albuquerque, New Mexico
1971 - Raleigh, North Carolina	1983 - Charlotte, North Carolina
1972 - Albany, Georgia	1984 - Mobile, Alabama
1973 - Oklahoma City, Oklahoma	1985 - San Antonio, Texas
1974 - Williamsburg, Virginia	1986 - Virginia Beach, Virginia
1975 - Dothan, Alabama	1987 - Orlando, Florida
1976 - Dallas, Texas	1988 - Tulsa, Oklahoma
1977 - Asheville, North Carolina	1989 - Winston-Salem, North Carolina
1978 - Gainesville, Florida	1990 - Stone Mountain, Georgia
1979 - Tulsa, Oklahoma	1991 - San Antonio, Texas
1980 - Richmond, Virginia	1992 - Norfolk, Virginia

1969-1978: American Peanut Research and Education Association (APREA)

1979-Present: American Peanut Research and Education Society, Inc. (APRES)

## APRES COMMITTEES

1992-93

### Program Committee

Dallas Hartzog, chair (1993)

### Public Relations Committee

Dan Gorbet, chair (1994)  
James E. Mobley (1993)  
Howard Thomas (1994)  
Tom Whitaker (1994)  
Richard Crozier (1995)  
Randy Griggs (1995)  
Bobby Walls (1995)

### Finance Committee

Mark Braxton, chair (1994)  
William C. Odle (1993)  
Fred Cox (1995)  
Scott Wright (1995)  
Ron Sholar, ex-officio

### Nominating Committee

Charles Simpson, chair (1993)  
Ken Jackson (1993)  
Aithel McMahon (1993)  
Tim Sanders (1993)

### Site Selection Committee

James R. Weeks, chair (1993)  
Greg Gregory (1993)  
John Damicone, vice-chair (1994)  
Darold Ketric (1994)  
Rick Brandenburg (1995)  
Tom Isleib (1995)  
Jerry Bennett (1996)  
Danny Colvin (1996)

### Publications and Editorial Committee

Mike Schubert, chair (1993)  
Joe Dorner (1993)  
Richard S. Wilkes (1993)  
Marvin Beute (1994)  
Tim Brenneman (1994)  
Austin Hagan (1994)  
Bill Branch (1995)  
Dave Hogg (1995)

### Peanut Quality Committee

Gene Sullivan, chair (1993)  
Aithel McMahon (1993)  
Terry Coffelt (1994)  
Danny Colvin (1994)  
Gerald Harrison (1994)  
Darold Ketric (1994)  
Bill Birdsong (1995)

### Bailey Award Committee

Ken Boote, chair (1993)  
Chip Lee (1993)  
Jim Davidson (1994)  
Hassan Melouk (1994)  
Glen Heuberger (1995)  
Benny Rogerson (1995)

### Fellows Committee

Morris Porter, chair (1993)  
Clyde Young (1993)  
Dan Gorbet (1994)  
Olin Smith (1994)  
James E. Mobley (1995)  
Billy Rowe (1995)

**National Peanut Council Awards  
Committee**

Leland Tripp, chair	(1993)
Clyde Young	(1993)
James Grichar	(1994)
Ron Henning	(1994)
Dick Cole	(1995)
Gene Sullivan	(1995)

**Coyt T. Wilson Distinguished  
Service Award Committee**

David Dougherty, chair	(1994)
George Alston	(1993)
Alex Csinos	(1993)
Craig Kvien	(1994)
William Flanagan	(1995)
Norris Powell	(1995)

**DowElanco Awards Committee**

Johnny Wynne, chair	(1993)
Dennis Hale	(1993)
Ken Jackson	(1993)
Dave Knauft	(1994)
Chip Lee	(1994)
John Beasley	(1995)
Zackie Harrell	(1995)

## PAST PRESIDENTS

Charles E. Simpson	(1991)	James S. Kirby	(1979)
Ronald J. Henning	(1990)	Allen J. Norden	(1978)
Johnny C. Wynne	(1989)	Astor Perry	(1977)
Hassan A. Melouk	(1988)	Leland Tripp	(1976)
Daniel W. Gorbet	(1987)	J. Frank McGill	(1975)
D. Morris Porter	(1986)	Kenneth Garren	(1974)
Donald H. Smith	(1985)	Edwin L. Sexton	(1973)
Gale A. Buchanan	(1984)	Olin D. Smith	(1972)
Fred C. Cox	(1983)	William T. Mills	(1971)
David D. H. Hsi	(1982)	J.W. Dickens	(1970)
James L. Butler	(1981)	David L. Moake	(1969)
Allen H. Allison	(1980)	Norman D. Davis	(1968)

## FELLOWS

Dr. Hassan A. Melouk	(1992)	Dr. James L. Steele	(1988)
Dr. F. Scott Wright	(1992)	Dr. Daniel Hallock	(1986)
Dr. Johnny C. Wynne	(1992)	Dr. Clyde T. Young	(1986)
Dr. John C. French	(1991)	Dr. Olin D. Smith	(1986)
Dr. Daniel W. Gorbet	(1991)	Mr. Allen H. Allison	(1985)
Mr. Norfleet L. Sugg	(1991)	Mr. J.W. Dickens	(1985)
Dr. James S. Kirby	(1990)	Dr. Thurman Boswell	(1985)
Mr. R. Walton Mozingo	(1990)	Dr. Allen J. Norden	(1984)
Mrs. Ruth Ann Taber	(1990)	Dr. William V. Campbell	(1984)
Dr. Darold L. Ketring	(1989)	Dr. Harold Pattee	(1983)
Dr. D. Morris Porter	(1989)	Dr. Leland Tripp	(1983)
Mr. J. Frank McGill	(1988)	Dr. Kenneth H. Garren	(1982)
Dr. Donald H. Smith	(1988)	Dr. Ray O. Hammons	(1982)
Mr. Joe S. Sugg	(1988)	Mr. Astor Perry	(1982)
Dr. Donald J. Banks	(1988)		

## BAILEY AWARD

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. Ketrin 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. Jay Williams and J. Stanley Drexler
1981	N.A. deRivero and S.L. Poe
1980	J. Stanley Drexler and E. Jay Williams
1979	David A. Nickle and David W. Hagstrum
1978	John M. Troeger and James L. Butler
1977	Johnny C. Wynne
1976	J.W. Dickens and Thomas B. Whitaker
1975	Robert E. Pettit, Frederick M. Shokes and Ruth Ann Taber

## NPC RESEARCH AND EDUCATION AWARD

1992	J.C. Wynne	1977	H.E. Pattee
1991	D.J. Banks and J.S. Kirby	1976	D.A. Emery
1990	G. Sullivan	1975	R.O. Hammons
1989	R.W. Mozingo	1974	K.H. Garren
1988	R.J. Henning	1973	A.J. Norden
1987	L.M. Redlinger	1972	U.L. Diener and N.D. Davis
1986	A.H. Allison	1971	A.E. Waltking
1985	E.J. Williams and J.S. Drexler	1970	A.L. Harrison
1984	Leland Tripp	1969	H.C. Harris
1983	R. Cole, T. Sanders, R. Hill, and P. Blankenship	1968	C.R. Jackson
1982	J. Frank McGill	1967	R.S. Matlock and M.E. Mason
1981	G.A. Buchanan and E.W. Hauser	1966	L.I. Miller
1980	T.B. Whitaker	1965	B.C. Langley
1979	J.L. Butler	1964	A.M. Altschul
1978	R.S. Hutchinson	1963	W.A. Carver
		1962	J.W. Dickens
		1961	W.C. Gregory

1989      *Changed to National Peanut Council Research and Education Award*  
1961-1988    *Golden Peanut Research and Education Award*

**JOE SUGG GRADUATE STUDENT AWARD**

1992 M.J. Bell	1990 R.M. Cu
1991 T.E. Clemente	1989 R.M. Cu

**COYT T. WILSON DISTINGUISHED SERVICE AWARD**

1992 Dr. Harold E. Pattee
1991 Dr. Leland Tripp
1990 Dr. D.H. Smith

**DOWELANCO AWARD FOR EXCELLENCE IN EXTENSION**

1992 J. Ronald Sholar

**DOWELANCO AWARD FOR EXCELLENCE IN RESEARCH**

1992 Rodrigo Rodriguez-Kabana

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## GRADUATE STUDENT PAPERS

Radiation Use Efficiency of Peanut in Southern Ontario. M.J. BELL<sup>1</sup>\*, R.C. ROY<sup>2</sup> and T.E. MICHAELS<sup>1</sup>. <sup>1</sup>Dept. of Crop Science, Univ. of Guelph, Guelph, Ontario Canada. <sup>2</sup>Agric. Canada, Delhi Research Station, Delhi, Ontario, Canada.

Recent research has suggested that low night temperatures (15-17°C) may limit rates of dry matter (DM) accumulation and the efficiency of conversion of intercepted photosynthetically active radiation (PAR) to DM (Radiation Use Efficiency, RUE; g MJ<sup>-1</sup>) in subtropical production environments. Total DM and economic yields at maturity may not be reduced, however, due to compensating effects of cool nights on rate of accumulation of thermal time, resulting in longer crop duration. Eight peanut cultivars, representing Virginia, Spanish and Valencia botanical types, were grown during 1991 in the field at Delhi (SW Ontario) to evaluate potential variation in RUE under cool night conditions. Cultivars represented locally adapted material, as well as sources of desirable physiological traits used in the local breeding program (eg. earliness - cv. Chico; high partitioning to pods - cv. Early Bunch) and cultivars with high yield potential in other environments (Va 910212; Marc 1). Following an unusually warm growing season of 127 days after emergence (DAE) to first frost (mean max = 27.0°C, mean min = 13.5°C), all cultivars had reached physiological maturity except Early Bunch, Marc 1 and Va 910212. Pod yields were exceptionally high, ranging from 3910 kg ha<sup>-1</sup> (Chico; 109 DAE) to 7610 kg ha<sup>-1</sup> (Va 910212; 123 DAE) at 9% moisture. No significant differences were observed among cultivars in single leaf, light-saturating apparent CO<sub>2</sub> assimilation rates from 60-90 DAE, with the exception of a 40% decline towards the end of that period for cv. Tango. Assimilation rates ranged from 16-24  $\mu$ moles CO<sub>2</sub> m<sup>-2</sup>s<sup>-1</sup>, depending on temperature. Total DM figures from destructive samples were adjusted to account for the high energy content of kernels, and used in RUE calculations. There were no significant differences in RUE among cultivars ( $P < 0.05$ ), with a pooled estimate of RUE across cultivars being 2.06 ( $\pm 0.02$ ) g MJ<sup>-1</sup>. Values of RUE were similar to those obtained in environments with night temperatures of 15-17°C, and suggest RUE may be insensitive to night temperatures from 13-17°C.

Evaluation of Peanut Embryonic Leaflets as Recipient Tissue for Biolistic DNA Delivery. T.E. CLEMENTE\*, J.A. SCHNALL<sup>2</sup>, M.K. BEUTE<sup>1</sup>, and A.K. WEISSINGER<sup>2</sup>. <sup>1</sup>Dept. of Plant Pathology<sup>1</sup> and Crop Science<sup>2</sup>, North Carolina State University, Raleigh, NC 27695.

Successful gene transfer into a crop species is dependent upon two parameters of the transformation system, the stable integration of the foreign DNA into a cell, and the subsequent differentiation of that cell. Estimates were made on the frequency of integration events within embryonic leaflets of two peanut genotypes, UPL PN4 and Tamnut 74. Integration events were based on the recovery of stably growing callus masses isolated from leaflet tissue in which plasmid DNA (pRT 99 GUS carrying the selected marker NPT II and the assayable marker B-glucuronidase, GUS) was delivered by the biolistic process with subsequent subculturing of the leaflet tissue on selective medium. Combined results of three large scale experiments conducted with UPL PN4 and two experiments with Tamnut 74 were tabulated. Frequency of recovery of stably growing calli from UPL PN4 was estimated at 0.24 calli per leaflet cultured, while Tamnut 74 estimated frequency was 0.025 calli per leaflet cultured. Thirty callus lines derived from UPL PN4 were characterized for presence of the delivered DNA sequences by PCR analysis and expression of proteins by ELISA (NPT II) and fluorometry (GUS). All 30 callus lines contained the NPT II open reading frame (ORF) and all were positive for NPT II expression. Twenty-eight of the 30 callus lines contained the GUS ORF, while eight of the 30 were co-expressing GUS. Culture experiments conducted with the embryonic leaflets demonstrated a strong genotype effect governing plant regeneration frequencies. The limiting factor for the successful recovery of transgenic plants with this system is the identification of a genotype within the cultivated peanut germplasm which responds well in culture.

**Peanut Cultivar Tolerance Differences to Nicosulfuron Applications.** T. A. Littlefield\*, D. L. Colvin and B. J. Brecke, University of Florida, Gainesville, 32611.

Field research was conducted at Archer and Marianna, Florida, during 1990 and Trenton and Archer, Florida, in 1991 to determine peanut cultivar tolerance to nicosulfuron applications. Sunrunner, Southernrunner, NC-7, Valencia and Florigiant peanuts were planted at all locations in mid-May at a seeding rate of 112 kg/ha and harvested approximately 115 - 150 days after planting according to cultivar maturity. Nicosulfuron application rate was 0.038 kg ai/ha and was applied alone and tank-mixed with 2,4-DB. Applications were made at 5, 9, and a sequential of 5 + 9 weeks after planting. Visual peanut injury ratings were made two, four and six weeks after each application time. Injury was reported as percent of the untreated check. Yield was taken at maturity and grade data was gathered according to USDA standards. Results indicate that all varieties exhibited significant amounts of injury and yield reductions from the 5 WAP applications. There were no variety tolerance differences from the 9 WAP applications with no significant injury or yield reductions. Sequential treatments consistently exhibited greater injury and in most cases lower yields.

**Comparison of Field Resistance and the Effect of Peanut Growth Habit with Expression of Metabolic and Physiological Resistance to Sclerotinia minor.**

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Studies were conducted over the 1990 and 1991 growing seasons in four row by 8.5 m plots. Nine genotypes having varying levels of resistance were planted in each test. The first study, conducted in infested portions of the field, involved measuring canopy height and width, limb number and length in a 2 cm zone above the soil surface, and pegs in a 0.5 m row section of row at 2 wk intervals. The second study (destructive sampling) was established in uninfested portions of the field to characterize total plant canopy. Canopy height and width was measured on site and a 0.5 m section was removed to measure leaf area, leaflet number, limb length and number, and sample dry weight. Field evaluations and field disease levels were moderately correlated ( $r=0.41$  to  $0.52$ ) for limb number, limb length and canopy width. Canopy height was significant ( $r=-0.26$ ) under the high disease pressure in 1991. Coefficients ranged from 0.54 to 0.67 for canopy width, total limb length, limb number, leaflet number and sample weight for destructive samples. Plant height and leaf area were correlated with Sclerotinia blight under higher disease pressure in 1991 ( $r=-0.44$  and  $0.46$ , respectively). Metabolic and physiological resistance (previously measured) failed to predict field performance. Current evidence indicates that moderate levels of metabolic resistance now available to breeders will not be adequate for disease control if environmental (climate, plant growth habit) are conducive for infection and disease development. Future genotype selection procedures must consider the role of plant phenotype in addition to metabolic and physiological resistance responses.

On-Farm Evaluation of AU-Pnuts: an Expert System for Control of Leaf Spot Diseases of Peanut.  
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AU-Pnuts is a rule-driven, non-computerized expert system for timing of fungicide applications for control of peanut leaf spot diseases, caused by *Cercospora arachidicola* and *Cercosporidium personatum*. AU-Pnuts rules incorporate the number of days with daily precipitation in excess of 2.5 mm, occurrence of evening fogs, and five-day rainfall forecasts. Verification (using field trials) and validation (conducted in Georgia, Florida, and Oklahoma by Extension and Research Specialists) of AU-Pnuts was conducted from 1989-1991. The next phase of validation for expert systems, on-farm evaluation with potential users (Annu. Rev. Phytopathol. 29:343-360), was conducted in 1991 with ten peanut producers in five counties of the Wiregrass Region of Alabama. On-farm evaluation included coordination and training of County Agents and volunteer producers. The National Weather Service provided information for the predictive portion of AU-Pnuts, and this weather information was delivered to producers via a toll-free phone service and an answering machine. Producers interacted with researchers by using the answering machine when calling for weather forecasts. AU-Pnuts plots consisted of 1-10 acres of peanuts. Each plot was compared to the remainder of the field treated by the farmer's conventional program. Eight of the ten farmers were able to successfully conduct the AU-Pnuts program. The average number of sprays with AU-Pnuts and conventional programs was 5.6 and 6.0 respectively. Spring rains triggered very early applications with AU-Pnuts. AU-Pnuts triggered initial sprays on average at 33 DAP (range = 28-38 DAP) in non-rotated fields and 36 DAP (range = 30-40 DAP) in rotated fields, while first spray applications for the conventional program averaged 42 DAP (range = 26-61 DAP). Subsequent applications were coordinated with infection periods. The combination of earliness and timeliness resulted in improved disease control as measured by AUDPC's ( $p < 0.076$ ). Yields were compared in five fields, and AU-Pnuts had better yields in four of these. Based on results obtained and suggestions from producers and involved personnel, AU-Pnuts was revised for limited release in 1992.

Influence of Sulfur and Seaweed Extract on Peanut Yield. N.V. NKONGOLO \* and  
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A field experiment was used to evaluate the effect of 3 levels each of sulfur and NPK boosted liquid seaweed fertilizer on the growth, yield, and yield components of "Colton # 1" peanut cultivar. Sulfur was applied as gypsum and seaweed fertilizer as Response 9-9-7. The study was conducted in 1991, on a Memphis silt loam soil at the Alcorn Branch Experiment Station, Lorman, Mississippi. A split split arrangement in a randomized complete block experiment design was used in the study, with sulfur levels as main plots and seaweed fertilizer levels as subplots, with 4 replications. Application of 16.80 kg/ha of sulfur increased vine production, nodule formations, and number of single-segmented pods over the control, but not numbers and weights for mature pods and kernels, double and triple segmented pods. Immature pods number was decreased by sulfur application. Application of 75 ml of seaweed fertilizer per plot increased all parameters studied except for number of single-segmented pods. Interaction between sulfur and seaweed applications were significant for all parameters investigated except for plant height.

# BREEDING AND BIOTECHNOLOGY

**Transformation of peanuts (*Arachis spp.*) with a peanut stripe virus coat-protein (PStV-CP) gene via particle bombardment and polyethylene glycol (PEG) treatment of protoplasts.** Z.J. LI<sup>1</sup>, J.W. DEMSKI<sup>1</sup>, R.L. JARRET<sup>2</sup>, R.N. PITTMAN<sup>2</sup> and K.B. DUNBAR<sup>2</sup>. <sup>1</sup>Dept. of Plant Path., Univ. of Georgia, Georgia Station; <sup>2</sup>USDA-ARS Regional Plant Intr. Station, Georgia Station, Griffin, Georgia 30223.

Plasmid DNA containing either the marker gene coding for  $\beta$ -glucuronidase (GUS) or the PStV-CP gene with the selectable marker gene encoding hygromycin phosphotransferase (*hph*) was introduced into leaf tissues and protoplasts of wild and cultivated peanuts by particle bombardment or PEG treatment. Foreign gene expression was under the control of the cauliflower mosaic virus 35S promoter and the *tm1* terminator. Transient expression of the GUS gene, detected 48 hours after bombardment, was used to determine optimal transformation conditions. Sub-stringent hygromycin selection on transformed leaf disks of *A. villosulicarpa* resulted in recovery of resistant shoots and shoot primordia. Plants are being regenerated and will be used to further verify the genetic transformation. A protoplast regeneration system was also established to increase transformation efficiency. Highly regenerable protoplasts of *A. paraguariensis* were used as a model system to investigate major factors affecting PEG-mediated protoplast transformation. High transformation frequency (up to 5% of total selected protoplast colonies) was achieved by inoculating protoplasts with DNA in a Mg-containing solution, followed by the addition of PEG to a final concentration of 20-25%. Using the optimized conditions, protoplasts isolated from immature cotyledons and leaf-derived callus from various cultivars of cultivated peanut (*A. hypogaea*) were transformed with the PStV-CP gene. Multiple shoots are being regenerated from protoplast-derived calli. The successful regeneration of transgenic peanut plants will allow us to evaluate the induction of cross protection against PStV from the incorporation of the viral coat-protein gene.

**Regeneration of Transgenic Shoots from Long-term Embryogenic Cultures of *Arachis hypogaea*.**

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Somatic embryos and embryogenic callus can be induced *in vitro* from immature zygotic embryo explants. Induction and maintenance occurs on a nutrient medium supplemented with the synthetic auxin, picloram. Seven genotypes (one valencia, three virginia/runner, and three spanish) have been compared under similar culture conditions for their ability to produce somatic embryos, embryogenic callus, and plants after short-term culture. There were significant differences among genotypes for these responses, but most importantly, all genotypes were competent for somatic embryo and plant formation. Long-term cultures of selected genotypes have been maintained for 12-24 months. A culture protocol that bypasses an embryo maturation step has been imposed to encourage shoot development from apical meristematic regions of somatic embryos. Embryogenic callus pieces approximately 25 mm<sup>2</sup> containing an estimated 1-5 somatic embryos were cultured on media with either NAA or a combination of cytokinins. Subsequent transfer to basal medium and medium supplemented with gibberellic acid allowed the formation of elongated shoots which were subsequently rooted. Rooted shoots transferred to the greenhouse flower and produce pegs. Over 900 shoots have been regenerated from 160 callus pieces in one experiment. Long-term embryogenic cultures were bombarded with DNA-coated microprojectiles. Plasmid DNA contained a hygromycin-resistance gene (*hph*) driven by the CaMV 35S promoter. Bombardeed callus was grown for one subculture period (about one month) under non-selective conditions and subsequently was transferred to liquid medium containing 20 mg/l hygromycin. After approximately two months, hygromycin-resistant calli were recovered. Two callus lines have shown integration of the *hph* gene based on amplification of the gene by the polymerase chain reaction and hybridization of the gene to genomic DNA from the transgenic lines. Regenerated shoots from one callus line have all shown the presence of the *hph* gene based on amplification by the polymerase chain reaction.

Development of in vitro Regeneration Approaches for Valencia-type Peanut (*Arachis hypogaea* L.) Suitable for *Agrobacterium*-mediated Transformation. M. Cheng\*, D.C.H. Hsi, and G.C. Phillips. Dept. of

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This study evaluated plant development via direct organogenesis from *in vitro* cultured young seedling tissues of valencia type peanut, as a means to develop a genetic transformation system for cultivated peanut. Complete plants were regenerated from *in vitro*-cultured petiolules with blades attached, leaflet segments, and epicotyl and petiole sections. Multiple shoots arose on MS medium supplemented with BA (5-25 mg/L) + NAA (0.5-3 mg/L). After 30 d culture on 25 mg/L BA + 1 mg/L NAA, 1.6 buds or shoots/explant were regenerated from the petiolule with blade attached explants. Comparable numbers of shoots were obtained from epicotyl sections cut from the region of the first node of the seedling after 60 d culture using 10 mg/L BA + 1 mg/L NAA. Leaflet segments and petiole sections were less responsive for normal shoot formation. Excised shoots developed roots *in vitro* upon transfer for 15 d to MS medium supplemented with NAA at 1 mg/L and sucrose at 20 g/L. Plantlets were transferred to soil and grown in a greenhouse to maturity. A wide range of cultivated peanut genotypes was evaluated for organogenic responsiveness, using the petiolules with blades attached as the explant. Only valencia type cultivars were responsive with this regeneration system. These explant regeneration systems were characterized histologically to identify regeneration-competent cell types. Regeneration-competent cell types were compared to putative transformation-competent cell types within each explant system, by evaluation of the transient expression of a  $\beta$ -glucuronidase reporter gene introduced by co-cultivation with *Agrobacterium* vectors. There was a significant but partial overlap between the regeneration-competent and transformation-competent cell types in each explant system.

Culture of Peanut Zygotic Embryos for Transformation via Microprojectile Bombardment J.A. Schnall and A.K. Weissinger\*, Department of Crop Science, North Carolina State University, Raleigh NC 27695-7620.

A method for rapidly producing fertile peanut (*Arachis hypogaea*) plants from embryo axes was developed for use with microprojectile bombardment. The embryo axes were removed from dry seed, and all pre-existing leaves were removed. The axes were then disinfested in 20% Chlorox® for 2 minutes, rinsed in sterile DI water, and transferred to medium. Germination was rapid on MS based, hormone-free medium containing 2% agar, while medium containing 0.6% agar caused embryo axes to swell and to develop slowly. Representative varieties from all market types responded well to this procedure, except for the valencia cultivar UPL-PN4, which failed to form new leaflets. Using this method, the apical dome housing the germ line could be exposed for bombardment without compromising the viability of the plant. A chimeric beta-glucuronidase introduced by bombardment into the apical dome was expressed transiently. The frequency of transient expression events was increased by optimization of both culture and bombardment parameters. Many axes can be processed rapidly to provide large numbers of explants needed for successful biotic transformation of intact tissues without selection. This method is also much less likely to cause chromosomal and developmental abnormalities often encountered with other culture systems.

**Response of Peanut Cultivars to Different Leafspot Spray Initiation Dates.** D. W. GORBET\*, F. M. SHOKES and D. A. KNAUFT. University of Florida, North Florida Research and Education Center, Marianna, FL 32446; North Florida Research and Education Center, Quincy, FL 32351; and Agronomy Department, Gainesville, FL 32611.

Differential initiation dates for fungicide programs to control late leafspot (*C. personatum*) were conducted on twelve peanut cultivars in 1990 and 1991. The cultivars Florunner, Sunrunner, Southern Runner, Marc I, AgraTech 127, Okrun, Tamrun 88, GK 7, NC 7, NC 9, NC 10C, and Florigiant were planted on May 31, 1990, and June 11, 1991. Four fungicide programs, using chlorothalonil on a 14 day schedule, were applied as follows: 1) sprays initiated at 30-35 days after planting; 2) two weeks later; 3) four weeks later; 4) six weeks later. Treatment spray totals were 7, 6, 5, and 4, respectively. Each cultivar had two harvest dates, at visual maturity (H1) for the full season spray program and 7-10 days later (H2). Marc I and AgraTech 127 were both early maturing (H1 = 125-128 days). All other cultivars were dug at 132-134 days for H1, except Southern Runner (H1 = 144 days). All cultivars had higher disease levels and lower pod yields as fungicide treatments were decreased. Southern Runner had the least amount of difference among fungicide treatments. A low level of resistance to late leafspot was noted in NC 9. The early maturing cultivars, Marc I and AT 127, appeared to be the most susceptible. The greatest fungicide treatment differences were between 4 vs. 5 sprays on most of the cultivars. Pod yields generally exceeded 4000 kg ha<sup>-1</sup> with 6-7 sprays for most cultivars.

**New High-Yielding Israeli Peanut (*Arachis hypogaea*, L.) Cultivars**

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Peanuts are grown in Israel mainly for export to the European unshelled pod market. Return to growers for "giant" pods (7-9 pods per 28.3 gram) is 25% greater than that for "choice" (9-11 pods per 28.3 gram). 'Shulamit', the main Israeli peanut cultivar for the past 25 years, has only a 15% yield of export-quality "giant" pods. Since 1981, we have been breeding peanut cultivars for improved yield, larger pods, and earlier maturity, using both crosses and selections from extant germplasm. Four new cultivars ('Hanoch', 'Shosh', 'Eli', and 'Zecharia') have been released in the past six years. During the three years 1988-1990, we grew the new cultivars and 'Shulamit', digging six replicates of each at 143 and at 157 days after planting (DAP). At 143 DAP, 'Shulamit' produced the highest net pod yield (5347 kg/ha) while the lowest yield was from 'Zecharia' (5073 kg/ha). However, differences were not statistically significant. At 157 DAP, 'Hanoch' produced a net pod yield of 6327 kg/ha, while the average yield of all other cultivars was 5700 kg/ha. At both harvest dates 'Shosh' produced the highest "giant" pod yield (3810 kg/ha at 143 DAP; 4150 kg/ha at 157 DAP) compared to 'Shulamit' (1057 kg/ha at 143 DAP; 1110 kg/ha at 157 DAP).

**Germline Transformation of Peanut (*Arachis hypogaea* L.) Utilizing Electric Discharge**

**Particle Acceleration (ACCELITM) Technology.** G.S. BRAR\*, B.A. COHEN, and C.L. VICK. Agracetus, Inc., Middleton, WI 53562.

A commercially-viable germline transformation system has been developed for peanut (*A. hypogaea*). The first germline transgenic plant was obtained in Florunner. In this system, cotyledons from sterilized mature seeds were removed to obtain embryonic-axes. The shoot meristems of the embryonic-axes were exposed and bombarded with 1-3  $\mu$ m gold beads coated with plasmid DNA encoding various genes of interest. Bombarded embryonic-axes were manipulated to produce multiple shoots which were screened for the reporter gene beta-glucuronidase (*gus*). Transformed plants were transferred to greenhouse to produce seeds. Pollen from transgenic plants, assayed for *GUS* to identify putative germline transformants, had expected 1:1 genetic segregation. R1 seeds from plants with *GUS*-expressing pollen were analyzed to confirm the transmission and genetic segregation of *gus* gene in the next generation. By using these procedures, we have transferred genes for Bialaphos-resistance, Tomato Spotted Wilt Virus-coat protein in addition to *gus*. Transgenic plants have also been obtained from the cultivar Florigiant. We are now focussing on transferring valuable genes determining agronomic or food value traits into additional commercial cultivars.

# BREEDING FOR RESISTANCE

Evaluation of Advanced Georgia Breeding Lines for White Mold and Rhizoctonia Limb Rot Resistance. W. D. BRANCH\* AND T. B. BRENNEMAN. Dept. of Agronomy and Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793-0748.

White mold or southern stem rot (*Sclerotium rolfsii* Sacc.) and Rhizoctonia limb rot (*Rhizoctonia solani* Kuhn) are major soil-borne disease problems in Georgia peanut (*Arachis hypogaea* L.) production. In the past, chemical and cultural controls have only been about 50% effective, thus genetic resistance continues to be a primary objective within the Georgia Peanut Breeding Program as an environmentally safe and cost efficient alternative. During 1989-91, several advanced Georgia breeding lines (candivars) have been evaluated in replicated field tests conducted on a Tifton loamy sand soil type heavily infected with these two pathogens. Disease assessments were made directly after digging, shaking, and inverting each two-row plot (6.1 m long by 1.8 m wide). Results show significant differences exist between the four runner check cultivars and the Georgia candivars. Among the cultivars, Southern Runner had the best overall yield and resistance to white mold, but not to Rhizoctonia limb rot. However, three Georgia candivars averaged >5% higher yield than Southern Runner, and several had comparable or more resistance to white mold and Rhizoctonia limb rot.

Screening Peanut Genotypes for Resistance to Stem Rot Caused by *Sclerotium rolfsii*. F. M. SHOKES\*, D. W. GORBET, University of Florida, North Florida Res. and Educ. Center (NFREC), Quincy, FL 32351 and NFREC, Marianna, FL 32446, Z. WEBER, Poznan Agric. University, Poznan, Poland and D. A. Knauf, Univ. of FL., Gainesville, FL 32611.

Eight tests of 54 *Arachis hypogaea* genotypes were conducted in 1991 to screen for resistance to stem rot (white mold) caused by *Sclerotium rolfsii*. The genotypes included the commercial cultivars Florunner, Marc I, Sunrunner, Early Bunch and Southern Runner. Plants were grown in 4-inch pots in the laboratory under artificial lights and inoculated with the pathogen at 20 days after planting (DAP). Plants were grown in 6-inch pots in a glasshouse and inoculated with the fungus at 40 DAP. Laboratory and glasshouse studies were performed three times with five replicate pots of each genotype. In two field studies five plants in each of six plots were inoculated at 60 DAP. Field-grown plants were marked with flags prior to inoculation to locate the plants for evaluation. Field plots were irrigated prior to inoculation and the two mornings after inoculation. Inoculum consisted of one sclerotium with actively growing mycelium in the center of a 1-cm disk of potato dextrose agar placed in contact with plant stems in all studies. The isolate used for inoculation had been previously tested for pathogenicity and selected for virulence. Plants were evaluated 4-7 times and scored on a 1-6 scale in which 1 represents a healthy plant and 6 a plant with >50% of the stems wilting and dying. Genotypes were ranked and rankings compared using correlation analysis. Genotypic rankings were most consistent for field tests with coefficients of variation <20%. Genotypes that ranked significantly ( $P<0.05$ ) lower than the cultivars Florunner and Sunrunner in all tests and similar or slightly better than Southern Runner in field tests were selected for further testing. Screening of genotypes for resistance to stem rot worked best in field tests. Results indicated that artificial inoculation using these methods may be a practical way to insure uniform infection for differentiation of genotypes.

Improvements in Screening Techniques for Resistance to Preharvest Aflatoxin Contamination and some Potential Sources of Resistance. C. C. HOLBROOK<sup>1</sup>, D. M. WILSON<sup>2</sup>, W. F. ANDERSON<sup>1</sup>, M. E. WILL<sup>2</sup> and M. E. MATHERON<sup>3</sup>. <sup>1</sup>USDA-ARS, Tifton, GA; <sup>2</sup>Univ. of Georgia, Tifton, GA; <sup>3</sup>Univ. of Arizona, Somerton, AZ

One of the major limitations in breeding for resistance to preharvest aflatoxin contamination (PAC) in peanut (*Arachis hypogaea* L.) has been the difficulty in reliably measuring resistance in the field. The objectives of this research were to develop reliable and efficient field screening techniques and to begin screening the peanut core collection for sources of resistance to PAC. Three systems were examined using Florunner plots at Yuma, Arizona in 1990 (normal planting date, late planting date, and normal planting date with shading during the stress period). Results showed that the best of these systems was a normal planting date without shading. However, the samples had a low mean contamination (228 ppb), unacceptably large error variance (C.V.=223%) and unacceptably large frequency of escapes (43%). It was proposed that the screening technique could be improved by using subsurface irrigation to maintain plant life while imposing an extended drought stress period on the pods. Using this system in 1991, the mean was increased to 1,167 ppb, the C.V. was reduced to 102% and only 4% of the samples were escapes. A two year study examining ten inoculation techniques at Tifton, GA, demonstrated that Aspergillus parasiticus should be applied at midbloom (60 DAP) using corn as an organic carrier. Results from Tifton in 1991 indicated that portable greenhouses which can be move using tractors, can be used to greatly expand the field space suitable for screening for resistance to PAC. Preliminary germplasm screening results indicated a number of potential sources of resistance to PAC in peanut.

Reaction of *Arachis* interspecific hybrid TP-135-4 to the northern root-knot nematode *Meloidogyne hapla*. J.L. STARR\*, C.E. SIMPSON, and C.S. KATSAR. Department of Plant Pathology and Microbiology, Texas Agricultural Experiment Station, College Station, TX 77843; and Texas Agricultural Experiment Station, Stephenville, TX 76401.

TP-135-4 is a complex hybrid developed from *Arachis hypogaea* cv Florunner, *A. batizocoi*, *A. cardenasi*, and *A. chacoensis*. It is highly resistant to reproduction of the peanut root-knot nematode *Meloidogyne arenaria* race 1. In one preliminary test, TP-135-4 was rated as moderately resistant to the northern root-knot nematode *M. hapla*. To further evaluate the reaction of TP-135-4 to *M. hapla*, seeds of TP-135-4, Florunner, and Tamnut 74 were germinated in rag-dolls and then transferred to 15-cm dia pots of a sand-peat soil mix (6:1, v/v) when the roots were ca 5 cm long. One week later, each seedling was inoculated with suspension of 5,000 eggs of *M. hapla*. After a further eight weeks of growth in a controlled environment chamber at 26 C with a 14 hr day length, plants were harvested and the numbers of nematode eggs per gram of root tissue determined. No difference in numbers of eggs produced among the three genotypes was detected. Florunner supported 1,400 eggs/g root, Tamnut 74 1,100 eggs/g root, and TP-135-4 1,200 eggs/g root. In a second experiment, seedlings of Tamnut 74 and TP-135-4 growing in 500-cm<sup>3</sup> cups of the sand-peat soil mix were inoculated with 1,500 freshly hatched juveniles of *M. hapla*. Inoculated seedlings were harvested at weekly intervals and nematodes in the roots stained with acid fuchsin. Although development of the nematodes on TP-135-4 was slightly slower than on Tamnut 74, the differences were not significant and egg-laying adult females were observed on both host genotypes by 21 days after inoculation at 26 c. We have concluded that in contrast to our initial report, TP-135-4 is not resistant to *M. hapla*.

Leafspot Resistance of Genotypes Derived from Crosses of Wild *Arachis* spp. and Virginia Peanut. B. B. SHEW\*, H. T. STALKER, and M. K. BEUTE. Departments of Crop Science and Plant Pathology, North Carolina State University, Raleigh NC 27695-7616.

Ten genotypes derived from crosses between wild *Arachis* spp. and virginia peanut were evaluated in the field for resistance to Cercospora leafspots. NC 6, NC 7, Southern Runner, and GP-NC 343 were included as checks. Genotypes were planted in six replicate plots 3.3 m long x 3.7 m (four rows) wide, and individual plots were bordered on all sides by 7.3 m of soybeans. A plant infected with *Cercosporidium personatum* was placed in each plot on 12 August 1992. Natural inoculum of *Cercospora arachidicola* was present at levels sufficient to initiate early leafspot epidemics in susceptible genotypes. Incidence (number of infected leaflets/number of leaflets present) of early leafspot caused by *C. arachidicola* and late leafspot caused by *C. personatum* was estimated weekly in August and September. Defoliation also was determined by counting missing leaflets and total nodes on two stems per plot. Area under disease progress curve (AUDPC) was used to compare the genotypes. All test genotypes had smaller AUDPCs for early leafspot than the most resistant check, GP-NC 343, and five had AUDPCs that were less than half that of GP-NC 343. In contrast, none of the test genotypes had significantly smaller AUDPCs for late leafspot than Southern Runner, and three had AUDPCs that were significantly larger. All test genotypes had less late leafspot than the susceptible cultivars NC 6 and NC 7. Eight of the test genotypes had significantly less defoliation than the most resistant checks (NC 6 and GP-NC 343). Some of the best-ranked genotypes in each disease category had poor rankings in one of the other categories, but some genotypes had resistance to early leafspot and defoliation far superior to commercial cultivars, along with late leafspot resistance equal to Southern Runner.

Late Leafspot, TSWV and Growth Traits within Peanut Core Collection. W.F. ANDERSON\* and C.C. HOLBROOK. USDA-ARS, Coastal Plain Exp. Stn., Tifton, GA 31793.

The United States peanut germplasm collection contains genes that could have great value to breeders searching for disease resistance. A systematic method of evaluation is required to assess the potential use of genotypes among the 7,000 accessions contained in the collection. A core collection was used to reduce the initial number of genotypes tested while attempting to retain maximum variability. A portion of the core collection (335 plant introductions) was rated for five plant growth traits, late leafspot resistance and tomato-spotted wilt virus (TSWV) resistance. Possible relationships were explored between plant phenotypes or country of origin and disease resistance. Negative correlation was found between erect growth habit and TSWV resistance and a negative correlation was found between maturity and late leafspot resistance. Accessions from South America and Asia had higher incidence of TSWV than those from Africa. Twenty entries did not show TSWV symptoms during the first year of testing in the field. Susceptibility to late leafspot and TSWV were not correlated indicating no genetic linkages. Cluster analyses using plant descriptors were not useful in predicting differences among entries for TSWV infection and late leafspot ratings.

Comparison of Components of Resistance to Late Leafspot in Peanut Measured in Different Environments. A.J. CHIYEMBEKEZA, D.A. KNAUFT\*, and D.W. GORBET. Dept. of Agronomy, University of Florida, Gainesville 32611 and Marianna 32446.

It is not known whether sources of resistance to late leafspot in peanut (*Arachis hypogaea* L.) have similar reactions to the natural pathogen population in different environments. To study these reactions, segregating generations from twelve crosses of peanut were grown at Gainesville, Florida, USA, located 29° 41' N latitude and 82° 20' W longitude and the Chitala and Kasinthula Experiment Stations, Malawi, located between 9° 45' S and 17° 5' S latitude and 32° 45' E and 36° E longitude. The  $F_2$  and  $F_3$  generations were inoculated with late leafspot and evaluated for latent period, lesion diameter, and amount of sporulation. Measurements of the components in Florida were positively correlated with those in Malawi. The correlation between latent period measurements was  $r=0.52$ ; the correlation between lesion diameter measurements was  $r=0.61$ , and that between sporulation measurements was also  $r=0.61$ . In both locations latent period was negatively correlated with lesion diameter ( $r=-0.55$ ) and sporulation ( $r=-0.63$ ); lesion diameter and sporulation amount were positively correlated ( $r=0.44$ ). Narrow-sense heritability, estimated by parent-offspring regression, was similar in both environments, averaging near 0.60 for latent period, 0.50 for lesion diameter, and 0.40 for sporulation.

The Interaction between Maturity and Leafspot Resistance in Peanut. B.E. FRIESEN\*, D.A. KNAUFT, and D.W. GORBET. Dept. of Agronomy, University of Florida, Gainesville 32611 and Marianna 32446.

Peanut genotypes have been identified with both high yield potential and good resistance to late leafspot (*Cercosporidium personatum* (Berk. & Curt.) Deighton). However there is a strong relationship in most genotypes, including the cultivar Southern Runner, between late maturity and disease resistance. To explore this relationship two early maturing, leafspot susceptible cultivars, Early Bunch and Marc I, were grown along with two later maturing breeding lines with leafspot resistance, F81206-2 and F76x9. Genotypes were grown for two years both with and without fungicide applications. One-meter sections from each genotype-treatment combination were harvested at 10-d intervals and percentage of pod dry weight, pod darkness, and shelling percentage were recorded. Regression analyses were conducted to determine the relationship of maturity with leafspot resistance ratings. Predicted resistance rating values at a constant percentage dry weight, pod darkness, and shelling percentage were calculated to compare the four genotypes at the same stage of maturity. Disease ratings were higher, indicating greater susceptibility, for Early Bunch and Marc I than for the resistant lines at both a given number of days after planting and at the same maturity. The magnitude of the differences between resistant and susceptible lines was less at a constant physiological maturity. However, disease ratings were still significantly different between resistant and susceptible lines.

# CURING, PROCESSING, AND UTILIZATION

Antioxidative Activity in Oils Prepared from Peanut Kernels Subjected to Various Treatments and Roasting. R.Y.-Y. Chiou. Department of Food Industry, National Chiayi Institute of Agriculture, Chiayi, Taiwan 60083, Republic of China.

Significant antioxidative activity was observed in oil prepared from peanuts subjected to treatments consisting of rehydration, blanching and dehydration, followed by roasting at 160°C for 90 min. The activity was approximately equivalent to that of 200 ppm TBHQ. After storage of the oil at 62°C for 40 days, the fatty acid composition was unchanged. Changes in lipid and protein contents, and amino acid profiles resulting from treatments and roasting were minor. Sucrose and free amino acid contents decreased stepwise in a limited range with steps of treatment. However, during roasting, comparatively more sucrose, total amino acid contents and free amino acids were degraded in treated than untreated peanuts. Color of the treated, deskinned and unroasted kernels was darker than untreated kernels. During roasting, both types of kernels had the same color changes. During storage, linoleic acid was much more susceptible to oxidation than other fatty acids.

Oil and Flavor Quality of TSWV Infected Seed. T. H. SANDERS, A. M. SCHUBERT, and K. L. BETT. USDA, ARS, Market Quality and Handling Research, Box 7624, North Carolina State University, Raleigh, NC 27695-7624; Texas Agricultural Experiment Station, Texas A&M University, Yoakum, TX 77995-0755; and USDA, ARS, Southern Regional Research Center, P. O. Box 19687, New Orleans, LA 70179.

Florunner peanuts with red, cracked seed coats characteristic of Tomato Spotted Wilt Virus (TSWV) infection were examined for size, oil quality and flavor variation. Samples of normal and TSWV seed were collected randomly by electronic color sorting and hand-picking from three locations in Texas. Commercial size distributions in the samples indicated that higher percentages of TSWV seed were found in the smaller sizes. The oleic/linoleic acid ratio in oil was consistently slightly higher in TSWV seed and oven test stability of oil was correspondingly longer for TSWV seed. Sensory panel evaluation of roasted normal and TSWV peanuts indicated no relevant flavor differences.

Response Surface Modeling of Extrusion Processed Full-fat Peanut and Sorghum Multi-mix Blend. J.C. ANDERSON\*, X. YAN and B. SINGH. Department of Food Science and Animal Industries, Alabama A&M University, Normal AL 35762.

Since peanuts possess high levels of oil, extrusion to form stable snack food forms is hindered unless combinations of whole peanuts with starch-rich, low-fat meals are considered. Development of convenient food model forms for the semi-arid tropics (SAT), such as in West Africa, has been pursued using minimally processed peanuts and sorghum since both remain staples in the food-crop production efforts of the region. An optimization experiment involving three process factors in a central composite design served to set the variables in this study. Yellow sorghum and de-skinned peanut kernels were used to prepare five levels of ground meal combinations (in ratios ranging from 3:1 to 5:1) milled together from the pre-chilled components to avoid excessive oil separations. Similarly, extruder screw speed rates and meal feeder input rates were assigned at five levels to establish an orthogonal set for experimentation. An Appropriate Engineering AE-303 extruder was employed to form 18 preparations of kibble products which were evaluated in terms of physical parameters of force and work of TexturePress shearing, expansion, bulk density and chemical interactions including water absorption capacity and extractable fat. Additional parameters of machine function were observed including power usage, temperature development in barrel, process water rates applied and moisture levels resulting in the products. Response surface equations were produced from the data using the CADE Optimization application. A tentative optimum process space based upon parameters of product shear, expansion, bulk density and water absorption capacity restricted products to compositions of less than 20% peanut with considerable latitude for the other two process parameters.

Relationship of Kernel Moisture Content to Aflatoxin Contamination in Florunner and Southern Runner Peanuts. J. W. DORNER\*, R. J. COLE and P. D. BLANKENSHIP. USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742

Florunner and Southern Runner peanuts were grown in two 5.5 m X 12.2 m environmental control plots and subjected to late-season drought stress. One plot contained a 2.54 cm thick layer of polystyrene 7.6 cm below the soil surface to separate the pod and root zones. The root zone (beneath the polystyrene) contained porous rubber tubing for plant irrigation. During the drought stress period, only the pod zone in this plot was stressed while the plants continued to receive water through root zone irrigation (pod stress treatment). In the other plot no polystyrene barrier was present and plants and pods both were exposed to drought stress (total stress treatment). Plants were harvested by hand from both plots after 42 days of stress. Pods from individual plants were hand-picked, separated into sound and damaged pods, and hand shelled. Peanuts from approximately half the plants were used to determine kernel moisture on an individual plant basis. Peanuts from the remaining plants were used for aflatoxin determination on an individual plant basis. Kernel moisture content was generally more variable in Florunner than in Southern Runner peanuts and moisture contents lower in the total stress treatment. Considerably more Florunner than Southern Runner plants died during the stress period. Aflatoxin contamination (>10 ppb) in kernels from sound pods occurred more frequently (17.5% of plants) in the Florunner cultivar from the total stress treatment than in the Southern Runner cultivar (5% of plants). Aflatoxin contamination in kernels from damaged pods was frequent and very high in the total stress treatment. However, aflatoxin contamination was less frequent and lower in the pod stress treatment.

A Sensor to Measure Peanut Moisture Content While Curing. C.L. BUTTS<sup>1</sup>. USDA-ARS,  
National Peanut Research Laboratory, Dawson, GA 31742.

Overdrying farmers stock peanuts prior to marketing increases the quantity of split kernels and the risk of high temperature off-flavors. Overdrying occurs due to insufficient monitoring during the curing operation. The current method of monitoring the moisture content of peanuts requires that a sample be obtained periodically from the load of peanuts, shelled and placed in a countertop moisture meter. The time required to properly sample the trailer and process each sample makes monitoring the peanut curing operation very labor intensive. Laborers hired to monitor the curing operation often resort to improper sampling methods, such as removing a sample from the top of the load, to reduce sampling time for each trailer. Improper sampling methods may result in an inaccurate indication of the average peanut moisture content. Improper sampling and the intense labor requirements increase the risk of overdrying. A sensor developed by Applied Instrumentation to monitor moisture content of nut crops such as walnuts and pistachios, was installed in commercial peanut drying trailers and calibrated to measure the moisture content of farmers stock peanuts while drying. Sensors were constructed of 2.4 mm sheet metal and permanently mounted in the peanut trailers. The sensor output was observed using a handheld portable display unit. During the 1990-91 crop years data was collected to calibrate the moisture sensor and to determine sensor durability. Peanut trailers were loaded according to conventional practice and transported to commercial peanut buying facilities where they were dried from field moisture to a marketable moisture content of 10% w.b. While drying, sensor output was recorded periodically and samples removed simultaneously for moisture determination. Kernel and hull moisture contents were determined using the gravimetric method (ASAE Standard 410.1). Sensor output decreased consistently as moisture content of the peanuts decreased for each individual load of peanuts. However, conventional statistical regression techniques did not result in an acceptable calibration curve due to the load-to-load variability of moisture content for a given sensor output level. Other variables for consideration are the kernel to hull ratio and the temperature and relative humidity of the drying air.

Peanut Quality Improvement Through Controlled Curing. K.D. BAKER<sup>2</sup>, F.S. WRIGHT and  
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and State University, Blacksburg, VA 24061 and USDA-ARS, Tidewater Agricultural  
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Peanut curing must proceed fast enough to avoid mold growth and harvest delays, yet slow enough to avoid quality loss. A new dryer heat control method, termed drying rate control (DRC), was developed to better meet the above criteria. The DRC method was tested and compared with humidistat control (HC) and conventional control (CC) methods using a bulk drying simulation model and laboratory curing tests. Airflow rates of 5, 10, and 15  $\text{m}^3/\text{min}/\text{m}^3$  were used, and the simulation studies incorporated five years of actual weather data recorded at Suffolk, Virginia. Laboratory curing tests were done on five lots of peanuts in 1990 and four lots in 1991. Average curing times were the same for CC and DRC, but averaged 17% longer with HC. Average curing times increased 27% when airflow rate decreased from 10 to 5  $\text{m}^3/\text{min}/\text{m}^3$ , and decreased 6% when airflow rate increased from 10 to 15  $\text{m}^3/\text{min}/\text{m}^3$ . Estimated fuel costs were the same for CC and DRC, but were 14% less for HC. As airflow rate increased from 5 to 15  $\text{m}^3/\text{min}/\text{m}^3$ , fuel costs increased at nearly a linear rate. Percent splits when shelled by a grade sample sheller were less than 2% in all tests and were not significantly different within tests. Volatile organic matter concentrations above comminuted samples were less than 8 mg ethanol/kg air for all samples and were not significantly different within tests. Percent skin slippage in ELK's averaged 30% less than CC with DRC and HC. DRC resulted in better peanut quality than CC with similar curing time and similar fuel cost. HC resulted in better peanut quality than CC with lower fuel cost, but increased curing time. There is a need for an objective method for measuring skin slip propensity that can document quality improvements achieved with improved dryer heat control methods.

Development of an Expert System for Curing Peanuts. J. M. TROEGER\* and C. L. BUTTS. USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742

The purpose of an expert system for curing peanuts is to recommend to the dryer operator the appropriate temperature rise and limit to optimize quality, energy use, and drying time. The bulk curing simulation model, PNTDRY, was used to determine drying time, energy use, and estimated percentage of split kernels. Estimated splits was based on the cumulative value of the plenum relative humidity below 50%. These values were determined for a range of maximum and minimum ambient temperatures, initial moistures, and the temperature rise and limit in the plenum. Results are incorporated into an expert system program and in tabular form for non-computer use. The user specifies expected maximum and minimum ambient temperatures for the next 24 hours along with initial moisture of the peanuts. The program (or tables) recommends temperature settings for the dryer which will optimize drying time, energy use, and splits. The program will be evaluated at several buying points during the 1992 harvest season.

Expert Systems for the Peanut Industry. J. I. DAVIDSON\*, M. C. LAMB<sup>1</sup>, C. L. BUTTS<sup>1</sup>, M. SINGLETARY<sup>2</sup>, J. M. TROEGER<sup>1</sup>, E. J. WILLIAMS<sup>1</sup>, J. S. SMITH<sup>1</sup> and P. D. BLANKENSHIP<sup>1</sup>. <sup>1</sup>USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742;

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Expert systems are likely to be the primary tools for technology transfer and management in the future. Nine expert systems (PNTPLAN, EXNUT, DRYNUT, PNUTPRO, XPDRY, MNUT, SHELNUT, STORNUT, and VNUT) are being developed to reduce economic, food safety, quality, and environmental risks. PNTPLAN is a whole farm planning expert system that provides optimum planning decisions for crop rotation, cash flow, crop insurance, and other economic considerations. EXNUT is an irrigation management expert system that provides optimum decisions for irrigated peanut production. Similarly, DRYNUT is an expert system for managing dryland peanut production. PNUTPRO is a decision role-based system for selecting optimum harvest dates. XPDRY is an expert system for managing the peanut drying process. MNUT is a marketing management system that predicts supply (yield, grade, aflatoxin, outturns, and germination), demand and pricing of peanuts prior to harvest. SHELNUT is an expert system that provides optimum management decisions for shelling plants. Similarly, STORNUT is an expert system for managing storage facilities. VNUT is an expert system to predict the acceptability to industry of new varieties, to determine optimum methods, and procedures for handling, marketing, and processing of the acceptable varieties. Documentation, status, impact, and future plans for each expert system are discussed.

# PRODUCTION AND EXTENSION TECHNOLOGY

**The Virginia Pesticide Use Survey for Peanut Production in 1990.** P. M. PHIPPS\*, D. A. HERBERT, JR., and C. W. SWANN. Tidewater Agric. Exp. Sta., Virginia Polytechnic Institute and State University, Suffolk, VA 23437

Data on pesticide use for production of peanuts (*Arachis hypogaea* L.) were sought from 50 growers or one for every 2000 acres planted in eight counties. Surveys were distributed evenly among growers with >100 acres and <100 acres of peanuts. Thirty-five growers from seven counties completed the survey. Yields averaged 217 lb/acre above the state average of 3487 lb/acre; representing 4.8% of total yield and 4.4% of the harvested acres. All participants indicated the Peanut Production Guide and extension education meetings were sources of information for decisions on pesticide use. The Leafspot Advisory Program, Nematode Assay Program and Diagnostic Clinic were used by 96, 37 and 23% of the participants, respectively. Private consultants were employed by 9% of the growers. Two out of every five growers designated Sclerotinia blight and one in every five designated Southern stem rot as responsible for yield losses >10%. Other diseases and pests were noted at frequencies of one in ten or less. Total input of pesticide active ingredients (a.i.) averaged 17 lb a.i./acre at an estimated cost of 118 dollars, not including application. An estimated 825 tons of pesticide a.i. at a cost of 12.1 million dollars were used on the 97,000 acres of peanuts planted in 1990. Fungicides, herbicides, insecticides and nematicides accounted for 42, 31, 18 and 6% of the total a.i. and 30, 29, 30 and 11% of total cost, respectively. An average of 4.1 sprays of fungicide were made for control of early leafspot. Chlorothalonil was applied an average of 2.6 times to almost all of the acreage. Cupric hydroxide plus sulfur was the second most widely used fungicide with 66% of the acreage receiving an average of 1.7 applications. Iprodione was applied to 19% of the acreage for control of Sclerotinia blight. A nematicide treatment was applied to 53% of the acreage. Ethoprop, fenamiphos, carbofuran and aldicarb accounted for 41, 30, 19 and 10% of the acres treated, respectively. Metolachlor and alachlor were among the most widely used herbicides, considering all timings of treatment. Commonly used post-emergence herbicides included 2,4-DB, alachlor, acifluorfen and bentazon. Aldicarb was applied in-furrow at planting to 85% of the acreage for thrips control. About 17% of the acreage was treated subsequently for thrips control, primarily with either carbaryl or acephate. An additional spray of insecticide was applied to 89% of the acreage and directed primarily at corn earworm. Efenvalerate and carbaryl accounted for 77 and 15% of the acreage treated, respectively. Granular insecticides were applied at pegging to 90% of the acreage for control of southern corn rootworm. Chlorpyrifos was used on 77% of the acres treated. Use of acaricides was limited to propargite on 5% of the acreage.

**Spray-Tank-Mix Compatibility of Manganese, Boron, and Fungicide I: Wet Chemistry.** N. L. POWELL. Virginia Polytechnic Institute and State University, Suffolk, VA.

Foliar application to the peanut (*Arachis hypogaea* L.) crop of manganese and boron mixed with pesticides in water is a common practice. This study was conducted to determine the compatibility of mixing manganese with boron, fungicides and several sources of spray water. Spray mixtures of the chelated manganese salt of ethylene diamine tetra-acetate (EDTA) and the inorganic salts of manganese as manganese sulfate (Tecmangam), manganese sulfate monohydrate, manganese chloride, and manganese nitrate were developed with deep-well water, shallow well water, surface (pond) water, and distilled water. These mixtures were also made up in combination with boron as boric acid or disodium octaborate tetrahydrate. In addition all combinations were mixed with the fungicides chlorothalonil or cupric hydroxide plus sulfur. Mixtures were equivalent to normal recommended rates of manganese, boron, and fungicide applied to the foliage in 140 L ha<sup>-1</sup> of spray volume. Measurements were made of pH and manganese remaining in solution after filtration. Observations of precipitates forming were noted. Because of the high pH of the deep-well water, addition of the manganese inorganic salts caused a precipitate to form in the mixture. The chelated manganese did not precipitate. Addition of disodium octaborate tetrahydrate increased the tank-mix pH of all waters and caused increased precipitation of the manganese inorganic salts but not the chelated manganese. Use of boric acid in the waters lowered the solution pH and allowed all added manganese sources to remain in solution. Spray-tank-mix pH was very critical in keeping all manganese inorganic salts in solution. For all pH levels studied (pH 5.5 to 8.5) the chelated manganese remained in solution without formation of a precipitate. Chemical analysis of the filtrate show that only 75 to 80% of the inorganic salts of manganese remain in solution with disodium octaborate tetrahydrate while 100% of the chelated manganese salt remained in solution. The inorganic salts of manganese and disodium octaborate tetrahydrate should not be mixed with chlorothalonil and none of the manganese materials should be mixed with cupric hydroxide plus sulfur for foliar application.

Response of Virginia-Type Peanut Cultivars to Chlorimuron. C. W. SWANN. Tidewater Agricultural Experiment Station, Virginia Polytechnic Institute and State University, Suffolk, VA 23437

In 1990 and 1991, NC 6, NC 7, NC 9 and NC-V 11 peanut (*Arachis hypogaea L.*) cultivars were evaluated for response to chlorimuron application. In 1990, the NC 9 cultivar was treated with 0.004 lb ai/acre chlorimuron as single treatment 49, 63 and 77 days after emergence (DAE) as sequential treatments 49 + 63 and 49 + 77 DAE and with 0.008 lb ai/acre as a single treatment 63 or 77 DAE. In 1991, the NC 9 cultivar was treated with 0.008 lb ai/acre chlorimuron 35, 49, 63, 70, 77 and 91 DAE. NC 6, NC 7, NC 9 and NC-V 11 cultivars were treated with 0.008 and 0.016 lb ai/acre chlorimuron at 63 DAE in 1990 and with 0.005, 0.008 and 0.016 lb ai/acre at 77 DAE in 1991. In 1990, application of chlorimuron at 0.008 lb ai/acre at 63 DAE and 0.015 lb ai/acre 63 DAE reduced yield of the NC 9 cultivar. In 1991, yield of NC 9 peanut treated with 0.008 lb ai/acre chlorimuron was significantly greater than untreated peanuts. In 1990, row definition of NC 9 at harvest was significantly improved with 0.004 lb ai/acre chlorimuron applied sequentially at 49 + 63 DAE and row definition of the NC 9 and NC-V 11 cultivars was significantly improved with the 0.008 lb ai/acre applied at 63 DAE. In 1991, 0.008 lb ai/acre chlorimuron applied at 35, 49, 63 and 70 DAE significantly improved row definition of NC 9.

Comparison of Plow Layer and Pegging Zone Soil Test Results in Georgia STEVEN C. HODGES\* and G. GASCHO. University of Georgia, Tifton, GA.

Differences in calcium recommendations for runner-type peanuts have been closely examined in Alabama, Georgia and Florida in recent years as part of a regional project to develop uniform Ca recommendations for peanuts. Cooperative efforts have pointed out several areas of research needed to fully integrate Ca research into useful recommendations. Although extensive calibration results are available within the region, differences in interpretation remain. Analytical methods were initially thought to play a role in these varying interpretations, but results of a sample exchange ruled this out as a major source of difference. Close examination of the calibration data indicate that some differences in soil sampling methodology could influence interpretation. In Alabama, samples for determining critical Ca levels have typically been taken from the "plow layer" (6-8 in depth) at the end of the growing season. In Georgia, samples were taken from a 6-8 in depth in the fall or spring prior to planting and/or from a 2-3 in depth in the pegging zone after peanuts emerged. In this study, microplot areas (30 ft by 30 ft) were located in 25 fields. Microplots were sampled prior to deep turning in the spring (6 in depth) and in the pegging zone 10-15 days after emergence (3 inch depth). Additional samples will be collected in the fall prior to harvest. The data was analyzed to determine the variation in calcium concentration following tillage, time of sampling and sample depth. Although all analysis are not complete at this time, a preliminary comparison of the results show differences in Ca concentration averaged around 80 lb per ac. Where plow depths were greater than 6-8 in, Ca concentrations were significantly lower in the 3 in samples than in the 6 in samples. This was apparently caused by dilution with acidic subsoil. In other cases, Ca levels in the upper 3 in were increased after deep turning. The results indicate that sampling depth must be similar to actual plow depth if plow layer samples taken in the fall are to be used to evaluate soil Ca status for peanuts. A better alternative for many growers will be the use of pegging zone samples taken after peanuts emerge.

Phosphorus and Potassium Fertilization on Peanut. D. L. HARTZOG\* and J. F. ADAMS, Auburn University, Headland, AL 36345.

Direct fertilization of peanut (*Arachis hypogaea L.*) has traditionally shown no yield increases when crops in rotation have been fertilized according to good management practices. Recently, direct P and K fertilization has resulted in yield increases. Eight on-farm experiments were conducted from 1987 to 1991 throughout the Wiregrass area of Alabama. The experimental treatments consisted of a check (no P or K), 80 lb P<sub>2</sub>O<sub>5</sub>, 80 lb K<sub>2</sub>O, and 80 lb P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O per acre. Three of the experiments had increased yield due to P application. Soil-test P for these experiments ranged from 4 to 7 lb/acre, while nonresponsive sites had soil-P ranging from 13 to 81 lb/acre. All sites that responded to P application were following long-term bahiagrass rotations. Also, three of eight on-farm experiments had increased yield due to applied K. The soil-test K ranged from 10 to 18 lb/acre of K for the deficient sites. This was expected due to previously conducted research. This research shows that peanuts following long-term grass rotation or idle land may require direct P and K fertilization.

# PRODUCTION AND SEED TECHNOLOGY

Row Pattern Demonstrations in Georgia. J.P. BEASLEY, JR.\* and J.A. BALDWIN.  
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The predominant row pattern used in planting peanut (*Arachis hypogaea* L.) in Georgia is two rows per bed spaced in a range from 81 to 97 cm apart. Surveys of County Extension Agents indicate five percent or less of the peanut acreage in Georgia is planted to a row pattern other than the conventionally spaced single rows. Row spacing studies in peanut have been conducted since the 1920's, mostly evaluating evenly-spaced rows on a bed, ranging from five rows 18 cm apart to the more common spacing of two rows 91 cm apart. Weed control, digging, inverting, and combining were the reasons most commonly listed why closely-spaced, multiple rows per bed were not as successful as two rows 81 to 97 cm apart. More recent research has examined the twin row pattern. This pattern consists of two sets of twin rows per bed, with each set of twins spaced 18 to 25 cm apart. Demonstrations were established in Georgia in 1990 evaluating the response of different runner-type cultivars to twin rows (twins spaced 18 cm apart) compared to single rows 91 cm apart on a 182 cm bed. Yield increases of 565 kg ha<sup>-1</sup> and 426 kg ha<sup>-1</sup> were obtained on twin rows of 'Florunner' and 'Southern Runner', respectively, compared to single rows. In another demonstration, the new cultivar 'AT 127' from AgraTech Seeds, Inc. was evaluated on twin rows and single rows. AT 127 is more determinant in fruiting habit and produces more of a "tap-root" crop than Florunner. Twin rows of AT 127 had a non-significant yield increase (LSD .05=780) of 337 kg ha<sup>-1</sup> over single rows, while twin rows of Florunner had a significant yield increase of 889 kg ha<sup>-1</sup> over single rows in the same test.

Diamond Shaped Seeding of Six Peanut Cultivars. R. W. MOZINGO\* and F. S. WRIGHT. Virginia Polytechnic Institute and State University and USDA-ARS, Tidewater Agricultural Experiment Station, Suffolk, VA.

Six large-seeded virginia-type peanut (*Arachis hypogaea* L.) cultivars (NC 7, VA 81B, NC 9, NC-V 11, VA-C 92R, and Florigrant) were planted in diamond shaped seed spacings of 6 x 6, 12 x 12, and 18 x 18 inches. The objective of this 3-year study conducted at the Tidewater Agricultural Experiment Station in Suffolk, Virginia was to determine the influence of seed spacings on the yield, grade, and plant growth of peanuts. A randomized complete block, split-plot design was used with cultivars as the whole plot and seed spacings as the split-plot. Significant differences as expected were obtained between years and cultivars for all characteristics. Closer seed spacings resulted in higher yield, value, sound mature kernels and total kernels and lower percentage of other kernels. The 6 x 6, 12 x 12 and 18 x 18 inch seed spacings had yields of 5299, 4908, and 4352 pounds and values of 1697, 1540, and 1353 dollars per acre, respectively. Sound mature kernels were 69.7, 68.2 and 67.4% and total kernels were 73.2, 72.3 and 71.8% for the 6 x 6, 12 x 12 and 18 x 18 inch seed spacings, respectively. Other kernels decreased with closer seed spacing with 1.7, 2.0 and 2.3% recorded for the 6 x 6, 12 x 12 and 18 x 18 inch spacings, respectively. Plants had taller main stems (15.5, 12.0 and 9.0 inches) and longer cotyledonary lateral branches (19.8, 18.9 and 17.9 inches) respectively with the 6 x 6, 12 x 12 and 18 x 18 seed spacing, respectively. Significant cultivar x seed spacing interactions were indicated for yield and value. All cultivars had an increase in yield and value with closer seed spacings; however, the magnitude of difference between cultivars created the interactions.

Yield and Grade of Florunner Peanut Following Two Years of 'Tifton 9' Bahiagrass, Corn or Peanut. J. A. BALDWIN. University of Georgia, Tifton, GA.

Peanut (*Arachis hypogaea* L.) following two or three years of grass crops is recommended by Extension Services in peanut producing states. Three years of continuous peanut ('Florunner') was compared to peanut following two years of 'Tifton 9' bahiagrass (*Paspalum notatum* Flugge) or corn (*Zea mays* L.). Plots were four rows 90 cm by 20 m and planted during 1991 in a randomized complete block design replicated four times. Yields following 'Tifton 9' bahiagrass, corn, and continuous peanut were 4170, 3520, and 2960 kg ha<sup>-1</sup>, respectively, and significantly different at the  $p \leq .05$  level. No differences occurred in Total Sound Mature Kernels (TSMK) or other grade factors.

An Index to Assess Quality of Peanut Seeds. D.L. KETRING.

USDA-ARS, Plant Science Research Laboratory, Southern Plains Area and Dept. of Agronomy, Oklahoma State University, Stillwater, OK 74075.

Seed testing has been developed to aid agriculture in avoiding some of the hazards of crop production by furnishing information about seeds that are to be used for planting purposes. The ultimate goal of the test is to determine the value of seeds for field planting and to compare the value of different seed lots. Further knowledge of temperature extremes that affect peanut (*Arachis hypogaea* L.) seed quality (germination and seedling vigor) could be of value to provide additional information concerning peanut seed quality. Temperatures of about 50 °C were attained under natural warehouse-like storage conditions in a previous study. The objective of this study was to examine the temperature/time relationship effects on peanut seed quality beginning at 50 °C. Germination was not significantly affected while there was a significant reduction in seedling vigor by a 48-hour exposure to 50 °C. Severe damage to seedling vigor and significant reduction of germination occurred after 168-hour exposure to 50 °C. Field emergence followed the same trends as germination and seedling vigor. Correlations of field emergence with germination and rapidly growing seedlings was positively significant ( $P < 0.01$ ) and negatively significant ( $P < 0.10$ ) with slow growing seedlings, respectively. A "vigor Index" (VI) was positively correlated with field emergence. Although yield was not significantly different among treatments, VI and yield were positively correlated ( $r = 0.797$ ,  $P < 0.10$ ). Repeated exposures to adverse temperature had additive effects in reducing seed quality. Seedling growth (vigor) is more sensitive to adverse temperature than germination. A vigor index calculated from both germination and seedling growth provided a sensitive indicator of reduced seed quality.

Peanut Germination Related to Potassium, Calcium and Magnesium in Seed, Hulls and Soils. G. J. GASCHO\*, W. R. GUERKE, M. B. PARKER and T. P. GAINES.

University of Georgia and Georgia Department of Agriculture, Tifton, GA. Calcium (Ca) concentrations in soil and its ratios with potassium (K) and magnesium (Mg) are important determinants of yield, grade and germination of peanut (*Arachis hypogaea* L.). Fourteen replicated field experiments were conducted over 3 years on sandy loams, loamy sands, and sands to relate seed germination to seed, hull, and soil concentrations and ratios in order to more closely describe the chemical environment conducive to produce seed with adequate germination. Experimental sites were chosen on the basis of low Mehlich 1 (0.05 N HCl in 0.025 N  $H_2SO_4$ ) soil test calcium. Preplant incorporated lime and bloom gypsum treatments were applied to both runner- and virginia-type peanuts. Germination varied widely from less than 10% to greater than 90% and was significantly correlated with soil Ca during seed development as well as with seed and hull Ca. When experiments were combined, maximum germination was attained at 0.64 g/kg seed Ca and 2.53 g/kg hull Ca for runner-type peanut and 0.61 g/kg seed Ca for virginia-type peanut. Significant correlations were also determined for seed Ca/(K+Ca+Mg) with maximum germination occurring at 0.08 for runner-type peanut and 0.07 for virginia-type peanut. Even though maximum germination was described via significant curvilinear equations, germination from peanuts grown on low Ca status sands was not adequate for producing acceptable quality seed in several experiments, especially for virginia-type peanut. For a given Ca status, germination was greater for peanuts grown on finer textured loam soils than coarse textured sands.

Sample Mixing in a Full-Size Peanut Combine. B.J. BRECKE\*. University of Florida Agricultural Research and Education Center, Jay, FL 32565.

Questions have arisen over the years concerning sample mixing from plot to plot when a full-size commercial peanut combine is used for harvest. If excessive mixing occurs, tests for grade, chemical residue or other quality characteristics might provide unreliable data. A study was conducted in 1990 and 1991 to evaluate the amount of mixing that occurs. Peanuts (2 rows by 7.6m) that had been inverted and allowed to field dry for 3 days were colored with various shades of latex paint so that nuts from other than the plot being harvested could be identified after passing through a Lilliston 1500<sup>®</sup> peanut combine fitted with a bagging attachment. Two combines, one produced in 1966 and the other in 1968, were used. The combines were allowed to clean-out for either 15, 30 or 45 seconds before moving on to the next plot. Results indicated that a 15 second clean-out allowed 1.8 kg of nuts to mix with the plot sample while either a 30 or 45 second clean-out allowed 1.4 kg to mix. The amount of mixing was consistent regardless of total sample size (ranging from 5 to 9 kg) or age of combine. It has been suggested that much of this mixing may be due to the amount of peanuts remaining in the bottom of the auger which transfers the nuts from the combine separator to the duct leading to the bagger/hopper. However, only 0.4 kg could be recovered from this auger after a 45 second clean-out leaving at least 1 kg of nuts unaccounted for. Depending on sample size, this can still be a significant percentage of the sample. Therefore, changing to a combine that eliminates the transfer auger would not seem to be a solution to this problem.

# ENTOMOLOGY

## Thrips Overwintering in Relation to Peanut Emergence in North Carolina.

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Overwintering biology is an important factor relating to the ability of thrips to transmit tomato spotted wilt virus (TSWV) into newly planted peanut. In North Carolina, thrips can be found on peanut seedlings before the seedlings emerge from the soil. In a two year study, both emergence and exclusion cages were used in order to test the hypothesis that thrips are overwintering on site in fields planted in peanut or a crop planted in rotation with peanut, and that these overwintering thrips attack and damage newly emerging peanut seedlings. In 1990 and 1991, thrips numbers and thrips damage were significantly lower on peanut plants inside of emergence and exclusion cages than on peanut plants outside of these cages. In 1991, the experiment was conducted in corn planted in peanut the previous year. The number of thrips found on corn seedlings inside of emergence cages was significantly lower than that found on corn seedlings outside of emergence cages. In 1991, all thrips collected from corn and peanut plants were identified as Frankliniella fusca, a vector of TSWV.

## Tobacco Thrips Control Alternatives and Effects on Peanut Maturity and Yield. D.A.

HERBERT, JR.\* and C.W. SWANN. Dept. of Entomology and Dept. of Crop and Soil Environmental Sciences, Virginia Polytechnic Institute and State University, Tidewater Agricultural Experiment Station, Suffolk VA 23437.

Alternative treatments were compared to aldicarb (Temik 15G) for control of tobacco thrips in Virginia-type peanuts. Oxamyl (Vydate L) was applied as a preplant incorporated band. In-furrow treatments included acephate (Orthene 75S) applied either as a liquid band or dry to seed, and phorate (Thimet 15G and 20CR). Postemergence treatments were applied either alone in 12-inch bands at LGC (2 weeks after plant), or tank-mixed with herbicides and broadcast EPO (4 weeks after plant). LGC treatments included acephate, carbaryl (Sevin XLR PLUS), lambda-cyhalothrin (Karate 1EC), and Danitol 2.4EC. EPO treatments included acephate tank-mixed with paraquat, acifluorfen or pyridate. Thrips injury was determined weekly using a visual rating scale. Maturity was determined using the Hull-Scrape maturity assessment method on three digging dates at weekly intervals beginning September 10. Yield was based on combining, drying (7% moisture) and weighing 80 row feet of peanuts per plot. All treatments with acephate and phorate provided excellent levels of thrips control (less than 25% injured leaves) that were equal to that of aldicarb. Hull-scrape ratings indicated that the percentage of pods in darker categories (indicating maturity) was higher in treatments where severe thrips and herbicide injury was prevented. Differences in maturity ratings became less distinct with later digging dates. Yields were generally higher where thrips and herbicide injury was prevented and at later digging dates. Although thrips control was equal with acephate and aldicarb, yields were generally higher with aldicarb except where fumigation with metham-sodium (Vapam) had been done prior to planting.

Management of Thrips on Peanuts in Alabama Integrating Cultural and Insecticidal Control Practices. J. R. WEEKS\* and A. K. HAGAN. Department of Entomology and Plant Pathology, respectively, Auburn University, AL 36849.

Studies were conducted on runner peanut varieties in Alabama from 1987 through 1991 to evaluate the effects of cultural management practices and insecticide treatments on thrips populations, plant damage, tomato spotted wilt (TSW) incidence and peanut yield. Studies where planting dates were manipulated indicated that April planted peanuts consistently had higher levels of thrips than May or June plantings. Compared to April and June plantings May planted peanuts had fewer thrips, less TSW and higher yields. Florunner, GK-7 and Southern Runner peanut varieties were evaluated for thrips populations, thrips damage, TSW incidence and yields. Southern Runner consistently had less TSW and yielded as well as the other varieties; however, thrips populations among varieties were not significantly different. The inclusion of an at-plant insecticide treatment with either of these two cultural management practices did not affect TSW incidence or yield, although thrips populations and thrips damage were significantly reduced by the insecticide treatment.

Wireworms as Pests of Peanuts in Georgia. S. L. BROWN\*. University of Georgia, Rural Development Center, Tifton, GA 31793.

Larvae of beetles in the family Elateridae (click beetles) have been recognized as occasional pests of peanuts for many years. In most peanut-producing states, wireworms are not considered to be an important insect pest of peanuts and treatments are rarely necessary. In Georgia, entomologists have ranked wireworms as the most important insect pest of peanuts six out of the last 10 years. Three on-farm evaluations of insecticides for wireworm control revealed infestation levels of 4.2, 23.6, and 26.5% damaged pods in the untreated controls. At all three sites, percent damage ratings declined during digging and again during combining. Damage ratings of harvested peanuts gave a poor indication of actual damage levels in the field. In a replicated experiment, percent damage ratings taken 114 days after planting (DAP) indicated that chloryprifos applied either pre-plant incorporated or 44 DAP resulted in significantly less damage than with chloryprifos applied 86 DAP. Yields were not significantly different possibly due to heavy lesser cornstalk borer damage that occurred just prior to harvest. Four different wireworm species were collected from the test plots. The number of adult Elaterid beetles collected in pitfall traps steadily declined during the sampling period July through September. In separate tests during 1990 and 1991, 'Southern Runner' had less wireworm damage than 'Florunner' even though wireworm populations on the two varieties were not different. In 1991, significantly less wireworm damage was found on peanuts planted on twin rows than on single 36 inch rows.

## ECONOMICS

PNTPLAN. An Expert Systems Whole-Farm Planning Model Designed to Optimize Peanut-Based Rotation Decisions. M. C. LAMB\*, J. I. DAVIDSON and C. L. BUTTS. USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742.

Significant structural and environmental changes have affected SE peanut production. Peanut acres steadily increased from 770,000 acres in 1980 to more than 1.3 million acres in 1991. Acreage devoted to traditional rotation crops (i.e. corn, grain sorghum, cotton) decreased significantly during the same time periods, resulting in a decrease in the length and suitability of peanut rotations. PNTPLAN was developed to provide a whole-farm plan on a field-by-field basis for all potential enterprises available for production. Inputs include information regarding the whole-farm operation, rented farms, individual field production history, production costs and policy regulations. Based on peanut rotation data from commercial fields from 1980 through 1991, PNTPLAN will optimize peanut-based rotation decisions and prepare an optimum rotation sequence subject to the physical and financial constraints of an individual farm. PNTPLAN will prompt the user for additional information as the optimization routines are running. It is suggested that the farmer run PNTPLAN for 1, 2, 3 and even 4 years to examine the differences and determine which plan is most consistent with the objectives of the farmer. Sensitivity analysis allows farmers to develop several farm plans under various yield, price and policy scenarios to examine the changes in farm structure, income and risk associated with each scenario. Data gathered with cooperating farmers in the Southeast indicated that many farmers were not fully aware of actual production costs until the itemized budget analyses were performed. PNTPLAN suggested several changes in farm structures ranging from planted acres of peanuts and other crops to the restructuring of farm debt.

Structural Trends in Southwest Peanut Production. F.D. MILLS, JR.\* Dept. of Agriculture and Environment, Abilene Christian University, Abilene TX 79699. Changes in the world and U.S. political environment could precipitate the dismantling of the U.S. peanut program. The possibility arises that structural changes could occur among traditional U.S. peanut production regions. Therefore, familiarity with past and present structural characteristics provide a basis for measuring potential future changes. Secondary data were obtained to compare specific structural attributes of Southwest (i.e., Texas, Oklahoma, New Mexico) and U.S. peanut production. Structural characteristics examined included the number of peanut farms, peanut acreage, and quantity of peanuts produced. Southwest peanut farms comprised 16% of total U.S. peanut farms in 1982--rising to 17% in 1987. Similarly, the quantity of peanuts produced in the Southwest rose from 15% to 19% of total U.S. production, although Southwest peanut acreage fell from 25% to 23% of total U.S. peanut acreage. Southwest irrigated peanut farms fell from 46% to 40% of total U.S. irrigated peanut farms, while Southwest irrigated peanut acres fell from 51% to 44% of the total. Other attributes analyzed were farm size, farms producing peanuts by Standard Industrial Classification, business organization of farms, age and principal occupation of farm operators, farm operator tenure, and the value of agricultural products sold. Individual county trends were also considered to assess internal changes within the region.

The National Poundage Quota: Analysis of Some Alternative Approaches. R. H. MILLER.

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The Food, Agriculture, Conservation, and Trade Act of 1990 requires that the national poundage quota must equal the quantity of peanuts estimated to be devoted to domestic edible, seed, and related uses in each marketing year, but not less than 1.35 million tons. Over three-fourths of the national quota represents domestic sales. This study shows that discrepancies between expected and reported domestic use, inability to consider distribution of effective quota, and increased imports may result in sizable quota crushing losses for Commodity Credit Corporation (CCC) in fiscal years 1992 and 1993. The analysis indicates delaying the quota-setting to mid-February (coincident with the support level) has an economic rationale and also would enhance the knowledge base for the upcoming marketing years. An alternative procedure of manufacturer or sheller-supplied purchase intentions is examined. Considering the carryover of undermarketings when setting the prospective quota would reduce the crop-size variation and the potential for CCC loans. The marketing quota can be adjusted to account for projected or anticipated imports but not for changes in imports after the marketing quota is set (e.g., July 1991). After initially proposing the 1992-crop quota at 1,610,000 tons, USDA set the quota at 1,540,000 tons, slightly below the 1991-crop quota. The final quota (announced in December 1991) recognized that domestic food use would grow at a slower rate than first proposed. Early 1992 estimates indicate that recovery in domestic food use for the 1992 marketing year is not projected to materialize and the quota may be considerably overstated. The change in domestic edible use following the 1980 and 1990 droughts are compared.

An Examination of Federal Crop Insurance as a Risk Management Tool in Southeast Peanut Production. W. DON SHURLEY.

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Peanut acreage in the Southeastern United States has expanded rapidly in recent years. In most years this has been due to annual increases in a farm's basic peanut quota. The acreage of additional or non-quota peanuts has also increased. Farmer acreage decisions are influenced by the comparative net returns of other crops, price and yield risk, and financial or credit considerations. A combination of crop insurance and price contracting of peanuts greatly limits income risk for the grower and credit risk for the lender. Risk considerations are likely a major factor contributing to increased peanut acreage in Georgia and the Southeast. The percentage of peanut acres insured has increased dramatically in recent years. Data examined since 1980, however, reveals that peanut crop insurance also has an unfavorable Loss Ratio. Changes in insurance could be forthcoming. An example "Area 19" farm from Mitchell County, Georgia was used to illustrate the risk management properties of crop insurance. A computerized model was developed to calculate and compare net returns and risk in net returns for uninsured peanuts versus 75 percent, 65 percent, and 50 percent coverage. Probability distributions of net returns were developed for uninsured and each level of coverage. The optimal level of insurance is dependent on the amount of quota, additional or non-quota acreage, amount and combination of irrigated and non-irrigated acres, and yield history. Results suggest that crop insurance can completely eliminate the possibility of negative returns above variable costs even at the 50 percent level of coverage. Uninsured peanuts had about the same net return but double the risk of peanuts insured at the 75 percent level. The model will continue to be developed with cooperation from FCIC. The model can be useful to assist growers in selecting the most risk-efficient level of coverage for their peanut enterprise. The model can also help analyze the impacts of any future changes in crop insurance provisions. Additional work will focus on combinations of insurance and contracting as risk management tools.

# PLANT PATHOLOGY

Detection of Peanut Stripe Virus in Peanut Seed Using the Polymerase Chain Reaction. J.L. SHERWOOD<sup>1</sup>, R.E. PENNINGTON<sup>1</sup>, B.G. CASSIDY<sup>2</sup>, and R.S. NELSON<sup>2</sup>. <sup>1</sup>Dept. of Plant Pathology, Oklahoma State University, Stillwater, OK 74078 and <sup>2</sup>The Samuel Roberts Noble Foundation, Plant Biology Division, Ardmore, OK 73402.

Peanut stripe virus (PStV), a member of the potyvirus group, infects *Arachis hypogaea* L. and is a significant problem in Southeast Asia, including the People's Republic of China, Thailand, and the Philippines. No cultivated peanut with resistance to PStV has been reported. PStV is seed transmitted, so the distribution of virus free-seed for planting could delay the spread of PStV to new geographical regions. The non-germ end of peanut seed can be removed and assayed for virus without significantly affecting germination. Thus, seed lots can be screened for virus infection. This has been done with serology, but the limit of sensitivity of serological assay is about one virus infected seed per thirty seeds. An assay that could amplify and specifically detect the viral nucleic acid could circumvent this problem. The polymerase chain reaction (PCR) permits the specific amplification of a segment of nucleic acid and potentially may be used to detect a single copy of a nucleic acid. Our purpose was to examine the use of the PCR for detection of PStV in seed. A method entailing an initial extraction in amended Tris-HCl buffer followed by several phenol extractions gave the best results of five methods to obtain viral RNA suitable for cDNA synthesis. The cDNA was amplified in the PCR using primers based on the sequence of the viral RNA around the coat protein region. Of the sets of primers utilized, a set that resulted in an approximately 400 base pair product gave the most consistent results. As little as 16 pg of virus could be detected in assays using previously isolated PStV. Similar results were obtained with an extract of seed to which purified virus had been added. Seed were obtained from peanut that had been inoculated with PStV and the seed were assayed by ELISA. Seed positive in ELISA were also positive by PCR. When PStV infected seed were mixed with other seed and tested by the PCR, the sensitivity of the assay by PCR was variable. Approaches to obtain consistent results are being evaluated.

Comparison of Hidden and Apparent Spotted Wilt Epidemics in Peanut. A. K. CULBREATH<sup>1</sup>, Dept. of Plant Pathology, J. W. TODD, Dept. of Entomology, The University of Georgia, Tifton, GA 31793, and J. W. DEMSKI, Dept. of Plant Pathology, The University of Georgia, Griffin, GA 30223.

A block (12 two-row beds wide by 80 ft long) of Florunner peanut (*Arachis hypogaea* L.) was planted on 15 April 1991 at the University of Georgia, Attapulgus Research Farm, Attapulgus, GA. The block was divided into four tiers of plots 6 ft wide by 20 ft long. Ten of the 12 plots in each tier were used for destructive sampling for detection of latent tomato spotted wilt virus (TSWV) infections. One plot per tier was chosen by random selection without replacement each week beginning 2 May for sampling of the plant population for incidence of spotted wilt based upon serological detection of the virus. For each plot sampled, one 3-ft section was selected at random from each row. The tap root from each plant in the section was assayed for TSWV by use of ELISA with commercially available antiserum to the common or "L" strain of TSWV. A total of 160 plants were collected and assayed each week for 17 weeks. After all ten plots in each tier had been sampled once, the random selection process was repeated. Among the root samples, percent of plants testing positive for TSWV increased linearly from 30 until 130 days after plant emergence. Two plots from each tier were designated as plots for monitoring the incidence of spotted wilt, based upon foliar symptoms. In these plots, incidence of symptomatic plants was determined on 17 July, 29 July and 12 August. Incidence indicated by serological tests of roots ranged from two to three times higher than was indicated by foliar symptoms at respective sampling dates. Final incidence of infection among the root samples was greater than 20% according to ELISA results compared to only 7% apparent incidence of spotted wilt based upon foliar symptoms.

**Variability in the Morphology and Germinability of *Cercospora arachidicola***

**Isolates.** P.V. SUBBA RAO, J.L. REWARD, F. WALIYAR, P. SUBRAHMANYAM, D.H. SMITH and D. McDONALD. Legumes Program, ICRISAT, Patancheru 502 324, Andhra Pradesh, India, IRHO-CIRAD, B.P. 5035, 34032 Montpellier, France, ICRISAT, B.P. 12404, Niamey, République de Niger, SADCC/ICRISAT Groundnut Project, P.O. Box 1096, Lilongwe, Malawi.

Sixteen isolates of *Cercospora arachidicola*, causal agent of the early leaf spot of peanut were obtained from 14 peanut-producing countries world-wide, and the variability in morphology and germinability of their conidia was studied. Conidial length and number of septa per conidium varied significantly ( $P<0.05$ ) between isolates. When grown on peanut leaves the Nigerian isolate had the longest conidia (99.8  $\mu$ m) and the highest number (10.96) of septa per conidium and the Senegalese isolate had the shortest conidia (82.5  $\mu$ m) and the lowest number (8.46) of septa per conidium. For all the isolates except the one obtained from ICRISAT, the conidia were significantly longer ( $P<0.001$ ) when grown on peanut leaves than when grown on oat meal agar supplemented with peanut leaf extract. The germinability of the isolates did not vary significantly and all the isolates had more than 84% germination. Interestingly, the average number of germtubes per conidium varied significantly between isolates. The more pathogenic isolates had much higher numbers of germtubes per conidium than the less pathogenic isolates. Studies are in progress to compare the pathogenicity of these isolates on a set of peanut genotypes.

**Biological Control of the Late Leafspot Fungus with a Mycoparasite.** D.M. PORTER\* and

R.A. TABER. USDA-ARS, Tidewater Agricultural Experiment Station, Suffolk, VA 23437 and 210 Forest Drive, LaVale, MD 21502.

The mycoparasite, *Dicyma pulvinata* (Berk. and M. A. Curtis) Arx., parasitized the late peanut leafspot pathogen *Phaeoisoriopsis personata* (Berk. and M. A. Curtis) Arx. = *Cercosporidium personata* (Berk. and M. A. Curtis) Deighton but did not parasitize *Cercospora arachidicola* S. Hori, the early leafspot pathogen in Virginia peanut (*Arachis hypogaea* L.) fields. Peanut leaflets used in the study were obtained from a field site planted to the variety NC 6. Leafspot fungicides had been used at recommended rates. Over 90% of the lesions which were observed throughout the field were caused by *C. arachidicola*; however, late leafspot lesions were observed in localized areas within the field. Leaflets, exhibiting mostly late leafspot lesions were collected at random from several areas within the field site. Individual lesions of both late and early leafspot were observed for evidence of colonization by *D. pulvinata*. The total number of lesions observed with typical *C. arachidicola* lesions and *P. personata* lesions was 2,022 and 9,785, respectively. Only lesions caused by *P. personata* were colonized by *D. pulvinata*. Abaxial surface lesions and adaxial surface lesions were colonized by *D. pulvinata* at a frequency of 2.7% and 0.7%, respectively. About 60% of the colonized lesions were adjacent to leaflet midrib. This is the first report in Virginia of *D. pulvinata* parasitizing lesions on peanut leaflets caused by the late leafspot fungi.

Hairy Indigo for the Management of *Meloidogyne arenaria* in Peanut. D.G. ROBERTSON\*, R. RODRIGUEZ-KABANA and L. WELLS. Department of Plant Pathology, Auburn University, Alabama Agricultural Experiment Station, Auburn, AL 36849.

The value of hairy indigo (*Indigofera hirsuta*) as a rotation crop for the management of root-knot nematode (*Meloidogyne arenaria*) in 'Florunner' peanut (*Arachis hypogaea*) was studied for six years (1986-1991) in a field at the Wiregrass substation, near Headland, Alabama. Hairy indigo supported low juvenile populations of the nematode in soil. Yield of peanut without nematicide treatment following one year of hairy indigo was 12.7% higher than that from monoculture peanut without nematicide [P(-)]. At-plant application of aldicarb (0.336 g a.i./M row in a 20-cm-wide band) to monoculture peanut [P(+)] resulted in an average 23.0% yield increase. When aldicarb was applied to peanut following one year of hairy indigo, yield increased by 43.0% compared to P(-). Peanut yield following two years of hairy indigo [I-I-P] was 35.8% higher than that from P(-). Aldicarb applied to peanut in the I-I-P rotation increased yield by 56.1% relative to P(-) and by 22.7% compared with P(+) yield. Peanut yields obtained with the I-I-P system were equivalent to those from peanut following one year of hairy indigo preceded by one year of 'Kirby' soybean (*Glycine max*) [Soybean-I-P] or peanut following 'DPL 90' cotton (*Gossypium hirsutum*) preceded by one year of hairy indigo [I-Cotton-P].

Implications of Peanut Seed Infection with *Sclerotinia minor* on the Epidemiology of Sclerotinia Blight. H. A. MELOUK\*, K. E. JACKSON and J. P. DAMICONE. USDA-ARS and Department of Plant Pathology, Oklahoma State University, Stillwater, OK 74078-9947.

The incidence of *S. minor* in 1,218 commercial peanut (*Arachis hypogaea* L.) seed lots harvested in 1988, 1989 and 1990 was determined by an agar plate assay. Seed samples were obtained from seed laboratories of the Oklahoma Department of Agriculture (Oklahoma City, OK) and the Oklahoma Crop Improvement Association (Stillwater, OK). Samples consisted of either non-treated seeds or seeds that had been commercially treated with registered fungicides. Isolations were made generally from 250 seeds per sample, and recovery of *S. minor* from one seed constituted an infected seed lot. Only 30 of the 1,218 seed lots assayed were infected and incidence of *S. minor* in these infected lots ranged from 0.4-0.8%. If seed with a 0.5% incidence of *S. minor* were planted at a density of 170,000 seeds/ha, it would result in the introduction of 850 infected seeds/ha. Based on a 25% transmission efficiency, as determined in the greenhouse under optimal conditions for the development of sclerotinia blight, infection of at least 212 plants/ha would occur. Seed protectants that reduce the incidence of *S. minor* in seeds would decrease potential seed transmission of sclerotinia blight in developing peanut plants to a level proportional to their efficacy.

Modification of Canopy Microclimate by Pruning to Control Sclerotinia Blight of Peanut. P. D. BRUNE\* and J. E. BAILEY, Department of Plant Pathology, North Carolina State University, Raleigh, NC 27695.

Pruning was investigated as a means of altering canopy microclimate to control sclerotinia blight (Sclerotinia minor) of peanut (Arachis hypogaea L.). Each plot consisted of four rows 15.25m long of cultivar NC 7 with row spacing and seeding rate according to currently recommended cultural practices. In 1990 treatments included the fungicide iprodione; pruning tops, sides, or tops and sides of plants either in July or August; and neither pruning nor fungicide. In 1991 the experiment was a 2x2x3 factorial. The 12 treatments were combinations of pruning tops of plants or no pruning; cupric hydroxide or chlorothalonil to control leafspots; and iprodione or fluazinam to control sclerotinia blight. Pruning was achieved with a string weed trimmer. Disease assessments were made by recording the presence or absence of limb lesions with actively growing S. minor mycelium, on stems in 30.5cm sections of each of the two center rows, in both 1990 and 1991. Data from 1990 showed pruning tops, or tops and sides in July was not different from the iprodione treatment, and was significantly better than unpruned plots without fungicide for both disease control and yield. Other pruning treatments were less desirable. In 1991, pruned had less disease than unpruned plots when no fungicides were applied to either, but yields were not significantly different. Fungicide treatments on pruned plants resulted in lower disease and higher yield than chemical control on nonpruned plants. It was concluded that pruning peanut canopies to alter microclimate may prove useful in helping to reduce disease and increase yield when S. minor is a problem.

Development of Strategies for Integrated Management of Sclerotinia Blight of Peanut in Oklahoma. K. E. JACKSON\*, H. A. MELOUK, J. P. DAMICONE, and J. R. SHOLAR. Dept. of Plant Pathology, USDA-ARS, and Dept. of Agronomy, Oklahoma State University, Stillwater, OK 74078-9947.

Disease management strategies for Sclerotinia blight of peanut (Arachis hypogaea L.) caused by Sclerotinia minor were developed based on cultivars planted, time of harvest, and chemical inputs. Data were collected from replicated field plots over an eight year period at Ft. Cobb and Perkins, OK. The Spanish cultivar, Spanco, had 43% higher pod yields and 66% lower disease incidence than the runner cultivar, Okrun. Due to the low incidence of Sclerotinia on Spanco, the value of the average pod yield increase of 332 kg/ha in iprodione treated plots did not exceed fungicide and application costs. However, the value of the average pod yield increase of 865 kg/ha in iprodione treated plots of Okrun exceeded fungicide and application costs. Pod yield of the Sclerotinia blight resistant Spanish cultivar, Tamspan 90, was 3371 kg/ha in the untreated plots compared to the average yield of 3148 kg/ha from plots of Florunner treated with iprodione. Harvest date studies revealed that incidence of Sclerotinia blight increased and yields decreased on Okrun 135 days after planting, therefore, the early harvest date had the highest yield. Yields of Spanco were also highest at 135 days after planting, near the normal maturity date for this cultivar in Oklahoma. These results warrant the following management strategies for control of Sclerotinia blight: 1) plant Tamspan 90 or Spanco peanut in fields with a history of severe Sclerotinia blight; 2) harvest Spanish peanuts near or at normal maturity; 3) apply iprodione on runner type peanut where Sclerotinia blight is a problem; and 4) harvest runner cultivars early when incidence of Sclerotinia blight is high.

Weather Monitoring Device for the Development and Deployment of Disease Advisory Models. J.E. BAILEY. Department of Plant Pathology, North Carolina State University, Raleigh, NC 27695-7616.

A significant amount of research is being conducted across the peanut production region on timing fungicide sprays according to weather-based predictive models. Commercialization of these models is gaining in popularity due in part to the efforts of Neogen Corporation (Lansing, MI) which has developed the Envirocaster, a weather data collection and analysis system. A significant need exists, however, for an inexpensive research and development device which will allow easy exchange of computer code as well as a common method of data collection. Research at North Carolina State University has lead to the development of a personal computer-based system which monitors a solid state weather station. Parameters measured are; air and soil temperature, dew point (convertible to relative humidity), and rainfall. Software is written in "C" language. Weather data is logged into a floppy disk text file. The system is designed so that each researcher, using commonly available college student programmers, can create or modify a weather-based model. Advantages of this system are; a) a commonly used data exchange and programming code format, b) ease of uploading developed programs to EPROM chip (i.e. Envirocaster) format, c) low cost, and d) large screen to aid in communicating model results. Suitability of this device for on-farm and extension use is currently being evaluated.

On-Farm Evaluation of Folicur 3.6F for Peanut Disease Control. J. W. BELL\*, K. A. NOEGEL, and R. D. RUDOLPH, Miles Inc., Kansas City, MO 64120.

In 1991, nine peanut (*Arachis hypogaea* L.) grower locations with a history of foliar and soilborne disease problems were selected for on-farm evaluations of Folicur 3.6F fungicide. Except for Folicur applications, all cultural practices were performed by the growers and were identical to the producer's commercial production. Folicur was applied at 3.6 oz a.i./A with surfactant at fungicide applications 3-6 or 4 and 5 with Bravo being applied at all other application dates in the seven-application spray schedule. Both Folicur spray schedules provided Cercosporidium personatum, Sclerotium rolfsii, and Rhizoctonia solani control. However, the four-application schedule provided more consistent disease control with twice the yield increase. Two Folicur applications increased yield 550 lb/A over Bravo while four applications increased yield 1200 lb/A. In addition, the two-application schedule increased % SMK+SS by one percentage point, while the four-application schedule provided a two percentage point increase. The potential for soilborne disease control, yield increase, and grade improvement make Folicur, a valuable addition to peanut pest control products.

Effects of Irrigation on Yield and Rhizoctonia Limb Rot in Southern Runner Peanut at Two Harvest Dates. T. B. BRENNEMAN, Dept. of Plant Pathology, Coastal Plain Experiment Station, Tifton, GA 31793.

Southern Runner peanut was planted in blocks 40 ft long by eight beds (48 feet) wide in a field of Tifton loamy sand (pH 5.9) with solid set sprinkler irrigation. A split-split-plot design with five replications was used where main plots were either nonirrigated or received 0.75 in of supplemental water twice each week unless they received the equivalent in rainfall. Subplots consisted of Moncut 50W treatments applied to single beds at 0, 1.0 and 2.0 lb/A at 60 and 90 days after planting (DAP). Sub-subplots were defined by digging dates with an initial harvest at about 140 DAP and a second harvest two to three weeks later. All plots received a narrow band application of PCNB-Mocap (50 lb/A) at pegging. In 1990, it was extremely hot and dry, and irrigation increased the incidence of white mold (*Sclerotium rolfsii*) at the late harvest and more than doubled the severity of rhizoctonia limb rot (*Rhizoctonia solani* AG-4). The effects of drought stress were so severe that irrigation increased pod yields by 2334 and 1563 lb/A, respectively, for the early and late harvests. There was a significant negative correlation between limb rot severity and pod yield only in the irrigated plots. Moncut treatments had little effect on disease levels or pod yields. In 1991, it was extremely wet early but dry late in the season. Irrigation only increased yields by 384 and 332 lb/A, respectively, for the early and late harvests and had very little effect on disease incidence. Moncut treatments reduced disease severity and increased yields. There was a significant ( $P < 0.02$ ) correlation between limb rot severity, and the percent damaged kernels at both harvests but a significant ( $P < 0.03$ ) negative correlation with yield only at the early harvest. Mean pod yields were all greater than 4400 lb/A although limb rot severity was approximately 50% in nontreated plots. Overall, Southern Runner appears to tolerate moderate to high levels of limb rot and still produce excellent yields if supplied adequate water.

Effectiveness Of Four New Experimental Fungicides For Control Of Southern Blight On Peanut In Texas. T. A. LEE, JR.\*; Texas Agricultural Extension Service, Texas A & M University System, Stephenville, Texas 76401

Two field studies conducted in 1991 compared four new experimental fungicides [Fluazinam - (ISK Biotech), Folicur - (Mobay), Moncut - (Nor Am), Mon 24017 - (Monsanto)] to Terraclor 10G (Uniroyal) for control of Southern blight caused by *Sclerotium rolfsii*. *S. rolfsii*, even with the best currently labeled controls, continues to destroy 3-6% of the Texas peanut (*Arachis hypogaea* L.) crop each year. These four experimental chemicals were sprayed from 1-3 times during the growing season through a compressed air sprayer in 179.39 L/ha. Plots 30.5 m X 2 rows spaced 0.91 m apart were arranged in a randomized block design on naturally infested sites on grower farms. Mon 24017 was evaluated at rates ranging from 0.14 to 0.56 kg a.i./ha. Folicur was evaluated at 0.25 kg a.i./ha. Moncut was evaluated at 1.12 kg a.i./ha. Fluazinam was evaluated at 0.14 to 1.12 kg a.i./ha. Untreated check plots averaged 20 infection sites. Mon 24017 treatments averaged 3.83 infection sites. Fluazinam treatments averaged 9.16 sites. Moncut treated plots averaged 7.61 sites. Folicur treated plots averaged 4.67 sites. Terraclor treated plots averaged 15.67 sites. All fungicides had fewer infection sites than the untreated check plots. All four experimental fungicides had less infection than the Terraclor 10G standard with Mon 24017 displaying the fewest infection sites.

Disease Control and Yield Response of Peanut treated with Moncut as Influenced by Crop Rotation. A. K. HAGAN\*, K. L. BOWEN, and J. R. WEEKS. Auburn University, AL 36849-5624.

A full canopy spray of Moncut 50W at 1.1 kg a.i./ha was made 60 days after planting to Florunner peanuts (*Arachis hypogaea* L.) in 16 different commercial fields with one of the following cropping sequences: continuous peanuts (poor), peanuts after 1 yr of corn (average), 2 or 3 yrs of corn and/or cotton before peanuts (good), peanuts after bahiagrass (5 yrs min.) (best). Irrigated fields were included in all but the best rotation category. Plots were two 15.2 m rows spaced 0.9 m apart and were randomized in four or six complete blocks. Stem and limb rot damage was assessed within 2 days of digging and yields were adjusted to 10% moisture. Economic impact was determined by integrating field results with a cropping frequency database and 1991 crop value inputs. Stem rot severity was highest in fields in the average rotation category, followed by significantly less disease in the good and poor categories. Few stem rot loci were seen in fields in the best category. Severe limb rot damage was noted in two fields, one each in the best and good rotation categories. Largest yield gains (23%) were seen in the average category fields treated with Moncut. Yield gains were found in fields in the good (14%) and poor (6%) rotation categories. Overall, stem rot severity was reduced 80% and yield increased 18% by Moncut. Based on these results, nearly 63,000 tons of peanuts with a gross value of almost 38 million dollars (\$0.30/ lb) would have been gained had Moncut been used on Alabama's 1991 peanut acreage.

Survival of *Rhizoctonia solani* AG-4 in Residual Peanut Shells in Soil. R. E. BAIRD<sup>1</sup>, D. K. BELL<sup>2,3</sup>, B. G. MULLINIX, JR.<sup>2</sup> and A. K. CULBREATH<sup>2</sup>. Southwest Purdue Agricultural Program, Vincennes, IN 47591<sup>1</sup>; and Dept. of Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793-0748<sup>2</sup>

*Rhizoctonia solani* AG-4 (RS), a major pathogen of agricultural crops, may overwinter as a saprophyte in dead plant material in soil. We attempted to determine the practical longevity of RS in residual peanut shells from pods buried in field microplots. Mature pods were surface sterilized with propylene oxide and colonized by RS (= treated). A second group of pods were left untreated. Pods from each group were placed into fiberglass mesh bags and buried in Tifton loamy sand at 0, 7.5 and 25.5 cm depths. Every 6 months for 2 years treated and untreated pods were lifted, surface disinfested and 50 half- or quarter-shells/replicate plated on tannic acid-benomyl agar for semi-selective recovery of RS. After 6 months, RS was isolated from 43% (0 depth), 11.5% (7.5 cm) and 15% (25.5 cm) of treated shells and 7%, <1% and 0%, respectively, from untreated shells. *Trichoderma* spp. isolations increased with depth. After 12 months, isolations of RS were still greatest from shells at 0 cm. Also, more RS cultures were obtained from treated than untreated shells. Isolations of *Trichoderma* increased and *Fusarium* spp. also were recovered. After 18 months, RS was isolated most frequently from shells buried 25.5 cm: 18% of treated and 15% of untreated shells. *Trichoderma* isolations were lower from shells at 25.5 than 0 and 7.5 cm and *Fusarium* isolations increased from all depths. After 24 months, RS was isolated from 3.5% of both treated and untreated shells. *Fusarium* was the most common fungus isolated and *Trichoderma*, though often recovered, was isolated less than at 12 months. RS cultures were recovered from the shells observed to be in various states of decay. We hypothesize that nutrient (cellulose) depletion with subsequent loss of shell integrity and competition or antagonism from other colonizing fungi ultimately reduced survival of the pathogen. Deep burial of RS containing plant debris initially depleted inoculum of the pathogen faster than shallow or no burial, but the fungus lived 2 years in debris at all depths. We suspect that the remaining level of inoculum would be problematical with susceptible hosts.

## WEED SCIENCE

Pursuit Tank Mixtures for Weed Control in Georgia Peanuts. S. JONES\*, J. W. WILCUT, J. S. RICHBURG, III, and G. WILEY. Dep. of Agronomy, Coastal Plain Experiment Station, Univ. of Georgia, Tifton, GA 31793-0748, and American Cyanamid Corp., Tifton, GA 31794.

Field studies were conducted in 1990 and 1991 at seven locations in Georgia to evaluate Pursuit and various Pursuit tank mixtures for weed control and peanut tolerance and yield. Treatments evaluated included cracking (GC) treatments of Pursuit applied at 0.063 lb ai/ac, Pursuit plus Basagran at 0.25 lb/ac, Pursuit plus Starfire at 0.125 lb/ac, and Basagran at 0.25 lb/ac plus Starfire for comparative purposes. All plots except the weedy check received an application of Prowl at 1.0 lb/ac preplant incorporated. Weed species in the test areas included purple nutsedge (*Cyperus rotundus* CYPRO), yellow nutsedge (*Cyperus esculentus* CYPES), sicklepod (*Cassia obtusifolia* CASOB), coffee senna (*Cassia occidentalis* CASOC), bristly starbur (*Acanthospermum hispidum* ACNHI), Florida beggarweed (*Desmodium tortuosum* DEDTO), smallflower morningglory (*Jacquemontia tamnifolia* IAQTA), *Ipomeoa* morningglory species IPOZZ, common cocklebur (*Xanthium strumarium* XANST), and prickly sida (*Sida spinosa* SIDSP). Pursuit provided at least 90% control of IAQTA, IPOZZ, XANST, SIDSP, CYPRO, CASOC, ACNHI, 85% control of CYPES, 12% control of DEDTO, and 16% CASOB control. Adding Basagran to Pursuit did not influence control of any species. Adding Starfire to Pursuit improved DEDTO control to 69% and CASOB control to 75%. Basagran plus Starfire provided less late-season control of all species except DEDTO and CASOB when compared to Pursuit GC. There were no statistical differences in peanut yield with the GC applications. Pursuit plus Starfire yielded 3,630 lb/ac, Basagran plus Starfire yielded 3,380 lb/ac, Pursuit plus Basagran yielded 3,120 lb/ac, while Prowl alone yielded 1,840 lb/ac.

Pursuit and Cadre Mixtures for Weed Control in Georgia Peanuts. J. W. WILCUT\* AND J. S. RICHBURG, III. Dep. of Agronomy, Coastal Plain Experiment Station, Univ. of Georgia, Tifton, GA 31793-0748.

Field studies were initiated in 1991 at two locations to investigate Pursuit and Cadre applied alone and in various mixtures for weed control, peanut tolerance and yield. Pursuit and Cadre were each applied alone at 0.016, 0.032, 0.048, and 0.063 lb ai/ac. A replacement series was utilized to evaluate different mixtures of Pursuit and Cadre. All possible mixtures of Pursuit and Cadre were evaluated where a grand total of no more than 0.063, 0.048, and 0.032 lb ai/ac of Pursuit and Cadre were applied together. The Pursuit, Cadre, and mixture combination treatments were applied approximately two weeks after cracking. For comparative purposes, a standard of Basagran at 0.25 lb/ac plus Starfire at 0.125 lb/ac at cracking followed two weeks later by Basagran at 0.5 lb/ac plus Starfire at 0.125 lb/ac plus Butyrac at 0.25 lb/ac was used along with a weedy and weed-free check. Sonalan at 0.75 lb ai/ac was applied preplant incorporated to all plots except the weedy check. A nonionic surfactant at 0.25% (v/v) was applied with all Basagran plus Starfire, Pursuit, Cadre, and Pursuit plus Cadre mixtures. Weed species in the test area included bristly starbur (*Acanthospermum hispidum* ACNHI), sicklepod (*Cassia obtusifolia* CASOB), Florida beggarweed (*Desmodium tortuosum* DEDTO), smallflower morningglory (*Jacquemontia tamnifolia* IAQTA), and coffee senna (*Cassia occidentalis* CASOC). All POST treatments provided >95% control of IAQTA. Cadre provided better control of all other broadleaf weeds than Pursuit at comparable rates. There was no benefit to mixing Pursuit with Cadre but Cadre mixtures with Pursuit provided better control than Pursuit alone. Cadre must be applied at 0.032 lb/ac to provide >90% control of ACNHI, DEDTO, and CASOB. Yields equivalent to the standard and the weed-free check required at least 0.032 lb/ac of Cadre. No Pursuit only treatment provided yields equivalent to the weed-free check or the standard.

Cadre Systems for Weed Control in Georgia and North Carolina Peanuts. T. L. GREY\*, J. W. WILCUT, G. R. WEHTJE, F. R. WALLS, JR., and G. WILEY. Dep. of Agronomy and Soils, Auburn Univ., AL 36849, Dep. of Agronomy, Coastal Plain Experiment Station, Univ. of Georgia, Tifton, GA 31793-0748, and American Cyanamid Corp., Goldsboro, NC 27530 and Tifton, GA 31794.

Field studies were conducted in 1990 and 1991 at six locations in Georgia and one location in North Carolina in 1991 to evaluate Cadre, Cadre tank mixtures, and Cadre systems for weed control, peanut tolerance and yield. Treatments evaluated included cracking (GC) treatments of Cadre applied at 0.063 lb ai/ac, Cadre plus Basagran at 0.25 lb/ac, and Basagran at 0.25 lb/ac plus Starfire at 0.125 lb/ac for comparative purposes. Several systems then received POST treatments at 3 weeks after GC (3WGC) that included Cadre at 0.063 lb/ac plus Butyrac at 0.25 lb/ac, Cadre plus Basagran at 0.5 lb/ac plus Butyrac, or Cadre alone at 0.063 lb/ac. All plots except the weedy check received an application of Prowl at 1.0 lb/ac preplant incorporated. Weed species in the test areas included purple nutsedge (*Cyperus rotundus* CYPRO), yellow nutsedge (*Cyperus esculentus* CYPES), sicklepod (*Cassia obtusifolia* CASOB), coffee senna (*Cassia occidentalis* CASOC), bristly starbur (*Acanthospermum hispidum* ACNHI), Florida beggarweed (*Desmodium tortuosum* DEDTO), smallflower morningglory (*Jacquemontia tamnifolia* IAQTA), *Ipomea* morningglory species IPOZZ), common cocklebur (*Xanthium strumarium* XANST), citronmelon (*Citrullus lanatus* var. *citrionoides* CITLC), and prickly sida (*Sida spinosa* SIDSP). Cadre provided >90% control of CITLC, IAQTA, IPOZZ, XANST, DATST, SIDSP, CYPRO, CASOC, and CYPES as single application at GC. Control of these species generally was not improved with a second application. Cadre generally provided >90% control of DEDTO, ACNHI, and CASOB. However, in some locations, control of these species was improved with a 3WGC application. Cadre provided at least equivalent control to the commercial standard of Starfire plus Basagran sequential and frequently better control. 'Florunner' and 'Southern Runner' peanuts exhibited excellent tolerance to Cadre even at two 0.063 lb/ac applications. Injury was slightly higher with two applications. In one location, Basagran reduced Cadre control of DEDTO. Wheat, oats, triticale, and rye showed no effect to Cadre at 0.063 lb/ac or 0.063 plus 0.063 lb/ac when planted in rotation the fall following Cadre application.

Influence of Pursuit and Cadre on Nutsedge Development. D.T. GOODEN\* and M.B. WIXSON. Clemson University, Pee Dee Research and Education Center, Florence, SC 29501 and American Cyanamid Company, Columbia, SC 29212.

An experiment was coordinated in 1991 at the Pee Dee Research and Education Center, Florence, S.C., to evaluate the influence of Pursuit and Cadre on nutsedge in peanuts. The study had a field phase where the two herbicides were evaluated by several methods of application for efficacy on nutsedge, crop injury and yield of the crop. A second phase involved digging nutsedge tubers from the plots to determine tuber numbers, weight, species present and germination in the greenhouse. Both field and greenhouse comparisons of Pursuit and Cadre were made with a standard nutsedge material and with a weedy check. Results found all Cadre treatments and Pursuit applied either PPI or at cracking to be excellent for season-long control of nutsedge, while Vernam offered only 3-4 weeks of control. Yields of peanuts, nutsedge tuber weights and tuber counts, as well as germination of tubers, followed herbicide efficacy very closely. It appears that Pursuit and Cadre inhibit germination of surviving tubers, as compared to the standard. The greenhouse germination study involved only purple nutsedge, as yellow did not germinate in the greenhouse.

Weed Control in Texas Peanuts with V-53482. W. J. GRICCHAR\* and P. S. BOYD-ROBERTSON. Texas Agricultural Experiment Station, Yoakum, TX 77995. Field studies were conducted at three locations in South and Central Texas during the 1991 growing season to evaluate V-53482 alone and in combination with pendimethalin, trifluralin, imazethapyr, lactofen, or 2,4-DB for weed control. V-53482 alone at 28.4 or 42.5 g/A applied preplant incorporated (PAW) or preemergence (PRE) failed to provide control of (less than 60%) Texas panicum (*Panicum texanum*) under less than ideal moisture conditions. Under irrigated conditions, Texas panicum control was greater than 85%. Palmer amaranth (*Amaranthus palmeri*) control was 100% when V-53482 was used alone or in combination with pendimethalin, imazethapyr, lactofen, or 2,4-DB. Pitted morningglory (*Ipomoea lacunosa*) control with V-53482 was greater than 85% when used alone. In combination with pendimethalin, control of pitted morningglory was greater than 90%. Ivyleaf morningglory (*Ipomoea hederaea*) control with V-53482 in combination with trifluralin was greater than 90%. Leafflower (*Phyllanthus urinaria*) control with V-53482 was 100% while trifluralin alone only provided 28% control. Peanut stunting (15%) was noted at one location (Central Texas). Peanut yields with V-53482 were significantly higher than the untreated check and comparable with pendimethalin.

DPX PE350 (STAPLE) and F6285 for Weed Control in Georgia Peanuts.

J. S. RICHBURG, III\* and J. W. WILCUT, Dep. of Agronomy, Coastal Plain Experiment Station, Univ. of Georgia, Tifton, GA 31793-0748. Field studies were initiated in 1991 to evaluate Staple and F6285 for weed control, peanut tolerance and yield. Prowl was applied PPI at 1.0 lb ai/ac to all plots except the weedy check. Staple treatments included a factorial arrangement of three rates at 0.04, 0.08, and 0.12 lb ai/ac and three application methods of PPI, PRE, and GC (at cracking). F6285 was applied PPI at 0.375 and 0.5 lb ai/ac. A commercial standard of Basagran at 0.25 lb/ac plus Starfire at 0.125 lb/ac was applied at GC followed two weeks later by Basagran at 0.5 lb/ac plus Starfire at 0.125 lb/ac plus Butyrac at 0.25 lb/ac. All GC and POST treatments were applied with a nonionic surfactant at 0.25% (v/v). For comparative purposes one additional treatment consisted of Prowl PPI with no GC or POST treatment. Weed species included sicklepod (*Cassia obtusifolia* CASOB), coffee senna (*Cassia occidentalis* CASOC), smallflower morningglory (*Jacquemontia tamnifolia* IAQTA), and yellow nutsedge (*Cyperus esculentus* CYPES). Peanut phytotoxicity was approximately 30% with Staple at all application methods at 0.12 lb/ac and with Basagran plus Starfire sequentials, while phytotoxicity from F6285 was at least 60% three weeks after planting. F6285 provided complete control of CASOC, IAQTA, and CYPES and no control of CASOB. In an adjacent study, F6285 also provided complete control of purple nutsedge (*Cyperus rotundus* CYPRO). Staple controlled CASOB at least 86% applied PPI and PRE at 0.12 lb/ac and 22% control as a GC application. CASOC control was >92% with all applications at 0.12 lb/ac. IAQTA control was at least 98% with all applications of Staple. All Staple treatments except 0.08 lb/ac GC provided yields equivalent to the commercial standard. F6285 treatments generally provided lower yields than the commercial standard.

Interactions of Classic (chlorimuron) with other pesticide used in Peanuts. G. WEHTJE and J. W. WILCUT.

Assoc. Prof. Agronomy and Soils, Auburn University, Auburn AL 36849; and Assist. Prof. Agronomy, University of Georgia, Coastal Plain Experiment Station, Tifton GA 31793.

The herbicide chlorimuron is used for late-season control of various weeds. The age-dependent tolerance of peanuts to chlorimuron is unique. As peanuts mature, chlorimuron foliar penetration decreases, and metabolism to benign forms increases. The interaction of chlorimuron with other pesticides and pesticide adjuvants that are commonly used in peanuts was evaluated in a series of laboratory, greenhouse and field experiments. The addition of 2,4-DB had no effect on the absorption and translocation of <sup>14</sup>C-chlorimuron; conversely, the addition of <sup>14</sup>C-2,4-DB and no effect on the absorption and translocation of <sup>14</sup>C-2,4-DB. Both greenhouse and field studies revealed that tank mixtures of these two herbicides were additive with respect to weed control and no more injurious to peanuts than either herbicide applied alone. The addition of either naptalam or bentazon reduced <sup>14</sup>C-chlorimuron absorption and translocation. This antagonism toward chlorimuron penetration was frequently reflected in increases crop tolerance. Weed control with these tank mixtures varied with the target species. The addition of some, but not all, adjuvants increased crop injury. The addition of the insecticide acephate (Orthene) had minimal effect on <sup>14</sup>C-chlorimuron absorption and translocation.

FLAIR: A Potential New Cracking-Time Peanut Herbicide. D.L. COLVIN\* and W.C. JOHNSON

III. Agronomy Dept., University of Florida, Gainesville, FL 36611-0500 and USDA-ARS,  
Coastal Plain Expt. Sta., Tifton, GA.

Studies were conducted during 1991 at Attapulgus, Georgia, and Gainesville, Florida, to determine endothall formulation, time of application, and rates to be used for peanut weed control. Herbicide treatments used in these studies included Herbicide 273 (dipotassium salt of endothall), Hydrothol 191 (dimethylalkylamine salt of endothall), as well as a standard treatment of paraquat plus bentazon for comparisons. Rates of endothall were 0.6, 1.1, 2.2 and 4.5 kg/ai/ha. All plots received pendimethalin at 1.1 kg/ha as a preplant-incorporated treatment. Endothall and standards were applied at-cracking, two weeks after cracking (2WAC) and four weeks after cracking (4WAC) at Gainesville, with applications made 2WAC at Attapulgus. Sunrunner peanuts were planted in Gainesville and Florunner in Attapulgus. Spray applications were made with either a tractor-mounted boom or a backpack sprayer set to deliver 187 l/ha per acre utilizing flat fan tips. Data gathered included crop injury, weed control ratings, and yield. Crop injury from endothall treatments generally ranged from 10% to as high as 50% injury, according to time of application. Crop injury persisted early-season, but had dissipated by the late-season rating. As a general rule, Hydrothol 191 was a little more injurious to peanuts than Herbicide 273. With respect to weed control, Hydrothol 191 was more effective than Herbicide 273 at comparable rates. In most cases, sicklepod and Florida beggarweed required at least the 4.5 kg/ha rate of Herbicide 273 for adequate weed control. Conversely, rates of 0.6 to 1.1 kg of Hydrothol 191 gave very good control of both Florida beggarweed and sicklepod. Yields correlated with weed control data. Rates of at least 2.2 to 4.5 kg of Herbicide 273 provided yields equivalent to the standard of paraquat plus bentazon, while rates of 0.6 to 1.1 kg/ha of Hydrothol 191 were equivalent to the standard. Results from studies conducted during 1991 showed that Hydrothol 191 was a more efficacious treatment than Herbicide 273, while the optimum rate tested was between 0.6 to 1.1 kg/ha for Hydrothol 191. The optimum application window for weed control at the Gainesville location was 2WAC. Hydrothol 191 provided equal control to the standard of paraquat plus bentazon on sicklepod, Florida beggarweed and bristly starbur. Yields were equal to the standard under weedy and weedfree conditions when at least 1.1 kg/ha of Hydrothol 191 was used.

**Effects of Endothall Formulation, Rate, and Time of Application on Peanut.** W. C. JOHNSON, III\* and D. L. COLVIN. USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793; Department of Agronomy, University of Florida, Gainesville, FL 32611.

Studies were conducted in 1991 at Tifton, GA to measure the effects of endothall on peanut growth and yield in a weed free system. Two formulations of endothall were evaluated; dipotassium salt sold as "Herbicide 273" (currently registered for use on sugar beets) and a dimethylalkylamine salt sold as "Hydrothol 191" (currently registered for use in aquatics). Four rates of each formulation were evaluated; 0.6, 1.1, 2.2, and 4.5 kg ai ha<sup>-1</sup>. Bentazon (0.6 kg ai ha<sup>-1</sup>) plus paraquat (0.15 kg ai ha<sup>-1</sup>) was used as a standard. All treatments were applied at VE, VE plus 2 wk, and VE plus 4 wk. Parameters evaluated were stand count, canopy width, biomass, pod biomass, and yield. Generally, Herbicide 273 was less injurious than Hydrothol 191 at equivalent rates and times of application. Hydrothol 191 at rates up to 1.1 kg ha<sup>-1</sup> was no more phytotoxic than bentazon plus paraquat. The highest rate of Herbicide 273 and Hydrothol 191 applied VE plus 4 wk reduced peanut biomass, pod biomass, and yield. Given the previously reported data that Hydrothol 191 is more efficacious than Herbicide 273, it appears that Hydrothol 191 can safely be applied to peanut at VE through VE plus 4 wk at rates of 0.6 through 1.1 kg ha<sup>-1</sup>. Within these limits, the level of phytotoxicity is similar to that from bentazon plus paraquat.

**Interactions of Butyrac with Postemergence Graminicides.** A. C. YORK\*, J. W. WILCUT AND W. J. GRICCHAR. Crop Science Dep., North Carolina State Univ., Raleigh, NC 27695-7620, Dep. of Agronomy, Coastal Plain Experiment Station, Univ. of Georgia, Tifton, GA 31793-0748, and Agric. Station, P.O. Box 755, Texas A&M Univ., Yoakum, TX 77995.

Field studies were initiated in 1991 at four locations in North Carolina, two locations in Georgia, and one location in Texas. These experiments investigated the interactions of Butyrac with four graminicides (Assure II, Fusilade 2000, Poast Plus, and Select) as tank mixtures and in sequential applications. Butyrac was applied at 0.25 lb ai/ac, Assure II at 0.05 lb/ac, Fusilade and Poast Plus at 0.188 lb/ac, and Select at 0.1 lb/ac. The first five treatments consisted of each herbicide alone; treatments 6-9 consisted of the graminicides applied in mixture with Butyrac; treatments 10-13 consisted of Butyrac applied alone followed by (fb) each respective graminicide applied 24 h later; treatments 14-17 consisted of the graminicide applications fb Butyrac 24 h later, and treatment 18 consisted of the untreated check. All graminicides and graminicide tank mixtures with Butyrac were applied with a crop oil concentrate at 1.25% (v/v) of the spray volume. Grass species treated included Texas panicum (*Panicum texanum* PANTE), large crabgrass (*Digitaria sanguinalis* DIGSA), broadleaf signalgrass (*Brachiaria platyphylla* BRAPP), goosegrass (*Eleusine indica* ELEIN), field sandbur (*Cenchrus incertus* CCHIN), and johnsongrass (*Sorghum halepense* SORHA). No interactions were observed with Butyrac and graminicides on CCHIN, DIGSA, ELEIN, and BRAPP in North Carolina. PANTE control was reduced when Assure II was tank mixed with Butyrac in Texas. No interactions were observed in Georgia for PANTE or SORHA control. Efficacy with the graminicides varied among the different grass species.

**Modeling Peanut Yield Losses Due to Weeds. J.C. BARBOUR\* and D.C. BRIDGES.**

University of Georgia, Griffin, GA.

A useable yield loss model would permit simulation of multiple densities for a given weed species and the identification of critical densities for fitting a yield response curve. These critical densities could then be studied in the field, and if the model predictions are validated, the yield response curve could be used to establish economic thresholds. The objective of this research was to develop a submodel of light competition between broadleaf weeds and peanuts to run with the PNUTGRO model. PNUTGRO is a physiologically based model of peanut growth and development. It incorporates genetic and environmental information into a highly mechanistic model. Light is a key input into PNUTGRO and is the primary resource competed for by weeds in peanut production. Nursery plots were established at Griffin in 1989, 1990, and 1991 to measure the canopy development and light interception characteristics of three broadleaf weeds. The species chosen, sicklepod (*Cassia obtusifolia*), Florida beggarweed (*Desmodium tortuosum*), and wild poinsettia (*Euphorbia heterophylla*), are three of the most troublesome weeds in Georgia peanut production. Individual plants were grown from seed planted next to the peanut furrow on the day of peanut planting. Periodic measurements were made of canopy height and width, leaf area, shoot dry matter, and light attenuation on weeds and crop at 30 cm increments from the weed. These data were used to develop light attenuation profiles for the weeds. Maximum PAR attenuation values for Florida beggarweed, sicklepod, and wild poinsettia were 44%, 38%, and 33%, respectively. Sicklepod and wild poinsettia emerged above the peanut canopy about 35 DAP, and Florida beggarweed topped the peanuts at about 40 days. The row length over which peanut yield was influenced was 172 cm for beggarweed, 158 cm for sicklepod, and 204 cm for wild poinsettia.

# **ECONOMIC FORCES IMPACTING THE U.S. PEANUT INDUSTRY SYMPOSIUM**

**U.S. and World Peanut Market Analysis.** S.M. FLETCHER,\* P. ZHANG and D.H. CARLEY.

Department of Agricultural and Applied Economics, University of Georgia, Griffin, GA 30223-1797.

Peanuts are one of the principal oilseeds in the world. Even though peanuts has experienced significant production growth in the 1980s over the 1970s, rapeseed (canola) has surpassed it in terms of world production in the early 1990s. Furthermore, sunflower seed is close behind. This change in world ranking may be attributable to the emergence of health concerns in the industrial countries. Since the mid 1970s, edible peanuts has increased in importance in both domestic consumption and export trade. The export market has become more concentrated in the 1980s while the import market is less concentrated. While world harvested area changed very little from the 1970s to the 1980s, there was definite regional and subregional shifts. Asia, and in particular, China increased their share significantly, while Africa's share decreased. A similar picture was seen for yield. Asia and China had the largest yield increases while Africa's yield declined from the 1970s to the 1980s. Two key factors exist that may change the peanut environment in the 1990s and beyond. One of the factors is "aflatoxin." This factor is a key item in the edible trade as well as the domestic market. USA, EC and other developed countries are lowering the limits allowed for aflatoxin in the edibles. USA does the best given their peanut usually command a \$100/MT premium in the export market. Aflatoxin is a key problem for the African countries if they desire to enter the edible trade market on a large scale. The second factor deals with GATT and individual country's domestic policy. If a GATT agreement is reached, trading and production patterns could change for the 1990s and beyond. In conclusion, the world peanut market is not static. It is a dynamic, ever changing environment.

**U.S. Peanut Policy and Trade Issues - Impact on Peanut Farmers.** D.H. CARLEY\* and S.M. FLETCHER. Department of Agricultural and Applied Economics, University of Georgia, Griffin, GA 30223-1797.

Several U.S. peanut policy and international trade issues may have substantial production, marketing, and income impacts on U.S. peanut farmers. Possible policy and trade scenarios for the remainder of the 1990s are 1) continuation of the current program, 2) a phasing out of the price support and quota program beginning in 1996, 3) GATT agreements become operational in 1993, and 4) food safety and labeling issues decrease demand for peanut products. Under program continuation, gross income to peanut farmers was estimated to increase 16% from 1993 to 1998 and estimated net income will increase over 5%. If GATT measures are adopted by 1993, gross income to peanut farmers will stabilize at \$1.1 bil, about \$200 mil less than current program income in 1993, and \$400 mil less by 1998. Total gross income under GATT is estimated to be \$1.7 bil less than under current programs in the 1993 to 1998 period. Net returns may become negative by 1997 under GATT. A phasing out of the current program beginning in 1996 with a support price adjustment to \$660 mt from \$772 mt, and then decreasing 10% annually, could result in a negative net income by 1998. A decrease in consumer demand for peanut products of 10%, as a result of the negative impact of food labeling regulations and food safety issues concerning aflatoxin and a reduction in exports by one-third, would decrease gross income to peanut farmers by almost \$900 mil from 1994 to 1998. The overall effect of decreasing income to peanut farmers would impact on local communities in decreased farm income, rental income and land values, a reduction in the local tax base, changes in locations of peanut production, changes in farm supply and peanut buying businesses, and fewer peanut farmers. Production technology would need to be viewed differently, new marketing methods would need to be considered, and added emphasis would be needed on quality. The short-term adjustment to lower incomes will be painful, but in the longer-term the U.S. peanut industry will survive and maintain its competitiveness.

Regional Peanut Production Costs, Production History, and Market Structure:

Profitability and Advantage. MARSHALL C. LAMB, W. DON SHURLEY\*, FOY D. MILLS, JR., and A. BLAKE BROWN. USDA, ARS, National Peanut Research Laboratory, 1011 Forrester Drive, S. E., Dawson, GA 31742; Dept. of Agricultural and Applied Economics, University of Georgia, P. O. Box 1209, Tifton, GA 31793; Dept. of Agriculture and Environment, Abilene Christian University, Abilene, TX 7699; and Dept. of Agricultural and Resource Economics, North Carolina State University, Raleigh, NC 27695.

A GATT agreement or possible future change in the U.S. peanut program could lower price supports and change or eliminate the peanut production quota system. Currently, quota peanut production is limited to those farms having quota. Changes in the program to eliminate a quota structure could cause some realignment of peanut production. Peanut production could reallocate among farms depending on production costs and comparative economic advantage. Factors important in comparative advantage include costs, yields, and alternative enterprise opportunity costs. The Southwest has a history of underproduction. Recent modifications in the 1990 Farm Bill, however, allow quota in Texas to be transferred across county lines from underproduction areas to other areas. Yields, on average, in the Southwest tend to be less variable due to geographic distances between peanut growing areas. The Southeast generally accounts for the majority of production over quota or additional. Peanut yields in the Southeast have been highly variable in recent years and have trended downward. The Southeast must improve yields to maintain its competitive edge and lower cost per ton. USDA cost of production data for years 1987-89 were calculated and compared by region. As a region, the Southeast has the lowest production cost per ton. Because the USDA data averages all peanut types and production practices, peanut enterprise budget data were collected from states in each of the 3 peanut regions. An analysis of this data indicated some locations in the Southwest were competitive with the Southeast. Based on USDA costs, Returns to Land and Management by region were compared at various peanut prices. Break-even peanut prices were calculated that would equate net returns from other enterprises. Although farm income would decline, peanuts would likely continue to be the most profitable crop for many Southeastern farmers but with fewer farmers.

Future Issues and Potential Changes in Domestic Peanut Policy.

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The 1985 and 1990 farm bills evolved against a background of public concern over increasing farm financial stress, rising program costs, increasing crop surpluses, weakening export competitiveness, and protecting the environment. These same concerns will shape future agricultural policy. Substantial CCC losses are projected for the 1991 crop. Policy attention is likely to focus on those parts of the peanut program that create budget exposure. An agreement in the Uruguay Round of GATT negotiations will have significant effects on the U.S. peanut industry. A GATT agreement would replace import quotas with tariff equivalents and establish minimum market access levels. Tariffs would be phased down but not to zero. Aggregate Measure of Support (AMS) which has decreased since 1985 for most program crops would have to be reduced for peanuts.

A Manufacturer's Perspective on GATT. C. C. BARNETT.  
ALGOOD FOOD COMPANY, LOUISVILLE, KY 40217.

A successful conclusion of the current round of GATT negotiations will present the peanut product manufacturing sector with a number of changes and challenges. Under the current program, the support price and import quotas establish many of the perimeters which manufacturers use in purchasing policies. Agreement in the GATT negotiations could produce a range of scenarios which change the environment for the manufacturing sector. One extreme is total elimination of the current peanut program and all import restrictions. A more modest shift would result in some alterations in the current program, but preserve the existing framework. Major changes would occur if either unlimited or very large quantities of imported shelled goods are allowed into the U.S. It is assumed that major manufacturers would not make rapid changes in peanut supplies without assurance that their finished product would continue to be acceptable to the consumer. If finished products can be made so that the consumer sees no perceptible difference in the finished product regardless of the origin of peanuts used, then price becomes the dominant issue in most manufacturers buying decisions. Faced with large quantities of imported shelled goods into the United States we have a requirement for a quality system similar to that which the PAC currently provides for domestic shelled goods. Even with such a system in place, there is concern that only the larger manufacturers would have adequate resources to carry out monitoring and testing to insure that quality levels met government regulations and expectations of the consumer. Smaller manufacturers would be exposed to significant risks if they did not have suitable internal testing and monitoring capabilities.

A Grower's Perspective on GATT. J. L. ADAMS\*, Peanut Grower, 275  
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The GATT negotiations are at a critical stage with the summit meeting in Europe. An agreement on GATT seems probable and if passed, it would be difficult to defeat its ratification in the U.S. Congress. However, European objections have slowed down the negotiations. The European Common Agricultural Policy is costly, consuming over one-half of their domestic budget and totals, in direct cost, 40 to 60 billion dollars. Europe must curtail its spending on agriculture. The North American Free Trade Agreement (NAFTA) also poses a threat to the peanut program and especially Section 22. A NAFTA agreement may be imminent and possibly even more difficult to defeat than GATT. If the current peanut program is lost, profit from peanuts will accumulate in fewer hands and landowners and quota owners will suffer losses. Therefore, the entire peanut industry must work collectively to develop a GATT legal peanut program to insure a stronger and more stable industry.

# FUNGICIDE RESISTANCE SYMPOSIUM

Fungicide Resistance in Peanut Production. T. B. BRENNEMAN\* and A. K. CULBREATH, Dept. of Plant Pathology, Coastal Plain Experiment Station, Tifton, GA 31793.

Peanut (*Arachis hypogaea* L.) is a high value crop that routinely receives large fungicide inputs since most currently grown cultivars have little disease resistance. This reliance on chemicals to produce a commodity of such importance to the southeastern U.S. makes fungicide resistance an issue of great concern. The benzimidazole fungicides were highly effective against peanut leafspot diseases (*Cercosporidium personatum* and *Cercospora arachidicola*) but became ineffective due to the rapid selection of resistant isolates. The continued availability of chlorothalonil ensured stable production, but a valuable management tool was essentially lost. In vitro resistance of *Sclerotinia minor* to the dicarboximide fungicides has also been documented in Virginia. Fortunately this appears to be a low-level resistance, and there have been no crop losses linked to dicarboximide-resistant isolates of *S. minor*. Considering the heavy use of fungicides on peanut, the crop has had relatively few problems from resistance. However, several excellent new fungicides are being evaluated on peanut. With the demonstrated tendency for some new fungicide classes to be more prone to resistance, it is imperative that we utilize the best use strategies to optimize the effective life of these compounds.

Peanut Disease Control Strategies Utilizing Sterol Biosynthesis Inhibitors in Texas. T. A. LEE, JR., Texas Agricultural Extension Service, Texas A & M University System, Stephenville, TX 76401.

After almost a decade of testing various sterol biosynthesis inhibitors (SI) on Texas peanuts, one must wonder if they will ever be labeled. Texas growers have even experienced two years (1989-1990) where the SI from Ciba-Geigy (Tilt) was legally used under a Section 18 label. The wealth of experience gained here indicates very erratic performance. This is thought to be either due to significant strain differences in peanut fungi or a rapidly developing tolerance. Under Texas conditions the soil organisms such as *Sclerotium rolfsii* and *Rhizoctonia solani* appear to be the most likely targets for the SI materials. It would be desirable if the SI materials could be rotated with non-related materials. This should reduce the speed at which tolerance would develop. Non-related materials that are legal for the soil diseases have to date performed so poorly that growers try to avoid them. The potential problem thus becomes magnified. With this in mind, it is believed that even if one or more of the SI's become available they will have a relatively short effective use pattern in Texas.

Integrating Ergosterol Biosynthesis Inhibiting Fungicides into Strategies for Peanut Disease Control in Virginia. P. M. PHIPPS\*. Tidewater Agric. Exp. Sta., VPI&SU, Suffolk, VA 23437

Diniconazole, propiconazole, tebuconazole, cyproconazole, and fenbuconazole are ergosterol biosynthesis inhibiting (EBI) fungicides that have utility for control of early and late leafspot of peanut as well as certain soilborne diseases. Some of these chemicals are in the final stages of review for registration as peanut fungicides and may be approved for commercial use in the near future. Compared to chlorothalonil, the EBI fungicides would allow a 90% reduction in levels of active ingredient required for control of early leafspot. The replacement of just one spray of chlorothalonil with an EBI fungicide could reduce the tonnage of fungicide by 49 tons a.i. in the state of Virginia. Furthermore, applications of certain EBI fungicides for control of leafspot would offer suppression of Southern stem rot and Rhizoctonia limb rot; thereby replacing the need for applications of fungicides such as quintozene (PCNB) and carboxin. An additional and highly desired effect, observed only with diniconazole, has been suppression of excessive vine growth. As a group, the EBI fungicides have important limitations which include the absence of activity against Sclerotinia blight, and limited efficacy for control of web blotch and pepper spot. Another highly debated question surrounding use of EBI fungicides has been the risk for development of resistance in fungal populations. Strategies to minimize the risk of resistance require strict adherence to practices for minimizing disease pressure and either tank mixes or alternating sprays of EBI fungicides with fungicides that have a different mode of action, such as chlorothalonil. Peanut growers in Virginia have widely adopted the Peanut Leafspot Advisory Program for reducing the number of fungicide sprays from six or seven on a 14-day schedule to an average of 3.5 per growing season. The program consistently results in increased disease pressure, but affords efficient control of disease at minimal cost and risk. Full-season use of an EBI fungicide according to the advisory program should be discouraged to reduce selection pressure for EBI-resistant populations of fungi. Routine use of chlorothalonil in the first and last sprays of a growing season would reduce selection pressure and the likelihood for seasonal carryover of resistance. Growers should also be reminded to stop using the advisory program and begin a 10- or 14-day schedule with chlorothalonil or fungicides other than EBI's whenever >20% of leaflets show one or more spots before August 1 or >40% before September 1. EBI fungicides will probably find the best fit in Virginia when the second leafspot spray is made at pegging or soon thereafter. Application of an EBI fungicide at this time of spray would offer control of early leafspot and suppression of Southern stem rot and Rhizoctonia limb rot.

Application Strategies for Minimizing Resistance Build-up to Sterol Inhibitor Fungicides in Southeastern Peanuts. PAUL A. BACKMAN. Department of Plant Pathology, Alabama Agric. Exp. Stn. Auburn University, Auburn AL 36849.

Resistance to DMI fungicides has developed in several diverse groups of pathogenic fungi. In some fungi the resistant forms are much less competitive than the wild type, and their populations decline quickly when the fungicide is not applied; in other cases they are much more competitive. Resistance has developed much more slowly in soil borne pathogens. Of particular concern has been the rapid development of resistance to triazole DMIs such as seen in banana srikatoka disease with Cercospora musicola. Recommendations in Belize, where the problem developed, were to apply no more than 6-8 sprays with Tilt (propiconazol) of the 20 spray season. However, programs adopted by producers did not comply with these patterns and resistance quickly developed. Presently several companies plan to market triazoles in peanuts utilizing 2, 3, and sometimes 4 applications of a 7 spray calendar application schedule. Since the average peanut farmer in the southeast applies 5-6 applications per season, some companies are proposing spray schedules for triazoles that could exceed 50% of applications. Moreover, since many states are evaluating predictive systems that could reduce spray applications below the 7 presently recommended by the calendar system, the potential exists to have an even higher percentage of total treatments made with triazoles. The major benefit that triazoles provide is control of soil borne diseases caused by Rhizoctonia solani and Sclerotium rolfsii. These users can best be preserved by predictive applications made at times appropriate for soil borne disease control that can also substitute for leafspot applications; two to three applications should suffice. Alternatively, tank mixtures of chlorothalonil and triazoles have also proven effective, sometimes at half the rate at which either component would be used when applied alone. This latter strategy preserves some of the curative benefits of the DMI fungicides in controlling peanut leafspots while greatly delaying the buildup of DMI resistant pathotypes. Triazole use can best be preserved by sale of these fungicides only in combination with nontriazole fungicides, and by use of triazoles applied alone only when used for predictive control of soil borne diseases, and then to a maximum of 50% of the regional average number of applications coupled with an education program to prevent misapplication by farmers.

Tank Mix Applications of Cyproconazole with Chlorothalonil for Control of Peanut Leaf Spot. A. K. CULBREATH<sup>1</sup>, T. B. BRENNEMAN, Dept. of Plant Pathology, The University of Georgia, Tifton, GA 31793-0748, and F. M. SHOKES, Dept. of Plant Pathology, Univ. of Florida, North Florida Res. and Ed. Center, Quincy, FL 32351.

Field tests were conducted in Tifton and Plains, GA, and Marianna, FL in 1989 through 1991 to determine the efficacy of full-season tank mix applications of cyproconazole with chlorothalonil for control of late leaf spot of peanut (*Arachis hypogaea*) caused by *Cercosporidium personatum*. Treatments consisted of nontreated control, chlorothalonil at 1.26 kg a.i./ha alone and tank mix applications of 0.65 kg a.i. of chlorothalonil plus either 0.55 or 0.66 kg a.i. of cyproconazole. In all years and locations, leaf spot control achieved with the tank mix treatments was as good as with chlorothalonil alone, and in cases where leaf spot epidemics were severe, leaf spot control with the tank mix treatments was better than with chlorothalonil alone. In 1990 and 1991, tests were conducted in Tifton and Plains to determine the efficacy of tank mix combinations of low rates of chlorothalonil and cyproconazole for control of late leaf spot. Treatments consisted of factorial combinations of 0, 0.21, 0.42 and 0.63 kg ai/ha of chlorothalonil with 0, 0.012, 0.024, 0.048, 0.073 and 0.097 kg ai/ha of cyproconazole. In all locations and years, combinations of low rates of the two materials provided adequate control of leaf spot. Combinations of rates of the two materials that alone had little effect on the final disease severity reduced disease severity more than expected if control effects from the two materials were additive. Synergistic effects of cyproconazole tank mixed with chlorothalonil may improve leaf spot control compared to standard applications of chlorothalonil alone and may enhance the ability of this application practice to prevent development of resistant pathogen populations.

Risk of Resistance to Sterol Biosynthesis Inhibitors. W. KÖLLER, Cornell University, Department of Plant Pathology, New York State Agricultural Experiment Station, Geneva, NY 14456.

Sterol biosynthesis inhibitors (SIs) are modern fungicides expected to become available for the control of peanut diseases. Experience from Europe has indicated that field resistance to SIs can develop, although the speed of resistance development has been slower than for high risk compounds such as the benzimidazoles. For the SIs, the sensitivity spectrum of unexposed pathogen populations is broad, and individual isolates that comprise the resistant part of the sensitivity distribution can still be inhibited at increasingly higher SI doses. Because field rates are restricted, a small portion of isolates not sufficiently suppressed will slowly increase in frequency. The speed of resistance development will be determined by (a) the disease pressure, (b) the time of exposure to the SIs, and (c) the original frequency of resistant isolates. These three parameters determine the basis for current anti-resistance strategies. General rules are: (a) Reduce the speed of resistance development by reducing disease pressure. For the SIs, this rule implies the careful control of the disease with sufficiently high rates. Disease pressure on the SIs can also be reduced by a protectant fungicide used in mixture. (b) Reduce selection time by limited use of the SIs as single compounds. The SIs should not be applied season-long; they should be used at times where they are of greatest benefit, with alternative fungicides applied during the remaining disease cycle. (c) Reduce the frequency of resistant and thus selectable isolates. For the SIs, the term resistant and selectable is confined to isolates that produce sporulating lesions between two consecutive sprays. In contrast to benzimidazole-resistant isolates, this definition is dependent on the SI dose. Because the SI sensitivity distribution of field populations is continuous, the frequency of isolates allowed to sporulate decreases while the dose increases. A second opportunity for decreasing the frequency of resistant isolates is the use of fungicide mixtures consisting of two unrelated systemic compounds. The vast majority of isolates resistant to one component would be sensitive to the other.

Better Management of Fungicide Resistance. JOHN FRENCH, ISK Biotech, Mentor, OH 44061.

For almost 20 years, the concept of and problems resulting from resistance to certain classes of fungicides has been of commercial importance in crop agriculture. Strategies for managing problems due to resistance have been proposed by fungicide manufacturers, as well as by publicly supported agricultural research specialists. These strategies have enjoyed considerable success in many regions of the world, however, problems due to resistance still are increasing. One major reason for instances of failure to manage fungicide resistance is the lack of cooperation at the grower or end-user level. Improvements in programs will be discussed which are more customer-oriented, and which could reduce potential abuse of agricultural fungicides that are at risk from resistance.

Fungicide Resistance Research Within CIBA-GEIGY - A Major Part of Product Stewardship. G. R. WATSON, CIBA-GEIGY, Greensboro, NC 27419.

Management of potential fungicide resistance has been a focus of CIBA-GEIGY for many years, concentrating on practices to maintain stewardship for products such as Ridomil®, Tilt®, and Topas®. Research has been conducted and sponsored by CIBA-GEIGY in the areas of: 1) development of appropriate fungicide sensitivity testing methods, 2) active monitoring of pathogen populations, 3) maintaining available testing for isolates suspected of decreased sensitivity, and 4) field research to identify and validate fungicide resistance management strategies. CIBA-GEIGY maintains laboratories active in this area of research throughout the world, particularly in Europe and the United States. Strategies for management of fungicide resistance have included development of pre-pack products containing active ingredients with different modes of action, limiting the number and timing of applications (decrease selection events), and development of label language to deter the prevalence of individuals with decreased fungicide sensitivity in pathogen populations.

Applications Strategies for Use of Tebuconazole on Peanut. K. A. NOEGEL, Miles Inc., Kansas City, MO 64120.

Tebuconazole was researched in various foliar spray programs for management of Sclerotium rolfsii, Rhizoctonia solani, Cercospora arachidicola, Cercosporidium personatum, and Puccinia arachidis on peanut, Arachis hypogaea L. A use pattern was selected for optimum benefit to the peanut grower as well as for resistance management. The biological and physical properties of tebuconazole are best suited to a four-application block spray program, preceded and followed by applications of a protectant fungicide. Although targeted for soilborne diseases, tebuconazole also will provide protection against peanut leafspot and rust during the four-application schedule.

# POSTERS

## Trivial Movement and Dispersal Patterns of the Tobacco Thrips

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A population of tobacco thrips, *Frankliniella fusca* (Hinds), was established in the center of a small field of peanuts and excluded from the rest of the field through the use of insecticides. Dispersal of the population outwards was monitored by taking daily samples of quadrifoliate leaf terminals for collecting thrips adults and immatures from the entire field. The quadrifoliant samples were taken from June 6 to July 26 1990 and May 23 to July 8 1991. Sticky traps were also used to monitor the migration of thrips in and around the field from May 21 to July 8 1991. The population movement data from both of these studies were analyzed and tested against data generated from hypothetical dispersion models. The peanut terminal samples showed that dispersal outwards from the center did not occur stepwise as expected, but seemed to expand uniformly, filling the entire field. One explanation for this pattern was much more within field movement occurrence than initially expected. Sticky trap data also supported the hypothesis that after an initial directional migration, thrips stopped moving between fields. Thrips were caught on sticky traps only during the first 2 weeks of the field season (20% of catch was identified as *F. fusca*), however there may have been thrips activity after trapping was discontinued. The drop in catches after the first two weeks could mean either that the thrips were no longer attracted to the traps or that they had ceased dispersing.

## Contamination of Thrips by Tomato Spotted Wilt Virus as Determined by ELISA

K.K. KRESTA<sup>1</sup>, F.L. MITCHELL, Texas Agricultural Experiment Station, Rt. 2 Box 00, Stephenville TX 76401, J.W. SMITH, JR., and V.K. LOWRY, Department of Entomology, Texas A&M University, College Station TX 77843.

Thrips adults and immatures were collected from peanut fields and weed hosts and examined by ELISA for the presence of tomato spotted wilt virus (TSWV). Adults were identified to species, and immatures identified to life stage. Tobacco thrips, *Frankliniella fusca*, and western flower thrips, *Frankliniella occidentalis* were collected from peanut. Only tobacco thrips tested positive from this host. Immatures collected from peanut plants infected with TSWV were more likely to be contaminated with TSWV. However, adult thrips contaminated by the virus were common both on infected and uninfected peanut plants. Collections made from weed hosts included western flower thrips, *Frankliniella minuta*, *Frankliniella williamsi*, *Frankliniella tritici*, *Microcephalothrips abdominalis*, *Aelothrips* sp. and immature thrips. In weed hosts, only western flower thrips tested positive for TSWV.

## Population Dynamics of Thrips Vectoring Tomato Spotted Wilt Virus in Texas Peanut Fields

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Adult and immature thrips were sampled from peanut (*Arachis hypogaea* L.) flowers and foliage on a weekly basis. Peanut terminals and flowers were counted weekly as well, and the number of thrips per meter of row per week was determined in nine fields over two years. Larval populations were seasonally dense, while adult populations were found to be low and erratic over the field season. Insecticidal control of thrips was never complete, and populations rebounded quickly. Remedial insecticidal treatments for tomato spotted wilt virus (TSWV) were also inconsistent, as demonstrated by prevalence curves for TSWV infecting peanut. Planting date affected thrips density. Early planted peanut had more thrips per terminal than late planted peanut, while late planted peanut had more thrips per meter of row.

Spotted Wilt Disease (TSWV) Incidence in Peanut Following Various Insecticide Application

Regimes for Thrips Vector Control. J. W. Todd\* and J. R. Chamberlin, Department of Entomology, A. K. Culbreath, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793, and J. W. Demski, Department of Plant Pathology, The University of Georgia, Griffin, GA 30223.

*Frankliniella fusca* (Hinds) and *Frankliniella occidentalis* (Pergrande) are two of seven thrips species known to vector tomato spotted wilt virus (TSWV). Both of these species are found in peanut, although *F. occidentalis* has not been shown to reproduce on peanut. Adult populations of *F. occidentalis* seem to be only transitory in peanut, whereas adult and larval populations of *F. fusca* are found at low levels for the remainder of the growing season after peaking 4 to 6 weeks after planting. TSWV is acquired only by the larvae and is spread mainly by adults. Peanut may be fed upon by in-migrating or overwintering populations of thrips containing viruliferous individuals constituting primary TSWV infection. Additionally, larvae arising from the initial or subsequent generations may acquire the virus from previously infected plants and survive to infect other plants in the same field constituting secondary spread. Theoretically, one would expect that secondary spread of TSWV could be minimized by applications of efficacious insecticides directed toward control of larval thrips populations. Furthermore, it is highly unlikely that primary infection would be significantly reduced by insecticidal control of adult thrips. Incidence of TSWV in 'Florunner' and 'Southern Runner' peanut treated with Thimet® applied in-furrow @ 1.0 AI/A at-planting, Orthene® sprays applied weekly season-long or a combination of these 2 treatment regimes was investigated in three replicated small-plot experiments planted in early April, early May or early June at the Attapulgus Research Farm of the Georgia Agricultural Experiment Station. Incidence of TSWV was higher in both cultivars planted in early April and early June than in those planted in early May. Thimet applied in-furrow at-planting plus weekly applications of Orthene suppressed TSWV incidence compared with the nontreated checks, although the combinations of both insecticides on Florunner still allowed TSWV incidence to reach levels as high or higher than that of nontreated Southern Runner. Incidence of TSWV in Florunner which received the combination insecticide treatments was approximately half that of those plots that were not treated with insecticides.

Performance of Peanuts (*Arachis hypogaea* L.) as Influenced by Seeding Rate and Planter. L. WELLS, R. WEEKS and G. WEHTJE. Wiregrass Experiment Station and Department of Agronomy and Soils, Auburn University, Auburn, AL 36849.

Experiments were conducted at the Wiregrass Experiment Station to evaluate the uniformity of spacing between peanut seedlings using the newer 'air' or 'vacuum-type' planter versus a conventional-type planter. It has been suggested that the vacuum planter is more accurate, and that this added accuracy could allow for a reduction in seeding rate compared to what is normally used with conventional planters. Peanuts were planted at 110, 90, 70, 50 and 30 lb/A with both the vacuum and conventional planter. The conventional planter was a John Deere Maxi-merge. Both were operating at approximately 4 mph. After peanuts emerged, the exact spacing between individual seedlings was measured over a ten-foot section of row. At normal seeding rates (i.e.  $\geq$  70 lbs/a) the accuracy in achieving the theoretical perfect spacing for a particular seeding rate, and the uniformity of spacing was nearly identical between the two planters. At substandard seedling rates the variation in spacing increased; and this increase in variation was similar between the two types of planters. Peanut yield was influenced by seeding rate, but not by planter. Maximum yield required a seeding rate of at least 90 lb/A; lower rates resulted in a step-wise reduction in yield. Disease was influenced by seeding rate, but not by planter. Higher seeding rates resulted in an increase in the occurrence of white mold. Conversely, tomato spotted wilt virus was more common with the lower seedling rates, reflecting the tendency for the vectoring aphid to be attracted to a sparse and open canopy. Results indicate that both types of planters are equally accurate.

An Overview of the Peanut (*Arachis hypogaea* L.) Crop in México.

SAMUEL SANCHEZ DOMINGUEZ. Departamento de Fitotecnia, Universidad Autónoma Chapingo, Chapingo, Méx. 56230.

Peanut is a very important pulse crop which was grown by the prehispanic culture in México. Some archaeological evidences indicate that peanut was known by the Mesoamerican people like the Aztecs. In this century, peanut has been cultivated on up to 100,000 ha in México. Currently only approximately 48,00-50,000 ha are being grown by mexican farmers. México has two main regions where peanut is grown: Northern areas (states of Chihuahua, Sonora, Sinaloa and Nayarit) and Southern region (states of Morelos, Puebla, Guerrero, Guanajuato and Chiapas). In the first region high technology (selected varieties, mechanized systems, irrigation and good pest control) is used by farmers. On the other hand, in southern areas due to the rainfed system very low levels of technology are used, except in Coast of Oaxaca. In the other states, some topographic and economic aspects limit appropriate agronomic practices. Most of the peanut germplasm used is criollos (land races), although in northern areas selected varieties from U.S.A. are being sowed. Consequently, mexican pod yield are: Northern areas, 2.0-4.0 t ha<sup>-1</sup>; southern areas (rainfed conditions) 1.0-1.5 t ha<sup>-1</sup>. It is known that the American Peanut Council is interested in the peanut industry in México. It is possible that if the Free Trade Agreement between México and United States of América is signed, funds for peanut production in México will be available.

A Blot Assay for Detection of Peanut Arginase. S.Y. CHUNG\* and Y.M. BORDELON.

USDA-ARS, Southern Regional Research Center, 1100 Robert E. Lee Boulevard, P.O. Box 19687, New Orleans, Louisiana 70179.

Little is known about the cause for the decrease in levels of free arginine in mature peanuts as compared to immature peanuts which have higher levels of free arginine. We hypothesized that the decrease could be due to an increase in the level of arginase which catalyzes the conversion of arginine to L-ornithine and urea. To support our hypothesis, a detection method for arginase is needed. Conventional methods for detection of arginase based on measurement of urea are tedious and subject to interference. We, therefore, developed a novel and simple procedure for detection of arginase using an arginine- or canavanine-enzyme conjugate as the detecting system. In the method, the arginase sample was subject to gel electrophoresis, followed by eletrotransferring to a polyvinylidene difluoride (PVDF) membrane. The resulting arginase on the membrane was then detected with the arginine-enzyme conjugate having an affinity for the arginase, and visualized as a colored band after incubation with a substrate for the bound enzyme conjugate. The detection limit of the assay was 2 µg of arginase on the membrane. Requirements for successful detection include use of a spacer arm introduced into the enzyme conjugate and a buffer (0.01 M sodium borate) which does not interact with MnCl<sub>2</sub> to form precipitates during incubation. MnCl<sub>2</sub> is required for the membrane-bound arginase to remain active and bind to the arginine or canavanine conjugate. Conjugates were prepared respectively through a sequential reaction between arginine (or canavanine), NHS-LC-biotin, and avidin-peroxidase (or avidin-phosphatase). Arginine- or canavanine-LC-biotin-avidin-peroxidase conjugate gave the best result (i.e., high signal and low background) with Immobilon P membranes while arginine-LC-biotin-avidin phosphatase conjugate performed best with BioRad PVDF membranes. Application of this method to detecting arginase in peanut samples is being investigated.

Viscosity Changes in the Hydration of Peanut Butter. T.O.M. Nakayama.

Dept. of Food Science and Technology, University of Georgia,

Experiment Station, Griffin GA 30223

Attempts to modify the physical properties of peanut butter have been tried since the appearance of commercial suppliers. These have included additions of syrups, honey, milk solids, vegetable oils, and other diluents. Water has been tried, but the resulting shortened shelf life precluded its advantages as a ready to eat shelf stable item. The hydration and use of tehina, a sesame seed butter, prompted us to look again at water. Addition of a small increment of water produced a greatly stiffened product. Further additions increased the stiffness until a maximum was reached. When an equal weight of water has been added with mixing, the emulsion is changed in its adhesive properties and resembles mayonnaise in consistency. The effect of pH is to produce two maxima which suggest that the soluble protein is responsible. Comparisons with sesame butter, almond butter, and pecan butter indicate that the emulsification can be explained as a result of protein hydration and subsequent emulsification of the oil into an oil in water emulsion.

Phytoalexin Induction in Peanut Leaves. S.M. Basha, Plant Biotechnology Laboratory,

Division of Agricultural Sciences, Florida A&M University, Tallahassee, FL

32307

Cercospora leaf-spot has been recognized as a major disease problem in the Southern United States peanut production area. A high incidence of lesions result in extensive defoliation of leaflets, loss of vigor and reduced yield. Attempts to control leaf-spot diseases have concentrated on the use of fungicides and other chemicals. Our research efforts are focused on enhancing natural resistance of peanut to leaf-spot diseases. In this connection, phytoalexin involvement in disease resistance is being studied. Phytoalexin induction was achieved in the mature and immature peanut leaves, damaging by injury and incubation at 25°C for 10 days. The phytoalexins were extracted from the leaves and fractionated by HPLC. The data showed that damaged peanut leaves produced 3 to 5 phytoalexin peaks depending upon their maturity status and condition of incubation, while the undamaged leaves (control) produced no phytoalexins. The mature leaves produced relatively higher amount of phytoalexins than the immature leaves. Studies are in progress to determine the effect of temperature, water activity and genotype on phytoalexin producing ability of the peanut leaves. Furthermore, methods are also being developed to induce phytoalexin production in the leaves following infestation of leaves with Cercospora spp.

Factors Affecting Adventitious Shoot Formation from Mature Leaf Explants of *Arachis villosulicarpa* Hoehne K. B. DUNBAR<sup>1</sup> and R. N. PITTMAN. USDA, ARS, SAA, REG. PL. INTRO. STN. 1109 Experiment Street Griffin, GA 30223-1797.

Adventitious shoot formation has important applications in genetic transformations, vegetative propagation, and germplasm storage. This investigation was conducted to evaluate factors that affect adventitious shoot formation from mature leaf explants of *Arachis* species. Light intensity, explant age, gelling agent, phytohormone, and genotype were observed to affect adventitious shoot formation from mature explants of *Arachis* species. Changing the gelling agent in the regeneration medium from agar to rice starch produced a 3-fold increase in the number of shoot buds produced from leaf explants of *A. villosulicarpa*. Mature leaf explants of *A. villosulicarpa* produced an average of 50 shoots and buds after 25 days in culture at 25 C, with a 16 hour photoperiod of 100  $\mu\text{mol m}^{-2}\text{s}^{-1}$ , on a medium with MS salts, B5 vitamins, 5  $\mu\text{M}$   $\alpha$ -naphthaleneacetic acid and 5  $\mu\text{M}$  6-benzylaminopurine, and solidified with 120 g/l rice starch. Mature leaf explants of 13 *Arachis* species were cultured for 30 days on a medium with MS salts, B5 vitamins, 30 g/l sucrose, 5  $\mu\text{M}$   $\alpha$ -naphthaleneacetic acid, 5  $\mu\text{M}$  6-benzylaminopurine, and solidified with 8 g/l agar. After tissue from these cultures was transferred to medium with reduced auxin, shoots or shoot buds were regenerated from the cultures of *A. burkartii*, *A. lignosa*, *A. paraguariensis*, *A. repens*, *A. rigonii*, *A. tuberosa*, *A. villosa*, and *A. villosulicarpa*. The high rate of shoot regeneration observed from mature leaf explants of *A. villosulicarpa* may allow it to be a model to test factors which affect adventitious shoot formation from *A.* species.

Spray-Tank-Mix Compatibility of Manganese, Boron, and Fungicide II: Visual Demonstration. D. C. MARTENS and N. L. POWELL<sup>1</sup>. Virginia Polytechnic Institute and State University, Suffolk, VA.

Mixtures of manganese and boron with pesticides and applied as a foliar spray to the peanut (*Arachis hypogaea* L.) crop is a common practice. This study was conducted to determine the compatibility of mixing manganese with boron in the spray water. Spray mixtures of the chelated manganese salt of ethylene diamine tetra-acetate (EDTA) and the inorganic salts of manganese as manganese sulfate (Tecmangam), manganese sulfate monohydrate, manganese chloride, and manganese nitrate were developed with deep-well water. These mixtures were also made up in combination with boron as boric acid or disodium octaborate tetrahydrate. All mixtures were also made up in combination with the fungicides cupric hydroxide plus sulfur and chlorothalonil. Mixtures were equivalent to normal recommended rates of manganese, boron, and fungicide applied to the foliage in 140 L ha<sup>-1</sup> of spray volume. Because of the high pH of deep-well water, addition of the manganese inorganic salts to the water caused a slight precipitate to form. The chelated manganese did not precipitate. With addition of disodium octaborate tetrahydrate, the solution pH was increased and more precipitates formed from the inorganic salts. The chelated manganese remained in solution. With addition of boric acid to the manganese solution and deep-well water, pH was decreased and no apparent precipitate formed. Mixtures of these formulations are on display for visual observation. Because of flocculation none of the manganese materials should be mixed with cupric hydroxide plus sulfur for foliar application. The inorganic salts of manganese and disodium octaborate tetrahydrate should not be mixed in water alone or with chlorothalonil for foliar application.

**Minutes of the Board of Directors Meeting  
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY  
Eppington Room, Omni Hotel  
Norfolk, Virginia  
July 7, 1992**

**1. The meeting of the Board of Directors was called to order at 7:05 pm  
by President Charles Simpson.**

Those present were: C. Simpson, R. Sholar, B. Branch, G. Buchanan, D. Gorbet, H. Melouk, T. Stalker, O. Smith, M. Porter, L. Tripp, D. Dougherty, G. Sullivan, D. Welch, T. Sanders, S. Wright, M. Schubert, H. Pattee, C. Stacy, W. Mozingo, and K. Cutchins.

**2. Reading of the Minutes of the Previous Meeting - Ron Sholar, Executive Officer**

The minutes were approved as published in the 1991 Proceedings. The Board then approved an amended agenda for the meeting.

**3. Reports were made as follows:**

**a. Executive Officer Report - Ron Sholar**

The Executive Officer reported on the financial status of the society. He reported that APRES remains in excellent condition and that assets increased significantly during the past year. He reported that the Chair of the Finance Committee would provide a complete report on APRES finances. The Executive Officer reported that APRES has approximately 600 members. It is anticipated that over 325 will register for the 1992 meeting.

**b. American Society of Agronomy Liaison Report - Bill Branch**

Bill Branch reported that the 83rd annual meeting of the American Society of Agronomy, Crop Science Society of America, and the Soil Science Society of America was held October 27-November 1, 1991, in Denver, Colorado. The theme for this year's meeting was "Global Agronomic Opportunities". Approximately 2575 papers were presented in 279 sessions and slightly over half of the papers were given as posters. Members of APRES were authors or co-authors on some 12 total presentations involving various aspects of peanut research.

The 1992 meetings of the three sister societies will be held November 1-6 in Minneapolis, Minnesota.

**c. Southern Agricultural Experiment Station Directors Report - Gale Buchanan**

Gale Buchanan prefaced his remarks with a report on CAST activities. He complimented Dan Gorbet for the job he is doing as the APRES representative on the CAST Board of Directors.

Dr. Buchanan reported that the spring meeting of the Southern Regional Association of State Agricultural Experiment Station Directors was held in Knoxville, Tennessee, in May.

Dr. Buchanan reported that peanuts continue to be one of the commodities included in the Southern Region IPM program which is administered by the Southern Agricultural Experiment Station Directors. Some projects pertaining to peanuts were funded under this program in the last series of awards.

Funding continues to be a major concern of the Southern Experiment Station Directors. A major effort is underway at the national level to support base funding through Hatch and Regional Research, as well as designated special grants.

Dr. Buchanan indicated that the issue of experimental quota of peanuts involved in research continues to be a major concern of the Directors. He stated that Southern Region Agricultural Experiment Station Directors continue to have a special interest in APRES.

**d. CAST Report - Dan Gorbet**

The Board of Directors of CAST met in Kansas City in August. Numerous topics were discussed and reported on by the various committees. At the Washington, D.C., meeting in March, 1992, Dr. Gale Buchanan took over as President for CAST (1992-93).

Dr. Stanley P. Wilson has retired as Executive Vice-President of CAST, effective June 30, 1992. Dr. Wilson is former vice-president for agriculture, home economics, and veterinary medicine at Auburn University and has served as CAST Executive Vice-President since June 1, 1990.

Dr. Gorbet reported on the guidelines and criteria for CAST consideration for reports:

1. The topic should be of broad national concern and there should be a compelling need for the information. Topics on which legislative or regulatory decisions are pending, are likely to be made in the near future, or are perceived as being seriously needed, should be given highest

priority. Regional and state issues may be considered if they have evident potential for national concern.

2. The topic should benefit from a multidisciplinary approach and should relate to one or more of the scientific disciplines represented in CAST member societies. Topics that fall within the boundaries of a single member society are not normally addressed by CAST.
3. With topics dealing with products, the perspective should be broad (e.g., explaining the impacts of agricultural mechanization rather than building a case of public funding of research on agricultural mechanization).

Dr. Gorbet reported on recently published reports by CAST and reports that will be published in the next year or so. (Editor's Note: A complete listing is included in the CAST report.)

Dr. Gorbet indicated that he has been involved in reviewing manuscripts for CAST publications.

**4. New Business** - The following ad hoc committee reports were made:

**a. Annual Meeting - George Alston**

Dr. Alston reported that his committee had studied the possibility of changing the meeting days for the annual meeting. This was done because of suggestions that the meeting format be changed. His committee discussed two possibilities:

1. Current format (Tues - committee meetings; Wed and Thurs - presentations; Fri - business meeting)
2. New format (Wed - committee meetings; Thurs and Fri - presentations; Sat - business meeting)

Advantages of the new format would be:

1. Permit Monday in office for some members
2. Permit overnight Saturday stay to take advantage of lower airfares
3. Potential increase in graduate student involvement (due to lower airfares)

Disadvantages considered were:

1. Participation might be reduced (because of historical affiliation with current dates)
2. Location choices might be limited if Friday and Saturday nights are included as weekend rates are normally higher

3. Some members might be unwilling to travel on the weekend
4. Industry response must be considered. Would industry continue to support sponsored events if some had to occur at more expensive weekend rates?

The ad hoc committee suggested either staying with the current format or polling the entire society membership to determine the interest in changing the meeting dates. Polling could be done through Peanut Research or a separate mailout. The first possible meeting under the new format would likely be in 1996.

The Board then discussed the report in detail. It was pointed out that the current format had worked well for more than 20 years. The Board decided to take a show of hands at the Friday Business Meeting to determine whether to pursue changing the format. The Board decided that a vote of a minimum of 70% in favor of the change would be required to pursue putting the issue to a vote of the entire membership.

*Editor's Note: The vote at the Business Meeting was less than 70% in favor of pursuing a change in the meeting format and the current format will be maintained.*

#### **b. New Book - Tom Whitaker**

Dr. Whitaker reported that his committee was working under the guidelines laid down by the Board of Directors in July 1991.

Dr. Whitaker pointed out that this is the second ad hoc committee to look at developing a new book. The first committee recommended that a new book be published but that it be different in the following ways from Peanut Science and Technology:

1. That chapters contain material that was not previously covered or that chapters be completed when major revisions were warranted.
2. That the new book have a different title.
3. That the number of copies be 1500 or less.

Dr. Whitaker then presented a series of comments and recommendations to the Board as follows:

1. The editors of the new book will be Drs. Harold Pattee and Tom Stalker.
2. The proposed chapters and authors were developed by Drs. Pattee and Stalker. These were presented to the ad hoc committee with the ad hoc committee adding two

chapters. These were "Cultural Practices" and "Fertilization".

3. The proposed title is "Advances in Peanut Science".
4. The length will be 525 pages.
5. Pierce Printers of North Carolina has indicated that the book should cost about \$16.00 per copy.
6. Recommend that a professional indexer be used.
7. The time table for completion would be to start immediately and the book would be printed by March 1995.
8. Recommend that the ad hoc committee stay intact to assist with the book as needed.
9. Recommend that the editors be permitted to choose substitute senior authors (with approval of the ad hoc committee) if a selected senior author declines.
10. All authors would be provided with a free copy.
11. Reprints will not be made available.
12. Photos and figures will be in black and white. Due to increased costs, any color costs would be the responsibility of senior authors.

Dr. Whitaker then read a list of proposed chapters. He indicated that the suggested chapters came from input from authors of chapters in Peanut Science and from Drs. Pattee and Stalker. Discussion was held on whether the book would be international in scope or just have a US flavor. Discussion was also held on the proper place for coverage of genetics in the new book.

The Board approved the recommendations of the ad hoc committee and requested that the editors proceed with publishing the new book.

### **c. Changes to the By-Laws - Charles Simpson**

Dr. Simpson explained the need to make changes in Art VIII, Sec 2 of the By-Laws. This change was necessitated by the resignation of one Board member and the addition of two state employee representatives on the Board. A copy of the proposed change was sent to Board members more than 30 days in advance of the Board meeting. The Board approved the following change:

Old-(beginning at the colon after "follows" in Line 3, Page 152, 1991 APRES Proceedings):

"e, 1972; d and f(1), 1973; and f(2) and f(3), 1974."

Change:

"d(VC area), e and f(2), 1992; d(SE area) and f(3), 1993; and d(SW area) and f(1), 1994".

This change will be voted on by the membership at the business meeting on July 10.

## **5. Committee Reports**

### **a. Nominating Committee Report - Carroll Johnson**

Dr. Johnson reported that the 1992 APRES Nominating Committee met informally via telephone and personal visits in April of 1992. It was the consensus of the Committee to nominate the following individuals as representatives to the APRES Board of Directors:

President-Elect: Dallas Hartzog

USDA Representative: Thomas Whitaker

VC Area State Employee Representative: Charles Swann

Shelling, Marketing, Storage Industry Representative: Doyle Welch

### **b. Finance Committee Report - Olin Smith**

Dr. Smith reported that the Finance Committee met at 4:00 p.m. He noted that all committee members were present. He also noted that the President, President Elect, and Executive Officer were present.

The Committee received and approved the financial report presented by Executive Officer Ron Sholar. Society income for the year totalled \$85,343 which was about \$20,000 over the 1991-92 budget. The increase was due to outstanding contributions by industry supporters and the increase in registration fees (from \$30 to \$55) that went into effect this year.

The June 30, 1992, assets totalled \$140,639.68, a \$19,000 increase over the June 30, 1991 balance of \$121,946. Assets include \$85,030 in savings, \$31,000 checking, and \$24,600 book inventory. The checking account balance will be reduced measurably with payment of expenses related to the annual meeting.

The Committee recommended that the Publication and Editorial Committee consider a special emphasis to sell more copies of PEANUT SCIENCE AND TECHNOLOGY to reduce inventory (1,070 books) prior to publication of the new book targeted for publication in 1995.

Dr. Smith pointed out that the old registration fee would have covered only about 40% of the total meeting costs. The proposed budget for the next fiscal year will be \$75,650.

There was discussion about how to sell more copies of Peanut Science and Technology. Ron Sholar indicated the inventory should be sold down to around 200 copies with some copies kept in APRES inventory.

**c. Fellows Committee Report - Morris Porter**

Dr. Porter reminded the Board that Fellows are selected based on primary area achievements, secondary area achievements, and service to the profession. The Fellows Committee had six members. The committee made its selections and the candidates were presented to President Simpson on May 5, 1992. The society can elect only three to Fellowship in any year. Dr. Porter indicated that the selectees were voted on by the Board of Directors and they were informed by the Society. The new Fellows will be announced at the business meeting.

Dr. Porter suggested that the Format for Fellows Nominations needs to be changed. The Fellows Committee recommended the following change:

**Old (Page 112 of 1991 Proceedings) Para IIIB2:**

"Supporting Letters: Three supporting letters should be included, at least two of which are from active members of the Society."

**Recommended Change:**

"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 Board unanimously approved the recommendation of the Fellows Committee dealing with supporting letters and the change will become effective with the 1993 elections.

**d. NPC Research and Education Award Committee Report - Leland Tripp**

Committee chair Leland Tripp reported that the 1992 National Peanut Council Research and Education Award Committee had seven entries to consider this year for the National Peanut Council Research and Education Award. Dr. Johnny Wynne was declared winner and the award was presented by the National Peanut Council at the annual meeting in April.

Dr. Tripp discussed the fact that the NPC is considering changing the selection procedures for this award. He pointed out that the selection procedure is very straight forward but nominators are failing to follow the instructions.

**e. Bailey Award Committee Report - Tom Stalker**

Committee chair Tom Stalker reported that thirteen papers were nominated for the Bailey Award at the 1991 APRES meeting held in San Antonio, Texas.

Each of the thirteen papers were presented by the senior author who was a member of APRES. On August 5, 1991, the senior author of the nominated paper was notified of the nomination and an original manuscript based on the presentation was requested by January 7, 1992. Twelve of the thirteen nominees responded with a manuscript. Submitted manuscripts were judged by four of the six Bailey Award Committee members (two committee members' papers were nominated and manuscripts were submitted). Papers were judged on appropriateness, originality, clarity, and scientific excellence. On April 15, 1992, the Committee reached a consensus on the Bailey Award winner and the President, Executive Officer, and President-Elect were notified.

The award winner will be announced at the business meeting.

The Committee suggested that the criteria for the Bailey Award be published annually in the PROCEEDINGS and/or PEANUT RESEARCH. The guidelines are currently in several issues of the PROCEEDINGS because changes have been made over the years, and several problems have arisen (for example, papers presented at annual meetings with different authorship than manuscripts judged); and the committee suggested that the President formally ask the Bailey Award Committee to synthesize all guidelines, policies and suggested changes and present the information to the Board of Directors at the 1993 APRES meetings and then publish the information thereafter.

Walt Mozingo as President Elect agreed to do this.

**f. Coyt T. Wilson Distinguished Service Award Committee Report -  
David Dougherty**

The Wilson Award Committee received nominations and selected a winner. The committee will publish information on Coyt Wilson and information on the award in Peanut Research in order to publicize the award.

**g. DowElanco Awards Committee Report - Gene Sullivan**

Dr. Sullivan retraced the steps that led to creation of the DowElanco Awards. At the 1991 meeting, President Simpson appointed a committee to establish the guidelines for the awards. This was to take advantage of the offer by DowElanco to sponsor awards for research and extension. This offer was for up to five years. The committee established the eligibility and criteria for the award and a nomination form was created. The committee conducted its business by mail. The committee solicited nominations and selected recipients. The winners will be announced at the business meeting.

President Simpson indicated that the Executive Committee had approved the selection procedure but that it needed full Board approval. The Board of

Directors voted to approve the selection guidelines with one change. The revised guidelines will require that three supporting letters must be submitted with the nomination.

**h. Graduate Student Competition (Joe Sugg Award) Committee Report - Hassan Melouk**

Dr. Melouk pointed out that the Graduate Student Competition had two objectives:

1. Recognize excellence in graduate education
2. Showcase APRES graduate student work in a meeting

The current format is to have a special session to handle graduate student presentations. Six papers will be presented at the 1992 meeting. Judges will select first and second place papers.

Dr. Melouk presented suggested guidelines for conducting the competition in the future. Much discussion ensued. The Board voted to distribute guidelines to the membership and study the results for deciding on the future format for the competition. The Graduate Student Competition Committee will develop the materials for determining member attitudes about the format.

**i. Public Relations Committee Report - Doyle Welch**

Doyle Welch indicated his committee discussed several possibilities for activities for the Public Relations Committee. Among these were how to increase membership, publishing information on award winners, and necrology.

The committee discussed the following:

1. Pictures should be provided by award recipients and should be provided to the Executive Officer. These pictures and accompanying stories could be provided to newspapers and to the agricultural press.
2. Consideration should be given to developing a society scrapbook of pictures taken at the annual meeting.
3. The committee knew of only one death during the past year - Mr. Eli Goldin of Israel. Dr. Coffelt pointed out that Mr. Goldin developed the 'Shulamit' peanut cultivar.
4. Consideration should be given to asking someone who typically attends other peanut meetings such as the NPC, Southwestern and Southeastern Peanut Shellers Conventions to make a short presentation on APRES goals and objectives. This could help increase support

for APRES and increase industry participation in APRES. This could be done by APRES providing written material (a letter) to be used for this purpose.

Considerable discussion ensued on the type of brochure or letter that APRES needs to develop. It was agreed that both a new brochure and a letter are needed. Doyle Welch indicated that a letter of information is needed for industry relations. This would also let industry or congress know what kind of expertise is available in APRES.

#### **j. Peanut Quality Committee Report - Tim Sanders**

Chairman Tim Sanders indicated that one of the concerns discussed by his committee is the interest, focus, and direction of the peanut quality committee - or what the committee is about. He indicated the committee is to promote quality improvement in the industry. The committee decided on a series of agenda items which they will attempt to get in Peanut Research.

The committee discussed three items of business:

1. Need to prepare additional Quality Methods as originally planned. Dr. Sam Ahmed had much of the material in Florida at the time of his death and some of it may be lost. The discussion focused on the need for new methods such as hull scrape, alcohol meter, and basic chemistry. Dr. Sanders as Editor of Quality Methods will develop a list of topics to solicit individuals to write methods.
2. The committee heard a presentation by Gordon Patterson of Hersheys. Hersheys is moving forward with quality improvement in their operations.
3. Discussion in which Olin Smith, Dan Gorbet, and Terry Coffelt participated on early maturing varieties. Focus was on whether they are early maturing or simply early yielding and the quality implication that may come from this. This discussion was joined by many participants.

Dr. Sanders recommended that some direction be given to the chair of the Peanut Quality Committee because there is no consistent direction for the committee.

#### **k. Site Selection Committee Report - Scott Wright**

The schedule for the annual meeting of APRES is:

July 13-16, 1993 - Huntsville, Alabama - Huntsville Hilton Hotel  
(room rates are \$65.00 single, double, triple, quad)

July 12-15, 1994 - Tulsa, Oklahoma - Sheraton Kensington Hotel  
(room rates are \$55.00 single, double; \$65.00 triple, quad)

The committee recommended Charlotte, North Carolina for the 1995 meeting. Date and hotel have not been selected. The Board agreed that the Site Selection Committee should choose the most advantageous dates for the 1995 meeting.

#### **I. Publication and Editorial Committee Report - Mike Schubert**

The Committee received Harold Pattee's Editorial Committee Report. PEANUT SCIENCE operated in the black this year with an income of \$25,255.03 and expenses of \$23,319.45 resulting in almost \$2000 net profit. Forty two manuscripts were submitted. Eighteen articles and a 4-page index were printed in the July-December 1991 issue and 16 articles were printed in the January-June 1992 issue for a total of 34 papers published. Twenty-three articles are currently in review and nine articles have been accepted for the 1992-93 issues. The proposed budget for PEANUT SCIENCE for next year indicates it will be in the black.

Retiring from the PEANUT SCIENCE Editorial Board after six years of service are Dallas L. Hartzog; Walt Mozingo; and James Young. Replacements approved, pending acceptance by the nominees, are Ed Colburn, Texas A&M University, Production; and John Cundiff, Agricultural Engineering.

Electronic submission of manuscripts was discussed. Two trial electronic submissions worked well. The Committee approved a proposal to invite voluntary electronic submissions to PEANUT SCIENCE. Submissions should include both disk file and hard copies. Benefits would include making future page charge increases less likely, reducing printer-generated errors, and uniformity in appearance of tables.

The Committee discussed waiving page charges in PEANUT SCIENCE. On rare occasions governmental policies or currency exchange circumstances generate a request for waiving page charges for a paper from a foreign scientist. The Committee recommended that the Editor of PEANUT SCIENCE and Chair of the Publication and Editorial Committee be authorized to waive page charges in exceptional situations. The Board of Directors voted to approve this.

Corley Holbrook reported that things are going smoothly on PEANUT RESEARCH. Tom Stalker is stepping down as a contributing editor. The Committee will publicly recognize Tom for his contributions.

Doyle Welch, Public Relations Committee Chair, proposed that a brochure or letter be circulated to members, prospective members, growers, shellers, other industry groups, and political and government leaders letting them know

what APRES is doing for the peanut industry. The Publication and Editorial Committee endorsed the need to revise the previous APRES brochure and agreed to work with the Public Relations Committee. This could aid in pulling diverse parts of the industry together.

**m. Program Committee - Walt Mozingo**

Walt Mozingo commented that the Program Committee had excellent people to work with and thanked the committee chairs. He indicated that 60 sponsors helped with the meeting and that over \$10000 had been collected in amounts from \$100-500 to help with coffee breaks etc.

The program lists 101 papers. This includes 6 graduate student papers.

Clifton Stacy indicated that he was the only peanut producer on the Board and a 4-day meeting is difficult to attend. Gale Buchanan pointed out that APRES needs to get more producers involved such as is the case with the cotton industry.

**5. President Simpson adjourned the meeting.**

**Opening Remarks by the President  
at the 1992 Business Meeting  
of APRES  
July 10, 1992**

Charles E. Simpson

Welcome, ladies and gentlemen, to the Awards Presentations and the 24th annual Business Meeting of APRES.

A hearty thank you to each of you for being here and making these meetings the success they have been. I take this opportunity to thank Mr. Walt Mozingo and his committees for planning and organizing a very productive meeting. We would like to recognize the Local Arrangements Committee, co-chaired by Mr. W. M. Birdsong and Dr. F. Scott Wright. Bill and Scott, I would like for you and your committees to stand and be recognized. We also recognize the Technical Program Committee, chaired by Dr. Terry Coffelt. Terry, would you and your committee please stand and be recognized. We also recognize the Ladies Program Committee, chaired by Mrs. Joyce Wright. Joyce, please stand with your committee and be recognized. We thank each member of these committees for their diligent efforts to make this annual meeting a huge success and very enjoyable. The full list of these committees is shown in your program.

I also want to thank all the other committee chairs and their committees for serving this year. Your hard work has combined to make this a successful year for APRES.

We give special thanks and recognition to those companies and organizations who so generously supported this gathering financially and with products and/or service. I would like to especially thank those companies who sponsored our social events:

Rhone-Poulenc: Ice Cream Social Tuesday night  
ISK-Biotech: Spirit of Norfolk Cruise Wednesday night  
Valent, DowElanco, and American Cyanamid: International Dinner  
Thursday night  
American Cyanamid: Awards Breakfast Friday morning

A complete list of contributors is in the back of your program. We say thank you to each of you.

I want to say a special thank you to Dr. Ron Sholar for keeping me on track this past year. Ron, thank you for all your hard work.

I want to give a special thank you to a person who quietly does a great deal of work for our Society and gets very little recognition for it. Linda Sholar, would you please stand and let us say "many thanks".

Before we have the awards presentations, I would like to make a few brief remarks as your President.

There have been many changes in our world and our organization since I made my first trip to Norfolk twenty-five years ago and attended the last PIWG meeting when our Society was formed. Since that time the Viet Nam War finally ended, man walked on the moon, we elected a peanut farmer as President of the USA, and then we voted in a movie star! We saw the cold war almost erupt into flames more than once, China opened her doors, if ever so slightly, and then—who would ever have thought it—the total collapse of the Communist Soviet Union.

Meanwhile APRES has persisted, grown, and become a dynamic and yet stable Society. We have published two books and are preparing for a third, we have no less than eleven standing committees and almost 600 members. To emphasize our stability, I looked in the membership lists for our first year, 1968-69. Of those 119 individual members, at least 33 are still active. One, then Board Member, is serving again this year as chair of a major committee—Leland Tripp. Two committee chairs from that first year are still active members—Harold Pattee and Frank McGill. Of the 65 sustaining and organizational members in 1968-69, more than 30 are still active, several with different names but still active. This type of devotion and longevity adds a lot of strength to APRES. We have undergone many changes, but in many ways we have simply undergirded the reason we are here—to promote the peanut and its use.

Our businesses, extension, and research have experienced some drastic changes, but I get the strong feeling "we ain't seen nothing yet". What with budget cuts, loss of political influence for agriculture, GATT, and a weak economy, where are we headed?

I really cannot answer that question, but I personally think we will be okay! I think we, as an organization and an industry, will meet the challenge. Growers groups, shellers, and the National Peanut Council recognize the need and are putting their financial and other support in places that help immensely.

And we, and I speak to and of the Research and Extension people, as scientists, realize we can make a difference. We continue to learn new and quicker ways to accomplish our objectives. I remember my first attempt at using a computer several years ago. My thought at the time, "No Way", and now I take it home with me like a close friend. And now Biotechnology! I am not very comfortable with a lot of it. I'll bet I am not alone. But we must learn

to use these tools so that they fit like a rubber glove. There are those in this room who are already this comfortable with Biotech, and with computers--there are others of us who are still working on it.

I spoke of the strength of APRES. We have other strengths, such as our many hard-working members who have joined our organization in the years since 1969. And our strength also lies in our newest members--some brilliant, well-trained minds--many of them understand Biotech, and they thrive on it. These new members are the future leaders of APRES. I challenge those of you in this group who have been members of APRES for one, two or just a few years; be active in APRES. When you are asked to serve on a committee, serve and serve well. And if you are not asked to serve on a committee, let the President know you want to serve the Society. I guarantee, he will find a place for your contribution.

And I would be remiss if I did not emphasize another of our strengths, that is our strong industry support. Cases in point are the many social and meal activities we have enjoyed this week, and the new awards that will be made in a few minutes, sponsored by DowElanco. These types of awards, along with the other support so many companies and organizations provide, have kept us moving forward through these twenty-four years.

To all of you I say, "Keep up the good work", and with the help of The Almighty God we will continue to grow and be productive. Thank you. It has been an honor and pleasure to serve as your President for the past year, and I intend to continue my service to APRES.

**Business Meeting and Awards Ceremony**  
**AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY**  
Ballroom, Omni Hotel  
Norfolk, Virginia  
July 10, 1992

The meeting was called to order at 8:30 a.m. by President Charles Simpson. The following items of business were conducted:

1. President's Report - Charles Simpson
2. The following awards were presented and reports made. Detailed reports are presented in the PROCEEDINGS.
  - a. NPC Research and Education Award - Leland Tripp
  - b. Bailey Award - Tom Stalker
  - c. Graduate Student Competition (Joe Sugg Award) - Hassan Melouk
  - d. DowElanco Awards for Research and Education - Gene Sullivan
  - e. Coyt T. Wilson Distinguished Service Award - Charles Simpson
  - f. Fellows - Morris Porter
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 Previous Meeting - Ron Sholar
  - b. Ad Hoc Committee Reports
    - 1) Annual Meeting - George Alston
    - 2) New Book - Tom Stalker

President Simpson took a show of hands to determine the interest in changing the annual meeting dates from **a) Tuesday through Friday to b) Wednesday through Saturday**. The vote failed to reach the 70% favorable vote that the Board of Directors had determined would be required to proceed with polling the entire membership on making the change. President Simpson declared the issue of changing the meeting dates as dead.

3) Changes to By-Laws - Charles Simpson

Dr. Simpson explained the need to make changes in Article VIII, Section 2 of the By-Laws. This change was necessitated by the resignation of one Board member and the addition of two state employee representatives on the Board. A copy of the proposed change was sent to Board members more than 30 days in advance of the Board meeting. The Board approved the following change:

Old-(beginning at the colon after "follows" in  
Line 3. Page 152, 1991 APRES  
PROCEEDINGS):  
"e, 1972; d and f(1), 1973; and f(2) and f(3),  
1974."

Change:

"d(VC area), e and f(2), 1992; d(SE area) and  
f(3), 1993; and d(SW area) and f(1), 1994."

- c. Nominating Committee - Tom Whitaker
- d. Finance Committee - Olin Smith
- e. Public Relations Committee - Dan Gorbet
- f. Peanut Quality Committee - Tim Sanders
- g. Site Selection Committee - Scott Wright
- h. Publication and Editorial Committee - Mike Schubert
- i. Program Committee - Walt Mozingo

4. Dr. Simpson turned the meeting over to the new President, Walt Mozingo of Virginia, who then adjourned the meeting.

## FINANCE COMMITTEE REPORT

The Finance Committee met at 4:00 p.m. on July 7, 1992, at Norfolk, Virginia. Committee members present were Mark Braxton, Terry Coffelt, W. C. Odle, Ron Sholar (ex-officio), and Olin Smith. Others present included Charles Simpson, Walton Mozingo, Harold Pattee, Clifton Stacy, and Fred Cox.

The Committee received and approved the financial report presented by Executive Officer J. R. Sholar. Society income for the year totalled to \$85,343, about \$20,000 over the 1991-92 budget. Principal factors for the increase were: 1) very generous contributions by industry supporters and 2) increase in registration fees (\$55 vs. \$30) that was effected this year.

The June 30, 1992, assets totalled \$140,639.68, a \$19,000 increase over the June 30, 1991, balance of \$121,946. Assets include \$85,030 in savings, \$31,000 checking, and \$24,600 book inventory. The checking account balance will be reduced measureably with payment of expenses related to the annual meeting.

The Committee recommended that the Publication and Editorial Committee develop a special effort on book sales (PEANUT SCIENCE AND TECHNOLOGY) to reduce inventory (1,070 books) prior to publication of the new book targeted for publication in 1995.

The financial report from Harold Pattee, Editor of PEANUT SCIENCE, was reviewed with proposed 1992-93 receipts of \$26,190 and expenditures totalling \$25,550.

The Committee discussed a total APRES budget for fiscal year 1992-93. Receipts were estimated at \$75,650 with expenditures totalling \$75,364, leaving a reserve of \$285. A motion was made and passed to recommend this budget for adoption. A copy of the budget will be published in the PROCEEDINGS.

The meeting adjourned at 5:30 p.m.

Respectfully submitted,

O. D. Smith, Chair

**AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY  
BUDGET 1992-93**

**RECEIPTS**

Annual Meeting Registration	\$16,500
Membership	16,000
Special Contributions (host state)	18,000
Differential Postage Assessment	2,000
Peanut Science & Technology	1,000
Quality Methods book	50
Proceedings and Reprint Sales	100
Peanut Science Page Charges & Reprints	17,000
Interest	<u>5,000</u>
<b>TOTAL RECEIPTS</b>	<b>\$75,650</b>

**EXPENDITURES**

Annual Meeting	\$24,500
Membership CAST	1,400
Office Supplies	1,500
Secretarial Services	10,815
Postage	2,000
Travel - Officers	1,200
Legal Fees	300
Proceedings - Printing & Reprints	3,500
Peanut Science	25,550
Peanut Science and Technology	100
Peanut Research	2,000
Quality Methods	100
Bank charges	150
Miscellaneous	250
On-line Computer Search Capability	2,000
Reserve	<u>285</u>
<b>TOTAL EXPENDITURES</b>	<b>\$75,650</b>

Excess Receipts over Expenditures 0

**AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY  
BALANCE SHEET FOR FY 1991-92**

<b>ASSETS</b>	<u>June 30, 1992</u>	<u>June 30, 1991</u>
Petty Cash Fund	\$ 345.84	\$ 200.39
Cash in Checking Account	30,673.39	14,162.68
Certificate of Deposit #1	18,468.41	17,348.04
Certificate of Deposit #2	11,853.13	11,218.54
Certificate of Deposit #3	11,106.64	10,496.19
Certificate of Deposit #4	28,882.74	27,062.11
Certificate of Deposit #5	10,795.21	10,388.93
Money Market Account	2,662.25	2,542.13
Savings Account (Wallace Bailey)	1,261.91	1,205.06
Inventory of Books	<u>24,590.16</u>	<u>27,322.40</u>
<b>TOTAL ASSETS</b>	<b>\$140,639.68</b>	<b>\$121,946.47</b>
 <b>LIABILITIES</b>		
None	0.00	0.00
<b>FUND BALANCE</b>	<b>\$140,639.68</b>	<b>\$121,946.47</b>
<b>TOTAL LIABILITIES AND FUND BALANCE</b>	<b>\$140,639.68</b>	<b>\$121,946.47</b>

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

<u>Receipts</u>	<u>June 30, 1992</u>	<u>June 30, 1991</u>
Registration	\$15,015.00	\$10,850.00
Membership	14,984.00	16,843.00
Special Contributions	28,827.00	8,246.17
Differential Postage	2,193.00	2,279.50
Ladies Activities	1,918.00	659.00
Peanut Science and Technology	1,475.50	1,063.25
Quality Methods	55.00	30.00
Proceedings & Reprint Sales	143.00	2,560.99
Peanut Science Page Charges & Reprints	15,369.50	10,882.25
Checking Account Interest	593.02	663.33
Savings Account Interest (W. Bailey)	56.31	69.65
Money Market Account Interest	120.12	323.75
Certificate of Deposit #1 Interest	1,120.37	1,274.60
Certificate of Deposit #2 Interest	634.59	806.74
Certificate of Deposit #3 Interest	610.45	773.51
Certificate of Deposit #4 New & Interest	1,820.63	2,017.59
Certificate of Deposit #5 New & Interest	406.28	10,388.93
Transfer from Money Market to Checking Acct	0.00	4,000.00
<b>TOTAL RECEIPTS</b>	<b>\$85,341.77</b>	<b>\$73,732.26</b>

<u>Expenditures</u>	<u>June 30, 1992</u>	<u>June 30, 1991</u>
Annual Meeting	\$19,155.52	\$ 8,789.12
Membership	30.00	679.00
Office Supplies	1,527.61	786.05
Secretarial Services	10,340.00	9,914.08
Postage	1,558.74	3,155.57
(minus petty cash fund balance)	(0.00)	(200.39)
Travel - Officers	365.85	1,207.16
Corporation Registration	55.00	55.00
Legal Fees	270.00	215.00
Sales Tax	35.12	35.45
Proceedings	3,265.12	5,994.08
Peanut Science	23,571.93	14,208.27
Peanut Science and Technology	118.18	51.36
Peanut Research	3,638.24	1,987.03
Quality Methods	0.00	155.00
Bank Charges	131.00	136.75
Money Market Account	0.00	4,000.00
Certificates of Deposit	0.00	10,000.00
Miscellaneous	0.00	193.00
<b>TOTAL EXPENDITURES</b>	<b>\$64,062.31</b>	<b>\$61,361.53</b>
<b>EXCESS RECEIPTS OVER EXPENDITURES</b>	<b>\$21,279.46</b>	<b>\$12,370.73</b>

Cash in Checking Account:      June 30, 1992 - \$30,673.39  
    June 30, 1991 - \$14,162.68  
    June 30, 1990 - \$13,587.41

**PEANUT SCIENCE BUDGET  
1992-93**

**Income**

Page and reprint charges	\$17,000.00
Foreign mailings	1,200.00
APRES member subscriptions (505 x \$13.00)	6,565.00
Library subscriptions (95 x \$15.00)	<u>1,425.00</u>
<b>TOTAL INCOME</b>	<b>\$26,190.00</b>

**Expenditures**

Printing and reprint costs	\$16,200.00
Editorial assistance (750 hours)	6,600.00
Miscellaneous	500.00
Computer usage	200.00
Office supplies	100.00
Postage, domestic	750.00
Postage, foreign	<u>1,200.00</u>
<b>TOTAL EXPENDITURES</b>	<b>\$25,550.00</b>

**PEANUT SCIENCE AND TECHNOLOGY  
SALES REPORT AND INVENTORY ADJUSTMENT  
1991-92**

	<u>Books Sold</u>	<u>Remaining Inventory</u>
Beginning Inventory		1190
1st Quarter	19	1171
2nd Quarter	54	1117
3rd Quarter	13	1104
4th Quarter	33	1071
<b>TOTAL</b>	<b>119</b>	

119 books sold x \$22.96 = \$2,732.24 decrease in value of book inventory.

1071 remaining books x \$22.96 (book value) = \$24,590.16 total value of remaining book inventory.

<u>Fiscal Year</u>	<u>Books Sold</u>
1985-86	102
1986-87	77
1987-88	204
1988-89	136
1989-90	112
1990-91	70
1991-92	119

## PUBLIC RELATIONS COMMITTEE REPORT

The Public Relations Committee met Tuesday, July 7, 1992, at the Omni Hotel in Norfolk, Virginia. We had seven members present and one guest. As there was no unfinished business known, we considered the following:

1. We recommend a letter be written by the Public Relations Committee and the Publications & Editorial Committee, to be mailed or presented to the peanut shelling/growing/manufacturing industries, leading politicians, certain newspapers, and farm magazines for the purpose of educating our industry in what we are doing and our vision for APRES. Certainly, all we do should support the whole industry. The paper could be combined with the brochure that is to be revised or could be independent for mailing to or perhaps, read to convention groups, etc. The length should be no more than one page.
2. We recommend that APRES members who receive awards supply a picture that would accompany the summary of their award. This information will be available to be published in local hometown newspapers, university papers, national peanut publications, pertinent farm magazines, etc., for the purpose of making the industry aware of APRES.
3. Two deaths have been reported to date. Mr. Eli Goldin, a pioneer and leader of peanut breeding and research in Israel, passed away September 6, 1991, at the age of 84. Dr. Esau (Sam) Ahmed, a leader in peanut research and education in the area of food science and technology passed away on July 22, 1991. Resolutions honoring their lives and contributions to the peanut industry follow.
4. We recommend a member be appointed to the Public Relations Committee who resides in the forthcoming meeting state. This member would be responsible for snapshots with captions for same about the meeting, to be displayed the following year.

Respectfully submitted,

Doyle Welch, Chair

## RESOLUTIONS

*Whereas Mr. Eli Goldin was a pioneer and leader in the area of peanut breeding and research in Israel for 50 years, and*

*Whereas Mr. Goldin worked diligently to improve peanut production in underdeveloped countries in Africa and Asia, and*

*Whereas Mr. Goldin developed the Shulamit cultivar which has been the leading peanut cultivar in Israel for the past 25 years, and*

*Whereas Mr. Goldin made many significant contributions to the world's peanut industry, and*

*Whereas Mr. Goldin passed away on September 6, 1991,*

*It is resolved that Mr. Goldin's life and contributions to the peanut industry are honored by the American Peanut Research and Education Society.*

*Whereas Dr. Esau Mahmoud (Sam) Ahmed, Professor of Food Science and Human Nutrition at the University of Florida, was a leader in peanut research and education in the area of food science and technology for over 20 years, with more than 200 publications and 40 graduate students, and*

*Whereas Dr. Ahmed made major contributions in the area of product development and quality factors of peanuts, and*

*Whereas Dr. Ahmed was very active in several professional societies, including APRES, and*

*Whereas Sam was a long-time active members of APRES, serving in many capacities, especially in the area of publications (including a book chapter), meeting presentations and related contributions, the quality committee and other functions related to his expertise, and*

*Whereas Sam made significant contributions to the functions and actions of the APRES Quality Committee, editing the Quality Methods Manual, coordinating a quality symposium, authoring a peanut quality bulletin, of which 4000 copies were distributed, and*

*Whereas Dr. Sam Ahmed passed away in Williston, Florida, on July 22, 1991,*

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

## **PUBLICATION AND EDITORIAL COMMITTEE REPORT**

The Publication and Editorial Committee met July 7, 1992, at Norfolk, Virginia. Members present were Bill Branch, Richard S. Wilkes, Joe Domer, Marvin Beute, Austin Hagan, Tim Brenneman, and Mike Schubert. Harold Pattee, Tom Whitaker, Corley Holbrook, Doyle Welch, and Charles Simpson were also present.

The Committee received Harold Pattee's Editorial Committee Report. PEANUT SCIENCE operated in the black this year with an income of \$25,255.03 and expenses of \$23,319.45 resulting in a net profit of \$1,935.58. There were 42 manuscripts submitted from July 1, 1991, to June 30, 1992. Of these, 18 articles (83 pages) and a 4-page index were printed in the July-December 1991 issue and 16 articles (62 pages) were printed in the January-June 1992 issue for a total of 34 papers published. Twenty-three articles are in review and nine articles have been accepted for the 1992-93 issues. The proposed budget for PEANUT SCIENCE for 1992-93 is \$26,190 income, \$25,550 expenses, with \$640 net based on an estimated 149 pages at a \$90 cost per page.

Retiring from the PEANUT SCIENCE Editorial Board after six years of service are Dallas L. Hartzog, Production; R. Walton Mozingo, Multi-disciplinary topics and Production; and James H. Young, Agricultural Engineering. Replacements approved, pending acceptance by the nominees, are Ed Colburn, Extension Peanut Specialist, Texas A&M University, Production; and John Cundiff, USDA-ARS, Suffolk, Virginia, Agricultural Engineering. Nominations and approval of the third replacement will be done by telephone. The retiring editors will be publicly recognized at the annual business meeting.

Electronic submission of manuscripts was discussed. Two trial electronic submissions worked well. The Committee approved a proposal to invite voluntary electronic submissions to PEANUT SCIENCE. This may eventually lead to a formal policy for electronic submissions. Voluntary submissions should include both disk file and hard copies. Benefits would include making future page charge increases less likely, reducing printer-generated errors, and uniformity in appearance of tables.

The Committee discussed waiving page charges in PEANUT SCIENCE. On rare occasions governmental policies or currency exchange circumstances generate a request for waiving page charges for a paper from a foreign scientist. The Committee recommended that the Editor of PEANUT SCIENCE and Chair of Publication and Editorial Committee be authorized to waive page charges in exceptional situations.

Tom Whitaker reported on progress by the New Book Committee.

Corley Holbrook reported that things are going smoothly on PEANUT RESEARCH. Tom Stalker is stepping down as a contributing editor. The Committee will publicly recognize Tom for his contributions.

Doyle Welch, Public Relations Committee Chair, proposed that a brochure or letter be circulated to members, prospective members, growers, shellers, other industry groups, and political and government leaders letting them know what APRES is doing for the peanut industry. The Publication and Editorial Committee endorsed the need to revise the previous APRES brochure and agreed to work with the Public Relations Committee.

Respectfully submitted,

Mike Schubert, Chair

## **NOMINATING COMMITTEE REPORT**

The 1992 APRES Nominating Committee met informally via telephone and personal visits in April of 1992. It was the consensus of the Committee to nominate the following individuals as representatives to the APRES Board of Directors:

President-Elect: Dallas Hartzog

USDA Representative: Thomas Whitaker

VC Area State Employee Representative: Charles Swann

Shelling, Marketing, Storage Industry Representative: Doyle Welch

Respectfully submitted,

Ron Henning, Chair

Carroll Johnson

Tom Whitaker

Ron Weeks

## **FELLOWS COMMITTEE REPORT**

Nominations were received by the Fellows Committee. The Fellows Committee recommended to the Board of Directors the following members for election to Fellowship in APRES:

Dr. Hassan Melouk, Oklahoma

Dr. Johnny Wynne, North Carolina

Dr. Scott Wright, Virginia

All were found to be worthy of being elected as Society Fellows.

The APRES Board of Directors elected these three members to Fellowship and all were notified prior to the annual meeting.

Respectfully submitted,

Morris Porter, Chair

## BIOGRAPHICAL SUMMARY OF FELLOWS RECIPIENTS

**Dr. Hassan A. Melouk** is a Research Plant Pathologist with the USDA-ARS, and Professor (Adjunct) at Oklahoma State University. He has been engaged in research on peanuts since 1976. He has authored or co-authored over 120 publications which span the subject areas of fundamental to applied research on the control of peanut diseases. He is presently a senior editor for a book entitled *Peanut Health Management*. This book is being developed for publication by the American Phytopathological Society.

He has conducted research on the nature, epidemiology, and control of diseases of peanut, with emphasis on germplasm evaluation and host-plant resistance to improve peanut production efficiency. Hassan has 1) developed effective procedures for evaluating the reaction of wild and cultivated peanut germplasm against important pathogens, such as leafspot fungi, peanut mottle virus, peanut stripe virus, *Verticillium dahliae*, and *Sclerotinia minor*; 2) identified disease resistant sources in peanut germplasm, and defined epidemiological parameters for evaluating levels of resistance; 3) investigated environmentally safe means for effective management of economically important peanut diseases; 4) advanced practical epidemiological concepts to assist geneticists and breeders in developing peanut cultivars with resistance to diseases; 5) studied modes of pathogen dissemination as influenced by different genotypes; and 6) investigated ways to eliminate pathogens from peanut seed. One of his more noted recent accomplishments is the release of the peanut cultivar 'Tamspan 90', resistant to Sclerotinia blight, in cooperation with Texas A & M University. He has served as a major advisor for several students (M.S. and Ph.D.) whose research activities involve solving problems related to peanut production.

Dr. Melouk served as President of APRES and has served on the Board of Directors. He has also served on a number of committees (Finance, Public Relations, Nominating, Bailey Award), ad hoc committees, and as an Associate Editor of PEANUT SCIENCE. Other professional Society activities include membership in the National Peanut Council and the American Phytopathological Society. Also, he interacts closely with commodity organizations in the Southwest for promoting the peanut industry.

**Dr. F. Scott Wright** is a Research Agricultural Engineer with the USDA-ARS at the Tidewater Agricultural Experiment Station, Suffolk, Virginia, and an Adjunct Professor of Agricultural Engineering at Virginia Polytechnic Institute and State University. He has been active in agricultural engineering research for 31 years. He is recognized as a leader in research and equipment development. He has improved harvesting procedures and developed methods to separate the peanut from the plant with minimal pod damage. In 1975 he and a co-worker published a method of determining peanut blanchability, and this method has now been accepted as the standard by the American Society

of Agricultural Engineers and is widely used in the peanut industry. Dr. Wright has had a major impact on the development and evaluation of peanut diggers, peanut combines, planting and tillage equipment, and irrigation systems. Recent investigations have focused on tillage techniques used in peanut production and irrigation practices. He has authored or co-authored more than 120 refereed journal articles and abstracts.

Dr. Wright has contributed extensively to the American Peanut Research and Education Society, Inc., and its predecessor, the Peanut Improvement Working Group (PIWG). Dr. Wright has participated in 21 annual meetings of the Society. He presented 14 contributed papers and has served as a co-author on an additional 19 papers. He has served as chairman or co-chairman of the Bailey Award Committee, Local Arrangements Committee, Site Selection Committee, Technical Program Committee and a member of the Finance Committee for APRES. He has served as Associate Editor of PEANUT SCIENCE. Dr. Wright is an active participant in the Southeast Region and Virginia State Section of the American Society of Agricultural Engineers. He has served on several committees for the American Society of Agricultural Engineers.

One of Dr. Wright's most outstanding attributes is his cooperative spirit in working with others. There are many excellent programs within the peanut industry, the USDA-ARS and the Virginia Polytechnic Institute and State University that have received national and international recognition because of his major contributions.

**Dr. Johnny C. Wynne** is a Professor of Crop Science and Associate Dean and Director, North Carolina Agricultural Experiment Station, Raleigh, North Carolina. He has been involved with peanut improvement for more than 25 years. He has authored or co-authored more than 120 refereed journal articles. Much of his professional efforts have been devoted to developing improved peanut cultivars with high yield. He was the primary developer of NC 6, the first insect-resistant cultivar released in the U.S.; NC 8C and NC 10C, two cultivars resistant to Cylindrocladium black rot; and NC 7, NC 9 and NC-V11, three high-yielding, large-seeded genotypes. His varieties are currently grown on more than 90% of the peanut acreage in North Carolina and Virginia and are the predominant large-seeded cultivars grown across the southern peanut belt. In addition, he has identified germplasm with resistance to many disease and insect pests and other lines with improved agronomic traits. He supplied the International Crops Research Institute for the Semi-Arid Tropics with their base peanut collection, and these materials now comprise a large percentage of the advanced germplasm lines distributed from the institute.

Dr. Wynne has served as president of APRES, chairman of the Program and Technical Committees, as a member on the Board of Directors, and as chairman or a member of numerous other APRES committees. In 1980 he co-

organized a Plant Breeding Symposium. Johnny served as an associate editor for PEANUT SCIENCE for six years and was the chairman of the Peanut Crop Advisory Committee from 1981 to 1984. Dr. Wynne received the Bailey Award for his paper entitled "Use of accelerated generation increase programs in peanut breeding" in 1977.

At NCSU, Dr. Wynne has chaired 41 graduate committees and has served on numerous others. He has extensive international involvement in peanut research through the Peanut CRSP Program in Thailand and the Philippines and through other projects as a cooperator, consultant or invited speaker at many international conferences. He was the chairman of the Peanut CRSP Technical Advisory Committee and is currently on its Board of Directors.

Dr. Wynne has been a leader in the peanut and agricultural community in North Carolina, in the U.S., and internationally. He has endeavored to meet the needs of industry while establishing superior academic and research programs. His work has benefited the entire peanut industry through cultivar development, training, and service to state and national organizations.

**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

Thirteen papers were nominated for the Bailey Award at the 1991 APRES meeting held in San Antonio, Texas. Each of the thirteen papers were presented by the senior author who was a member of APRES. On August 5, 1991, the senior author of the nominated paper was notified of the nomination and an original manuscript based on the presentation was requested by January 7, 1992. Twelve of the thirteen nominees responded with a manuscript. Submitted manuscripts were judged by four of the six Bailey Award Committee members (two committee members' papers were nominated and manuscripts were submitted). Papers were judged on appropriateness, originality, clarity, and scientific excellence. On April 15, 1992, the Committee reached a consensus on the Bailey Award winner and the president, executive officer, and president-elect were notified.

The 1992 recipient of the Bailey Award is *"Variability associated with testing farmers stock peanuts for aflatoxin"* by T. B. Whitaker, F. E. Dowell, W. M. Hagler, F. G. Giesbrecht and J. Wu, USDA/ARS, North Carolina State University, Raleigh, NC; USDA/ARS, National Peanut Research Laboratory, Dawson, GA; Mycotoxin Laboratory, North Carolina State University, Raleigh, NC; Dept. of Statistics, North Carolina State University, Raleigh, NC; AMS Statistics Branch, USDA, Washington, DC.

Secondly, the Committee suggests that the criteria for the Bailey Award be published annually in the PROCEEDINGS and/or Peanut News. The guidelines are currently in several issues of the PROCEEDINGS because changes have been made over the years, and several problems have arisen (for example, papers presented at annual meetings with different authorship than manuscripts judged); thus, we suggest that the president formally ask the Bailey Award Committee to synthesize all guidelines, policies and suggested changes and present the information to the Board of Directors at the 1993 APRES meetings and publish the information thereafter.

Respectfully submitted,

H. T. Stalker, Chair  
T. A. Lee  
K. J. Boote  
H. A. Melouk  
J. I. Davidson  
C. W. Swann

## NOMINEES FOR BAILEY AWARD 1992

1. Restriction fragment length polymorphism evaluation of six peanut species within the *Arachis* section. O.G. Paik-Ro, R.L. Smith and D.A. Knauff.
2. Resistance to *Meloidogyne arenaria* in *Arachis hypogaea*. C.C. Holbrook, J.P. Noe and N.A. Minton.
3. Spectral reflectance characteristics of undamaged and damaged peanut kernels. F.E. Dowell.
4. Single leaf carbon exchange and canopy radiation use efficiency of four peanut cultivars. J.M. Bennett, L. Ma, T.R. Sinclair and K.J. Boote.
5. Variability associated with testing farmers stock peanuts for aflatoxin. T.B. Whitaker, F.E. Dowell, W.M. Hagler, F.G. Giesbrecht and J. Wu.
6. Effect of calcium on germination of Florunner, Sunrunner, GK7, and Southern Runner. D.L. Hartzog and J.F. Adams.
7. Peanut yield decline in the Southeast and economically feasible solutions. M.C. Lamb, J.I. Davidson, Jr. and C.L. Butts.
8. Interactive effects of lesser cornstalk borers and *Aspergillus* incidence in peanut. K.L. Bowen and T.P. Mack.
9. Do world peanut prices influence U. S. prices and production or vice versa? D.H. Carley and S.M. Fletcher.
10. Influence of *Meloidogyne arenaria* and *Sclerotium rolfsii* on performance of Florunner and Southern Runner cultivars in three leafspot control regimes. A.K. Culbreath, N.M. Minton and T.B. Brenneman.
11. Interaction of paraquat and other herbicides when used in peanuts. G. Wehtje, J.W. Wilcut and T.V. Hicks.
12. Effectiveness of fluazinam (ASC-66825), a new broad-spectrum fungicide, with chlorothalonil for control of both Sclerotinia blight and Cercospora leafspot of peanut. F.D. Smith, P.M. Phipps and R.J. Stipes.

### Nominated but not submitted:

1. Chemical, chromatographic and sensory assessment of Canadian peanuts and extrusion processed peanut butter. D.J. Moore and Y. Kakuda.

## JOE SUGG GRADUATE STUDENT AWARD REPORT

Judges for the 1992 Graduate Student Competition were:

Dr. H. A. Melouk, Chair  
Dr. Tom Stalker  
Dr. John Wilcut  
Dr. David Knaut  
Mr. James Grichar

Six papers were presented in the session. The five judges scored the papers based on clarity of presentation, quality of visual aides, originality and contribution to science, overall quality and clarity of abstract, and interaction with the audience. All students had done an excellent job presenting their research and the competition was keen.

The first place award went to **M.J. Bell** of the Department of Crop Science at the University of Guelph and Delhi Research Station, Ontario, Canada, for presenting a paper titled "Radiation Use Efficiency of Peanut in Southern Ontario". The paper was co-authored by **R.C. Roy** and **T.E. Michaels**.

The second place award went to **G.F. Chappell** of the Department of Crop Science, North Carolina State University, Raleigh, for presenting a paper titled "Comparison of Field Resistance and the Effect of Peanut Growth Habit with Expression of Metabolic and Physiological Resistance of *Sclerotinia minor*". The paper was co-authored by **M.K. Beute** of the Department of Plant Pathology at North Carolina State University

Cash awards sponsored by the North Carolina Peanut Growers Association were presented to the winners. Mr. Norfleet Sugg of the North Carolina Peanut Growers Association made the presentations. The first place winner received a cash award of \$200 and the second place winner received a cash award of \$100.

Respectfully submitted,

H. A. Melouk, Chair

## **COYT T. WILSON DISTINGUISHED SERVICE AWARD REPORT**

The Coyt T. Wilson Distinguished Service Award was established to recognize those persons within the American Peanut Research and Education Society who have provided outstanding service to the Society for a long period of time and deserve special recognition.

The Award was named to pay tribute to one of our founding members who spent many years and much time in nurturing our young Society so it could become what it is today--Dr. Coyt T. Wilson.

The Coyt T. Wilson Distinguished Service Award Committee met and selected Dr. Harold E. Pattee as the recipient of the 1992 award. Dr. Pattee has been a member of the Society or the Peanut Working Group for 28 years, and has attended 27 meetings. In 1977, Dr. Pattee received the Golden Peanut Research Award and in 1983 he became a Fellow of APRES. Dr. Pattee's main contribution to the Society has been as editor of PEANUT SCIENCE from 1976 to present, during which time PEANUT SCIENCE has become an internationally recognized publication.

In order to further enhance the prestige of this new award and increase awareness of it, the Committee shall undertake to publicize both the award and the man whom it honors prior to the next deadline for nominations.

Respectfully submitted,

David Dougherty, Chair

## BIOGRAPHICAL SUMMARY OF COYT T. WILSON DISTINGUISHED SERVICE AWARD RECIPIENT

**Dr. Harold E. Pattee** is a research chemist for the U.S. Department of Agriculture and Professor of Botany, North Carolina State University, Raleigh, North Carolina. He has been a leader in the area of quality and flavor composition of peanuts. Dr. Pattee identified "off-flavor" components in seeds which then led to definition of volatile profiles for chemical analyses. His research led to the development of a simple, rapid, reproducible test for evaluating farmers stock peanuts for high-temperature curing off-flavors and freeze-damage. Cooperative work to study the inheritance of peanut flavor promises to lead to improved genotypes throughout the market place. As part of a research team he developed a physiological maturity index for controlling variation in maturity across time. He is an expert in embryology and has set standards for comparative reproductive development of cultivated and wild species and their interspecific hybrids. In summary, he has served the peanut industry by developing new technologies and applying theories to solve practical problems during the past 30 years.

Since 1976, Dr. Pattee has served as the editor of PEANUT SCIENCE and, largely due to his efforts, the journal is recognized as a high quality outlet for peanut scientific information. He was chairman of the ad-hoc committee to establish the association "APREA" as a non-profit society; this also led to a change in the name to American Peanut Research and Education Society. Harold was senior editor for PEANUT SCIENCE AND TECHNOLOGY and will edit a forthcoming update of the book. In 1989 he co-chaired a symposium on peanut quality at the APRES meetings, which addressed critical needs of the peanut industry, and distributed the resulting bulletin to nearly 4000 individuals. Dr. Pattee has served on numerous committees, was recognized as Fellow of the organization in 1983, received the Golden Peanut Research Award from the National Peanut Council, and has been a strong contributor of peanut research from the early days of the society to the present when APRES is an internationally recognized society.

## 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

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

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 AWARDS COMMITTEE REPORT**

The DowElanco Awards Committee was charged with setting up the criteria for the DowElanco Award for Research and the DowElanco Award for Extension. The Committee developed the description for the award, established eligibility criteria for each award, and developed nomination procedures and nomination forms for each award. The awards were named the DowElanco Award for Excellence in Research and the DowElanco Award for Excellence in Extension. The criteria for the awards and a nomination form were printed in Peanut Research.

The Committee received the nominations for 1992 and selected Dr. Rodrigo Rodriguez-Kabana of Auburn University to receive the research award and Dr. James Ronald Sholar of Oklahoma State University to receive the extension award. The awards were presented at the 24th annual meeting in Norfolk, Virginia.

Respectfully submitted,

G.A. Sullivan, Chair  
P. Blankenship  
D. Hale  
K. Jackson  
D. Knauth  
T.A. Lee  
J.C. Wynne

### **BIOGRAPHICAL SUMMARY OF DOWELANCO AWARD FOR EXCELLENCE IN EXTENSION**

**Dr. James Ronald Sholar** holds a B.S. degree from the University of Tennessee and M.S. and Ph.D. degrees from Oklahoma State University. He has authored more than 300 popular articles, extension publications, fact sheets, circulars, abstracts and refereed journal articles. As an Extension Crops Specialist at Oklahoma State University and as Executive Officer of the American Peanut Research and Education Society, Ron's achievements and contributions have led to significant improvements in the entire U.S. peanut industry. He has provided superior leadership and guidance to producer groups in the discovery and implementation of new technology and peanut management strategies which has increased quality and profits while at the same time protecting the environment.

Ron has successfully utilized novel and innovative demonstration programs and educational materials to help the peanut industry make informed decisions relating to producing and marketing a quality product. He has provided

leadership to the industry by serving on state boards, regional and national committees and task forces and participating in international assignments with the National Peanut Council of America and other agencies. He has served on the Board of Directors of the Council on Agricultural Science and Technology (CAST) and has participated in educational activities in England, the Netherlands, Switzerland, and China. Recognition of Ron's excellence in peanut industry leadership at both the national and international levels is evidenced by virtue of his continuing role (since 1983) as Executive Officer of the American Peanut Research and Education Society. Dr. Sholar's work has and continues to benefit the total peanut industry in the U.S. and internationally.

#### **BIOGRAPHICAL SUMMARY OF DOWELANCO AWARD FOR EXCELLENCE IN RESEARCH**

**Dr. Rod Rodriguez-Kabana** holds B.S., M.S., and Ph.D. degrees from Louisiana State University. He has authored more than 160 refereed journal articles, a myriad of abstracts and proceedings, and several book chapters on soil microbiology and ecology, and nematode ecology and control. As a faculty member at Auburn University, Rod has made amazing contributions to the peanut industry in the areas of biology and biological, chemical, and cultural control of plant parasitic nematodes and other soilborne pathogens of peanuts and crops used in rotation with peanuts. His work on integration of crop rotation with use of nematicides has been of benefit to all peanut growers in the U.S. His work in the area of biological control is world-renowned. Rod's work in the alternative nematode control methods is at the cutting edge of research in the area of environmentally sound production agriculture.

This distinguished scientist has received numerous prestigious awards commemorating his accomplishments and contributions. These include the Auburn University Director's Senior Research Award, the Auburn University Distinguished Graduate Faculty Lecturer award, the Society of Nematologists' CIBA-GEIGY award, the Organization of Nematologists of Tropical America Rhone-Poulenc award, Fellow of the Society of Nematologists, and Fellow of the American Phytopathological Society. Most recently Dr. Rodriguez-Kabana has been named as a Fulbright Scholar.

**Guidelines for**  
**DOWELANCO AWARDS FOR EXCELLENCE**  
**IN RESEARCH AND EXTENSION**

**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 Extension**

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 Extension

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 Peanut Quality Committee discussed the interests, focus, and direction of the Peanut Quality Committee—or what the committee is about. The purpose of the Peanut Quality Committee is to promote quality improvement in the industry.

The Committee discussed three items of business:

1. Need to prepare additional Quality Methods as originally planned. Dr. Sam Ahmed had much of the material in Florida at the time of his death. The discussion focused on the need for new methods such as hull scrape, alcohol meter, and basic chemistry. The editor of Quality Methods will develop a list of topics and individuals will be solicited to write the new methods.
2. The Committee heard a presentation by Gordon Patterson of Hershey. Hershey is moving forward with quality improvement in all phases of their operation.
3. The Peanut Quality Committee discussed the issue of early maturing varieties. Olin Smith, Dan Gorbet, and Terry Coffelt led the discussion. The focus of the discussion was on whether these are early maturing or simply early yielding varieties and the quality implication of this. This discussion was joined by many participants.

The Peanut Quality Committee recommends that some direction be given to the chair of the Peanut Quality Committee as there is no consistent direction for the Committee.

Respectfully submitted,

Tim Sanders, Chair

## **PROGRAM COMMITTEE REPORT**

The 24th annual meeting of the American Peanut Research and Education Society was held at the Omni International Hotel in Norfolk, Virginia, on July 7-10, 1992. The working committees were chaired by Mrs. Joyce Wright (Spouses Program), Mr. Bill Birdsong and Dr. Scott Wright (Local Arrangements) and Dr. Terry Coffelt (Technical Program). The complete listing of all committee members is included in the program section of these PROCEEDINGS.

A total of 100 papers were presented. These included 67 volunteer papers, 11 poster papers, 6 graduate student papers judged for the Joe Sugg Award, and 2 symposia where 16 presentations were made.

Tremendous industry support was obtained for the 1992 meeting. Five major contributors (American Cyanamid Company, DowElanco, ISK Biotech Corporation, Rhone-Poulenc Ag Company, and Valent USA Corporation) supported four special events. An additional 47 organizations gave financial assistance and nine organizations supplied peanut products for the breaks. A complete listing of these organizations is in the program section of these PROCEEDINGS.

Approximately 545 people registered for the meetings. These included 300 members, 130 spouses and 85 children. The spouses tour included 48 people who visited historic Williamsburg, Virginia, had lunch at the George Washington Inn, and shopped at the famous Williamsburg Pottery Factory. The spouses hospitality suite was maintained from Tuesday noon until Thursday at 5:00 p.m.

A special congratulations to all 1992 APRES meeting committees for a super job.

Respectfully submitted,

**R. Walton Mozingo, Chair**

# 1992 PROGRAM

## BOARD OF DIRECTORS 1991-1992

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## PROGRAM COMMITTEE R. Walton Mozingo, Chairman

<u>Local Arrangements</u>	<u>Technical Program</u>	<u>Spouses' Program</u>
F.S. Wright, Co-Chair	T A. Coffelt, Chair	Joyce Wright, Chair
W.M. Birdsong, Co-Chair	D.A. Herbert	Dale Birdsong
J. Ashley	T.G. Isleib	Shirley Coffelt
R.L. Brandenburg	P.M. Phipps	Claudia Cotton
T.R. Cotton, Jr.	N.L. Powell	Julee Herbert
D.E. Dougherty	H.T. Stalker	Sarah Heuberger
G.W. Harrison	C.W. Swann	Judy Mozingo
G.L. Heuberger	T.B. Whitaker	Janet Phipps
D.M. Porter	J.H. Young	Sylvia Porter
J.J. Riddick		Shirley Riddick
R.C. Schools		Faye Schools
G.A. Sullivan		Sharry Swann
C.W. Swann		Betty West
F.R. Walls, Jr.		
J.H. West		

## PROGRAM HIGHLIGHTS

### Tuesday, July 7

8:30-12:00	Peanut CAC Meeting . . . . .	Brandon Room B
12:00- 8:00	APRES Registration . . . . .	Grand Promenade
1:00- 5:00	Spouses' Registration . . . . .	Riverview Room
	Spouses' Hospitality . . . . .	Riverview Room
1:00- 2:00	New Book Committee . . . . .	Brandon Room B
	Site Selection Committee . . . . .	Montpelier Room
	Fellows Committee . . . . .	Greenway Room
	Coy T. Wilson Award Committee . . . . .	Brandon Room A
2:00- 3:00	Associate Editors, Peanut Science . . . . .	Brandon Room B
	Public Relations Committee . . . . .	Montpelier Room
	Meeting Survey Committee . . . . .	Greenway Room
	Bailey Award Committee . . . . .	Brandon Room A
2:00- 5:00	Peanut Growers Cooperative Marketing Association . . . . .	Eppington Room
3:00- 4:00	Publications and Editorial Committee . . . . .	Brandon Room B
	Nominating Committee . . . . .	Montpelier Room
	Graduate Student Competition Ad-hoc Committee . . . . .	Greenway Room
	Peanut Quality Committee . . . . .	Brandon Room A
4:00- 6:00	Finance Committee . . . . .	Montpelier Room
	Peanut Systems Workshop . . . . .	Greenway Room
7:00-11:00	Board of Directors . . . . .	Eppington Room
8:00-10:00	ICE CREAM SOCIAL - Rhône-Poulenc . . . . .	Omni Ballroom

### Wednesday, July 8

8:00- 4:00	APRES Registration . . . . .	Grand Promenade
	Spouses' Registration . . . . .	Riverview Room
	Spouses' Hospitality . . . . .	Riverview Room
8:00- 5:00	Industry Exhibits . . . . .	Stratford Hall
8:15- 9:30	General Session . . . . .	York Hall
9:30- 4:30	Poster Session I . . . . .	Stratford Hall
10:00-11:45	Breeding and Biotechnology . . . . .	York Hall
10:00-11:30	Production and Extension Technology . . . . .	Claremont Room
10:00-11:00	Entomology . . . . .	Brandon Room
1:00- 3:00	Plant Pathology I . . . . .	York Hall
1:30- 3:00	Weed Science I . . . . .	Claremont Room
3:30- 5:00	Plant Pathology II . . . . .	York Hall
3:30- 4:45	Weed Science II . . . . .	Claremont Room
6:45-10:00	SPIRIT OF NORFOLK CRUISE - ISK Biotech . . . . .	Otter Berth (on Waterfront)

**Thursday, July 9**

8:00- 4:00	Spouses' Hospitality .....	Riverview Room
8:00- 3:00	Poster Session II .....	Stratford Hall
	Industry Exhibits .....	Stratford Hall
8:00-10:00	Breeding for Resistance .....	York Hall
8:00-10:00	Curing, Processing, and Utilization .....	Claremont Room
10:30-12:00	Graduate Student Papers .....	York Hall
10:30-11:30	Economics .....	Claremont Room
1:00- 2:30	Production and Seed Technology .....	York Hall
1:00- 3:30	Economic Symposium .....	Brandon Room
1:00- 4:00	Fungicide Resistance Symposium .....	Claremont Room
6:30- 9:00	<b>INTERNATIONAL DINNER -</b> Valent, DowElanco, American Cyanamid .....	Omni Ballroom

**Friday, July 10**

7:30- 8:30	<b>AWARDS BREAKFAST -</b> American Cyanamid .....	Omni Ballroom
8:30-10:00	APRES Awards Ceremony and Business Meeting .....	Omni Ballroom

## **GENERAL SESSION**

### **Wednesday, July 8**

8:15- 9:30 a.m. ....	York Hall
8:15      Call to Order .....	<b>APRES President Charles Simpson</b>
8:20      Invocation and Welcome .....	<b>Senator Mark L. Earley</b> State Senator of the 14 <sup>th</sup> District, Commonwealth of Virginia
8:30      Overview of the Virginia Agricultural Experiment Station .....	<b>Dr. Gerald "Skip" Jubb</b> Assistant Director, Virginia Agric Experiment Stations
8:45      Introduction of Guest Speaker .....	<b>Joe Barlow</b>
8:50      Peanuts, Agriculture, and the Consumer ...	<b>Dr. Clinton Turner</b> Commissioner, Virginia Department of Agriculture and Consumer Services
9:15      Announcements:	
Technical Program .....	<b>Terry Coffelt</b>
Local Arrangements .....	<b>Bill Birdsong and Scott Wright</b>

## **SPECIAL EVENTS**

### **Tuesday, July 7**

8:00-10:00 p.m. ICE CREAM SOCIAL .....	Omni Ballroom Rhône-Poulenc
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### **Wednesday, July 8**

6:45-10:00 p.m. SPIRIT OF NORFOLK CRUISE .....	Otter Berth ISK Biotech (on Waterfront)
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### **Thursday, July 9**

6:30- 9:00 p.m. INTERNATIONAL DINNER .....	Omni Ballroom Valent, DowElanco, American Cyanamid
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## TECHNICAL SESSIONS

Wednesday, July 8

**Poster Session I** ..... **Stratford Hall**  
9:30 - 4:30 (authors present 3:30 - 4:30 p.m.)

*Coordinator: T. B. Whitaker, USDA-ARS, Raleigh, NC*

P1 Trivial Movement and Dispersal Patterns of the Tobacco Thrips.  
**A.J. Birdwhistell\*, N.D. Stone, and D.A. Herbert, Jr.**, Dept. of Entomology, Virginia Tech, Blacksburg, VA and Tidewater Agric. Exp. Stn., Suffolk, VA.

P2 Contamination of Thrips by Tomato Spotted Wilt Virus as Determined by ELISA. **K.K. Kresta\*, F.L. Mitchell, J.W. Smith, Jr., and V.K. Lowry**, Texas Agric. Exp. Stn., Stephenville, TX and Dept. of Entomology, Texas A&M Univ., College Station, TX.

P3 Population Dynamics of Thrips Vectoring Tomato Spotted Wilt Virus in Texas Peanut Fields. **F.L. Mitchell\*, J.W. Smith, Jr., and H.B. Highland**, Texas Agric. Exp. Stn., Stephenville, TX and Dept. of Entomology, Texas A&M Univ., College Station, TX.

P4 Spotted Wilt Disease (TSWV) Incidence in Peanut Following Various Insecticide Application Regimes for Thrips Vector Control. **J.W. Todd\*, J.R. Chamberlin, A.K. Culbreath, and J.W. Demski**, Dept. Entomology and Dept. Plant Pathology, University of Georgia, Tifton and Griffin, GA.

P5 Performance of Peanuts as Influenced by Seeding Rate and Planter. **L. Wells\*, J.R. Weeks, and G.R. Wehtje**, Wiregrass Exp. Stn. and Dept. Agronomy and Soils, Auburn University, Auburn, AL.

P6 An Overview of the Peanut (*Arachis hypogaea* L.) Crop in Mexico. **S. Sanchez-Dominguez\***, Dept. de Fitotecnia, Chapingo, Mexico.

**Breeding and Biotechnology ..... York Hall**

*Moderator: T. G. Isleib, North Carolina State University, Raleigh, NC*

10:00 (7) Transformation of Peanuts (*Arachis* spp.) with a Peanut Stripe Virus Coat Protein (PStV-CP) Gene via Particle Bombardment and Polyethylene Glycol (PEG) Treatment of Protoplasts. **Z.J. Li, J.W. Demski\*, R.L. Jarret, R.N. Pittman, and K.B. Dunbar**, Dept. of Plant Pathology, University of Georgia and USDA-ARS, Regional Plant Introduction Station, Griffin, GA.

10:15 (8) Plant Regeneration from Short- and Long-term Embryogenic Cultures of *Arachis hypogaea*. **P. Ozias-Akins\* and W.F. Anderson**, Dept. of Horticulture and USDA-ARS, University of Georgia, Coastal Plain Exp. Stn., Tifton, GA.

10:30 (9) Development of *in vitro* Regeneration Approaches for Valencia-type Peanut (*Arachis hypogaea* L.) Suitable for Agrobacterium-mediated Transformation. **M. Cheng\*, D.C.H. Hsi, and G.C. Phillips**, Dept. of Agronomy and Dept. of Horticulture, New Mexico State University and Agric. Sci. Center, Las Cruces and Los Lunas, NM.

10:45 (10) Culture of Peanut Zygotic Embryos for Transformation via Microprojectile Bombardment. **J.A. Schnall and A.K. Weissinger\***, Dept. of Crop Science, North Carolina State University, Raleigh, NC.

11:00 (11) Response of Peanut Cultivars to Different Leafspot Spray Initiation Dates. **D.W. Gorbet\*, F.M. Shokes, and D.A. Knauf**, North Florida Research and Education Centers and Agronomy Department, University of Florida, Marianna, Quincy, and Gainesville, FL.

11:15 (12) New High-yielding Israeli Peanut (*Arachis hypogaea* L.) Cultivars. **I.S. Wallerstein\* and S. Kahn**, Dept. of Industrial Crops, ARO-Volcani Center, Bet Dagan, Israel.

11:30 (13) Germline Transformation of Peanut (*Arachis hypogaea* L.) Utilizing Electric Discharge Particle Acceleration (ACCELL™) Technology. **G.S. Brar\*, B.A. Cohen, and C.L. Vick**, Agracetus, Inc., Middleton, WI.

11:45 Discussion

**Production and Extension Technology . . . . . Claremont Room**

*Moderator: D. M. Porter, USDA-ARS, Suffolk, VA*

10:00 (14) The Virginia Pesticide Use Survey for Peanut Production in 1990. **P.M. Phipps\***, **D.A. Herbert, Jr.**, and **C.W. Swann**, Tidewater Agric. Exp. Stn., Virginia Tech, Suffolk, VA.

10:15 (15) Spray-Tank-Mix Compatibility of Manganese, Boron, and Fungicide I: Wet Chemistry. **N.L. Powell\***, Tidewater Agric. Exp. Stn., Virginia Tech, Suffolk, VA.

10:30 (16) Response of Virginia-type Peanut Cultivars to Chlorimuron. **C.W. Swann\***, Tidewater Agric. Exp. Stn., Virginia Tech, Suffolk, VA.

10:45 (17) Comparison of Fall and Pegging Zone Soil Test Results in Georgia. **S.C. Hodges\*** and **G.J. Gascho**, Ext. Agronomy Dept., University of Georgia, Rural Dev. Ctr., Tifton, GA.

11:00 (18) Phosphorus and Potassium Fertilization on Peanuts. **D.L. Hartzog\*** and **J.F. Adams**, Dept. of Agronomy, Auburn University, Headland, AL.

11:15 Discussion

**Entomology . . . . . Brandon Room**

*Moderator: D. A. Herbert, Jr., Virginia Tech, Suffolk, VA*

10:00 (20) Thrips Overwintering in Relation to Peanut Emergence in North Carolina. **R.L. Brandenburg** and **J.D. Barbour\***, Dept. of Entomology, North Carolina State University, Raleigh, NC.

10:15 (21) Tobacco Thrips Control Alternatives and Effects on Peanut Maturity and Yield. **D.A. Herbert, Jr.\*** and **C.W. Swann**, Tidewater Agric. Exp. Stn., Virginia Tech, Suffolk, VA.

10:30 (22) Management of Thrips on Peanuts in Alabama Integrating Cultural and Insecticidal Control Practices. **J.R. Weeks\*** and **A.K. Hagan**, Dept. of Entomology and Dept. of Plant Pathology, Auburn University, Auburn, AL.

10:45 (23) Wireworms as Pests of Peanuts in Georgia. **S.L. Brown\***, Ext. Entomology Dept., University of Georgia, Rural Dev. Ctr., Tifton, GA.

11:00 Discussion

**Plant Pathology I ..... York Hall**

*Moderator: F. D. Smith, USDA-ARS, Southeastern Forest Experiment Station, Otto, NC*

1:00 (24) Detection of Peanut Stripe Virus in Peanut Seed Using the Polymerase Chain Reaction. **J.L. Sherwood\***, **R.E. Pennington**, **B.G. Cassidy**, and **R.S. Nelson**, Dept. Plant Pathology, Oklahoma State University, Stillwater, OK and The Samuel Roberts Nobel Foundation, Plant Biology Division, Ardmore, OK.

1:15 (25) Comparison of Hidden and Apparent Spotted Wilt Epidemics in Peanut. **A.K. Culbreath\***, **J.W. Todd**, and **J.W. Demski**, Dept. of Plant Pathology and Dept. of Entomology, University of Georgia, Tifton and Griffin, GA.

1:30 (26) Variability in the Morphology and Germinability of *Cercospora arachidicola* Isolates. **P.V. Subba Rao**, **J.L. Renard**, **F. Waliyar**, **P. Subrahmanyam**, **D.H. Smith**, **D. McDonald** and **A. Mayeux\***, ICRISAT, Andhra Pradesh, India, Niamey, Republic de Niger, Lilongwe, Malawi, and IRHO-CIRAD, Montpellier and Paris, France.

1:45 (27) Biological Control of Peanut Leafspot with a Mycoparasite. **D.M. Porter\*** and **R.A. Taber**, USDA-ARS, Suffolk, VA and Consultant, Lavale, MD.

2:00 (28) Hairy Indigo for the Management of *Meloidogyne arenaria* in Peanut. **D.G. Robertson**, **R. Rodriguez-Kabana\***, and **L. Wells**, Dept. Plant Pathology, Auburn University, Auburn, AL.

2:15 (29) Implications of Peanut Seed Infection with *Sclerotinia minor* on the Epidemiology of Sclerotinia Blight. **H.A. Melouk\***, **K.E. Jackson**, and **J.D. Damicon**, USDA-ARS and Dept. Plant Pathology, Oklahoma State University, Stillwater, OK.

2:30 (30) Modification of Canopy Microclimate by Pruning to Control Sclerotinia Blight of Peanut. **P.D. Brune\*** and **J.E. Bailey**, Dept. of Plant Pathology, North Carolina State University, Raleigh, NC.

2:45 (31) Development of Strategies for Integrated Management of Sclerotinia Blight of Peanut in Oklahoma. **K.E. Jackson\***, **H.A. Melouk**, **J.D. Damicon**, and **J.R. Sholar**, Dept. Plant Pathology, USDA-ARS, and Dept. Agronomy, Oklahoma State University, Stillwater, OK.

3:00 BREAK

**Weed Science I . . . . . Claremont Room**

*Moderator: W. C. Johnson, III, USDA-ARS, Tifton, GA*

1:30 (32) Pursuit Tank Mixtures for Weed Control in Georgia Peanuts. **S. Jones, J.W. Wilcut, J.S. Richburg, III\***, and **G. Wiley**, Dept. of Agronomy, Coastal Plain Exp. Stn., University of Georgia and American Cyanamid Company, Tifton, GA.

1:45 (33) Pursuit and Cadre Mixtures for Weed Control in Georgia Peanuts. **J.W. Wilcut\*** and **J.S. Richburg, III**, Dept. of Agronomy, University of Georgia, Coastal Plain Exp. Stn., Tifton, GA.

2:00 (34) Cadre Systems for Weed Control in Georgia and North Carolina Peanuts. **T.L. Grey\***, **J.W. Wilcut, G.R. Wehtje, F.R. Walls, Jr., and G. Wiley**, Dept. of Agronomy and Soils, Auburn University, Auburn, AL, Dept. of Agronomy, University of Georgia, Coastal Plain Exp. Stn., Tifton, GA, and American Cyanamid Company, Goldsboro, NC and Tifton, GA.

2:15 (35) Influence of Pursuit and Cadre on Nutsedge Development. **D.T. Gooden\*** and **M.B. Wixson**, Clemson University, Pee Dee Research and Education Center, Florence, SC and American Cyanamid Company, Columbia, SC.

2:30 (36) Weed Control in Texas Peanuts with V-53482. **W.J. Grichar\*** and **P.S. Boyd-Robertson**, Texas Agric. Exp. Stn., Yoakum, TX.

2:45 (37) DPX PE350 (STAPLE) and F6285 for Weed Control in Georgia Peanuts. **J.S. Richburg, III\*** and **J.W. Wilcut**, Dept. of Agronomy, University of Georgia, Coastal Plain Exp. Stn., Tifton, GA.

3:00                    **BREAK**

**Plant Pathology II . . . . . York Hall**

*Moderator: Marvin Beute, North Carolina State University, Raleigh, NC*

3:30 (38) Weather Monitoring Device for the Development and Deployment of Disease Advisory Models. **J.E. Bailey\***, Dept. Plant Pathology, North Carolina State University, Raleigh, NC.

3:45 (39) On-Farm Evaluation of Folicur 3.6F for Peanut Disease Control. **J.W. Bell\***, **K.A. Noegel**, and **R.D. Rudolph**, Miles, Inc., Kansas City, MO.

4:00 (40) Effects of Irrigation on Yield and *Rhizoctonia* Limb Rot in Southern Runner Peanut at Two Harvest Dates. **T.B. Brenneman\***, Dept. Plant Pathology, University of Georgia, Coastal Plain Exp. Stn., Tifton, GA.

4:15 (41) Effectiveness of Four New Experimental Fungicides for Control of Southern Blight on Peanut in Texas. **T.A. Lee, Jr.\***, Texas Agric. Exp. Stn., Stephenville, TX.

4:30 (42) Disease Control and Yield Response of Peanut Treated with Moncut as Influenced by Crop Rotation. **A.K. Hagan\*, K.L. Bowen, and J.R. Weeks**, Dept. Plant Pathology, Auburn University, Auburn, AL.

4:45 (43) Survival of *Rhizoctonia solani* AG-4 in Residual Peanut Shells in Soil. **R.E. Baird, D.K. Bell\*, B.G. Mullinix, Jr., and A.K. Culbreath**, Southwest Purdue Agric. Program, Vincennes, IN and Dept. Plant Pathology, University of Georgia, Tifton, GA.

**Weed Science II** ..... **Claremont Room**

*Moderator: D. T. Gooden, Clemson University, Florence, SC*

3:30 (44) Interactions of Classic (Chlorimuron) with Other Pesticide Used in Peanuts. **G.R. Wehtje\* and J.W. Wilcut**, Dept. Agronomy and Soils, Auburn University, Auburn, AL and University of Georgia, Coastal Plain Exp. Stn., Tifton, GA.

3:45 (45) FLAIR: A Potential New Cracking-Time Peanut Herbicide. **D.L. Colvin\* and W.C. Johnson, III**, Agronomy Dept., University of Florida, Gainesville, FL and USDA-ARS, Coastal Plain Exp. Stn., Tifton, GA.

4:00 (46) Effects of Endothall Formulation, Rate, and Time of Application on Peanut. **W.C. Johnson, III\* and D.L. Colvin**, USDA-ARS, Coastal Plain Exp. Stn., Tifton, GA and Dept. of Agronomy, University of Florida, Gainesville, FL.

4:15 (47) Interactions of Butyrac with Postemergence Graminicicides. **A.C. York\*, J.W. Wilcut, and W.J. Grichar**, Crop Science Dept., North Carolina State Univ., Raleigh, NC, Dept. of Agronomy, University of Georgia, Coastal Plain Exp. Stn., Tifton, GA, and Texas Agric. Station, P.O. Box 755, Texas A&M Univ., Yoakum, TX.

4:30 (48) Modeling Peanut Yield Losses Due to Weeds. **J.C. Barbour\*** and **D.C. Bridges**, Agronomy Dept., University of Georgia, Georgia Exp. Stn., Griffin, GA.

4:45 Discussion

**Thursday, July 9**

**Poster Session II** ..... **Stratford Hall**  
8:00 - 3:00 (authors present 2:00 - 3:00 p.m.)

*Coordinator: T. B. Whitaker, USDA-ARS, Raleigh, NC*

P49 A Blot Assay for Detection of Peanut Arginase. **S.Y. Chung\*** and **Y.M. Bordelon**, USDA, ARS, SRRC, New Orleans, LA.

P50 Viscosity Changes in the Hydration of Peanut Butter. **T.O.M. Nakayama\***, Dept. Food Sci. and Tech., University of Georgia, Georgia Exp. Stn., Griffin, GA.

P51 Phytoalexin Induction in Peanut Leaves. **S.M. Basha\***, Plant Biotechnology Lab., Florida A&M University, Tallahassee, FL.

P52 Factors Affecting Adventitious Shoot Formation from Mature Leaf Explants of *Arachis villosumicarpa* Hoehne. **K.B. Dunbar\*** and **R.N. Pittman**, USDA, ARS, SRPIS, Griffin, GA.

P53 Spray-Tank-Mix Compatibility of Manganese, Boron, and Fungicide II: Visual Demonstration. **D.C. Martens** and **N.L. Powell\***, Virginia Tech, Blacksburg and Suffolk, VA.

**Breeding for Resistance** ..... **York Hall**

*Moderator: O. D. Smith, Texas A&M University, College Station, TX*

8:00 (54) Evaluation of Advanced Georgia Breeding Lines for White Mold and Rhizoctonia Limb Rot Resistance. **W.D. Branch\*** and **T.B. Brenneman**, Dept. Agronomy and Dept. Plant Pathology, University of Georgia, Coastal Plain Exp. Stn., Tifton, GA.

8:15 (55) Screening Peanut Genotypes for Resistance to Stem Rot Caused by *Sclerotium rolfsii*. **F.M. Shokes\***, **D.W. Gorbet**, **Z. Weber** and **D.A. Knauf**, North Florida Res. and Educ. Center, Quincy and Marianna, FL and Poznan Agric. University, Poznan, Poland.

8:30 (56) Improvements in Screening Techniques for Resistance to Preharvest Aflatoxin Contamination and Some Potential Sources of Resistance. **C.C. Holbrook\***, **D.M. Wilson**, **W.F. Anderson**, **M.E. Will**, and **M.E. Matherson**, USDA-ARS and University of Georgia, Tifton, GA and University of Arizona, Somerton, AZ.

8:45 (57) Reaction of *Arachis* interspecific hybrid TP-135-4 to the northern root-knot nematode *Meloidogyne hapla*. **J.L. Starr\***, **C.E. Simpson**, and **C.S. Katsar**, Dept. Plant Pathology and Microbiology and Texas Agric. Exp. Stn., College Station and Stephenville, TX.

9:00 (58) Leafspot Resistance of Genotypes Derived from Crosses of Wild *Arachis* spp. and Virginia Peanut. **B.B. Shew\***, **H.T. Stalker**, and **M.K. Beute**, Dept. Crop Science and Dept. Plant Pathology, North Carolina State University, Raleigh, NC.

9:15 (59) Late Leafspot, TSWV, and Growth Traits Within Peanut Core Collection. **W.F. Anderson\*** and **C.C. Holbrook**, USDA-ARS, Tifton, GA.

9:30 (60) Comparison of Components of Resistance to Late Leafspot in Peanut Measured in Different Environments. **A.J. Chiyembekeza**, **D.A. Knauf\***, and **D.W. Gorbet**, Dept. of Agronomy, University of Florida and North Florida Res. and Educ. Center, Gainesville and Marianna, FL.

9:45 (61) The Interaction Between Maturity and Leafspot Resistance in Peanut. **B.E. Friesen\***, **D.A. Knauf**, and **D.W. Gorbet**, Dept. of Agronomy, University of Florida and North Florida Res. and Educ. Center, Gainesville and Marianna, FL.

10:00 BREAK

**Curing, Processing, and Utilization . . . . . Claremont Room**

*Moderator: J. H. Young, North Carolina State University, Raleigh, NC*

8:00 (62) Antioxidative Activity in Oils Prepared from Peanut Kernels Subjected to Various Treatments and Roasting. **R.Y.-Y. Chiou\***, Dept. of Food Industry, National Chiayi Inst. Agric., Chiayi, Taiwan, Republic of China.

8:15 (63) Oil and Flavor Quality of TSWV Infected Seed. **T.H. Sanders\***, **A.M. Schubert**, and **K.L. Bett**, USDA-ARS, Raleigh, NC and New Orleans, LA and Texas Agric. Exp. Stn., Yoakum, TX.

8:30 (64) Response Surface Modeling of Extrusion Processed Full-fat Peanut and Sorghum Multi-mix Blend. **J.C. Anderson\***, **X. Yan**, and **B. Singh**, Dept. Food Science and Animal Industries, Alabama A&M University, Normal, AL.

8:45 (65) Relationship of Kernel Moisture Content to Aflatoxin Contamination in Florunner and Southern Runner Peanuts. **J.W. Dorner\***, **R.J. Cole**, and **P.D. Blankenship**, USDA-ARS, Dawson, GA.

9:00 (66) A Sensor to Measure Peanut Moisture Content While Curing. **C.L. Butts\***, USDA-ARS, Dawson, GA.

9:15 (67) Peanut Quality Improvement Through Controlled Curing. **K.D. Baker\***, **F.S. Wright**, and **J.S. Cundiff**, Agricultural Engineering Dept., Virginia Tech, Blacksburg, VA and USDA-ARS, Suffolk, VA.

9:30 (68) Development of an Expert System for Curing Peanuts. **J.M. Troeger\*** and **C.L. Butts**, USDA-ARS, Dawson, GA.

9:45 (69) Expert Systems for the Peanut Industry. **J.I. Davidson\***, **M.C. Lamb**, **C.L. Butts**, **M. Singletary**, **J.M. Troeger**, **E.J. Williams**, **J.S. Smith**, and **P.D. Blankenship**, USDA-ARS, Dawson, GA and Consultant, Albany, GA.

10:00 BREAK

**Graduate Student Papers .....** **York Hall**

*Moderator: H. T. Stalker, North Carolina State University, Raleigh, NC*

10:30 (70) Radiation Use Efficiency of Peanut in Southern Ontario. **M.J. Bell\***, **R.C. Roy**, and **T.E. Michaels**, Dept. Crop Science, University of Guelph and Delhi Res. Stn., Guelph and Delhi, Ontario, Canada.

10:45 (71) Evaluation of Peanut Embryonic Leaflets as Recipient Tissue for Biostatic DNA Delivery. **T.E. Clemente\***, **J.A. Schnall**, **M.K. Beute**, and **A.K. Weissinger**, Dept. Plant Pathology and Dept. Crop Science, North Carolina State University, Raleigh, NC.

11:00 (72) Peanut Cultivar Tolerance Differences to Nicosulfuron Applications. **T.A. Littlefield\***, **D.L. Colvin**, and **B.J. Brecke**, Agronomy Dept., University of Florida, Gainesville, FL.

11:15 (73) Comparison of Field Resistance and the Effect of Peanut Growth Habit with Expression of Metabolic and Physiological Resistance to *Sclerotinia minor*. **G.F. Chappell\*** and **M.K. Beute**, Dept. Crop Science and Dept. Plant Pathology, North Carolina State University, Raleigh, NC.

11:30 (74) On-farm Evaluation of AU-Pnuts; an Expert System for Control of Leaf Spot Diseases of Peanut. **P.M. Brannen\*** and **P.A. Backman**, Dept. Plant Pathology, Auburn University, Auburn, AL.

11:45 (75) Influence of Sulfur and Seaweed Extract on Peanut Yield. **N.V. Nkongolo\*** and **P.E. Igboekwe**. Dept. Agriculture, Alcorn State University, Lorman, MS.

**Economics** ..... **Claremont Room**

*Moderator: G. A. Sullivan, North Carolina State University, Raleigh, NC*

10:30 (76) PNTPLN, An Expert Systems Whole-farm Planning Model Designed to Optimize Peanut-based Rotation Decisions. **M.C. Lamb\***, **J.I. Davidson**, and **C.L. Butts**, USDA-ARS, Dawson, GA.

10:45 (77) Structural Trends in Southwest Peanut Production. **F.D. Mills, Jr.\***, Dept. of Agriculture and Environment, Abilene Christian University, Abilene, TX.

11:00 (78) The National Peanut Poundage Quota: Analysis of Some Alternative Approaches. **R.H. Miller\***, USDA-ASCS, Washington, D.C.

11:15 (79) An Examination of Federal Crop Insurance as a Risk Management Tool in Southeast Peanut Production. **W.D. Shurley\***, Dept. Agricultural and Applied Economics, University of Georgia, Rural Dev. Ctr., Tifton, GA.

11:30 Discussion

**Production and Seed Technology** ..... **York Hall**

*Moderator: N. L. Powell, Virginia Tech, Suffolk, VA*

1:00 (80) Row Pattern Demonstrations in Georgia, **J.P. Beasley, Jr.\*** and **J.A. Baldwin**, Agronomy Dept., University of Georgia, Rural Dev. Ctr., Tifton, GA.

1:15 (81) Diamond Shaped Seeding of Six Peanut Cultivars. **R.W. Mozingo\*** and **F.S. Wright**, Tidewater Agric. Exp. Stn., Virginia Tech and USDA-ARS, Suffolk, VA.

1:30 (82) Yield and Grade of Florunner Peanut Following Two Years of 'Tifton 9' Bahiagrass, Corn, or Peanuts. **J.A. Baldwin\***, Agronomy Dept., University of Georgia, Rural Dev. Ctr., Tifton, GA.

1:45 (83) An Index to Assess Quality of Peanut Seeds. **D.L. Ketrin\***, USDA-ARS, Stillwater, OK.

2:00 (84) Peanut Germination Related to Potassium, Calcium, and Magnesium in Seed, Hulls, and Soils. **G.J. Gascho\***, **W.R. Guerke**, **M.B. Parker**, and **T.P. Gaines**, Dept. of Agronomy, University of Georgia and Georgia Dept. of Agriculture, Seed Laboratory, Tifton, GA.

2:15 (85) Sample Mixing in a Full-size Peanut Combine. **B.J. Brecke\***, University of Florida, Agric. Res. and Educ. Center, Jay, FL.

2:30 Discussion

**Fungicide Resistance Symposium . . . . . Claremont Room**

*Moderator: J. Bailey, North Carolina State University, Raleigh, NC*

1:00 (86) Fungicide Resistance in Peanut Production. **T.B. Brenneman\*** and **A.K. Culbreath**, Dept. Plant Pathology, University of Georgia, Coastal Plain Exp. Stn., Tifton, GA.

1:15 (87) Peanut Disease Control Strategies Utilizing Sterol Biosynthesis Inhibitors in Texas. **T.A. Lee, Jr.\***, Texas Agric. Exp. Stn., Texas A&M University, Stephenville, TX.

1:30 (88) Integrating Ergosterol Biosynthesis Inhibiting Fungicides into Strategies for Peanut Disease Control in Virginia. **P.M. Phipps\***, Tidewater Agric. Exp. Stn., Virginia Tech, Suffolk, VA.

1:45 (89) Application Strategies for Minimizing Resistance Build-up to Sterol Inhibitor Fungicides in Southeastern Peanuts. **P.A. Backman\***, Dept. Plant Pathology, Auburn University, Auburn, AL.

2:00 (90) Tank Mix Applications of Cyproconazole with Chlorothalonil for Control of Peanut Leafspot. **A.K. Culbreath\***, **T.B. Brenneman**, and **F.M. Shokes**, Dept. Plant Pathology, University of Georgia, Tifton, GA and University of Florida, Quincy, FL.

2:15 (91) Risk of Resistance to Sterol Biosynthesis Inhibitors. **W. Kölle\***, Cornell University, Dept. of Plant Pathology, New York State Agric. Exp. Stn., Geneva, NY.

2:45 (92) Better Management of Fungicide Resistance. **J. French\***, ISK-Biotech, Mentor, OH.

3:00 (93) Fungicide Resistance Research within Ciba-Geigy—A Major Part of Product Stewardship. **G.R. Watson\***, Ciba-Geigy, Greensboro, NC.

3:15 (94) Application Strategies for Use of Tebuconazole on Peanut. **K.A. Noegel\***, Miles, Inc., Kansas City, MO.

3:30 Discussion

**Economic Forces Impacting the U.S. Peanut Industry Symposium ..... Brandon Room**

*Moderators: M. C. Lamb and W. D. Shurley, USDA-ARS and University of Georgia, Dawson and Tifton, GA*

1:00 (95) U.S. and World Peanut Market Analysis. **S.M. Fletcher\***, Dept. Agricultural and Applied Economics, University of Georgia, Georgia Exp. Stn., Griffin, GA.

1:20 (96) U.S. Peanut Trade Issues and GATT Update. **T. Kay\***, Kay Associates, Washington, D.C.

1:40 (97) U.S. Peanut Policy and Trade Issues: Impact on Peanut Farmers. **D.H. Carley\***, Dept. Agricultural and Applied Economics, University of Georgia, Georgia Exp. Stn., Griffin, GA.

2:00 (98) Regional Peanut Production Costs, Production History, and Market Structure: Profitability and Advantage. **M.C. Lamb\***, **W.D. Shurley**, **F.D. Mills, Jr.**, and **B. Brown**, USDA-ARS and Dept. Agricultural and Applied Economics, University of Georgia, Dawson and Tifton, GA, Dept. Agriculture and Environment, Abilene Christian University, Abilene, TX, and Dept. Agricultural and Resource Economics, North Carolina State University, Raleigh, NC.

2:20 (99) Future Issues and Potential Changes in Domestic Peanut Policy. **D.A. Sumner\***, USDA, Washington, D.C.

2:40 (100) A Manufacturer's Perspective on GATT. **C.C. Barnett\***, Algood Food Company, Louisville, KY.

2:55 (101) A Grower's Perspective on GATT. **J.L. Adams\***, Grower, Camilla, GA.

3:10 Discussion

### **Contributors to the 1992 APRES Meetings**

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

#### **Special Activities**

American Cyanamid Company  
Dow-Elanco  
ISK Biotech Corporation  
Rhône-Poulenc Ag Company  
Valent U.S.A. Corporation

#### **Regular Activities**

Agrotec, Inc.  
Alliance Fertilizer Crop./Plant Food Products  
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BASF Corporation  
Birdsong Peanuts  
Bush Hog Implement Division  
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The Nestle Company  
North Carolina Peanut Growers Association  
Planters Lifesavers Company  
Virginia Peanut Growers Association

## **SITE SELECTION COMMITTEE REPORT**

The schedule for the annual meeting of APRES is:

- July 13-16, 1993 - Huntsville, Alabama - Huntsville Hilton Hotel  
(room rates are \$65.00 single, double, triple, quad)
- July 12-15, 1994 - Tulsa, Oklahoma - Sheraton Kensington Hotel  
(room rates are \$55.00 single, double; \$65.00 triple, quad)
- July 1995 - Charlotte, North Carolina. Date and hotel to be announced.

The report was accepted.

Respectfully submitted,

Scott Wright, Chair

## **AMERICAN SOCIETY OF AGRONOMY LIAISON REPRESENTATIVE REPORT**

The 83rd annual meeting of the American Society of Agronomy, Crop Science Society of America, and the Soil Science Society of America was held October 27-November 1, 1991, in Denver, Colorado. The theme for this year's meeting was "Global Agronomic Opportunities". Approximately 2575 papers were presented in 279 sessions, and slightly over half of these were given as posters. Members of APRES were authors or co-authors on some 12 total presentations involving various aspects of peanut research.

New Officers of the Tri-Societies (ASA, CSSA, and SSSA) are as follows: D.N. Duvick, president and D.R. Keeney, president-elect of ASA; G.H. Heichel, president and C.W. Stuber, president-elect of CSSA; and W.S. McFee, president and D.W. Nelson, president-elect of SSSA. Minneapolis, Minnesota, will host the 1992 meetings of these three sister societies from November 1-6.

Respectfully submitted,

William D. Branch  
ASA/APRES Representative

## CAST REPORT

The Council for Agricultural Science and Technology (CAST) is a consortium of 29 scientific societies in food and agriculture which compiles and publishes reports on public issues related to food, agriculture, the environment, and related issues. CAST has over 3500 individual and numerous corporate members. Scientists, most of whom are members of the various member professional societies, volunteer their time and expertise to develop CAST reports and articles for its science magazine and NewsCAST.

The Board of Directors of CAST met in Kansas City on August 24-26, 1991, and in Washington, DC, on March 7-9, 1992. Numerous topics were discussed and reported on by the various committees. At the Washington, DC, meeting, Dr. John Pesek (Distinguished Professor and Agronomist from Iowa State University) was presented CAST's Charles A. Black Award for outstanding contributions toward public understanding of the science of food and agriculture. Dr. Gale Buchanan took over as President for CAST (1992-93) at the close of the Washington meeting.

Dr. Stanley P. Wilson has retired as Executive Vice-President of CAST, effective June 30, 1992. Dr. Wilson is former vice-president for agriculture, home economics, and veterinary medicine at Auburn University and has served as CAST executive Vice-President since June 1, 1990. Dr. Wilson has provided a high degree of professionalism to CAST during his tenure as Executive Vice-President and CAST has made great progress in reaching its goals during his tenure.

Guidelines and criteria for CAST consideration for reports are as follows:

1. The topic should be of broad national concern, and there should be a compelling need for the information. Topics on which legislative or regulatory decisions are pending, are likely to be made in the near future, or are perceived as being seriously needed, should be given highest priority. Regional and state issues may be considered if they have evident potential for national concern.
2. The topic should benefit from a multidisciplinary approach and should relate to one or more of the scientific disciplines represented in CAST member societies. Topics that fall within the boundaries of a single member society are not normally addressed by CAST.
3. With topics dealing with products, the perspective should be broad (e.g., explaining the impacts of agricultural mechanization rather than building a case of public funding of research on agricultural mechanization).

Recently published reports by CAST include:

- 1) Preparing U.S. Agriculture for Global Climatic Change - Rpt. 119, June 1992.
- 2) Food Fats and Health - Task Force Rpt. 118, Dec 1991.
- 3) Herbicide-resistant Crops - Comments from CAST, May 1991.
- 4) Pesticides - Minor Uses/Major Uses - Comments from CAST 1992-2, June 1992.

Reports from CAST that will be published in the near future include the following:

- 1) Risk/Benefit Assessment of Antibiotics Use in Animals
- 2) Risks Associated with Foodborne Pathogens
- 3) Waste Management and Utilization in Food Production and Processing
- 4) Quality of U.S. Agricultural Products
- 5) Water Quality: Agriculture's Role
- 6) The Impact of Alternative Agricultural Practices on the Environment
- 7) Relationship of Value-Added Activities on Agricultural Products and the U.S. Trade Balance
- 8) Animal Well-Being
- 9) Public Land Grazing: Social, Economic, and Regulatory Issues

Respectfully submitted,

D.W. Gorbet

## NEW BOOK AD-HOC COMMITTEE REPORT

Present at the meeting on July 10, 1992, were members Thomas B. Whitaker, Chair; T.A. Coffelt, M.K. Beute, G.A. Buchanan, D.L. Hartzog, H.A. Melouk, C.K. Kvien (ex-officio); T.H. Sanders (ex-officio); and H.E. Pattee (ex-officio). Others present were A.E. Colburn, A.M. Schubert (ex-officio), and C.C. Holbrook (ex-officio).

Working under the guidelines laid down by the Board of Directors in July 1991, the Ad-Hoc Committee developed the following recommendations concerning a new peanut book:

1. Editors - Harold Pattee and Thomas Stalker
2. Title - Advances in Peanut Science
3. Length - not to exceed 525 pages
4. Time Table - distribution by March 1995

A list of suggested topic areas for chapters along with suggested senior authors was developed.

Several publishing companies were contacted for publication and cost information. A publishing company needs to be identified that can receive chapter text on a computer diskette and keep production costs below \$16.00 per book.

Respectfully submitted,

Thomas B. Whitaker, Chair

## NATIONAL PEANUT COUNCIL RESEARCH AND EDUCATION AWARD ADVISORY COMMITTEE REPORT

The 1992 National Peanut Council Research and Education Award Committee had seven entries to consider this year for the National Peanut Council Research and Education Award. Dr. Johnny Wynne was declared winner and the award was presented by the National Peanut Council at the annual meeting in April.

Respectfully submitted,

Leland Tripp, Chair

**REPORT OF LIAISON REPRESENTATIVE  
FROM THE SOUTHERN REGIONAL ASSOCIATION OF  
STATE AGRICULTURAL EXPERIMENT STATION DIRECTORS**

The spring meeting of the Southern Regional Association of State Agricultural Experiment Station Directors was held in Knoxville, Tennessee, on May 27-79, 1992. The Tennessee Agricultural Experiment Station served as host for the meetings.

The Southern Agricultural Experiment Station Directors have initiated a research planning program that embraces the total research thrust in the Southern Region. This program is patterned generally along the lines of the national effort, but specifically designed to surface important research programs that should be addressed by scientists in the Southern Region. Results of this planning effort will probably be published during late 1992.

Peanuts continue to be one of the commodities included in the Southern Region IPM program which is administered by the Southern Agricultural Experiment Station Directors. Three projects pertaining to peanuts were funded under this program in the last series of awards.

Funding continued to be a major concern of the Southern Experiment Station Directors. Major effort is underway at the national level to support base funding through Hatch and Regional Research, as well as designated special grants. In addition, strong support is given by the Directors for the National Research Initiative.

The matter of experimental quota of peanuts involved in research continues to be a major concern of the Directors and will continue to be carefully monitored.

The Southern Regional Association of State Agricultural Experiment Station Directors continues to have a special interest in APRES and its role in supporting research and education in peanuts and enhancing the entire peanut industry.

Respectfully submitted,

Gale A. Buchanan

## BY-LAWS

### of the AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY, INC.

#### ARTICLE I. NAME

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

#### ARTICLE II. PURPOSE

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

#### ARTICLE III. MEMBERSHIP

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

- a. Individual memberships: Individuals who pay dues at the full rate as fixed by the Board of Directors.
- b. Institutional memberships: Libraries of industrial and educational groups or institutions and others that pay dues as fixed by the Board of Directors to receive the publications of the Society. Institutional members are not granted individual member rights.
- c. Organizational memberships: Industrial or educational groups that pay dues as fixed by the Board of Directors. Organizational members may designate one representative who shall have individual member rights.
- d. Sustaining memberships: Industrial organizations and others that pay dues as fixed by the Board of Directors. Sustaining members are those who wish to support this Society financially to an extent beyond minimum requirements as set forth in Section 1c, Article III. Sustaining members may designate one representative who shall have individual member rights. Also, any organization may hold sustaining

memberships for any or all of its divisions or sections with individual member rights accorded each sustaining membership.

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

**Section 2.** Any member, participant, or representative duly serving on the Board of Directors or a Committee of this Society and who is unable to attend any meeting of the Board or such Committee may be temporarily replaced by an alternate selected by the agency or party served by such member, participant, or representative upon appropriate written notice filed with the president or Committee chairman 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.

#### **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 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 dues for the current year 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. The registration fee for student members shall be one-third that of members.

## 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. Also, opportunity shall be provided for discussion of these and other matters that members may 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, either on its own motion or upon request of one-fourth of the members. In either event, 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 chairman of each annual meeting of the Society. Except for certain papers specifically invited by the Society president or program chairman 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 or projects by a portion of the Society membership, 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 to the extent they deem desirable.

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 project 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 immediate surviving 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 general meeting of this Society to the close of the next annual general meeting. The president-elect shall automatically succeed to the presidency at the close of the annual general meeting. If the president-elect should succeed to the presidency to complete an unexpired term, he 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 general 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 general meeting from nominees selected by the Nominating Committee or members nominated for this office from the floor. The president, president-elect, and surviving 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 yearly 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 general 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 chairman, responsible for development and coordination of the overall program of the education phase of the annual meetings.

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 immediate past-president able to serve
- 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 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 meetings and may authorize or direct the president 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, immediate surviving 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 chairman of each committee from among the incumbent committeemen. The Board of Directors may, by a two-thirds vote, reject committee appoints. Appointments made to fill unexpected vacancies by incapacity of any committee member shall be only for the unexpired term of the incapacitated committeeman. Unless otherwise specified in these By-Laws, any committee member may be re-appointed to succeed himself, and may serve on two or more committees concurrently but shall not hold concurrent chairmanships. 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 include at least four members, one each representing State and USDA and two from Private Business segments of the peanut industry. 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 recommendation as they deem necessary or as requested or directed by the Board of Directors. The term of the Chairman 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 in the work of the Finance Committee under his chairmanship, whichever is later.

- b. **Nominating Committee:** This committee shall consist of at least three members appointed to one-year terms, one each representing State, USDA, and Private Business segments of the peanut industry. 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 general meetings) prior to the election. No person may succeed himself as a member of this committee.
- c. **Publication and Editorial Committee.** This committee shall consist of at least three members for three-year terms, one each representing State, USDA, and Private Business segments of the peanut industry. The members will normally serve two consecutive three-year terms, subject to approval by the Board. Initial election shall alternate from reference years as follows: Private Business, 1983; USDA, 1984; and State, 1985. 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 include at least 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 include at least seven members, one each representing the State, USDA, Grower, Sheller, Manufacturer, and Services segments of the peanut industry, and a member from the university of the host state who will serve a one-year term to coincide with the term of the president-elect. The primary purpose of this person will be to publicize the meeting and make photographic records of important events at the meeting. This committee shall provide leadership and direction for the Society in the following areas:

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

f. **Bailey Award Committee:** This committee shall consist of at least 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 peanut production and with balance among State, USDA, and Private Business. Terms of office shall be for three years with initial terms as outlined in Section 1 of this Article. The committee shall select from nominations received, according to procedures adopted by the Society (P148-9 of 1981 Proceedings of APRES), qualified nominees for approval by the Board of Directors.

- h. National Peanut Council Research and Education Award Committee: This committee shall consist of six APRES members appointed by the president and represent the three areas of peanut production. Three committee members shall be former winners (preferably most recent) and the other three members shall be selected so as to maintain a balance on the committee between the three production areas. Terms of office shall be for three years as outlined in Section 1 of this Article. This committee shall serve as an advisory committee by screening nominations received by the National Peanut Council. The final selection shall be made by the National Peanut Council.
- i. 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 chairman of the committee shall be from the state which will host the meeting the next year and the vice-chairman shall be from the state which will host the meeting the second year. The vice-chairman will automatically move up to chairman.
- j. 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 peanut producing areas. This committee shall review and rank nominations and submit these rankings to the committee chair. 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.

## 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 (chairman,

vice-chairman to succeed to the chairmanship, and a secretary) and appointment 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 10, 1992, Norfolk, Virginia

**APRES MEMBERSHIP (1975 - 1992)**

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

# 1992

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