1997
PROCEEDINGS

American Peanut Research and Education Society, Inc.

Volume 29

'98 FEB 16 AM 11 32

RECEIVED
OFFICE OF
DIRECTOR

Volume 29

1997
PROCEEDINGS

of

THE AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY, INC.

Meeting
San Antonio, Texas
July 8-11, 1997

Publication Date
December 1997

Editor: J. Ronald Sholar
Production Editor: Irene Nickels

TABLE OF CONTENTS

BOARD OF DIRECTORS

1997-98

President ..... Chip Lee (1998)

Past President ..... Fred Shokes (1998)

President-elect ..... Charles Swann (1998)

Executive Officer ..... J. Ronald Sholar (1998)

State Employee Representatives:

(VC Area) ..... James Young (1998)

(SE Area) ..... John Beasley (1999)

(SW Area) ..... Mike Schubert (2000)

USDA Representative ..... Robert Lynch (1998)

Industry Representatives:

Production ..... H. Randall Griggs (2000)

Shelling, Marketing, Storage ..... Bobby Walls (1998)

Manufactured Products ..... Doug Smyth (1999)

American Peanut Council President ..... Jeannette Anderson (1998)

ANNUAL MEETING SITES

1969 - Atlanta, Georgia
1970 - San Antonio, Texas
1971 - Raleigh, North Carolina
1972 - Albany, Georgia
1973 - Oklahoma City, Oklahoma
1974 - Williamsburg, Virginia
1975 - Dothan, Alabama
1976 - Dallas, Texas
1977 - Asheville, North Carolina
1978 - Gainesville, Florida
1979 - Tulsa, Oklahoma
1980 - Richmond, Virginia
1981 - Savannah, Georgia
1982 - Albuquerque, New Mexico
1983 - Charlotte, North Carolina
1984 - Mobile, Alabama
1985 - San Antonio, Texas
1986 - Virginia Beach, Virginia
1987 - Orlando, Florida
1988 - Tulsa, Oklahoma
1989 - Winston-Salem, N. Carolina
1990 - Stone Mountain, Georgia
1991 - San Antonio, Texas
1992 - Norfolk, Virginia
1993 - Huntsville, Alabama
1994 - Tulsa, Oklahoma
1995 - Charlotte, North Carolina
1996 - Orlando, Florida
1997 - San Antonio, Texas

1969-1978: American Peanut Research and Education Association (APREA)
1979-Present: American Peanut Research and Education Society, Inc. (APRES)

APRES COMMITTEES
1997-98

Program Committee

Charles Swann, chair	(1998)

Finance Committee

Daniel W. Gorbet, chair	(1998)
James H. Young	(1998)
Hassan Melouk	(1999)
Pat Phipps	(1999)
Justin Tuggle	(2000)
Ken Noegel	(2000)
Ron Sholar, ex-officio	

Nominating Committee

Fred Shokes, chair	(1998)
Dallas Hartzog	(1998)
Jim Starr	(1998)
J. W. Chapin	(1998)

Publications and Editorial Committee

Rick Brandenburg, chair	(1998)
David A. Knauft	(1998)
James Grichar	(1999)
Albert Culbreath	(1999)
Foy Mills	(2000)
Ray Smith	(2000)

Peanut Quality Committee

Carroll Johnson, chair	(1998)
Elbert J. Long	(1998)
Emory Murphy	(1999)
Rachel Shireman	(1999)
Corley Holbrook	(2000)
Don Sternitzke	(2000)
Doyle Welch	(2000)

Public Relations Committee

Robert Sutter, chair	(1998)
Tom West	(1998)
Mike Kubicek	(1999)
Richard Sprenkel	(1999)
Craig Kvien	(2000)
Jim Davidson	(2000)
Chip Graham	(2000)

Bailey Award Committee

Thomas B. Whitaker, chair	(1998)
Wilbur Parker	(1998)
Ken Jackson	(1999)
Jim Todd	(1999)
Kurt Warnken	(2000)
Nancy Keller	(2000)

Fellows Committee

Norris Powell, chair	(1999)
F. Scott Wright	(1998)
G. M. "Max" Grice	(1998)
Fred Cox	(1999)
Dan Gorbett	(2000)
Charles Simpson	(2000)

Site Selection Committee

Ames Herbert, chair	(1998)
Charles Swann	(1998)
W. Donald Shurley	(1999)
Robert E. Lynch	(1999)
Austin Hagan	(2000)
Kira Bowen	(2000)
Ron Sholar	(2001)
Hassan Melouk	(2001)

Coyt T. Wilson Distinguished Service Award Committee

Peggy Ozias-Akins, chair	(1998)
John Sherwood	(1998)
John Baldwin	(1999)
Robert Lemon	(1999)
Richard Rudolph	(2000)
Pat Phipps	(2000)

DowElanco Awards Committee

John Baldwin, chair	(2000)
J. W. Smith	(1998)
Betsy Owens	(1998)
Tom Kucharek	(1999)
Lance Peterson	(1999)
Chris Butts	(2000)

Joe Sugg Graduate Student Award Committee

James Grichar, chair	(1998)
Ames Herbert	(1998)
Barry Brecke	(1998)
Jack Bailey	(1999)
Mike Kubicek	(1999)

PAST PRESIDENTS

Fred M. Shokes	(1996)	James L. Butler	(1981)
Harold Pattee	(1995)	Allen H. Allison	(1980)
William Odle	(1994)	James S. Kirby	(1979)
Dallas Hartzog	(1993)	Allen J. Norden	(1978)
Walton Mozingo	(1992)	Astor Perry	(1977)
Charles E. Simpson	(1991)	Leland Tripp	(1976)
Ronald J. Henning	(1990)	J. Frank McGill	(1975)
Johnny C. Wynne	(1989)	Kenneth Garren	(1974)
Hassan A. Melouk	(1988)	Edwin L. Sexton	(1973)
Daniel W. Gorbet	(1987)	Olin D. Smith	(1972)
D. Morris Porter	(1986)	William T. Mills	(1971)
Donald H. Smith	(1985)	J.W. Dickens	(1970)
Gale A. Buchanan	(1984)	David L. Moake	(1969)
Fred R. Cox	(1983)	Norman D. Davis	(1968)
David D. H. Hsi	(1982)		

FELLOWS

Dr. Timothy H. Sanders	(1997)	Dr. Darold L. Ketring	(1989)
Dr. H. Thomas Stalker	(1996)	Dr. D. Morris Porter	(1989)
Dr. Charles W. Swann	(1996)	Mr. J. Frank McGill	(1988)
Dr. Thomas B. Whitaker	(1996)	Dr. Donald H. Smith	(1988)
Dr. David A. Knauft	(1995)	Mr. Joe S. Sugg	(1988)
Dr. Charles E. Simpson	(1995)	Dr. Donald J. Banks	(1988)
Dr. William D. Branch	(1994)	Dr. James L. Steele	(1988)
Dr. Frederick R. Cox	(1994)	Dr. Daniel Hallock	(1986)
Dr. James H. Young	(1994)	Dr. Clyde T. Young	(1986)
Dr. Marvin K. Beute	(1993)	Dr. Olin D. Smith	(1986)
Dr. Terry A. Coffelt	(1993)	Mr. Allen H. Allison	(1985)
Dr. Hassan A. Melouk	(1992)	Mr. J.W. Dickens	(1985)
Dr. F. Scott Wright	(1992)	Dr. Thurman Boswell	(1985)
Dr. Johnny C. Wynne	(1992)	Dr. Allen J. Norden	(1984)
Dr. John C. French	(1991)	Dr. William V. Campbell	(1984)
Dr. Daniel W. Gorbet	(1991)	Dr. Harold Pattee	(1983)
Mr. Norfleet L. Sugg	(1991)	Dr. Leland Tripp	(1983)
Dr. James S. Kirby	(1990)	Dr. Kenneth H. Garren	(1982)
Mr. R. Walton Mozingo	(1990)	Dr. Ray O. Hammons	(1982)
Mrs. Ruth Ann Taber	(1990)	Mr. Astor Perry	(1982)

BAILEY AWARD

1997 J. W. Dorner, R. J. Cole and P. D. Blankenship
1996 H.T. Stalker, B.B. Shew, G.M. Garcia, M.K. Beute, K.R. Barker, C.C. Holbrook, J.P. Noe and G.A. Kochert
1995 J.S. Richburg and J.W. Wilcut
1994 T.B. Brenneman and A.K. Culbreath
1993 A.K. Culbreath, J.W. Todd and J.W. Demski
1992 T.B. Whitaker, F.E. Dowell, W.M. Hagler, F.G. Giesbrecht and J. Wu
1991 P.M. Phipps, D.A. Herbert, J.W. Wilcut, C.W. Swann, G.G. Gallimore and T.B. Taylor
1990 J.M. Bennett, P.J. Sexton and K.J. Boote
1989 D.L. Ketring and T.G. Wheless
1988 A.K. Culbreath and M.K. Beute
1987 J.H. Young and L.J. Rainey
1986 T.B. Brenneman, P.M. Phipps and R.J. Stipes
1985 K.V. Pixley, K.J. Boote, F.M. Shokes and D.W. Gorbet
1984 C.S. Kvien, R.J. Henning, J.E. Pallas and W.D. Branch
1983 C.S. Kvien, J.E. Pallas, D.W. Maxey and J. Evans
1982 E.J. Williams and J.S. Drexler
1981 N.A. deRivero and S.L. Poe
1980 J.S. Drexler and E.J. Williams
1979 D.A. Nickle and D.W. Hagstrum
1978 J.M. Troeger and J.L. Butler
1977 J.C. Wynne
1976 J.W. Dickens and Thomas B. Whitaker
1975 R.E. Pettit, F.M. Shokes and R.A. Taber

JOE SUGG GRADUATE STUDENT AWARD

1997 R.E. Butchko
1996 M.D. Franke
1995 P.D. Brune
1994 J.S. Richburg, III
1993 P.D. Brune
1992 M.J. Bell
1991 T.E. Clemente
1990 R.M. Cu
1989 R.M. Cu

COYT T. WILSON DISTINGUISHED SERVICE AWARD

1997 Mr. J. Frank McGill
1996 Dr. Olin D. Smith
1995 Dr. Clyde T. Young
1993 Dr. James Ronald Sholar
1992 Dr. Harold E. Pattee
1991 Dr. Leland Tripp
1990 Dr. D.H. Smith

DOWELANCO AWARD FOR EXCELLENCE IN EDUCATION

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

1997 Changed to DowElanco Award for Excellence in Education
1992-1996 DowElanco Award for Excellence in Extension

DOWELANCO AWARD FOR EXCELLENCE IN RESEARCH

1997 W. James Grichar
1996 R. Walton Mozingo
1995 Frederick M. Shokes
1994 Albert Culbreath, James Todd and James Demski
1993 Hassan Melouk
1992 Rodrigo Rodriguez-Kabana

APC RESEARCH AND EDUCATION AWARD

1997 O. D. Smith
1996 P. D. Blankenship
1995 T.H. Sanders
1994 W. Lord
1993 D.H. Carley and S.M. Fletcher
1992 J.C. Wynne
1991 D.J. Banks and J.S. Kirby
1990 G. Sullivan
1989 R.W. Mozingo
1988 R.J. Henning
1987 L.M. Redlinger
1986 A.H. Allison
1985 E.J. Williams and J.S. Drexler
1984 Leland Tripp
1983 R. Cole, T. Sanders, R. Hill and P. Blankenship
1982 J. Frank McGill
1981 G.A. Buchanan and E.W. Hauser
1980 T.B. Whitaker
1979 J.L. Butler
1978 R.S. Hutchinson
1977 H.E. Pattee
1976 D.A. Emery
1975 R.O. Hammons
1974 K.H. Garren
1973 A.J. Norden
1972 U.L. Diener and N.D. Davis
1971 A.E. Waltking
1970 A.L. Harrison
1969 H.C. Harris
1968 C.R. Jackson
1967 R.S. Matlock and M.E. Mason
1966 L.I. Miller
1965 B.C. Langley
1964 A.M. Altschul
1963 W.A. Carver
1962 J.W. Dickens
1961 W.C. Gregory

1997 Changed to American Peanut Council Research & Education Award
1989 Changed to National Peanut Council Research & Education Award
1961-1988 Golden Peanut Research and Education Award

ANNUAL MEETING PRESENTATIONS

SYMPOSIUM PAPERS

Spotted Wilt Disease

Production Technology I

Economics

Mycotoxins/Physiology and Seed Technology

Curing, Storing and Handling

Weed Science I

Entomology

Processing and Utilization

Weed Science II

Plant Pathology I

Breeding and Genetics I

Plant Pathology II

Breeding and Genetics II

Spotted Wilt Disease

Thrips as Tospovirus Vectors in Peanut. J. W. TODD*, A. K. CULBREATH, H. R. PAPPU, and S. L. BROWN. College of Agric. and Env. Sci., P. O. Box 748, Univ. of GA, Tifton, GA 31793.
Spotted wilt disease of peanut caused by tomato spotted wilt tospovirus (TSWV) has developed into one of the most serious threats to peanut production in the southeastern United States since being reported on the crop in Texas in the early 1980's. The disease was first observed in Georgia in 1975, but there were no further reports until 1986 when a few plants were observed in experimental plots at Tifton. The disease then developed slowly and sporadically until the mid-1990's. It became the most damaging disease in peanut in Georgia in 1995, and was again in 1996. Peanut producers in Texas have experienced some years of devastating losses with intermittent periods of light to moderate damage. Severe losses have also occurred some years in Florida, Louisiana and Mississippi. For unknown reasons, Alabama has had only minor problems with TSWV during the 1980's and 1990's thus far. Production areas in North and South Carolina, and Virginia have also noted an increasing problem with the disease. The only proven vectors of tospoviruses are eight species of thrips. Two species, *Frankliniella fusca* (Hinds), the Tobacco thrips and *Frankliniella occidentalis* (Pergande), the Western flower thrips occur in all peanut producing areas of the United States. In Georgia, *F. fusca* comprises ca. 85% of the thrips adults found in peanut, and ca. 97% of the larvae. Thrips reproduction is therefore mainly attributable to *F. fusca* rather than *F. occidentalis* in peanut in Georgia. Both species are involved in primary infection of peanut with TSWV and it appears that *F. fusca* may be mainly responsible for secondary spread. The percentage incidence of TSWV in Georgia peanuts and the percentage of competent TSWV vectors in the thrips populations has increased dramatically during the last decade. In 1996, ca. 8.1% of *F. fusca* adults and 3.4% of *F. occidentalis* adults tested positive for NSs by ELISA, indicating virus replication had occurred in the thrips. Adults cannot acquire the virus because a barrier develops which prevents passage from the mid-gut lumen to the hemolymph. The primary site of virus replication is in the salivary glands. Larvae can acquire the virus after feeding as little as 30 min. on an infected plant. A latent period of ca. 3 to 7 days passes before transmission is possible by feeding of late second stage larvae and adults. Only adults which acquired the virus as larvae can subsequently vector the virus. Inoculation may occur when a transmitting thrips feed for ca. 1 h., and infected thrips may transmit for life.

Validation of the University of Georgia Tomato Spotted Wilt Risk Index. S.L. BROWN*, J.W. TODD, A.K. CULBREATH, J.A. BALDWIN, G.B. PADGETT, University of Georgia, Tifton, GA 31793; D.W. GORBET and F.M. SHOKES, University of Florida, Marianna and Quincy, FL 32351
The economic impact of tomato spotted wilt virus (TSWV) of peanut has steadily increased in Georgia since it was first discovered in 1986. The thrips-vectored disease was estimated to reduce statewide peanut yields by 8% in 1995 and 10% in 1996. Although no single, effective control measure has been identified, the combination of several cultural practices has significantly reduced levels of TSWV in Georgia. Cultivar, planting date, plant population and at-plant insecticides have been shown to influence TSWV incidence. Geographic location is also important with some locations in the state historically having higher incidence of TSWV than others. Some of these factors have a greater effect on TSWV incidence than others. A tomato spotted wilt risk index was developed to help growers identify and avoid the combination of factors that represents high risk situations for TSWV. The index assigns points to certain production practices with higher point totals representing higher levels of risk. In small plot studies, TSWV incidence was significantly correlated with index value. Cultivar was found to have the greatest influence on TSWV incidence with the relative importance of the other factors variable depending on location. One hundred and six on-farm observations indicted similar trends but TSWV incidence was more variable for a given index value. Based on results of the validation project, small adjustments have been made in the risk index and the index has been promoted to Georgia peanut growers as a means to lower their risk of losses due to TSWV.

Tomato Spotted Wilt Virus: Influence on Peanut Breeding. SMITH, O.D. Department of Soil & Crop Sciences, Texas A&M University, College Station, TX 77802.

Tomato spotted wilt virus (TSWV) first became a factor in U.S. peanut breeding in the 1980's. The effect of the virus, first realized in the Southwest, has progressed through the Southeast and Eastern regions. Response to a survey of U.S. peanut breeders revealed unanimity in the realization that TSWV is a problem and all peanut breeding programs have been affected. Germplasm maintenance, seed production in the field (particularly in spaced and small plot plantings) and greenhouse, experiment interference, rapid and reliable diagnosis, parent sources and choices, variety life, test site selection and access, population sizes, and risk of resistance stability factor into program decisions. Resistance to TSWV is now a priority objective of peanut breeding in all three U.S. peanut regions with funding primarily through redirection within projects. Little new appropriated or grant funds have been provided to breed for resistance to the virus. Nevertheless, four state and one commercial peanut breeding program have released one or more varieties each with partial resistance to the virus. Most breeders believe that current partially resistant varieties, with good management, can provide reasonable control of the virus in most situations, but concern is general regarding 1) the adequacy of the resistance under severe virus pressure and 2) the possibility of new "resistance breaking" virulence within the viral organism as a result of genetic change. Current varieties reported with partial resistance include: Southern Runner, Tamrun 96, Georgia Green, AT 108, NCV 11 and Tamspan 90. Much of this resistance is from a common recent ancestor. The hope is that alternative hosts will favor stability of virulence sufficient for current resistant varieties to serve the industry as adequate until new and higher levels of resistance can be utilized.

Will New Information on Tomato Spotted Wilt Tospovirus Provide New Tools for Management? JOHN L. SHERWOOD. Department of Plant Pathology, University of Georgia, Athens, GA 30602.

During the last decade a significant amount of information has been obtained about the tomato spotted wilt Tospovirus. This includes how the genome of the virus is organized, the nucleotide sequence of the three RNAs that comprise the genome, the variability in the genome of tospoviruses, that the virus replicates in its thrips vector and that the viral glycoproteins may be involved in the acquisition of the virus by thrips. This information has and will be useful in developing management strategies to facilitate the control of TSWV. To date, plants have been transformed with the open reading frame that encodes the nucleocapsid protein or the protein associated with cell to cell movement of TSWV and the plants have some resistance to the virus. As we learn more about the role of the viral glycoproteins in acquisition of TSWV by thrips, strategies to block viral acquisition by the vector may be possible. Also, new tools that permit identification of thrips in which the virus replicates may lead to a better understanding of the epidemiology of the disease. The continued collective efforts of all those involved in research on TSWV may one day lead to effective management of the diseases it causes.

Production Technology I

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

Farmers have traditionally used a moldboard plow and disk to reduce disease pressure from unincorporated plant residue and for herbicide incorporation and seedbed preparation. Three experiments were conducted at the Wiregrass Substation in 1995 and 1996 to determine if alternative tillage schemes with different fungicides could maintain high yields. An experiment in 1995 and 1996 was in continuous peanuts and a third experiment in 1996 was in a cotton-peanut rotation. Whole plot treatments consisted of moldboard plow, disk, chisel, Ro-till and ripper-bedder. Subplot treatments were four applications of Folicur preceeded by two Bravo applications and followed by one Bravo application or seven applications of Bravo alone. There were no differences in yield or TSMK for the tillage treatments in continuous peanuts, but yields were lower for the Ro-till as compared to the moldboard in the peanut-cotton rotation. Folicur treatments had higher yields in all tillage treatments, but TSMK were unaffected by fungicide treatment. Conservation tillage practices can be adopted without yield reduction or increased disease pressures.

Impact of Tillage and Fungicides on Diseases and Yield of Peanut in Two Cropping Systems. A. K. HAGAN*, D.L. HARTZOG, J.R. WEEKS, J. ADAMS and B. GAMBLE. Depts. Plant Pathology, Agronomy and Soils, and Entomology, Auburn University, AL 36849.

In 1996, the occurrence of tomato spotted wilt (TSWV), leaf spot diseases, and southern stem rot (SSR) along with their impact on yield of peanut in peanut-peanut and cotton-peanut cropping systems was compared under conventional (moldboard alone or followed by a Chisel-vator) and reduced (disk, chisel, Ro-till, and ripper bedder) tillage. A RCB split-plot design with tillage as whole plots and fungicides as sub-plots was used. In addition to the above spring tillage treatments, a fall moldboard treatment was also included in the cotton-peanut cropping system. An oat cover crop, sown the previous fall, was killed in March with Roundup. All tillage plots, except the Ro-till and fall moldboard treatments, were disked before planting peanut (*Arachis hypogaea*) cv. 'Florunner'. Subplots in each tillage treatment received either 7 applications of Echo 6F alone at 1.25 kg a.i./ha or 2 applications of Echo 6F at 1.25 kg a.i./ha followed by 4 applications of Folicur 3.6F at 0.22 kg a.i./ha and a final application of Echo 6F at 1.25 kg a.i./ha, all of which were applied on a 14-day calendar spray schedule. Fertility as well as insect and weed control recommendations were followed. Disease ratings and yield were taken from the center 2 rows of 6 row sub-plots. Tillage did not have a significant impact in the cotton-peanut cropping system on the severity of leaf spot or TSWV. SSR severity, however, was lower and yields higher in the moldboard plots as compared with those prepared with a disk or Ro-till. In the peanut-peanut cropping system, TSWV levels were higher in plots turned with a moldboard plow than in those tilled with the Ro-till or chisel. Although yield in the peanut-peanut cropping system was higher in the spring moldboard plots than in those prepared with the Ro-till, chisel, and fall moldboard plow, no differences in SSR severity were noted between tillage treatments. Leafspot severity in the spring moldboard plots was similar to levels seen in the reduced tillage treatments. In both cropping systems, leaf spot and SSR severity was generally lower and pod yield higher across tillage treatments in plots treatments with Folicur 3.6F than in those receiving Echo 6F alone. TSWV levels were not influenced by fungicide treatment.

Impact of Tillage on Thrips Populations, Tomato Spotted Wilt and Yield of Peanut.
J. R. WEEKS*, A. K. HAGAN, Depts. of Entomology and Plant Pathology, respectively, Auburn University, Auburn, AL 36849, and L. WELLS, Wiregrass Substation, Headland, AL 36345.

In 1994-1996, studies were conducted at the Wiregrass Substation in Headland to evaluate the effects of several tillage systems on thrips and TSWV incidence in continuous rotation peanut culture. An RCB split plot design with wheat cover or fallow as whole plots and strip-till or moldboard plow as sub-plots was used. Florunner cv. peanut was planted in each of the three year studies. No insecticides were used on any treatments for thrips control. Standard weed and leafspot control programs were conducted throughout the growing season. Thrips samples were taken from each plot from peanut emergence until 5 weeks after planting by randomly selecting 5 peanut terminals and washing in 70% ETOH. Thrips adults and larvae were counted in the laboratory with the aid of a stereoscope. Plant damage ratings were taken 3-4 weeks after planting using a 1-10 subjective rating of the whole plot where 1 = no damage and 10 = death. TSWV incidence was assessed by counting the number of visible symptomatic plants in the middle 2 rows of 8 row subplots. Yield was also taken from the middle 2 rows. On at least one date in each sample period each year, thrips adults or larvae had significantly lower numbers in the strip-till plots than in moldboard tillage plots. In 1996, when thrips populations were especially high, adult thrips in strip-till plots were almost half the level of those in moldboard plots. Plant damage assessments in 1995 and 1996 also demonstrated significently higher thrips damage in moldboard plots than the strip-till plots. In 1994, levels of TSWV were too low to compare treatments. However, in 1995 and 1996, TSWV incidence was significantly higher in the fallow moldboard treatment than in the strip-till wheat or fallow treatments. Peanut yields in 1994 for fallow strip-till treatment was significantly lower than other treatments. In 1995, there were no significant differences in yields among tillage treatments. In 1996, only the moldboard fallow treatment had significantly higher yield than all other treatments. Yield differences did not correlate to TSWV levels.

Twin Versus Single Row Patterns for Peanut Production. J. A. BALDWIN, J. P. BEASLEY, JR., A. C. CULBREATH, and S. L. BROWN, Crop & Soil Sciences Dept., The University of Georgia, Tifton, GA 31793, Plant Pathology Dept., Tifton, GA 31793, Extension Entomology Dept., The University of Georgia, Tifton, GA 31793.

The predominant row pattern used in planting peanut in Georgia is two rows planted 32-38 inches apart on beds 72 inches wide. Surveys of Extension Agents indicate six percent of the Georgia peanut acreage was planted in a twin row pattern during the 1995 growing season. The twin row pattern consists of two sets of twin rows per bed, with each set of twins spaced 7-10 inches apart. Demonstrations and research trials were conducted in Georgia from 1990-1996 comparing the response of different runner-type cultivars on single and twin row patterns. In a few trials, there was a significant yield and grade response. Peanut plants tend to have a more upright growth habit when grown on twin rows. Pod production tends to be more concentrated around the tap root resulting in grade increases. In some tests, incidence of tomato spotted wilt virus (TSWV) has been lower in peanuts grown in twin rows compared to those grown in standard row patterns. Trials comparing several newly-released cultivars were conducted utilizing 7- inch twin rows versus 36-inch single rows. During 1996, several newly released cultivars were evaluated on 10.5-inch twin rows compared to 36-inch rows at multi-locations in Georgia.

Feasibility of Using Computer Programs for Managing Irrigation for Peanuts. J.I. DAVIDSON, JR.*[1], C.T. BENNETT[1], T. TYSON[2], J. BALDWIN[3], J. BEASLEY[3], M. BADER[3], and T. TYSON[3]. [1]USDA, ARS, NPRL, Dawson, GA 31742, [2]Auburn University, Auburn, AL 36849, [3]University of Georgia, Tifton, GA 31793.

Based upon a 3 year replicated study (crop years 1994-1996) on both sandy and medium textured soils, computer programs were very effective in managing irrigation scheduling for peanut production. Computer programs EXNUT and MMOISNUT scheduled irrigation on a timely basis. On the average economic returns were $490/ha higher for the plots irrigated in accordance with these two programs than for the non-irrigated plots. Irrigating according to these computer programs during crop year 1994 required an average of 2 irrigations and a total of 5.8 cm of water. During crop year 1995 six irrigations and a total of 18.8 cm of water were required. No fungicide was applied for control of soilborne diseases during crop years 1994 and 1995. During crop year 1996, irrigating according to these computer programs resulted in an average of 6 irrigations using a total of 14 cm of water. During crop year 1996 Folicur was used for control of soilborne diseases. During CY1994 on the medium textured soil, serious compaction problems negated the benefits of irrigation. During CY1995, poor fertility and high disease pressure on the sandy soils negated the benefits of irrigation. Removing these confounded data changed the average $490/ha benefit to $923/ha. During CY1996 using Folicur, the economic benefits of irrigation using these programs averaged $1100/ha and $1013/ha for sandy and medium textured soils respectively. No aflatoxin (oppb) was found in peanuts managed by these two computer programs while aflatoxin (4-2500ppb) was found in the non-irrigated peanuts during CY1995. Shelling outturns, seed germination, and other quality factors were generally better for the peanuts managed by these two computer programs than for the non-irrigated peanuts. Based upon this study and past research studies that indicated only marginal economic returns resulted from irrigation by traditional methods, these computer programs are very feasible for scheduling irrigation on peanuts. Education of users of these computer programs and use of fungicides such as Folicur should minimize the negative aspects of irrigation for abnormal fields .

Economics

Economic Feasibility of Screening Farmer Stock Peanuts prior to Marketing. M.C. LAMB* and P.D. BLANKENSHIP. Dept. of Agricultural Economics and Rural Sociology, Auburn University, Auburn, AL 36849 and USDA-ARS National Peanut Research Laboratory, Dawson, GA 31742.

Screening farmer stock peanuts prior to marketing provides a method to increase the per ton value of peanuts. Through the mechanical separation of larger, higher value pods (overs) from foreign material (fm), loose shelled kernels (lsk), and smaller, lower value pods (thrus), significant changes in farmer stock grade result. Based on data from 395 runner lots in the Southeast, the percentage of sound mature kernels and sound splits (smkss), lsk, fm, and other kernels (ok) were changed by +0.61, -4.31, -2.32, and -0.3 between overs and unscreened lots, respectively. The average per ton value of farmer stock peanuts was $26.45 higher in the overs lots compared to the unscreened lots. Although the average per ton value of peanuts is increased, feasibility of screening is dependent upon several factors. The specific marketing situation of the farmer must be such that production in excess of quota provides additionals to replace peanuts removed during the screening process. Thus opportunity cost must be included. Typical investment in screening equipment is approximately $150,000. Amortized at 10% rate of interest over a six year period with salvage value and labor and energy cost included, a minimum of 4,000 farmer stock tons per year must be screened to effectively "spread" fixed cost. Further, the quality of peanuts prior to screening also impacts feasibility. These factors will be incorporated to estimate specific decision thresholds to determine if individual lots should be screened prior to marketing.

Economic Analysis and Management Implications of the University of Georgia Tomato Spotted Wilt Risk Index For Peanuts. W. D. SHURLEY*, S.L. BROWN, J.W. TODD, A.K. CULBREATH, and J.A. BALDWIN, University of Georgia, Tifton, GA 31793.

Tomato spotted wilt virus (TSWV) reduced peanut yields in Georgia by an estimated 10% in 1996 resulting in losses of $39 million. There currently is no single, effective method for controlling the virus. A TSWV index has been developed, however, to assist growers to identify their succeptability to the virus based on several cultural practices and growing conditions. The index may range from a minimum of 40 to a maximum of 115. Choice of cultivar, planting date, plant population, at-plant insecticide, and geographic location have been identified as factors influencing the incidence and severity of TSWV. A yield reduction of 250 pounds per acre has been estimated for each 10 percentage point increase in severity. Changes in cultural practice to reduce yield losses from TSWV are relatively low-cost but some factors may be beyond the farmer's control. Therefore, a minimum risk exposure is unavoidable under this scenario. The cost of production was calculated for each index value and correlation made between the Index, severity of the virus, and yield or change in yield. Production costs and incomes for various TSWV control strategies were compared for. The economic value of variety and planting date was estimated. In Georgia, the demand for Georgia Green and Southern Runner varieties has been high due their TSWV resistance. Growers in potentially moderate and high-risk situations need to evaluate alternative strategies to reduce severity and yield loss. The Index will help growers identify and reduce or avoid high-risk situations for TSWV. Growers must evaluate ways to reduce risk and losses from factors within their control and/or evaluate their whole-farm plan in search for ways to reduce the factors over which they have no control.

Economic Considerations for Reduced Tillage for Peanut Production.
T. D. Hewitt*. University of Florida, NFREC, Marianna, FL 32446.

Soil problems, environmental issues, improved technology, economic considerations and changes in the peanut program have combined to create interest in alternative tillage systems. The interest has been evident throughout the peanut production area because of the potential of reducing production costs and/or increasing peanut yields. The introduction of modern conservation tillage equipment has made it possible to plant peanuts without utilizing conventional tillage methods. However, acceptance of conservation tillage methods for peanut production has been slowed by high production costs for peanuts, concern about pest problems and the reluctance of growers to experiment with new production technology due to the high value of the crop. Studies done throughout the Southeast (in Alabama, Florida, Georgia and South Carolina) indicate that reduced tillage systems will work for peanuts. The studies indicate that costs are reduced $15 to $25 per acre for reduced tillage practices from the average production cost of $500 per acre. Yield differences for the tests done in the Southeast average 200 pounds per acre higher for reduced tillage systems. From an economic perspective, reduced tillage systems have a $25 to $40 higher net return per acre than conventional tillage methods. Management factors must also be considered in the production decision-making. Timing of planting, harvesting timing and pesticide application is critical along with the overall management expertise of the producer. Additional management decisions must be made with reduced tillage. The economic analyses indicate that reducing tillage provides better land utilization, reduces fuel use, reduces soil compaction, reduces labor, reduces soil erosion problems, and results in slightly higher yields.

Economic Implications of the FAIR Act on U.S. Peanut Producers. C.P. CHEN and S.M. FLETCHER*. Department of Agricultural and Applied Economics, The University of Georgia, Griffin, GA 30223-1797.

The FAIR Act symbolizes that the U.S. peanut industry is entering an era characterized as no government financial support and increasing competition. Under the new 7-year peanut program, Congress reduced the quota support price, and eliminated minimum quota floor, price escalator and undermarketings plus made significant changes to the disaster transfer provision. In addition, the peanut program was made into a no-net-cost program to the federal government. This domestic policy reform coupled with increasing imports under NAFTA and GATT is reshaping the U.S. peanut industry to where it will alter peanut growers' livelihoods as well as the vitality of the southern rural economies. Prices, quota, yield, acreage, and additionals data were obtained from FSA and NASS of the USDA. Production was decomposed into Runner, Virginia, Valencia and Spanish. A spreadsheet putting the relationships together was developed. Long term impacts were approximated based on three scenarios: (1) no change in domestic demand, (2) a 3% increase in domestic demand annually and (3) a 3% decrease in domestic demand annually. In 1996 gross income to peanut producers was expected to decline $276 million which is 27% less than 1995's gross income. Of the decline in farm income, about $81 million was attributable to the support price reduction and $194 million was due to quota reduction. The long term economic impacts under the three scenarios provides a sense of possible outcomes based on the direction of the industry. If there was no change in domestic demand, American peanut producers would have about $20 million less in gross farm income for the next six years compared with the base year, 1996. If there was a 3% increase in domestic demand, peanut growers would gain about $141 million in gross farm income over its base even though imports of foreign peanuts increase. If domestic demand declines by 3%, there would be about $121 million of gross farm income reduction over the six years. This indicates the potential benefit to American peanut producers in expanding domestic demand.

Inter-County Transfer of Peanut Quota in Georgia Under the FAIR Act. B.J. HUBBELL* and S.M. FLETCHER. Department of Agricultural and Applied Economics, The University of Georgia, Griffin, GA 30223-1797.

Prior to the implementation of the 1996 FAIR Act, peanut quota was basically restricted to the county in which it was produced. However, in the reform of the peanut program, quota movement within a state was allowed. A maximum of 40% of a county's quota can move out of the county over the seven year period of the FAIR Act. Two other critical features of the reformed program could significantly influence a producers decision. The domestic support price was reduced by 10% and the disaster transfer provision was significantly modified. Using county level yield, quota rental rates and quota data combined in a geographic information system (GIS), the expected inter-county flow of quota poundage over the seven year transition period laid out by the 1996 FAIR Act was examined. Five key factors influencing quota transfer were identified - (1) available quota for transfer out of a county, (2) available acreage for transfer into a county, (3) yield, (4) dryland vs. irrigated production and (5) cost of production. The marginal cost of production was defined as the difference in support price and the county quota rental rate. The model used in this analysis had five basic assumptions - (1) 3 year rotation, (2) all quota will shift to irrigated acres (due to higher yield potential, more stable production in dry years and less risk of aflatoxin), (3) maximum acres planted to peanuts equals total cropland in a county divided by 3 times the percent of irrigated cropland available in a county, (4) high yield/low cost counties will rent quota up to their maximum available acreage, and (5) low yield/high cost counties will lease quota up to the maximum allowed for transfer. The majority of the low cost producing counties were in the southwest area. However, some of the medium cost counties were also in the southwest corner of the state. Results indicate that quota will tend to move from the mid- and southeastern portions of the peanut belt to the southwest and northeast portions. Movement to the southwest is due to two factors: high yield/cost ratios and a large proportion of irrigated acres. Movement to the northeast is due to low existing quota levels and high yield/cost ratios. The 40% limit on transfer of quota will result in some low yield/cost counties planting peanuts when it would be optimal for them to transfer their quota to higher yield/cost counties. The returns to quota will be higher in the southwest and northeast, suggesting that overall farmer welfare under the FAIR Act will be enhanced by allowing free inter-county quota transfer.

Economic Impacts of 1996 Farm Act Peanut Program Changes Emphasizing Shifts in Location of Production. KENNETH M. ROBISON and VERNER N. GRISE. USDA, Farm Service Agency, Washington, D.C. 20250-0514.

Opponents of the peanut program frequently portray it as expensive for consumers and the U.S. Treasury. The Federal Agricultural Improvement and Reform Act of 1996 (1996 Act) changed the peanut program by eliminating the minimum quota level and the carry-over of undermarketings, lowering the quota price support level 10 percent, and allowing limited sales of quota across county lines within states. The planted acres for the 1996 crop were 8 percent less than for the 1995 crop and to begin the 1997 marketing year manufacturers' stocks were at a five-year low. Consequently, producers should receive a dividend from the loan pools. The Commodity Credit Corporation (CCC) will crush less than 10,000 tons of quota seg 1 (peanuts eligible for food use) at a loss and there were more than 110,000 tons of buybacks (additional peanuts transferred to quota status). Quota sales across county lines should leave counties that were experiencing recurring undermarketings (above 10 percent of effective quota), below average yields, suburban-sprawl, and bisected by the interstate highway system to counties with above average yield potential and below average cost of production.

Consumers' Attitudes, Perceptions and Consumption of Peanut Products. S.M. FLETCHER* and R.B. LARSON. Department of Agricultural and Applied Economics, The University of Georgia, Griffin, GA 30223-1797.

After reaching a peak in shelled peanuts use in edible peanut products in 1988 and 1989, use has decreased during the 1990s. This has had a significant impact on peanut farmers' gross farm income. This is evident from the significant reductions in quota for 1996 of 18.5% as well as the reductions in prior years. To enhance the marketing and promotion of peanuts, a national survey on consumers' attitudes, perceptions and consumption levels was completed in December, 1996 by the Gallup Organization. Telephone interviews of 2,500 peanut users were conducted among a random sample of U.S. households. In addition, demographics were collected on 380 non-peanut users. The final sample sizes are: peanut butter consumers - 991, snack peanut consumers - 1002, and in-shell peanut users - 507. Approximately 13% of consumers had not eaten any peanut butter, snack peanuts or in-shell peanuts in the past twelve months. This implies that the percentage of non-users has increased over time. Approximately 58% of the peanut butter users state that they consume peanut butter at least once a week. Smooth peanut butter was the most favorite type consumed. Almost 30% of peanut butter users have tried reduced fat peanut butter/spread. One-third believed the reduced fat product was worse than regular peanut butter with taste being the primary reason for the negative perception. Peanut butter has a positive image in areas of taste, a good protein source and being a good value. Milk is the most popular beverage to drink with peanut butter. This suggest the potential tie-in with milk in promotions. Lunch is the most frequent time of consumption which implies that consumers need to be reminded of new ways and times of day for eating peanut butter. The presence of children is the most influential factor in the level of peanut butter usage. This suggest that the promotion of adult usage needs to be considered. However, the key barrier to increased adult usage appears to be fat. Snack peanuts are eaten primarily at home and if eaten away from home, the level of consumption is much lower. Reasons for increased consumption was basically due to "liking them/acquiring a taste for them" or perceiving them to be a healthy/natural food. Decreased consumption was most often attributed to calorie and fat concern. 43% of the users perceived snack peanuts to be somewhat to much more expensive relative to other snack foods. The value of snack peanuts relative to other snack foods will need to be addressed.

Impacts of the Peanut CRSP Program on the Peanut Sector in the USA. D.G. CUMMINS and J.H. WILLIAMS. Peanut CRSP Management Office, University of Georgia, CAES Campus at Griffin, Griffin GA 30223-1797.

The Peanut CRSP (Collaborative Research Support Program, supported by the US Agency for International Development and University Cost Sharing) must benefit the peanut sectors of developing countries and the USA. The program has operated in a number of areas, focusing on constraints to production, aflatoxin contamination and post harvest utilization. The program has maintained a portfolio with a mix of basic, applied and adaptive research. Since the program has had to focus on low input production technologies applicable to the developing world, it has provided US scientists with an advantage in dealing with the changes associated with the changes in the peanut program. The basic research supported by the program has contributed to the development of biotechnologies permitting transformation of peanuts with synthetic or novel genes, and the transfer of genes for resistance from wild relatives of the peanut to the cultivated peanut. Other research has identified genetic sources of resistance to problems such as insects, foliar diseases, nematodes and viruses. The basic pathway for aflatoxin production has been determined, allowing the present attempts to develop plants resistant to the fungal production of the toxin. The development of resistant varieties involving these basic achievements will have great significance to the future of the peanut sector as farmers need to decrease input costs to remain competitive in the global market. The applied research supported has resulted in varieties with resistance to CBR (NC10c which is now used on some 20% of the area in North Carolina and increasing areas in Georgia), and to sclerotinia blight (Tamspan 90 which is grown on about 28% of the peanut area of Texas and Oklahoma). These varieties result in benefits to farmers of some $30 million each year. Other research has developed IPM methods that minimize the use of chemicals for the control of southern corn rootworm in North Carolina. There are numerous other technologies relating to post harvest and food technology aspects that are available for commercialization.

Mycotoxins/Physiology and Seed Technology

Cloning of a Lipoxygenase Gene from Peanut and Characterization of its Role in the Peanut-*Aspergillus* Interaction. G.B. BUROW*(1), H.W. GARDNER (2), N.P. KELLER (1). (1)Dept. of Plant Pathology and Microbiology, Texas A&M University, College Station, TX 77843; (2) USDA-ARS, Peoria, Ill. 61604

Contamination of peanuts with aflatoxin, a highly carcinogenic mycotoxin, produced by *Aspergillus* spp. poses serious economic losses to farmers and a health hazard to consumers. In lieu of these effects, extensive research efforts have been devoted to devising strategies towards controlling aflatoxin production in *Aspergillus* or understanding host resistance to *Aspergillus* colonization. We have reported that the product of soybean lipoxygenase 1, (13- hydroperoxylinoleic acid) represses expression of the genes in the aflatoxin biosynthetic pathway and inhibits mycotoxin biosynthesis in *Aspergillus* spp. *in vitro*. This indicates that plant lipoxygenases and their products could be important in controlling aflatoxin contamination during infection of peanuts with *Aspergillus*. To better understand the role of native lipoxygenases and their products *in situ* during the peanut-*Aspergillus* interaction we have cloned a putative lipoxygenase from a cDNA library of peanut seed. The nucleotide sequence of the putative peanut lipoxygenase gene is being determined and the enzyme will be expressed from a bacterial source to oxidize linoleic acid to hydroperoxylinoleic acid product for analysis of regio- and stereo-configuration of the hydroperoxide. The expression of peanut lipoxygenase gene during peanut-*Aspergillus* interaction is being examined and will be discussed.

Plant Metabolites Alter *Aspergillus* Development Through Modulation of Lipoxygenase Expression. A.M. CALVO* and N.P. KELLER. Department of Plant Pathology, Texas A&M University, College Station, TX 77843-2132.

In nature, *Aspergillus* spp. survive unfavorable conditions as a cleistothecium and in the case of the asexual aspergilli, as the analogous structure called a sclerotium. The formation of cleistothecia in *Aspergillus nidulans* appears to be dependent on linoleic acid-derived pheromones called psi factors which are structurally similar to products of the plant lipoxygenase pathway. Expression of soybean seed lipoxygenase 1, *lox1*, in *A. nidulans* transformants results in the production of barren to near-barren cleistothecia, a phenotype similar to that generated by high levels of psiA. Interestingly, the cotton-derived lipoxygenase inhibitor gossypol increases cleistothecial production. These facts suggest that an *Aspergillus* lipoxygenase-like enzyme may be necessary for psi biosynthesis and that plant products can influence fungal development. These effects on *Aspergillus* development may help explain how the soybean Lox1 product, 13*S*-hydroperoxylinoleic acid, inhibits the production of the *Aspergillus* mycotoxins, sterigmatocystin and aflatoxin. The information generated from this work could contribute to the design of control strategies to reduce mycotoxin biosynthesis and survival of seed-colonizing aspergilli.

Evaluation of Different Formulations Used in Delivery of Aflatoxin Biocontrol Agents to Peanuts. J. W. DORNER[1]*, R. J. COLE[1], P. D. BLANKENSHIP[1], W. J. CONNICK[2], D. J. DAIGLE[2], and M. R. McGUIRE[3]. [1]USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742; [2]USDA, ARS, Southern Regional Research Center, New Orleans, LA 70179; [3]USDA, ARS, National Center for Agricultural Utilization Research, Peoria, IL 61604.

Nontoxigenic color mutants of *Aspergillus flavus* and *A. parasiticus* have been shown to be effective biological control agents (BCA) against preharvest aflatoxin contamination of peanuts when applied to peanut soils early in the growing season. Three formulations of the BCA were tested with regard to the establishment of large populations of the color mutants in soil, their effect on populations of wild-type *A. flavus* and *A. parasiticus*, and their effect on aflatoxin contamination of peanuts. Formulations were (1) rice that was infected with the BCA, (2) Pesta, an extrusion product in which conidia of the BCA were encapsulated in a wheat gluten-kaolin matrix, and (3) corn flour granules, made by encapsulating conidia of the BCA in pregelatinized corn flour. Formulations were applied to plots (3 m long × 5.5 m wide, consisting of 6 rows of Florunner peanuts) at 58 days after planting. Treatments as well as nontreated controls were replicated four times. Drought and temperature stress were imposed during the last 45 days before harvest to produce optimum conditions for preharvest aflatoxin contamination. Soil populations of BCA just prior to harvest in treated plots did not differ significantly with rice, Pesta, and corn flour granule plots averaging 77,000, 80,950, and 56,625 CFU/g, respectively. Populations of wild-type *A. flavus/parasiticus* averaged 10,475 CFU/g in control plots compared with 38, 1222, and 945 CFU/g in rice, Pesta, and corn flour-treated plots, respectively. Aflatoxin concentrations in peanuts from control, rice, Pesta, and corn flour-treated plots did not differ significantly, averaging 119.8, 5.0, 30.6, and 13.8 ppb, respectively. Results indicated that all formulations were effective in establishing the BCA in the soil and reducing populations of wild-type *A. flavus/parasiticus*. Although not statistically significant, a trend toward lower aflatoxin contamination in treated plots was also seen.

Reduction of Aflatoxins in Peanuts by *Bacillus thuringiensis*. W.J. MOAR[1]*and K.L. BOWEN[2], [1]Departments of Entomology, & [2]Plant Pathology, Auburn University, AL 36849.

A strain of *Bacillus thuringiensis* (AU633) with lepidopteran activity was selected for high chitinase activity using an *in vitro* assay. Incubation of this strain with N-methyl-N'-nitro-N-nitrosoguanidine resulted in several colonies exhibiting clearing zones after 24 hr. when plated on nutrient agar containing 0.4% colloidal chitin. One colony was selected (AU634) and assayed *in vitro* for fungicidal activity against *Aspergillus flavus*. In both cases, AU634 inhibited growth of the fungi, whereas AU633 did not. In 1995 and 1996 peanut field trials, seed and soil drench treatments using AU634 reduced aflatoxin concentration of the harvested peanuts when compared to the untreated control. Results of peanut experiments conducted in glasshouses demonstrate that AU634 (used as a seed treatment) also significantly reduced plant damage due to the lesser cornstalk borer, *Elasmopalpus lignosellus*. This soil insect causes direct damage to the peanut peg and pod which also allows easier penetration by *Aspergillus*. These results suggest that future *B. thuringiensis* formulations may have the ability to control both insect and fungal pests of peanuts, thereby reducing our dependance on synthetic pesticides.

Aflatoxin Reduction and Total Quality Control of Peanuts and Peanut Products in Thailand.
C. OUPADISSAKOON*, S. JOGLOY, and S. WONGKAEW. Dept. of Product Development, Kasetsart University, Bankok 10900: & Faculty of Agriculture, Khon Kaen University, Khon Kaen 40002, Thailand.

In recognition of the importance of the aflatoxin contamination problem in peanuts and peanut products, the Industrial Standard Institute, Ministry of Industry of Thailand has granted funds to Thai researchers to conduct research that would lead to a reduction of aflatoxin contamination and total quality control of peanuts and peanut products in Thailand. The studies involved controlled production at the farmers' level from planting to harvesting, post harvest handling and storage, and processing management. Monitoring was done at all stages for management practices, climatic and field conditions, diseases and pests, and peanut quality and aflatoxin contamination from both the controlled production fields and normal farmers' fields. Relationships among various climatic and biological factors and quality grades on aflatoxin contamination were also determined. The studies were done at different peanut production areas and in different growing seasons. Various methods of drying were also examined. In peanut processing, on incoming peanuts, during and after processing and finished products. The products studied involved testing for consumer acceptance of unprocessed peanuts, fried peanuts, coconut-coated fried peanuts, and ground peanuts. The paper will present highlights of the results of these studies.

Response of Georgia Red Peanuts Grown Hydroponically to Continuous Light and two Temperature Regimes. T. ROWELL*, D.G. MORTLEY, K. STANCIEL, AND D. HILEMAN. W. Carver Agricultural Experiment Station, Tuskegee University, AL 36088.

As part of the National Aeronautics and Space Administration's research on food production for extended space missions, the peanut (*Arachis hypogea*) is being studied as a candidate crop at Tuskegee University. The peanut has traditionally been considered a day neutral plant but studies have shown that pod yield is higher under short compared to long photoperiods. Very little is known about the effects of continuous light on growth and yield of peanut. To evaluate the effects of continuous light, 'Georgia Red' peanut was exposed to photoperiods of 12 h and 24 h in combination with a constant 28C or 28/22C in reach-in growth chambers using a randomized complete block design with three replications in time. Growth chamber conditions included 250 and 500 µmols $m^{-2}s^{-1}$ photosynthetic photon flux (PPF), for 12 and 24 h, respectively, (so that plants would receive the same number of photons over time), and 70% RH. Two standard Tuskegee University nutrient film technique (NFT) channels (Gray PVC-1 with dimensions of 0.15 x 0.15 x 1.2 m) were used in each treatment . Four 12-day old seedlings were transplanted into each growth channel supplied by a modified half strength Hoagland nutrient solution with a pH range of 6.4-6.5, an EC of 1200 μS^{-1}, which was changed every two weeks. Plants were harvested 110 DAP, when leaf number and area, foliage weight, pod and seed yield were measured. Photoperiod significantly influenced foliage yield, pod fresh and dry weight but did not affect pod number. Temperature significantly influenced pod yield and number but had no significant effect on foliage yield. There was a significant interaction between temperature and photoperiod for dry foliage yield, and total pod number. In relation to seed yield, photoperiod significantly influenced total yield, mature seed number and yield, mature pod number and yield and total sound mature kernel (%TSMK) but had no significant effect on immature seed number and yield. Temperature significantly affected dry pod yield, mature pod number and yield, immature pod number and yield, and mature seed number but not mature seed yield or % TSMK. These results show that seed yields were higher at the shorter photoperiod while foliage growth was higher under continuous light. Overall, photoperiod appeared to have influenced peanut growth responses much more than did temperature.

Response of Georgia Red Peanut to CO_2 Enrichment when Grown in Nutrient Film Technique (NFT). K. STANCIEL*, D.G. MORTLEY, J.H. HILL, AND D. HILEMAN. W. Carver Agricultural Experiment Station, Tuskegee University, AL 36088.

'Georgia Red' peanut was grown in reach-in growth chambers to determine the effect of CO_2 enrichment on growth, seed yield and quality attributes, and light and CO_2 response curves. The CO_2 treatments were ambient (400), 800 and 1200 ppm. Growth chamber conditions included 600 μmols $m^{-2}s^{-1}$ photosynthetic photon flux (PPF), 28/22C, 70% RH, and 12/12 h photoperiod. Two standard Tuskegee University nutrient film technique (NFT) channels (Gray PVC-1 with dimensions of 0.15 x 0.15 x 1.2 m) were used in each treatment in a randomized complete block design and three replications in time. Four 12-day old seedlings were transplanted into each growth channel supplied by a modified half strength Hoagland nutrient solution with a pH range of 6.4-6.5, an EC of 1200 μS^{-1} which was changed every two weeks. Beginning 21 days after planting (DAP) and every two weeks thereafter, the second leaf from the growing axis (main stem) was detached to determine CO_2 effect on leaf area and dry weight. Plants were harvested 95 DAP, at which time total leaf area, leaf number, plant and root weights in addition to pod production data were taken. Total foliage fresh weight, pod number and pod fresh weight increased with CO_2 up to 800 ppm but declined at 1200 ppm. Number of pods/plant, pod fresh and dry weight, fibrous root and plant dry weight were higher with elevated CO_2. Leaf area increased as the level of CO_2 increased. Regardless of enrichment, leaf dry weight, leaflet area and specific leaf area declined as the plants got older. The number and weight of mature pods increased with CO_2 up to 800 and declined at 1200 ppm. Seed yield increased an average of 35% with CO_2 enrichment although there was a 14% decline between 800 and 1200 ppm CO_2. Net photosynthetic rate was highest at 800 and lowest at 1200 ppm CO_2, and leaves appeared to have been saturated at an internal CO_2 concentration of 600 ppm. Judging from the response obtained at 800 ppm CO_2, it appears that 1200 ppm CO_2 may be approaching the threshold level to exert adverse effects on peanut responses.

Production Technology II

Comparisons of Different Levels of Production Inputs for Profitability in Peanut.
K.E. JACKSON*, J.P. DAMICONE, J.R. SHOLAR, J.K. NICKELS, and P.G. MULDER. Departments of Plant Pathology, Agronomy, and Entomology, Oklahoma State University, Stillwater, OK 74078-9947.

Weeds, diseases, nematodes, and insects typically limit peanut yield and quality. Pesticides in combination with agricultural practices are utilized to lessen the detrimental impacts caused by these pests. Lower support prices for peanut have caused the growers to limit their production costs. Data on profitability of reduced inputs is needed to formulate informed management decisions. In 1996, plots were established in Southwestern, South Central, and East Central Oklahoma managed under four different levels of inputs to determine profitability. Each plot consisted of a runner cultivar, Okrun (sclerotinia-susceptible), and a spanish cultivar, Tamspan 90 (sclerotinia-resistant). Plots consisted of four 0.91 m spaced rows, 13.7 m long arranged in a split plot design with cultivars as main plots and replicated 4 times. Levels of inputs were as follows: level one had no inputs for diseases and insects; level two was typical of a low input grower program; level three was recommended practices; and the fourth input level was a high input production program. Yields, grades, gross value, cost of production and returns per acre were determined for each production level. Pooled over cultivars and locations, an increase in inputs resulted in an increase in yield of 2039 to 3592 lb/acre (2283 - 4023 kg/ha). Level one had the lowest net return per acre ($279). Average net return per acre increased until level 3 ($548) and profitability was less at level 4 ($539) because of the higher production costs, except at the Southwest location. At the Southwest location, level 4 had the highest net return on Tamspan 90 because of the full-season spray program that controlled web blotch (*Phoma arachidicola*). Okrun had a higher average return per acre than Tamspan 90 in the locations without sclerotinia blight (*Sclerotinia minor*) and Tamspan 90 had a higher return per acre than Okrun in the location with sclerotinia blight. These demonstrations showed that peanuts are not a low input crop and in 1996 level 3 had the highest profit with some reduction in inputs.

Influence of Harvest Date on Response of Six Virginia-type Peanut Cultivars to BAS 125. A.S. CULPEPPER, D.L. JORDAN*, and A.C. YORK. Department of Crop Science, North Carolina State University, Raleigh, NC 27695-7620.

Excessive vine growth often creates problems associated with digging peanuts. Prior to removal from the market, Kylar was used extensively to limit vine growth and increase row visibility at harvest. Research in North Carolina suggests that BAS 125 is a suitable replacement for Kylar. Previous research has focused on determining the appropriate rate and timing of BAS 125 in Virginia-type peanuts. Research was conducted at two locations in North Carolina in 1995 and 1996 to determine if variable yield and maturity response in previous studies was due to interactions among cultivar maturity and harvest date. BAS 125 increased row visibility of 'VC-1', 'NC 7', 'NC 9', 'NC 10C', 'NC V-11', 'NC 12C', and 'VA-C 92R'. BAS 125 affected canopy profile of NC V-11 the most and NC 9 the least with the response of other cultivars intermediate. BAS 125 increased the percentage of extra large kernels, total sound mature kernels, and fancy pods irrespective of harvest date. Differences in maturity (based on pod mesocarp color) and grade caused by BAS 125 were independent of cultivar. BAS 125 increased yield and value of NC 9 but decreased these parameters for VA-C 92R in two studies. In contrast, BAS 125 increased yield and value of peanuts irrespective of cultivar in two other studies. Response of peanut to BAS 125 was associated with irrigation or rainfall that produced excessive vine growth. These data are consistent with previous research showing that BAS 125 significantly affects peanut canopy profile, greatly improves row visibility at harvest, and increases yield in some instances. Inconsistent response to BAS 125 could not be explained by interactions among cultivars and harvest dates.

Response of Florunner Peanut to High-Frequency Deficit Irrigation in the Texas Southern High Plains. A.M. SCHUBERT*, W.M. LYLE, and J.W. KEELING, Texas A&M University Agricultural Research & Extension Center, Lubbock, TX 79401-9757, and J.F. FARRIS, Texas Agricultural Extension Service, Lamesa, TX 79331.

Responses of peanuts to irrigation application methods and quantity were measured in large field experiments conducted during the 1995 and 1996 crop years. Irrigation was by a center-pivot system with drop nozzles on a circular planting pattern. All irrigation applications prior to 60-70 days after planting (DAP) were equal and in the spray mode. Application of different irrigation quantities and methods began at 60-70 DAP and continued until late August. Irrigation frequency was 3.5 days until July 20 when it was reduced to 2.5 days for the remainder of the experimental period in 1995. Irrigation frequency was 2.5 days throughout the experimental irrigation period in 1996. Irrigation levels were those needed to replace 1.25, 1.00, 0.75, 0.50, and 0.25 times calculated cotton evapotranspiration (ET). This amounted to 251 mm (9.9 in) irrigation water applied at 1.00 ET during the 1995 test period and 191 mm (7.61 in) in 1996. Application methods compared were Low Energy Precision Application (LEPA) mode (using drag socks) in alternate furrows, LEPA mode in every furrow, and spray mode in alternate furrows. Yields were much higher in 1996 than in 1995, reflecting trends observed in commercial fields in the region. In alternate-furrow treatments, 1995 yields were highest with 1.25 and 1.00 ET (3,900 kg/ha) and declined to 3,126, 2,796, and 2,137 kg/ha as ET replacement was reduced to 0.75, 0.50, and 0.25, respectively. In 1996, yields from 1.25, 1.00, and 0.75 ET plots were statistically equal and averaged 6,676 kg/ha with significant losses to 4,972 and 3,314 kg/ha at 0.50 and 0.25 ET replacement, respectively. In all treatments, LEPA-mode yields were superior or equal to spray. There was no advantage to applying water to every furrow when using LEPA mode. In general, yields and quality declined in 0.50 and 0.25 ET plots when the water applied by every-furrow LEPA or by the spray mode vs. alternate-furrow LEPA. Pod and kernel size distributions were reduced with inadequate water supply.

Investment Returns from Three Sub-Surface Microirrigation Tubing Spacings. N. L. POWELL*, D. J. BOSCH and F. S. WRIGHT. Tidewater Agricultural Research and Extension, Virginia Tech, Suffolk, VA 23437 and National Peanut Research Lab, USDA, ARS, SAA, Dawson, GA 31742.

Sub-surface microirrigation (SMI) investment costs make up 33 to 60 percent of total investment costs depending on tubing spacing. SMI investment costs can be lowered by $291/acre by increasing tubing spacing from three to nine feet. Yields may be reduced due to less uniform placement of water in the crop root zone. Study objectives were to estimate net present values (NPVs) of three SMI tubing spacings for systems irrigating corn (Zea mays L.) and peanut (Arachis hypogaea L.) as crop and economic parameters were varied. Irrigated yield responses and irrigation applications came from field experiments conducted on coarse textured soils in southeast Virginia. The six-foot tubing spacing had the highest NPV of $8 per acre, compared to -$31 and -$179 per acre for three-foot and none-foot spacings, respectively. Six-foot spacing had lower yields and lower investment costs compared to three-foot spacing. Increasing the proportion of corn in the rotation lowered the advantage of six-foot spacing. Increasing peanut and corn prices by 29 percent caused three-foot and six-foot spacings to have the same NPVs ($180/ac). Twenty-five percent lower tubing costs would cause NPVs for three-foot and six-foot spacings to be the same ($48/ac). When only the higher irrigated corn yield responses for 1994-95 were used to estimate NPVs, the three-foot spacing had a slightly higher NPV than six-foot spacing.

Groundnut Production in South Africa. C.J. SWANEVELDER. Agricultural Research Council, Grain Corps Research Institute, Potchefstroom, South Africa.

Groundnut has been produced in South Africa since the late-1800's. In South Africa, it is a minor crop compared to maize and wheat (production between 120,000 and 200,000 metric tons per year). Groundnut is produced under irrigation with pod yields up to 6 mt/ha and under dryland conditions with yields up to 3 mt/ha. The average is about 1.4 mt/ha. Acreage per farmer varies from a few square meters of the family garden, up to several hundred hectares produced by commercial farmers. Production practices vary from the typical third world to the most modern. The major commercial production area lies between 24 and 32°E and 22 and 29° S with rainfall of 400 to 800 mm/year and altitude of 1000 to 1300 meters above sea level. Spanish types are mainly produced by commercial farmers. One Valencia and Virginia cultivar, one runner and seven Spanish cultivars are grown. Seed are produced under a certification scheme. Most of the nuts are utilized in confectionary products, with exports and peanut butter in the second and third position. Major pests are nematodes (*Ditylenchus africanus*, *Tylenchorhynchus brevilineatus*, *Hilda patruelis)*, termites and aphids. Tomato spotted wilt and rosette are the major viruses. Leafspot, *Cercospora arachidicola, Cercosproidium personatum, Phoma arachidicola* and *Puccinia arachidis* in some areas are major problems. *Chalara elegans* and *Sclerotium rolfsil* are serious pod rot diseases with *Botrytis cinerea* and *Sclerotinia minor*, a major and minor problem, respectively. Our breeding program was very successful in producing cultivars resistant to *Chalara elegans, Ditylenchus africanus* and also tolerance to *Botrytis cinerea* and the leafspot complex.

Graduate Student Competition

Use of a Core Collection to Identify Resistance to Rhizoctonia Limb Rot in Peanut. M.D. FRANKE[1]*, T.B. BRENNEMAN[1], and C.C. HOLBROOK[2]. Dept. of Plant Pathology, Univ. of Georgia, [1]Coastal Plain Experiment Station, Tifton, GA 31793-0748 and [2]USDA-ARS, Tifton, Georgia 31793.

The U.S. germplasm collection for peanut, *Arachis hypogaea* L., contains 7432 accessions representing a wide range of genetic diversity. A core collection, consisting of 831 accessions that are representative of the entire collection, has been developed to improve the efficiency of germplasm screening. The core collection was created by clustering the accessions by country of origin and morphological characteristics. The purpose of this study was to evaluate 66 of the 831 core selections plus Florunner, Southern Runner, Georgia Brown, and Georgia Green for resistance to Rhizoctonia limb rot. The selections used in the study represent clusters of accessions from 20 countries and 6 of the 9 sets that make up the core collection. Selections were planted 23 May, in two row plots 2.94 m long. Plants were inoculated with 88.48 kg/ha of oat seed infested with *Rhizoctonia solani* 11 September and plants were inverted and rated 10 October. Ten stem sections were cut from each plot. Average number of lesions, girdling lesions, lesions longer than 2.45cm, and percent leaf area exhibiting symptoms were calculated per stem. Pods were harvested and yield data were collected. Core selections representing the same country and cluster that were not significantly different were pooled in order to calculate one value to represent accessions within that cluster. Average number of lesions per stem, percent leaf area exhibiting symptoms, and yield were the only factors that showed significant differences between clusters. Disease severity was not high, therefore Fisher's LSD did not result in clearly defined groups of means. To reduce the chance of overlooking resistant genotypes, the Scottknot procedure was used to eliminate overlapping groups of means. This procedure placed the average number of lesions per stem, percent leaf area exhibiting symptoms, and yield of countries and clusters into distinct groups. For each factor one group contained core selections exhibiting similar characteristics as the partially resistant cultivar Georgia Brown. This preliminary work will be used to identify accessions to be screened more extensively.

Effect of Plant Growth and Canopy Modification on Sclerotinia Blight of Peanut. D.B. LANGSTON, JR.*, P. M. PHIPPS, and R. J. STIPES. Tidewater Agricultural Research & Extension Center, Virginia Polytechnic Institute & State University, Suffolk, VA 23437.

Vine growth and canopy development are important factors in the epidemiology of sclerotinia blight of peanut. Plant growth modifiers and canopy desiccants were applied to peanut in 1995 and 1996 to determine their effect on plant architecture and sclerotinia blight. The effect of natural defoliation was assessed by witholding treatments for control of corn earworm in both years and early leaf spot in 1996. Prohexadione calcium (140 g/ha), chlorimuron (8.8 g/ha), and paraquat (105 g/ha) were applied when vines were 15 cm from lapping between rows. Two subsequent applications of prohexadione calcium at 72 g/ha were applied at 3 wk intervals. Paraquat (79 g/ha) was applied 1 wk after row closure in 1996. Treatments were broadcast with three $D_3$23 nozzles/row. Chlorimuron was most effective for reducing mainstem height and delaying row closure. Prohexadione calcium shortened internodes, reduced mainstem height, and produced a compact foliar canopy with lateral limbs appressed to the soil surface. Paraquat caused foliar burn and 35 to 50% defoliation in 1995 and 1996. Leaf spot resulted in 40% defoliation in 1996, while corn earworm caused <10% defoliation in untreated plots both years. Treatments with chlorimuron and paraquat resulted in a significant reduction of area under disease progress curve (AUDPC) when compared to the untreated check in 1995. Only treatments with chlorimuron and no leaf spot fungicide gave a significant reduction in AUDPC in 1996. Paraquat significantly reduced yield below that of other treatments in 1995 and produced a similar trend in 1996 while prohexadione calcium did not effect yield for either year. Chlorimuron and no leafspot treatments significantly improved yield 724 and 705 kg/ha, respectively, when compared to the untreated check in 1996. Fluazinam (0.58 kg/ha) and iprodione (1.12 kg/ha) were applied alone or superimposed on growth/canopy modification treatments according to the Virginia sclerotinia blight advisory (FDI 32). Fluazinam alone and superimposed on canopy modification treatments increased yield 415 kg/ha over similar applications of iprodione in 1995. Overall, fluazinam increased yield an average of 1,280 kg/ha, while iprodione increased yield an average of 605 kg/ha in 1996. A split-plot analysis of 1996 data indicated that fungicide treatments had a significant effect on disease incidence (14 Aug and 2 Oct), AUDPC, and yield. These results suggest that plant growth and canopy modifiers may be useful tools for reducing losses to sclerotinia blight.

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

Early leaf spot (caused by *Cercospora arachidicola*) is one of the most serious foliar diseases in peanut production. Management of the disease is accomplished using fungicides and cultural practices. Eight runner-type breeding lines were selected from interspecific F_4 populations following early generation evaluations based on restricted selection for early leaf spot resistance and yield. Approximately 1600 individual plants of these eight selected lines were evaluated in 1995 at the Texas Agricultural Experiment Station, Yoakum. One hundred plants were selected from the eight lines based on early leaf spot resistance, yield, plant appearance, pod, and kernel characteristics and were planted for progeny evaluations at Yoakum in 1996. Disease ratings were made using the Florida scale on 14 day intervals beginning with the first occurrence of symptoms. Heavy late leaf spot pressure occurred after the third disease rating so that subsequent ratings were not utilized in the area under the disease progress curve (AUDPC). Differences ($p \leq 0.05$) were found among the lines and susceptible cultivars for single disease rating, AUDPC, yield, total kernel weight, sound mature kernels, one-hundred seed weight, and other agronomic characteristics. Ranges for disease ratings were from 3.0 (TX964106) to 6.0 (Florunner) with yields ranging from 679 (TX964106) to 3306 kg/hectare (Florunner, Folicur-treatment). Mean early leaf spot score and yield across treatments were 4.7 and 1848 kg/hectare, respectively. One hundred seed weights ranged from 35 g (TX964168) to 72 g (TX964199) with a mean of 49 g. In conclusion, 26 of the 100 lines displayed resistance and agronomic characteristics that exceeded the susceptible cultivars and in some (eg.; TX964114) neared Folicur-treated Florunner in agronomic characteristics.

Isolation and Characterization of the Aspergillus parasiticus pacC Gene. D. PINERO* and N.P. KELLER. Dept. of Plant Pathology and Microbiology, Texas A&M University, College Station,TX 77843-2132.

Aflatoxin contamination of peanut by the fungi *Aspergillus flavus* and *A. parasiticus* accounts for serious losses in the industry. Research efforts have been directed towards regulating aflatoxin production in *Aspergillus* species. Ambient pH has been determined to affect biosynthesis of aflatoxin and the related mycotoxin sterigmatocystin in *Aspergillus parasiticus* and in the closely related model organism *Aspergillus nidulans*, respectively. pH regulation of gene expression in *Aspergillus nidulans* is controlled by *pacC*, a wide domain transcription factor. Since constitutive expression of PacC leads to decreased sterigmatocystin production, we postulate that *pacC* has a role in regulating *Aspergillus* mycotoxin biosynthesis. Here we describe the characterization of a putative *A. parasiticus pacC* homologue and its ability to rescue *A. nidulans pacC* mutants.

A Visual Screen to Detect *Aspergillus nidulans* Mutants Defective in *aflR* Regulation. R. A.E. BUTCHKO[1]*, T. H. ADAMS[2] and N. P. KELLER[1]. [1]Department of Plant Pathology and Microbiology and [2]Department of Biology, Texas A&M University, College Station, TX 77843.

Peanuts are susceptible to contamination with aflatoxin produced by *Aspergillus flavus* and *A. parasiticus*. A species closely related to *A. flavus* and *A. parasiticus*, called *A. nidulans*, shares the genetic characteristics required for mycotoxin production and has proven to be a useful model system for studying aflatoxin biosynthesis. The three species contain a conserved gene cluster containing the genes necessary for mycotoxin production. We are exploiting the characteristics of the biochemical pathway and of the gene cluster to identify genes that have a role in regulating the production of mycotoxins in these fungi. The sixth gene in the *A. nidulans* mycotoxin gene cluster encodes a transcription factor, AflR, that regulates the expression of the remaining genes in the cluster. This gene has been shown to be functionally conserved between *A. flavus* and *A. nidulans* and as *aflR* itself is not constitutively expressed, there is potential for identifying genes that regulate *aflR*. *aflR* activity can be visually assessed in *A. nidulans* strain TTS40 because a mutation in the fifth gene in the cluster (*stcE*) results in the accumulation of norsolorinic acid (NOR, an orange colored intermediate in the mycotoxin biosynthetic pathway). Chemical mutagenesis of TTS40 has resulted in ~100 mutants unable to produce NOR. Genetic analysis of the mutants show that some contain mutations that are linked and some unlinked to the mycotoxin cluster. The linked mutations could represent lesions in one of four cluster genes required to produce NOR (*aflR*, *stcA*, *stcJ* and *stcK*) whereas the unlinked mutations potentially represent an *aflR trans*-acting regulatory factor. We are characterizing mutants in each class through genetic complementation and isolation of the gene(s) involved in the defect.

Curing, Storing and Handling

A Two-Stage Batch Dryer for Curing Peanuts. C.L. BUTTS*[a], M.OMARY[b], [a]USDA, ARS, National Peanut Research Laboratory, Dawson, GA 31742, [b]Biological and Agricultural Engineering Department, University of Georgia, Coastal Plain Experiment Station, Tifton, Georgia 31793.
A two-stage batch peanut dryer developed by a commercial grain dryer manufacturer was tested at a commercial peanut buying point during the 1996 harvest. A 7.3-m diameter grain bin provides the superstructure for two peanut curing chambers. Each chamber had a capacity of approximate 18000 kg of in-shell peanuts. Comparisons between conventional peanut curing wagons and the bin dryer were conducted. Recorded data included temperature and relative humidity in both type dryers, drying time, moisture content throughout curing, propane consumption, farmers stock grades, milling quality, and seed germination. A total of twenty-three batches were dried in the bin dryer and thirteen in the conventional dryers. The initial moisture content of peanuts ranged from 11.5 to greater than 22% wet basis and dried at an average moisture removal rate of 0.44%/h. The moisture removal rates for the two dryers were not significantly different. The final moisture content averaged 11.3%. Moisture content at the time of grading averaged 9.4 and 9.3% for the conventional and two-stage cured peanuts, respectively. Farmers stock grades and milling quality were not significantly different. The average quota support price, including LSK for peanuts cured in conventional dryers was $671.59/net 1000-kg compared to $671.69/net 1000-kg peanuts cured in the two-stage dryer. Seed germination averaged 78.4 and 80.2% for conventional and bin-dried peanuts, respectively. Mechanical problems with the gates separating the two curing chambers in the bin dryer were encountered which allowed mixing of separate batches of peanuts within the dryer. This was undesirable under current marketing procedures. Design changes have been made and additional tests will be conducted during the 1997 peanut harvest.

Warehousing Peanuts in West Texas with Aeration. P.D. BLANKENSHIP*, C.L. BUTTS, M.C. LAMB, T.H. SANDERS, B.W. HORN, AND G.M. GRICE. USDA-ARS National Peanut Research Laboratory, Dawson, GA 31742.
Maintaining peanut quality during farmer stock (FS) peanut storage is a mandatory objective for peanut shellers and processors because losses are generally non-recoverable and have considerable, economic ramifications. A primary factor in quality maintenance during storage is moisture control. Split and bald kernel out turns have been shown to be directly proportional to moisture content (MC) during shelling. Proper over space ventilation and/or aeration during FS storage have been shown to provide proper maintenance of kernel moisture during storage. However, previous research has been conducted primarily in the more humid areas of US peanut production. West Texas is more arid than other areas of the U.S. peanut production with average humidities ranging from 20 to 50 % during an average day. During 1994, Birdsong Peanut Company installed a 10,160 t warehouse with an aeration system in Gaines county near Seminole, TX, at their buying point. A cooperative project was initiated to accumulate data during the 1994-95 and 1995-96 storage seasons to determine if moisture and quality loss could be minimized during the storage period with aeration. Peanuts were stored for approximately 6 mo during both storage seasons. Official grade data for all loads of peanuts entering and being removed from the warehouse were collected. Environmental data was collected at 40 locations of a cross-section of the warehouse, in the warehouse headspace, and outside. Ambient relative humidity was consistently lower during the '95-'96 storage season. Grade data indicated that moisture content decreased from 9.2% to 7.2% during the '94-'95 storage season and from 8.7% to 6.7% during the '95-'96 season. Smk decreased from 67.9% to 64.6% during the '94-'95 season and from 66.3% to 59.7% during the '95-'96 season. Splits increased from 6.6% to 8.8% during the '94-'95 season and from 7.4% to 11.6% during the '95-'96 season. Although quality loss occurred, peanut quality can apparently be maintained satisfactorily in warehouses equipped with aeration during farmer stock storage in west Texas. Moisture content at warehouse loading apparently has a major influence in quality loss during storage.

Cold Storage and Tempering of Shelled Peanuts. F.S. WRIGHT* and C.L. BUTTS. USDA ARS NPRL, Dawson, GA.

The response of shelled peanuts placed in fiberboard and plastic bulk containers were compared during cool down in cold storage and tempering in ambient conditions. The fiberboard box (FB) (121x102x124 cm) is used commercially to ship shelled peanuts. The plastic box (PB) (121x121x61 cm) is used to ship many other food products and may provide an improved alternative for handling shelled peanuts. Type-T thermocouples and relative humidity (RH) sensors, positioned at the top, middle, and bottom of each box, were monitored at 15-min intervals. Peanut temperature (T) when placed in the boxes was about 10 C. They were placed in a refrigerated cold storage operating at 3 C and 70 % relative humidity for 6 or 7 d. Following cold storage, the boxes were placed in a closed receiving area where the T and RH varied daily with the outside ambient conditions and activities within the commercial plant. The T varied between 15 and 27 C and the RH varied between 40 and 80 % over the 8-d period. T and RH in the top of the PB and FB responded significantly within 20 h to the cold conditions. The midpoint T in PB decreased about -0.0239 C/h while the midpoint T in the FB decreased more slowly at about -0.0152 C/h. RH readings in both containers remained fairly constant at ±5% of the cold storage RH. During the tempering period, the T response in the PB was much faster than the FB. The top and bottom T in the PB changed about 11 C in about 25 h compared to 50 h in the FB. The middle T in the PB changed 11 C in 80 h compared to more than 180 h in the FB. The PB responded faster than the FB to surrounding conditions. An immediate controlled tempering area may be advantageous to reduce possible condensation and potential for mold development. The PB offers an alternative for handling shelled peanuts in a container that can be completely sterilized for control of insects and food contaminants.

Evidence of Stress Proteins in Peanuts as Potential Maturity Markers and Their Relationship to Alcohol Dehydrogenase. S.Y. CHUNG*[1], J.R. VERCELLOTTI[2], and T.H. SANDERS[3].

[1]USDA-ARS, Southern Regional Research Center, P.O. Box 19687, New Orleans, LA 70179.

[2] V-Labs, Inc., 423 Theard St., Covington, LA 70433. [3] USDA-ARS, Market Quality Handling Research, North Carolina State University, P.O. Box 7624, Raleigh, NC 27695-7624.

Stress proteins are proteins produced in plants or organisms in response to stresses in their environment. Stresses occur when plants or organisms are exposed to extreme heat or changes in oxygen or water levels. We assume that stress proteins occur in peanuts during maturation and curing because (1) reduction in water content occurs under those conditions, and (2) we have previously shown that peanut metabolism under those conditions is anaerobic. To verify our assumption, we used a polyclonal antibody raised against a synthetic peptide (related to stress proteins) to detect stress proteins in peanuts. In two separate experiments which involved SDS-gel and isoelectric focusing-gel electrophoresis, each followed by a transfer to a PVDF membrane and subsequent detection by the antibody, we identified several major stress proteins that appear to exist in mature or cured peanuts only. This finding suggests that stress proteins are potentially maturity markers for uncured peanuts. Because previously we found a substantial increase in alcohol dehydrogenase (ADH) activity during peanut maturation and curing, question has been raised as to whether ADH is related to stress proteins. To determine if there is a relationship between stress proteins and ADH, we isolated peanut protein fractions, using a Rotofor Cell System which separates proteins based on their isoelectric points (pI). The resulting fractions were then analyzed for stress proteins and ADH activity. Of the 20 fractions collected, two were identified to have ADH activity and stress proteins, respectively. The fraction exhibiting ADH activity contained little proteins that were recognized by the antibody to stress protein. The other fraction containing stress proteins displayed little ADH activity. This finding suggests that ADH is probably not related to stress proteins, and that ADH and stress proteins might be induced under different mechanisms.

Weed Science I

Efficacy and Crop Tolerance of Diclosulam Soil-applied in Peanuts. L.B. BRAXTON*, J.L. BARRENTINE, D.L. GRANT, V..B. LANGSTON, K.D. REDDING, J.S. RICHBURG, and B.R. SHEPPARD, DowElanco, Indianapolis, IN

Diclosulam is a new triazolopyrimidine sulfonanilide herbicide being developed by DowElanco for use in peanuts and soybeans and will be marketed under the tradename Strongarm*. EPA registration is anticipated in 1999. Diclosulam can be applied preplant incorporated (PPI), preemergence (PRE) and postemergence (POST) for effective broadspectrum broadleaf weed control in peanuts. Diclosulam was evaluated extensively as PPI and PRE treatments in peanuts by DowElanco researchers in AL, GA, NC and VA during 1993-1996 for crop tolerance in Runner, Spanish, and Virginia peanut types. All peanut types evaluated were tolerant of both PPI and PRE applications at rates up to 52 g ai/ha as indicated by injury and yield observations. Diclosulam applied PPI at 26.3 gm ai/ha provided excellent (≥90%) control of Florida beggarweed (*Desmodium tortuosum DC.*), yellow nutsedge (*Cyperus esculentus L.*), common cocklebur (*Xanthium* spp.), morningglory species (*Ipomoea* spp.), prickly sida (*Sida spinosa L.*), and smallflower morningglory (*Jacquemontia tamnifolia (L.) Griseb.*). Diclosulam applied PPI provided good (≥85%) control of sicklepod (*Cassia obtusifolia L.*) in one trial conducted on coarse soil although previous results in other crops on medium and heavy soils have shown diclosulam to provide less than acceptable sicklepod control. Diclosulam applied PRE at 26.3 gm ai/ha provided excellent control of cocklebur, prickly sida and morningglory species.
*Trademark of DowElanco

EFFICACY AND CROP TOLERANCE OF DICLOSULAM POST-APPLIED IN PEANUTS. V. B. LANGSTON*, L. B. BRAXTON, J. L. BARRENTINE, B. R. SHEPPARD, S. P. NOLTING, J. S. RICHBURG, D. L. GRANT, K. D. REDDING and T. C. GESELIUS, DowElanco, Indianapolis, IN.

Diclosulam, which will be marketed under the tradename Strongarm has been extensively tested in field research trials from 1994 to 1996 for weed control in peanuts. Results with diclosulam applied postemergence show good to excellent performance on common cocklebur (Xanthium strumarium), common ragweed (Ambrosia artemisiifolia), bristly starbur (Acanthospermum hispidum), yellow nutsedge (Cyperus esculentus), and annual morningglory species (Ipomoea sp.) Control of broadleaf weeds with diclosulam was equal to or greater than the control provided by Cadre SC (imazameth, proposed), Starfire + Basagran (paraquat + bentazon) or Storm (acifluorfen + bentazon). Excellent crop safety was observed with diclosulam when applied postemergence with crop oil concentrate (COC) or non-ionic surfactant.

Weed Management in Peanut with Diclosulam. J. W. WILCUT* and V. B. LANGSTON. Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620 and DowElanco, Raleigh, NC 27616.

Field studies from 1994 to 1996 conducted in North Carolina and Georgia evaluated different diclosulam rates and methods of application with commercial standards for weed control, crop tolerance, and peanut yield. Diclosulam was applied PPI, PRE, or EPOST. EPOST treatments were applied with a nonionic surfactant at 0.25% (v/v). Diclosulam soil-applied controlled Ipomoea morningglory, Florida beggarweed [Desmodium tortuosum (Sw.) DC.], yellow nutsedge (Cyperus esculentus L.), purple nutsedge (Cyperus rotundus L.), common ragweed (Ambrosia artemisiifolia L.), prickly sida (Sida spinosa L.), and eclipta (Eclipta prostrata L.) as good and frequently better than the commercial standards of acifluorfen plus bentazon, paraquat plus bentazon, or AC 263,222. Diclosulam controls Ipomoea morningglories, velvetleaf (Abutilon theophrasti Medicus), and common ragweed EPOST. It will not control prickly sida EPOST and does not control sicklepod [Senna obtusifolia (L.) Irwin and Barneby], regardless of application method. Peanut exhibited excellent tolerance to diclosulam at all rates and methods of application. Diclosulam applied PPI at 0.032 lb ai/ac did not influence peanut yield or grade compared to untreated peanut for the following varieties: NC 12C, NC 15, NC 7, VAC 92R, NCV 11, NC 10C, VC 1, and NC 9. This experiment was kept weed-free with weekly hand weedings.

V-53482: A New Peanut Soil Applied Herbicide. J.R. CRANMER*, J.V. ALTOM, T.V. HICKS, T.G. BEAN, J.O. BRYSON, and J.A. PAWLAK. Valent USA Corporation, Cary, NC 27511, Gainesville, FL 32606, College Station, TX 77840, Oxford, PA 19363, Germantown, TN 38139, and Lansing, MI 48911.

V-53482 (flumioxazin) is a new herbicide from Valent USA Corporation for broadleaf weed control in peanuts and soybeans. It is a N-phenylphthalimide derivative which is a new chemistry for peanuts. The mode of action of this family is inhibition of protoporphyrinogen oxidase (PPO). V-53482 is applied preemergence to peanuts and provides four to six weeks residual control. It degrades rapidly and is relatively immobile in the soil. V-53482 has an aerobic soil half-life of 11.9 to 17.5 days. Because of the rapid breakdown in the soil, there will be no crop rotation restrictions to cotton, tobacco, corn, soybeans, and small grains. No peanut phytotoxicity has been reported in FL, GA, SC, NC, VA, or AL from V-53482 applied preemergence at 28.4 to 42.5 grams ai/A. However, slight injury has been observed in TX. Therefore, a preplant incorporated (PPI) label is being evaluated for TX only. V-53482 at 28.4 grams ai/A controls common lambsquarters (*Chenopodium album* L.), crownbeard [*Verbesina encelioides* (Cav.) Benth. & Hook. f. ex Gray], eclipta [*Eclipta alba* (L.) Hassk.], Florida beggarweed [*Desmodium tortuosum* (Sw.) DC.], Florida pusley (*Richardia scabra* L.), hairy indigo (*Indigofera hirsuta* Harvey), hophornbeam copperleaf (*Acalypha ostryifolia* Riddell), black nightshade (*Solanum nigrum* L.), eastern black nightshade (*Solanum ptycanthum* Dun.), Palmer amaranth (*Amaranthus palmeri* S. Wats), redroot pigweed (*Amaranthus retroflexus* L.), smooth pigweed (*Amaranthus hybridus* L.), spiny amaranth (*Amaranthus spinosus* L.), tumble pigweed (*Amaranthus albus* L.), tall waterhemp [*Amaranthus tuberculatus* (Moq.) J. D. Sauer], prickly sida (*Sida spinosa* L.), spotted spurge (*Euphorbia maculata* L.), and Venice mallow (*Hibiscus trionum* L.). Additional weeds that are controlled when V-53482 is applied at 42.5 grams ai/A include common ragweed (*Ambrosia artemisiifolia* L.), hemp sesbania [*Sesbania exaltata* (Raf.) Rydb. ex A. W. Hill], jimsonweed (*Datura stramonium* L.), ivyleaf morningglory [*Ipomoea hederacea* (L.) Jacq.], smallflower morningglory [*Jacquemontia tamnifolia* (L.) Griseb.], tall morningglory [*Ipomoea purpurea* (L.) Roth], tropic croton (*Croton glandulosus* var. septentrionalis Muell.-Arg.), and velvetleaf (*Abutilon theophrasti* Medicus). Registration is expected for sales in 1999 in peanuts and soybeans.

Weed Management in Peanut with Flumioxazin. W. A. BAILEY*, J. W. WILCUT, and J. R. CRANMER. Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620, and Valent, Cary, NC 27511.

Field studies conducted in North Carolina in 1996 evaluated different flumioxazin rates with commercial standards for weed control, crop tolerance, and peanut yield. Flumioxazin was applied PRE at 0.063 or 0.094 lb ai/ac. Flumioxazin controlled Ipomoea morningglory, common lambsquarters (Chenopodium album L.), and prickly sida (Sida spinosa L.) as good and frequently better than the commercial standards of acifluorfen plus bentazon, paraquat plus bentazon, norflurazon, or AC 263,222. It will not control sicklepod [Senna obtusifolia (L.) Irwin and Barneby]. Peanut exhibited excellent tolerance to flumioxazin at all rates. Flumioxazin applied PRE at 0.063 lb ai/ac did not influence peanut yield or grade compared to untreated peanut for any variety tested. The following varieties were tested: NC 12C, NC 15, NC 7, VAC 92R, NCV 11, NC 10C, VC 1, and NC 9. This experiment was kept weed-free with weekly hand weedings.

Effect of Cadre Timing Applications on Peanut Growth and Yield. D. C. SESTAK*, W. J. GRICHAR, R. G. LEMON, and T. A. HOELEWYN. Texas Agricultural Experiment Station, Yoakum, TX 77995 and Texas Agricultural Extension Service, College Station, TX 77843.

Field experiments were conducted in 1996 in Lavaca and Lee Counties in weed-free areas to investigate the effects of Cadre at 4.0 oz product/A on 'GK-7' and 'Tamspan 90' peanut. Cadre treatments were applied at 7 day intervals beginning at peanut crack and continuing until approximately 60 days after cracking (DAC). All Cadre treatments received a surfactant at 0.25% v/v. Peanut plant height and width measurements were taken approximately 60 DAC. Peanut yield and grade data were obtained as well as peanut pod, shell, and nut weight for 100 pods at random to determine if Cadre affected peanut development. 'GK-7' peanut was planted in an irrigated field while 'Tamspan 90' was planted in a non-irrigated field. 'GK-7' plant growth was not affected by any Cadre applications. Cadre applied 21 DAC did reduce 'GK-7' yield when compared with 7 DAC application. Pod weight for Cadre applied at crack, 7, and 21 DAC was also reduced when compared with the untreated check. 'Tamspan 90' growth was reduced with all Cadre treatments when compared to the untreated check. However, no yield or grade differences were noted between the untreated check and Cadre treatments. No differences were noted in pod or nut weight.

Effects of Broadleaf Herbicides on Control of Morningglory Species with Imazameth. P.A. DOTRAY* and J.W. KEELING. Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409-2122 and Texas Agricultural Experiment Station and Texas Agricultural Extension Service, Lubbock, TX 79401-9757.

West Texas peanut production has increased to over 301,878,000 pounds on at least 106,600 acres in 1996. Yet, yield and quality was reduced because some weeds were not controlled effectively with current weed management practices. Field experiments were conducted in 1996 near Lorenzo and near Punkin, TX to investigate weed management systems with and without imazameth. The soil type at both locations was an Amarillo fine sandy loam with less than 1% organic matter and a pH of 7.8. Imazameth at 71 g/ha plus 28-0-0 (1.7% v/v), crop oil concentrate (COC, 1.7% v/v) plus 28-0-0, methylated seed oil (MSO, 1.7% v/v), or non-ionic surfactant (NIS, 0.25% v/v) was applied alone or in combination with acifluorfen at 0.28 kg/ha or bentazon at 0.84 kg/ha. Applications using a tractor-mounted compressed-air sprayer that delivered 140 l/ha at 152 kPa were made to peanuts at 8 to 10 cm peanuts and morningglory species (*Ipomoea sp.*) at the cotyledonary to 20 cm stage. Plots, 4 rows by 9.1 m, were arranged in a randomized complete block design with 3 replications. Peanut and morningglory injury was rated visually throughout the growing season. Imazameth plus 28-0-0, COC plus 28-0-0, MSO, or NIS controlled morningglory at least 80% by 40 days after treatment (DAT) and 85% 116 DAT. No differences were observed between surfactants. When imazameth was tank mixed with acifluorfen or bentazon, morningglory control was reduced 14 to 34% and 14 to 32%, respectively, by 116 DAT depending on the surfactant used. Imazameth injured peanuts up to 7% at 17 DAT, but no injury was observed at 116 DAT. Additional studies without imazameth were examined using acifluorfen, bentazon, 2,4-DB at 0.12 kg/ha, acifluorfen plus 2,4-DB, or bentazon plus 2,4-DB. 2,4-DB plus bentazon controlled morningglory 75%, but control by other treatments did not exceed 40%. No peanut injury was observed from these treatments.

Entomology

Danitol®: A New Peanut Insecticide-Miticide. J.V. ALTOM*, K.M. PERRY, J.R. CRANMER, T.V. HICKS, and J.R. ALECK. Valent USA Corporation, Gainesville, FL, Richardson, TX, Cary, NC, College Station, TX, and Cary, NC.

Danitol® 2.4 EC Spray (fenpropathrin) is a foliar applied insecticide-miticide registered on cotton, tomato, strawberry, and peanuts. It is a synthetic pyrethroid that affects the central nervous system of a wide spectrum of arthropods. Danitol has been predominantly used for silverleaf/sweetpotato whitefly (*Bemisia* spp.) control in cotton and more recently received registration in the other crops. In peanuts, the use rates are 0.2 to 0.3 lbai/A (10 ⅔ to 16 floz/A) for twospotted spider mite (*Tetranychus urticae* Koch) and corn earworm (*Helicoverpa zea* (Boddie)) control. These same rates in combination with Orthene® at 0.5 lbai/A can be used to control silverleaf/sweetpotato whitefly and thrips. The maximum use rate per season is 0.8 lbai/A (42 ⅔ floz/A). The 0.2 lbai/A rate can therefore be applied four (4) times in a season. However, it is recommended to mix or alternate with another insecticide or miticide to comply with IPM and resistance management programs. Danitol has a 24 hour re-entry interval (REI) and a 14 day preharvest interval (PHI) for digging, grazing, or feeding peanut vine forage or dried hay. Data indicate that Danitol at 10 ⅔ to 16 floz/A provides excellent twospotted spider mite control that is equal to or better than Comite® at 32 floz/A. Corn earworm control by Danitol at 10 ⅔ floz/A is equal to Karate® at 3.2 floz/A. Tankmixing with Orthene at 0.5 lbai/A provides broader insect control including the silverleaf/sweetpotato whitefly and thrips.

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

The use of acephate 15G (6 lbs/acre in-furrow at-plant), aldicarb 15G (3.4 lbs/acre in-furrow at-plant), acephate 15G (6 lbs/acre in-furrow at-plant) + acephate 75S {8 oz/acre foliar application at 30 days after cracking (DAC)} and acephate 75S (4 oz/acre hopper box treatment at-plant) did not result in statistically significant yield differences when compared to control plots. Significantly better grades (SMK) were observed in the acephate 15G + acephate 75S treatment and the control plots when compared to the other insecticide treatments. No statistically significant differences were observed in thrips populations in this test nor were there any levels of tomato spotted wilt virus present in any plots. All adult thrips sampled from blooms and terminals during the first 59 DAC of this study were identified as Frankiniella occidentalis or western flower thrips. Significantly lower plant populations were found in all treatments as compared to the control; however, no differences were noted in plant height or yield. Although no significant benefits were associated with insecticide treatments, it is suggested by the authors' that studies be conducted for two more years to determine the efficacy of at-plant systemic insecticides in west Texas peanut.

An Overview of Options for Managing Insect Pests in Virginia-North Carolina Peanuts. D. A. HERBERT, JR.[1*], W. J. PETKA[1], and R. L. BRANDENBURG[2]. [1]Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437; [2]Department of Entomology, North Carolina State University, Raleigh, NC 27695.

Because of the recently lowered peanut quota value, many peanut producers have inquired about options for managing pests. To address these inquires, as they relate to insect pests, a summary was prepared which compares existing options and presents some new strategies. The summary includes tobacco thrips (*Frankliniella fusca*), southern corn rootworm (*Diabrotica undecimpunctata howardi*), and corn earworm (*Helicoverpa zea*). For tobacco thrips, field trial data were evaluated for a 6-year period (1991 to 1996) for various management options by comparing percent and actual yield increases over the untreated control. Insecticides were applied either at planting time into the seed furrow as granules, liquids or seed treatments, or as postemergence foliar bands. Averaged over 7 field trials, Di-Syston 15G (1.0 lb A.I./acre) resulted in an 8.5% and 213 lb increase over the untreated control; over 10 trials, Orthene 75S applied as a seed treatment (0.1875 lb A.I./cwt) then followed with a foliar band (0.1875 lb A.I./acre) applied about 3 weeks after planting increased yield by 11.4% and 315 lb over the untreated control; over 13 trails, Thimet 20G (1.0 lb A.I./acre) increased yield by 13.2% and 364 lb; over 21 trails, Temik 15G (1.0 lb A.I./acre) increased yield by 14.3% and 459 lb; and over 13 trials, Orthene 75S applied as a liquid into the seed furrow (0.75 lb A.I./acre) increased yield by 14.8% and 440 lb. For southern corn rootworm, a new risk index was presented which aids in determining the need for insecticide treatment on individual fields. The index was evaluated on 44 commercial peanut fields over an 8-year period (1989 to 1996) by comparing predicted levels of pod damage to actual damage assessed at the end of the season. The index was accurate in 24 fields; overestimated damage in 18 fields, which may have resulted in some unnecessary insecticide being applied, but minimized pod losses; and underestimated damage in only 2 fields. For corn earworm, of 3 field trails available, controlling larvae with insecticide significantly increased yield in only one, where larval populations reached almost 12 per foot of row and leaf feeding continued for 15 days.

Transmission Efficiency of Tobacco Thrips and Western Flower Thrips Vectoring Tomato Spotted Wilt Virus to Peanut Leaf Disks. F.L. MITCHELL[*] and K.K. KRESTA, Texas Agricultural Experiment Station, Route 2 Box 00, Stephenville, TX 76401 and J.W. SMITH, JR., Department of Entomology, Texas A&M University, College Station, TX 77843

Leaf disks of peanut were used to investigate the transmission efficiency of tobacco thrips, *Frankliniella fusca* (Hinds), and the western flower thrips, *Frankliniella occidentalis* (Pergande) when vectoring tomato spotted wilt virus. Thrips were reared in the laboratory on infected peanut and impatiens leaf tissue. Two day old adults were then allowed inoculation access to leaf disks from the host plants. Leaf disks were incubated for 14 days and subjected to ELISA to determine if infection occurred. The thrips were also subjected to ELISA after feeding was completed. This study determined that peanut leaf disks would become infected by TSWV and that differences could be found in susceptibility of leaf disks from peanut, impatiens and petunia. Additionally, adult *F. fusca* were collected from a peanut field in south Texas and allowed inoculation access to peanut leaf disks. Transmission rates between field and laboratory infected *F. fusca* to peanut disks were comparable. Field infected peanut and lab infected impatiens tissue served equally well as acquisition access host sources. Detection of TSWV in thrips by ELISA did not correlate completely with transmission ability.

Rapid Identification of Tomato Spotted Wilt Virus-Transmitters among Populations of Tobacco Thrips and Western Flower Thrips in Georgia by ELISA. H.R. PAPPU*[1], J.W TODD[2], A.K. CULBREATH[1], M.D. BANDLA[3], AND J.L. SHERWOOD[3]. Departments of [1]Plant Pathology and [2]Entomology; University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793-0748; [3]Department of Plant Pathology, Oklahoma State University, Stillwater, OK.

Epidemics of tomato spotted wilt tospovirus (TSWV) in Georgia's peanut can be largely attributed to the proliferation of its two vector species: western flower thrips (*Frankliniella occidentalis*) and tobacco thrips (*F. fusca*). While the seasonal dynamics of these two species in peanut have been studied in detail, little or no information is available on the prevalence of virus-transmitters in a given thrips population. Transmitters constitute the most important contributory component in TSWV epidemiology, and it is important to understand the relative proportions and seasonal dynamics of transmitters in thrips populations in peanut. Thrips were collected from sticky cards from selected peanut fields on a weekly basis during the 1996 season, and the two vector species were identified and separately stored frozen at -80 C. Thrips were processed either singly or in groups of five. Antigen-coated plate ELISA or triple-antibody sandwich ELISA (TAS-ELISA) were used to detect the TSWV non-structural protein, NSs, whose presence indicated that the adult was capable of transmitting TSWV. In TAS-ELISA, NSs-specific polyclonal antiserum was used to capture the antigen, and an NSs-specific monoclonal antibody was used to detect the captured antigen. Virus-free thrips were used as negative controls. The system facilitated rapid detection of transmitters in a given population of the two vector species. NSs could be easily detected in single adults of western flower thrips and tobacco thrips using this approach. While TSWV was previously shown to multiply in western flower thrips, no such information is available for tobacco thrips. The detection of NSs in tobacco thrips in our study indicated, for the first time, that TSWV multiplies in tobacco thrips as well. The percent transmitters varied during the season, with highest transmitters detected during late April and early May. Significant numbers of thrips caught during May and early June also tested positive for NSs.

Processing and Utilization

Estimates of Free Folic Acid Content of Peanut Seeds (Arachis hypogaea) after either Oil Roasting or Hot Air Roasting. D.A. SMYTH. Planters Company, NABISCO Technical Center, 200 DeForest Ave., East Hanover, NJ 07936

Peanut seeds are nutritionally complex, and can be an important part of the diet in developing countries. Peanut seeds are a source of monounsaturated oil, plant protein, fiber, minerals, and vitamins. Peanut seeds are usually considered to be a good source of the B vitamin, folic acid. Folic acid, and related derivatives, are important in single carbon transfer reactions in basic metabolism. Most recently, adequate folic acid nutrition has been linked to decreases in the incidence of neural cord defects in newborn children. Here free folic acid content of peanuts was measured during different stages of processing to determine whether roasting destroyed vitamin content of the finished product. Free folic acid equivalents were measured by commercial analytical laboratories using a standard microbial growth method. The free folic acid content of raw redskins, or peanut seeds still in the seed coat, was approximately 21 to 35 micrograms of folic acid per 100 grams of Virginia-type, Extra Large grade (ELK) peanuts. Peanuts were roasted either in peanut oil, or roasted in a hot air oven to reach optimal roasted peanut flavor. Roasted ELK peanuts had the same free folic acid content as the raw starting material. These results suggest that the two common ways to roast peanuts for snack products do not destroy endogenous folic acid. The free folic acid values determined here are severalfold lower than the values reported in older literature.

Variation in Intensity of Sweet and Bitter Sensory Attributes Across Peanut Genotypes. H. E. PATTEE*, T. G. ISLEIB, and F. G. GIESBRECHT. USDA-ARS, Crop Science Dept., and Statistics Dept., North Carolina State University, Raleigh, NC. 27695-7625

Little is known about the heritability of sweet and bitter sensory attributes of roasted peanut flavor nor has the range of genetic variation been well defined. From 1986 to 1994, 1136 peanut samples were obtained from the Southeast, Southwest, and Virginia-Carolina regions. Represented within the samples were 42 environments and 122 genotypes, including the most common peanut cultivars in the runner and virginia market-types. Samples were roasted to a nearly common color, ground into paste, and assessed for selected sensory attributes including sweet, bitter, and roasted peanut by a trained sensory panel. CIELAB L* color was measured for use as a covariate in statistical analysis to adjust for slight differences in roast color. The significant sources of environmental variation and genotype-by-environment interaction were similar to those reported previously for a limited number of genotypes. The intensity means for sweet attribute ranged from 2.3 to 4.1, for bitter from 2.4 to 4.4, and for roasted peanut 3.8 to 5.2 across all market types. Estimates of broad-sense heritability were 0.29 for sweet, 0.06 for bitter, and 0.06 for roasted peanut. Genotype means for the three attributes were significantly correlated $r_{sweet \cdot bitter}=-0.80$, $r_{sweet \cdot roasted\ peanut}=0.59$, and $r_{bitter \cdot roasted\ peanut}=-0.59$. These estimates of heritability and genetic correlation suggest that indirect selection might be more efficient than direct selection for improvement of roasted peanut attribute.

Effect of Blanching on Peanut Shelf Life.

T.H.SANDERS*, G.A.ADELSBERG, K.H.HENDRIX, and R.W.McMICHAEL. USDA, ARS, Market Quality and Handling Research, Department of Food Science, NC State University, Raleigh, NC 27695

Blanched peanuts are required in many manufacturing operations and the blanching process in conjunction with color sorting is effective in removing damaged/discolored seed often associated with aflatoxin contamination. Although blanching is often a necessary processing step, the general peanut industry consensus is that significant shelf life reduction occurs as a result of the process. To evaluate the effect of blanching on peanut shelf life, virginia type peanuts were exposed to nine heating protocols consisting of three heating times (30, 45, and 60 min) factorially paired with three final temperatures (76.6, 87.8, and 98.9 C achieved from 32.2 C over six heating zones). Lipoxygenase activity in peanuts decreased with increasing time and temperature of heating. Blanched peanuts from each protocol and unblanched controls were stored at 30 C and ambient relative humidity over a 28-wk period. Blanched peanuts from all protocols had similar or better storage stability than the unblanched peanuts as determined by oil stability index (OSI) and peroxide value (PV). OSI was ca. 10 hrs for blanched and unblanched peanuts and did not change significantly over the storage period. PV's for blanched peanuts from the nine protocols varied from 0.2-0.8 and were significantly different from the PV of 1.3 for unblanched peanuts. Descriptive sensory analysis of roasted peanuts which had been stored as blanched from each protocol or unblanched indicated no significant differences in intensity of roasted peanutty and painty descriptors.

Potential for Increased Utilization of Peanuts in Value-added Products. M. J. HINDS*, A. H. JACKSON and C. M. JOLLY. School of Agriculture, North Carolina A&T State University, Greensboro, NC 27455; and Department of Agricultural Economics and Rural Sociology, Auburn University, AL 36849.

Since 1991, there has been a decline in consumption of peanuts and traditional peanut products in the US. This study investigated present consumption trends of peanuts and the potential for acceptability of peanuts in meat analogs by residents of North Carolina. Results from a mail survey indicated that roasted peanuts, peanut butter and boiled peanuts were never eaten by 38, 24, and 71%, respectively, of the 200 respondents, whereas 53, 51, and 27%, respectively, ate these products less than once per week. Peanut products were consumed by 10, 26, and 16%, respectively, at breakfast, for dessert, and as a side dish. Fifty seven, 62, and 64%, respectively, were willing to eat frankfurters, burgers, and deli meats containing some peanut protein, whereas 28, 34, and 30%, respectively, were willing to eat these products if they were made from 100% vegetable protein. Seventy and 16%, respectively, never ate or ate vegetarian products less than once per week, and this may be responsible for the low potential for acceptability of analogs containing 100% peanut protein. Persons who usually ate peanut products for dessert, or were older than 61 years, or ate vegetarian products five or more times per week were the most willing to eat frankfurters made from 100% peanut protein. There was no correlation between potential for consumption of the other types of analogs and age, sex, size of family or household income. Intent to eat all analogs was not significantly ($p<0.01$) influenced by present consumption of peanut products, like/dislike for the taste of roasted or boiled peanuts, awareness of nutritional content or perceptions about the fat content of peanuts. Although 86% preferred to eat peanut products as snacks, there was no correlation between snacking on peanuts and willingness to eat analogs. Results indicate that there is potential for increased utilization of peanuts by incorporating peanut protein into meat products such as frankfurters, burgers, and deli meats.

Use of 'Florunner' and 'SunOleic' Oil Stock Peanuts as Fat Sources for Pigs Diets. R. O. MYER* and D. W. GORBET. University of Florida, NFREC, Marianna, FL 32446.

An alternative use of oil stock or "cull" peanuts is as a fat source in pig diets. Two trials were conducted to evaluate raw cull peanuts as a potential feedstuff/fat source when included at low levels in diets for growing and finishing pigs. Trial 1 consisted of 108 crossbred pigs (32 kg avg initial wt) divided among four dietary treatments with 3 reps. Treatments were diets containing 0, 2.5, 5 or 10% raw cull 'Florunner' peanuts. Trial 2 involved 90 pigs (30 kg) and three dietary treatments. Treatments consisted of diets with added feed fat (brown grease) at 4.5% of the diet and two raw cull peanut diets, one with Florunner and the other with 'SunOleic' peanuts at 10% of diets to give all three diets the same level of fat /oil. Diets in both trials were corn-soybean meal based and formulated following NRC (1988) guidelines. The peanuts used in trial 1 averaged 48% oil (81% unsat'd) and for trial 2 the peanuts were 43 and 40% oil with 81 and 80% unsat'd, respectively, with the feed fat at 69% unsat'd. Pigs were fed to 108 and 109 kg avg wt, respectively, and then slaughtered to obtain carcass data. Pig growth performance was not affected (P>.10) by dietary treatment in either trial. In trial 1, average gain-to-feed ratio tended to improve with increasing dietary level of cull peanuts (P=.19; linear). Gain-to-feed was similar (P>.10) across treatments in trial 2. Percentage carcass lean content was not affected (P>.10) by treatment in trial 2. Carcass fat firmness decreased with increasing dietary cull peanut level (P<.05; linear) in trial 1, and firmness decreased slightly (P<.10) in trial 2 from pigs fed the peanut diets compared to pigs fed the fat added diets. Carcass fat firmness scores were similar (P>.10) from pigs fed diets with either peanut type in trial 2. Fat firmness scores from both trials indicated that the carcass fat was still firm enough for the meat processor. Fatty acid analysis of backfat samples obtained at slaughter from pigs from trial 2 indicated a higher proportion (P<.01) of unsat'd to sat'd fatty acids from pigs fed the peanut diets compared to pigs fed the fat added diets. Pigs fed the SunOleic peanut containing diets had a higher (P<.01) proportion of monounsat'd fatty acids in the backfat than pigs fed the Florunner peanut diets. The inclusion of raw cull peanuts up to 10% of the diet was well utilized by the growing-finishing pig with only a minimal negative effect on carcass fat firmness.

Weed Science II

Effects of Insecticide-Nematicide Treatment on Tolerance of Peanut to Postemergence Herbicides. C.W. SWANN. Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437.

In 1996 NC-V 11 peanut was treated at the Tidewater Agricultural Research and Extension Center with at-planting in-furrow applications of aldicarb, phorate or disulfoton at 7.0, 6.7 or 6.7 lb/acre respectively. Peanut plots with each in-furrow treatment received no postemergence herbicide, or sequential postemergence treatment of either bentazon + crop oil concentrate (0.75 lb + 2 pt/acre) or bentazon + acifluorfen + crop oil concentrate (0.5 lb + 0.25 lb + 2 pt/acre) at 25 days and 36 days after planting. All plots were treated with a preplant soil incorporated application of pendimethalin (0.75 lb/acre) an under-row preplant soil injected application of metam-sodium (32 lb/acre), a surface application of metolachlor (1.5 lb/acre) at the time of soil fumigation and, metolachlor + paraquat + NIS (1.5 lb + 0.125 lb/acre + 0.125% v/v) at the peanut ground cracking stage. All plots were maintained by hand weeding. Across all postemergence herbicide treatments, phorate treated peanut yielded significantly less than aldicarb treated peanut (3060 versus 3967 lb/acre). Across in-furrow insecticide-nematicide treatments yield of peanut from plots treated with sequential applications of bentazon + acifluorfen + COC (3320 lb/acre) was significantly less than yield of plots with no postemergence herbicide (3943 lb/acre) or bentazon + COC treated plots (3700 lb/acre). Within aldicarb and phorate in-furrow treatments yield of plots treated with sequential applications of bentazon + acifluorfen + COC was significantly lower than plots receiving bentazon + COC and plots receiving no postemergence herbicide.

Comparison of Metolachlor and Dimethenamid for Nutsedge Control and Peanut Injury. W. J. GRICHAR*, R. G. LEMON, D. C. SESTAK, and T. A. HOELEWYN. Texas Agricultural Experiment Station, Yoakum, TX 77995 and Texas Agricultural Extension Service, College Station, TX 77843.

Field experiments were conducted in 1996 in Comanche, Dawson, and Lavaca Counties to evaluate metolachlor (Dual) and dimethenamid (Frontier) for yellow nutsedge (Cyperus esculentus) control and peanut (Arachis hypogaea) injury. Dual and Frontier were applied PPI or PRE at rates of 0.75 lb ai/A to 2.4 lb ai/A (0.75X to 2X rates) while Dual was applied PPI or PRE at 1.5 lb ai/A to 4.0 lb ai/A (1X to 2.6X rates). 1.0 to 1.5 inch of irrigation was applied at the Comanche and Lavaca County sites while 3.0 inch of irrigation was applied in Dawson County within 24 hr. of herbicide application to induce herbicide injury. Yellow nutsedge populations were heavy in Comanche and Lavaca Counties but no yellow nutsedge was present in Dawson County. Early-season yellow nutsedge control with Frontier and Dual was similar in Lavaca County; however, in Comanche County, Dual provided better nutsedge control than Frontier. At both locations, late-season yellow nutsedge control was better with Dual than Frontier. Peanut injury was slightly higher with Dual than Frontier in the Dawson County study when rated 4 and 12 weeks after treatment (WAT). In Lavaca County, Dual injury was slightly higher than with Frontier when rated 3 WAT. Peanut yields in Comanche County were similar except for Frontier at 1.5 pt/A which yielded only 1120 lb/A. In Dawson County, all Dual and Frontier treatments produced peanut yields lower than the weed-free check except for Frontier PRE at 1.0 pt/A. At Lavaca County, none of the herbicide treatments were significantly lower in yield than the untreated check. From this one-year study across Texas, there does not appear to be any difference between Dual and Frontier in relation to peanut injury or yield. However, Dual does provide better season-long yellow nutsedge control than Frontier.

Select®, A New Postemergence Grass Herbicide For Use in Peanuts. T.V. HICKS*, T.D. BISHOP, K.M. PERRY, J.R. CRANMER, and J.V. ALTOM. Valent USA Corporation, College Station, TX, Bardstown, KY, Richardson, TX, Cary, NC, and Gainsville, FL.

Select® 2EC herbicide (clethodim) is a postemergence cyclohexanedione graminicide that has been extensively tested across the peanut belt. Currently Select is registered for use on cotton, soybean, onion, and sugarbeet for the control of problem annual and perennial grass weeds. At the recommended use rates Select has consistently provided excellent control of annual grasses such as Texas panicum, barnyardgrass, large, southern, and smooth crabgrass, broadleaf signalgrass, goosegrass, as well as perennial grass species such as bermudagrass and rhizome johnsongrass, at least equal to currently labelled alternatives. Use rates for Select in peanuts ranges from 0.094 lb/a (lowest annual grass use rate) to 0.250 lb/a (highest perennial grass use rate). Data from research trials conducted over numerous years and a wide geographical area indicates that Select applications do not result in phytotoxicity to any peanut type (runner, Spanish, or Valencia), or variety, when applied at recommended use rates. The addition of peanuts to the Select label is pending approval at the U.S. EPA. Due to the delays at the EPA as they implement the Food Quality Protection Act of 1996 we now expect the registration on peanuts will be delayed until the 1998 use season.

Response of Six Virginia-type Peanut Cultivars to Norflurazon in North Carolina. D.L. JORDAN*, A.S CULPEPPER, and A.C. YORK. Department of Crop Science, North Carolina State University, Raleigh, NC 27695-7620.

Florida beggarweed [*Desmodium tortuosum* (Sw.) DC.] is prevalent in Georgia and Alabama peanut production and is concentrated in southeastern counties of North Carolina and isolated pockets in northeastern North Carolina. Norflurazon can be used to control Florida beggarweed in peanut. However, there is concern over cultivar sensitivity to norflurazon, especially with Virginia-type cultivars. Spread of Florida beggarweed in the Virginia-Carolina area has been expected. Determining sensitivity of Virginia-type peanut cultivars to norflurazon would be advantageous should Florida beggarweed become established in this region. Experiments were conducted from 1994 through 1996 in North Carolina to determine response of the cultivars 'VC-1', 'NC 7', 'NC 9', 'NC 10C', 'NC V-11', and 'VA-C 92R' to norflurazon applied preemergence at 1.6 kg ai/ha. Variation in visual injury was noted among cultivars and years. In one of four experiments visual injury ranged from 23 to 41% while injury in the other experiments was 7% or less. In two of four experiments norflurazon reduced peanut yield and value irrespective of the cultivar. Percent extra large kernels, sound mature kernels, and fancy pods was not affected by norflurazon but did vary among cultivars and years. These data suggest that yield and value reductions can be expected from norflurazon when applied to Virginia-type cultivars and that other control options should be implemented to control Florida beggarweed.

Changes in Herbicide Use Patterns Among High Yield Producers in Georgia. G.E. MACDONALD*, J.A. BALDWIN and J.P. BEASLEY. Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.

A review of herbicide use patterns from the 'Georgia Money Maker Peanut Club' entries from 1986 through 1996 was performed. There are approximately 40 to 60 entries per year and comprise high yield growers throughout the peanut growing region of Georgia. Three categories of herbicide use were evaluated; pre-plant incorporated (PPI) and/or preemergence (PRE), at-cracking (AC) or early postemergence, and postemergence (POST). There was a consistent use (>96% of all entries) of a dinitroanaline herbicide PPI from 1986 to 1996. More than 70% of all growers applied an additional herbicide either PPI or PRE, the majority of these including alachlor, metolachlor or vernolate from 1986 to 1990 and metolachlor or imazethapyr from 1991 through 1995. In 1996, less than half of growers used an additional herbicide PPI or PRE. In 1986, dinoseb was used on most (92%) peanuts at-cracking. Chloramben was used on approximately 25% of those entries from 1986 to 1989. The predominant at-cracking treatment from 1986 through 1996 was paraquat, with >70% of the acreage treated. After 1990, the majority of paraquat treatments contained bentazon. There was an increase in the use of paraquat + bentazon + 2,4-DB or metolachlor at-cracking from 1991 to 1995 but a sharp decrease in 1996. The combination of bentazon + acifluorfen (Storm) was also used on approximately 10% of the entries from 1994 to 1996. Nearly half of the entries in 1996 used imazameth (Cadre) as an at-cracking or early postemergence treatment. 2,4-DB was used on > 50% of entries from 1986 through 1990 and on >30% from 1991 through 1996. Chlorimuron was also used on >30% of the entries from 1989 through 1996. Other postemergence treatments included acifluorfen, bentazon, pyridate, sethoxydim and bentazon + acifluorfen with less than 12% of those entries using these treatment regimes. The number of producers that did not apply either an at-cracking or postemergence treatment fluctuated over the survey period. There was a general decrease in the number of herbicides applied PPI or PRE and an increase in those applied at-cracking or postemergence, indicating a greater reliance on postemergence control measures.

Economic Considerations of Stale Seedbed Weed Control in Peanut. W. C. JOHNSON, III. USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793.

An economic analysis of peanut production was conducted using data from two sets of stale seedbed weed management research trials, each set composed of three years of data. The first data set was from preliminary stale seedbed research trials conducted from 1991 to 1993. Four stale seedbed management systems were evaluated; conventional (deep turn and plant same day), power-till stale seedbeds 3X before planting, glyphosate applied two weeks before planting, and nontreated stale seedbeds. Sub-plots were three levels of weed management once peanut were planted; intensive, basic, and cultivation alone. The second data set was from studies on refined stale seedbed management systems conducted from 1994 to 1996. Three stale seedbed management systems were evaluated; power-till stale seedbeds 2X before planting, glyphosate applied two weeks prior to planting, and a combination of one power tillage operation followed by glyphosate prior to planting. Sub-plots were three levels of weed management; intensive, basic, and cultivation alone. Net returns to peanut production were based on individual plot yields, production budgets prepared by the University of Georgia Cooperative Extension Service, quota support price, and herbicide prices from a local supplier for each year. In the preliminary studies, plots with stale seedbeds tilled 3X had higher net returns than other stale seedbed management systems. There was no difference in net returns between plots with basic or intensive weed management. In studies on refined stale seedbed management systems, there was no difference in net returns among stale seedbed management systems. Similarly, net returns did not differ between plots with basic or intensive weed management. These results show that tillage of stale seedbeds resulted in greater yields and net returns, despite the additional cost of tillage. Attempts to refine this cultural practice by using less intensive stale seedbed practices were not completely successful. Fewer tillage operations did not improve yields enough to increase net returns. These data also show that intensive weed control did not improve yields enough to compensate for increased herbicide costs. Properly implemented basic weed management was sufficient to maximize peanut net returns.

Plant Pathology I

Applications of Corn Meal Enhance Biological Suppression of Sclerotinia Blight of Peanut. P. M. PHIPPS*, D. B. LANGSTON, JR., and S. G. STURT. Tidewater Agricultural Research & Extension Center, Virginia Polytechnic Institute & State University, Suffolk, VA 23437.

Field applications of yellow corn meal in 1995 and 1996 suppressed Sclerotinia blight to levels similar to treatments with the registered fungicide, iprodione. Tests were planted to NC-V 11 peanut at sites with a history of severe epidemics of the disease. Treatments were replicated in four randomized complete blocks, and plots consisted of four, 35-ft rows spaced 36 inches apart. Corn meal was applied in an 18-inch band over rows when plants were 6-inches from overlapping between rows and again 3 weeks later. Sprays of iprodione at 1 lb a.i./A plus Nu-Film 17 (0.156% v/v) were applied with a single 8010LP nozzle over each row according to the Virginia Sclerotinia blight advisory (FDI 32). Spray volume was 40 gal/A and nozzle height was adjusted to provide complete coverage of plants. Area under the disease progress curve (AUDPC) was suppressed significantly by iprodione and corn meal treatments at 100, 250 and 500 lb/A in 1995. Only corn meal at 500 lb/A suppressed AUDPC significantly in 1996. All treatments increased yield in 1995, but only corn meal at 250 and 500 lb/A gave a significant increase in 1996. Material and application costs for corn meal were based on the market value of corn ($4.91/cwt in 1995 and $8.04/cwt in 1996), grinding ($0.75/cwt), hauling ($0.27/cwt) and spreading ($1.00/cwt) each year. These costs totaled $6.93/cwt in 1995 and $10.06/cwt in 1996. Cost/benefit analyses showed that two applications of corn meal at 250 lb/A increased yield by 946 and 736 lb/A, and net return by $264 and $180/A in 1995 and 1996, respectively. Similar applications at 500 lb/A in 1995 and 1996 increased yield by 1438 and 647 lb/A, and net return by $385 and $102/A, respectively. Fungicide input costs were based on the cost of iprodione ($41.75/lb a.i.), Nu-Film 17 ($29/gal) and each application ($3.95/A). Two applications of iprodione in 1995 and three applications in 1996 increased yield by 1451 and 558 lb/A, and net return by $364 and $32/A, respectively. The reduced return in 1996 was a result of highly favorable conditions for disease due to heavy rainfall in July, August and September. Additional studies in 1996 indicated that cracked corn provided nearly the same level of disease suppression as corn meal. Split applications of either material starting at pegging tended to be more effective than a single, soil incorporated dose at planting. Applications of iprodione in addition to cracked corn did not show synergistic or additive properties for improving disease management.

Effects of Corn Meal as a Soil Amendment on Southern Stem Rot, Aflatoxin Production, and Aspergillus Populations. T.B. BRENNEMAN*, D.M. WILSON, and F.M. SHOKES. Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793 and NFREC, University of Florida, Quincy, FL 32351.

Corn meal was evaluated as a soil amendment applied several ways to determine its effects on peanut diseases in the southeastern United States. A three-year study with corn meal applied at 800 lb/A at 40 DAP showed mid-season populations of *Aspergillus flavus* in soil were often higher where corn meal was used. This effect was not observed when supplemental applications of Kocide 101 (3 lb/A) were applied. Corn meal increased *A. flavus* populations at harvest only one of three years. In 1995, aflatoxin levels were higher in plots receiving corn meal, Kocide, or corn meal plus Kocide than those plots receiving only chlorothalonil. Corn meal did not alter the final stem rot incidence or pod yields. Mid-season stem rot incidence was sometimes higher when corn meal was applied. Kocide treatments did not affect stem rot incidence, but did increase yields one year when leaf spot pressure was severe. In other trials, plots with corn meal applied at 57 or 87 DAP tended to have more stem rot and lower yields than those receiving only chlorothalonil. An additional study evaluated pre-plant incorporated treatments in all possible combinations of corn meal (1200 lb/A), methanol (1 gal/A), and a granular *Trichoderma* formulation (23.3 lb/A). In two trials, none of the treatments reduced stem rot, although corn meal plus methanol increased yield in one study. Overall, corn meal appears to offer little benefit for stem rot control in the southeast and may even increase *A. flavus* populations.

Effect of Organic Amendments on Sclerotial Germination of *Sclerotium rolfsii*. C.SAUDE[1], H.A. MELOUK[2], J.P.DAMICONE[3], and M.E.PAYTON[4]. [1]Dept. of Plant Pathology, Oklahoma State University, (OSU) ,[2]USDA- ARS, Dept. of Plant Pathology (OSU), [3]Dept of Plant Pathology, OSU, and [4]Statistics, OSU, Stillwater, OK, 74078.

Sclerotia from six isolates (JD24, JD52, JD65, JD80, JD121, and MEL) of *Sclerotium rolfsii*, produced on potato dextrose agar (PDA) and on soil enriched with dried crushed peanut leaves (DCPL), were used to study the effects of organic amendments on germination of sclerotia. Petri plates (9.0 cm) each containing 27.5 g of soil were amended with 0.25 g of DCPL, dried crushed rape greens (DCRG), and rape seed meal (RSM). Filter paper (9 cm; Whatman # 1) was placed on top of contents of each petri plate. Ten sclerotia were placed on top of the filter paper and wetted to saturation either with deionized water or aqueous methanol (1%). Germination of sclerotia was assessed at 48 , 72 and 96 h after incubation in darkness at 24 C. Germination of sclerotia of all isolates, produced on both PDA and enriched soil (ES), was not affected by the DCPL amendment as compared with wetting agents alone. Germination of sclerotia of isolates JD24, JD52, JD65, JD80, and MEL, produced on both PDA and ES was significantly (p values ranged from 0.0004 to 0.059) decreased for the DCRG amendment as compared with wetting agents alone. In addition, sclerotial germination of isolate JP80, produced on PDA, was significantly (p=0.009) less for RSM as compared to wetting agents alone. For all isolates, except JD121, sclerotia produced on both PDA and ES media had significantly (p values ranged from 0.0001 to 0.09) higher germination at 96 h than at 72 h of incubation. These data suggest that volatile compounds from the breakdown of rape greens are inhibitory to sclerotial germination of *S. rolfsii*.

Field Response of Multiple Pathogen Resistant Peanut Cultivar UF91108 to Tomato Spotted Wilt Virus. A. K. CULBREATH*, J. W. TODD, D. W. GORBET, and F. M. SHOKES. Coastal Plain Expt. Station, Tifton, GA 31793, North Florida Res. and Ed. Center, Marianna, FL 32446, and North Florida Res. and Ed. Center, Quincy, FL 32351

Epidemics of spotted wilt, caused by tomato spotted wilt tospovirus (TSWV), were monitored in replicated field plots of a new mid-oleic, multiple pathogen resistant peanut (*Arachis hypogaea*) cultivar, UF91108, and in runner-type peanut cultivars, Southern Runner and Florunner at Attapulgus, GA and Marianna, FL in 1994 and 1995. Across both years, final spotted wilt intensity ratings (reported as percent row length severely affected by spotted wilt) were 18.1, 10.2, and 11.6 % (LSD = 5.2, p = 0.05) for Florunner, Southern Runner and UF91108, respectively, at Attapulgus. Because of year x cultivar interactions at Marianna, disease intensity ratings were analyzed within individual years. In 1994, final spotted wilt intensity ratings were 36.3, 11.7 and 11.7 % (LSD = 5.2, p = 0.05) for Florunner, Southern Runner, and UF91108, respectively. Final spotted wilt intensity ratings were 79.6, 46.3 and 27.5 % (LSD = 14.2, p = 0.05) for those respective entries in 1995. There was no significant effect of cultivars on yield in 1994 at Attapulgus. In 1995, yields were 3361, 4262, and 4432 kg/ha (LSD = 440, p = 0.05) in Florunner, Southern Runner and UF91108, respectively. Across both years at Marianna, yields averaged 3442, 4369, and 4798 kg/ha (LSD = 415, p = 0.05) for the respective cultivars. There was no evidence that differences in disease intensity ratings among the three cultivars were due to corresponding differences in preference by thrips or to suitability for thrips reproduction. Results indicate UF91108 represents a potential tool for management of spotted wilt in peanut production areas of the southeastern U.S.

RESPONSE OF PEANUT VARIETIES TO IB11923 FOR CONTROL OF SCLEROTINIA BLIGHT IN VIRGINIA. R. W. MOZINGO* and G. W. HARRISON. Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, Virginia 23437 and ISK Biosciences, Mentor, Ohio 44061.

Eight commercial large-seeded, virginia-type peanut varieties (NC 7, NC 9, NC 10C, NC-V 11, AgraTech VC-1, NC 12C, VA 93B, and VA-C 92R) and four advanced breeding lines (VA 910954, VT 940419P, N90009, and N91026E) were planted 13 May 1996 at the Tidewater Research Farm in Suffolk, Virginia, for evaluation of chemical control of sclerotinia blight. The test site had an Eunola loamy fine sand soil type with a history of sclerotinia blight disease occurrence and had been planted to corn in 1994 and 1995. Field plots were two 20 ft rows, spaced 36 inches apart and replicated four times in a split-block design. All cultural practices used, except for control of sclerotinia blight, were as recommended by Virginia Cooperative Extension for the production of high quality peanuts. All treated plots received spray applications of IB11923 (Bravo and Fluazinam combination) at 2.25 pt/A on 18 Jul, 8 Aug, and 29 Aug for control of sclerotinia blight and leaf spot. Treated plots also received sprays of Bravo Weather Stik at 1.5 pt/A on 27 Jun and 19 Sep for control of leaf spot. Untreated plots were not sprayed with IB11923 but did receive five applications of Bravo Weather Stik at 1.5 pt/A for control of leaf spot on the same dates as treated plots. Fungicide sprays were applied by a tractor mounted sprayer calibrated to deliver 23 gal/A at 60 psi using $D_3$23 (disc-core combination) nozzles spaced nine inches apart. In order to eliminate tractor wheel damage to the peanut vines, fungicide applications were applied across rows with an off-set broadcast boom operated from a tractor traveling in the alleyway. Peanuts were dug 1 Oct, combined 14 Oct, dried, weighed, and yields adjusted to a standard 7% moisture. Higher than normal rainfall (3.37 inches) in July resulted in excessive peanut vine growth which, along with ideal moisture and relative humidity, created conditions favorable for sclerotinia blight development. By mid-August, heavy infestations of this disease were observed. With above normal rainfall (3.89 inches) also recorded for September, disease incidence was of epidemic proportion by late September. Disease ratings and yield loss data for untreated plots reflect the severity of the disease. Treating with IB11923 resulted in tremendous increases in yield and significant suppression of disease incidence (according to t-test, P=0.05) for each variety and advanced breeding line. Averages across all lines tested showed 4566 lb/A for treated plots and 2648 lb/A for untreated. Differences in disease ratings were also recorded among varieties and breeding lines treated with IB11923, indicating some varieties or breeding lines responded differently to treatment than others. Significant differences in disease ratings were not observed without treatment due to the heavy disease pressure. However, significant yield differences were obtained among varieties and breeding lines for both treated and untreated.

Peanut Variety Response to Southern Blight using Reduced Applications of Folicur. B. A. BESLER*, A. J. JAKS, W. J. GRICHAR and O. D. SMITH. Texas Agricultural Experiment Station, Yoakum, TX 77995 and College Station, TX. 77843.

In 1995 and 1996, twelve varieties were evaluated alone or in combination with Folicur sprays for reaction to southern blight (Sclerotium rolfsii) at the Texas Agricultural Experiment Station near Yoakum. Spray schedules of Folicur included 2 and 4 spray applications. No spray plots of each variety were included to serve as the control. Folicur was applied at 7.2 fl oz/A using a tractor-mounted boom using hollow cone D2 tips, #13 cores and slotted strainers at 20 gal/A. The experiment was replicated 4 times as a split-plot design with varieties as the main plot and spray schedules as the sub plot. Southern blight disease loci was determined immediately following inversion of plants. Southern blight disease pressure was heavy in 1995 and low in 1996. Tamrun 96 and Southwest Runner in each year, had the lowest disease incidence when compared to all other varieties. Both varieties exhibited reduced southern blight disease loci in the absence of a fungicide treatment. Most varieties responded with reduced southern blight disease when sprayed on the 2 and 4 spray schedule. Disease control tended to be better for most varieties when sprayed 4 times. Most varieties also responded with increased yields when sprayed with 2 and 4 applications. Tamrun 96 was the highest yielding variety both years for each fungicide treatment and when averaged across all treatments including the untreated control.

Use of Pesticides and Cropping Systems with Cotton, Peanut and Velvetbean for the Management of Root-knot Nematode (*Meloidogyne arenaria*) and Southern Blight (*Sclerotium rolfsii*) in 'Florunner' Peanut. R. RODRIGUEZ-KABANA, D. G. ROBERTSON*, AND L. W. WELLS. Department of Plant Pathology, Auburn University, AL 36849.

The efficacy of pesticide applications and cropping systems with peanut, cotton, and velvetbean (*Mucuna deeringiana*) for the management of root-knot nematode and southern blight was studied in an experiment at the Wiregrass Substation near Headland, AL. The experiment was started in 1993 in a field heavily infested with the two pathogens. Cropping systems were: continuous peanut [P], peanut following one year of 'Alabama' velvetbean [V-P], and peanut following one year of 'Deltapine 90' cotton [C-P]. Highest peanut yields were obtained with the V-P and C-P systems. Application of the fungicide tebuconazole (Folicur®) increased peanut yields in all systems by an average of 995 kg/ha; the V-P system was the least responsive [597 kg/ha] to the treatment while the P system benefitted the most [1,000 kg/ha]. Aldicarb (Temik®) nematicide application to plots without tebuconazole improved yields of all systems but C-P. In plots with the fungicide, aldicarb increased yields only in the P system. C-P resulted in the lowest number of *M. arenaria* juveniles in soil at peanut harvest time. Incidence of southern blight was lowest in the V-P and the C-P systems with and without fungicide application. Treatment with aldicarb reduced southern blight levels in plots without tebuconazole. Peanut yields were negatively related to both numbers of *M. arenaria* juveniles in soil and southern blight levels.

Yield of Root-knot Nematode Resistant Peanut Lines in Small Field Plots. J. L. STARR*, C. E. SIMPSON, and T. A. LEE, Jr. Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX ; Texas AgriculturalEperiment Station, Stephenville, TX; and Texas Agricultural Extension Service, Stephenville, TX.

Resistance to the root-knot nematode *Meloidogyne arenaria* has been introgressed from wild *Arachis* species into cultivated peanuts and a backcross breeding program has been used to develop peanut lines with nematode-resistance and needed agronomic traits. The yield potentials of nine BC_2F_3 lines were evaluated in two nematode-infested and one non-infested site in 1996. Plots were two rows by 2-m long with three replications of each line at each site. Nematode-susceptible recurrent parents (Florunner, NC-7, and Tamspan 90) were included in each test. At crop maturity, susceptible cultivars exhibited typical symptoms of nematode pathogenesis of stunting, chlorosis, and premature vine death at the two nematode infested locations, whereas the resistant breeding lines lacked these symptoms. With one exception, the six runner and the single virginia type breeding line had yields that were greater ($P \leq 0.05$) than that of their recurrent parents at the two nematode-infested sites and were not different ($P \leq 0.05$) from the recurrent parents at the non-infested site. Two spanish type breeding lines did not have greater yield than Tamspan 90 at the two nematode-infested sites and yields of these lines were less than that of Tamspan 90 at the non-infested sites. Nematode population densities at crop maturity were similar to or less than ($P \leq 0.05$) those of the susceptible recurrent parents at the nematode-infested sites. Severe damage to the susceptible cultivars resulting from nematode pathogenesis limited nematode reproduction on these plants.

Breeding and Genetics I

Progress in Breeding for Peanut Oil Improvement in the University of Florida Program. D. W. GORBET*, D. A. KNAUFT, E. B. WHITTY, S. F. O'KEEFE and P. C. ANDERSEN. University of Florida, NFREC, Marianna, FL 32446, Crop Science Dept., North Carolina State University, Raleigh, NC 27695 and Agronomy Dept. and Food Science Dept., University of Florida, Gainesville, FL 32611, and University of Florida, NFREC, Quincy, FL 32351.

Peanut (*A. hypogaea*) oil quality improvement has long been an objective of the Florida and other breeding programs, since this influences shelf-life and nutritional quality. Fatty acids are the primary constituents of peanut oil, with palmitic (16:0), oleic (18:1), and linoleic (18:2) constituting almost 90%. Since oleic fatty acid is the most desirable, considering health and stability, the University of Florida program has emphasized incorporation of the high oleic (80±%) chemistry in all breeding material since the mid-1980s. SunOleic® 95R was the first cultivar released with this chemistry (80% oleic). SunOleic® 97R was released in 1997 with the same chemistry but with improved yields, grades, less pod splitting, and less damage from tomato spotted wilt virus. Florida high oleic yield tests in 1996 included 255 entries in 12 tests, with pod yields up to 6500 kg ha^{-1}. These included new breeding backgrounds from Marc I, Andru 93, Southern Runner, UF81206, UF87113, F627B-, Robut 33, and numerous others, with mainly runner market-types. In 15 breeding nurseries with emphasis on high oleic chemistry, 3776 plant selections were made in 1996 at Marianna. In Gainesville nurseries, 168 plant selections were made for possible high oleic chemistry. New and improved cultivars with the high oleic chemistry will become more common in the near future.

Inheritance of O/L Ratio in Crosses of Selected Spanish Varieties with a High Oleic: Linoleic Breeding Line. Y. LOPEZ*, O.D. SMITH, and A. M. SCHUBERT. Dep. of Soil and Crop Sciences, Texas A&M University, College Station, 77802; and Texas A&M University Research & Education Center, Lubbock, TX 79401.

Peanuts are comprised of 45% oil, a major factor in the storability of peanuts and peanut products. 80% of the oil consists of two fatty acids: oleic and linoleic. In Texas, the proportions of these two fatty acids vary from <1:1 to 2.5:1, with spanish being at the low end of the scale. Reduced unsaturation as a result of a high oleic to linoleic (O/L) ratio would improve stability and shelf-life of peanut and peanut products. Research has revealed a high degree of genetic variability in fatty acid composition. Genetic control of oleic acid content by recessive alleles at two loci in virginia and runner peanuts has been reported. The research to be reported concerns the inheritance of the proportions of oleic and linoleic acids in crosses of some commercially important spanish market-type peanut cultivars with a high oleic breeding line. Seven spanish varieties – Tamspan 90, Starr, Pronto, Spanco, TS32-1. 55-437, and Fleur 11 – were crossed with the high oleic F435-2. Single seed analyses, using gas chromatography, were conducted on seed of parent, F_1, F_2 and BC generations. Ten-seed $F_{2,3}$ progeny samples were analyzed for F_2 genotypic determinations. Based on preliminary studies, a 10:1 ratio was used as the critical ratio for classification of peanut plants fitting a bimodial distribution into "high" and "low" oleic groups. Chi-square analyses revealed acceptable P values for 3:1; 15:1; and 63:1 "low:high" ratios among the crosses. Such ratios suggest that parents differed for factor(s) controlling the fatty acid ratios at 1, 2, and 3 loci, respectively. Testcross analyses are in progress.

Variation in Oil Content in Virginia-Carolina Area Peanuts. R.W. MOZINGO, II, T.G. ISLEIB*, R.W. MOZINGO, H.E. PATTEE, and R.F. WILSON. Dept. of Crop Science, North Carolina State University, Raleigh, NC 27695-7629; Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437; and USDA-ARS, Raleigh, NC.

The high oil content of peanut concerns the consumer and in many cases causes aversion to peanut as a snack food. Processes have been developed to remove oil from shelled peanuts and peanut products, but reduction of oil content in in-shell peanuts must be achieved genetically. Under FDA regulations, a "reduced fat" product must contain less than 3/4 the fat of a standard product. In the case of virginia-type peanuts, this means an oil content of approximately 350 g kg^{-1} must be achieved. To assess the genetic variation of peanuts grown in the Virginia-Carolina peanut production area, samples were measured using nuclear magnetic resonance (NMR). Samples were obtained from several sources: ELK, medium, and No. 1 samples from the two-state Peanut Variety and Quality Evaluation program of 1995; SMK samples from all replicated tests conducted by the NCSU peanut breeding project in 1994 and 1995; and SMK samples from a collection of 580 mutants and introduced lines grown in 1990 and 1995. Samples from unreplicated nurseries of introductions also were measured. Seed size had a significant effect on oil content in the the PVQE samples with ELK averaging 497, mediums 471, and No. 1 419 g kg^{-1}. Genotypes were significantly different, ranging from 451 to 502 g kg^{-1}, but the range across seed sizes within a breeding line was more than the range across genotypes within a seed size. NCSU breeding lines ranged from 473 to 552 g kg^{-1} without separating SMK into finer grades. Late-maturing leafspot-resistant and jumbo-pod lines had lower oil contents while early-maturing CBR-resistant lines had higher oil. Oil content in 580 mutants and introductions ranged from 442 to 562 g kg^{-1}. The lower tail of the normal distribution included several related lines derived from crosses among irradiated mutants. In unreplicated samples, lines with Bolivian ancestry were found to have generally high oil contents while a number of selections from Mexican *hirsuta*-type collections had oil contents under 420 g kg^{-1}. Crosses of virginia-type breeding line N91026E with *hirsuta* collections and a factorial mating of lower-oil virginia lines with low-oil parents were evaluated in 1995 and 1996. A few plants were identified with oil contents near the target level.

Identification of Additional B- Genome Peanut Accessions by use of RFLP Markers. M. D. BUROW*, A. H. PATERSON, J. L. STARR, and C. E. SIMPSON. Department of Soil and Crop Sciences, Texas A&M University, College Station, TX 77843; Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX 77843; and Texas Agricultural Experiment Station, Stephenville, TX 76401.

Wild peanut species possess numerous agronomically-useful genes lacking in the cultivated *A. hypogaea*. In order to facilitate the use of wild germplasm, DNA markers were used to aid in identification of wild peanut accessions. Radiolabeled peanut (*A. hypogaea*) cDNA clones were hybridized to EcoRI- or HindIII-digested peanut DNA. Based on statistical analyses of marker data, *A. batizocoi* (accessions 9484 and 36026) and *A. cruziana* (36024) are similar, are distinct from A-genome species examined, and therefore both appear to be B-genome species. The marker patterns of accession 1302 are highly similar to 36024, suggesting that 1302 belongs to *A. cruziana*. Marker data also suggest that accessions 1287, 1288, and 1291 are B-genome, because of molecular similarity to *A. batizocoi* and *A. cruziana*, and dissimilarity to A-genome species. These data expand the number of B-genome species known to at least two, and indicate that RFLP markers can be used as a rapid aid in determination of B-genome accessions.

Cross-Compatibility Data of Additional B-Genome *Arachis* Accessions. C.E. SIMPSON*, M.D. BUROW, A.H. PATERSON, J.F.M. VALLS, D.E. WILLIAMS, I.G. VARGAS C. and J.L. STARR. Texas Agric. Exp. Stn. Stephenville, TX; Soil & Crop Sci. Dept. Texas A&M Univ. College Stn. TX; CENARGEN/EMBRAPA, Brasilia, Brazil; IPGRI, CIAT, Cali, Colombia; Univ. Santa Cruz, Herb. & Economic Botany, Santa Cruz, Bolivia; and Plant Path. & Micro. Dept. Texas A&M Univ. College Stn. TX.

We have conducted cross-compatibility studies on numerous accessions of wild *Arachis* which have been collected in South America over the past twenty years. Crossing data have been difficult to obtain in several cases because amounts of material have been limited on several accessions. However, by re-collecting and seed increase we have now accumulated sufficient material and data to make some definitive statements regarding some of these germplasm lines. In addition, molecular data have been attained which substantiate additional B-genome materials. The molecular data are to be presented in a separate paper. Several accessions were suspected to be B-genome, including KSSc-36024, VSGr-6389, VSW-9923, and WiSVg-1291. These were crossed with several parents, some in common. The pollen stain percent of hybrids involving 36024 ranged from 0.1 to 78. Hybrids between 36024 and WiSVg-1287, 1288, 1299, and 1300 ranged from 62 to 78% in pollen stain percent, indicating some affinity with *A. cruziana*. The VSGr-6389 hybrids ranged in pollen stain from 0.4 to 14.8%. Hybrids between 36024 and 6389 averaged less than 4% stained, indicating appreciable distance between the two species. When crossed with *A. batizocoi*, the two species had 0.1 (36024) and 4.5% (6389) pollen stain, again showing much difference. The data for WiSVg-1291 are more limited, but hybrids with 36024 (*A. cruziana*) and K-9484 (*A. batizocoi*) had pollen stain percent between 33 and 52%; good evidence that 1291 has some affinity with both species and all are likely the same genome. Morphologically, 1291, 6389, and 36024 are similar, and the three are similar to, but distinct from, *A. batizocoi*. Descriptions of several new species are being prepared as a result of these and related studies.

Inheritance and Expression of Transgenes in Peanut. P. OZIAS-AKINS* and H. YANG. Department of Horticulture, University of Georgia Coastal Plain Experiment Station, Tifton, GA 31793-0748.

The introduction of foreign genes into any genotype of peanut has become relatively routine when microprojectile bombardment of embryogenic tissues is used as the method of gene transfer. We have introduced an insecticidal crystal protein gene from *Bacillus thuringiensis* (*Bt cryIA*(c)), a nucleocapsid protein gene from tomato spotted wilt virus (TSWV-NP), and a β-glucuronidase (*gus*) gene driven by a soybean vegetative storage protein gene promoter (*vsp-gus*). Progeny from primary transgenic plants containing the *Bt* gene segregated for insecticidal activity. Presence of the gene did not always confer insecticidal activity. Evidence for gene silencing was observed for one primary transgenic line containing multiple copies of the TSWV-NP gene. Progeny from another line containing a single copy of the gene segregated 3:1 for expression of the gene based upon ELISA determination. Progeny from primary transgenic plants containing the *vsp-gus* gene showed several different segregation patterns. The levels of *gus* gene expression also varied considerably among different cell lines. Overall conclusions confirmed observations from other transgenic plant species, namely, that multiple copies of a transgene inserted into a genome sometimes but not always lead to gene silencing, that physical methods of gene transfer can allow the selection of plants with single copies of the transgene where strict Mendelian segregation occurs, and that levels of expression of a transgene are dependent upon other factors in addition to promoter strength.

Plant Pathology II

Evaluation of Reduced Spray Programs with Tebuconazole for Control of Southern Blight and Early Leaf Spot of Peanut in Oklahoma. J. P. DAMICONE* and K. E. JACKSON. Department of Plant Pathology, Oklahoma State University, Stillwater, OK.

Recommended use patterns for tebuconazole were compared to reduced spray programs in three trials over a two-year period to develop efficient disease management programs. Trials were in fields with a history of severe southern blight (*Sclerotium rolfsii*). The standard spray programs included six applications (14-d intervals) of a tank mix of 0.15 kg/ha tebuconazole and 0.63 kg/ha chlorothalonil, and a 6-spray block program with four applications of 0.23 kg/ha tebuconazole substituted for 1.26 kg/ha chlorothalonil on sprays 2-5. Reduced spray programs were blocks of two (sprays 2,3 or 3,4) or three (sprays 2-4) applications of 0.23 kg/ha tebuconazole substituted for 1.26 kg/ha chlorothalonil in the 6-spray programs. In addition, the tank-mix and 0.23 kg/ha tebuconazole treatments were applied according to a weather-based advisory program for early leaf spot (*Cercospora arachidicola*). Spray programs were compared to a 6-spray program of 1.26 kg/ha chlorothalonil, with and without 1.12 kg/ha flutolanil (spray 2). Trial x treatment interactions were significant ($P<0.05$) for disease incidence, but not for grade (%TSMK) and yield. All spray programs were effective in controlling leaf spot (10% defoliation or less). The difference in yield between the unsprayed control and the chlorothalonil program, which were attributed to leaf spot, averaged 588 kg/ha. Incidence of southern blight ranged from 10-17% for the chlorothalonil program. Disease control, the percentage reduction in disease incidence compared to the chlorothalonil program, was 70% or greater for the 14-d tank-mix, 4-spray block, 3-spray block, and the 2-spray block (sprays 2-3) programs. All spray programs except the tank-mix applied according to the leaf spot advisory, and the chlorothalonil/flutolanil program reduced disease incidence ($P\leq0.05$) in each trial compared to chlorothalonil. However, the 4-spray block program provided better control than 0.23 kg/ha tebuconazole applied according to the leaf spot advisory. All spray programs except the tank-mix applied according to the leaf spot advisory, and the 2-spray block (sprays 3,4) increased yield ($P\leq0.05$) compared to chlorothalonil. Yields above the chlorothalonil program, which were attributed to control of southern blight, ranged from 594 kg/ha for the chlorothalonil/flutolanil treatment to 852 kg/ha for the 14-d tank mix. Grades were not improved for any spray program compared to chlorothalonil. Several spray programs with less than the recommended number of applications of tebuconazole provided effective disease control, but application timing was critical.

Evaluation of Fungicides for Control of Soilborne Pathogens of Peanut. J.A. WELLS* and T.A. LEE, JR. Department of Plant Pathology and Microbiology, Texas A&M University, Stephenville, TX 76401.

Four different fungicides were tested in seven locations in the following Texas counties: Collingsworth, Eastland, Gaines, Hall, Lee, Mason, and Wilbarger. Folicur 3.6 F at .5 kg/ha, Moncut 50 WP at 2.2 kg/ha, Abound 80 WG at .42 kg/ha, and Fluazinam 500F at .84 kg/ha were applied at 50 days after planting (DAP) and 80 DAP in each location. A randomized complete block design with three replications were sprayed with a CO_2 backpack sprayer using 8002VS nozzles (179.4 kPa) at 187 L/ha, banded over the row (30-cm band). Plots with southern blight (Sclerotium rolfsii) and all significant pod and limb rot (Rhizoctonia solani) showed increased yields with all the fungicides. Plots heavily infested with Sclerotinia blight (Sclerotinia minor) responded only to Fluazinam. The other fungicides have been shown not to be active against Sclerotinia blight. Fields with no disease pressure did not respond well enough to warrant application. Effects of fungicides for soilborne disease control were minimized by the extreme drouth and heat in the first part of the growing season, and above average rainfall and cooler temperature in the last part.

Effect of Application Method and Formulation on Distribution of Flutolanil in Peanut Plants and Soil. A. O'LEARY*, L. VARGYAS, C. ROSE, Ricerca, Inc., Painesville, OH, 44077, and J. FRENCH, ISK Biosciences Corporation, Mentor, OH, 44060.

Bravo®/Moncut® (chlorothalonil/flutolanil) formulations were applied to peanut plants (2.125 pt/A) at three locations (Georgia, South Carolina and Oklahoma) using one or several application methods (ground and/or aerial and chemigation). Applications were made on a 14-day schedule. Residues of flutolanil were determined in plant tissues (upper and lower canopy, and subterranean plant parts) and in the soil. Samples were collected immediately before and after the 4th application (5th in SC) and after 0.5 in. of irrigation. In GA, significantly more flutolanil was deposited on the above-ground plant canopy and in the soil when applied via ground spray (upper - 30.02, lower - 19.16 µg/g tissue, soil - 0.22 ppm) compared to aerial spray (upper - 14.54, lower - 12.35 µg/g tissue, soil - 0.15 ppm). After irrigation, there was no significant difference in plant and soil residues between the two application methods. At the OK site, chemigation resulted in significantly smaller residues in the upper (2.55 µg/g tissue) and lower (2.52 µg/g tissue) canopy compared to ground (20.07 and 16.04 µg/g tissue) and aerial (15.57 and 8.07 µg/g tissue) applications. In subterranean plant parts and in soil, significantly more flutolanil was detected in the chemigation treatment after irrigation compared to the other two application methods. In SC, the commercial and an experimental formulation of Bravo®/Moncut® were applied via ground spray. Significantly greater initial quantities of flutolanil were detected in the upper canopy (25.70 µg/g tissue) and subterranean parts (0.67 µg/g tissue) with the experimental formulation than with the commercial formulation (14.71 and 0.42 µg/g tissue). In the lower canopy more flutolanil was found with the experimental treatment than with the commercial treatment, although the difference was not significant. After irrigation, flutolanil levels were greater in the upper and lower canopy and in the soil with the experimental formulation than with the commercial formulation.

Effect of Reduced Rate Tank Mix Sprays of Tebuconazole, Chlorothalonil and Adjuvants on Disease Control and Peanut Yield. A. J. JAKS*, W. J. GRICHAR, and B. A. BESLER. Texas Agricultural Experiment Station, Yoakum, TX 77995.

The test was conducted in 1996 to evaluate the effectiveness of tank mixes of tebuconazole (Folicur 3.6F) and chlorothalonil (Bravo Weather Stik) with various cleared and experimental adjuvants for control of peanut (Arachis hypogaea L.) foliar and soilborne diseases. Tebuconazole, chlorothalonil, and adjuvants were applied at 3.6 fl oz/A, 12.0 fl oz/A and 0.125% v:v respectively in the tank mix. Adjuvants were added to the one half rates of tebuconazole and chlorothalonil to evaluate enhancement by these products on a five spray (21 day) schedule. These treatments were compared to a half rate tank mix of tebuconazole and chlorothalonil without adjuvant and a full rate, seven spray (14 day) block application of chlorothalonil at 1.5 pt/A at sprays 1, 2, 7 and tebuconazole at 7.2 fl oz/A plus Induce at 0.20% v:v at sprays 3-6. Plots were two rows, each 20 ft long. Early leaf spot (Cercospora arachidicola) pressure was heavy with untreated plots rating 5.9 at the initial leaf spot rating 101 days after planting (DAP). Late leaf spot (Cercosporidium personatum) pressure was severe at the final rating (130 DAP) with untreated plots rating 9.5. Leaf spot was assessed by using the Florida Scale (1=no disease, 10=plants dead, defoliated by leaf spot). Soilborne disease pressure from southern blight (Sclerotium rolfsii) was moderate. Southern blight ratings were based on the number of S. rolfsii disease loci per unit row length. Phytotoxicity was not observed from any of the treatments in which adjuvants were added. All treatments with adjuvants which received five sprays had numerically less leaf spot at the final rating than the treatment without adjuvant. The seven spray, full rate treatment had statistically less leaf spot than any of the other treatments at the final rating. All treatments had significantly less southern blight target site hits than the untreated control at digging. While pod yield from the full rate, seven spray treatment was 3359 lbs/A it was not statistically significant from some of the other half rate treatments which received five sprays.

Disease Control with Combinations of Flutolanil and Tebuconazole. K.L. BOWEN*, P.A. BACKMAN, and J. FAJARDO. Department of Plant Pathology, Auburn University, Auburn, AL 36849-5409.

The fungicides flutolanil and tebuconazole are very effective against southern stem rot (caused by *Sclerotium rolfsii*) and limb rot (caused by *Rhizoctonia solani*) in peanut. Both of these fungicides are commonly used with chlorothalonil for season-long disease control including leaf spots. In 1995, observations from trials that included these three fungicides in combination indicated synergism between flutolanil and tebuconazole for southern stem rot control. In 1996, possible synergy among these fungicides, when used at rates lower than recommended, was evaluated. Treatments consisted of combinations of chlorothalonil (at 100, 67, and 33% recommended rate) and tebuconazole (at 100, 57, 28, 14% recommended rate and 0) over seven applications, along with four applications of flutolanil (60, 30, and 15% recommended rate for each application and 0). Data were collected on percent infection due to leaf spots, defoliation, limb rot rating, numbers of limb rot lesions, incidence of southern stem rot, and yield. Levels of infection due to leaf spots and percent defoliation were lowest in treatments that received full rates of chlorothalonil plus tebuconazole and chlorothalonil (65%) plus tebuconazole (57%) (for seven applications) plus flutolanil (15 or 30%) for four applications. Southern stem rot was lowest in treatments to which tebuconazole was applied at 14 or 28% the recommended rate with chlorothalonil at the 67% rate plus flutolanil at the 15% rate. Two years of data and methods for determining synergy and additive effects due to fungicidal disease control will be discussed.

Use of a GIS System to Disseminate Weather-based Advisories on the WWW. J.E. BAILEY*. Department of Plant Pathology, North Carolina State University, Raleigh, NC 27695-7616.

Weather-based spray advisories are used in North Carolina to reduce unnecessary fungicide sprays and improve the timing of applications for peanut early leafspot (*Cercospora arachidicola* Hori) and sclerotinia blight (*Sclerotinia minor* Jagger) control. Each county maintains weather-monitoring equipment and a computer analysis system for advisory analysis and computation. Weather advisories and disease observations are recorded for growers to access by phone in each county. A GIS (ArcInfo) program was developed so transcounty communication could be facilitated. Agents access a forms page, using a web browser, to enter observations from their county regarding disease and advisory status. Disease observations were observed or not observed. Advisory information was favorable or not favorable. Submission of this information to the host computer on campus in Raleigh created a data set which was automatically mapped by the GIS system and posted to a web page. Farmers and county agents can view the state map with color-coded county disease observation and weather advisory status information using a web browser. The whole procedure takes less than 30 seconds.

Distance and Irrigation Factors in an Automated AU-Pnuts Weather Advisory Program. J.E. FAJARDO*, P.A. BACKMAN, K.L.BOWEN, and J.E. BURKETT. Department of Plant Pathology, Auburn University, Auburn, AL 36849-5409.

Distance from the test field to a rainfall monitoring station at irrigated and non-irrigated peanut field sites were compared in two years for their ability to accurately predict fungicide applications for control of leaf spot and Southern stem rot using both AU-Pnuts schedule and a calendar-based application schedule. Distances to rainfall monitoring stations were 0, 1, and 8 miles. A randomized complete block design with 6 replications was utilized and plot size for each treatment per replication was 6 rows x 35 ft. Foliar sprays of chlorothalonil (1.5 pt/A) or chlorothalonil + tebuconazole (4.2 fl oz/A) were applied singly or in combination with a tractor-mounted boom sprayer equipped with three TX8 hollow cone nozzles per row calibrated to deliver 15 gpa at 40 psi. Early leaf spot caused by *Cercospora arachidicola* was the predominant foliar pathogen for both 1995 and 1996 growing seasons in Headland, AL. In 1995, regardless of irrigation, fewest leaf spot and white mold infections were recorded with fungicides applied in tank-mix under an AU-Pnuts advisory program with a 1-mile distance to a rain gauge compared to fungicides applied alone or in tank-mix under a 14-day spray schedule. However, in 1996, leaf spot and white mold control were effective only for a local rainfall monitoring station. Leafspot control changed as the distance to a monitoring station increased beyond 1 mile. Results indicated that up to 1-mile distance from a rainfall monitoring station was optimum and accurate for timing fungicide applications in a tank-mix using AU-Pnuts advisory. Year, irrigation x year, and treatments x year had significant effects on leaf spot and white mold control.

Formation of Infection Cushions on Cellophane Dialysis Membrane by *Sclerotinia minor* in Response to Peanut. H.A. MELOUK[1*], S.S. ABOSHOSHA[2], and M.E. PAYTON[3]. [1]USDA-ARS, Dept of Plant Pathology, Oklahoma State University (OSU), [2]Plant Pathology Dept, Alexandria University, Egypt,and [3]Statistics, OSU, Stillwater, OK 74078.

All leaves except the top two on detached shoots (12-15cm) from 8-wk-old peanut plants were removed. Four Shoots were placed in a water moistened 10 x 3.3cm bag made of dialysis tubing (MWCO 12,000), which was placed in a foam cup (177 ml ca.) filled with 15 g perlite. One hundred ml of fragmented *Sclerotinia minor* mycelial suspension (containing 1 g mycelia) was added to each cup. Glass test tubes (1 x 14cm) were each placed in a dialysis bag as controls. Dialysis bags and contents were lifted from the perlite medium after 5 days, and the outer surface facing the perlite was gently rinsed with cold running tap water. Ten, 1cm^2 squares were randomly cut from the dialysis membrane, and placed on a glass slide with the inner surface of the membrane contacting the glass. The squares were stained with lactophenol cotton blue for 3 min, and mounted in glycerin gel. The number of infection cushions was counted using a light microscope. Two peanut genotypes and 13 isolates of *S. minor* were used. Over isolates in Okrun(a sclerotinia-susceptible peanut) an average of 4.5 infection cushions (IC)/cm^2 were formed which was higher (p=0.05) than with the sclerotinia-resistant genotype Southwest Runner (2.7 IC/cm^2). These results suggest that quantifying IC formed on cellophane dialysis membrane in response to plant host contact could be used to facilitate determination of reaction to *S. minor*.

Sensitive and Rapid Detection of Tomato Spotted Wilt Tospovirus by Immunocapture or Direct Binding Polymerase Chain Reaction. R.K. JAIN, S.S. PAPPU[1], H.R. PAPPU*, A.K. CULBREATH, AND J.W TODD[1]. Departments of Plant Pathology, and [1]Entomology; University of Georgia Campus at Tifton, Coastal Plain Experiment Station, Tifton, GA 31793-0748.

Tomato spotted wilt tospovirus (TSWV), a member of the genus *Tospovirus*, family *Bunyaviridae*, is a major constraint to peanut production in Georgia. Detection of the virus by using rapid, sensitive, and reliable procedures is an important pre-requisite in identifying TSWV infection of peanut and other susceptible crops. A combination of immunocapture and reverse-transcription-polymerase chain reaction (IC-RT-PCR), or direct binding-PCR (DB-PCR) methods were adapted for rapid and sensitive detection of TSWV in plant tissue. In IC-RT-PCR, TSWV was first captured by using nucleocapsid protein (NP)-specific polyclonal antiserum that was previously adsorbed to the wells of a microwell titer plate or to the walls of a microcentrifuge tube. The resulting antibody-antigen complex was denatured by heating the contents at 70 C for five minutes. The NP gene of TSWV was then amplified by a combined, one-tube, RT-PCR. In DB-PCR, virus in the tissue extract was directly adsorbed to the walls of a microcentrifuge tube. Following heat denaturation at 70 C for five minutes, RT-PCR was performed directly in the same tube to amplify the NP gene of TSWV. Presence of the virus was detected by analyzing the RT-PCR reaction products by agarose gel electrophoresis. A 700 bp DNA fragment indicative of the presence of TSWV was seen in samples infected with TSWV but not in extracts of uninfected plants. Both IC-RT-PCR and DB-PCR procedures were rapid, did not involve multiple extractions with organic solvents, and did not require precipitation of nucleic acids. DB-PCR and IC-RT-PCR facilitated rapid detection of TSWV and its subsequent molecular characterization by restriction analysis and/or nucleotide sequencing.

Breeding and Genetics II

Characteristics of the 3'-Terminal Region of a Necrotic Strain of Peanut Stripe Potyvirus. S.S. PAPPU[1], H.R. PAPPU*[2], C.A. CHANG[3], A.K. CULBREATH[2], and J.W. TODD[1]. Departments of [1]Entomology, and [2]Plant Pathology; University of Georgia Campus at Tifton, Coastal Plain Experiment Station, Tifton, GA 31793-0748; [3]Taiwan Agricultural Research Institute, Taichung, Taiwan.

Peanut stripe potyvirus (PStV) causes typical stripe or vein banding pattern on leaves of peanut. Several biologically distinct PStV isolates have been described from various parts of the world. The necrotic isolate from Taiwan (PStV-TS) produces chlorotic lesions on peanut leaves that become necrotic with the necrosis later extending to the midribs, petioles and sometimes to the stems. This leads to stunting, severe mosaic, systemic foliar distortion or stripe symptoms on peanut. The 3'-terminal region of the PStV-TS was characterized at the molecular level. Using degenerate primers, the 3' region of the virus including a part of the NIb gene, the capsid protein (CP) gene and the 3'-untranslated region (UTR) was obtained by reverse transcription-polymerase chain reaction. The resulting ca. 1.3 kilobase fragment was cloned and sequenced. The sequenced region showed a part of the polyprotein consisting of a 367-amino acid polypeptide. The protease cleavage site for the capsid protein was predicted to be between the residues glutamine (Q) and serine (S), yielding a CP polypeptide of 287 amino acid residues. The aphid transmissibility of this strain was in agreement with the presence of the amino acid triplet DAG. The necrotic strain was highly homologous at the CP amino acid level with the blotch strains described from Georgia (PStV-B) and Indonesia (PStV-IB). The sequence identity was 95% with the B and IB strains. The 3' UTR is 252 nucleotides long, one nucleotide less than the B strain. The sequence identity in the 3'UTR ranged between 92% (B) and 94% (IB). Sequence phylograms indicated that PStV-B and IB are closer to each other than to the PStV-TS. All the PStV strains formed a cluster within the passion fruit woodiness virus group.

Comparison of Two Mass-Selected Cross Populations for Stem Rot Resistance in Peanut. W. D. BRANCH* and T. B. BRENNEMAN. Dept. of Crop and Soil Sci. and Plant Pathology respectively, University of Georgia, Coastal Plain Expt. Station, Tifton, GA 31793-0748.

Stem rot, white mold, or southern blight are different names for the same widespread devastating peanut (*Arachis hypogaea* L.) soilborne disease caused by *Sclerotium rolfsii* Sacc. Currently, fungicides used to control stem rot are very expensive in the U.S. Development of disease resistant cultivars is thus needed to reduce production cost for peanut growers. The objective of this study was to compare two mass-selected cross populations from the Georgia Peanut Breeding Program for stem rot resistance. The two cross populations represent different genetic sources (Southern Runner and Toalson) for stem rot resistance. Ten plants were mass-selected during each of the three early segregation generations (F_2, F_3, and F_4) under heavy stem rot disease pressure within the two cross populations. Advanced ($F_{6,9}$) mass-selections were then tested to unselected bulks and parental lines over four consecutive years (1993-96) for pod yield and stem rot resistance in an inoculated field area with known history of heavy disease pressure. Significant differences ($P \leq 0.05$) were found among the parents and mass-selected cross populations. Toalson significantly out-yielded Southern Runner by an average of >40%, and had less than half the number of stem rot disease hits as compared to Southern Runner. Mass-selections derived from Toalson also resulted in significantly higher pod yields and significantly less disease as compared to mass-selections derived from Southern Runner.

Backcrossing to Increase the Probability of Recovery of Superior Genotypes from Biparental Populations. T.G. ISLEIB*. Dept. of Crop Science, North Carolina State University.
The theory of backcrossing is well known as it pertains to the transfer of qualitative traits from one pure line to another. However, breeders of self-pollinated species often make crosses between parents with significantly different genotypic values for yield or other quantitative traits. In peanuts, this might occur not only in crosses of elite parents with exotics introduced from other countries, but also in crosses between elite parents from different market classes. Before beginning selection within a population, the breeder should maximize the probability that a genotype superior to the better of the two parents will be found. This probability can be improved by backcrossing under certain circumstances. Probability distribution is presented for the number of loci homozygous for beneficial alleles expected to occur in plants derived by selfing or backcrossing the biparental populations. The probability of successful recovery of superior homozygous genotypes is a function of the number of loci segregating in the population (n), the proportion of beneficial alleles carried by the better parent (k), the probabilities of fixation of a beneficial allele from the better and the the worse parent (p_b and p_w), and the minimum genetic difference in number of beneficial alleles required to differentiate between genotypes (n_d). When both parents carry equal numbers of beneficial alleles (k=0.5) as in elite-by-elite crosses, then the probability of recovery genotypes superior to either parent is high under selfing. When k deviates from 0.5 toward 1.0 as it does in wider crosses, it becomes advantageous to backcross to the better parent, increasing the probability of that loci will be homozygous for beneficial alleles from the better parent while decreasing the probability that beneficial alleles from the worse parent will be recovered in a homozygous state. The number of backcrosses required to optimize the probability of success is dependent on k, n, and n_d.

Runner-type Peanut with Resistance to *Sclerotinia minor* Jagger. O.D. SMITH, C.E. SIMPSON and H. A. MELOUK. Soil & Crop Sciences Department, Texas A&M University, College Station, TX 77843; Texas Agricultural Experiment Station, Stephenville, TX 76401 and USDA-ARS and Department of Plant Pathology, Oklahoma State University, Stillwater, OK 74078.
Sclerotinia minor Jagger is the cause of significant peanut yield loss in Texas and Oklahoma. Tamspan 90 has enhanced production in disease prone fields but reduction in spanish peanut consumption has heightened the need for a sclerotinia blight resistant runner cultivar. Transfer of resistance from Tamspan 90 to industry acceptable runner-type breeding lines has been a focus of the Texas peanut breeding program. Single and backcross progenies with numerous runner-type parents have been screened for disease reaction and selections made for plant type, vine size, pod shape and size, and seed shape and size. Resistance to sclerotinia blight has been combined with plant characteristics similar to commercial runner cultivars. Disease reactions among the selections vary from highly susceptible to resistance superior to that of Tamspan 90. Five breeding lines were evaluated for yield, grade, other agronomic traits, and disease reaction at multiple Texas and Oklahoma locations in 1995 and 1996. Yields of the selected lines in Northern Texas and Oklahoma were markedly superior to Florunner and Okrun in the presence of the disease, and equal or better where the disease was not present. Seed increase in prospect of a cultivar release is in progress.

Genotype-by-Environment Interaction for Yield and Grade in the Uniform Peanut Performance Test. P.W. RICE and T.G. ISLEIB*. Dept. of Crop Science, North Carolina State University, Raleigh, NC 27695-7629.

In the past, there was clear separation of production of the runner, spanish, and virginia market-types in the three major peanut-producing areas of the US. Over the past 20 years, growers have diversified their plantings until runner and virginia peanuts are now produced in all three areas. It is important to understand the genotype-by-environment interactions that can occur when cultivars developed in one area are grown in another. The Uniform Peanut Performance Test provides data allowing estimation of the components of GxE interaction across the three areas. Genotype means from the 1985 through 1996 UPPT were subjected to analysis of variance to estimate the effects of years, production areas, locations within areas, genotypes, and the various interactions among of genotypes and environmental factors. Because the genotypes grown in the UPPT represent most of the commercially grown cultivars, genotype effects were considered to be fixed. Furthermore, genotype effects were stratified by area of origin to permit testing of the significance of interaction between the area of origin of a genotype and the area of testing. For pod yield, the significant sources of variation were: locations within production areas, year-by-location interaction within areas, genotypes, and area-by-genotype interaction. There was significant interaction between the area of origin for a genotype and the area where it was tested. Genotypes selected in the Southwestern area performed 140 kg ha^{-1} worse than expected when tested in the Southeast and 201 kg ha^{-1} better than expected when tested in the Southwest. Genotypes selected in the VC area yielded 174 kg ha^{-1} worse than expected in the Southwest and 92 kg ha^{-1} better than expected in the Southeast. No significant interactions were observed for genotypes tested in the VC area. The largest component of GxE variance for yield was location-by-genotype interaction within area, indicating that comparisons among genotype means could be made more precise by increasing the number of locations within areas used each year rather than by leaving selections in the UPPT for more years.

Advances of the Peanut Selection Program at the University of Chapingo. SAMUEL SANCHEZ-DOMINGUEZ. Depto. de Fitotecnia, Universidad Autónoma Chapingo, Chapingo, Mex. 56230.

The main areas where peanut are grown under rain-fed conditions are located in southern Mexico (states of Morelos, Guerrero, Puebla, Oaxaca and Chiapas). This area is characterized by low yields (1.5-2.0 t ha^{-1}) because most of the peanut germplasm used by growers are landraces. In 1994 a selection study was conducted in Cuauchichinola Mor. (18° 35' LN and 800 m high, 800 mm rainfall). A group of 49 dragging peanut accessions and experimental genotypes were grown. During harvest, a plant from each accession was selected. Foliage health, pod distribution on the branches, pod number and pod size were the main selection traits used. On the basis of 45 selected plants, plus 45 original accessions and 10 control genotypes in 1995 a 10 X 10 latix with 2 replications was performed for another selection cycle. It was made only on the first 45 genotypes and in the first replication. According to the higher values for main yield components, the results indicate that for pod number, DEW-SSD 1230-SI_1, Mor. 41-SI_1 and Gro. 6-SI_1 were the best genotypes with 92, 91 and 74 pods/2 plants. For pod yield, the best genotypes were Mor. 41-SI_1 (143.4 g/plant), Gro. 6-SI_1 (120. 4 g/plant) and Pue. 60-SI_1 (120.2 g/plant). In relation to mature seed number, Mor. 41-SI_1, DEW-SSD 1230-SI_1, and Gro. 24-SI_1 showed the highest values with 156, 140, and 130 pods/2 plants, respectively. For non-mature seed numbers, Gro. 2-SI_1, GP-NC-343 SI_1, and Pue. 60 SI_1 were the peanut genotypes which showed the lowest values with 10, 10 and 10 seeds/2 plants. Mor. 41-SI_1, DEW-SSD 1230-SI_1, and Gro. 21-SI_1 produced higher total seed numbers, with 174, 152 and 133 seeds/2 plants, respectively. Mor. 41-SI_1, Pue. 60-SI_1 and Gro. 6-SI_1 were the best overall peanut genotypes, producing 101.8, 82.3 and 80.4 g of mature seed/2 plants. Gro. 32-SI_1, Gto. 35-SI, and Gro. 2-SI_1 showed the best seed-hull ratio with values of 0.77, 0.76, and 0.74, respectively.

Locating, Characterizing and Describing Ecuadorian Peanut Diversity. D.E. WILLIAMS*, K.A. WILLIAMS, G.A. ZAMBRANO, J.H. MENDOZA, and C.E. SIMPSON. IPGRI-Americas, c/o CIAT, Cali, Colombia; USDA-ARS National Germplasm Resources Laboratory, Beltsville, MD 20705, USA; Colegio Técnico de Manabi, Portoviejo, Ecuador; INIAP, Portoviejo, Ecuador; and Texas Agricultural Experiment Station, Stephenville, TX 76401, USA.

As part of a collaborative effort by the U.S. Department of Agriculture, the Instituto Nacional Autónomo de Investigaciónes Agropecuarias, and the International Plant Genetics Resources Institute, the diversity and distribution of Ecuadorian peanut landraces are being described and mapped to facilitate their conservation for future use in peanut improvement. A comprehensive collecting strategy targeted areas of high diversity with special emphasis on indigenous and traditional peanut farming communities. Nearly two hundred accessions of native peanuts were collected over a two year period, including five of the six known botanical varieties of *Arachis hypogaea* L. Rare examples of the botanical varieties *hirsuta* and *aequatoriana* were recovered. In an effort to increase the benefits of plant exploration activities to germplasm donor countries, the collected materials were increased and characterized in Ecuador using USDA peanut descriptors. A U.S. peanut breeder provided training on peanut characterization to Ecuadorian scientists. Building upon previous studies of Ecuadorian landraces, a catalog is being produced that will describe, illustrate, and map the distribution of peanut landraces in Ecuador.

The U. S. Germplasm Collection of *Arachis hypogaea*: How Much Diversity do we Have? C. C. HOLBROOK, USDA-ARS, Coastal Plain Exp. Sta., Tifton, GA 31793.

A core collection has been selected for peanut (*Arachis hypogaea* L.). This core collection was selected to represent the genetic diversity of the entire germplasm collection. The objective of this study was to evaluate the core collection for 17 plant discriptors. This information was then used to estimate genetic diversity in the entire collection and to suggest collection needs. All core collection accessions were grown in field plots at Tifton, GA for at least two years during the period 1990-1996. Eight above ground plant discriptors were evaluated using standard procedures before digging and nine below ground discriptors were evaluated using standard procedures after digging. The collection contains accessions from 95 countries of origin. The most common countries of origin were Argentina (14.7%), Zambia (8.5%), Brazil (7%), Bolivia (6.9%), and India (6%). Sixty-four percent of the accessions exhibited an erect plant growth habit. Each of the classes, spreading, spreading and bunch, and bunch contained less than ten percent of the accessions. Sixty-three percent of the accessions had flowering on the main stem. Fifty-nine percent of the accession were either early or very early in maturity. These results indicate a preponderance of *A. hypogaea* L. ssp *fastigiata* in the collection. Valencia was the most prevalent U.S. pod market type at 26%. Twenty-two percent of the accessions had a runner pod type, however, spanish (2%) and Virginia (3%) were poorly represented. Almost half (46%) of the samples showed a mixture of pod types.

Minutes of the APRES Board of Directors Meeting
Hyatt Regency Hotel
San Antonio, TX
July 8, 1997

The meeting was called to order at 7:05 p.m. by President Fred Shokes. Those present were Fred Shokes, Chip Lee, Ron Sholar, Harold Pattee, David Knauft, Corley Holbrook, Tom Stalker, Mark Black, Hassan Melouk, John Baldwin, Robert Lynch, Robert Scott, Bobby Walls, Norris Powell.

Approval of 1996 Minutes of the APRES Board of Directors Meeting - Ron Sholar

The minutes of the 1996 annual meeting held in Orlando, FL were approved as published in the 1996 PROCEEDINGS.

Executive Officer Report - Ron Sholar

The society continues in a stable situation with a current membership of 500. Membership continues to drop slightly which is likely a function of the decline in the number of individuals involved in the peanut industry. Financially, the society remains in extremely good condition.

American Society of Agronomy Liaison Report - Tom Stalker

Reported on the relationship between APRES and ASA. Fred Shokes pointed out that APRES does not have the same relationship with the American Phytopathological Society.

CAST Report - David Knauft

David Knauft pointed out that CAST is an umbrella organization made up of other agricultural organizations. The major function for CAST is to provide an unbiased source of scientific information for the media and congress. CAST has a strong presence on Capitol Hill and has influenced some legislation and likely prevented the reporting of incorrect information by the media.

CAST continues to work with the Kellogg Foundation to conduct the *"Conversations on Change"* series. This has allowed the CAST member societies to take a look at themselves and address the needs of their members. Phases I and II have already taken place. APRES may want to take a look at how *Conversations on Change* can help the society even more. Some societies have looked at certification. APRES might want to look at the possibility of increasing grower participation.

Harold Pattee asked about the Phase III and David Knauft responded that CAST has presented a proposal to the Kellogg Foundation for Phase III.

David Knauft brought up the fact that the APRES dues paid to CAST do not cover his travel expenses to CAST meetings. He recommended that APRES take no action at this time on paying additional travel expenses but wait to determine if CAST develops a policy on this. Ron Sholar pointed out that APRES is paying only a little over $600 per year in CAST dues. David Knauft indicated that he feels that CAST is doing a very good job in representing its member societies.

Finance Committee Report - Hassan Melouk

APRES continues to be a solvent organization. Society assets were $139,681.98 on June 30, 1996 and were $154,604.87 on June 30, 1997. Society assets grew by $14,922.89 during the last year. The proposed budget is for $68,300. The 96-97 budget proposed selling 200 copies of *Advances in Peanut Science* but only 100 copies were sold. The 97-98 budget proposes that 100 copies will be sold. The Finance Committee recommended that a $1000 cash award be given with the Coyt T. Wilson Distinguished Service Award beginning with the 1998 award. This is the highest award that the society can present and this would match the amount for the DowElanco Awards. Dan Gorbet asked what the source of the award funds would be. Dr. Melouk responded that the funds would come from APRES general funds. The Board of Directors voted to approve the cash award beginning with the 1998 award.

The Board of Directors voted to cover the expenses for Frank McGill to attend the 1997 APRES meeting in San Antonio as the winner of the Coyt T. Wilson Distinguished Service Award.

The proposed budget was approved by the Board of Directors.

Nominating Committee Report - Harold Pattee

The committee was composed of Harold Pattee, Gerald Harrison, Jim Davidson and Charles Simpson.

The following slate of officers was presented:

President-Elect - Charles Swann, Virginia Tech University
State Employee Representative (SW) - Mike Schubert, Texas A&M University
Industry Representative (Production) - Randy Griggs, Alabama Peanut Producers

The committee also recommended that Ron Sholar continue as Executive Officer and Tom Stalker continue as Editor of Peanut Science.

The Board of Directors accepted the report. The actual vote on these offices will be taken at the Business Meeting on July 12.

Publications and Editorial Committee Report - Tom Stalker

In the absence of Rick Brandenberg, Tom Stalker presented a *Peanut Science* report.

Dr. Stalker reported that library subscriptions have continued to decline and that the Board might want to take some action to try to increase this number. The committee has also considered review papers as a means for increasing participation.

The committee recommended the following as new members for the Editorial Board:

Margaret Hinds - Food Science representative, Editorial Board
Marshall Lamb - Economics representative, Editorial Board
Corley Holbrook indicated that he has been using Duncan McCluskey, Station Librarian at Tifton, GA as the co-editor of Peanut Research. He has been given a complimentary membership.

The Board of Directors approved the appointments to the Peanut Science Editorial Board and Duncan McCluskey as co-editor of Peanut Research.

Peanut Quality Committee Report - Corley Holbrook

See complete report. Dr. Holbrook discussed the concern in the nut industry about cross-contamination.

The report was accepted.

Bailey Award Committee Report - Craig Kvien

The Board of Directors approved the selection of the Bailey Award winner for the 1996 meeting.

Bailey Award Committee Ad Hoc Committee Report - Tim Brenneman, Chair - Harold Pattee, President of APRES in 95-96, appointed an Ad Hoc Committee to study and make recommendations for changes in the way the Bailey Award is presented.

The committee made the following recommendations:

a. There is a need for a set of guidelines for the oral presentations.
b. The guidelines would be similar to the guidelines being used for the written presentation.
c. When the program chair selects session chairs, he will send to each of them a set of guidelines for selecting outstanding papers and a uniform score sheet (to be developed by the ad hoc committee). This will ensure that all moderators/session chairs know all of their responsibilities and should improve presentations.

Dr. Brenneman also discussed:

a. The possibility of a separate session just for those who want to compete for the Bailey Award.
b. There is some feeling that more emphasis should be given to the oral presentation and less (or none) for the manuscript presented. In this case, all judging would be based on the oral presentation, the abstract, and a hard copy of the slides used with the oral presentation.
c. The possibility of a cash award for the winner and certificate to all who make the initial cut for further consideration.

There was discussion about the value of being nominated for the Bailey Award. Some thought being nominated had value while others thought this had little value to university faculty members.

Dr. Shokes asked the current ad hoc committee to work further and (1) develop oral presentation guidelines and that (2) the program chair (working with the Executive Officer) be responsible for distributing these to the session chairs.

Fellows Committee Report - Norris Powell

The Fellows Committee received one nomination. Mr. Powell pointed out that we have many deserving members who should receive consideration for fellowship.

Dr. Shokes pointed out that we all have a responsibility for helping secure nominations for each of the awards presented by APRES. Mr. Powell pointed out that the deadline for nominations is March 1 and calls need to be made well in advance of this date to secure nominations.

Site Selection Committee Report - Mark Black

The following meeting schedule will be followed:

Norfolk, VA - July 7-10, 1998, Omni Waterside, $93 roomrate
(single and double)
Savannah, GA - July 13-16, 1999, Savannah Hyatt Regency
Alabama - 2000 (Location and dates TBA)
Oklahoma - 2001
North Carolina - 2002
Florida - 2003

Hotel Negotiations and Site Selection Ad Hoc Committee Report - Chip Lee and Mark Black

There is increasing concern about whether we will have sponsored on-site events.

Fred Shokes indicated he will be responsible for pulling together some guidelines for hotel negotiations. He will collect input from others inside and outside the society and these will be published by the Executive Officer.

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

There were three nominations for the award. See report.

The committee was in strong agreement with the action to award $1000 to the recipient of the Coyt T. Wilson Award.

Joe Sugg Graduate Student Award Committee Report - Hassan Melouk

Five papers will be presented on Wednesday and five judges have been selected.

Fred Shokes asked about encouraging graduate students to participate in the competition. Dr. Melouk commented that the number of papers is a function of number of graduate students. This number has been declining.

Currently, the award is for $200 for first place and $100 for second place. The funds are provided by the North Carolina Peanut Grower's Association.

There was considerable discussion about how to handle the Graduate Student competition. President Shokes asked the Graduate Student Committee to continue to work on procedures for conducting the graduate student competition to include whether all papers will be presented in a single or multiple sessions. New guidelines are to be presented to the Executive Officer not later than mid January.

After much discussion, the Board of Directors approved increasing the awards to $500 for first place and $250 for second place. The North Carolina Peanut Growers Association will be given the opportunity to provide the entire $750. If they elect not to fund the entire amount, then $300 would be provided by North Carolina and $450 will be taken from APRES general funds.

DowElanco Awards Committee Report - Mike Schubert

No nominations were received for the DowElanco Award for Excellence in Education and only one nomination was received for the Award for Excellence in Research.

Program Committee Report - Chip Lee

The 29th annual meeting of the American Peanut Research and Education Society was held at the Hyatt Regency Hotel, in San Antonio, Texas, on July 8-11, 1997. Committee chairs were Mark Black for Local Arrangements, Robert Lemon for Technical Program and Barbara Lee and Ivana Warnken for Spouses Program. A complete listing of all committee members is included in the program section of these PROCEEDINGS.

There were 92 technical papers presented, including 5 papers in the graduate student competition and 4 papers in a symposium.

Four special events were sponsored by Rhone-Poulenc, ISK-Biosciences, American Cyanamid, Bayer Corporation, DowElanco and Valent Corporation. Additional financial assistance and peanut products were supplied by 13 other peanut industry firms. A complete listing of these is given in the program section of these PROCEEDINGS.

There were 498 persons in attendance at the 1997 meeting. This included 293 registered participants representing 19 state and 6 countries other than the U.W. There were also 205 spouses and children.

Appreciation is due to all committee members and registration personnel who helped to make the 1997 meeting a great success.

OPENING REMARKS BY THE PRESIDENT AT THE 1997 APRES BUSINESS MEETING

July 11, 1997

"Facing Change in a Society Serving a Challenged Industry"

F. M. Shokes

Last year at this meeting Dr. Harold Pattee, as president of APRES, presented a report on the challenges facing a changing peanut industry. This is such an important topic that I feel the need to continue in the same vein addressing this vital issue. The peanut industry has been a vibrant, changing industry for many years. When the Peanut Improvement Working Group became the American Peanut Research and Education Association in 1969 rapid growth took place. The 70 attendees at the 1969 meeting became more than 200 by 1970 and attendance swelled to more than 400 by 1975. In 1979 the name was changed to the American Peanut Research and Education Society and by 1985 the society reached its greatest size, over 500 individual members. It is interesting to note that we have maintained between 10-15% non-U.S. membership since 1975 and between 5-10% student membership. These are small but important segments of our society that we need to encourage and maintain. For many years prior to the 1990's farm numbers in the U.S. have been decreasing. We now have less than 2% of our population producing food and fiber for the other 98.5%. In the 1990's other agriculturally related concerns have been undergoing a slow but steady downsizing of personnel. A number of agribusinesses have been bought, sold, or consolidated through mergers, any of which typically results in a general downsizing of staff. In the peanut industry many shellers have consolidated into a few large concerns. As faculty have retired or moved many land grant universities have eliminated or consolidated positions. All of these changes directly affect professional societies. There are fewer people (faculty, company representatives, etc.) to be members. Budgets have been tightened in some states limiting the ability of some members to participate freely in all of the societies related to their discipline. This results in careful choosing of meetings to be attended and fewer participants at some society meetings. This impacts moderately small to small societies greater than large societies.

In spite of all of these factors our society remains very strong and we have not wavered in our mission of research and education. However, as we have seen from the statistics presented, most of which our executive secretary has compiled for the "Proceedings," our membership has been undergoing a slow but steady decline in recent years. This decline coincides with the challenges facing a rapidly changing peanut industry and is but part of similar changes that have taken place throughout other agricultural industries. It also coincides with a general downsizing in agricultural research and extension in university systems and a similar consolidation of many other agribusiness concerns.

Yes, we are faced with some challenging problems but your leadership has been aware of these and in recent years steps have been taken and are being taken to meet these challenges. In 1995, President Bill Odle conducted a survey to determine the views of APRES members regarding the society and to get opinions as to steps that might be taken to meet changing needs. President Harold Pattee appointed an ad-hoc committee, chaired by Dr. Chip Lee to study the survey results and make recommendations to the Board of Directors. Meanwhile in 1996, five representatives of APRES, David Knauft, Ron Henning, Chip Lee, Harold Pattee and myself attended a Workshop on Changes Facing Professional Societies sponsored by the Counsel of Agricultural Science and Technology, CAST. At that meeting we discovered that APRES is very strong compared to some societies of our size. However, we were also made aware of many of the challenges facing moderately sized professional societies. In 1996 based on recommendations of the previous ad-hoc committee, I was charged with the responsibility of appointing a second committee to consider steps that might be implemented to strengthen APRES. This committee, made up of Jeannette Anderson, John Beasley, Dan Gorbet and Hassan Melouk, is chaired by Tim Sanders. They are charged with "Future Planning for APRES" and specifically are trying to encourage greater participation in annual meetings, to encourage greater involvement of new members in committee activity, and to study the meeting timetable to see whether changes are needed. Last but not least they are charged with the important responsibility of engendering closer cooperation and exploring the feasibility of joint meetings with the American Peanut Council.

Because we are serving an industry that is at present undergoing significant challenges it is important that we do all that we can to fulfill the mission of APRES in keeping the industry strong, not only through research and education (I consider the extension function to by synonymous with education) but using other means at our disposal which I will refer to later. Some of the challenges faced by the peanut industry are similar to those which have been met by the poultry, beef, cut flower, cotton and currently the dairy industries. Of major concern is the decline in domestic consumption. Unfortunately this is brought about by consumers negative perception of peanut as a high fat food with little regard for the positive aspects of the nutritional value, quality protein and excellent oil. Added to this are the problems of maintaining high quality at the farm gate and processor level. High quality in peanuts manifests itself by the absence of aflatoxins, elimination of foreign materials and chemical residues, and the presence of high percentages of sound mature kernels which are nutritious and flavorful. Such quality is not easily attained and is generally not appreciated in price received. Another industry problem of increasing importance is global competition for export markets.

Will peanut oil be a factor in the future of the U.S. peanut industry? Logic tells us it should be. The markets are there but can we produce peanut oil at a price that is competitive with lesser quality oils? I saw evidence for the market during a dinner several years ago with the President of the Potash Phosphate Institute. That institute had been very active in promoting canola production. I asked him how many acres of canola were in the U.S. at that time. Answer: "About 600,000." Question: "How many acres could the current demand for canola oil support." Answer: "About 1,000,000." Recently I checked the vegetable oil shelves at a store of a large popular grocer chain in Florida. The prevalent oil was cheaply priced canola oil. The store manager informed me that this oil was so popular with consumers that he often had to restock his bottom shelves, the two gallon containers, on the weekends. According to information bulletin AER/710, Background Information for the 1995 Farm Legislation, "Peanuts rank among the world's principal oilseeds but contribute only insignificant quantities to the availability of oil and protein meal in the United States." Of course, we all know that economics plays a big part in this. But it does seem illogical that the tiny rapeseed which contains about 20-25% oil can out-produce the incredible, edible peanut which contains about 50% oil. My logic tells me that we need to find a way to remedy that, especially since peanut oil is superior to many of the other oils in several aspects. Perhaps high oleic peanut oil will provide us with the means to take some of the markets which should belong to peanut. High oleic peanut oil should be similar in quality to high-priced olive oil, all of which is imported into the U.S.

There are some other changes that are occurring in the peanut industry which are worthy of mention. One of these is a significant increase in acreage into west Texas. Is this a long-term shift? Will it bring about subsequent acreage reductions in other areas? Only time will tell but my guess is that increased acreage in Texas is going to be long term if the industry stays healthy and market demand remains strong.

Global competition is a variable that the U.S. peanut industry has to work with. In a recent paper in Peanut Science Chen, et. al., suggested that U.S. peanuts are less competitive than Chinese peanuts in terms of costs and net returns. They suggested that reducing costs and improving economic efficiency should be the most important priority for the U.S. peanut industry as free trade becomes more of a factor in the world economy. Future competitiveness will depend on high quality as well as relative pricing in domestic and international markets.

Some of the research and extension work that must be accomplished will relate to implementing all of the IPM that we already know about, releasing more disease-resistant cultivars, possibly finding an efficacious inducer of systemic acquired resistance, using greater precision to reduce inputs into the crop. Hopefully in the future genetic engineering will be practical on

peanuts. Of course many of these practices fit right into increased sustainability on the farm. This improved economic efficiency is going to be important at the farm level if we are going to maintain a healthy peanut industry.

There are some other things that all of us can do to strengthen the peanut industry. One of these is to encourage unity among the various segments of the industry. We in APRES can be instrumental in promoting a focus on cooperation among growers, shellers, and manufacturers. If practical, join the American Peanut Council so that you can have a voice in promoting cooperation. I like to use Cotton Incorporated as a role model for what can be accomplished when an industry unites with a common goal to deal with seemingly insurmountable problems. In developing ways and means to regain market share from the synthetic textiles, Cotton Incorporated proved once again the benefits of cooperation. We need to have the same kind of united focus if we are to maintain a healthy growing peanut industry. We must do all that we can to unify this industry. It is a matter of survival. We of APRES serve an industry that is worthy of our service. Let us continue to serve it well by helping to bring it through the current crises and make it stronger than ever.

BUSINESS MEETING AND AWARDS CEREMONY
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY

Hyatt Regency Hotel
San Antonio, Texas
July 11, 1997

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

1. President's Report – Fred Shokes

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

   a. Fellows – Norris Powell

   b. Bailey Award – Craig Kvien

   c. Joe Sugg Graduate Student Competition - Hassan Melouk

   d. DowElanco Awards for Research and Extension - Mike Schubert

   e. Coyt T. Wilson Distinguished Service Award – John Baldwin

   f. Past President's Award – Fred Shokes

   g. Peanut Science Associate Editors - Tom Stalker

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

   a. Executive Officer Report and Reading of Minutes of 1996 Meeting - Ron Sholar

   b. Finance Committee – Hassan Melouk

   c. Nominating Committee – Harold Pattee

   d. Publications and Editorial Committee – Rick Brandenburg

   e. Peanut Quality Committee - Corley Holbrook

   f. Site Selection Committee – Mark Black

   g. Program Committee – Chip Lee

4. Dr. Shokes turned the meeting over to the new President, Chip Lee of Texas, who then adjourned the meeting.

FINANCE COMMITTEE REPORT

The Finance Committee met at 3:00 p. m. on July 8th. Those present were: Hassan Melouk, Jim Young, Dan Gorbet, Pat Phipps, Ray Smith and Ron Sholar.

The Committee briefly reviewed the previous year's financial records. The records indicate that the Society is in excellent financial condition. The Society started the year on July 1, 1996 with assets of $139,681.98. On July 30, 1997, the Society had assets of $154,604.87.

The Finance Committee discussed the proposed budget for 1997-98. The Finance Committee recommended a budget of $68,300 for 1997-98.

The Finance Committee also recommended to the board that beginning with the 1998 award, a cash award of $1,000.00 be made to the recipient of the Coyt T. Wilson Distinguished Service Award, the highest award given by our society.

Respectfully submitted,

Hassan Melouk, Acting Chair
Ron Weeks, Chair
Ray Smith
Daniel Gorbet
James Young
Pat Phipps
Ron Sholar, ex-officio

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
BUDGET 1997-98

RECEIPTS

Annual Meeting Registration	$15,000
Membership Dues	15,000
Special Contributions	9,000
Differential Postage	2,500
Peanut Science & Technology	500
Quality Methods	0
Proceedings and Reprint Sales	0
Peanut Science	16,000
Interest	5,300
Advances in Peanut Science	5,000
TOTAL RECEIPTS	**$68,300**

EXPENDITURES

Annual Meeting	$12,000
CAST Membership	600
Office Supplies	2,000
Secretarial Services	13,400
Postage	5,000
Travel - Officers	1,200
Legal Fees	500
Proceedings	4,600
Peanut Science	27,000
Peanut Science and Technology	0
Peanut Research	1,500
Quality Methods	0
Bank charges	200
Miscellaneous	300
Advances in Peanut Science	0
Reserve	0
TOTAL EXPENDITURES	**$68,300**

Excess Receipts over Expenditures	0

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
BALANCE SHEET FOR FY 1996-97

ASSETS	June 30, 1996	June 30, 1997
Petty Cash Fund	$ 508.85	$ 631.48
Checking Account	21,815.12	30,772.09
Certificate of Deposit #1	22,007.82	23,242.76
Certificate of Deposit #2	14,211.01	15,004.07
Certificate of Deposit #3	13,290.14	14,031.81
Certificate of Deposit #4	9,943.23	10,507.44
Certificate of Deposit #5	13,406.19	14,197.06
Certificate of Deposit #6	10,898.34	11,527.90
Money Market Account	3,045.19	3,147.79
Savings Account (Wallace Bailey)	1,100.17	1,017.19
Peanut Science Account (Wachovia Bank)		3,474.40
Inventory of PEANUT SCIENCE AND TECHNOLOGY Books	5,310.00	4,980.00
Inventory of ADVANCES IN PEANUT SCIENCE Books	24,145.92	22,070.88
TOTAL ASSETS	**$139,681.98**	**$154,604.87**
LIABILITIES		
No Liabilities	0.00	0.00
TOTAL FUND BALANCE	**$139,681.98**	**$154,604.87**

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

	June 30, 1996	June 30, 1997
RECEIPTS		
Advances in Peanut Science Book	$ 11,332.52	$4,747.50
Annual Meeting Registration	14,575.00	16,760.00
Contributions	8,900.00	11,900.00
Differential Postage	1,909.00	2,430.50
Dues	9,779.00	20,178.00
Interest	7,344.53	5,353.75
Peanut Research	34.00	32.00
Peanut Science	697.50	976.50
Peanut Science Page Charges	26,377.24	15,779.80
Peanut Science and Technology Book	400.00	380.00
Proceedings	160.00	99.00
Quality Methods	0.00	0.00
Spouse Registration	1,451.00	1,613.00
Other Income	1,912.63	0.00
CD Transfer	25,000.00	0.00
TOTAL RECEIPTS	**$109,872.42**	**$80,250.05**
EXPENDITURES		
Advances in Peanut Science Book	$ 31,738.95	$ 0.00
Annual Meeting	12,580.53	14,229.90
Bank Charges	173.50	159.75
CAST Membership	1,059.15	588.70
Corporation Registration	115.00	15.00
Federal Withholding	732.00	780.00
FICA	1,383.84	1,446.16
Legal Fees	350.00	400.00
Medicare	323.76	338.28
Miscellaneous	190.00	77.00
Office Expenses	534.73	1,756.01
Oklahoma Withholding	297.36	174.34
Peanut Research	1,200.00	1,400.38
Peanut Science	33,569.70	25,807.22
Peanut Science and Technology Book	0.00	0.00
Postage	4,896.59	2,223.57
Proceedings	3,852.63	4,525.07
Sales Tax	83.80	33.76
Secretarial Services	9,276.84	9,828.74
Spouse Program Expenses	3,377.22	2,152.17
Travel - Officers	1,172.00	330.47
TOTAL EXPENDITURES	**$106,907.60**	**$66,396.52**
EXCESS RECEIPTS OVER EXPENDITURES	**$ 2,964.82**	**$13,853.53**

PEANUT SCIENCE BUDGET
1997-98

INCOME

Page and reprint charges	$16,000.00
Journal orders	1,000.00
Foreign mailings	1,215.00
APRES member subscriptions (508 x $13.00)	6,604.00
Library subscriptions (74 x $15.00)	1,110.00
TOTAL INCOME	**$25,924.00**

EXPENDITURES

Printing and reprint costs	$11,424.00
Editorial assistance	12,000.00
Office supplies	600.00
Postage	1,900.00
TOTAL EXPENDITURES	**$25,924.00**

ADVANCES IN PEANUT SCIENCE
SALES REPORT AND INVENTORY ADJUSTMENT
1996-97

	Books Sold	Remaining Inventory
Beginning Inventory		1152
1st Quarter	61	1091
2nd Quarter	20	1071
3rd Quarter	12	1059
4th Quarter	6	1053
TOTAL	99	

99 books sold x $20.96 = $2,075.04 decrease in value of book inventory.

1053 remaining books x $20.96 (book value) = $22,070.88 total value of remaining book inventory.

Fiscal Year	Books Sold
1996-97	99

PEANUT SCIENCE AND TECHNOLOGY
SALES REPORT AND INVENTORY ADJUSTMENT
1996-97

	Books Sold	Remaining Inventory
Beginning Inventory		531
1st Quarter	19	512
2nd Quarter	6	506
3rd Quarter	5	501
4th Quarter	3	498
TOTAL	33	

33 books sold x $10.00 = $330.00 decrease in value of book inventory.

498 remaining books x $10.00 (book value) = $4,980.00 total value of remaining book inventory.

Fiscal Year	Books Sold
1985-86	102
1986-87	77
1987-88	204
1988-89	136
1989-90	112
1990-91	70
1991-92	119
1992-93	187
1993-94	85
1994-95	91
1995-96	50
1996-97	33

PUBLICATIONS AND EDITORIAL COMMITTEE REPORT

The Publications and Editorial Committee of APRES met July 10, 1997, in San Antonio, Texas. Members present were David Knauft, Carroll Johnson and Rick Brandenburg. Harold Pattee, Tom Stalker and Corley Holbrook were also present.

Old Business:

The committee received Tom Stalker's PEANUT SCIENCE Editor's report. Volume 23 of PEANUT SCIENCE had 26 manuscripts totaling 143 pages and Volume 24, No. 1 will have 14 manuscripts and 66 pages. During July 1, 1996 to June 30, 1997, 42 manuscripts were submitted to PEANUT SCIENCE. This represents a significant increase in submissions as compared to the previous year.

During the past year, PEANUT SCIENCE had a net loss of $872 which included some postage for society books being mailed from Raleigh.

Extensive time for reviewing manuscripts during the editorial process continues to be a concern. Associate editors can also serve as one of the reviewers; which may help. Two associate editors, Dr. Mehboob Sheikh in Food Science and Dr. Alan York in Weed Science, have completed their terms and will be replaced by Dr. Marshall Lamb in Economics and Dr. Margaret Hinds in Food Science.

Corley Holbrook indicated a change in the co-editor for PEANUT RESEARCH with Duncan McCluskey assuming responsibilities for library references.

The effort to market the book, "Advances in Peanut Science" was discussed and several efforts will be launched by the committee in the next few months. The quality of abstracts for the APRES Proceedings had been discussed during the past year and the committee agreed that the added threat of not publishing those abstracts inconsistent with guidelines was sufficient.

The committee discussed a proposal for including an interpretive summary for all PEANUT SCIENCE journal manuscripts to aid in the usefulness of the article to growers and consultants. A motion passed not to pursue this issue based on the perceived lack of benefits.

New Business:

Tom Stalker added that titles and abstracts for PEANUT SCIENCE will be added to the APRES web page.

Respectfully submitted,

Rick L. Brandenburg, Chair

PEANUT SCIENCE EDITOR'S REPORT

Volume 23 of PEANUT SCIENCE had 26 manuscripts totaling 143 pages. Volume 24, No. 1 will have 14 manuscripts and will total 66 pages. Galley proofs have been forwarded to the authors and the membership should receive their copy in August.

During the year 07/01/96 - 06/30/97, 42 manuscripts were submitted to PEANUT SCIENCE. Of these, 16 have been accepted, 22 are still in review, and 4 have been released to the authors. Three manuscripts have been accepted for Volume 24, #2. The number of manuscripts submitted in 1996-97 was significantly greater than during the previous year.

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

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

Dr. M. B. Sheikh has completed his six-year term as an Associate Editor of PEANUT SCIENCE. Dr. A. C. York has completed a three-year term, but other duties prohibit him from continuing to serve as an Associate Editor. Sincere thanks are expressed to these two individuals for their service to the journal and to APRES.

Respectfully submitted,

H. Thomas Stalker, Editor
PEANUT SCIENCE

NOMINATING COMMITTEE REPORT

The committee was composed of Harold Pattee, Gerald Harrison, Jim Davidson and Charles Simpson.

The following slate of officers was presented:

President-elect – Charles Swann, Virginia Tech University
State Employees (SW) – Mike Schubert, Texas A&M University
Industry (Production) – Randy Griggs, Alabama Peanut Producers

The committee also recommended that Ron Sholar continue as Executive Officer and Tom Stalker continue as Editor of Peanut Science.

The Board of Directors accepted the report. The actual vote on these offices will be taken at the Business Meeting on July 12.

Respectfully submitted,

Harold Pattee, chair

FELLOWS COMMITTEE REPORT

The committee received one nomination. It was pointed out that we have many deserving members who should receive consideration for fellowship.

Dr. Shokes stated that we all have a responsibility for helping secure nominations for each of the awards presented by APRES. Deadline for nominations is March and calls should be made well in advance of this date to secure nominations.

Respectfully submitted,

Norris Powell, chair

BIOGRAPHICAL SUMMARY OF FELLOWS

Dr. Timothy Sanders, was elected as Fellow of APRES at the 1997 annual meeting. He is an active member of APRES and was nominated to receive the honor of fellowship by other active members, recommended by the Fellows Committee and elected by the APRES Board of Directors.

Election to Fellow is one of the highest distinctions an APRES member can achieve. It is a recognition of outstanding contributions. The following is a brief synopsis of the contributions of the 1997 Fellow.

Dr. Sanders was project leader and supervisory plant physiologist, USDA, ARS at the National Peanut Research Laboratory in the Peanut Quality Unit at Dawson, GA from 1976 to 1991. Since 1991 he has been the research leader for the Market Quality and Handling Unit and Professor of Food Science at North Carolina State University. In 1983 he was the co-recipient of the National Peanut Council Golden Peanut Research and Education Award and in 1995 received the award a second time for his work "Factors Affecting Flavor Development in Peanuts". During the past 21 years he has published more than 100 papers in refereed scientific journals.

Dr. Sanders has concentrated his research in areas related to quality and safety of peanut products. Specifically, he developed a large database of new knowledge about preharvest aflatoxin and peanut quality as related to variety, maturity, curing, warehouse storage, handling and production. Dr. Sanders demonstrated that yields, market grade, flavor and quality potentials improve at optimum peanut harvest time. He also discovered a relationship between oil characteristics and physiological maturity. His early research demonstrated significant potential for using a nondestructive maturity classification in physiological and mycotoxin studies. He demonstrated that peanuts continue to mature after harvest and that seed size doesn't always equate with maturity.

He has been the research leader for a team of scientists who investigated the relationships of environmental factors to mycotoxin production and elimination of aflatoxin from the food chain. He determined quantitative changes in tannin (polyphenol) content of developing peanut seeds and demonstrated that those compounds are one of several factors contributing to resistance of peanut genotypes to invasion of *A.flavis*. He was responsible for developing the mini-column to detect aflatoxin in farmers stock peanuts, and the work with pod strength led to improved designs of peanut shelling and processing plants. Dr. Sanders currently is studying factors affecting flavor development in peanut and relationships of protein and oil composition relative to development and retention of flavor during oil roasting.

Dr. Sanders has maintained strong interactions with the peanut industry and the National Peanut Council. He served as leader of the USDA Peanut Nutrition Task Team, is a member of the National Peanut Foundation's Technical Review Committee and is Chairman of the USDA-ARS Peanut Working Group. In APRES, he has been chairman of the Peanut Quality Committee, developed symposia, is editor of Quality Methods, is an associate editor of Peanut Science and has been a member of the Board of Directors for three years.

Guidelines for

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY FELLOW ELECTIONS

Fellows

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

Eligibility of Nominators

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

Eligibility of Nominees

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

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

Nomination Procedures

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

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

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

Basis of Evaluation

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

Processing of Nominations

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

Recognition

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

Distribution of Guidelines

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

Format for

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY FELLOW NOMINATIONS

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

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

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

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

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

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

I. PERSONAL ACHIEVEMENTS AND RECOGNITION (10 points)

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

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

A. Research

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

B. Extension

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

C. Service to Industry

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

D. Administration or Business

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

III. SERVICE TO THE PROFESSION (30 points)

A. Service to APRES

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

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

B. Service to the profession outside the Society

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

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

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

for fellowship should be noted. However, brevity is essential as the body of the nomination, excluding publication lists, should be confined to not more than eight (8) pages.

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

BAILEY AWARD COMMITTEE REPORT

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

The Bailey Award in 1997 is awarded to Joe W. Dorner, Richard J. Cole and Paul D. Blankenship for their paper titled "Effect of Biological Control Inoculum Rate on Preharvest Aflatoxin Contamination in Peanuts".

The Bailey Award Committee meeting was held July 8, 1997 in San Antonio, Texas.

Respectfully submitted,

Craig Kvien, Chair

Papers Submitted for the 1997 Bailey Award

1) Genotype-by-Environment Interaction In Sweet and Bitter Sensory Attributes. H.E. Pattee, T.G. Isleib and F.G. Giesbrecht.

2) Lowering of Peanut Support Price and the Extent of Consumers' Gain. S. Y. Deodhar and S. M. Fletcher.

3) Effect of Stale Seedbed Tillage Implements on Viable Weed Seeds and Weed Densities in Peanut. W.C. Johnson, III and B.G. Mullinix, Jr.

4) Occurrence of Pod Rot Diseases in North Carolina. J.E. Hollowell and M.K. Beute.

5) Effect of Biological Control Inoculum Rate on Preharvest Aflatoxin Contamination of Peanuts. J.W. Dorner, R.J. Cole and P.D. Blankenship.

6) Genetics of an Unusual Peanut Pod Trait. W.D. Branch, D.E. Branch and E.J. Williams.

7) Variability in Fungicide Sensitivity of *Sclerotium rolfsii* from Peanut in Georgia. M.D. Franke, T.B. Brenneman and K.L.Reynolds.

8) A Risk Index for Determining Insecticide Treatment for Southern Corn Rootworm in Peanut. D.A. Herbert, Jr., W.J. Petka and R.L. Brandenburg.

9) Use of Laboratory Colorimeter to Measure Pod Brightness in Virginia-Type Peanuts. T.G. Isleib, H.E. Pattee, R.W. Mozingo and P.W. Rice.

Guidelines for

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY BAILEY AWARD

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

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

1. The presenter of a nominated paper, whether the first or a secondary author, must be a member of APRES.

2. Graduate students being judged for the Joe Sugg Award are also eligible for the Bailey Award if they meet all other criteria for eligibility.

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

1. Well organized.

2. Clearly stated.

3. Scientifically sound.

4. Original research.

5. Presented within the time allowed.

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

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

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

2. Originality of concept and methodology.

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

4. Contribution to peanut scientific knowledge.

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

JOE SUGG GRADUATE STUDENT AWARD REPORT

First, the committee would like to thank our graduate students for their participation in the competition.

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

The five judges were; Ames Herbert, James Grichar, Bill Odle, Mike Kubicek and Hassan Melouk.

Two papers were identified by the judges to receive first and second place.

First place was awarded to Robert Butchko of Texas A&M for his presentation titled "A visual screen to defect *Aspergillus nidulans* mutants defective in aflR regulation." The co-authors on the paper were T.H. Adams and N.P. Keller.

Second place was awarded to Michael Franks of the University of Georgia for his presentation titled "Use of a core collection to identify resistance to Rhizoctonia limb rot in peanut." The co-authors on the paper were T.B. Brenneman and C.C. Holbrook.

The cash awards of $200.00 to the first place and $100.00 to the second place were presented by Mr. Bob Sutter on behalf of the North Carolina Peanut Growers Association.

Respectfully submitted,

Hassan A. Melouk, Chair
William Odle
James Grichar
Ames Herbert
Barry Brecke

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 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 developing and nurturing our young Society so it could develop into what it is today--Dr. Coyt T. Wilson.

The Committee met and selected Mr. J. Frank McGill as the recipient of the 1997 Award.

Respectfully submitted,

John Baldwin, Chair

BIOGRAPHICAL SUMMARY OF COYT T. WILSON DISTINGUISHED SERVICE AWARD RECIPIENT

Mr. J. Frank McGill is a former Extension Agronomist-Peanuts with the University of Georgia, Tifton, Georgia. Mr. McGill was instrumental at the ground floor level in building our organization and leading it through the formative years. As with any organization, leadership is the key to success and it was men like J. Frank McGill that provided APREA/APRES the chance to succeed.

Even though he retired from the University of Georgia in 1981, Mr. McGill has continued to support and attend APRES meetings. He missed only three of the 28 meetings since the first meeting in 1969. Prior to that, he was the driving force behind the Peanut Improvement Working Group, the forerunner to APRES.

J. Frank McGill served APRES in every capacity, having been a member of almost every committee and serving as chairman of most at one time or the other. He was elected President in 1975 and named a Fellow of APRES in 1988. His other awards and honors are too numerous to list here.

J. Frank McGill is considered to be one of the all time leaders in the peanut industry and peanut education. He has had a tremendous impact on the advancement of peanut research and education in this industry. Internationally, he is probably the most-recognized authority on peanut production and education.

Guidelines for

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

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

Eligibility of Nominators

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

Eligibility of Nominees

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

Nomination Procedures

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

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

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

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

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

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

Qualifications of Nominee

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

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

III. Supporting letters:

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

Award and Presentation

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

DOWELANCO AWARD COMMITTEE REPORT

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

Nomination materials were received and distributed to committee members. After examining the materials, committee members voted for their choice for the award. Votes were tabulated and award recipients identified.

Mr. W. James Grichar was selected to receive the Award for Excellence in Research.

The DowElanco Awards Committee wishes to encourage more nominations. There were no nominations for the DowElanco Award for Excellence in Education.

Several suggestions were made for encouraging timely nomination of the many deserving APRES members:

1) Earlier and more visible reminder of this and other awards and their deadlines;
2) Committee members actively encouraging nominations from their regions;
3) Appoint past recipients to the committee who might be more motivated to encourage nominations (this would also prevent potential recipients from being ineligible, because they are members of the awards committee);
4) All APRES members remind their departmental awards committees of this prestigious award and obtain their assistance in preparing nominations, and
5) Carry over nomination packets into the next year.

We wish to thank DowElanco for their generous support for these important awards.

Respectfully submitted,

Mike Schubert, Chair

BIOGRAPHICAL SUMMARY OF DOWELANCO AWARD FOR EXCELLENCE IN RESEARCH RECIPIENT

Mr. W. James Grichar is a Research Scientist at the Texas A&M University Agricultural Research Station at Yoakum, Texas. Mr. Grichar attended Navarro Junior College from 1968-1970. He earned the Bachelor of Science degree in Botany in 1972 and Master of Agriculture degree in Plant Protection in 1975 from Texas A&M University. He has been located at the Yoakum research station since 1975, where he advanced from Technician II, to Research Associate in 1978, Research Scientist in 1982, and Superintendent since 1993.

James Grichar has been and is a leader in plant protection of the peanut crop—including weed control, soil-borne diseases and nematodes. He has also conducted extensive research on reduced tillage in the peanut crop. James Grichar has established on-station weed nurseries that are outstanding. Through his efforts in weed science research, herbicide rates have decreased in the southwest. He has been an advocate of new herbicides with lower use rates. He has been quick to recognize developing weed problems, such as *Eclipta prostrata*, and has worked to introduce effective control strategies. He has been active in creative research that has allowed effective placement of postemergence herbicides under reduced tillage systems.

James Grichar's research has established that southern blight is not aggravated by reduced tillage systems. He has been actively involved in investigating the utility of and the effective utilization of soil-borne disease control chemicals. His cooperation with plant breeders has resulted in lines with resistance to soil-borne diseases. James was a collaborator on the release of Tamspan 90, a sclerotinia blight resistant variety. He has been a collaborator in the US-AID Peanut CRSP in West Africa.

James Grichar has published 32 scientific journal articles, more than 250 reports, abstracts, and popular articles and has made numerous presentations to various peanut groups. He was the winner of the Texas A&M University Soil & Crop Sciences Department Research Support Achievement Award in 1991 and a Bailey Award nominee in 1992.

In addition, James has a strong commitment to his family, church and community. He has been active in Saint Joseph's Catholic Church and school and in community sports programs. He is a skilled woodworker and an excellent softball player and manager.

James Grichar was strongly recommended for this award by research, extension and industry colleagues. It is obvious from their glowing recommendations that he is an effective researcher and team player. One

supporter writes that James "is energetic, cooperative, dependable, prompt, complete and willing. He has never lacked, in my experience, in carrying his share (or more) of the research load...His current and three previous supervisors have commented to me on different occasions that as for James' program, their basic need was to get out of his way." Another writes, "Although weed control in peanuts falls under my responsibility as the State Weeds Specialist, when I want to know what products have potential and how to solve a particular pernicious weed problem, I call James Grichar." Still another writes, "..if it were not for James' direct involvement in research on peanut in South Texas, hundreds of thousands of dollars would have been misspent on disease and weed problems."

Guidelines for

DOWELANCO AWARDS FOR EXCELLENCE IN RESEARCH AND EDUCATION

I. DowElanco Award for Excellence in *Research*

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

Eligibility of Nominees

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

II. DowElanco Award for Excellence in *Education*

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

Eligibility of Nominees

Nominees must be active members of the American Peanut Research and Education Society and must have been active members for the past five years. The nominee or team must have made outstanding contributions to the peanut industry through education programs. Members of the DowElanco Awards Committee are not eligible for the award while serving on the committee.

Eligibility of nominators, nomination procedures, and the DowElanco Awards Committee are identical for the two awards and are described below:

Eligibility of Nominators

Nominators must be active members of the American Peanut Research and Education Society. Members of the DowElanco Awards Committee are not eligible to make nominations while serving on the committee. A nominator may make only one nomination each year.

Nomination Procedures

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

DowElanco Awards Committee

The APRES President is responsible for appointing the committee. The committee will consist of seven members with one member representing the sponsor. After the initial appointments, the President will appoint two new members each year to serve a term of three years. If a sponsor representative serves on the awards committee, the sponsor representative will not be eligible to serve as chair of the committee.

NOMINATION FORM FOR DOWELANCO AWARDS

General Instructions: Listed below is the information to be included in the nomination for individuals or teams for the DowElanco Award. Ensure that all information is included. Complete Section VI, Professional Achievements, on the back of this form. Attach additional sheets as required.

****

Indicate the award for which this nomination is being submitted.
Date nomination submitted:

___ DowElanco Award for Excellence in Education

___ DowElanco Award for Excellence in Research

****

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

Nominee _____

Address _____

Title _____ Tel No. _____

II. Nominator:

Name _____ Signature _____

Address _____

Title _____ Tel No. _____

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

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

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

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

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

PEANUT QUALITY COMMITTEE REPORT

The annual meeting of the Peanut Quality Committee convened at 3:05 p.m. on Tuesday, July 8, 1997. There were 19 people in attendance.

The meeting began with a discussion of food allergies and problems that this is causing manufacturers. Dave Stewart, from Hershey Foods Corp., led this discussion. He described the massive efforts that Hershey is devoting to eliminate cross contamination. Cross contamination is when a small amount of material that is not on the list of ingredients gets into a product. An example discussed was a small amount of pecan contaminating peanut that are entering Hershey plants. This could be a serious problem for individuals that are allergic to pecans, but can safely eat peanuts.

The Federal Drug Administration is taking the issue of cross contamination very seriously. There were 47 product recalls last year as a result of cross contaminations that could result in food allergy reactions. The number of food recalls has been increasing every year for 8 years.

Hershey has been working for several years to minimize cross contamination. They are leading an educational effort to minimize the problem of cross contamination in all facets of the peanut industry.

The meeting was adjourned at 4:10 p.m.

Respectfully submitted,

Corley Holbrook, Chair
John Damicone
James Hadden
Elbert Long
Emory Murphy
Rachel Shireman
Clyde T. Young

PROGRAM COMMITTEE REPORT

The 29th annual meeting of the American Peanut Research and Education Society was held at the Hyatt Regency Hotel, in San Antonio, Texas, on July 8-11, 1997. Committee chairs were Mark Black for Local Arrangements, Robert Lemon for Technical Program and Barbara Lee and Ivana Warnken for Spouses Program. A complete listing of all committee members is included in the program section of these PROCEEDINGS.

There were 92 technical papers presented, including 5 papers in the graduate student competition and 4 papers in a symposium.

Four special events were sponsored by Rhone-Poulenc, ISK-Biosciences, American Cyanamid, Bayer Corporation, DowElanco, and Valent Corporation. Additional financial assistance and peanut products were supplied by 13 other peanut industry firms. A complete listing of these is given in the program section of these PROCEEDINGS.

There were 498 persons in attendance at the 1997 meeting. This included 293 registered participants representing 19 states and 6 countries other than the U.S. There were also 205 spouses and children.

Appreciation is due to all committee members and registration personnel who helped to make the 1997 meeting a great success.

Respectfully submitted,

Thomas "Chip" Lee, Chair

1997 PROGRAM

BOARD OF DIRECTORS
1996-97

President ..... Fred M. Shokes
President-Elect ..... Thomas A. "Chip" Lee, Jr.
Past President ..... Harold Pattee
Executive Officer ..... J. Ronald Sholar
State Employee Representatives:
(VC Area) ..... James Young
(SE Area) ..... John Beasley
(SW Area) ..... Mike Schubert
USDA Representative ..... Robert Lynch
Industry Representatives:
Production ..... Robert E. Scott
Shelling, Marketing Storage ..... Bobby Walls
Manufactured Products ..... Doug Smyth
American Peanut Council President ..... Jeannette Anderson

PROGRAM COMMITTEE

Local Arrangement
Mark Black, Chair
Brent Besler
W. James Grichar
A. J. Jaks
Johnna Patterson
David Sestak
Mike Schubert
Kurt Warnken
Bob Whitney

Technical Program
Robert Lemon, Chair
Albert Culbreath
Peter Dotray
W. James Grichar
Thomas Hoelewyn
Forrest Mitchell
Olin Smith
Jim Starr

Spouse's Program
Barbara Lee, Co-Chair
Ivana Warnken, Co-Chair
Dimple Grichar
Sharon Lemon
Annalee Schubert
Lynann Simpson
Thelma Smith
Sally Stacey
Bernadine Tripp

PROGRAM HIGHLIGHTS

Tuesday, July 8

08:00	Golf Tournament	Pecan Valley Golf Course
08:00 - 12:00	Crops Germplasm Committee	Mesquite
12:00 - 08:00	APRES Registration (Including Spouses Tours)	Los Rios Foyer B-Level (Second Floor)
01:00 - 02:00	Peanut Science, Associate Editors	Nueces
	Site Selection Committee	Frio
	Fellows Committee	Directors
	Coyt T. Wilson Award Committee	Mesquite
02:00 - 03:00	Publications and Editorial Committee	Nueces
	Public Relations Committee	Frio
	Bailey Award Committee	Directors
	DowElanco Awards Committee	Mesquite
03:00 - 04:00	Nominating Committee	Nueces
	Joe Sugg Graduate Student Award Committee	Frio
	Peanut Quality Committee	Directors
03:00 - 05:00	Finance Committee	Mesquite
04:30 - 06:00	Peanut Systems Working Group	Nueces
07:00 - 11:00	Board of Directors	Nueces
06:00 - 09:00	Exhibit Set-Up	Regency (East Aisle)
08:00	Rhone-Poulenc Ice Cream Social	Regency West

Wednesday, July 9

08:00 - 04:00	APRES Registration	Los Rios Foyer
07:30 - 09:00	Spouse's Hospitality	Pecan
08:00 - 05:00	Industry Exhibits	Regency (East Aisle)
08:00 - 04:00	Speaker Ready Preview Room	Medina
08:00 - 09:40	General Session	Regency East
09:40	Break	Regency (East Aisle) and Foyer
10:00 - 12:00	Symposium – Spotted Wilt Disease	Regency East
01:15 - 03:15	Production Technology I	Regency East #1
	Economics	Regency East #2
	Mycotoxins/Physiology and Seed Technology	Regency East #3
03:00 - 04:30	Spouse's Hospitality	Pecan
03:00	Break	Regency (East Aisle) and Foyer
03:30 - 04:45	Production Technology II	Regency East #1
	Graduate Student Competition	Regency East #2
	Curing, Storing and Handling	Regency East #3
07:00	ISK-Biosciences Appreciation Dinner	Regency East

Thursday, July 10

08:00 - 12:00	APRES Registration	Los Rios Foyer
07:30 - 09:00	Spouse's Hospitality	Pecan
08:00 - 05:00	Industry Exhibits	Regency (East Aisle)
08:00 - 12:00	Speaker Ready Preview Room	Medina
08:00 - 09:45	Weed Science I	Regency East #1
	Entomology	Regency East #2
	Processing and Utilization	Regency East #3
09:30	Break	Regency (East Aisle) and Foyer
10:00 - 12:00	Weed Science II	Regency East #1
	Plant Pathology I	Regency East #2
	Breeding and Genetics I	Regency East #3
01:00 - 03:15	Speaker Ready Preview Room	Medina
01:15 - 03:30	Plant Pathology II	Regency East #2
	Breeding and Genetics II	Regency East #3
03:00 - 04:30	Spouse's Hospitality	Pecan
03:30	Break	Regency (East Aisle) and Foyer
05:00 - 06:00	Exhibit Take-Down	Regency (East Aisle)
06:00	American Cyanamid/Bayer Appreciation Dinner	Aggie Park & Banquet Hall, 6205 West Avenue

Friday, July 11

07:30 - 08:30	DowElanco/Valent USA Awards Breakfast	Regency East
08:30 - 10:00	APRES Awards Ceremony and Business Meeting	Regency East
10:00 - 01:00	Peanut CRSP Meeting	Directors
10:00 - 12:00	Molecular Biology Information Exchange – Poster Reading	Pecan
01:00 - 05:00	Molecular Biology Information Exchange – Discussion	Pecan
01:00 - 06:00	Peanut CRSP Technical Committee	Directors

SPECIAL EVENTS

Tuesday, July 8

08:00 ICE CREAM SOCIAL
Rhone-Poulenc ..... Regency West

Wednesday, July 9

07:00 APPRECIATION DINNER
ISK-Biosciences ..... Regency East

Thursday, July 10

06:00 APPRECIATION DINNER
American Cyanamid/Bayer ..... Aggie Park and
..... Banquet Hall, 6205 West Avenue

Friday, July 11

07:30 - 08:30 AWARDS BREAKFAST
DowElanco and Valent USA ..... Regency East

SPOUSES' EVENTS

Wednesday, July 9

09:00 - 03:00 Highlights of San Antonio (Tour)

Thursday, July 10

11:30 - 03:00 Lunch Cruise on the River

GENERAL SESSION

Wednesday, July 9

8:00	Call to Order *Fred Shokes* *APRES President*
8:10	Welcome to San Antonio *Lyle Larson* *County Commissioner* *Bexar County*
8:20	The Changing Peanut Industry in Texas from the Perspective of the Ag Lending Industry *Joe Bob Huddleston* *Production Credit Association*
8:50	Current Issues in the Peanut Industry *Howard Valentine* *American Peanut Council*
9:30	Announcements *Thomas A. "Chip" Lee, Jr.* *APRES Program Chair*
9:40	Break ..... Regency (East Aisle) and Foyer

TECHNICAL SESSION

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

Wednesday, July 9

Spotted Wilt Disease ..... Regency East
Moderator: Albert K. Culbreath

10:00 Introduction ..... Albert Culbreath

10:10 (1) Thrips as Tospovirus vectors in peanut. **J.W. Todd, A.K. Culbreath, H.R. Pappu and S.L. Brown.** University of Georgia, Tifton, GA.

10:30 (2) Validation of the University of Georgia TSWV risk index. **S.L. Brown, J.W. Todd, A.K. Culbreath, J.A. Baldwin, G.B Padgett, D.W. Gorbet and F.M. Shokes.** University of Georgia, Tifton, GA.

10:50 (3) TSWV influence on peanut breeding. **O. Smith.** Texas A&M University, College Station, TX.

11:10 (4) Will new information on tomato spotted wilt tospovirus provide new tools for management? **J. Sherwood.** Oklahoma State University, Stillwater, OK.

11:30 Discussion.

Production Technology I ..... Regency East #1
Moderator: Robert Lemon

1:15 (5) Reduced tillage for peanuts. **D.L. Hartzog*, J.F. Adams and B. Gamble.** Auburn University, Headland, AL.

1:30 (6) Impact of tillage and fungicides on diseases and yield of peanut in two cropping systems. **A.K. Hagan*, D.L. Hartzog, J.R. Weeks, J. Adams and B. Gamble.** Auburn University, Auburn, AL.

1:45 (7) Impact of tillage on thrips populations, tomato spotted wilt and yield of peanut. **J.R. Weeks*, A.K. Hagan and L. Wells.** Auburn University, Headland, AL.

2:00 (8) Twin versus single row patterns for peanut production. **J.A. Baldwin*, J.P. Beasley, Jr., A.K. Culbreath and S.L. Brown.** University of Georgia, Tifton, GA.

2:15 (9) Feasibility of using computer programs for managing irrigation for peanuts. **J.I. Davidson, Jr.*, C.T. Bennett, T. Tyson, J. Baldwin, J. Beasley and M. Bader.** USDA-ARS, NPRL, Dawson, GA.

Economics ..... Regency East #2

Moderator: Foy Mills

1:15 (10) Economic feasibility of screening farmer stock peanuts prior to marketing. **M.C. Lamb* and P.D. Blankenship.** USDA-ARS, NPRL, Dawson, GA.

1:30 (11) Economic analysis and management implications of the University of Georgia tomato spotted wilt risk index for peanuts. **W.D. Shurley*, S.L. Brown, J.W. Todd, A.K. Culbreath and J.A. Baldwin.** University of Georgia, Tifton, GA.

1:45 (12) Economic considerations for reduced tillage for peanut production. **T.D. Hewitt*.** University of Florida, Marianna, FL.

2:00 (13) Economic implications of the FAIR act on U.S. peanut producers. **C.P. Chen and S.M. Fletcher*.** University of Georgia, Griffin, GA.

2:15 (14) Inter-county transfer of peanut quota in Georgia under the FAIR act. **B.J. Hubbell* and S.M. Fletcher.** University of Georgia, Griffin, GA.

2:30 (15) Economic impacts of 1996 farm act peanut program changes emphasizing shifts in location of production. **K.M. Robison* and V.N. Grise.** USDA-FSA, Washington, D.C.

2:45 (16) Consumers' attitudes, perceptions and consumption of peanut products. **S.M. Fletcher* and R.B. Larson.** University of Georgia, Griffin, GA.

3:00 (17) Impacts of the peanut CRSP program on the peanut sector in the USA. **D.G. Cummins* and J.H. Williams.** University of Georgia, Griffin, GA

Mycotoxins/Physiology and Seed Technology ..... Regency East #3
Moderator: Nancy Keller

1:15 (18) Cloning of a lipoxygenase gene from peanut and characterization of its role in the peanut-*Aspergillus* interaction. **G.B. Burow*, H.W. Gardner and N.P. Keller.** Texas A&M University, College Station, TX.

1:30 (19) Plant metabolites alter *Aspergillus* development through modulation of lipoxygenase expression. **A.M. Calvo* and N.P. Keller.** Texas A&M University, College Station, TX.

1:45 (20) Evaluation of different formulations used in delivery of aflatoxin biocontrol agents to peanuts. **J.W. Dorner*, R.J. Cole, P.D. Blankenship, W.J. Connick, D.J. Daigle and M.R. McGuire.** USDA-ARS, NPRL, Dawson, GA.

2:00 (21) Reductions of aflatoxins in peanuts by *Bacillus thuringiensis*. **W.J. Moar* and K.L. Bowen.** Auburn University, Auburn, AL.

2:15 (22) Aflatoxin reduction and total quality control of peanuts and peanut products in Thailand. **C. Oupadissakoon*, S. Jogloy and S. Wongkaew.** Kasetsart University, Bangkok, Thailand.

2:30 (23) Response of Georgia Red peanuts grown hydrophonically to continuous light and two temperature regimes. **T. Rowell*, D.G. Mortley, K. Stanciel and D. Hileman.** Tuskegee University, Tuskegee, AL.

2:45 (24) Response of Georgia Red peanut to CO2 enrichment when grown in nutrient film technique. **K. Stanciel*, D.G. Mortley, J.H. Hill and D. Hileman.** Tuskegee University, Tuskegee, AL.

Production Technology II..... Regency East #1
Moderator: Bob Whitney

3:30 (25) Comparisons of different levels of production inputs for profitability in peanut. **K.E. Jackson*, J.P. Damicone, J.R. Sholar, J.K. Nickels and P.G. Mulder** Oklahoma State University, Stillwater, OK.

3:45 (26) Influence of harvest date on response of six Virginia-type peanut cultivars to BAS-125. **A.S. Culpepper*, D.L. Jordan and A.C. York.** North Carolina State University, Raleigh, NC.

4:00 (27) Response of Florunner peanut to high-frequency deficit irrigation in the Texas Southern High Plains. **A.M. Schubert*, W.M. Lyle, J.W. Keeling and J.F. Farris.** Texas A&M University, Lubbock, TX.

4:15 (28) Investment returns from three sub-surface microirrigation tubing spacings. **N.L. Powell*, D.J. Bosch and F.S. Wright.** Virginia Polytechnic Institute and State University, Suffolk, VA.

4:30 (29) Groundnut production in South Africa. **C.J. Swanevelder*.** Agricultural Research Council-Grain Crops Research Institute, Potchefstroom, South Africa.

Graduate Student Competition ..... **Regency East #2**
Moderator: Jim Starr

3:30 (30) Use of a core collection to identify resistance to Rhizoctonia limb rot in peanut. **M.D. Franke*, T.B. Brenneman and C.C. Holbrook.** University of Georgia, Tifton, GA.

3:45 (31) Effect of plant growth and canopy modification on Sclerotinia blight of peanut. **D.B. Langston, Jr.*, P.M. Phipps and R.J. Stipes.** Virginia Polytechnic Institute and State University, Suffolk, VA.

4:00 (32) Selection of agronomically acceptable early leaf spot resistant interspecific breeding lines of peanut. **J.C. Tuggle*, O.D. Smith, J.L. Starr and B.A. Besler.** Texas A&M University, College Station, TX.

4:15 (33) Isolation and characterization of the *Aspergillus parasiticus* pacC gene. **G.D. Pinero* and N.P. Keller.** Texas A&M University, College Station, TX.

4:30 (34) A visual screen to detech *Aspergillus nidulans* mutants defective in aflR regulation. **R.A.E. Butchko*, T.H. Adams and N.P. Keller.** Texas A&M University, College Station, TX.

Curing, Storing and Handling ..... **Regency East #3**
Moderator: Chuck Danheim

3:30 (35) A two-stage batch dryer for curing peanuts. **C.L. Butts* and M. Omary.** USDA-ARS, NPRL, Dawson, GA.

3:45 (36) Warehousing peanuts in West Texas with aeration. **P. D. Blankenship*, C.L. Butts, M.C. Lamb, T.H. Sanders, B.W. Horn and G.M. Grice.** USDA-ARS, NPRL, Dawson, GA.

4:00 (37) Cold storage and tempering of shelled peanuts. **F.S. Wright* and C.L. Butts.** USDA-ARS, NPRL, Dawson, GA.

4:15 (38) Evidence of stress proteins in peanuts as potential maturity markers and their relationship to alcohol dehydrogenase. **S.Y. Chung*, J.R. Vercellotti and T.H. Sanders.** USDA-ARS, SRRC, New Orleans, LA.

Thursday, July 10

Weed Science I ..... **Regency East #1**
Moderator: Todd Baughmann

8:00 (39) Efficacy and crop tolerance of disclosulam soil-applied in peanuts. **L.B. Braxton*, J.L. Barrentine, D.L. Grant, V.B. Langston, K.D. Redding, J.S. Richburg and B.R. Sheppard.** DowElanco, Indianapolis, IN.

8:15 (40) Efficacy and crop tolerance of diclosulam post-applied in peanuts. **V.B. Langston*, L.B. Braxton, J.L. Barrentine, B.R. Sheppard, S.P. Nolting, J.S. Richburg, D.L. Grant, K.D. Redding and T.C. Geselius.** DowElanco, Indianapolis, IN.

8:30 (41) Weed management in peanut with diclosulam. **J.W. Wilcut* and V.B. Langston.** North Carolina State University, Raleigh, NC.

8:45 (42) V-53482: A new peanut soil applied herbicide. **J.R. Cranmer*, J.V. Altom, T.V. Hicks, T.G. Bean, J.O. Bryson and J.A. Pawlak.** Valent Corporation, Cary, NC.

9:00 (43) Weed management in peanut with flumioxazin. **W.A. Bailey*, J.W. Wilcut and J.R. Cranmer.** North Carolina State University, Raleigh, NC.

9:15 (44) Effect of Cadre timing applications on peanut growth and yield. **D.C. Sestak*, W.J. Grichar, R.G. Lemon and T.A. Hoelewyn.** Texas Agricultural Experiment Station, Yoakum, TX.

9:30 (45) Effects of broadleaf herbicides on control of morningglory species with imazameth. **P.A. Dotray* and J.W. Keeling.** Texas Agricultural Experiment Station, Lubbock, TX.

Entomology ..... **Regency East #2**

Moderator: Forrest Mitchell

8:00 (46) Danitol: A new peanut insecticide-miticide. **J.V. Altom*, K.M. Perry, J.R. Cranmer, T.V. Hicks and J.R. Aleck.** Valent USA Corporation, Gainesville, FL.

8:15 (47) Efficacy of at-plant systemic insecticides in West Texas peanut. **C.R. Crumley* and F.L. Mitchell.** Texas Agricultural Extension Service, Seminole, TX.

8:30 (48) An overview of options for managing insect pests in Virginia-North Carolina peanuts. **D.A. Herbert, Jr.*, W.J. Petka and R.L. Brandenburg.** Virginia Polytechnic Institute and State University, Suffolk, VA.

8:45 (49) Transmission efficiency of tobacco thrips and western flower thrips vectoring tomato spotted wilt virus to peanut leaf disks. **F.L. Mitchell*, K.K. Kresta and J.W. Smith, Jr.** Texas Agricultural Experiment Station, Stephenville, TX.

9:00 (50) Rapid identification of tomato spotted wilt virus-transmitters among populations of tobacco thrips and western flower thrips in Georgia by ELISA. **H.R. Pappu*, J.W. Todd, A.K. Culbreath, M.D. Bandla and J.L. Sherwood.** University of Georgia, Tifton, GA.

Processing and Utilization ..... **Regency East #3**

Moderator: Mike Kubicek

8:00 (51) Estimates of free folic acid content of peanut seeds (*Arachis hypogaea*) after either oil roasting or hot air roasting. **D.A. Smyth*.** Planters Company, NABISCO Technical Center, East Hanover, NJ.

8:15 (52) Variation in intensity of sweet and bitter sensory attributes across peanut genotypes. **H.E. Pattee*, T.G. Isleib and F.G. Giesbrecht.** USDA-ARS, Raleigh, NC.

8:30 (53) Effect of blanching on peanut shelf life. **T.H. Sanders*, G.A. Adelsberg, K.H. Hendrix and R.W. McMichael.** USDA-ARS, MQHR, Raleigh, NC.

8:45 (54) Potential for increased utilization of peanuts in value-added products. **M.J. Hinds*, A.H. Jackson and C.M. Jolly.** North Carolina A&T State University, Greensboro, NC.

9:00 (55) Use of 'Florunner' and 'Sunoleic' oil stock peanuts as fat sources for pigs diets. **R.O. Myer* and D.W. Gorbet.** University of Florida, Marianna, FL.

Weed Science II ..... Regency East #1
Moderator: Peter Dotray

10:00 (56) Effects of insecticide-nematicide treatment on tolerance of peanut to postemergence herbicides. **C.W. Swann*.** Virginia Polytechnic Institute and State University, Suffolk, VA.

10:15 (57) Comparison of metolachlor and dimethenamid for nutsedge control and peanut injury. **W.J. Grichar*, R.G. Lemon, D.C. Sestak and T.A. Hoelewyn.** Texas Agricultural Experiment Station, Yoakum, TX.

10:30 (58) Select: A new postemergence grass herbicide for use in peanuts. **T.V. Hicks*, T.D. Bishop, K.M. Perry, J.R. Cranmer and J.V. Altom.** Valent USA Corporation, College Station, TX.

10:45 (59) Response of six Virginia-type peanut cultivars to norflurazon in North Carolina. **D.L. Jordan*, A.S. Culpepper and A.C. York.** North Carolina State University, Raleigh, NC.

11:00 (60) Changes in herbicide use patterns among high yield producers in Georgia. **G.E. MacDonald*, J.A. Baldwin and J.P. Beasley.** University of Georgia, Tifton, GA.

11:15 (61) Economic considerations of stale seedbed weed control in peanut. **W.C. Johnson, III*.** USDA-ARS, CPES, Tifton, GA.

Plant Pathology I ..... **Regency East #2**

Moderator: John Damicone

10:00 (62) Applications of corn meal enhance biological suppression of Sclerotina blight of peanut. **P.M. Phipps*, D.B. Langston, Jr. and S.G. Sturt.** Virginia Polytechnic Institute and State University, Suffolk, VA.

10:15 (63) Effects of corn meal as a soil amendment on southern stem rot, aflatoxin production, and *Aspergillus* populations. **T.B. Brenneman*, D.M. Wilson and F.M. Shokes.** University of Georgia, Tifton, GA.

10:30 (64) Effect of organic amendments on sclerotial germination of *Sclerotium rolfsii*. **C. Saude*, H.A. Melouk, J.P. Damicone and M.E. Payton.** Oklahoma State University, Stillwater, OK.

10:45 (65) Field response of multiple pathogen resistant peanut cultivar UF91108 to tomato spotted wilt virus. **A.K. Culbreath*, J.W. Todd, D.W. Gorbet and F.M. Shokes.** University of Georgia, Tifton, GA.

11:00 (66) Response of peanut varieties to IB11923 for control of Sclerotinia blight in Virginia. **R.W. Mozingo* and G.W. Harrison.** Virginia Polytechnic Institute and State University, Suffolk, VA.

11:15 (67) Peanut variety response to southern blight using reduced applications of Folicur. **B.A. Besler*, A.J. Jaks, W.J. Grichar and O.D. Smith.** Texas Agricultural Experiment Station, Yoakum, TX.

11:30 (68) Use of pesticides and cropping systems with cotton, peanut and velvetbean for the management of root-knot nematode (*Meloidogyne arenaria*) and southern blight (*Sclerotium rolfsii*) in 'Florunner' peanut. **R. Rodriguez-Kabana, D.G. Robertson* and L.W. Wells.** Auburn University, Auburn, AL.

11:45 (69) Yield of root-knot nematode resistant peanut lines in small field plots. **J.L. Starr*, C.E. Simpson and T.A. Lee, Jr.** Texas A&M University, College Station, TX.

Breeding and Genetics I ..... **Regency East #3**
Moderator: Olin D. Smith

10:00 (70) Progress in breeding for peanut oil improvement in the University of Florida program. **D.W. Gorbet, D.A. Knauft, E.B. Whitty, S.F. O'Keefe and P.C. Andersen.** University of Florida, Marianna, FL.

10:15 (71) Inheritance of O/L ratio in crosses of selected spanish varieties with a high oleic:linoleic breeding line. **Y. Lopez*, O.D. Smith and A.M. Schubert.** Texas A&M University, College Station, TX.

10:30 (72) Variation in oil content in Virginia-Carolina area peanuts. **R.W. Mozingo, II, T. G. Isleib*, R.W. Mozingo, H.E. Patte and R.F. Wilson.** North Carolina State University, Raleigh, NC.

10:45 (73) Identification of additional B-Geonome peanut accessions by use of RFLP markers. **M.D. Burow*, A.H. Paterson, J.L. Starr and C.E. Simpson.** Texas A&M University, College Station, TX.

11:00 (74) Cross-compatibility data of additional B-Genome *Arachis* accessions. **C.E. Simpson*, M.D. Burow, A.H. Paterson, J.F.M. Valls, D.E. Williams, I.G. Vargas and J.L. Starr.** Texas Agricultural Experiment Station, Stephenville, TX.

11:15 (75) Inheritance and expression of transgenes in peanut. **P. Ozias-Akins* and H. Yang.** University of Georgia, Tifton, GA.

Plant Pathology II ..... **Regency East #2**
Moderator: Richard Rudolph

1:15 (76) Evaluation of reduced spray programs with tebuconazole for control of southern blight and early leaf spot of peanut in Oklahoma. **J.P. Damicone* and K.E. Jackson.** Oklahoma State University, Stillwater, OK.

1:30 (77) Evaluation of fungicides for control of soilborne pathogens of peanut. **J.A. Wells* and T.A. Lee, Jr.** Texas Agricultural Experiment Station, Stephenville, TX.

1:45 (78) Effect of application method and formulation on distribution of flutolanil in peanut plants and soil. **A. O'Leary*, L. Vargyas, C. Rose and J. French.** Ricerca, Inc., Painesville, OH.

2:00 (79) Effect of reduced rate tank mix sprays of tebuconazole, chlorothalanil and adjuvants on disease control and peanut yield. **A.J. Jaks*, W.J. Grichar and B.A. Besler.** Texas Agricultural Experiment Station, Yoakum, TX.

2:15 (80) Disease control with combinations of flutolanil and tebuconazole. **K.L. Bowen*, P.A. Backman and J. Fajardo.** Auburn University, Auburn, AL.

2:30 (81) Use of GIS system to disseminate weather-based advisories on the WWW. **J.E. Bailey*.** North Carolina State University, Raleigh, NC.

2:45 (82) Distance and irrigation factors in an automated AU-Pnuts weather advisory program. **J.E. Fajardo*, P.A. Backman, K.L. Bowen and J.E. Burkett.** Auburn University, Auburn, AL.

3:00 (83) Formation of infection cushions on cellophane dialysis membrane by *Sclerotinia minor* in response to peanut. **H.A. Melouk*, S.S. Aboshosha and M.E. Payton.** USDA-ARS, Stillwater, OK.

3:15 (84) Sensitive and rapid detection of tomato spotted wilt tospovirus by immunocapture or direct binding polymerase chain reaction. **R.K. Jain, S.S. Pappu, H.R. Pappu*, A.K. Culbreath and J.W. Todd.** University of Georgia, Tifton, GA.

Breeding and Genetics II ..... Regency East #3
Moderator: Mike Schubert

1:15 (85) Characteristics of the 3'-terminal region of a necrotic strain of peanut stripe potyvirus. **S.S. Pappu, H.R. Pappu*, C.A. Chang, A.K. Culbreath and J.W. Todd.** University of Georgia, Tifton, GA.

1:30 (86) Comparison of two mass-selected cross populations for stem rot resistance in peanut. **W.D. Branch* and T.B. Brenneman.** University of Georgia, Tifton, GA.

1:45 (87) Backcrossing to increase the probability of recovery of superior genotypes from biparental populations. **T.G. Isleib*.** North Carolina State University, Raleigh, NC.

2:00 (88) Runner-type peanut with resistance to *Sclerotinia minor* Jagger. **O.D. Smith*, C.E. Simpson and H.A. Melouk.** Texas A&M University, College Station, TX.

2:15 (89) Genotype-by-environment interaction for yield and grade in the uniform peanut performance test. **P.W. Rice and T.G. Isleib*.** North Carolina State University, Raleigh, NC.

2:30 (90) Advances of the peanut selection program at the University of Chapingo. **S. Sanchez-Dominguez*.** Universidad Autonoma Chapingo, Chapingo, Mexico.

2:45 (91) Locating, characterizing and describing Ecuadorian peanut diversity. **D.E. Williams*, K.A. Williams, G.A. Zambrano, J.H. Mendoza and C.E. Simpson.** USDA-ARS, Beltsville, MD.

3:00 (92) The U. S. germplasm collection of *Arachis hypogaea*: How much diversity do we have? **C.C. Holbrook*.** USDA-ARS, Tifton, GA.

CONTRIBUTORS TO THE 1997 APRES MEETING

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

Special Events

American Cyanamid
Bayer Corporation
DowElanco
ISK Biosciences Corporation
Rhone-Poulenc Ag Company
Valent U.S.A. Corporation

Breaks Sponsored by Novartis

Regular Activities and Products

DeLeon Peanut Company
Farley Farm Supply
Golden Peanut Company
Griffin Corporation
Hershey Chocolate USA
Jim Leek & Associates
LiphaTech, Inc.
M & M Mars
Nestle Food Company
Planters Company
Terra International
Texas Peanut Producers Board
Zeneca Ag Products
Oklahoma Peanut Growers
Helena Chemical
BASF
Oklahoma Peanut Commission
Western Peanut Growers Board

SITE SELECTION COMMITTEE REPORT

The following meeting schedule will be followed:

Norfolk, VA – July 7-10, 1998, Omni Waterside, $93 room rate (single and double)
Savannah, GA – July 13-16, 1999, Savannah Hyatt Regency
Alabama – 2000 (Location and dates TBA)
Oklahoma – 2001
North Carolina – 2002
Florida - 2003

Respectfully submitted,

Mark Black, Chair

AMERICAN SOCIETY OF AGRONOMY LIAISON REPRESENTATIVE REPORT

The annual meetings of the joint American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America were held in Indianapolis, Indiana on November 3 to 8, 1996. More than 3000 scientific presentations were made. Of these, 7 were devoted to peanut research and 6 members of APRES authored or co-authored presentations. The next annual meeting will be held in Anaheim, California on October 26 to 31, 1997.

Respectfully submitted,

H. Thomas Stalker

CAST REPORT

The CAST Board met in Dallas on November 15-17, 1996 and in Washington, D.C. on April 4-6, 1997. New officers were installed during the April 1997 meeting. Sue Sullivan, Garst Seed, Hawaii, is the new President, Victor Lechtenberg, Dean of the College of Agriculture at Purdue University, is Past President, and David Lineback, Dean of the College of Agriculture at the University of Idaho is President-Elect. David Knauft is a member of the Science Education Committee and is Chair of Plant Sciences Work Group.

CAST is growing rapidly in stature, visibility, representation and level of activity. The American Society of Plant Physiologists joined CAST and many other societies and organizations of importance to APRES are considering membership.

Publications on topics of national importance have increased in frequency as well as impact. Several planned publications that may interest APRES members include *If Prescription Pesticides are Mandated* and an update on both the mycotoxin and aflatoxin reports.

A major upcoming activity is the 25-year anniversary of CAST. This special event will be celebrated with an international conference, *"Food Safety and Food Security: Domestic and International Dimensions"*. The conference will be at the Hyatt Regency in Chicago on November 2-4, 1997.

Specific meeting reports have been printed in *Peanut Research* and are also available at the CAST website (http://www.netins.net).

The Charles A. Black Award was presented to Neil Harl, an agricultural economist from Iowa State University. Dr. Harl's specialty is environmental law.

CAST continues to explore ways to increase efficiency and participation, while keeping costs to a minimum. Board membership, travel expenses, society dues structure and related issues continue to be debated. David Knauft's travel to the board meetings is partially funded by CAST and the remaining by NC State University's Crop Science Department. The cost is considerably more than the contributions APRES makes to CAST.

APRES continues to be involved in the CAST–sponsored activity, Conversations in Change. The focus of this effort is to assist professional societies, including APRES, as they work to meet the needs of both current and future membership. Agriculturally based professional societies are undergoing fundamental change, as is agriculture as a whole and this CAST effort is providing opportunities for societies to grow. Details have been printed in Peanut Research.

Membership has decreased 36% since a high of 742 in 1985.

Organizational membership is down nearly 64% from a peak in 1986 and individual, institutional, student and sustaining memberships are all either constant or decreasing.

APRES should address why this is taking place and determine what can be done to increase our ability to communicate research and education opportunities in peanut science.

Both the Peanut Institute and the National Peanut Council have undergone fundamental changes and improvements to bolster the peanut industry. APRES should also have a role in this process.

The CAST Conversations in Change process has included several members of APRES. We need to take advantage of their experiences and ideas as we look toward ways of improving APRES.

Respectfully submitted,

David Knauft

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

ARTICLE I. NAME

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

ARTICLE II. PURPOSE

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

ARTICLE III. MEMBERSHIP

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

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

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

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

d. Sustaining memberships: Industrial organizations and others that pay dues as fixed by the Board of Directors. Sustaining members are those who wish to support this Society financially to an extent beyond minimum requirements as set forth in Section 1c, Article III. Sustaining members may designate one representative who shall have

individual member rights. Also, any organization may hold sustaining memberships for any or all of its divisions or sections with individual member rights accorded each sustaining membership.

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

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

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

ARTICLE IV. DUES AND FEES

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

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

(Dues were set at 1992 Annual Meeting)

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

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

ARTICLE V. MEETINGS

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

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

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

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

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

ARTICLE VI. QUORUM

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

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

ARTICLE VII. OFFICERS

Section 1. The officers of this Society shall consist of the president, the

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

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

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

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

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

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

Section 7. (a) The executive officer shall countersign all deeds, leases, and conveyances executed by the Society and affix the seal of the Society thereto and to such other papers as shall be required or directed to be sealed. (b) The executive officer shall keep a record of the deliberations of the Board of Directors, and keep safely and systematically all books, papers,

records, and documents belonging to the Society, or in any wise pertaining to the business thereof. (c) The executive officer shall keep account of all monies, credits, debts, and property of any and every nature accrued and/or disbursed by this Society, and shall render such accounts, statements, and inventories of monies, debts, and property, as shall be required by the Board of Directors. (d) The executive officer shall prepare and distribute all notices and reports as directed in these By-Laws, and other information deemed necessary by the Board of Directors, to keep the membership well informed of the Society activities.

ARTICLE VIII. BOARD OF DIRECTORS

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

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

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

Section 3. The Board of Directors shall determine the time and place of regular and special board meetings and may authorize or direct the

president by majority vote to call special meetings whenever the functions, programs, and operations of the Society shall require special attention. All members of the Board of Directors shall be given at least 10 days advance notice of all meetings; except that in emergency cases, three days advance notice shall be sufficient.

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

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

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

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

ARTICLE IX. COMMITTEES

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

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

a. Finance Committee: This committee shall consist of six members, three representing State employees, one representing USDA, and two representing Private Business segments of the peanut industry.

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

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

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

d. Peanut Quality Committee: This committee shall consist of seven members, one each actively involved in research in peanuts--(1) varietal development, (2) production and marketing practices related to quality, and (3) physical and chemical properties related to quality--and one each representing the Grower, Sheller, Manufacturer, and Services (pesticides and harvesting machinery in particular) segments of the peanut industry. This committee shall

actively seek improvement in the quality of raw and processed peanuts and peanut products through promotion of mechanisms for the elucidation and solution of major problems and deficiencies.

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

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

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

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

nominations received, the committee shall select qualified nominees for approval by majority vote of the Board of Directors.

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

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

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

ARTICLE X. DIVISIONS

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

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

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

ARTICLE XI. AMENDMENTS

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

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

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

records, and documents belonging to the Society, or in any wise pertaining to the business thereof. (c) The executive officer shall keep account of all monies, credits, debts, and property of any and every nature accrued and/or disbursed by this Society, and shall render such accounts, statements, and inventories of monies, debts, and property, as shall be required by the Board of Directors. (d) The executive officer shall prepare and distribute all notices and reports as directed in these By-Laws, and other information deemed necessary by the Board of Directors, to keep the membership well informed of the Society activities.

ARTICLE VIII. BOARD OF DIRECTORS

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

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

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

Section 3. The Board of Directors shall determine the time and place of regular and special board meetings and may authorize or direct the

APRES MEMBERSHIP
1975-1997

	Individual	Institutional	Organizational	Student	Sustaining	Total
1975	419	--	40	--	21	480
1976	363	45	45	--	30	483
1977	386	45	48	14	29	522
1978	383	54	50	21	32	540
1979	406	72	53	27	32	590
1980	386	63	58	27	33	567
1981	478	73	66	31	39	687
1982	470	81	65	24	36	676
1983	419	66	53	30	30	598
1984	421	58	52	33	31	595
1985	513	95	65	40	29	742
1986	455	102	66	27	27	677
1987	475	110	62	34	26	707
1988	455	93	59	35	27	669
1989	415	92	54	28	24	613
1990	416	85	47	29	21	598
1991	398	67	50	26	20	561
1992	399	71	40	28	17	555
1993	400	74	38	31	18	561
1994	377	76	43	25	14	535
1995	363	72	26	35	18	514
1996	336	69	24	25	18	472
1997	364	74	24	28	18	508

1997-98
MEMBERSHIP ROSTER

INDIVIDUAL MEMBERS

SAYED S ABOSHOSHA
DEPT OF PLANT PATHOLOGY
110 NOBLE RESEARCH CENTER
OKLAHOMA STATE UNIVERSITY
STILLWATER OK 74078
Phone: 405-744-7988
FAX: 405-744-7373
EMail: abo@okway.okstate.edu

TIMOTHY ADCOCK
AMERICAN CYANAMID
105 INVERNESS DRIVE
PERRY GA 31069
Phone: 912-988-3022
FAX: 912-988-3024
EMail: adcockt@pt.cyanamid.com

MASOOMA ALI-AHMAD
RESEARCH SCHOLAR
301 SOUTH PERRY-PAIGE
FLORIDA A&M UNIVERSITY
TALLAHASSEE FL 32307
Phone: 850-561-3227
FAX: 850-561-2221

JOHN ALTOM
VALENT
3700 NW 91ST BLDG C STE 300
GAINESVILLE FL 32606
Phone: 352-336-4844
FAX: 352-336-7752
EMail: jalto@valent.com

JOHN C ANDERSON
DEPT FOOD SCIENCE & ANIMAL IND
PO BOX 264
NORMAL AL 35762
Phone: 205-851-5445

CATHERINE ANDREWS
THE PEANUT GROWER
PO BOX 83
TIFTON GA 31793
Phone: 912-386-8591
FAX: 912-386-9772

BRIAN ANTHONY
M&M MARS
113 COUNTY RD 1150
RICEVILLE TN 37370

RICHARD T AWUAH
FACULTY OF AGRICULTURE
UNIVERSITY OF SCIENCE & TECH
KUMASI
GHANA WEST AFRICA
Phone: 233-51-60192
FAX: 233-51-60137
EMail: uselib@ust.gn.apc.org

JAMES L AYRES
GOLD KIST INCORPORATED
2230 INDUSTRIAL BLVD
LITHONIA GA 30058
Phone: 770-393-5292
FAX: 770-393-5584

JACK BAILEY
NORTH CAROLINA STATE UNIVERSITY
BOX 7616 DEPT OF PLANT PATHOLOGY
RALEIGH NC 27695-7616
Phone: 919-515-6688
FAX: 919-515-3670
EMail: jack_bailey@ncsu.edu

MICHAEL W BAKER
NORTH CAROLINA FND SEED PRODUCERS
8220 RILEY HILL ROAD
ZEBULON NC 27597-8773
Phone: 919-269-5592
FAX: 919-269-5593
EMail: ncfspi@aol.com

JOHN A BALDWIN
P O BOX 1209
TIFTON GA 31793
Phone: 912-386-3430
FAX: 912-386-7308
EMail: jbaldwin@uga.cc.uga.edu

STEVE BARNES
PEANUT BELT RESEARCH STATION
PO BOX 220
LEWISTON NC 27849
Phone: 919-348-2213
FAX: 919-348-2298

BILLY BARROW
307 HICKORY FORK ROAD
EDENTON NC 27932
Phone: 757-934-6700
FAX: 757-925-0496

ROGER B BATTS
NORTH CAROLINA STATE UNIVERSITY
BOX 7620 – CROP SCIENCE DEPT
RALEIGH NC 27695-7620
Phone: 919-515-5272
FAX: 919-515-5315
EMail: roger_batts@ncsu.edu

TODD BAUGHMAN
TEXAS A&M RESEARCH & EXT CENTER
PO BOX 2159
VERNON TX 76385
Phone: 817-552-9941
FAX: 817-553-4657
EMail: ta-baughman@tamu.edu

JERRY A BAYSINGER
PIONEER HI-BRED INTERNATIONAL
RT 2 BOX 1A
YORK NE 68467
Phone: 402-362-6639
FAX: 402-362-6638
EMail: baysingerja@phibred.com

DANISE BEADLE
AGREVO USA COMPANY
PO BOX 7
CANTONMENT FL 32533
Phone: 850-587-3507
FAX: 850-587-5472
EMail: beadled@wilmde.hcc.com

JOHN P BEASLEY JR
THE UNIVERSITY OF GEORGIA
PO BOX 1209
TIFTON GA 31793
Phone: 912-386-3430
FAX: 912-386-7308
EMail: jbeasley@uga.cc.uga.edu

FRED BELFIELD JR
3152 GREENFIELD DRIVE
ROCKY MOUNT NC 27804
Phone: 919-443-6786
FAX: 919-459-9850
EMail: fbelfield@nash

JERRY M BENNETT
UNIVERSITY OF FLORIDA
PO BOX 110500
GAINESVILLE FL 32611-0500
Phone: 352-392-1811
FAX: 352-392-1840

BRENT BESLER
TEXAS AGRIC EXPERIMENT STATION
PO BOX 755
YOAKUM TX 77995
Phone: 512-293-6326
FAX: 512-293-2054
EMail: taes@icsi.net

W M BIRDSONG JR
BIRDSONG PEANUTS
PO BOX 776
FRANKLIN VA 23851
Phone: 757-562-3177
FAX: 757-562-3556

DEWANE BISHOP
VALENT CORP
131 WINDSOR AVE
BARDSTOWN KY 40004
Phone: 502-348-9522
FAX: 502-349-6027

MARK C BLACK
EXTENSION PLANT PATHOLOGIST
PO BOX 1849
UVALDE TX 78802-1849
Phone: 210-278-9151
FAX: 210-278-4008
EMail: m-black@tamu.edu

PAX BLAMEY
UNIVERSITY OF QUEENSLAND
DEPARTMENT OF AGRICULTURE
BRISBANE 4072
AUSTRALIA
Phone: 617-3365-2081
FAX: 617-3365-1188
EMail: p.blamey@uq.edu.au

PAUL D BLANKENSHIP
NATIONAL PEANUT RESEARCH LAB
1011 FORRESTER DRIVE SE
DAWSON GA 31742
Phone: 912-995-7434
FAX: 912-995-7416

MARK BOARDMAN
HCR 6 BOX 59A
LAMESA TX 79331
Phone: 806-489-7446

KENNETH J BOOTE
UNIVERSITY OF FLORIDA
AGRONOMY DEPT 304 NEWELL HALL
GAINESVILLE FL 32611-0500
Phone: 352-392-1811
FAX: 352-392-1840
EMail: kjb@gnv.ifas.ufl.edu

NIVES BORRELLI
SELECT INGREDIENTS
263 NORTH FORMAN ST
DETROIT MI 48209
Phone: 519-250-0011
FAX: 519-250-0671

J P BOSTICK
PO BOX 357
HEADLAND AL 36345
Phone: 334-693-3988
FAX: 334-693-2212

KIRA L BOWEN
AUBURN UNIVERSITY
DEPT PLANT PATH-209 LIFE SCI BLDG
AUBURN AL 36849
Phone: 334-844-1953
FAX: 334-844-1947
EMail: kbowen@ag.auburn.edu

WILLIAM D. BRANCH
UNIV OF GEORGIA - DEPT OF AGRON
COASTAL PLAIN EXP STATION
TIFTON GA 31793-0748
Phone: 912-386-3561
FAX: 912-386-7293
EMail: wdbranch@tifton.cpes.peachnet.edu

RICK L BRANDENBURG
NORTH CAROLINA STATE UNIVERSITY
BOX 7613 ENTOMOLOGY DEPT
RALEIGH NC 27695-7613
Phone: 919-515-8876
FAX: 919-515-7746
EMail: rick_brandenburg@ncsu.edu

JOHN BRAUN
1701 GATEWAY BLVD STE 385
RICHARDSON TX 75080
Phone: 972-664-1391
EMail: j.bran@valent.com

BARRY J BRECKE
UNIV OF FLORIDA AG RESEARCH CTR
4253 EXPERIMENT ROAD HIGHWAY 182
JAY FL 32565-9524
Phone: 850-994-5215
FAX: 850-994-9589
EMail: bjbe@gnv.ifas.ufl.edu

TIMOTHY BRENNEMAN
COASTAL PLAIN EXP STATION
DEPT PLANT PATHOLOGY
TIFTON GA 31794
Phone: 912-386-3371
EMail: arachis@tifton.cpes.peachnet.edu

STEVE L BROWN
UNIVERSITY OF GEORGIA
PO BOX 1209
TIFTON GA 31793
Phone: 912-386-3424
FAX: 912-386-7133
EMail: bugbrown@uga.cc.uga.edu

PHILIP D BRUNE
NOVARTIS CROP PROTECTION
DELTA RESEARCH STATION
727 SLAB ROAD
GREENVILLE MS 38703-9797

GALE A BUCHANAN
THE UNIVERSITY OF GEORGIA
101 CONNER HALL DEAN/DIR OFFICE
ATHENS GA 30602-7501
Phone: 706-542-3924
FAX: 706-542-0803
EMail: agdean@uga.cc.uga.edu

MARK D BUROW
TEXAS A&M UNIVERSITY
DEPT OF SOIL & CROP SCIENCE
COLLEGE STATION TX 77843
Phone: 409-845-2541
FAX: 409-845-0456
EMail: mburow@acs.tamu.edu

BRAD BUSH
HELENA CHEMICAL
301 SOUTH ROGERS
WAXAHACHIE TX 75165
Phone: 972-937-4182
FAX: 972-937-8130

CHRISTOPHER BUTTS
NATIONAL PEANUT RESEARCH LAB
1011 FORRESTER DRIVE SE
DAWSON GA 31742
Phone: 912-995-7431
FAX: 912-995-7416
EMail: cbutts@asrr.arsusda.gov

DWAYNE R BUXTON
AG RES SER, NATIONAL PROGRAM STAFF
ROOM 212 BLDS 005
BARC-WEST
BELTSVILLE MD 20705
Phone: 301-504-5321
FAX: 301-504-5467
EMail: drb@ars.usda.gov

JOHN E CAGLE
RT 1 BOX 113
MILL CREEK OK 74856
Phone: 405-622-6304
FAX: 405-622-3115

JOHN S CALAHAN JR
TARLETON STATE UNIVERSITY
DEPT OF BIOLOGICAL SCIENCES
PO BOX T-0100
STEPHENVILLE TX 76402
Phone: 254-968-9159
FAX: 254-968-9157

W V CAMPBELL
4312 GALAX DRIVE
RALEIGH NC 27612
Phone: 919-787-1417

CHARLES S CANNON
ROUTE 2 BOX 1020
ABBEVILLE GA 31001
Phone: 912-467-2042

KURT CARMEAN
5403 DAVIDS BEND DR
SUGAR LAND TX 77479
Phone: 281-565-1687
FAX: 281-565-1689
EMail: kcarmean@flash.net

SAM R CECIL
1119 MAPLE DRIVE
GRIFFIN GA 30223-4938
Phone: 770-228-8835

JAY W CHAPIN
CLEMSON UNIV--EDISTO EXP STATION
PO BOX 247
BLACKVILLE SC 29817
Phone: 803-284-3343
FAX: 803-284-3684
EMail: jchapin@clemson.edu

KELLY CHENAULT
RT 3 BOX 130
CLEVELAND OK 74020
Phone: 918-243-5330
FAX: 405-624-5311
EMail: dockdc@hotmail.com

JOHN C CHERRY
ERRC ARS-USDA
600 E MERMAID LANE
WYNDMOOR PA 19038-8551
Phone: 215-233-6595
FAX: 215-233-6777
EMail: jcherry@ars.usda.gov

MANJEET CHINNAN
UNIVERSITY OF GEORGIA
DEPT FOOD SCI & TECH/GA EXP STA
GRIFFIN GA 30223
Phone: 770-412-4741
FAX: 770-229-3216
EMail: chinnan@cfsqe.griffin.peachnet.edu

ROBIN Y-Y CHIOU
NATIONAL CHIAYI INST OF TECHNOLOGY
DEPT FOOD SCIENCE & TECHNOLOGY
CHIAYI TAIWAN
REP OF CHINA
Phone: 886-5-2775524
FAX: 886-5-2775160
EMail: rychiou@rice.cit.edu.tw

Z A CHITEKA
DEPT OF CROP SCIENCE
PO BOX MP 167
MOUNT PLEASANT HARARE
ZIMBABWE
Phone: 352-392-1823
FAX: 352-392-7248
EMail: zach@gnv.ifas.ufl.edu

SI-YIN CHUNG
USDA-ARS
1100 ROBERT E LEE BLVD
NEW ORLEANS LA 70124
Phone: 504-286-4465
FAX: 504-286-4419
EMail: sychung@nola.srrc.usda.gov

BOBBY COHORN
BOX 1084
SEMINOLE TX 79360
Phone: 806-487-6720

DANIEL L COLVIN
UNIVERSITY OF FLORIDA
303 NEWELL HALL
GAINESVILLE FL 32611
Phone: 352-392-1818
FAX: 352-392-1840

GARY L CLOUD
3400 BLUE QUILL LANE
TALLAHASSEE FL 32312
Phone: 904-893-3222
FAX: 904-893-9067

TERRY A COFFELT
USDA-ARS WATER CONSERVATION LAB
4331 EAST BROADWAY ROAD
PHOENIX AZ 85040-8832
Phone: 602-379-4356
FAX: 602-379-4355
EMail: tcoffelt@uswcl.ars.ag.gov

DESIREE L COLE
KUTSAGA RESEARCH STATION
PO BOX 1909
HARARE
ZIMBABWE
Phone: 263-4-575289
FAX: 263-4-575288

JAMES R COLLINS
RHONE-POULENC AG COMPANY
PO BOX 1467
CARY NC 27512
Phone: 919-387-8842
FAX: 919-387-8852

MATT COMER
ZENECA AG PRODUCTS
8000 CENTER VIEW PARKWAY
OAK RIDGE BLDG SUITE 501
CORDOVA TN 38018
Phone: 901-751-5213
FAX: 901-751-5223

DARLENE M COWART
CARGILL PEANUT PRODUCTS
PO BOX 272
DAWSON GA 31742
Phone: 912-995-7258
FAX: 912-995-3268

FRED R COX
NORTH CAROLINA STATE UNIVERSITY
BOX 7619 SOIL SCIENCE DEPT
RALEIGH NC 27695-7619
Phone: 919-515-2388
FAX: 919-515-2167
EMail: fred_cox@ncsu.edu

GREGORY KETIH COX
NORTH CAROLINA COOP EXTENSION
PO BOX 606
JACKSON NC 27845
Phone: 919-534-2711
FAX: 919-534-1827
EMail: kcox@northampces.ncsu.edu

JOHN R CRANMER
VALENT USA CORPORATION
1135 KILDAIRE FARM RD SUITE 250-3
CARY NC 27511
Phone: 919-467-6293
FAX: 919-481-3599

CLYDE R CRUMLEY
COURTHOUSE
SEMINOLE TX 79360
Phone: 915-758-2977

ALEX CSINOS
COASTAL PLAIN EXP STATION
DEPT PLANT PATHOLOGY
TIFTON GA 31793
Phone: 912-386-3370
FAX: 912-386-7285
EMail: pathtift@tifton

ALBERT K CULBREATH
COASTAL PLAIN EXP STATION
DEPT PLANT PATHOLOGY
TIFTON GA 31793-0748
Phone: 912-386-3370
FAX: 912-386-7285

DAVID G CUMMINS
UNIVERSITY OF GEORGIA
PEANUT CRSP GEORGIA STATION
GRIFFIN GA 30223
Phone: 404-228-7312
FAX: 404-229-3337
EMail: crspgrf@gaes.griffin.peachnet.edu

HIROYUKI DAIMON
UNIVERSITY OF OSAKA PREFECTURE
1-1 GAKUEN-CHO
SAKAI-SHI OSAKA-FU 593
JAPAN
Phone: 0722-52-1161

JOHN P DAMICONE
OKLAHOMA STATE UNIVERSITY
DEPT OF PLANT PATHOLOGY
STILLWATER OK 74078-9947
Phone: 405-744-9962
FAX: 405-744-7373
EMail: jpd3898@osuvm1.bitnet

GORDON DARBY
LIPHA TECH NITRAGIN BRAND INOC
732 WALNUT
MARKS MS 38646
Phone: 601-326-4789
FAX: 601-326-4825

JAMES I DAVIDSON JR
NATIONAL PEANUT RESEARCH LAB
1011 FORRESTER DRIVE SE
DAWSON GA 31742
Phone: 912-995-7428
FAX: 912-995-7416
EMail: davidson@asrr.arsusda.gov

IGNACIO JOSE DE GODOY
RUA LOTARIO NOVAES 336
TAQUARAL - CEP 13076-150
CAMPINAS SP
BRAZIL
Phone: 019-241-5188
FAX: 019-242-3602

CARL M DEOM
THE UNIVERSITY OF GEORGIA
DEPT PLANT PATH/PLANT SCI BLDG
ATHENS GA 30602-7274
Phone: 706-542-1270
FAX: 706-542-1262

REAGAN R DESPAIN
101 GROVERS MILL RD ROOM 201
LAWRENCEVILLE NJ 08648
Phone: 609-275-1200
FAX: 609-275-0330
EMail: reagan-despain@py.cyanamid.com

JOE W DORNER
USDA-ARS NATIONAL PEANUT RES LAB
1011 FORRESTER DRIVE SE
DAWSON GA 31742
Phone: 912-995-7408
FAX: 912-995-7416
EMail: jdorner@asrr.arsusda.gov

PETER A DOTRAY
TEXAS TECH UNIVERSITY
6921 E STATE RD 41
ROPESVILLE TX 79358
Phone: 806-863-2950

JACKIE DRIVER
NOVARTIS CROP PORTECTION
1800 TIMBER RIDGE ROAD
EDMOND OK 73034
Phone: 405-330-8855
FAX: 405-340-4055
EMail: jackie.driver@cp.novartis.com

JUANGJUN DUANGPATRA
KASETSART UNIVERSITY
DEPT OF AGRON FACULTY OF AGRIC
BANGKOK 10900
THAILAND
Phone: 662-579-3130
FAX: 662-579-8580
EMail: agrijua@nontri.ku.ac.th

JOSEPH R DUNN
BASF CORPORATION
ROUTE 7 BOX 422-B
BENSON NC 27504
Phone: 910-892-7190
FAX: 910-892-8307

ROBERT M DUTTON
CARGILL PEANUT
PO BOX 272
DAWSON GA 31742
Phone: 912-995-7215
FAX: 912-995-3268

FORD EASTIN
COASTAL PLAIN EXPERIMENT STATION
CROP & SOIL SCI DEPT PO BOX 748
TIFTON GA 31793
Phone: 912-386-7239
FAX: 912-386-7293
EMail: eastin@tifton.cpes.peachnet.edu

SONYA J EUBANKS
J LEEK ASSOCIATES INC
400 TIMERLINE DRIVE
GRANBURY TX 76048-4260
Phone: 817-579-1750

JOHN W EVEREST
AUBURN UNIVERSITY
107 EXTENSION HALL
AUBURN UNIVERSITY AL 36849
Phone: 334-844-5493
FAX: 334-844-4586
EMail: jeverest@acesag.auburn.edu

JULIUS FAJARDO
DEPT OF PLANT PATH
209 LIFE SCIENCES BLDG
AUBURN UNIVERSITY
AUBURN AL 36849-5409
Phone: 334-844-1973
FAX: 334-844-1972
EMail: jfajardo@acesag.auburn.edu

JOHN FARRIS
CEA-AG
TEXAS AG EXTENSION SERVICE
BOX 1268
LAMESA TX 79331
Phone: 806-872-3444
FAX: 806-872-5606
EMail: j-farris@tamu.edu

STANLEY M FLETCHER
UNIVERSITY OF GEORGIA
DEPT OF AG & APP ECON GEORGIA STA
GRIFFIN GA 30223-1797
Phone: 770-228-7231
FAX: 770-228-7208
EMail: sfletch@gaes.griffin.peachnet.edu

SIDNEY W FOX
PO BOX 64185
LUBBOCK TX 79464
Phone: 806-794-4695
FAX: 806-794-3852

JOHN R FRENCH
ISK BIOSCIENCES CORP
PO BOX 8000
MENTOR OH 44061-8000
Phone: 216-357-4146
FAX: 216-357-4692
EMail: frenchj@iskbc.com

DUANE FUGATE
WOODROE FUGATE & SONS
PO BOX 114
WILLISTON FL 32696
Phone: 352-528-5871
FAX: 352-528-4919

NORM FUGATE
WOODROE FUGATE & SONS
PO BOX 114
WILLISTON FL 32696
Phone: 352-528-0019
FAX: 352-528-4919

JOE FUNDERBURK
NORTH FLORIDA RES & EDUC CENTER
ROUTE 3 BOX 4370
QUINCY FL 32351-9500
Phone: 850-875-7146
FAX: 850-875-7148
EMail: jef@icon.qcy.ufl.edu

MARIA GALLO-MEAGHER
UNIVERSITY OF FLORIDA
PO BOX 110300 AGRONOMY DEPT
GAINESVILLE FL 32611-0300
Phone: 352-392-1823
FAX: 352-392-7248

GARY GASCHO
UNIVERSITY OF GEORGIA
COASTAL PLAIN EXP STA PO BOX 748
TIFTON GA 31793
Phone: 912-386-3329
FAX: 912-386-7293
EMail: gascho@tifton.cpes.peachnet.edu

LEONARD P GIANESSI
NCFAP
1616 P STREET NW
WASHINGTON DC 20036
Phone: 202-328-5036
FAX: 202-939-3460

OSCAR GIAYETTO
UNIV NACIONAL DE RIO CUARTO
ESTAFETA POSTAL NO 9
5800 RIO CUARTO (CORDOBA)
ARGENTINA
Phone: 058-676145
FAX: 058-680280
EMail: ogiayetto@ayv.unrc.edu.ar

PIERRE F GILLIER
17 ALLEE DU CLOS DE TOURVOIE
94260 FRESNES
FRANCE
Phone: 42-37-32-40
FAX: 49-84-23-14

LUIS GIRAUDO
390 SARATOGA STREET
ST PAUL MN 55105
Phone: 612-699-6712
FAX: 612-699-6712
EMail: girau001@maroon.tc.umn.edu

MIKE GODFREY
M & M MARS
PO BOX 3289
ALBANY GA 31706-1701
Phone: 912-883-4000

DEWITT T GOODEN
PEEDEE RESEARCH & EDUC CENTER
2200 POCKET ROAD
FLORENCE SC 29501-9603
Phone: 803-669-1912
FAX: 803-661-5676
EMail: dgooden@clemson.edu

DANIEL W GORBET
N FLORIDA RES & EDUC CENTER
3925 HIGHWAY 71
MARIANNA FL 32446-7906
Phone: 904-482-9904
FAX: 904-482-9917
EMail: dwg@gnv.ifas.ufl.edu

CHARLES GRAHAM
PO BOX 1046
GRENADA MS 38901
Phone: 601-229-0723
FAX: 601-229-0724
EMail: graham@network-owe.com

CLARENCE V GREESON
ZENECA
PO BOX 384
PIKEVILLE NC 27863
Phone: 919-242-6206

G M "MAX" GRICE
BIRDSONG PEANUTS
PO BOX 698
GORMAN TX 76454

JAMES GRICHAR
PLANT DISEASE RES STATION
PO BOX 755
YOAKUM TX 77995
Phone: 512-293-6326
FAX: 512-293-2054
EMail: taes@icsi.net

BILLY J GRIFFIN
NC COOP EXT SERVICE BERTIE CTR
PO BOX 280
WINDSOR NC 27983
Phone: 919-794-5317
FAX: 919-794-5327
EMail: wgriffin@bertie.ces.ncsu.edu

KEITH GRIFFITH
UNIROYAL CHEMICAL
5211 FAWNWAY COURT
ORLANDO FL 32819
Phone: 407-876-8698
FAX: 407-876-8697

JAMES F HADDEN
ISK BIOSCIENCES CORP
ROUTE 1 BOX 255
OMEGA GA 31775
Phone: 912-528-4611
FAX: 912-528-4748

AUSTIN HAGAN
AUBURN UNIVERSITY
106 EXTENSION HALL
AUBURN UNIVERSITY AL 36849-5624
Phone: 334-844-5503
FAX: 334-844-4072
EMail: ahagan@acesag.auburn.edu

W TIM HALL
COUNTY EXTENSION COORDINATOR
PO BOX 630
FITZGERALD GA 31750
Phone: 912-426-5175

R O HAMMONS
1203 LAKE DRIVE
TIFTON GA 31794-3834
Phone: 912-382-3157

CHARLES T HANCOCK
BIRDSONG PEANUTS
PO BOX 650
BLAKELY GA 31723
Phone: 912-723-3641

PAT HARDEN
PEANUT COMPANY OF AUSTRALIA
PO BOX 26
KINGAROY QLD 4610
AUSTRALIA
Phone: 071-62-6311
FAX: 071-62-4402

GERALD W HARRISON
3304 WISTERIA DRIVE
CLAYTON NC 27520
Phone: 919-550-2137
FAX: 919-550-2147

DALLAS L HARTZOG
AUBURN UNIVERSITY
PO BOX 217
HEADLAND AL 36345
Phone: 334-693-3800
FAX: 334-693-2957

PETER M HATFIELD
ARACHIS AUSTRALIA
PO BOX 26
KINGAROY QLD 4610
AUSTRALIA
Phone: 071-627477
FAX: 071-624402
EMail: hatty@b130.aone.net.au

ROGER D HAVLAK
400 S PECAN ST
PEARSALL TX 78061
Phone: 210-334-2372

LARRY R HAWF
MONSANTO AGRICULTURAL GROUP
PO BOX 188
SASSER GA 31785
Phone: 912-698-2111
FAX: 912-698-2211

GUOHAO HE
205 MILBANK HALL
TUSKEGEE UNIVERSITY
TUSKEGEE AL 36088
Phone: 334-727-8459

MELISSA HEATLEY
INTERNATIONAL PAPER CO
805 SOUTH WEST APT #3
BAINBRIDGE GA 31717

RONALD J HENNING
2103 S 4TH STREET
LAMESA TX 79331
Phone: 806-872-8443
EMail: ronhenning@juno.com

AMES HERBERT
TIDEWATER AGRIC RES & EXT CENTER
6321 HOLLAND ROAD
SUFFOLK VA 23437
Phone: 804-657-6450
FAX: 804-657-9333
EMail: herbert@vtvm1.cc.vt.edu

ROBERT M HERRICK
11 WOLFPACK COURT
HAMILTON NJ 08619-1156
Phone: 609-586-8843
FAX: 609-586-6653
EMail: herrick@pt.cyanamid.com

GLEN L HEUBERGER
TIDEWATER AGRIC RES & EXT CENTER
6321 HOLLAND ROAD
SUFFOLK VA 23437
Phone: 804-657-6450
FAX: 804-657-9333

TIMOTHY D HEWITT
NORTH FLORIDA RES & EDU CENTER
3925 HIGHWAY 71
MARIANNA FL 32446
Phone: 904-482-9904
FAX: 904-482-9917
EMail: tdhg@gnv.ifas.ufl.edu

T VINT HICKS
VALENT USA
7607 EASTMARK DR SUITE 108
COLLEGE STATION TX 77840
Phone: 409-694-7496
FAX: 409-693-0672

WILLIAM H HIGGINS JR
RT 2 BOX 00
STEPHENVILLE TX 76401
Phone: 254-968-4144

G L HILDEBRAND
PO BOX MP 63
MOUNT PLEASANT HARARE
ZIMBABWE
Phone: 263-4-884687
FAX: 263-4-884687
EMail: geoffhi@seedco.samara.co.zw.

MARGARET HINDS
NORTH CAROLINA A&T UNIVERSITY
161 CARVER HALL FOOD & NUTRITION
GREENSBORO NC 27411
Phone: 910-334-7963
FAX: 910-334-7674
EMail: hindsm@athena.ncat.edu

BILL HODGES
BAYER CORPORATION
1895 PHOENIX BLVD STE 241
ATLANTA GA 30349-5572
Phone: 770-997-7466
FAX: 770-997-7467

THOMAS A HOELEWYN
EXTENSION ASSISTANT
356 HEEP CENTER
COLLEGE STATION TX 77843-2474
Phone: 409-862-4162
FAX: 409-845-0604

DAVID M HOGG
UNITED STATES GYPSUM CO
PO BOX 40111
RALEIGH NC 27629
Phone: 919-872-2151
FAX: 919-872-2151
EMail: MATDIV310@aol.com

C CORLEY HOLBROOK
USDA-ARS-SAA
PO BOX 748
TIFTON GA 31793
Phone: 912-386-3176
FAX: 912-386-3437
EMail: nfla@tifton.cpes.peachnet.edu

JOYCE HOLLOWELL
NORTH CAROLINA STATE UNIVERSITY
BOX 7616
RALEIGH NC 27695-7616
Phone: 919-515-3930
FAX: 919-515-7716
EMail: joyce_hollowell@ncsu.edu

GERRIT HOOGENBOOM
UNIVERSITY OF GEORGIA
DEPT OF BIO/AG ENGINEERING
GRIFFIN GA 30223-1797
Phone: 770-228-7216
FAX: 770-228-7218
EMail: gerrit@bae.uga.edu

DAVID C HSI
2504 GRIEGOS ROAD NW
ALBUQUERQUE NM 87107
Phone: 505-345-3866
FAX: 505-345-5416
EMail: davehsiret@aol.com

DAVID HUNT
BAYER CORP
1911 NORTHGATE DRIVE
OPELIKA AL 36801
Phone: 334-745-3921
FAX: 334-741-5469

THOMAS N HUNT
AMERICAN CYANAMID
8504 BURNSIDE DRIVE
APEX NC 27502
Phone: 919-772-0025
FAX: 919-772-1496

GEORGE HUTCHISON
BOX WGT 390
WESTGATE HARARE
ZIMBABWE
Phone: 263-4-309843
FAX: 263-4-309843

I BONE LIBRARY
C CORRES 209
3400 CORRIENTES
ARGENTINA

EDWIN G INGRAM
RHONE-POULENC AGRIC CO
1209 HICKORY LANE
AUBURN AL 36830
Phone: 334-826-3738
FAX: 334-826-9734

KEITH T INGRAM
GEORGIA STATION
1109 EXPERIMENT ST
GRIFFIN GA 30223-1797
Phone: 770-228-7272
FAX: 770-229-3215
EMail: kingram@gaes.griffin.peachnet.edu

YASUYUKI ISHIDA
UNIVERSITY
AGRONOMY LAB FACULTY OF EDUC
URAWA
JAPAN

THOMAS G ISLEIB
DEPT OF CROP SCIENCE BOX 7629
NC STATE UNIVERSITY
RALEIGH NC 27695-7629
Phone: 919-515-3281
FAX: 919-515-5657
EMail: tisleib@cropserv1.cropsci.ncsu.edu

AKIHIRO ISODA
CHIBA UNIVERSITY 648 MASTUDO
LABORATORY OF CROP PRODUCTION
CHIBA 271
JAPAN
Phone: 81-473-631221
FAX: 81-473-631497
EMail: isoda@midori.h.chiba-u.ac.jp

YOSHIHARU IWATA
CHIBA PREF AG EXP STA PEANUT PLANTS
HE-199 YACHIMATA-SHI
CHIBA-KEN 289-11
JAPAN
Phone: 043-444-0676

KENNETH E JACKSON
OKLAHOMA STATE UNIVERSITY
110 NRC
STILLWATER OK 74078
Phone: 405-744-9959
FAX: 405-744-7373
EMail: kej6872@okway.okstate.edu

J O JACKSON JR
PO BOX 478
SEMINOLE TX 79360

ASHOK JAIN
ASSOCIATE IN RESEARCH
301 SOUTH PERRY-PAIGE
FLORIDA A&M UNIVERSITY
TALLAHASSEE FL 32307
Phone: 850-561-3227
FAX: 850-561-2221

A J JAKS
TEXAS A&M UNIVERSITY TAES
PO BOX 755
YOAKUM TX 77995-0755
Phone: 512-293-6326
FAX: 512-293-2054
EMail: taes@icsi.net

ROLF JESINGER
2425 ARBOR LANE
HILLSBOROUGH NC 27278
Phone: 919-732-2589
FAX: 919-732-3413

SANUN JOGLOY
C/O DAVID CUMMINS
UNIVERSITY OF GEORGIA
PEANUT CRSP GEORGIA STATION
GRIFFIN GA 30223

BECK JOHNSON
JOHNSON AGRONOMICS INC
2612 LANIER
WEATHERFORD OK 73096
Phone: 405-774-0737

W CARROLL JOHNSON
USDA-ARS COASTAL PLAIN EXP STA
PO BOX 748 DEPT OF AGRONOMY
TIFTON GA 31793
Phone: 912-386-3172
FAX: 912-386-7225
EMail: cjohnson@tifton.cpes.peachnet.edu

CURTIS M JOLLY
212 COMER HALL
DEPT OF AG ECON & RURAL SOCIOLOGY
AUBURN UNIVERSITY
AUBURN AL 36849-5406
Phone: 334-844-5613
FAX: 334-844-5639

DAVID L JORDAN
NORTH CAROLINA STATE UNIVERSITY
BOX 7620 CROP SCIENCE DEPT
RALEIGH NC 27695-7620
Phone: 919-515-4068

MICHAEL W JORDAN
GRIFFIN CORP
930 BUSY CORNER ROAD
CONWAY SC 29527
Phone: 803-365-7039

KATHIE E KALMOWITZ
AMERICAN CYANAMID COMPANY
866 SHELTER COVE COURT
COLUMBIA SC 29212
Phone: 803-749-4458
FAX: 803-749-4460
EMail: kalmowitzk@pt.cyanamid.com

HISAO KATSURA
1-19 MIDORI-CHO MOBARA-SHI
CHIBA-KEN 297
JAPAN

NANCY P KELLER
TEXAS A&M UNIVERSITY
DEPT PLANT PATH & MICROBIOLOGY
COLLEGE STATION TX 77843
Phone: 409-845-0963
FAX: 409-845-8463
EMail: npk3325@acs.tamu.edu

LAKHO L KHATRI
HUNT-WESSON INC
1645 W VALENCIA DRIVE
FULLERTON CA 92633
Phone: 714-680-1824
FAX: 714-449-5166
EMail: llk@class.org

DAVID KING
GRIFFIN CORP
PO BOX 1847
VALDOSTA GA 31603-1847
Phone: 912-249-5278
FAX: 912-249-5799

EUGENE KING
KING CONSULTING
5524 - 76TH STREET
LUBBOCK TX 79424
Phone: 806-794-4252
FAX: 806-794-4326

JAMES S KIRBY
OKLAHOMA STATE UNIVERSITY
AGRONOMY DEPARTMENT 276 AG HALL
STILLWATER OK 74078
Phone: 405-744-9600
FAX: 405-744-5269
EMail: jsk@soilwater.agr.okstate.edu

THOMAS KIRKLAND
THOMAS KIRKLAND FARM
ROUTE 1 BOX 209
HEADLAND AL 36345
Phone: 334-693-2552
FAX: 334-693-3300
EMail: kirkland@ala.net

CHARLES T KISYOMBE
CHITEDZE AGRIC RESEARCH STATION
PO BOX 158
LILONGWE MALAWI
Phone: 010-265-767222
FAX: 010-265-720-906

DAVID A KNAUFT
NORTH CAROLINA STATE UNIVERSITY
BOX 7620 CROP SCIENCE DEPT
RALEIGH NC 27695-7620
Phone: 919-515-2647
FAX: 919-515-7959
EMail: david_knauft@ncsu.edu

DEAN A KOMM
MILES INC
8313 BELLS LAKE ROAD
APEX NC 27502
Phone: 919-772-3128
FAX: 919-662-2611

BRUCE KOTZ
GOLDEN PEANUT COMPANY
100 NORTH POINT CENTER EAST
ALPHARETTA GA 30202
Phone: 770-752-8190
FAX: 770-752-8308

K R KRISHNA
2D KUMBA VILLA
211 9TH CROSS
JP NAGAR BANGALORE 560078
INDIA

THOMAS A KUCHAREK
UNIVERSITY OF FLORIDA
1421 FIFIELD HALL - PLANT PATH
GAINESVILLE FL 32611-0513
Phone: 352-392-1980
FAX: 352-392-6532
EMail: tak@gnv.ifas.ufl.edu

PAUL KUHN
AMERICAN CYANAMID
PO BOX 400
PRINCETON NJ 08543-0400
Phone: 609-716-2000
FAX: 609-275-5238
EMail: kuhnp@cyanamid.com

ARTHUR LOUIS KURTZ
144 STOUT HALL
OKLAHOMA STATE UNIVERSITY
STILLWATER OK 74077
Phone: 405-744-4453
EMail: karthur@okstate.edu

CRAIG KVIEN
COASTAL PLAIN STATION
PO BOX 748
TIFTON GA 31793
Phone: 912-386-7274
FAX: 912-386-7005
EMail: nespal@tifton.cpes.peachnet.edu

ASIRIFI N KYEI
DEPT OF PRIMARY INDUSTRIES
PO BOX 23 J BJELKE-PETERSEN STA
KINGAROY QLD 4610
AUSTRALIA
Phone: 61-71-600700
FAX: 61-71-623238
EMail: kyeia@kincrmool.prose.dpi.qld.gov.au

MARSHALL C LAMB
AUBURN UNIVERSITY
USDA-ARS-NPRL
1011 FORRESTER DRIVE SE
DAWSON GA 31742
Phone: 912-995-7417
FAX: 912-995-7416
EMail: mlamb@ag.auburn.edu

VERNON B LANGSTON
DOWELANCO
4600 MILL ROCK LANE
RALEIGH NC 27616
Phone: 919-850-0430
FAX: 919-850-0507
EMail: vblangston@dowelanco.com

FRANK A LATIMORE
219 BUTTERCUP LANE
AMERICUS GA 31709
Phone: 912-924-7521

THOMAS A LEE JR
TEXAS AGRIC EXTENSION SERVICE
ROUTE 2 BOX 1
STEPHENVILLE TX 76401
Phone: 254-968-4144
FAX: 254-965-3759
EMail: t-lee@tamu.edu

WILLIAM F LEHMBERG
DELEON PEANUT COMPANY
PO BOX 756
SEMINOLE TX 79360
Phone: 915-758-3444
FAX: 915-758-3932

JOHN LEIDNER
PROGRESSIVE FARMER
PO BOX 1603
TIFTON GA 31793
Phone: 912-386-0778
FAX: 912-386-2751

ROBERT G LEMON
TEXAS A&M UNIVERSITY
354 SOIL & CROP SCIENCE BUILDING
COLLEGE STATION TX 77843-2474
Phone: 409-862-4162
FAX: 409-845-0604
EMail: b-lemon@tamu.edu

H MICHAEL LINKER
NORTH CAROLINA STATE UNIVERSITY
BOX 7620
RALEIGH NC 27695-7620
Phone: 919-515-5644
FAX: 919-515-5315
EMail: mike_linker@ncsu.edu

ELBERT J LONG
SEVERN PEANUT CO INC
PO BOX 710
SEVERN NC 27877
Phone: 919-585-0838
FAX: 919-585-1718

WAYNE LORD
SOUTHCO COMMODITIES INC
6175 BARFIELD ROAD SUITE 240
ATLANTA GA 30328
Phone: 404-851-1397
FAX: 404-851-1360
EMail: southco@mindspring.com

NORMAN LOVEGREN
211 W BROOKS STREET
NEW ORLEANS LA 70124-1107
Phone: 504-482-0352

JAMES N LUNSFORD
ZENECA INC AG PRODUCTS
218 LAKEWOOD DRIVE
ENTERPRISE AL 36330
Phone: 334-347-3659
FAX: 334-983-1620

ROBERT E LYNCH
USDA-ARS PO Box 748
INSECT BIOLOGY RESEARCH LAB
TIFTON GA 31793-0748
Phone: 912-387-2375
FAX: 912-387-2321
EMail: rlynch@tifton.cpes.peachnet.edu

GREGORY E MACDONALD
PO BOX 1209 RDC
TIFTON GA 31793
Phone: 912-386-3194
FAX: 912-386-7308
EMail: gmac@uga.cc.uga.edu

KAZUMI MAEDA
C/O JICA THAILAND OFFICE
1674/1 NEW PETCHBURI ROAD
BANGKOK 10310
THAILAND

JUDE MAGARO
AMERICAN CYANAMID
PO BOX 532208
HARLINGEN TX 78553
Phone: 210-412-8846
FAX: 210-412-8846
EMail:jjmagaro@aol.com

DOUG MANNING
M & M/MARS
295 BROWN STREET
ELIZABETHTOWN PA 17022
Phone: 717-361-4636
FAX: 717-361-4608

K O MARFO
C/O DAVID CUMMINS
UNIVERSITY OF GEORGIA
PEANUT CRSP GEORGIA STATION
GRIFFIN GA 30223

M MARTIN
BASE CENTRE ARACHIDE
ISRA BP 53
BAMBEY
SENEGAL

MICHAEL MATHERON
UNIV OF ARIZONA/YUMA AG CENTER
6425 W 8TH STREET
YUMA AZ 85364
Phone: 520-726-0458
FAX: 520-726-1363
EMail: matheron@ag.arizona.edu

JAMES T MCCLARY JR
ZENECA AG PRODUCTS
8000 CENTERVIEW PKWY STE 501
CORDOVA TN 38018
Phone: 901-751-5200
FAX: 901-751-5224

MARSHALL J MCFARLAND
TAMU AGRIC RES & EXT CENTER
ROUTE 2 BOX 00
STEPHENVILLE TX 76401
Phone: 254-968-4144
FAX: 254-965-3759
EMail: m-mcfarland1@tamu.edu

JERRY W MCGEE
ROHM AND HAAS COMPANY
ROUTE 1 BOX 238
WALLER TX 77484
Phone: 409-372-9131
FAX: 409-372-5662
EMail: rhajmg@rohmhaas.com

J FRANK MCGILL
615 WEST 10TH STREET
TIFTON GA 31794
Phone: 912-382-6912

EDDIE MCGRIFF
PO BOX 973
BAINBRIDGE GA 31718
Phone: 912-248-3033
FAX: 912-248-3859
EMail: uge4087@uga.cc.uga.edu

THOMAS E MCKEMIE
BASF
7 CAMEROONS PLACE
DURHAM NC 27703
Phone: 919-598-9088
FAX: 919-957-0095
EMail: mckemit@basf.com

AITHEL MCMAHON
#19 TOWN & COUNTRY CIRCLE
ARDMORE OK 73401-9114
Phone: 405-223-3505
FAX: 405-226-7266

KAY MCWATTERS
GEORGIA EXPERIMENT STATION
FOOD SCIENCE DEPT
GRIFFIN GA 30223-1797
Phone: 770-412-4737
FAX: 770-229-3216
EMail: kmcwatt@cfsqe.griffin.peachnet.edu

HASSAN A MELOUK
USDA-ARS OKLAHOMA STATE UNIV
DEPT OF PLANT PATH, 311A NOBLE CTR
STILLWATER OK 74078
Phone: 405-744-9957
FAX: 405-744-7373
EMail: hassan@vm1.ucc.okstate.edu

KENNY MELTON
ZENECA AG PRODUCTS
1101 WEST 11TH STREET
PLAINVIEW TX 79072
Phone: 806-293-9005
FAX: 806-293-9113

ROBERT H MILLER
ECONOMIC CONSULTANT
801 CHALFONTE DRIVE
ALEXANDRIA VA 22305
Phone: 703-683-3025
FAX: 703-845-1660

FOY MILLS JR
ACU BOX 27986
210 ZONA LUCE BUILDING
ABILENE TX 79699-7986
Phone: 915-674-2401
FAX: 915-674-6936
EMail: f.mills@agenv.acu.edu

BRAD MITCHELL
PO BOX 73
CAMILLA GA 31730
Phone: 912-336-2066
FAX: 912-336-2068
EMail: uge4205@uga.cc.uga.edu

KIM MOORE
AGRATECH SEEDS INC
PO BOX 644
ASHBURN GA 31714
Phone: 912-567-3438
FAX: 912-567-2043
EMail: kmoore@surfsouth.com

RUSSELL B MOORE
GIBBS & SOELL INC
8521 SIX FORKS RD SUITE 300
RALEIGH NC 27615
Phone: 919-870-5718
FAX: 919-870-8911
EMail: rmoore@gibbs-soell.com

TIM W MOORE
406 W CRAWFORD
COLQUIT GA 31723
Phone: 912-758-4106
FAX: 912-758-4106

ROBERT B MOSS
PO BOX 67
PLAINS GA 31780
Phone: 912-824-5775
FAX: 912-824-3589

R WALTON MOZINGO
TIDEWATER AGRIC RES & EXT CENTER
6321 HOLLAND ROAD
SUFFOLK VA 23437
Phone: 757-657-6450
FAX: 757-657-9333
EMail: rmozingo@vt.edu

ROGER MUSICK
CROP GUARD RESEARCH INC
BOX 126
EAKLY OK 73033
Phone: 405-797-3213
FAX: 405-797-3214

KENNETH R MUZYK
408 LARRIE ELLEN WAY
BRANDON FL 33511
Phone: 813-681-3461
FAX: 813-662-9120

HIROYUKI NAKAE
PO BOX 60 ITABASHI
173 TOKYO
JAPAN

TATEO NAKANISHI
NAT'L SHIKOKU AGRIC EXP STATION
1-3-1 SENYU-CHO
ZENTUJI-SHI KAGAWA-KEN 765
JAPAN
Phone: 0877-62-0800

OUSMANE N'DOYE
SENEGAL INSTITUTE FOR AG RES
BAMBEY SENEGAL
WEST AFRICA

PAUL R NESTER
AMERICAN CYANAMID CO
42 W TRACE CREEK DR
THE WOODLANDS TX 77381
Phone: 713-367-7183
FAX: 713-298-1071
EMail: nesterp@pt.cyanamid.com

SANFORD H NEWELL
ZENECA AG PRODUCTS
PO BOX 969
STATESBORO GA 30458
Phone: 912-489-3029
FAX: 912-489-2075

SHYAM N NIGAM
ICRISAT CENTER
PATANCHERU
A P 502324
INDIA
Phone: 91040-596161
FAX: 91040-241239
EMail: s.nigam@cgnet.com

KENNETH A NOEGEL
BAYER CORPORATION
BOX 4913
KANSAS CITY MO 64120-0013
Phone: 816-242-2752
FAX: 816-242-2753

KEVIN L NORMAN
PEANUT COMPANY OF AUSTRALIA
PO BOX 671
TOLGA QLD 4882
AUSTRALIA
Phone: +61-70-954223
FAX: +61-70-954500
EMail: norman@pca.com.au

BONNY R NTARE
ICRISAT SAHELIAN CENTER
BP 12404
NIAMEY
NIGER
Phone: 234-64-662050
FAX: 234-64-663492
EMail: icrisat-w-nigeria@canet.com

FORREST W NUTTER JR
IOWA STATE UNIVERSITY
351 BESSEY HALL DEPT PLANT PATH
AMES IA 50011-1020
Phone: 515-294-8737
FAX: 515-294-9420
EMail: fwn@iastate.edu

DANIEL O'BYRNE
AMERICAN CYANAMID COMPANY
8915 RASPBERRY LANE
CORDOVA TN 38018
Phone: 901-751-3805
FAX: 901-751-3807
EMail: obyrned@pt.cyanamid.com

BRIAN K O'CONNOR
1536 STEINER
WEAHTERFORD OK 73096
Phone: 405-774-5793
FAX: 405-797-3223

SEAN O'KEEFE
UNIVERSITY OF FLORIDA
FOOD SCIENCE & HUMAN NUTRITION
GAINESVILLE FL 32611
Phone: 352-392-1991
FAX: 352-392-9467

ANN L O'LEARY
RICERCA INC
7528 AUBURN RD
PAINESVILLE OH 44077
Phone: 216-357-3561
FAX: 216-354-4662
EMail: oleary_a@ricerca.com

WILLIAM C ODLE
1122 CHIMNEY ROCK TRAIL
GARLAND TX 75043-1502
Phone: 972-864-0267
FAX: 972-864-8275

ROBERT L ORY
6647 AHEKOLO CIRCLE
DIAMONDHEAD MS 39525
Phone: 601-255-8423

GREGORY SCOTT OSBORN
2804 WOOD MEADOW DRIVE
BRYAN TX 77802
Phone: 409-268-2058

CHINTANA OUPADISSAKOON
C/O DAVID CUMMINS
UNIVERSITY OF GEORGIA
PEANUT CRSP GEORGIA STATION
GRIFFIN GA 30223

FELTON OUTLAND
NORTH CAROLINA PEANUT GROWERS ASS
ROUTE 1 BOX 156
SUNBURY NC 27979
Phone: 919-465-8587

PEGGY OZIAS-AKINS
COASTAL PLAIN EXPERIMENT STATION
DEPT OF HORT PO BOX 748
TIFTON GA 31793-0748
Phone: 912-386-3902
FAX: 912-386-3356
EMail: ozias@tifton.cpes.peachnet.edu

A T PALRANG
BAYER CORPORATION
6552 NEEDHAM LANE
AUSTIN TX 78739
Phone: 512-301-1274
FAX: 512-301-1057

H R PAPPU
COASTAL PLAIN EXPERIMENT STATION
DEPT OF PLANT PATHOLOGY
TIFTON GA 31793-0748
Phone: 912-386-3187
FAX: 912-386-7285
EMail: hrp@tifton.cpes.peachnet.edu

WILBUR A PARKER
SEABROOK ENTERPRISES INC
PO BOX 609
EDENTON NC 27932
Phone: 919-482-2112
FAX: 919-482-4767

WAYNE PARROTT
THE UNIVERSITY OF GEORGIA
DEPT OF CROP & SOIL SCIENCES
ATHENS GA 30602-7272
Phone: 706-542-0928
FAX: 706-542-0914
EMail: wparrott@uga

HAROLD E PATTEE
USDA/ARS-NCSU
BOX 7625
RALEIGH NC 27695-7625
Phone: 919-515-6745
FAX: 919-515-7760
EMail: harold_pattee@ncsu.edu

GORDON R PATTERSON
1025 REESE AVE
HERSHEY FOODS CORPORATION
HERSHEY PA 17033
Phone: 717-534-7658
FAX: 717-534-5076
EMail: gpatterson@hersheys.com

JOHNNA L PATTERSON
1819 NOLAN ROAD #15
PEARSALL TX 78061
Phone: 830-334-3290
FAX: 830-334-3290
EMail: j-patterson@tamu.edu

JERRY L PAULEY
ISK BIOSCIENCES CORPORATION
1523 JOHNSON FERRY ROAD SUITE 250
MARIETTA GA 30062
Phone: 770-565-3499
FAX: 770-565-4155

MARY PAULSGROVE
124 CHESTNUT RD
CHAPEL HILL NC 27514
Phone: 919-933-5097
EMail: mpaul@mindspring.com

RICARDO R PEDELINI
(5809) GRAL CABRERA (CBA)
CHILE 845
ARGENTINA
Phone: 54-58-930575
FAX: 54-58-930052
EMail: acabrerc@inta.gov.ar_

LANCE G PETERSON
DOWELANCO
1861 CAPITAL CIRCLE NE SUITE 104
TALLAHASSEE FL 32308
Phone: 904-877-6855
FAX: 904-877-7255
EMail: lgpeterson@dowelanco.com

PATRICK M PHIPPS
TIDEWATER AGRIC RES & EXT CENTER
6321 HOLLAND ROAD
SUFFOLK VA 23437
Phone: 757-657-6450
FAX: 757-657-9333
EMail: pmphipps@vt.edu

TEODORO PICADO
PO BOX 111
CHINANDEGA NICARAGUA
CENTRAL AMERICA
Phone: 505-341-3191

ROY PITTMAN
USDA/ARS REG PLANT INTRO STA
AGRIC EXP STA 1109 EXP STATION
GRIFFIN GA 30223-1797
Phone: 770-229-3252
FAX: 770-229-3324
EMail: rpittma@gaes.griffin.peachnet.edu

GARY L POWELL
DEPT BIOLOGICAL SCIENCES
CLEMSON UNIVERSITY
BOX 341903
CLEMSON SC 29634-1903
Phone: 864-656-2328
FAX: 864-656-0435
EMail: glpwl@clemson.edu

NORRIS L POWELL
TIDEWATER AGRIC RES & EXT CENTER
6321 HOLLAND ROAD
SUFFOLK VA 23437
Phone: 757-657-6450
FAX: 757-657-9333

ERIC P PROSTKO
TEXAS A&M UNIVERSITY
RESEARCH AND EXTENSION CENTER
RT 2 BOX 1
STEPHENVILLE TX 76401
Phone: 817-968-4144
FAX: 817-965-3759

RANDALL RATLIFF
NOVARTIS CROP PROTECTION
PO BOX 18300
GREENSBORO NC 27419-8300
Phone: 910-632-2549
FAX: 910-632-2861
EMail: randy.ratliff@cp.novartis.com

TIM RATLIFFE
DELEON PEANUT COMPANY INC
PO BOX 1325
LAMESA TX 79331
Phone: 806-872-3875
FAX: 806-872-5814

MICHAEL J READ
PEANUT COMPANY OF AUSTRALIA
PO BOX 26
KINGAROY QLD 4610
AUSTRALIA
Phone: 071-62-6311
FAX: 071-62-4402

JAMES R REIZNER
THE PROCTER & GAMBLE CO
6250 CENTER HILL ROAD
CINCINNATI OH 45224
Phone: 513-634-2566
FAX: 513-634-3208
EMail: reizner.jr@pg.com

JIMMY R RICH
UNIVERSITY OF FLORIDA
PO BOX 722
QUINCY FL 32353-0722
Phone: 850-875-7130
FAX: 850-875-7148
EMail: jrich@gnv.ifns.ufl.edu

JOHN S RICHBURG III
DOWELANCO
BOX 208 STATE HWY 438
GREENVILLE MS 38701
Phone: 601-379-8970
FAX: 601-379-8999
EMail: jsrichburg@dowelanco.com

GLENN ROBERTSON
3948 CO ROAD 54E
NOTASULGA AL 36866
Phone: 205-257-1303
FAX: 205-844-1948

KENNETH M ROBISON
USDA
5806 COVE LANDING ROAD #101
BURKE VA 22015
Phone: 202-720-9255
FAX: 202-720-1288

E W ROGISTER JR
ROUTE 1 BOX 19-A
WOODLAND NC 27897
Phone: 919-587-9791

STANLEY ROYAL
ZENECA AG PRODUCTS
4282 HARMONY ROAD
GIRARD GA 30426
Phone: 912-829-3826

MALCOLM RYLEY
DEPT OF PRIMARY INDUSTRIES
PO BOX 102
TOOWOOMBA QLD 4350
AUSTRALIA
Phone: +61-76-881316
FAX: +61-76-881199
EMail: ryleym@dpi.qld.gov.au

TAMELA J SABBERT
BAYER CORP
PO BOX 4913
KANSAS CITY MO 64120-0013

ROBERTA SALOVITCH
NABISCO FOODS GROUP - LIBRARY
PO BOX 1944
EAST HANOVER NJ 07936-1944
Phone: 201-503-3470
FAX: 201-428-8950

SAMUEL SANCHEZ-DOMINGUEZ
DEPT DE FITOTECNIA UNIVERSIDAD
AUTONOMA CHAPINGO/RESEARCHER
CHAPINGO MEX CP 56230
MEXICO
Phone: 595-5-16-54
FAX: 595-4-09-57
EMail: ssanchez@tavrusl.chapingo.mx

TIMOTHY H SANDERS
NORTH CAROLINA STATE UNIVERSITY
BOX 7624 USDA-ARS
RALEIGH NC 27695-7624
Phone: 919-515-6312
FAX: 919-515-7124
EMail: tim_sanders@.ncsu.edu

A M SCHUBERT
TEXAS AGRIC RES & EXTENSION CENTER
ROUTE 3 BOX 219
LUBBOCK TX 79401-9757
Phone: 806-746-6101
FAX: 806-746-6528
EMail: a_schubert@tamu.edu

CHARLES E SEILER JR
ELDRIDGE SEILER & SON
7711 NW US HIGHWAY 441
OCALA FL 34475
Phone: 352-629-1720
FAX: 352-629-2836

DAVID C SESTAK
TEXAS A&M UNIVERSITY
PO BOX 755
YOAKUM TX 77995-0755
Phone: 512-293-6326
FAX: 512-293-2054
EMail: taes@icsi.net

TERRY L SHAMBLIN
CARGILL PEANUT
PO BOX 575
DONALSONVILLE GA 31745
Phone: 912-524-2154
FAX: 912-524-6006

SHARON SHEARER-SMITH
PEANUT COMPANY OF AUSTRALIA
PO BOX 26
KINGAROY QLD 4610
AUSTRALIA

MEHBOOB B SHEIKH
FLORIDA A&M UNIVERSITY
301 SOUTH PERRY-PAIGE
TALLAHASSEE FL 32307
Phone: 850-561-3227
FAX: 850-561-2221

JOHN L SHERWOOD
UNIVERSITY OF GEORGIA
DEPT OF PLANT PATHOLOGY
ATHENS GA 30602
Phone: 706-542-1246
FAX: 706-542-1262
EMail: sherwood@uga.cc.uga.edu

BARBARA B SHEW
NORTH CAROLINA STATE UNIVERSITY
BOX 7616 DEPT OF PLANT PATHOLOGY
RALEIGH NC 27695-7616
Phone: 919-515-6984
FAX: 919-515-7716
EMail: bshew@ncsu.edu

F M SHOKES
N FLORIDA RES & EDUC CENTER
ROUTE 3 BOX 4370
QUINCY FL 32351
Phone: 904-875-7100
FAX: 904-875-7148
EMail: fms@gnv.ifas.ufl.edu

J RONALD SHOLAR
OKLAHOMA STATE UNIVERSITY
376 AG HALL
STILLWATER OK 74078
Phone: 405-744-9616
FAX: 405-744-5269
EMail: jrs@soilwater.agr.okstate.edu

W DONALD SHURLEY
UNIVERSITY OF GEORGIA
PO BOX 1209
TIFTON GA 31793
Phone: 912-386-3512
FAX: 912-386-3440
EMail: donshur@uga.cc.uga.edu

MARK C SIEMENS
UNIVERSITY OF GEORGIA
PO BOX 1209
TIFTON GA 31794
Phone: 912-387-9259
FAX: 912-387-3442
EMail: msiemens@uga.cc.uga.edu

CHARLES E SIMPSON
TEXAS AGRIC EXPERIMENT STATION
PO BOX 292
STEPHENVILLE TX 76401-0292
Phone: 254-968-4144
FAX: 254-965-3759
EMail: c-simpson@tamu.edu

JACK SIMPSON
BIRDSONG PEANUTS
PO BOX 698
GORMAN TX 76454
Phone: 254-734-2266
FAX: 254-734-2029

ANIL K SINHA
CARIBBEAN AGRIC RES & DEV INST
PO BOX 2 MINISTRY OF AGRIC
BELMOPAN BELIZE
CENTRAL AMERICA
Phone: 501-8-22602
FAX: 501-8-23143
EMail: cardi@btl.net

DONALD H SMITH
4114 BROADWAY BLVD
GARLAND TX 75043-2518
Phone: 972-240-9078
FAX: 972-303-1235

F DAVIS (TAD) SMITH
ROHM AND HAAS CO BLDG 4A
727 NORRISTOWN ROAD
SPRING HOUSE PA 19477-0904
Phone: 215-641-7937
FAX: 215-619-1617
EMail: tad_smith@rohmhaas.com

H RAY SMITH
NOVARTIS CROP PROTECTION
4601 SPYGLASS CT
COLLEGE STATION TX 77845
Phone: 409-690-6272
FAX: 409-690-6302

KENNETH L SMITH
BASF
706 N MOTLEY
OVERTON TX 75684
Phone: 903-834-3057
FAX: 903-834-7264

OLIN D SMITH
TEXAS A&M UNIVERSITY
DEPT OF SOIL & CROP SCIENCES
COLLEGE STATION TX 77843-2474
Phone: 409-845-8802
FAX: 409-845-0456
EMail: wpodom.1soil-crop.osmith@wpo-smtp.gate.tamu.edu

REX L SMITH
THE UNIVERSITY OF FLORIDA
PLANT SCIENCE LAB
PO BOX 110760
GAINESVILLE FL 32611
Phone: 352-392-1890
FAX: 352-392-1840
EMail: rls@gvn.ifas.ufl.edu

J W SMITH JR
TEXAS A&M UNIVERSITY
DEPT OF ENTOMOLOGY
COLLEGE STATION TX 77843-2475
Phone: 409-845-9717
FAX: 409-845-7977
EMail: jwsmith@tamu.edu

JOHN S SMITH JR
350 LUMPKIN ROAD E
LEESBURG GA 31763
Phone: 912-759-2730

LEWIS W SMITH JR
COUNTY EXTENSION DIRECTOR
NORTH CAROLINA COOP EXT SERVICE
PERQUIMANS COUNTY CENTER
PO BOX 87
HERTFORD NC 27944
Phone: 919-426-5428
FAX: 919-426-1345
EMail: 1wsmith@perquima.ces.ncsu.edu

DOUGLAS A SMYTH
NABISCO INC
200 DE FOREST AVENUE
EAST HANOVER NJ 07936
Phone: 201-503-4877
FAX: 201-503-3833

JANET FERGUSON SPEARS
NORTH CAROLINA STATE UNIVERSITY
CROP SCIENCE DEPT BOX 7620
RALEIGH NC 27695-7620
Phone: 919-515-2653
FAX: 919-515-7959
EMail: jan_spears@ncsu.edu

RICHARD K SPRENKEL
UNIVERSITY OF FLORIDA
ROUTE 3 BOX 4370
QUINCY FL 32351
Phone: 904-875-7128
FAX: 904-875-7105
EMail: rks@gnu.ifas.ufl.edu

CLIFTON L STACY
TEXAS PEANUT PRODUCERS BOARD
PO BOX 788
PEARSALL TX 78061
Phone: 210-334-3570
FAX: 210-334-4877

H THOMAS STALKER
NORTH CAROLINA STATE UNIVERSITY
CROP SCIENCE DEPT BOX 7629
RALEIGH NC 27695-7629
Phone: 919-515-3281
FAX: 919-515-5657
EMail: tstalker@cropserv1.cropsci.ncsu.edu

JAMES L STARR
TEXAS A&M UNIVERSITY
DEPT PLANT PATH & MICROBIOLOGY
COLLEGE STATION TX 77843-2132
Phone: 409-845-8278
FAX: 409-845-6483
EMail: j-starr@tamu.edu

DON STERNITZKE
NATIONAL PEANUT RESEARCH LAB
1011 FORRESTER DRIVE
DAWSON GA 31742

KATHERINE L STEVENSON
UNIVERSITY OF GEORGIA
DEPT OF PLANT PATHOLOGY
ATHENS GA 30602-7274
Phone: 706-542-1239
FAX: 706-542-1262
EMail: reynolds@uga.cc.uga.edu

R V STURGEON JR
1729 LINDA AVE
STILLWATER OK 74075-7310
Phone: 405-372-0405
FAX: 405-377-3307

PALA SUBRAHMANYAM
ICRISAT/MALAWI AIARC
4601 N FAIRFAX DRIVE STE 1110
ARLINGTON VA 22203
FAX: 265-741872
EMail: p.subrahmanyam@cgnet.com

GENE A SULLIVAN
GLOBAL AGRONOMICS INC
741 RAINS CROSSROADS ROAD
PRINCETON NC 27569
Phone: 919-965-5525
FAX: 919-965-0052
EMail: gooberpl@aol.com

JAMES SUTTON
MYCOGEN
1523 KELL LANE STE 5
GRIFFIN GA 30223
Phone: 770-412-1240
FAX: 770-412-1241
EMail: sutton@mycogen.com

KAZUO SUZUKI
CHIBA PREF AG EXP STA PEANUT PLANTS
HE-199 YACHIMATA-SHI
CHIBA-KEN 289-11
JAPAN
Phone: 043-444-0676

SHIGERU SUZUKI
CHIBA PREF AG EXP STA FARM MGMT LAB
808 DAIZENNO-CHO MIDORI-KU
CHIBA-SHI 266
JAPAN
Phone: 043-291-0151

CAREL J SWANEVELDER
AGRICULTURAL RESEARCH COUNCIL
PRIVATE BAG X1251
POTCHEFSTROOM 2520
SOUTH AFRICA
Phone: 27148-2996333
FAX: 27148-2976572
EMail: cjs@ops.agric.za

CHARLES W SWANN
TIDEWATER AGRIC RES & EXT CENTER
6321 HOLLAND ROAD
SUFFOLK VA 23437
Phone: 757-657-6450
FAX: 757-657-9333
EMail: tvaughan@vt.edu

ANGELO TATTI
PO BOX 53 MUTCHILBA
Q4872
AUSTRALIA

STEVE L TAYLOR
UNIVERSITY OF NEBRASKA
FOOD ALLERGY RES & RES PROGRAM
143 FOOD INDUSTRY BLDG
LINCOLN NE 68583-0919
Phone: 402-472-2833
FAX: 402-472-1693
EMail: staylor@foodsci.unl.edu

KEN TEETER
140 SPRINGWOOD COURT
MACON GA 31210
Phone: 912-474-3985
FAX: 912-474-3985
EMail: ken.teeter@cp.novartis.com

HAILE TEWOLDE
13372 - 180 1/2 CIR NW
ELK RIVER MN 55330
Phone: 612-241-9493
FAX: 612-441-7845
EMail: h_tewolde@cargill.com

EUGENE THILSTED
ROHM AND HAAS COMPANY
7807 HIGHLAND FARMS ROAD
HOUSTON TX 77095
Phone: 281-550-4010
FAX: 409-372-5662
EMail: mahzet@rohmhaas.com

JAMES S THOMAS
ROUTE 1 BOX 158C
DENMARK SC 29042
Phone: 803-284-3343
EMail: jthomas@clemson.edu

M HOWARD THOMAS
ISK BIOSCIENCES CORPORATION
ROUTE 1 BOX 189
MULLINS SC 29574
Phone: 803-423-7000
FAX: 803-423-7270

STEPHEN D THOMAS
GENERAL DELIVERY
DULCE NM 87528
Phone: 505-759-3569
FAX: 505-759-3924

ANDY TIMMONS
1111 S HOWELL
BROWNFIELD TX 79316
Phone: 806-637-8037
FAX: 806-637-7554
EMail: compuserv.[10554,2310]

KILEY TIMMONS
RT 2 BOX 145
BROWNFIELD TX 79316
Phone: 806-637-4965

MIKE TIMMONS
RT 2 BOX 145
BROWNFIELD TX 79316
Phone: 806-637-4965
FAX: 806-637-0569
EMail: janicetimmon@juno.com

PATRICIA TIMPER
US DEPT OF AGRICULTURE
PO BOX 748
TIFTON GA 31793

JAMES W TODD
COASTAL PLAIN EXP STATION
PO BOX 748
TIFTON GA 31793
Phone: 912-386-3529
FAX: 912-386-3086
EMail: todd@tifton.cpes.peachnet.edu

MICHAEL TOMERINI
PO BOX 1698
MAREEBA 4880
AUSTRALIA
Phone: 61-70-924867

LELAND D TRIPP
2811 CAMELOT DRIVE
BRYAN TX 77802
Phone: 409-776-1588

NOEL TROXCLAIR
PO BOX 1849
UVALDE TX 78802-1849
Phone: 830-278-9151
FAX: 830-278-4008
EMail: n-troxclair@tamu.edu

V C UMEH
ICRISAT
B P 320
BAMAKO MALI
FAX: 223-228683
EMail: icrisat-w-mali@cgnet.com

LORI A URBAN
NORTH CAROLINA STATE UNIVERSITY
BOX 7620
RALEIGH NC 27695-7620
Phone: 919-515-2704
FAX: 919-515-7959
EMail: laurban@unity.ncsu.edu

PHILIP UTLEY
237 HUTCHINSON RD
TIFTON GA 31794

SETYO DWI UTOMO
JURUSAN BIDIDAYA PERTANIAN
FAUKULTAS PERTANIAN UNIV LAMPUNG
JIN S BROJONEGORO 1 –
BANDAR LAMPUNG 35145
INDONESIA
Phone: 0721-781820

JFM VALLS
CENARGEN/EMBRAPA
SAIN PARQUE RURAL CP 02372
CEP 70849-970 BRAZILIA DF
BRAZIL
Phone: 5561-340-3544
FAX: 5561-340-3624
EMail: valls@cenargen.embrapa.br

PJA VAN DER MERWE
ICRISAT
PO BOX 1096
LILONGWE
MALAWI
FAX: 265-741-872
EMail: icrisat-malawi@cgnet.com

ELYMAR V VEA
RHONE-POULENC AG CO
PO BOX 12014
RESEARCH TRIANGLE PARK NC 27709

WILLIAM T VENTRESS JR
PO BOX 311310
ENTERPRISE AL 36331-1310

JOHN R VERCELLOTTI
V-LABS INC
423 NORTH THEARD STREET
COVINGTON LA 70433
Phone: 504-893-0533
FAX: 504-893-0517
EMail: v-labs@wild.net

FARID WALIYAR
ICRISAT
BP 320
BAMAKO, MALI
WEST AFRICA
Phone: 223-223375
FAX: 223-228683
EMail: f_waliyar@cgnet.com

I S WALLERSTEIN
C/O PROFESSOR HARRY SMITH
UNIVERSITY OF LEICESTER BOTANY DEPT
LEICESTER LE1 7RH
ENGLAND
FAX: 44116252-2791

BOBBY WALLS
501 PARKWOOD LANE
GOLDSBORO NC 27530
Phone: 919-736-2869
FAX: 919-736-2686
EMail: wallsf@pt.cyanamid.com

WILBUR WARD
NC PEANUT GROWERS ASSOC
PO BOX 935
CLARKTON NC 28433
Phone: 910-647-3341

JACKIE WARREN
207 JUNIPER DRIVE
LAMESA TX 79331
Phone: 806-872-6246
FAX: 806-872-5814

JAMES R WEEKS
WIREGRASS EXPERIMENT STATION
PO BOX 217
HEADLAND AL 36345
Phone: 334-693-3800
FAX: 334-693-2957
EMail: jweeks@acesag.auburn.edu

GLENN WEHTJE
AUBURN UNIVERSITY
233 FUNCHESS HALL
AGRONOMY AND SOILS
AUBURN AL 36849
Phone: 334-844-3993
FAX: 334-844-3945
EMail: gwehtje@acesag.auburn.edu

DOYLE WELCH
DELEON PEANUT COMPANY
PO BOX 1325
LAMESA TX 79331
Phone: 806-872-3875
FAX: 806-872-5814

JAMES A WELLS JR
TEXAS AGRIC EXTENSION SERVICE
ROUTE 2 BOX 1
STEPHENVILLE TX 76401
Phone: 817-968-4144
FAX: 817-965-3759
EMail: j-wells@tamu.edu

DREW WENNER
ISK BIOSCIENCES
ROUTE 5 BOX 4200
NACOGDOCHES TX 75964
Phone: 409-560-3137
FAX: 409-560-3137

TERRY WEST
BIRDSONG PEANUTS
PO BOX 548
SEMINOLE TX 79360
Phone: 915-758-8251
FAX: 915-758-3931

THOMAS B WHITAKER
NORTH CAROLINA STATE UNIVERSITY
BOX 7625
RALEIGH NC 27695-7625
Phone: 919-515-6731
FAX: 919-515-7760
EMail: whitaker@eos.bae.ncsu.edu

BOB WHITNEY
COUNTY EXTENSION AGENT
B-101 WEST CENTRAL
COMANCHE TX 76442
Phone: 915-356-2539
FAX: 915-356-3710

E B WHITTY
UNIVERSITY OF FLORIDA
PO BOX 110500
GAINESVILLE FL 32611-0500
Phone: 352-392-1817
FAX: 352-392-1840
EMail: ebw@gnv.ifas.ufl.edu

ANN WIESE
RHONE POULENC AG
2609 SCHOONER
PLANO TX 75074
Phone: 972-423-3380
FAX: 972-423-3380

JOHN W WILCUT
NORTH CAROLINA STATE UNIVERSITY
BOX 7620 CROP SCIENCE DEPT
RALEIGH NC 27695-7620
Phone: 919-515-5647
FAX: 919-515-5315
EMail: john-wilcut@ncsu.edu

RICHARD S WILKES
CPC/BEST FOODS
150 PIERCE STREET
SOMERSET NJ 08873-6710
Phone: 732-627-8529
FAX: 732-627-8695
EMail: njarachis@prodigy.com

ROGER WILLEMSEN
2TW ALEXANDER DRIVE
RTP NC 27709
Phone: 919-549-2033
Phone: 919-549-2033
EMail: rwillems@rp-agro.com

DAVID E WILLIAMS
711 SILVER SPRING AVE
SILVER SPRING MD 20910
Phone: 301-588-7652
EMail: d.williams@cgnet.com

E JAY WILLIAMS
UNIVERSITY OF GEORGIA
BIO & AGRI ENG/CPES
PO BOX 748
TIFTON GA 31793-0748
Phone: 912-386-3348
FAX: 912-386-3958
EMail: peanut@tifton.cpes.peachnet.edu

JOHN MICHAEL WILLIAMS
NORTH CAROLINA COOP EXT SERVICE
PO BOX 1030
EDENTON NC 27932
Phone: 919-482-8431
FAX: 919-482-0126
EMail: jmwillia@chowan.ces.ncsu.edu

JONATHAN WILLIAMS
110 SUMMIT DRIVE
GRIFFIN GA 30224
Phone: 770-228-7312
FAX: 770-229-3337
EMail: twillia@gaes.griffin.peachnet.edu

KAREN WILLIAMS
NATIONAL GERMPLASM RESOURCES LAB
BLDG 003 ROOM 402 BARC-WEST
BELTSVILLE MD 20705
Phone: 301-504-5421
FAX: 301-504-6305
EMail: kwilliams@ars-grin.gov

DAVID M WILSON
UNIVERSITY OF GEORGIA
PO BOX 748
TIFTON GA 31793
Phone: 912-386-3370
FAX: 912-386-7285
EMail: dwilson@tifton.cpes.peachnet.edu

E HAROLD WILSON
3046 HEROD HWY
DAWSON GA 31742
Phone: 912-995-2165
FAX: 912-995-4320

REX B WILSON
GOLDEN PEANUT CO
PO BOX 878
CORDELE GA 31010
Phone: 912-273-4703
FAX: 912-273-7741

LUKE WISNIEWSKI
12002 DEBONNAIRE DRIVE
ST LOUIS MO 63146-5242
Phone: 909-989-1988
EMail: 73441,2567@compuserve.com

SOPONE WONGKAEW
C/O DAVID CUMMINS
UNIVERSITY OF GEORGIA
PEANUT CRSP GEORGIA STATION
GRIFFIN GA 30223

HARRY C WOOD
PO BOX 46
EVINSTON FL 32633
Phone: 352-591-2430

F SCOTT WRIGHT
NATIONAL PEANUT RESEARCH LAB
1011 FORRESTER DRIVE SE
DAWSON GA 31742
Phone: 912-995-7430
FAX: 912-995-7416
EMail: fwright@asrr.arsusda.gov

JOHNNY C WYNNE
NORTH CAROLINA STATE UNIVERSITY
BOX 7643 NCARS
RALEIGH NC 27695-7643
Phone: 919-515-2717
FAX: 919-515-7745
EMail: johnny_wynne@ncsu.edu

MIKE (MIAOCHENG) YING
FLORIDA A&M UNIVERSITY
PLANT BIOTECHNOLOGY LAB
301 SOUTH PERRY-PAIGE
TALLAHASSEE FL 32307
Phone: 850-561-3227
FAX: 850-561-2221

HENRY YONCE
ZENECA AG PRODUCTS
1092 GLENWOOD TRAILS
DELAND FL 32720
904-736-0098
Phone: 904-736-0366

ALAN C YORK
NORTH CAROLINA STATE UNIV
BOX 7620
RALEIGH NC 27695-7620
Phone: 919-515-5643
FAX: 919-515-5315
EMail: alan_york@ncsu.edu

CLYDE T YOUNG
NORTH CAROLINA STATE UNIVERSITY
DEPT FOOD SCI, 236 SCHAUB HALL
RALEIGH NC 27695-7624
Phone: 919-515-2964
FAX: 919-515-7124

HERBERT S YOUNG
RHONE-POULENC
3005 WILLINGHAM WAY
TIFTON GA 31794
Phone: 912-388-1377
FAX: 912-387-0586
EMail: hyoung@surfsouth.com

JAMES H YOUNG
NORTH CAROLINA STATE UNIVERSITY
BOX 7625
RALEIGH NC 27695-7625
Phone: 919-515-6717
FAX: 919-515-7760
EMail: jim_young@ncsu.edu

MIGUEL ZAVALA
NICABOX #239
PO BOX 02-5640
MIAMI FL 33102-5640
Phone: 505-266-5648
FAX: 505-266-9387

GERRY C ZEKERT
416 FOREST HILL CRESCENT
SUFFOLK VA 23434
Phone: 804-539-3620

LAMAR ZIPPERER
321 ROCKY FORD ROAD
SYLVANIA GA 30467
Phone: 912-564-2064
FAX: 912-564-5815
EMail: /zipper@uga.cc.uga.edu

INSTITUTIONAL MEMBERS

AGRACETUS
GURDIP S BRAR
8520 UNIVERSITY GREEN
MIDDLETON WI 53562-2508
Phone: 608-836-7300

AGRICULTURE AND AGRI-FOOD CANADA
LIBRARY/BIBLIOTHEQUE
EDIFICE SIR JOHN CARLING BLDG
OTTAWA ONTARIO K1A 0C5
CANADA

ANDHRA PRADESH AGRIC UNIVERSITY
CENTRAL LIBRARY & DOCUMENT CTR
RAJENDRANAGAR, HYDERABAD 500 030
ANDHRA PRADESH
INDIA

APAU REGIONAL LIBRARY
AGRICULTURAL COLLEGE
TIRUPATHI 517 502
ANDHRA PRADESH
INDIA

AUBURN UNIVERSITY
SERIALS DEPARTMENT
R B DRAUGHON LIBRARY
231 MELL ST
AUBURN UNIVERSITY AL 36849

BOT-UNESP
C/O EBSCO BRASIL
CAIXA POSTAL 65000
20072-970 RIO JANEIRO RJ
BRAZIL

BRITISH LIBRARY
ACQUISITIONS UNIT (SRIS)
BOSTON SPA
WETHERBY W YORKSHIRE LS23 7BQ
ENGLAND

BRITISH LIBRARY (DSC-X9)
READMORE ACADEMIC SERVICES INC
901 ROUTE 168 STE 204-208
TURNERSVILLE NJ 08012

CHEMICAL ABSTRACTS SERVICE
LIBRARIAN
PO BOX 3012
COLUMBUS OH 43210

CHITEDZE AGRIC RESEARCH STATION
LIBRARY
PO BOX 158
LILONGWE MALAWI
CENTRAL AFRICA

CIRAD-CIDARC
UCIST BIBLIOTHEQUE
BUREAU 18 (CA) BP 5035 – BAT 5
34032 MONTPELLIER CEDEX 1
FRANCE

CLEMSON UNIVERSITY
ACQUISITIONS UNIT RM COOPER LIBRARY
BOX 343001
CLEMSON SC 29634-3001

COASTAL PLAIN EXPERIMENT STATION
LIBRARY
PO BOX 748
TIFTON GA 31793-0748

CORNELL UNIVERSITY
ALBERT R. MANN LIBRARY
SERIALS UNIT/ACQUISITIONS DIV
ITHACA NY 14853

DEPARTMENT OF AGRIC RESEARCH
LIBRARIAN
PRIVATE BAG 0033
GABORONE
BOTSWANA

DEPT OF PRIMARY INDUSTRIES
SERIALS LIBRARIAN
CENTRAL LIBRARY GPO BOX 2215
BRISBANE QLD 4001
AUSTRALIA

DEUTSCHE ZENTRALBIBLIOTHEK FUER
LANDBAUWISSENSCHAFTEN
POSTFACH 2460
53014 BONN
GERMANY

DUYVIS BUSINESS UNIT - TAV MEVR
E V AKEN AFD PRODUKTONTWIKKELING
POSTBUS 4
1540 AA KOOG A/D ZAAN
HOLLAND

FAO LIBRARY
SERIALS
VIA TERME DI CARACALLA
00100 ROME
ITALY

FLORIDA FOUNDATION SEED PRODUCERS
PO BOX 309
GREENWOOD FL 32443
Phone: 904-594-4721

LINDA HALL LIBRARY
SERIALS DEPARTMENT
5109 CHERRY STREET
KANSAS CITY MO 64110

HARVARD UNIVERSITY HERBARIA
OAK AMES LIBRARIES
22 DIVINITY AVENUE
CAMBRIDGE MA 02138-2020

HUALIEN DIST AGRIC IMPR STATION
LIBRARY
150 CHI-AN RD SEC 2 CHI-AN VILLAG
HUALIEN TAIWAN (FORMOSA)97309
REP OF CHINA

ICRISAT
LIBRARIAN
PATANCHERU POST
ANDHRA PRADESH 502 324
INDIA

INTA
EEA MANFREDI
BIBLIOTECA E INFORMACION
5988 - MANFREDI (CORDOBA)
ARGENTINA
Phone: 0572-93053
FAX: 0572-93061

IOWA STATE UNIVERSITY
PARKS LIBRARY
ACQUISITIONS DEPARTMENT
AMES IA 50011-2140

KAGOSHIMA DAIGAKU
TOSHOKAN
21-35 KOORIMOTO 1-CHOME
KAGOSHIMA 890
JAPAN

KASETSART UNIVERSITY
MAIN LIBRARY, KAMPHANGSEAN CAMPUS
KAMPHANGSEAN DISTRICT
NAKORN PATHOM PRO 73140
THAILAND

KIT INFORMATIE BIBLIOTHEEK
2675 EN DOCUMENTATIE IBD
POSTBUS 95001
1090 HA AMSTERDAM
THE NETHERLANDS

KNOWLEDGE BOOK & JOURNAL CO LTD
C/O MR CHIA ZON CHUANG (C09)
PO BOX 7-346
TAIPEI 106 TAIWAN
REP OF CHINA

LIBRARY-SERIALS
EASTERN NEW MEXICO UNIVERSITY
1500 S AVENUE K
PORTALES NM 88130

MAURITIUS SUGAR IND RES INST
LIBRARY
REDUIT
MAURITIUS

MICHIGAN STATE UNIVERSITY
LIBRARIES - SERIALS
100 LIBRARY
EAST LANSING MI 48824-1048
Phone: 517-353-8723
FAX: 517-353-8969

NCHU - DEPT OF AGRONOMY
C/O SUPER CHANNEL ENTERPRISES
PO BOX 43-478
TAIPEI TAIWAN (FORMOSA)
REP OF CHINA

NESTLE R & D CENTER OHIO INC
LIBRARY
809 COLLINS AVE PO BOX 4002
MARYSVILLE OH 43040-4002

NOBLE FOUNDATION
BIOMEDICAL/LIBRARY
PO BOX 2180
ARDMORE OK 73402

NORTH CAROLINA STATE UNIVERSITY
D H HILL LIBRARY
ACQUISITIONS DEPT (S) BOX 7111
RALEIGH NC 27695-7111

NORTH WEST AGRIC DEV INST
LIBRARY
PRIVATE BAG X804
POTCHEFSTROOM 2520
SOUTH AFRICA

OKLAHOMA STATE UNIVERSITY
EDMON LOW LIBRARY
ACQUISITIONS - PERIODICALS
STILLWATER OK 74078

PIRACI/EBSCO BRASIL
CAIXA POSTAL 65000
20072-972
RIO DE JANEIRO – FJ
BRAZIL

THE PROCTER & GAMBLE COMPANY
WINTON HILL TECHNICAL LIBRARY
6090 CENTER HILL ROAD
CINCINNATI OH 45224

SANITARIUM
PLANT DEVELOPMENT DIVISION
PO BOX 40 COORANBONG NSW 2265
AUSTRALIA

SERDANG/PERTANIAN
LIBRARY SERIALS DIVISION
PO BOX 1565
BIRMINGHAM AL 35201-1565

SOUTHERN ILLINOIS UNIVERSITY
MORRIS LIBRARY
CONTINUATIONS SECTION C169M26D
CARBONDALE IL 62901-6632

SOUTHWESTERN PEANUT SHELLERS
ASSOCIATION
WAYNE S WEAVER
299 S COLUMBIA
STEPHENVILLE TX 76401
Phone: 817-965-5855
FAX: 817-965-3316

SWETS SUBSCRIPTION SERVICE
440 CREAMERY WAY, SUITE A
EXTON PA 19341

TAINAN DIST AGRIC IMPR STATION
350 LIN-SHEN ROAD SECTION 1
TAINAN TAIWAN (FORMOSA) 70125
REP OF CHINA

TAMIL NADU AGRICULTURAL UNIV
LIBRARY
COIMBATORE 641003
INDIA

TARLETON STATE UNIVERSITY
DICK SMITH LIBRARY - TARLETON STA
MAIL STOP T0450
STEPHENVILLE TX 76402

TEXAS A&M UNIVERSITY
EVANS LIBRARY - SERIALS RECORD
MAIL STOP 5000
COLLEGE STATION TX 77843

UNIVERSIDADE EDUARDO MONDLANE
FACULDADE DE AGRONOMIA
C P 257
MAPUTO
MOZAMBIQUE

UNIVERSITATSBIBLIOTHEK UND TIB
1.1.2 ZEITSCHRIFTENERWERBUNG
POSTFACH 60 80
D-30060 HANNOVER
GERMANY

UNIVERSITY OF AGRIC SCIENCE
C/O ALLIED PUBLISHERS SUBS AGENCY
5TH MAIN ROAD GANDHINAGAR
BANGALORE 560 009 KARNATAKA
INDIA

UNIVERSITY OF AGRIC SCIENCES
UNIVERSITY LIBRARIAN
KRISHINAGAR
DHARWAD 580 005, KARNATAKA
INDIA

UNIVERSITY OF CALIFORNIA AT DAVIS
THE LIBRARY
ACQUISITIONS DEPT/SERIAL RECORDS
DAVIS CA 95616-5292

UNIVERSITY OF CALIFORNIA LIBRARY
BIOSCIENCE & NATURAL RES LIB
2101 VLSB #6500
BERKELEY CA 94720-6500

UNIVERSITY OF FLORIDA
MARSTON SCIENCE LIBRARY 002ACF7414
GAINESVILLE FL 32611

UNIVERSITY OF FLORIDA
WEST FLORIDA RES & EDUC CENTER
4253 EXPERIMENT DRIVE HIGHWAY 182
JAY FL 32565-9524
Phone: 904-994-5215

UNIVERSITY OF GEORGIA LIBRARIES
COLLEGE OF AGRICULTURE
GEORGIA EXPERIMENT STATION
GRIFFIN GA 30223-1797

UNIVERSITY OF GEORGIA LIBRARIES
SCIENCE PERIODICALS DEPARTMENT
ATHENS GA 30602

UNIVERSITY OF GUELPH LIBRARY
DATA MAINTENANCE
GUELPH ONTARIO N1G 2W1
CANADA

UNIVERSITY OF ILLINOIS LIBRARY
SERIALS - FAX
1408 W GREGORY DRIVE
URBANA IL 61801-3607

UNIVERSITY LIBRARIAN
DR PANJABRAO DESHMUKH KRISHI
VIDYAPEETH
PO KRISHI NAGAR
AKOLA – 444104
MAHARASHTRA STATE INDIA

UNIVERSITY OF QUEENSLAND
CENTRAL LIBRARY
SERIALS SECTION
ST LUCIA QLD 4072
AUSTRALIA

UNIVERSITY OF TENNESSEE
AGRICULTURE VETMED LIBRARY
A113 VET TEACHING HOSPITAL
KNOXVILLE TN 37996-4500

USDA NATIONAL AGRIC LIBRARY
CURRENT SERIAL RECORDS - CSR
10301 BALTIMORE BLVD ROOM 002
BELTSVILLE MD 20705

USDA SOUTHERN REGIONAL RES CTR
LIBRARY
PO BOX 19687
NEW ORLEANS LA 70179

VIRGINIA POLY INST & STATE UNIV
UNIVERSITY LIBRARIES/SERIALS RECEIV
PO BOX 90001
BLACKSBURG VA 24062-9001

YEPHET BEN-YEPHET VOLCANI CENTER
DEPT PLANT PATHOLOGY
BET DAGAN POB 6
ISRAEL

ZVI BAR
HEVEL MA'ON
D N NEGEV
ISRAEL 85465
Phone: 7-9987239
FAX: 7-9987230
EMail: yhamzbar@trendline.co.il

ORGANIZATIONAL MEMBERS

ALABAMA PEANUT PRODUCERS ASSOC
H RANDALL GRIGGS
PO BOX 8805
DOTHAN AL 36304
Phone: 334-792-6482
FAX: 334-792-5876
EMail: appa@ala.net

AMERICAN PEANUT COUNCIL
JEANNETTE ANDERSON
1500 KING ST SUITE 301
ALEXANDRIA VA 22314
Phone: 703-838-9500
FAX: 703-838-9508
EMail: npca@aol.com

BAYER CORPORATION, AGRIC DIVISION
DAVID ROGERS
PO BOX 436
TIFTON GA 31793
Phone: 912-386-5711
FAX: 912-386-2932
EMail: david.rogers.b@bayer.com

BIRDSONG PEANUTS
TOM WEST
PO BOX 1400
SUFFOLK VA 23439
Phone: 757-539-3224
FAX: 757-934-6840

CIBA CORPORATION
ALBERT B BASSI JR
PO BOX 18300
GREENSBORO NC 27419
Phone: 910-632-2509
FAX: 910-632-7650
EMail: bobby.bassi@cp.novartis.com

CIRAD-CA
M SCHILLING
BAT 8 – BP 5035
34032 MONTPELLIER CEDEX 1
FRANCE
Phone: 67-61-5878
FAX: 67-61-7160

FARMERS FERTILIZER & MILLING CO
KEVIN CALHOUN
PO BOX 265
COLQUITT GA 31737
Phone: 912-758-3520
FAX: 912-758-3240

GEORGIA FARM BUREAU FEDERATION
DON C MCGOUGH
PO BOX 7068
MACON GA 31298
Phone: 912-474-8411
FAX: 912-474-8750
EMail: dcmcgough@gfb.org

GFA PEANUT ASSOCIATION
CHARLES F COKER
US 19 SOUTH
CAMILLA GA 31730
Phone: 912-336-5241
FAX: 912-336-9503

THE LEAVITT CORPORATION
JAMES T HINTLIAN
100 SANTILLI HIGHWAY
EVERETT MA 02149
Phone: 617-389-2600
FAX: 617-387-9085

LIDOCHEM INC
DON J. PUCILLO
20 VILLAGE COURT
HAZLET NJ 07730
Phone: 908-888-8000
FAX: 908-264-2751
EMail: lidochem@monmouth.com

MARS BV
C/O MR P BERKERS
PO BOX 31
5466AE VEGHEL
THE NETHERLANDS
Phone: 01131-413-383706
FAX: 01131-413-351670

MARS CONFECTIONERY OF AUSTRALIA
J RENS
PO BOX 633
BALLARAT 3353
AUSTRALIA
Phone: 61-353-377-000
FAX: 61-353-377-096

THE SAMUEL ROBERTS NOBLE FOUNDATION
JERRY L BAKER
PO BOX 2180
ARDMORE OK 73401
Phone: 405-223-5810
FAX: 405-221-7320
EMail: jlbaker@noble.org

NORTH CAROLINA CROP IMPR ASSOC
CARROLL E COLLINS
3709 HILLSBOROUGH STREET
RALEIGH NC 27607
Phone: 919-515-2851
FAX: 919-515-7981
EMail: ccollins@cropserv1.cropsci.ncsu.edu

NORTH CAROLINA PEANUT GROWERS ASSOC
ROBERT R SUTTER CEO
PO BOX 8
NASHVILLE NC 27856-0008
Phone: 919-459-5060
FAX: 919-459-7396

THE PEANUT FARMER MAGAZINE
MARY EVANS
3000 HIGHWOODS BLVD SUITE 300
RALEIGH NC 27604-1029
Phone: 919-872-5040
FAX: 919-876-6531
EMail: speccomm@interserv.com

PROCTOR & SCHWARTZ INC
CHARLES S KOVACS JR
251 GIBRALTAR ROAD
HORSHAM PA 19044
Phone: 215-443-5200
FAX: 215-443-5206

SHULTZ PEANUT & COLD STORAGE INC
CARY W SHULTZ
PO BOX 40
WAKEFIELD VA 23888
Phone: 804-899-8900
FAX: 804-899-2185

SOUTHERN PEANUT CO
HARVEY MORRIS
PO BOX 160
DUBLIN NC 28332

SOUTHWEST FARM PRESS
CALVIN PIGG
1801 NORTH GATEWAY BLVD SUITE 208
RICHARDSON TX 75080-3626
PHONE: 972-690-0721

SOUTHWESTERN PEANUT GROWERS' ASSOC
ROSS WILSON
PO BOX 338
GORMAN TX 76454
Phone: 254-734-2222
FAX: 254-734-2288

THE PRINCIPAL
BHAVAN'S NEW SCIENCE COLLEGE
NARAYANAGUDA
HYDERABAD - 500 029
ANDHRA PRADESH INDIA

US BORAX
JAMES R WOODRUFF
128 MOUNTAIN VIEW LANE
CLEMSON SC 29631
Phone: 864-654-6778
FAX: 864-653-4735

USDA NATIONAL AGRIC LIBRARY
PRR
10301 BALTIMORE BLVD ROOM 002
BELTSVILLE MD 20705

VALENT
JOSEPH L POWELL
1333 N CALIF BLVD
WALNUT CREEK CA 94591
Phone: 510-256-2719
FAX: 510-256-2776
EMail: jpowe@valent.com

VIRGINIA-CAROLINA PEANUT PROMOTION
BETSY OWENS
PO BOX 8
NASHVILLE NC 27856-0008
Phone: 919-459-9977
FAX: 919-459-7396

VIRGINIA PEANUT GROWES ASSOC
RUSSELL C SCHOOLS
PO BOX 356
CAPRON VA 23829
Phone: 804-658-4573
FAX: 804-658-4531

WILCO PEANUT COMPANY
KURT G WARNKEN
PO DRAWER B
PLEASANTON TX 78064
Phone: 830-569-3808
FAX: 830-569-2743

STUDENT MEMBERS

LILIA BARRIENTOS-PRIEGO
NORTH CAROLINA STATE UNIVERSITY
BOX 7629
RALEIGH NC 27695-7629
Phone: 919-515-3281
FAX: 919-515-5657
EMail: lbarrien@cropserv1.cropsci.ncsu.edu

GLORIA B BUROW
DEPT OF PLANT PATH & MICRO
TEXAS A&M UNIVERSITY
112 B ROYAL
BRYAN TX 77801

ROBERT A E BUTCHKO
TEXAS A&M UNIVERSITY
4309 MAYWOOD
BRYAN TX 77801

ANA M CALVO-BYRD
PLANT PATH DEPT
TEXAS A&M UNIVERSITY
1401 FM 2818
COLLEGE STATION TX 77840

A STANLEY CULPEPPER
723 RYAN COURT
RALEIGH NC 27606
Phone: 919-515-2865

CHUCK DANNHEIM
DELEON PEANUT COMPANY
PO BOX 1325
LAMESA TX 79331
Phone: 806-872-3875
FAX: 806-872-5814

MICHAEL FRANKE
COASTAL PLAIN EXP STATION
DEPT PLANT PATHOLOGY
TIFTON GA 31794
Phone: 912-386-3371
FAX: 912-386-7285
EMail: mfranke@uga.cc.uga.edu

LLOYD E GARCIA
208 TAYLOR STREET
RALEIGH NC 27607
Phone: 919-733-6932
FAX: 919-733-1041
EMail: lloyd_garcia@ncdamail.agr.state.nc.us

PAUL V GARVEY
NORTH CAROLINA STATE UNIVERSITY
BOX 7609 HORT SCIENCE DEPT
RALEIGH NC 27695-7609
Phone: 919-515-5370
FAX: 919-515-7747
EMail: paul_garvey@ncsu.edu

KATIE JENNINGS
NORTH CAROLINA STATE UNIVERSITY
BOX 7620 CROP SCIENCE DEPT
RALEIGH NC 27695-7620
Phone: 919-515-5656
FAX: 919-515-5315
EMail: jennings@cropserv1.cropsci.ncsu.edu

BRETT SHANE JUNGMAN
4508 45th ST
LUBBOCK TX 79414
Phone: 806-746-6101
FAX: 806-746-6528

DAVID LANGSTON
ROUTE 2 BOX 89
GATES NC 27937
Phone: 757-657-6450
FAX: 757-657-9333
EMail: dlangsto@vt.edu

DAVID PINERO
TEXAS A&M UNIVERSITY
1501 HOLLEMAN #129
COLLEGE STATION TX 77840

CATARINA SAUDE
82 S UNIVERSITY PL APT 11
STILLWATER OK 74075

JUSTIN TUGGLE
DELEON PEANUT COMPANY
HC3 BOX 57C
BROWNFIELD TX 79316
Phone: 806-637-0568
FAX: 806-637-0569
EMail: jtuggle@tamu.edu

SUSTAINING MEMBERS

AGREVO USA COMPANY
DALE KINNEY
2711 CENTERVILLE ROAD
WILMINGTON DE 19808
Phone: 302-892-3163
FAX: 302-892-3091

ANDERSON'S PEANUTS
JOHN W FRYER
PO DRAWER 420
OPP AL 36467
Phone: 334-493-4591
FAX: 334-493-7767

BAYER, AGRICULTURE DIVISION
RICHARD RUDOLPH
1895 PHOENIX BLVD SUITE 241
ATLANTA, GA 30349-5572
Phone: 770-997-7512
FAX: 770-997-7467

FLORIDA PEANUT PRODUCERS ASSOC
JEFF CRAWFORD JR
PO BOX 447
GRACEVILLE FL 32440
Phone: 904-263-6130
FAX: 904-263-6210

GEORGIA AG COMMODITY COMM FOR PNUT
EMORY M MURPHY
PO BOX 967
TIFTON GA 31793
Phone: 912-386-3470
FAX: 912-386-3501

GRIFFIN CORPORATION
BOND MCINNES
PO BOX 1847
VALDOSTA GA 31603-1847
Phone: 912-249-5305
FAX: 912-249-5977
EMail: bond.mcinnes@griffincorp.com

ISK BIOSCIENCES CORPORATION
GARY L EILRICH
PO BOX 8000 5966 HEISLEY ROAD
MENTOR OH 44061-8000
Phone: 216-357-4145
FAX: 216-357-4692

ISK BIOSCIENCES CORPORATION
KEITH MANTON
1523 JOHNSON FERRY RD SUITE 150
MARIETTA GA 30062-6438
Phone: 770-578-9990
FAX: 770-578-0172

LIPHA TECH NITRAGIN BRAND INOC
STEWART SMITH
3101 W CUSTER AVENUE
MILWAUKEE WI 53209
Phone: 414-462-7600
FAX: 414-462-7186
EMail: rd2@execpc.com

NOVARTIS CROP PROTECTION
RANDY RATLIFF
PO BOX 18300
GREENSBORO NC 27419-8300
Phone: 910-632-2549
FAX: 910-632-2861

OKLAHOMA PEANUT COMMISSION
MIKE KUBICEK
PO BOX 1949
SHAWNEE OK 74802
Phone: 405-275-5994
FAX: 405-878-0887

PEANUT GROWERS COOP MKT ASSOC
DELL COTTON
PO BOX 59
FRANKLIN VA 23851
Phone: 757-562-4103
FAX: 757-562-0744

SOSTRAM CORPORATION
ART ASSAD
70 MANSELL COURT SUITE 230
ROSWELL GA 30076
Phone: 770-587-1032
FAX: 770-587-1115

SOUTH CAROLINA PEANUT BOARD
ROBERT E SCOTT
4 INVERNESS WEST
AIKEN SC 29801
Phone: 803-649-5511
FAX: 803-642-1834
EMail: montv@aol.com

SUFFOLK PEANUT COMPANY
BENNIE SPEIGHT
331 SUSSEX CT
SUFFOLK VA 23434
Phone: 757-934-1478
FAX: 757-934-7972

TEXAS PEANUT PRODUCERS BOARD
MARY WEBB
PO BOX 398
GORMAN TX 76454
Phone: 254-734-2853
FAX: 254-734-2017
EMail: mary@cctc.net

VICAM
PETER H X BUI
313 PLEASANT STREET
WATERTOWN MA 02172
Phone: 617-926-7045
FAX: 617-923-8055
EMail: vicam@vicam.com

AUTHOR INDEX