2009
PROCEEDINGS

American Peanut Research
and
Education Society, Inc.

Volume 41

Volume 41

2009 PROCEEDINGS

of

THE AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY, INC.

Meeting
Raleigh, North Carolina
July 14-17, 2009

Publication Date
February 2010

Editor: James L. Starr
Production Editor: Irene Nickels
apres_nickeli@att.net

TABLE OF CONTENTS

BOARD OF DIRECTORS

2009-10

President ..... Barbara Shew (2010)

Past President ..... Kelly Chamberlin (2010)

President-elect ..... Maria Gallo (2010)

Executive Officer ..... James L. Starr (2010)

University Representatives:
- (VC Area) ..... Jay Chapin (2010)
- (SE Area) ..... Eric Prostko (2010)
- (SW Area) ..... Jason Woodward (2011)

USDA Representative ..... Carroll Johnson (2010)

Industry Representatives:
- Production ..... Robert Sutter (2012)
- Shelling, Marketing, Storage ..... Emory Murphy (2010)
- Manufactured Products ..... Victor Nwosu (2011)

National Peanut Board Representative ..... Wes Shannon (2011)

Director of Science and Technology of the
- American Peanut Council ..... Howard Valentine (2010)

ANNUAL MEETING SITES

1969 - Atlanta, GA
1970 - San Antonio, TX
1971 - Raleigh, NC
1972 - Albany, GA
1973 - Oklahoma City, OK
1974 - Williamsburg, VA
1975 - Dothan, AL
1976 - Dallas, TX
1977 - Asheville, NC
1978 - Gainesville, FL
1979 - Tulsa, OK
1980 - Richmond, VA
1981 - Savannah, GA
1982 - Albuquerque, NM
1983 - Charlotte, NC
1984 - Mobile, AL
1985 - San Antonio, TX
1986 - Virginia Beach, VA
1987 - Orlando, FL
1988 - Tulsa, OK
1989 - Winston-Salem, NC
1990 - Stone Mountain, GA
1991 - San Antonio, TX
1992 - Norfolk, VA
1993 - Huntsville, AL
1994 - Tulsa, OK
1995 - Charlotte, NC
1996 - Orlando, FL
1997 - San Antonio, TX
1998 - Norfolk, VA
1999 - Savannah, GA
2000 - Point Clear, AL
2001 - Oklahoma City, OK
2002 - Research Triangle Park, NC
2003 - Clearwater Beach, FL
2004 - San Antonio, TX
2005 - Portsmouth, VA
2006 - Savannah, GA
2007 - Birmingham, AL
2008 - Oklahoma City, OK
2009 - Raleigh, NC

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

APRES COMMITTEES
2009-10

Program Committee

Maria Gallo, chair	(2010)

Finance Committee

Kelly Chamberlin, chair	(2011)
Barbara Shew	(2010)
Peter Dotray	(2011)
Chad Godsey	(2011)
Timothy Brenneman	(2012)
Austin Hagan	(2012)
Jim Starr, ex-officio	

Nominating Committee

Kelly Chamberliln, chair	(2010)
Barbara Shew	(2010)
Patrick Phipps	(2010)
Peter Dotray	(2010)
Jim Elder	(2010)

Publications and Editorial Committee

Naveen Puppala, chair	(2010)
Thomas Isleib	(2010)
Diane Rowland	(2011)
Kira Bowen	(2012)
Nathan Smith	(2012)
Jason Woodward	(2012)

Peanut Quality Committee

Victor Nwosu, chair	(2011)
Pat Donahue	(2010)
Jim Elder	(2010)
Mike Kubicek	(2011)
Max Grice	(2011)
Michael Franke	(2012)
Dell Cotton	(2012)
Timothy Sanders	(2012)

Public Relations Committee

Ryan Lepicier, chair	(2012)
Shelly Nutt	(2011)
Barry Tillman	(2011)
John Erickson	(2012)
Sandy Newell	(2012)
Betsy Owens	(2012)

Bailey Award Committee

Albert Culbreath, chair	(2010)
Peggy Ozias-Akins	(2010)
Kris Balkcom	(2010)
Emily Cantonwine	(2011)
Thomas Stalker	(2012)
David Jordan	(2012)

Fellows Committee

Todd Baughman, chair	(2010)
James Todd	(2010)
Charles Simpson	(2010)
Tom Isleib	(2011)
Jay Chapin	(2011)
Hassan Melouk	(2011)

Site Selection Committee

Barry Tillman, chair	(2011)
Ames Herbert	(2010)
Jason Woodward	(2010)
Maria Gallo	(2011)
Jay Chapin	(2012)
Jack Davis	(2012)
John Beasley	(2013)
Peggy Ozias-Akins	(2013)

Coyt T. Wilson Distinguished Service Award Committee

Elizabeth Grabau, chair	(2011)
Baozhu Guo	(2010)
Joe Dorner	(2010)
Naveen Puppala	(2011)
Ames Herbert	(2012)
Mark Black	(2012)

Dow AgroSciences Awards Committee

C. Corley Holbrook, chair	(2011)
Scott Tubbs	(2010)
Carroll Johnson	(2011)
Jay Chapin	(2011)
Mark Burow	(2011)
John Damicone	(2011)
John Beasley	(2011)

Joe Sugg Graduate Student Award Committee

Robert Kemerait, chair	(2011)
Patrick Phipps	(2010)
Phat Dang	(2011)
Thomas Isleib	(2012)
Timothy Grey	(2012)

PAST PRESIDENTS

Kelly Chenault Chamberlin	(2008)	Daniel W. Gorbet	(1987)
Austin K. Hagan	(2007)	D. Morris Porter	(1986)
Albert K. Culbreath	(2006)	Donald H. Smith	(1985)
Patrick M. Phipps	(2005)	Gale A. Buchanan	(1984)
James Grichar	(2004)	Fred R. Cox	(1983)
E. Ben Whitty	(2003)	David D. H. Hsi	(1982)
Thomas G. Isleib	(2002)	James L. Butler	(1981)
John P. Damicone	(2001)	Allen H. Allison	(1980)
Austin K. Hagan	(2000)	James S. Kirby	(1979)
Robert E. Lynch	(1999)	Allen J. Norden	(1978)
Charles W. Swann	(1998)	Astor Perry	(1977)
Thomas A. Lee, Jr.	(1997)	Leland Tripp	(1976)
Fred M. Shokes	(1996)	J. Frank McGill	(1975)
Harold Pattee	(1995)	Kenneth Garren	(1974)
William Odle	(1994)	Edwin L. Sexton	(1973)
Dallas Hartzog	(1993)	Olin D. Smith	(1972)
Walton Mozingo	(1992)	William T. Mills	(1971)
Charles E. Simpson	(1991)	J.W. Dickens	(1970)
Ronald J. Henning	(1990)	David L. Moake	(1969)
Johnny C. Wynne	(1989)	Norman D. Davis	(1968)
Hassan A. Melouk	(1988)		

FELLOWS

Dr. Kenneth J. Boote	(2009)	Dr. William D. Branch	(1994)
Dr. Timothy Brenneman	(2009)	Dr. Frederick R. Cox	(1994)
Dr. Albert K. Culbreath	(2009)	Dr. James H. Young	(1994)
Mr. G. M. “Max” Grice	(2007)	Dr. Marvin K. Beute	(1993)
Mr. W. James Grichar	(2007)	Dr. Terry A. Coffelt	(1993)
Dr. Thomas G. Isleib	(2007)	Dr. Hassan A. Melouk	(1992)
Mr. Dallas Hartzog	(2006)	Dr. F. Scott Wright	(1992)
Dr. C. Corley Holbrook	(2006)	Dr. Johnny C. Wynne	(1992)
Dr. Richard Rudolph	(2006)	Dr. John C. French	(1991)
Dr. Peggy Ozias-Akins	(2005)	Dr. Daniel W. Gorbet	(1991)
Mr. James Ron Weeks	(2005)	Mr. Norfleet L. Sugg	(1991)
Mr. Paul Blankenship	(2004)	Dr. James S. Kirby	(1990)
Dr. Stanley Fletcher	(2004)	Mr. R. Walton Mozingo	(1990)
Mr. Bobby Walls, Jr.	(2004)	Mrs. Ruth Ann Taber	(1990)
Dr. Rick Brandenburg	(2003)	Dr. Darold L. Ketring	(1989)
Dr. James W. Todd	(2003)	Dr. D. Morris Porter	(1989)
Dr. John P. Beasley, Jr.	(2002)	Mr. J. Frank McGill	(1988)
Dr. Robert E. Lynch	(2002)	Dr. Donald H. Smith	(1988)
Dr. Patrick M. Phipps	(2002)	Mr. Joe S. Sugg	(1988)
Dr. Ronald J. Henning	(2001)	Dr. Donald J. Banks	(1988)
Dr. Norris L. Powell	(2001)	Dr. James L. Steele	(1988)
Mr. E. Jay Williams	(2001)	Dr. Daniel Hallock	(1986)
Dr. Gale A. Buchanan	(2000)	Dr. Clyde T. Young	(1986)
Dr. Thomas A. Lee, Jr.	(2000)	Dr. Olin D. Smith	(1986)
Dr. Frederick M. Shokes	(2000)	Mr. Allen H. Allison	(1985)
Dr. Jack E. Bailey	(1999)	Mr. J.W. Dickens	(1985)
Dr. James R. Sholar	(1999)	Dr. Thurman Boswell	(1985)
Dr. John A. Baldwin	(1998)	Dr. Allen J. Norden	(1984)
Mr. William M. Birdsong, Jr.	(1998)	Dr. William V. Campbell	(1984)
Dr. Gene A. Sullivan	(1998)	Dr. Harold Pattee	(1983)
Dr. Timothy H. Sanders	(1997)	Dr. Leland Tripp	(1983)
Dr. H. Thomas Stalker	(1996)	Dr. Kenneth H. Garren	(1982)
Dr. Charles W. Swann	(1996)	Dr. Ray O. Hammons	(1982)
Dr. Thomas B. Whitaker	(1996)	Mr. Astor Perry	(1982)
Dr. David A. Knauft	(1995)		
Dr. Charles E. Simpson	(1995)		

BAILEY AWARD

2009 S.R. Milla-Lewis and T.G. Isleib
2008 Y. Chu, L. Ramos, P. Ozias-Akins, C.C. Holbrook
2007 D.E. Partridge, P.M. Phipps, D.L. Coker, E.A. Grabau
2006 J.W. Chapin and J.S. Thomas
2005 J.W. Wilcut, A.J. Price, S.B. Clewis, and J.R. Cranmer
2004 R.W. Mozingo, S.F. O'Keefe, T.H. Sanders and K.W. Hendrix
2003 T.H. Sanders, K.W. Hendrix, T.D. Rausch, T.A. Katz and J.M. Drozd
2002 M. Gallo-Meagher, K. Chengalrayan, J.M. Davis and G.G. MacDonald
2001 J.W. Dorner and R.J. Cole
2000 G.T. Church, C.E. Simpson and J.L. Starr
1998 J.L. Starr, C.E. Simpson and T.A. Lee, Jr.
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 T.B. Whitaker
1975 R.E. Pettit, F.M. Shokes and R.A. Taber

JOE SUGG GRADUATE STUDENT AWARD

2009	G. Place	1998	M.D. Franke
2008	J. Ayers	1997	R.E. Butchko
2007	J.M. Weeks, Jr.	1996	M.D. Franke
2006	W.J. Everman	1995	P.D. Brune
2005	D.L. Smith	1994	J.S. Richburg
2004	D.L. Smith	1993	P.D. Brune
2003	D.C. Yoder	1992	M.J. Bell
2002	S.C. Troxler	1991	T.E. Clemente
2001	S.L. Rideout	1990	R.M. Cu
2000	D.L. Glenn	1989	R.M. Cu
1999	J.H. Lyerly		

COYT T. WILSON DISTINGUISHED SERVICE AWARD

2008	Dr. Frederick M. Shokes	1999	Dr. Ray O. Hammons
2007	Dr. Christopher L. Butts	1998	Dr. C. Corley Holbrook
2006	Dr. Charles E. Simpson	1997	Mr. J. Frank McGill
2005	Dr. Thomas B. Whitaker	1996	Dr. Olin D. Smith
2004	Dr. Richard Rudolph	1995	Dr. Clyde T. Young
2003	Dr. Hassan A. Melouk	1993	Dr. James Ronald Sholar
2002	Dr. H. Thomas Stalker	1992	Dr. Harold E. Pattee
2001	Dr. Daniel W. Gorbet	1991	Dr. Leland Tripp
2000	Mr. R. Walton Mozingo	1990	Dr. D.H. Smith

DOW AGROSCIENCES AWARD FOR EXCELLENCE IN RESEARCH

2009	Joe W. Dorner	1999	Daniel W. Gorbet
2008	Jay W. Chapin	1998	Thomas B. Whitaker
2007	James W. Todd	1997	W. James Grichar
2005	William D. Branch	1996	R. Walton Mozingo
2004	Stanley M. Fletcher	1995	Frederick M. Shokes
2003	John W. Wilcut	1994	Albert Culbreath, James Todd and James Demski
2002	W. Carroll Johnson, III	1993	Hassan Melouk
2001	Harold E. Pattee and Thomas G. Isleib	1992	Rodrigo Rodriguez-Kabana
2000	Timothy B. Brenneman		

1998 Changed to Dow AgroSciences Award for Excellence in Research

DOW AGROSCIENCES AWARD FOR EXCELLENCE IN EDUCATION

2009	Robert C. Kemerait, Jr.	2001	Thomas A. Lee
2008	Barbara B. Shew	2000	H. Thomas Stalker
2007	John P. Damicone	1999	Patrick M. Phipps
2006	Stanley M. Fletcher	1998	John P. Beasley, Jr.
2005	Eric Prostko	1996	John A. Baldwin
2004	Steve L. Brown	1995	Gene A. Sullivan
2003	Harold E. Pattee	1993	A. Edwin Colburn
2002	Kenneth E. Jackson	1992	J. Ronald Sholar

1998 Changed to Dow AgroSciences Award for Excellence in Education
1997 Changed to DowElanco Award for Excellence in Education
1992-1996 DowElanco Award for Excellence in Extension

PEANUT RESEARCH AND EDUCATION AWARD

2009	A. Stephens
2008	T.G. Isleib
2007	E. Harvey
2006	D.W. Gorbet
2005	J.A. Baldwin
2004	S.M. Fletcher
2003	W.D. Branch and J. Davidson
2002	T.E. Whitaker and J. Adams
2001	C.E. Simpson and J.L. Starr
2000	P.M. Phipps
1999	H. Thomas Stalker
1998	J.W. Todd, S.L. Brown, A.K. Culbreath and H.R. Pappu
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	W.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. Langleya
1964	A.M. Altschul
1963	W.A. Carver
1962	J.W. Kickens
1961	W.C. Gregory

2005	Now presented by: Peanut Foundation and renamed – Peanut Research and Education Award
1997	Changed to American Peanut Council Research and Education Award
1989	Changed to National Peanut Council Research and Education Award

ANNUAL MEETING PRESENTATIONS

Technical Sessions

WEED SCIENCE

PHYSIOLOGY

POSTER SESSIONS

JOE SUGG GRADUATE STUDENT COMPETITION

BREEDING, BIOTECHNOLOGY AND GENETICS I

BREEDING, BIOTECHNOLOGY AND GENETICS II

EXCELLENCE IN EXTENSION EDUCATION
SPONSORED BY BAYER CROP SCIENCE

PROCESSING

PLANT PATHOLOGY, NEMATOLOGY, AND MYCOTOXINS I

PLANT PATHOLOGY, NEMATOLOGY, AND MYCOTOXINS II

PRODUCTION TECHNOLOGY

Moderator: Douglas Snyder, U.S. Gypsum, Cary, NC
Meeting Room: State Ballroom A

HARVESTING, CURING, SHELLING, STORING, & HANDLING

Strongarm and Cadre Comparison for Postemergence Weed Management in Peanut. B. BRECKE*, West Florida Research and Education Center, University of Florida, Jay, FL 32565; T. GREY, Crop and Soil Science Department, University of Georgia, Tifton, GA; and G.R. WEHTJE, Agronomy and Soils, Auburn University, Auburn, AL 36849.

Studies were conducted in Jay, FL, Tifton, GA and Auburn, AL to compare the effectiveness of postemergence applications of Strongarm and Cadre for broadleaf weed and purple nutsedge management in peanut. Treatments included either Cadre or Strongarm at the label rate applied once or at half the labeled rate applied as two sequential treatments spaced 3 weeks apart. The Cadre and Strongarm treatments were applied either following an at cracking application of Gramoxone Inteon plus Basagran or with no at cracking treatment. Adding an at cracking treatment prior to either Cadre or Strongarm improved control of most weed species evaluated by 10 to 15% and yield by 5 to 25%. Cadre provided better sicklepod, purple nutsedge and purple moonflower control than Strongarm. Control of common cocklebur, Palmer amaranth, smallflower morningglory and ivyleaf morningglory was similar for both herbicides. Splitting the Cadre application (2 applications at half label rate spaced 3 weeks apart) provided 10% better sicklepod control at Jay than the single application at full label rate. Splitting the Strongarm treatment did not affect control of most weed species; however, control of Palmer amaranth was reduced with the split application. Peanut yield was higher following Cadre treatment at Jay primarily due to the better sicklepod control observed.

Palmer amaranth (*Amaranthus palmeri*) Control with Combinations of 2,4-DB and Diphenylether Herbicides. G.S.H. CHAHAL, D.L. JORDAN*, E.P. PROSTKO, A.C. YORK, and S.B. CLEWIS, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; and Department of Crop and Soil Science, University of Georgia, Tifton, GA 31793.

Palmer amaranth that has escaped soil-applied herbicides at planting or that is resistant to the acetolactate synthase inhibiting herbicides can be difficult to control in peanut, especially when postemergence herbicides are applied to Palmer amaranth exceeding 15 cm in height. Experiments were conducted in Georgia and North Carolina during 2007 and 2008 to compare control of Palmer amaranth greater than 20 cm in height by sequential and tank mix applications of 2,4-DB and acifluorfen or lactofen. Palmer amaranth control by co-application of 2,4-DB with acifluorfen or lactofen or control when 2,4-DB was applied 3 to 7 days prior to diphenylether herbicides was similar in most experiments when evaluated 2 and 5 weeks after initial herbicide applications. Although

tank mix and sequential applications of 2,4-DB and acifluorfen or lactofen often were more effective than 2,4-DB at 2 weeks after the initial herbicide application, by 5 weeks after initial application 2,4-DB alone as two sequential applications was as effective as tank mix or sequential applications of 2,4-DB with acifluorfen or lactofen in most experiments.

Peanut Response to Dicamba. E.P. PROSTKO*, T.L. GREY, University of Georgia, Tifton, GA 31793; M. MARSHALL, Clemson University, Blackville, SC 29817; J.A. FERRELL, University of Florida, Gainesville, FL 32611; D.L. JORDAN, North Carolina State University, Raleigh, NC 27695; B.J. BRECKE, University of Florida, Jay, FL 32583; P.A. DOTRAY, Texas Tech University, Lubbock, TX 79409; W.J. GRICHAR, Texas AgriLIFE Research, Beeville, TX 78102; and G.R. WEHTJE, Auburn University, Auburn, AL 36849.
Dicamba (Clarity) is a postemergence, broadleaf herbicide used for weed control in grass crops. Herbicide tolerant broadleaf crops, such as cotton and soybean, are being developed with resistance to dicamba. Thus, it is speculated that there will be an increase in dicamba drift and tank contamination problems on peanut in the future. The response of peanut to low rates of dicamba has not been well documented. In 2008, field trials were conducted at nine locations across the Peanut Belt to evaluate the effects of dicamba on peanut growth, yield, and quality. Experiments were conducted in a randomized complete block design with a 3 X 6 factorial arrangement of treatments. Treatments included dicamba timing [30, 60, and 90 days after planting (DAP)] and dicamba rate (0, 1, 2, 4, 8, and 16 oz/A of Clarity 4SC). All treatments were replicated four times per location. The plot areas were maintained weed-free. Generally, peanut yields decreased with increasing rates of dicamba and peanut tolerance to dicamba increased as application timing was delayed. However, in 12 of 28 comparisons, peanut yield losses were greater when dicamba was applied at 60 DAP. When averaged across all locations and timings, even the lowest rate of dicamba (1 oz/A) caused a 13% peanut yield reduction (low = 0%; high = 25%). These results indicate that when peanuts are exposed to low rates of dicamba, significant yield losses can occur. Peanut growers must avoid dicamba drift and sprayer contamination problems.

Benefits and Risks of Early-Season Applications of Chlorimuron for Broadleaf Weed Control in Peanut. W.C. JOHNSON, III*, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793-0748.
Chlorimuron is applied mid-season to control Florida beggarweed in peanut, with applications beginning 60 days after emergence (DAE) and continuing until 45 days prior to harvest. Applications are restricted to this time interval since peanut are more tolerant of chlorimuron applied mid-season than when applied early-season. However, Florida beggarweed are often too large for consistent control once peanut are

old enough for treatment. Trials were conducted from 2006 to 2008 to determine if the benefits of controlling smaller Florida beggarweed with chlorimuron applied earlier in the season compensate for the risks of significant peanut injury. Main plots were chlorimuron (9 g ai/ha) applied at 21, 35, 49, 63, 77, and 91 (DAE). Additionally, flumioxazin (0.094 kg ai/ha) PRE was included as a standard treatment for Florida beggarweed, along with a nontreated control. Main plots were split into subplots; weed-free and weeds present. The only herbicide treatment that effectively controlled Florida beggarweed was flumioxazin PRE. While chlorimuron is registered on peanut specifically for Florida beggarweed control, visual control ratings at all times of application ranged from poor to fair (38 to 67% control). In general, chlorimuron applied at 21 and 35 DAE was more efficacious than chlorimuron applied at later dates. In plots with weeds present, peanut treated with chlorimuron at any time of application yielded less than peanut treated with the standard of flumioxazin PRE. In plots that were maintained weed free, peanut treated with chlorimuron at any of the times of application yielded less than peanut treated with the standard of flumioxazin PRE. These data indicate that chlorimuron can be applied earlier than 60 DAE and provide better Florida beggarweed control with greater peanut yields than when applied at the recommended time intervals. However, Florida beggarweed control and peanut yields from any of the chlorimuron treatments were consistently less than the standard of flumioxazin PRE.

Peanut Response to Flumioxazin. L.V. GILBERT, Texas AgriLIFE Research, Lubbock; P.A. DOTRAY*, Texas Tech University, Texas AgriLIFE Research, and Texas AgriLIFE Extension Service, Lubbock; E.P. PROSTKO, The University of Georgia, Tifton, GA; W.J. GRICHAR, Texas AgriLIFE Research, Beeville; J.A. FERRELL, University of Florida, Gainesville; and D.L. JORDAN, North Carolina State University, Raleigh, NC 27795.

Weeds compete with the peanut plant throughout the growing season for moisture, nutrients, and sunlight. Because of the low growing nature of peanuts, weeds that develop early and are not controlled “escape” relatively late in the growing season. Covering peanuts and weeds with soil during cultivation is not practical and can lead to more problems. Fomesafen (Reflex) is a herbicide that has effectively controlled broadleaf weeds and yellow nutsedge (*Cyperus esculentus* L.) in cotton but has not been extensively evaluated in peanut. In Texas, Reflex was recently labeled for use in cotton west of I-35 and is currently restricted for use as either a fall or spring preplant application. Additional label changes for use preemergence in cotton may occur as early as 2009. The objective of this research was to examine peanut tolerance to Reflex 2SL applied at 0, 0.19, 0.25, 0.38, and 0.50 lb ai/A (0, 12, 16, 24, and 32 oz/A) preemergence (PRE), at ground-crack (AC), and early

postemergence (EPOST, 21 days after planting). This study was conducted under weed-free conditions at Lamesa, TX (Flavorrunner 458), Tifton, GA (Georgia Green), Citra, FL (Georgia Green), and Lewiston-Woodville, NC (Perry) to ensure that crop response was a result of the herbicide treatment and not weed competition. Studies were also conducted at Yoakum, TX (OL02) and Williston, FL (SunOleic 97R) under weedy conditions to evaluate herbicide efficacy. At Lamesa, Reflex applied PRE at 12 to 32 oz/A caused up to 59% peanut injury 47 days after application. More injury was observed as Reflex rate increased. Late-season (Sep 26) injury was still apparent following PRE applications. Reflex applied AC or EPOST caused up to 50 and 54% injury, respectively. More injury was observed as the Reflex rate increased and injury was still apparent late-season. Peanut yield was reduced following Reflex applied PRE at all rates, AC at 24 and 32 oz/A, and EPOST at 16, 24, and 32 oz/A relative to the non-treated control (5196 lb/A). At Tifton, peanut injury was as great as 20%, 22%, and 10% following Reflex at 32 oz/A applied PRE, AC, and EPOST. Peanut yield was reduced following Reflex applied PRE at 32 oz/A, AC at 12, 16, and 32 oz/A, and EPOST at 32 oz/A relative to the non-treated control (4737 lb/A). At Citra, peanut injury was as great as 4%, 20%, and 18% following Reflex at 32 oz/A applied PRE, AC, and EPOST. Peanut yield was reduced following Reflex applied EPOST at 32 oz/A and was the only treatment to reduce yield relative to the non-treated control (4737 lb/A). No appreciable injury was noted from Reflex applied PRE. Under weedy conditions at Yoakum, TX, Reflex applied PRE, AC, and EPOST controlled horse purslane (*Trianthema portulacastrum* L.) and Palmer amaranth [*Amaranthus palmeri* (S.) Wats.] at least 92% when evaluated 34 days after planting (DAP). Reflex provided less than 70% smellmelon (*Cucumis melo* L.) control when applied PRE or AC with the exception of Reflex applied PRE at 32 oz/A which controlled smellmelon 78%. Reflex applied EPOST controlled smellmelon at least 95%. When rated 77 DAP, Reflex at 16 oz/A or less controlled horse purslane no greater than 60%; however, when the Reflex rate was increased to 24 oz/A or greater, horse purslane control increased to a least 95%. Reflex applied AC controlled horse purslane at least 92% while EPOST applications provided erratic control (65 to 85%). Reflex provided poor control (<50%) of smellmelon when applied PRE or AC; however, EPOST applications of Reflex controlled smellmelon 83 to 92%. Reflex provided perfect control of Palmer amaranth regardless of herbicide rate or application timing. Yellow nutsedge control was erratic with Reflex. Reflex did result in peanut stunting. Reflex applied PRE caused peanut stunting of 7 to 14%, AC applications resulted in 1 to 3% stunting, and EPOST applications resulted in 8 to 27% stunting. At Williston, Palmer amaranth was controlled 25 to 100% following PRE applications, 93 to 99% following AC applications, and 50 to 93% following EPOST applications 14 days after treatment. At these same observation dates,

peanut was injured up to 5%, 19%, and 36% following Reflex applied PRE, AC, and EPOST, respectively. These results suggest that although Reflex has good activity on Palmer amaranth, horse purslane, and smellmelon, Flavorrunner 458, OL02, Georgia Green, and SunOleic 97R are susceptible to injury and yield loss following PRE, AC, and EPOST applications, particularly when applied at 32 oz/A. Additional studies will be conducted in 2009 to determine peanut response and weed management following Reflex treatments applied PRE, AC, and EPOST.

Weed Control in Peanut (*Arachis hypogaea*) with Brand Name and Generic Formulations of Imazapic and Paraquat. R.D. WALLACE, E.P. PROSTKO, and T.L. GREY*. Crop and Soil Science Department, University of Georgia, P.O. Box 748, 115 Coastal Way, Tifton, GA 31793.

Peanut producers continue to seek ways to reduce input costs by using generic herbicide products. Producers often inquire to researchers if these generic products perform similarly to the standards they have previously used, specifically imazapic and paraquat. Imazapic is currently sold under the trade names of Cadre® (70% dry and 2AS liquid formulations) and Impose® (2 AS liquid) while paraquat is sold as Gramoxone Inteon® (2 SL liquid) or Parazone® (3 SL liquid). Experiments were conducted in 2007 and 2008 to compare postemergence peanut tolerance and weed control for the standard trade formulation to generic formulations of imazapic and paraquat. Results indicated there were no differences in peanut response between Cadre and Impose when they were applied alone or in combination with either bentazon (Basagran), Parazone, or Gramoxone Inteon. There were no differences between the treatments for control of smallflower morningglory, Palmer amaranth, and Florida pusley. Observed differences for the 2.0 oz/ac rate of Cadre control of bristly starbur, which was 76% while Impose at 2.0 oz/ac control was 95%. All treatment combinations resulted in less than 80% Florida beggarweed control. Overall, the generic formulations of imazapic and paraquat were similar for peanut response and weed control.

Weed Control with Lactofen. W.J. GRICHAR*, and P.A. DOTRAY, Texas AgriLIFE Research, Beeville, TX 78102 and Lubbock, TX 79409, respectively.

Field studies were conducted during the 2006 through 2008 growing seasons in south Texas and the southern High Plains of Texas to determine weed control and peanut tolerance to lactofen applied POST. No difference in horse purslane control was noted when lactofen was applied with either Agridex or Induce to horse purslane 5 to 30 cm tall. Smellmelon control was reduced when lactofen plus Induce was applied to smellmelon 18 to 30 long compared with lactofen applications made to

smellmelon 5 cm in length. Inconsistent Palmer amaranth control was noted with lactofen plus Induce applications to Palmer amaranth 18 to 30 cm long at the south Texas location. At the High Plains location, control was 32% or less with lactofen applied to 30 cm tall Palmer amaranth regardless of surfactant used. Weed control with sequential applications of lactofen following an initial 2,4-DB application, increased control of devil's-claw, puncturevine, buffalo bur, and horse purslane but did not improve control of Palmer amaranth over 2,4-DB alone. However, 2,4-DB followed by sequential applications of lactofen generally did improve Palmer amaranth control over lactofen alone. Lactofen applied 7 d after 2,4-DB resulted in 28 peanut leaf burn 6 day after application. The use of lactofen increased yield over the untreated check up to 27%.

Physiology

Relationship of Leaf and Canopy Photosynthesis to Dry Matter Accumulation and Yield as Predicted by the CROPGRO-Peanut Model. K.J. BOOTE*, J.E. ERICKSON, M. SINGH, Agronomy Department, University of Florida, Gainesville, FL 32611-0500; and G. BOURGEOIS, Agriculture Canada, Saint-Jean-sur-Richelieu, Quebec, Canada J3B 3E6.

Leaf and canopy assimilation are important drivers of crop dry matter accumulation; however, the linkage and coupling of leaf-level photosynthesis to canopy assimilation and subsequent dry matter accumulation are rarely documented. Leaf and canopy assimilation were measured at mid-day under field conditions throughout the life cycle of peanut crops grown in four seasons (1981, 1986, 1987, 2008) at Gainesville, Florida. Leaf area index and dry matter accumulation in total crop and pod were measured in those experiments. The CROPGRO-Peanut model was simulated for those seasons and the predicted leaf and canopy assimilation, crop biomass, and pod mass were compared to the observed values. The crop model predictions of leaf photosynthesis were found to scale up to predict canopy assimilation with reasonable accuracy based on the leaf-to-canopy hedgerow photosynthesis model. Subsequent predictions of crop and pod dry matter accumulation by the CROPGRO-Peanut model were found to be reasonably accurate. We conclude there is good closure of the crop carbon balance in the CROPGRO-Peanut model to the point of dry matter accumulation, considering that photosynthetic inputs match observed, and considering the growth conversion efficiencies and maintenance respiration parameters used in the model. Documenting the carbon balance closure is important, especially prior to using the crop model to predict leaf disease or defoliation effects on leaf and canopy assimilation, and subsequently on pod yield.

Assessment of Similarities Between Nontransgenic and Transgenic Peanut with Resistance to Sclerotinia Blight. J.H. HU*, P.M. PHIPPS, D.E. PARTRIDGE, Tidewater Agricultural Research & Extension Center (AREC), Virginia Tech, Suffolk, VA 23437; and E. A. GRABAU, Dept. of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, VA 24061.

The objective of this study was to compare similarities in quality characteristics of peanut seeds between Sclerotinia-blight resistant transgenic peanut and their nontransgenic parents. Field trials were conducted each year at the Tidewater AREC in Suffolk, VA in 2006, 2007 and 2008. More than 40 agronomic traits and market quality characteristics were measured on three virginia-type cultivars (Perry, Wilson, NC 7) and two lines of each cultivar transformed with a barley oxalate oxidase gene. These measurements included: i) levels of calcium, potassium, magnesium, phosphorous and sulfur in seeds, ii) fatty acid levels for O/L ratio, iodine value, polyunsaturated/saturated ratio (P/S), total saturated, total long chain saturated, iii) percentages of jumbo pods, fancy pods, extra large seeds, damaged seeds, sound splits, and sound mature seeds, iv) pod brightness, v) blanching ability of extra large and medium seeds, and vi) hay constituents of neutral detergent fiber, acid detergent fiber, total digestible nutrient and crude protein. The multivariate data set was analyzed by canonical discriminant analysis (CDA) in combination with cluster analysis. Results showed that the first two canonical functions (linear combination of trait variables) were significant ($P < 0.0001$) and accounted for 90% of the among-cultivar variability. Fatty acid levels of O/L ratio, P/S ratio and grade characteristics of jumbo percentage were the most differentiating traits among the cultivars. NC 7 and its transgenic lines N70 and N99 clustered tightly into a similar subgroup. Wilson and its derivatives W14, W171, W73 and P53 clustered tightly into a homogenous subgroup. P53 was of particularly because we have suspected that it was actually a Wilson transformant based on other studies. Perry and its transgenic P39 and P99 clustered tightly into a subgroup. Additionally, there were significant differences among these 3 well-separated subgroups based on pairwise Mahalanobis distance D^2 ($P < 0.01$). However, there were no significant differences in D^2 between transformed lines and their corresponding parent, indicating the highly similarity between each transgenic line and their corresponding parent cultivar in the context of all traits tested in this study.

Response of Peanut to Differing Irrigation Amounts. J.P. BEASLEY, JR.*, R.S. TUBBS, J.E. PAULK, III, J.E. HOOK, Crop and Soil Sciences Dept., The University of Georgia, Tifton, GA 31793; and R.T. YAGER, Stripling Irrigation Research Park, The University of Georgia, Camilla, GA 31730.

Lack of water is the major limiting factor for yield and percent total sound

mature kernels of peanut, *Arachis hypogaea* L. The amount of water received and timing of rainfall or water application via irrigation is critical to maximizing yield and quality factors. Many of the recently released runner-type peanut cultivars have a significantly larger seed size and greater leaf area than 'Georgia Green', the standard runner-type peanut cultivar in the southeastern United States the past 12 years. Previous research indicated Georgia Green has a lower water requirement than other cultivars with larger seed size and greater leaf area. Research trials were established in crop years 2007 and 2008 to determine the response of three peanut cultivars to two irrigation regimes. The cultivars were Georgia Green, 'AP-3', and 'Georgia-02C'. Two irrigation regimes, based on the Stansell and Pallas water curve for peanut, were compared to a non-irrigated control. One of the irrigation regimes used a maximum water application amount of 1.5 inches per week and the other regime had a maximum water application amount of 2.0 inches of water per week. The maximum water application amounts occurred during weeks 10-17 of the growing season. The experimental design was a 3 X 3 factorial in a randomized complete block. Individual plots were twelve rows by 55 feet in length. There were four replications and yield and grade data were collected from the center two rows. All data were subjected to analysis of variance and mean separation using LSD at the five percent level. There was no interaction between irrigation regimes and cultivars in either year for yield but there was a significant interaction for percent total sound mature kernels in 2008. There was no significant difference in yield among irrigation regimes when averaged over cultivars in either year. Sufficient rainfall in both years resulted in no yield difference between the non-irrigated plots and the two irrigation regimes.

Modeling Peanut (*Arachis hypogaea*) Seed Germination. T.L. GREY*, J.P. BEASLEY, JR., Crop and Soil Science Department, University of Georgia, P.O. Box 748, 115 Coastal Way, Tifton, GA 31793; C.Y. CHEN, USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842; and T.M. WEBSTER, Crop Protection and Management Unit, USDA-ARS, Tifton, GA 31794.

Experiments initially conducted in 2006 and 2007 evaluated the seed germination response of nine peanut cultivars. Seed were evaluated using a continuous temperature gradient ranging from 14 to 38 C using a thermogradient table. Seed were randomly distributed on moistened germination paper, which was placed in a Petri dish. For each cultivar, 22 Petri dishes were placed at 1.0 C increments along the length of the table. Beginning at 24 hours after seeding, peanut germination was counted when the radicle extended for more than 5 mm, and removed from the dish. Germination was counted daily, through seven d after seeding. Maximum and minimum temperatures were used to develop growing degree day (GDD) accumulation for each temperature increment. These data were then analyzed using GLM in SAS. Years

were regarded as random factors. Cultivars were considered fixed effects and thus germination thermal lines and temperature regimes were also fixed effects. Appropriate interactions between cultivars and these factors were used as error terms. Where F-tests indicated significant differences among different factors of cultivars, germination thermal lines, and temperature regimes, the Fisher's LSD at 0.05 significance level was used to separate means. A polynomial sigmoidal curve with three parameters was then used to compare growth among cultivars:

$$Y = a/(1+1/e^{(x-b1/b2)}).$$

Where *a* represents the height of the horizontal asymptote at a very large *X*, *b1* is the expected value of *Y* at time *X*=0, and *b2* is a measure of growth rate. The 95% confidence limits of the three parameters in the equations were used to compare the significant differences among the models for each cultivar.

By comparing 95% confidence intervals of the three parameters in the sigmoidal curve model for all tested cultivars in 2 years, it was determined that parameter *a*, an indication of the maximum germination rate, in five cultivars (AT3081R, Georgia-O2C, Georgia-O3L, C99R, and Georgia-O1R) were significantly different from year to year. Overlap existed in parameters *b1* and *b2* in most of tested cultivars in year 2006 and 2007, indicating that the initial germination rate and growth speed are very similar. Two indices obtained from the equation were used to elucidate seed germination performance by variety. One is maximum germination rate as presented as parameter *a* in the equation. The other is the GDD value at 80% of germination rate (80%GDD), the indication of seed vigor. The smaller the 80% GDD value, the stronger the seed vigor. Based on the two indices for 2 years data, AT3085RO and AP3 had the strongest seed vigor with 80%GDD < 30 and the highest germination rate of > 90% among the nine tested cultivars. Carver and Georgia Green had medium performance with about 80%GDD of 40 and ~83% germination rate. The poorest cultivars were C99R and Georgia-O1L with less than 70% germination rate. AT3081R, Georgia-O2C, and Georgia-O3L had very inconsistent performance from year to year.

Posters

Peanut Response to Fomesafen. L.V. GILBERT, Texas *Agri*LIFE Research, Lubbock; P.A. DOTRAY*, Texas Tech University, Texas *Agri*LIFE Research, and Texas *Agri*LIFE Extension Service, Lubbock; E.P. PROSTKO, The University of Georgia, Tifton; W.J. GRICHAR, Texas *Agri*LIFE Research, Beeville; J.A. FERRELL, University of Florida, Gainesville; and D.L. JORDAN, North Carolina State University, Raleigh.

Weeds compete with the peanut plant throughout the growing season for

moisture, nutrients, and sunlight. Because of the low growing nature of peanuts, weeds that develop early and are not controlled “escape” relatively late in the growing season. Covering peanuts and weeds with soil during cultivation is not practical and can lead to more problems. Fomesafen (Reflex) is a herbicide that has effectively controlled broadleaf weeds and yellow nutsedge (*Cyperus esculentus* L.) in cotton but has not been extensively evaluated in peanut. In Texas, Reflex was recently labeled for use in cotton west of I-35 and is currently restricted for use as either a fall or spring preplant application. Additional label changes for use preemergence in cotton may occur as early as 2009. The objective of this research was to examine peanut tolerance to Reflex 2SL applied at 0, 0.19, 0.25, 0.38, and 0.50 lb ai/A (0, 12, 16, 24, and 32 oz/A) preemergence (PRE), at ground-crack (AC), and early postemergence (EPOST, 21 days after planting). This study was conducted under weed-free conditions at Lamesa, TX (Flavorrunner 458), Tifton, GA (Georgia Green), Citra, FL (Georgia Green), and Lewiston-Woodville, NC (Perry) to ensure that crop response was a result of the herbicide treatment and not weed competition. Studies were also conducted at Yoakum, TX (OL02) and Williston, FL (SunOleic 97R) under weedy conditions to evaluate herbicide efficacy. At Lamesa, Reflex applied PRE at 12 to 32 oz/A caused up to 59% peanut injury 47 days after application. More injury was observed as Reflex rate increased. Late-season (Sep 26) injury was still apparent following PRE applications. Reflex applied AC or EPOST caused up to 50 and 54% injury, respectively. More injury was observed as the Reflex rate increased and injury was still apparent late-season. Peanut yield was reduced following Reflex applied PRE at all rates, AC at 24 and 32 oz/A, and EPOST at 16, 24, and 32 oz/A relative to the non-treated control (5196 lb/A). At Tifton, peanut injury was as great as 20%, 22%, and 10% following Reflex at 32 oz/A applied PRE, AC, and EPOST. Peanut yield was reduced following Reflex applied PRE at 32 oz/A, AC at 12, 16, and 32 oz/A, and EPOST at 32 oz/A relative to the non-treated control (4737 lb/A). At Citra, peanut injury was as great as 4%, 20%, and 18% following Reflex at 32 oz/A applied PRE, AC, and EPOST. Peanut yield was reduced following Reflex applied EPOST at 32 oz/A and was the only treatment to reduce yield relative to the non-treated control (4737 lb/A). No appreciable injury was noted from Reflex applied PRE. Under weedy conditions at Yoakum, TX, Reflex applied PRE, AC, and EPOST controlled horse purslane (*Trianthema portulacastrum* L.) and Palmer amaranth [*Amaranthus palmeri* (S.) Wats.] at least 92% when evaluated 34 days after planting (DAP). Reflex provided less than 70% smellmelon (*Cucumis melo* L.) control when applied PRE or AC with the exception of Reflex applied PRE at 32 oz/A which controlled smellmelon 78%. Reflex applied EPOST controlled smellmelon at least 95%. When rated 77 DAP, Reflex at 16 oz/A or less controlled horse purslane no greater than 60%; however, when the Reflex rate was increased to 24 oz/A or

greater, horse purslane control increased to a least 95%. Reflex applied AC controlled horse purslane at least 92% while EPOST applications provided erratic control (65 to 85%). Reflex provided poor control (<50%) of smellmelon when applied PRE or AC; however, EPOST applications of Reflex controlled smellmelon 83 to 92%. Reflex provided perfect control of Palmer amaranth regardless of herbicide rate or application timing. Yellow nutsedge control was erratic with Reflex. Reflex did result in peanut stunting. Reflex applied PRE caused peanut stunting of 7 to 14%, AC applications resulted in 1 to 3% stunting, and EPOST applications resulted in 8 to 27% stunting. At Williston, Palmer amaranth was controlled 25 to 100% following PRE applications, 93 to 99% following AC applications, and 50 to 93% following EPOST applications 14 days after treatment. At these same observation dates, peanut was injured up to 5%, 19%, and 36% following Reflex applied PRE, AC, and EPOST, respectively. These results suggest that although Reflex has good activity on Palmer amaranth, horse purslane, and smellmelon, Flavorrunner 458, OL02, Georgia Green, and SunOleic 97R are susceptible to injury and yield loss following PRE, AC, and EPOST applications, particularly when applied at 32 oz/A. Additional studies will be conducted in 2009 to determine peanut response and weed management following Reflex treatments applied PRE, AC, and EPOST.

Association of Stomata Traits and Root Distribution to Water Use Efficiency of Peanut under Different Available Soil Water. P. SONGSRI, S. JOGLOY*, T. KESMALA, N. VORASOOT, C. AKKASAENG, A. PATANOTHAI, Department of Agronomy, Faculty of Agriculture, Khon Kaen University, Muang, Khon Kaen, 40002, Thailand; and C.C. HOLBROOK, Crop Genetics and Breeding Research Unit, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA -31793-0748.

Most of the global peanut production areas are in arid and semi-arid tropic regions under rain-fed conditions where erratic and insufficient rainfall is a major constraint. Drought of various intensities and duration severely limits peanut productivity and increases the likelihood of aflatoxin contamination. Developing peanut varieties resistant to drought and efficient in water use offers the best long term and cost effective solution to the uncertainty of availability of water. More rapid progress may be achieved by a prior knowledge of the physiological basis of trait performance such as the ability of root systems to capture water for transpiration, reduce water loss by stomata and increase water use efficiency (WUE) under drought conditions. The objectives of this work were to (i) evaluate genotypic variations in WUE, stomatal density, stomatal aperture, stomatal conductance and root distribution among peanut genotypes in response to different available soil water levels; and (ii) assess the relevance of stomatal density, stomatal aperture, stomatal

conductance and root distribution in upper and lower soil layers to WUE in peanut under receding soil moisture.Two field experiments were conducted during the dry season (2003 to 2004 and 2004 to 2005). Eleven peanut genotypes (ICGV 98300, ICGV 98303, ICGV 98305, ICGV 98308, ICGV 98324, ICGV 98330, ICGV 98348, ICGV 98353, Tainan 9, KK 60-3 and Tifton-8) were tested under three soil moisture levels [field capacity (FC), 2/3 available soil water (AW) and 1/3 AW]. A split plot design with four replications was used for both years. Three soil moisture levels FC (10.55%), 2/3AW (8.48%) and 1/3AW (6.40%) were assigned as main plots and 11 peanut genotypes were laid out in subplots. Subsurface drip-irrigation system was installed to supply water to the crop, and soil water level was maintained uniformly at field capacity from planting to 14 DAS. Afterward, soil moistures for the stress treatments were allowed to gradually decline until reaching the predetermined levels of 2/3 AW and 1/3 AW, respectively, then were held more or less constant until harvest. In maintaining the specified soil moisture levels, water was added to the respective plots by subsurface drip-irrigation based on crop water requirement and surface evaporation. Data were recorded for %RLD(0-40cm), %RLD(40-100cm), stomatal density, stomatal aperture, and stomatal conductance at 97 days after sowing, and WUE were recorded at harvest. Soil moisture measured by neutron probe showed the clear distinction among soil moisture treatments was noted at 30 cm of soil depth. Observations found visual wilting in 2/3 AW and more severe wilting in 1/3 AW in the afternoon. Relative water content of the plants under 1/3 AW treatment were low (77.20%) at 97 DAS. Drought reduced stomatal aperture, stomatal conductance and $\%RLD_{(0-40cm)}$ but increased WUE, and $\%RLD_{(40-100cm)}$ was comparable to that for well-watered treatment. The differences in genotypic responses under drought were observed. Multiple regression analysis showed the contributions to WUE of physiological traits under FC, 2/3 AW and 1/3 AW conditions. The contribution of stomatal conductance was highest (54.18%) followed by stomatal density (20.00%) under mild drought stress. Under 1/3AW $\%RLD_{(0-40cm)}$ showed the highest contribution (32.15%). ICGV 98300 had high WUE, stomatal conductance and $\%RLD_{(40-100cm)}$ under drought conditions. ICGV 98300 maintained both high stomatal conductance and increase root distribution into deep soil. These associations may help maintain high WUE under drought conditions.

Evaluation of the U.S. Peanut Mini Core Collection Using a Molecular Marker for Resistance to Sclerotinia minor Jagger. K.D. CHENAULT-CHAMBERLIN*, H.A. MELOUK, USDA-ARS, Wheat, Peanut and other Field Crops Research Unit, 1301 N. Western, Stillwater, OK 74075; and M.E. PAYTON, Department of Statistics, Oklahoma State University, Stillwater, OK 74078.

Cultivated peanut, the second most economically important legume crop

throughout the United States and the third most important oilseed in the world, is consistently threatened by various diseases and pests. *Sclerotinia minor* Jagger the causal agent of Sclerotinia blight, is a major threat to peanut production in the Southwestern U.S., Virginia, and North Carolina and can reduce yield by up to 50% in severely infested fields. Although host plant resistance would provide the most effective solution to managing Sclerotinia blight, limited sources of resistance to the disease are available for use in breeding programs. Peanut germplasm collections are available for exploration and identification of new sources of resistance, but traditionally the process is lengthy, requiring years of field testing before those potential sources can be identified. Molecular markers associated with phenotypic traits can speed up the screening of germplasm accessions, but until recently none were available for Sclerotinia blight resistance in peanut. The objective of this study was to characterize the US peanut mini-core collection with regards to a recently discovered molecular marker associated with Sclerotinia blight resistance. Ninety-six accessions from the collection were available and genotyped using the SSR marker and 39 total accessions from spanish, valencia, runner market types were identified as potential new sources of resistance and targeted for further evaluation in field tests for Sclerotinia blight resistance.

Development of a Rapid Isolation Assay of High Quality RNA and DNA from Several Peanut Tissues Suitable for Molecular Analysis. C.Y. CHEN*, P.M. DANG, USDA-ARS, National Peanut Research Laboratory (NPRL), Dawson, GA 39842; B.Z. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793. Isolation of high quality peanut RNA and DNA is a prerequisite for transcript analyses and genetic studies. The presence of phenolic compounds and polysaccharides in peanut tissue can decrease yield quantity and quality which may render the isolated nucleic acid products unsuitable for various molecular studies. A method was developed to isolate both high quality RNA and DNA from the same peanut leaf or root tissue. This method utilizes guanidium salt as a strong denaturant in the extraction buffer and phenol-chloroform extraction, followed by LiCl precipitation to separate DNA from RNA. Spectrophometric analysis showed 260/230 ratios above 2.0 indicating no contamination from phenolics and polysaccharides. RNA was shown to be suitable for RT-PCR based on Actin primer amplification and DNA was suitable for enzyme digestion and PCR amplification. This result shows that RNA and DNA isolated using this method can be appropriate for molecular studies in peanut.

Exploring Climate Impacts on Growth and Yield of Peanut in North Carolina Through Simulation. G.G. WILKERSON*, Z. YANG, G.S. BUOL, D.L. JORDAN, Crop Science Department, North Carolina

State University, Raleigh, NC 27695-7620; and H. DINON, R.L. BOYLES, State Climate Office of North Carolina, North Carolina State University, Raleigh, NC 27695.

In this study, we used the crop simulation model CMS-CROPGRO-Peanut to explore the impact of climate variability on peanut growth and yield. Since the model had not been used previously to simulate growth of the Virginia market type cultivars currently grown in North Carolina, with the exception of NC 7, we first needed to estimate model genetic coefficients for each cultivar. We used data from the Peanut Variety and Quality Evaluation Trials performed in Virginia and North Carolina from 1996 – 2006 to estimate coefficients for nine peanut cultivars: Brantley, Champs, Gregory, NC 12C, NC-V 11, Perry, Phillips, VA 98R, and Wilson. First, time to harvest maturity (R8) was estimated for each cultivar for each of the 46 site-years included in this study from cultivar heat unit requirements and temperature data recorded at the closest weather station. Model coefficients affecting timing of important phenological stages were adjusted so that simulated harvest maturity under optimal conditions (no water stress) matched the R8 date estimated using heat unit requirements. Model coefficients affecting maximum leaf photosynthetic rate, specific leaf area, plant partitioning, seeds per pod, and seed-filling duration were varied using a Monte Carlo technique and optimized using yield data from two digging dates.

Once genetic coefficients had been estimated for these nine cultivars, historical climate data for more than 50 years for the top five peanut-producing counties in North Carolina were used to simulate growth of these nine cultivars. Simulations were made for the top three agricultural soils in each county and for six planting dates. Weather years were categorized according to ENSO (El Niño Southern Oscillation) phase, and simulated yields were analyzed by county, cultivar, planting date, and ENSO phase. According to simulations, some of the later-maturing cultivars did not reach harvest maturity in some years prior to the occurrence of a hard freeze due to unusually cool temperatures and/or water stress during the growing season. Results of these simulations will be available on the *AgroClimate* (http://agroclimate.org/) web site in the Yield Risk Forecast decision aid. This decision aid can assist peanut producers in making strategic decisions, such as cultivar and planting date selection, based on soil type, seasonal climate forecasts, and the probability of encountering a freeze prior to crop maturity.

Evaluation of DPX LEM 17 200SC for Control of Foliar and Soil-borne Diseases of Peanut at Two Locations in Alabama. H.L. CAMPBELL*, A.K. HAGAN, K.L. BOWEN, Dept. of Entomology and Plant Pathology, Auburn University, AL 36849; L.W. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345; and M.D. PEGUES, Gulf Coast Research and Extension Center,

Fairhope, AL 36532.

In 2008, the experimental fungicides, DPX LEM 17 200SC and QFA61 LEM/Bravo were evaluated for their efficacy in controlling early and late leaf spots as well as rust and stem rot (SR) of peanut and impact on yield. Tests were conducted at the Wiregrass Research and Extension Center (WREC) in Headland, AL and the Gulf Coast Research and Extension Center (GCREC) in Fairhope, AL. Plots, which consisted of 30-ft rows, were arranged in a randomized complete block design with six replications spaced 36-in apart at the WREC and 38-in apart at the GCREC. Plots at WREC were irrigated as needed and the plots at GCREC were not irrigated. Recommendations of the Alabama Cooperative Extension System for tillage, fertility, weed, and nematode control were followed. Fungicides were applied on a 14-day schedule. Leaf spot was rated using the Florida 1-10 leaf spot scoring system and rust was rated using the ICRISAT 1-9 rust rating scale. Hit counts of SR were made immediately after plot inversion and yields are reported at $\pm$ 10% moisture. At WREC, early leaf spot was primarily observed while late leaf spot and rust were the dominant diseases at GCREC. Leaf spot severity progressed during the season and at the time of inversion; the untreated plots were almost completely defoliated. At WREC, the Headline/Folicur/Headline/Bravo, Tilt + Bravo/DPX LEM/Bravo and Tilt + Bravo/Abound/Bravo programs gave significantly better leaf spot control than all other treatments except for Bravo/Abound. All fungicide treatment regimes had significantly lower incidence of SR than did the Bravo WS standard. Yield response for all fungicide programs was significantly higher than the Bravo WS full-season standard. Late leaf spot and rust were the primary foliar diseases observed. At GCREC, the QFA61 LEM/Bravo, Bravo/Folicur, and Headline/Folicur/Headline/Bravo programs gave the poorest leaf spot control. The level of late leaf spot control with the season-long Bravo standard and remaining fungicide programs was similar. Rust appeared in late August and intensified through September. The DPX LEM 17 200SC (16.8) program gave better rust control than all fungicide programs except for the season-long Bravo WS standard. Poorest rust control was obtained with the QFA61 LEM/Bravo program. Stem rot (SR) severity was lower than had been observed in previous years. However, the DPX LEM 17 200SC program had significantly lower SR disease loci counts than the season-long Bravo WS standard. Yields were higher for the DPX LEM 17 200SC program compared with the other programs. The season-long Bravo standard and remaining fungicide programs had similar yields.

Efficacy of Anthranilic Diamides Against Peanut Insect Pests. D.A. HERBERT, JR.*, and S. MALONE, Department of Entomology, Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.

In 2008, insecticide efficacy of two products in the new anthranilic

diamide insecticide class was evaluated in field trials; cyazypyr for thrips and southern corn rootworm, and rynaxypyr (Coragen) for corn earworm. Two thrips trials were located in Suffolk, VA, where cyazypyr/water solutions were injected into the seed furrow at planting at a total volume of 5 gal/acre. Three rates of cyazypyr (0.044, 0.088, and 0.134 lb ai/acre) were compared to in-furrow applied Thimet 20G at 1.0 lb ai/acre and Temik 15G at 1.05 lb ai/acre. Thrips injury to plants was determined on four dates based on visual ratings using a 0-10 scale where 0 = no injury and 10 = dead plants. Thrips counts based on soapy water extraction of larvae and adults from 10 leaflets per plot were taken on those same dates. Incidence of tomato spotted wilt was rated visually by counting the number of symptomatic plants in the center two rows of each plot (70 row ft total per plot) twice during the season. In trial one, suppression of thrips and tomato spotted wilt was about equal among all treatments and were in most cases better than the untreated control. All treatments resulted in significantly higher yields than the untreated control ranging from 4971—5436 lb per acre compared with 4023 pounds per acre in the untreated control. Trial two had similar results.

In the rootworm trials, also in Suffolk, VA, cyazypyr was applied either with water into the seed furrow at planting, or as a single foliar broadcast at early pegging (July 7). These treatments were compared with Lorsban 15G applied at 1.95 lb ai/acre as a 14-inch band over the row at early pegging. Rootworm damage was rated by randomly picking 100 pods per plot just after digging, and inspecting each for external scaring or pod penetration. Results were not as clear cut as with the thrips work. However, there did tend to be less pod damage and a yield advantage when cyazypyr was applied in furrow. In one trial cyazypyr significantly reduced pod scaring and yields were higher than the untreated control and the Lorsban treatment.

The corn earworm efficacy trial was conducted in Sunbury, NC. A pre-treatment beat sheet count showed an average of 10 medium-sized larvae per six row feet. Coragen (rynaxypyr) at 0.066 and 0.088 lb ai/acre, Karate Z at 0.021 and 0.031 lb ai/acre, Baythroid XL at 0.014 and 0.019 lb ai/acre, Steward EC at 0.065 and 0.110 lb ai/acre, Belt 480SC at 0.094 lb ai/acre, Intrepid 2F at 0.094 lb ai/acre, and Tracer 4SC at 0.063 lb ai/acre were applied as a foliar broadcast on August 15. Post-treatment beat sheet counts (two 3 row ft samples per plot) were made at 3, 5 and 10 days after treatment. There were 29 cumulative-larval-days in the untreated control (cumulative larvae = Σ (Xi+1 – Xi)[(Yi + Yi+1)/2], where Xi and Xi+1 are adjacent sample dates and Yi and Yi+1 are corresponding points of total larvae per 3 row ft beat cloth sample). Coragen performed extremely well with only 6.3 larval-days at the low rate (0.066 lb ai/acre) and had the lowest number (4.6 larval-days) at the high rate (0.088 lb ai/acre) compared with all other treatments.

Variability of Total Oil Content in Peanut across the State of Texas. M.R. BARING*, M.D. BUROW, C.E. SIMPSON, and J.N. WILSON Soil and Crop Sciences Department, Texas AgriLIFE Research, College Station, TX 77843-2474.

Studies have indicated that the total oil content of peanut can be affected by the environment, specifically between regions of production that have vastly different environments. The state of Texas has three major regions with a history of peanut production; South Texas, Central Texas, and West Texas. The Texas AgriLIFE peanut breeding program conducts a replicated advanced yield trial at multiple locations within each of these regions annually. We initiated a study using entries from our advanced line test to determine if there was an inter-regional and or intra-regional effect on total oil content variability between and within the entries. The study was comprised of five cultivars used as checks in our yield tests and five of our breeding lines for a total of ten entries. Three replications of each entry were tested for two South Texas, two West Texas, and two Central Texas locations. All of the samples were tested with a Nuclear Magnetic Resonance (NMR) machine which was used as a non-destructive test to determine the total oil content of a sample. To insure that the NMR gave us accurate data, we also took the same samples and ground up 100g of peanut to physically extract the oil using an oxalate extraction technique. The study was initiated using peanut samples from the 2008 crop and will be duplicated with the 2009 crop. All data has not been analyzed, but it will be in time for a final abstract.

Screening for Rosette Resistance in Valencia Mini Core Collection. D.O. KALULE*, National Semi Arid Resources Research Institute; M. DEOM, Department of Plant Pathology, University of Georgia; B.U. BORIS, Economics Department, University of Connecticut; H.D. UPADHYAYA, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, PO 502324, AP, India; P. PAYTON, and K.R. KOTTAPALLI, USDA-ARS Cropping Systems Research Laboratory, Lubbock, TX 79415; and P. KOTTAPALLI, S. SANOGO and N. PUPPALA, New Mexico State University Agricultural Science Center, Clovis, NM 88101.

Valencia peanuts are very susceptible to groundnut rosette disease (GRD) in Uganda. For any breeding program to be successful we need to identify germplasm lines that are resistant to diseases and at the same time yield high. Recently a Valencia core was developed from the USDA collection using 26 morphological descriptors. In this study we grew the Valencia core collection developed by NMSU and ICRISAT at Soroti, Uganda, which has been designated as a location having consistently high incidence for GRD. One hundred and twelve genotypes from the Valencia core were grown for two seasons and screened for resistance to GRD. We identified a number of PI's that were resistant to GRD;

namely, 493566 (best performing line), 390432, 502023, 493688, 493810, 493666, 475913, 406718 and 493340. The available GRD resistance indentified in the Valencia germplasm screened can be utilized in a breeding program to develop commercial Valencia cultivars with GRD resistance.

Planting Pattern Studies in Valencia Peanuts. N. PUPPALA*, New Mexico State University, Agricultural Science Center at Clovis, NM 88003; R. NUTI, and R. SORENSEN, USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842.

The purpose of this study was to identify which of three different planting patterns provided the most agronomic benefit in Valencia peanut and determine an optimum plant population for the diamond pattern. Results of these experiments in 2006 suggested that increasing seeding rate in twin row and diamond planting patterns improved economic value of the crop compared to the traditional single row pattern at six seed per foot of row. Because increasing seeding rate was a positive factor in previous research, another treatment was added to the experiment in an attempt to reach the upper limit and determine the point of diminishing returns. Experiments were repeated for the third year in 2008 with single row, twin row, and diamond planting patterns using 'Valencia C' at two locations - Brownfield and Farwell, Texas. In 2008, a new set of experiments with the variety 'Georgia Valencia' was initiated. This experiment included single row, twin row, and the diamond planting pattern at the same target population. Yield potential has consistently been higher near Brownfield compared to Farwell for 'Valencia C', however the best yield with 'Georgia Valencia' was achieved near Farwell in the single row planting pattern. Yield for 'Valencia C' near Farwell ranged between 1,690 and 1,990 lb/A and the range of yield near Brownfield was between 1,880 and 2,540 lb/A. In Farwell, 'Georgia Valencia' planted in single rows produced 2,300 lb/A which was 35% greater than the yield produced by comparative twin row and diamond planting patterns. In Brownfield, 'Georgia Valencia' responded similarly to planting patterns with a range of yield between 1,480 and 1,740 lb/A. Plots were dug on the same day at each location based on the maturity of 'Valencia C'. It was noted that 'Georgia Valencia' was much less mature than 'Valencia C' and may have had better yield if left for another 10 to 14 days. Percent total sound mature kernels (TSMK) was consistent across planting patterns for 'Valencia C' at both locations. Single row planting patterns with 'Georgia Valencia' had 63% TSMK compared to 55-56% TSMK for twin and diamond planting patterns in Farwell. In Brownfield, percent TSMK was similar among planting patterns for 'Georgia Valencia' ranging between 64 and 65.

Yield and Quality of Valencia Peanut as Affected by Application of Biorational and Chemical Fungicides. SOUM SANOGO*, New Mexico State University, Department of Entomology, Plant Pathology and Weed Science, Las Cruces, NM 88003; and N. PUPPALA, New Mexico State University Agricultural Science Center, Clovis, NM 88101.

This study is conducted as part of an on-going project with the objective of determining the efficacy of using biofungicides, reduced rate of a chemical fungicide, and in-furrow application of botanical extracts for controlling soilborne diseases on peanut. In 2008, experiments were conducted in a field in Farwell, TX. On May 25, 2008, seeds of Valencia peanut (cultivar Val-C) were planted in plots consisted of a single row with 5 m in length. Plots were arranged in randomized complete block design with three replications. Treatments evaluated were: in-furrow application of Actinovate AG, garlic extract, chile extract, and Abound; seed treatment with Messenger, Micro 108, and Kodiak; and foliar application (at full and half rates) of Abound at 60 days after planting. Incidence of pods with black discoloration was determined in each plot and averaged for each treatment. Yield and Total Sound Mature Kernels (TSMK) were also determined for each plot and averaged for each treatment. Although there was no statistically significant difference among treatments, there was clearly a trend of increased peanut quality and decreased incidence of pods with black discoloration with the use of biorational fungicides alone or in combination with Abound fungicide.

Molecular Characterization and Assessment of Genetic Diversity in Valencia Mini Core Using SSR Markers. P. KOTTAPALLI*, New Mexico State University Agricultural Science Center, Clovis, NM 88101; H.D. UPADHYAYA and R. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, PO 502324, AP, India; K.R. KOTTAPALLI and P. PAYTON, USDA-ARS Cropping Systems Research Laboratory, Lubbock, TX 79415; and N. PUPPALA, New Mexico State University Agricultural Science Center, Clovis, NM 88101.

Valencia peanuts known for their premium taste are mainly grown in eastern New Mexico and west Texas of the US. A well characterized and structured germplasm is a prerequisite for any crop improvement program. Recently a Valencia core was developed from the USDA collection using 26 morphological descriptors. In this study we attempted an extensive characterization of genetic diversity and relationships in the core subset using microsatellite or simple sequence repeat (SSR) markers. One hundred and twelve genotypes from the Valencia core were genotyped with 36 SSR markers generating 500 polymorphic loci. A moderate level of genetic variation was observed among the core subset with genetic distances ranging from 0.1 to 0.54. The available variation in the Valencia germplasm can be utilized for selection of

diverse parents for breeding and development of mapping populations.

Combining Ability for Oleic Acid in Peanut. N. SINGKHAM*, S. JOGLOY, P. JAISIL, Department of Plant Science and Agriculture Resources, Faculty of Agriculture, Khon Kaen University, Khon Kaen, 40002, Thailand; P. SWATSITANG, Department of Biochemistry, Faculty of Science, Khon Kaen University, Khon Kaen, 40002, Thailand; and N. PUPPALA, Agricultural Science Center at Clovis, New Mexico State University, Clovis, NM 88101.
Oleic and linoleic acids account for 80% of total fatty acids in peanut kernel. High oleic acid increases quality and shelf-life of peanut, and breeding for high oleic acid is an important objective of peanut breeding programs. The objective of this study was to examine general combining ability (GCA) and specific combining ability (SCA) for high oleic acid in peanut. The full diallel crosses of four parents in the F_2 generation were evaluated under field conditions at the agronomy farm of Khon Kaen University in the rainy season 2008. A randomized complete block design with two replications was used. Seed sample for each plot was analyzed for oleic and linoleic compositions by gas liquid chromatography (GC), and O/L ratio was determined. The results indicated highly significant general combining ability (GCA) effect for oleic, linoleic acid and O/L ratio. Specific combining ability (SCA) and reciprocal effects were also significant, but their relative contributions to variation among crosses were much smaller than those of GCA effects. The results suggested that additive gene action was more important in the inheritance of oleic acid, and selection for high oleic acid and O/L ratio in these populations should be effective. Sunoleic 97R was found to be suitable for use in high oleic acid and O/L ratio breeding program.

The Effect of Forage Harvest During Pod-filling on Pod and Forage Yield and Forage Nutritive Value of Valencia Peanut (*Arachis hypogaea* L.) in the Southern High Plains of the USA. L.M. LAURIAULT, Tucumcari Agric. Sci. Ctr., New Mexico State Univ., 6502 Quay Road AM.5, Tucumcari, NM 88401; and N. PUPPALA*, Clovis Agric. Sci. Ctr., New Mexico State Univ., 2346 St. Hwy 288, Clovis, NM 88101.
Peanut forage can be valuable to the rapidly growing dairy industry in the Southern High Plains. Sun-cured and threshed peanut hay, however, is often low in nutritive value. Replicated research conducted by New Mexico State University's Agricultural Science Center at Clovis at one site in 2004 and another in 2006 evaluated the effect of forage harvest timing [17, 19, 20, and 21 weeks after planting (wap), the last of which coincided with pod harvest maturity and was sun-cured in the field prior to threshing] on pod yield and forage yield and nutritive value. Producers can harvest higher quality hay by cutting and baling during the pod maturation phase (about 19 wap) without significantly ($P < 0.05$) reducing

pod yields (2799, 3311, 3720, and 4078 kg pods/ha when forage was harvested 17, 19, 20, and 21 wap, respectively, 5% LSD = 897); however, forage organic matter yields declined ($P < 0.10$) in the 20th week, indicating the optimum harvest time to be 19 wap (4359, 4649, 3494, and 3858 kg OM/ha for forage harvested 17, 19, 20, and 21 wap, respectively, 5% LSD = 962). Crude protein concentration remained above 10% when forage was harvested before pod digging. Differences also existed ($P < 0.05$) for fiber and fiber-based digestibility and energy components as well as calcium, potassium, magnesium, and ash; but, not phosphorus. Consequently, the high value of the peanut crop for food can be increased by the added value of the forage crop.

Plant Response to TSWV and Seed Accumulation of Resveratrol in Peanut. M. WANG, D. PINNOW, N.A. BARKLEY, and R. PITTMAN*, USDA, ARS, SAA, Plant Genetic Resources Conservation Unit, 1109 Experiment St., Griffin, GA 30223.

Biotic and abiotic stress may induce peanut plants to produce a high amount of resveratrol. The relationship of plant response to tomato spotted wilt virus (TSWV) and seed accumulation of resveratrol was investigated. Twenty peanut accessions and six wild relatives were selected from the US peanut germplasm collection and planted in the field with two replicates. Individual plant response to TSWV was observed and recorded in the field. Leaf tissues from the corresponding individual plants were collected and tested by an enzyme-linked immunosorbent assay (ELISA) for TSWV. Response to TSWV had been confirmed with individual plants by ELISA. One peanut accession and all six wild relatives were identified as highly resistant to TSWV. These accessions would be good materials to use in breeding programs for developing peanut cultivars. Seeds harvested from individual plants were used for quantification of resveratrol by high performance liquid chromatography (HPLC) analysis. Extensive resveratrol variation in seeds was detected among TSWV-negative and -positive plants. Among accessions, genotypes definitely play a major role on the capability for synthesis and accumulation of resveratrol. However, within an accession, the synthesis and accumulation of resveratrol may not be only affected by plant response to TSWV but also by other biotic and abotic stress.

SSR Allelic Diversity Shifts in Runner-Type Peanut Breeding. S.R. MILLA-LEWIS*, M.C. ZULETA, and T.G. ISLEIB, Dept. of Crop Science, North Carolina State Univ., Raleigh, NC 27695-7629.

The analysis of temporal changes in allelic diversity is important in understanding the effect of plant breeding on crop genetic diversity. Reductions in that diversity would lead to increased vulnerability of crops to changes in the spectrum of biotic stresses, and to reduced plasticity to adapt to environmental changes. Moreover, the continued ability to improve crops relies on the presence of genetic variability. Recent

estimates place the average coancestry of two randomly chosen peanut (*Arachis hypogaea* L.) plants at 0.72 in the Southeast production area. DNA markers are more useful predictors of genetic diversity because they indicate the actuality of identity in state rather than the probability of identity by descent. The objective of this study was to assess allelic diversity changes among 59 runner-type peanut cultivars released from 1943 to 2009 using simple sequence repeat (SSR) markers. Thirty seven SSR primers amplified a total of 166 alleles. The mean number of alleles per locus was four, ranging from two to ten. The informational worth of each marker was evaluated by calculating the polymorphic information content (PIC) for each locus. PIC values ranged from 0.04 to 0.75, with an average of 0.3. Changes in the average genetic diversity were analyzed with respect to breeding periods and breeding programs. Results will be discussed in terms of their relevance to the impact of plant breeding in the diversity of peanuts.

An Overview of the Peanut (*Arachis hypogaea* L.) Crop and Agroindustry in Argentine. S. SANCHEZ-DOMINGUEZ*, Departamento de Fitotecnia, Universidad Autonoma Chapingo, Chapingo Mex, 56230; O. GIAYETTO and G. CERIONNI, FAV-Universidad Nacional de Rio Cuarto, Ruta Nacional No. 36, Km 601,Pcia. de Cordoba, Ar.

From February 22 to March 13, 2009 I had the opportunity of staying at the Universidad Nacional de Rio Cuarto, in Pcia of Cordoba, Argentine which is the main area of peanut cropping and agroindustry in middle Argentine. This area includes the southern region of Pcia of Cordoba in the counties of Rio Cuarto, Hernando and General Deheza. This is a very flat region with Apludsoles soils of at least 2-2.5 m in depth. Averages between 180,000 and 200,000 ha have been cultivated during the past 10 years. This region (Pcia of Cordoba) accounts for 95% of the national peanut area. Other small areas are located in Salta, Tucuman, and Santiago del Estero. Pcia of Cordoba is located at 33^{o} L.S. and 43^{0} masl. Only four or six different peanut varieties are cropped, all of which are small runner market types similar to Florunner. The newest varieties include: Nahuel (1995), Manigram (2001) Granoleico (2003), EC-48(AO) and EC-12(2005); the last three varieties have high oleic content. Peanut production is done mainly by very large companies that finance small peanut growers. A good example is Prodeman, who is supporting farmers in an area of approximately 30,000 ha and is the largest peanut processer in South America. In this region are very high levels of technology that are used in both the field and factories. Prodeman is producing roasted, salted and blanched peanuts, mainly for export to Europe. Very high levels of quality control of their main products are in use, including modern methods for testing levels of aflaoxins.

Evaluating the Use of New and Standard Insecticides for Southern Corn Rootworm Control in Peanuts. B.M. ROYALS*, and R.L. BRANDENBURG, Department of Entomology, North Carolina State University, Box 7613, Raleigh, NC 27695-7613; and D.A. HERBERT, JR, Tidewater AG RES & EXT Center, 6321 Holland Road, Suffolk VA 23437.

North Carolina peanut growers have seen a decrease in the efficacy of chlorpyrifos (Lorsban 15G) against southern corn rootworm (SCR) control in localized areas over the past few years. The reduction in control of SCR has provided an incentive to reevaluate the use of chlorpyrifos and seek alternative products for controlling SCR in peanuts. Since SCR beetles lay their eggs at the base of the peanut plant in mid-summer and the larvae feed below the soil surface directly on the pods, makes controlling SCR challenging. In 2007 and 2008, trials were conducted to evaluate the efficacy of Lorsban 15G and a possible new insecticide, cyantraniliprole (Cyazypyr) for SCR control. Trials were conducted in both NC (Perquimans County, NC) and VA (Suffolk County, VA) based on peanut fields with a history of SCR damage. In NC, Lorsban 15G was applied broadcast at a rate of 13.0 lb/A and 26.0 lb/A at flowering, early pegging, and late pegging. In VA, Lorsban 15G was applied at 13.0 lb/A broadcast at pegging and Cyazypyr was applied in-furrow and broadcast at early pegging. Results from Perquimans Co., NC in 2007 showed plots treated with Lorban 15G at flowering combined with a pegging treatment had significantly less damage compared to the other Lorsban 15G treated plots, but the combined Lorsban 15G treatments wasn't significantly different from the untreated check. Results from Perquimans Co., NC in 2008 showed no significant difference among treatments from the untreated check. Results from Suffolk Co., VA in 2008 showed Lorsban 15G had a significant reduction in SCR damage when compared to the Cyazypyr treated plots applied in-furrow and pegging. In 2009, NC and VA will again conduct similar studies to further evaluate the efficacy of Lorsban 15G and Cyazypyr and trials in NC will include the use of bifenthrin.

Peanut yield in the Brazilian system of conservation tillage and crop rotation with sugarcane. D. BOLONHEZI*, Experimental Station of Agronomic Institute - APTA, Ribeirão Preto; M.C. MONTEZUMA, Monsanto, Brazil; E.L. FINOTO, M. MICHELOTTO, and A.L.M. MARTINS, Experimental Station, of Agronomic Institute – APTA, Pindorama, Brazil; I.J. GODOY, Center of Grains and Fiber, Agronomic Institute-APTA, Campinas, Brazil; L.M.A. IVAN, R. PALHARES and G.V. GOMES, Usina Açucareira Guaíra (Sugar Mill), Guaíra, Brazil; L.-A. PAIVA and L.R.P. FERREIRA, Usina Cerradinho (Sugar Mill), Catanduva, Brazil.

Peanut crop in Brazil is concentrated in the São Paulo State (southeastern) and a major part of this production comes from sugarcane

(Saccharum spp.) renovation area. Recently, the unburned-sugarcane harvesting areas increased, and peanut growers are encouraged to use conservation tillage in order to control the soil erosion and increase the net income. Preliminary researches showed favorable results, however there are many doubts on the feasibility of conservation tillage for peanut due to great amount of sugarcane straw (average of 15 Mg ha-1 of dry matter). The objective of this study was to evaluate the interaction between peanut cultivar and tillage on the yield and pod loss. Two experiments were carried out from October 2007 to April 2008, in different types of soil, Oxisol and Ultisol, respectively in Ribeirao Preto and Catanduva cities, SP, Brazil. Both trails were installed in commercial field of the Sugar Mills known as Usina Açucareira Guaíra and Usina Cerradinho. The were conducted on a randomized complete block design in a split-plot arrangement with four replications. Main plots consisted of three tillage; conventional (plow and disks), reduced (subsoiler after spray 4 kg a.i. ha-1 of glyphosate) and no-tillage (crop residues on its surface after spray the area with of glyphosate to kill the sugarcane ratoon). Subplots were two Runner market-type cultivars, IAC-886 and IAC-213 (red seed coat). There were no significant differences between tillage on pod yield (the highest were 3613 and 2878 kg ha-1, respectively for reduced tillage at Catanduva and no-tillage at Guaíra). However, an opposite response was noticed on the kernel yield at Guaíra, in which the no-tillage was 217 kg ha1 higher than the reduced tillage. On the other hand, the stand of plants was significantly lower in the reduced and no-tillage. Significant interaction was detected for pod loss. The highest pod loss was observed in the reduced tillage followed by conventional, mainly for IAC-886 cultivar. These results showed that peanut can be successfully grown under conservation tillage in sugarcane rotation system, since the planters reach the required plant depth in face of the amount of sugarcane straw.

Effect of Phenolic Compounds on Immunoassays of Peanut Allergens.

S.-Y. CHUNG*, Southern Regional Research Center, USDA-ARS, New Orleans, LA 70124.

Phenolic compounds (PCs) are antioxidants. Because of their health benefit, PCs may be added to some food products. Occasionally, these products may be subjected to screening for food allergens (i.e., from peanuts). In this case, the screening (an immunoassay technique) may or may not be affected by the PCs present, depending on their levels. Because PCs can bind and precipitate proteins, it was hypothesized that PCs at a certain level have a negative impact on the screening process. To verify this, a model involving ferulic acid (a phenolic) and peanut allergens was used and tested in an inhibition ELISA (an immunoassay). Ferulic acids at various concentrations were each mixed with a peanut extract, diluted, and then mixed with a pooled serum (containing IgE antibodies) from peanut-allergic patients. The mixture was then

incubated in a microtiter plate coated with peanut allergens. Inhibition of IgE binding was detected colorimetrically, using a goat anti-human IgE peroxidase and a soluble substrate. A control was performed without ferulic acid. Results showed that the degree of inhibition of IgE binding was similar to the control when the concentration of ferulic acid was low. Ferulic acid at 10 mM led to a reduced inhibition of IgE antibodies. High background or false positive results were observed when the concentration of ferulic acid was >10 mM. The conclusion was that ferulic acid at 10 mM or higher affected the accuracy of the inhibition ELISA. This implies that phenolic compounds, if improperly added, could affect negatively the results of screening for food allergens in food products.

Peanut Variability for Cold Tolerance and Water-use Efficiency. M. BALOTA *, Tidewater Agricultural Research & Extension Center, Virginia Tech, Suffolk, VA 23437; W.A. PAYNE, Texas A&M University, College Station, TX 77843-2477; T. ISLEIB, North Carolina State University, Raleigh, NC 27695-7629; and R.N. PITTMAN, USDA/ARS, Griffin, GA 30223.

We have examined 44 peanut varieties for the degree of genetic variability for cold tolerance, temperature base (T_b) for germination and elongation, and carbon discrimination within U.S. and foreign germplasm sources that included varieties from Texas, China, Bulgaria, Bolivia, Zimbabwe, Ecuador, and Peru. The results show substantial variability within Texas materials for both cold tolerance and water-use efficiency. Our data suggest that the most cold-tolerant Texas variety was Tamspan 90, but it had much less cold tolerance than material from the highlands of South America, Africa, and China. Some of the Hirsuta peanuts from Mexico also had good cold tolerance.

JOE SUGG GRADUATE STUDENT COMPETITION

Evaluating Florida-07 for Leaf Spot Tolerance. S. BURNS*, M. GALLO, Agronomy Department, The University of Florida, Gainesville, FL 32611-0300; and B. TILLMAN, Agronomy Department, North Florida Research and Education Center, The University of Florida, Marianna, FL 32446-8091.

Florida-07, a peanut cultivar recently released by the University of Florida, displays classic symptoms of leaf spot susceptibility, having numerous lesions and heavy defoliation. However, it still produces good yields. Therefore, our hypothesis is that Florida-07 possesses tolerance to leaf spot. To test this hypothesis, Florida-07 was compared to a known leaf spot susceptible cultivar, AP-3. Experiments were conducted in Gainesville, FL and Marianna, FL during the 2008 season. During the 2008 season, late leaf spot (*Cercosporidium personatum* (Berk and M. A. Curtis) Deighton) appeared to be the predominant pathogen. The

experimental design was a randomized complete block with a split-plot treatment arrangement and three replications. The cultivars were assigned to the sub-plots and fungicide treatment (full-season vs. no spray) was assigned to the main plots. Data collected included a visual leaf spot rating (Florida 1-10 scale), lesion area percentage, lesion-count ratio, and final yield. For both cultivars, sprayed plots yielded higher than non-sprayed plots (1119.12 lbs/acre greater, $p > t = 0.0163$). In the non-sprayed treatment, Florida-07 performed similarly to AP-3 in regard to lesion area percentage (23.1% and 17.8%, respectively), lesion-count ratio (159.71 and 149.96, respectively), and leaf spot rating (6.8 and 7.5, respectively). In the sprayed treatment, Florida-07 and AP-3 had similar yields (4125.25 lbs/acre and 4041.40 lbs/acre, respectively), and had similar levels of leaf spot disease. However, in the non-sprayed treatment, Florida-07 produced higher yields than AP-3 (561.44 lbs/acre greater, $p > t = 0.0342$). The fact that Florida-07 and AP-3 had similar disease ratings, but Florida-07 yielded higher suggests that Florida-07 does have tolerance to leaf spot diseases.

Etiology and Control of Peanut Pod Rot in Nicaragua. J. AUGUSTO*, T.B. BRENNEMAN, A.S. CSINOS, A.K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793-0748; and J. BALDWIN, Agronomy Department, The University of Florida, Gainesville, FL 32611-0300.

Peanut pods with pod rot symptoms were collected from freshly dug fields in 2006 and 2007 in Nicaragua for isolation of potential pathogens. Intact seed and sections from the edge of the rotted pegs and shells were plated on V-8 or PDA medium and incubated at room temperature for at least two days. The most commonly isolated species in pegs, shells, and seed was *Pythium myriotylum* with isolation frequencies of 23, 27, and 29%, respectively. Other isolated fungal species were *Rhizoctonia solani*, *Fusarium solani*, *Sclerotium rolfsii*, *Rhizopus* spp., *Trichoderma* spp., and *Aspergillus* spp. Samples with moist pods and wet seed decay had more *P. myriotylum* while those with a relatively dry decay had mostly *F. solani* and *R. solani*. Field experiments in split-split-plot or split-plot designs were conducted from 2005 to 2007 to evaluate applications of mefanoxam (1.2 kg a.i. ha^{-1} Ridomil Gold EC at 60 and 90 DAP), calcium (670 kg ha^{-1} gypsum at 60 and 90 DAP), and aldicarb (3.4 kg a.i. ha^{-1} Temik at planting). Cultivars with large pods are known to be more susceptible to pod rot from calcium deficiency, hence Georgia Green (small seeds) and C-99R (large seeds) were compared, but there were no differences in pod rot between the two cultivars. Application of mefanoxam decreased pod rot and increased pod yield by 57% and 13%, respectively, whereas calcium had no effect on pod rot and did not increase calcium levels in seed or shells. Aldicarb had no effect on pod rot, but significantly increased yield by 17% compared to the control, apparently due to

suppression of the high populations of lesion nematode in these fields. Our hypothesis that damage from lesion nematode could also increase pod rot did not appear to be true. Overall results showed that *P. myriotylum* was the most important pod rot fungus in Nicaragua.

A New Rapid Assay for Detecting Tebuconazole Resistance in *Cercospora arachidicola*. J. QIU*, K.L. STEVENSON and A.K. CULBREATH, Plant Pathology Department, The University of Georgia, Tifton, GA 31793.

The DMI fungicide, tebuconazole, is widely used in Georgia to control early leaf spot of peanut, caused by *Cercospora arachidicola*. In the last 5 years, reports from Georgia and neighboring states indicated that tebuconazole seemed to be less effective than it used to be, although it still controls early leaf spot. The general objective of this study was to develop a rapid assay to detect tebuconazole resistance in field populations of *C. arachidicola*. Nineteen isolates of *C. arachidicola* were collected and tested for sensitivity to tebuconazole in 2008 and 2009. A new rapid growth assay was developed to estimate EC_{50} values for these isolates based on colony diameters of *C. arachidicola.* Condia of *C. arachidicola* were transferred from individual early leaf spot lesions to tebuconazole-amended PDA. After 3 days incubation at room temperature, colony diameters were measured and EC_{50} values were estimated. For all isolates, EC_{50} values ranged from 0.39 mg/L to 6.17 mg/L. Eight isolates were considered to be resistant to tebuconazole based on an EC_{50} value greater than 1.27 mg/L. For comparison, the same isolates were tested for sensitivity to tebuconazole using the conventional microtiter plate assay. This new improved assay can be used to detect DMI resistance in *C. arachidicola* in a matter of days, rather than the several months required for the microtiter plate assay. The new assay will enable rapid identification of resistant isolates for future investigation of molecular mechanisms of DMI resistance in *C. arachidicola*, and for detection of resistant populations in the field before significant losses are incurred.

Leaf Photosynthesis and Senescence Vary in Response to Late Leaf Spot Infection in Peanut Cultivars of Differing Resistance**.** M.P. SINGH*, J.E. ERICKSON, and K.J. BOOTE, Agronomy Department, University of Florida, Gainesville, FL 32611-0500.

Late leaf spot (*Cercosporidium personatum*) can cause significant reductions in pod yield for peanut producers in the southeastern U.S. Cultivar improvement and reduced fungicide use through improved understanding of host-pathogen interactions offer a promising way to improve yield and reduce cost of peanut production. Therefore, a replicated multi-factorial field experiment was conducted in 2008 where cultivars, susceptible (Carver) and resistant (York) to leaf spot, were grown under fungicide-treated and non-treated conditions. Disease

progress, disease severity, leaf senescence and leaf photosynthesis were measured on leaf cohorts tagged at 49 and 92 days after planting (DAP). Light-saturated leaf photosynthesis data were analyzed using the model of Bastiaan, Y= (1- X)β, where Y is the relative photosynthesis, X is the visual disease severity (necrotic area), and β represents the ratio between virtual and visual lesion area. Although visual lesions were observed at the same time (97 DAP) in both cultivars, disease was more severe and the rate of disease progress was faster in Carver compared to York. Leaf senescence from the second tagging date also occurred significantly faster in Carver with average lifespan of 33 days compared to 45 days in York. A significantly greater β value of 4.6 was found in York compared to 2.6 in Carver, indicating that the reduction of photosynthesis due to the pathogen in the remaining green leaf area was higher in York. Thus, in our study, the resistant cultivar showed slower leaf senescence but increased photosynthetic sensitivity to disease in contrast to the susceptible cultivar, resulting in similar declines in yield from fungicide treated compared to fungicide non-treated conditions. These results illustrate the importance of a functional approach in evaluating cultivars for disease resistance and better disease management.

Effect of *Verticillium dahliae* Infested Peanut Residue on Verticillium Wilt Development in Cotton. S. CHAWLA* and J.E. WOODWARD, Dept. of Plant and Soil Science, Texas Tech University, Lubbock TX 79409.

Verticillium wilt, caused by the soilborne fungus *Verticillium dahliae* Kleb., is an increasingly important disease of peanut (*Arachis hypogaea* L.) and cotton (*Gossypium hirsutum* L.) in portions of West Texas. The fungus can survive for long periods of time as microsclerotia, and disease incidence is believed to be related to inoculum density; however, this relationship is poorly understood. A microplot study was initiated in 2008 to investigate the impact of peanut residue infested with *V. dahliae* on Verticillium wilt development in cotton. Peanut residue was collected from a field with history of Verticillium wilt and used to artificially infest microplots at rates of 370, 925, 1850, 2775, 3700, 18495, and 37000 kg/ha. Non-infested microplots served as controls. Treatments were arranged in a randomized complete block design with nine replications. Peanut residues were incorporated by hand tilling, and plots were planted with the susceptible cotton cultivar Stoneville 4554B2RF. Stand establishment and disease development were monitored throughout the growing season. Increasing residue rates had a negative effect on stand establishment (-5.70, R^2=0.78, $P \leq 0.001$); whereas, a positive correlation (27.68, R^2=0.95, $P \leq 0.001$) was found between Verticillium wilt incidence and increasing peanut residue rates. Soil populations of *V. dahliae* were quantified after harvest to examine the relationship between increasing residue rates on inoculum production. Inoculum density of *V. dahliae*

(cfu/cc soil) was positively influenced by the addition of peanut residue (4.21, R^2=0.96, P≤0.001), and highly correlated with disease incidence (R^2=0.69, P≤0.001). Results from this study may be integrated into management systems to minimize losses associated with *V. dahliae*.

Economic Return of Peanut Grown in Various Row Patterns with Different Herbicide Inputs. G. PLACE*, D.L. JORDAN, and C. REBERG-HORTON, Department of Crop Science, North Carolina State University, Raleigh, NC 27695.

Developing weed management strategies for peanut (*Arachis hypogaea*) include consideration of cultural practices such as variety selection and row planting pattern. Research was conducted during 2007 and 2008 to compare weed control, peanut yield, and economic return when the Virginia market-type cultivars NC 12C and VA 98R were seeded in single, twin, and narrow twin row planting patterns with postemergence herbicide programs consisting of clethodim only, cultivation and hand-removal of weeds (considered a low input production option), and paraquat plus bentazon followed by lactofen plus 2,4-DB (considered the best conventional production option). Single rows were spaced 91 cm apart. The twin row pattern included two, twin rows spaced18 cm apart on 91-cm centers. The narrow twin row pattern included three sets of twin rows on 46-cm centers. Low input and conventional weed management systems were similar in weed control in most cases. Twin and narrow twin row patterns resulted in similar weed control in all cases. Peanut variety and row pattern resulted in similar time needed for hand removal of weeds in the low input weed management system. Pod yield and economic return were not affected in two experiments when only broadleaf weeds were present. However, when Texas panicum (*Panicum texanum*) was present, the interaction of row pattern and weed management on pod yield was significant. With strong Texas panicum pressures the economic return main effects included: greater economic return with conventional weed management, greater economic return using twin rows, and greater economic return with the peanut variety VA 98R. Also with high densities of Texas panicum, a row pattern by weed management interaction effect showed the best economic return with conventional weed management using a twin row planting pattern.

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

Eight commercial varieties representing all four market types of peanut have been tested under three irrigation levels and three seeding rates in 2006, 2007 and 2008 at two locations with differing soil types in West Texas. Irrigation levels consisted of 75, 50 and 25% of reference

evapotranspiration (ET) replacement. Seeding rates were 100, 50 and 25% of the normal seeding rates based on market type. The 2006 crop year was characterized by hot and dry conditions, thus resulting in large differences in yield between irrigation levels, especially at the Brownfield, TX location which had a sandier soil compared to the Lubbock, TX location. Due to above average rainfall during the 2007 crop year, the differences in yield between irrigation levels was less when compared to 2006. The 2008 crop year was a mixture of the conditions we saw in 2006 and 2007. Differences in yield between irrigation levels were more what we expected to see in 2008. Greater differences between seeding rates were seen for the erect types compared to the spreading types largely due to plant architecture differences.
Differences in grade for spreading types have mainly been seen between the 75 and 25% ET replacement levels. No differences in yield, or grade were seen between seeding rates for the spreading types, except between the 100 and 25% rates in 2006 at Brownfield, TX. Hundred seed weights were less for the 25% ET level compared to the 75% ET level. Varietal differences have shown to be greater at the Brownfield, TX location compared to the Lubbock, TX location. Oil content was higher for the 75% ET irrigation level compared to the other levels, and higher for the 25% seeding rate compared to the 100 and 50% levels.

Management of Acetolactate Synthase Resistant Common Ragweed in Peanut and Other Row Crops. A. CHANDI*, B.R. LASSITER, D.L. JORDAN, A.C. YORK, and J.D. BURTON, Departments of Crop Science and Horticulture, North Carolina State University, Raleigh, NC 27695.

Several weeds have developed resistance to herbicides that inhibit the enzyme acetolactate synthase (ALS) in sensitive plants in North Carolina. These include Palmer amaranth (*Amaranthus palmer* S. Wats.) and other *Amaranthus* species, common cocklebur (*Xanthium strumarium* L.) and more recently common ragweed (*Ambrosia artemisiifoila* L.). Research was conducted in a field with confirmed resistance of common ragweed to the ALS herbicide diclosulam to develop management strategies in corn (*Zea mays* L.), cotton (*Gossypium hirsutum* L.), peanut (*Arachis hypogaea* L.), and soybean [*Glycine max* (L.) Merr.]. The I_{50} values obtained for diclosulam were 1.3 g ai/ha and 1028 g/ha for susceptible and resistant common ragweed biotypes, respectively. Treatments in peanut included two levels of preemergence herbicides (diclosulam or flumioxazin) and three levels of postemergence herbicides (clethodim only; paraquat plus bentazon, bentazon, and clethodim; and imazapic plus lactofen). Metolachlor was applied over the entire test area, except for the metolachlor control plots. Common ragweed was controlled less by diclosulam or flumioxazin alone compared with these herbicides followed by postemergence herbicides. Common ragweed density was lower regardless of herbicide program when compared with the metolachlor control. Common

ragweed density was approximately 20 (2007) and 13 (2008) times higher in the metolachlor control compared with metolachlor plus diclosulam. Preemergence application of flumioxazin followed by postemergence application of lactofen plus imazapic resulted in the highest peanut yield (3470 lb/acre) in 2007 which was similar to yield following preemergence application of diclosulam followed by postemergence application of paraquat plus bentazon and preemergence application of diclosulam followed by postemergence lactofen plus imazapic. In 2008, peanut yield was similar regardless of herbicide program compared with the metolachlor control. Results from these experiments demonstrate effective management strategies for ALS resistant common ragweed present in fields were peanut is planted.

Interactions of Tillage, Cultivar, and Planting Date on Virginia Market Type Peanut. W.L. DRAKE *, D.L. JORDAN, J.L. HEITMAN, and M. SCHROEDER-MORENO, Departments of Crop Science and Soil Science, North Carolina State University, Raleigh, NC 27695.

Management of tomato spotted wilt (TSW), caused by a *Tospovirus*, involves cultural practices including cultivar selection, planting date, plant population, row configuration, and tillage as well insecticide choice for early season tobacco thrips (*Franklinella fusca* Hinds) management. Although less TSW is often observed in reduced tillage systems, previous research in North Carolina has shown that Virginia market type peanut can maintain yield in reduced tillage systems in some but not all fields due to difficulty in digging. Previous research in North Carolina has addressed interactions of planting date, cultivar selection, plant population, and insecticide treatment and results have been used to develop a tomato spotted wilt index for the Virginia-Carolina production region. Research has not been conducted to determine interactions of tillage, planting date, and cultivar. Therefore, research was initiated in 2008 to compare development of TSW and pod yield when five peanut cultivars (Gregory, CHAMPS, Perry, Phillips, and VA 98R) were planted May 5 or May 25 in conventional and reduced tillage systems (strip till into residue from a previous cotton crop). Although the purpose of the experiment was to determine the effect of cultural practices on development of TSW, a combination of symptoms associated with TSW and Cylindrocladium black root, caused by *Cylindrocladium parasiticum*, were noted. The percentage of the peanut canopy expressing disease symptoms in mid September was affected by the interaction of cultivar and planting date but not by the main effect of tillage or the interaction of tillage with other treatment factors. When evaluating disease immediately prior to digging peanut, the interaction of planting date, tillage, and cultivar was significant. Pod yield was affected by the interaction of planting date and tillage but not by main effects of cultivar or interactions of cultivar with other treatment factors. When planted May 5, pod yield was lower in conventional tillage compared with

reduced tillage (3,300 lb/acre versus 3530 lb/acre). However, when peanut was planted May 25, pod yield was 3940 lb/acre in conventional tillage compared with 3450 lb/acre in reduced tillage. No clear relationship was observed for disease and pod yield. Additional research will be conducted to further evaluate interactions of these treatment factors in an effort to improve recommendations on management of TSW and other diseases in peanut.

Weed and Disease Control in Peanut as Influenced by Co-Application of Agrichemicals. G. CHAHAL*, D.L. JORDAN, B.B. SHEW, R.L. BRANDENBURG, J.D. BURTON, and D. DANEHOWER, Departments of Crop Science, Entomology, Plant Pathology, and Horticulture, North Carolina State University, Raleigh, NC 27695.
Co-application of herbicides, fungicides, insecticides, micronutrients, or adjuvants can broaden the spectrum of pest control and increase efficiency of pest management practices in peanut (*Arachis hypogaea*). Research was conducted to determine interactions of five-way mixtures applied for weed and disease control in peanut. The herbicides imazapic, clethodim, lactofen, and 2,4-DB were evaluated in separate experiments and were applied alone or in combination with three fungicide levels (no fungicide, chlorothalonil plus tebuconazole, pyrsclostrobin), two insecticide levels (no insecticide or lambda-cyhalothrin), three micronutrient levels (no micronutrient, boron, manganese), and two adjuvant levels (nonionic surfactant or Class Act for imazapic, no adjuvant or Class Act for 2,4-DB, crop oil concentrate or Class Act for clethodim and lactofen). Various interactions were observed in each weed control experiment but no definitive conclusions could be made from this research. In disease control experiments, early leaf spot (*Cercospora arachidicola*) and late leaf spot (*Cercosporidium personatum*) incidence in peanut were evaluated when pyraclostrobin and chlorothalonil plus tebuconazole were applied alone or in combination with two insecticide levels (no insecticide, lambda-cyhalothrin), three micronutrient levels (no micronutrient, boron, manganese), and three herbicide levels (no herbicide, clethodim plus crop oil concentrate, 2,4-DB). Additionally, later in the season a portion of all plots received two additional sprays of each pyraclostrobin followed by chlorothalonil. Canopy defoliation, reflecting fungicide efficacy, varied among fungicide treatments but was not affected by herbicide or insecticide treatment. However, boron and manganese affected fungicide efficacy in one of two experiments. Results from these experiments demonstrate the complexity of defining interactions among multiple agrichemical components in a tank mixture. Additional research will be conducted in 2009 to further define interactions of five-way tank mixtures with respect to weed and disease control in peanut.

Increasing Folate Content in Peanut. N. JUBA*, E. GRABAU, Department of Plant Pathology Physiology and Weed Science, Virginia Tech, Blacksburg, VA 24061; and K. HARICH, Depart. of Biochemistry, Virginia Tech, Blacksburg, VA 24061.

To achieve improved nutritional content in peanut, a metabolic engineering approach is being used to increase folate in kernels. Folate, also known as vitamin B_9, is an essential vitamin that must be obtained from dietary sources. Deficiency in folate is correlated with cancer, cardiovascular disease, anemia, and most notably birth defects. The folate biosynthetic pathway in plants is divided into two branches with sub-cellular localization in the cytosol and chloroplast, respectively. The first steps in each branch has been targeted for enhancing folate biosynthesis. Plant transformation vectors have been designed using publically available or licensable vector DNA components for seed specific expression of key biosynthetic enzymes, GTP cyclohydrolase I (GCHI) and aminodeoxychorismate synthase (ADCS), both from *Arabidopsis*. Folate is a general term used to encompass tetrahydrofolate and its derivatives. Derivatives can vary based on the oxidation state of the carrier C1 unit and by the number of glutamate moieties. Metabolic profiling will be used to determine the identity, location and amount of different folate derivatives in peanut plants since each derivative has a unique role in both plant and human health. A program using a liquid chromatography tandem mass spectrometry system (LC/MS/MS) is being developed using five folate derivatives as well as folic acid with one to five glutamate moieties to distinguish between different folate derivatives. Folate detection and differentiation will provide insight into folate accumulation in peanut plants and will better guide the folate biofortification process.

Quantification of Niacin and Folate Contents in Peanuts. M.L. EAST*, L.L. DEAN, T.H. SANDERS, Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695 and USDA, ARS, Market Quality and Handling Research Unit, Raleigh, NC 27695.

Peanuts (*Arachis hypogaea* L.) are known to be sources of several important B-vitamins, including niacin and folate. Recent research has shown that therapeutic doses of niacin are beneficial for vascular health; therefore, determination of the concentrations found in current varieties in production and potential breeding lines is needed. Folate is a term for a related group of compounds with vitamin activity important in DNA biosynthesis. Adequate levels of folate intake have been found to reduce levels of a variety of syndromes, most notably fetal neural disorders. Current information about the concentrations and the specific types of folates present may position peanuts as an important source of this nutrient. For this study, we analyzed a series of samples from the 2007 and 2008 UPPT and the 2005 Core of the Core peanut germplasm

collection to compare levels of niacin and folates across 10 locations. For the niacin assay, 39 total UPPT Florunner and NC7 samples were analyzed using the AOAC non cereal foods method. Selected samples from the Core of the Core were also analyzed. Samples were replicated within and between years. Niacin concentration (mg/100g) ranged from 8.20 to 25.8 with an average of 16.1 for the 2007 UPPT samples, 17.7 for the 2008 UPPT samples, and 16.8 for the Core of the Core samples. The average niacin concentration in Florunner and NC7 samples increased from 14.6 and 17.4 in 2007 to 16.4 and 18.9 in 2008, respectively. Regardless of peanut type, the average concentration of niacin increased from 16.1 in 2007 to 17.7 in 2008. For the folate assay, Core of the Core samples were analyzed using the AOAC microbiological method. Folic acid concentration (mg/100g) ranged from 102.8 to 235.9, with an average folate content of 163.3. Environmental effects may influence the content observed between peanut type and location; however, specific effects are still being investigated. These results suggest that germplasm/varietal differences may be sufficient for increases in levels of these vitamins through conventional breeding.

Flavor and Antioxidant Capacity of Peanut Paste Supplemented with Peanut Seed Coat. C.S. HATHORN*, K.W. HENDRIX, T.H. SANDERS, North Carolina State University, Department of Food, Bioprocessing and Nutrition Sciences, Raleigh, NC 27695, USDA, ARS, Market Quality and Handling Research Unit, Raleigh, NC 27695.

Peanut seed coats, a by-product from processing, are generally considered as waste material except for limited use as animal feed. Peanut seed coats contain several types of natural antioxidants contributing to extremely high levels of antioxidant activity. As such, peanut seed coats may represent an underutilized resource for human foods. The objective of this study was to add varying levels of peanut seed coats to peanut paste and assess changes in flavor, color, oil and antioxidant activity. Seed coats were obtained from VA98R peanuts after heating for 45 min at 87 C followed by manual removal. A laboratory grade Wiley Mill with a 0.5 mm sieve was used to grind the seed coats into powder (SCP) which was added in varying amounts (0, 0.5, 1.0, 5.0, 10.0, 20% w/w) to a uniform peanut paste. Hunter L color for all samples was determined using a HunterLab DP-9000™ colorimeter. Indirect oil content analysis was carried out using Nuclear Magnetic Resonance Spectroscopy (NMR). Descriptive sensory analysis using the Spectrum™ method intensity scale (0 to 15) was conducted on all samples. Antioxidant capacity was determined using the oxygen radical absorbance capacity (ORAC) assay. Hunter L values decreased with the addition of SCP and were significantly darker ($P < 0.05$) in color with each increasing amount of SCP. The mean roast peanutty (RP) flavor attribute for all samples ranged from 4.5 ± 0.2 to 3.3 ± 0.2 and all

samples were sequentially lower ($P < 0.05$) in RP, except at 0.5 and 10.0%. However, dark roast attribute ranged from 2.8 ± 0.1 to 3.0 ± 0.3 and was not statistically different ($P > 0.05$) among any of the samples. The descriptors bitter, astringent, and woody/ hulls/ skins increased in products with increasing amounts of SCP. All samples containing SCP had higher antioxidant capacity than the control sample. This study suggests that addition of seed coats to peanut products has potential for increasing antioxidant content with minimum changes in flavor.

The Relationship of Initial Moisture Content to Physical and Chemical Characteristics and Oil Uptake in Virginia-Type Peanuts. M.T. DEBRUCE*, Department of Food, Bioprocessing and Nutritional Sciences, North Carolina State University, Raleigh, NC 27695-7624; and L.L. DEAN, and T.H. SANDERS, Market Quality and Handling Research Unit, USDA-ARS, Raleigh, NC 27695-7624.
Physical characteristics of peanuts may interact with processing conditions to impact quality. This study examined the effects of peanut pre-roast moisture content (MC) on chemical, physical and sensory characteristics developed during oil roasting. A large lot of Virginia type peanuts were dried in-shell to obtain 4.2%, 4.5%, 5.8% and 6.6% MC. Shelled and sized (ELK) peanuts were oil roasted, stored in glass jars at 30 C and sampled eight times over 1 year. With roasting, Oxidative Stability Index (OSI) increased more in the low MC samples 11.1 H (raw) to 16.2 H (roasted) compared to high MC (10.3 to 10.7 H), but OSI decreased with time in all samples. Lower pre-roast MC resulted in lower peroxide values (PV) after 12 months of storage (3.37 meq/kg) compared to higher MC (4.83 meg/kg). Descriptive sensory analysis indicated that cardboard and painty notes appeared in all samples at 4 months, with higher intensities in the higher pre-roast MC samples which both increased with time. The cardboardy off note was slightly higher in the lower MC than in the higher MC. The roast peanutty flavor decreased in all samples over time. Physically, the higher MC peanuts had less of an oily appearance throughout the storage time than the lower MC samples. The relationship between MC and oil uptake during roasting was examined by roasting the samples in a peanut/coconut oil blend (90/10 v/v). Lauric acid (C12:0) extracted from coconut oil served as a marker of the movement of the roasting oil into the peanuts and was found to have been incorporated into the peanuts after roasting indicating a MC dependent uptake of the roaster oil. Scanning electron microscopy (SEM) was used to examine changes at the cellular level in the samples. Greater physical damage was seen on the surfaces of the higher MC samples compared to the lower MC peanuts and was attributed to the release of larger amounts of steam from the high MC samples during the roasting operation.

BREEDING, BIOTECHNOLOGY AND GENETICS I

Evaluation of Virginia-type Peanuts Engineered with a Barley Oxalate Oxidase Gene to Petition for Deregulated Status Through the Animal and Plant Health Inspection Service. E.A. GRABAU*, Department of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, VA 24061; J.H. HU, P.M. PHIPPS, Tidewater Agricultural Research & Extension Center (AREC), Virginia Tech, Suffolk, VA 23437.

Three virginia-type cultivars (Perry, Wilson, NC 7) were engineered to contain a barley oxalate oxidase gene to provide resistance to Sclerotinia blight. Two transgenic Blight Blocker lines and corresponding non-transformed parent from each cultivar were evaluated in a field with a history of Sclerotinia blight in 2008. Expression of the oxalate oxidase gene was confirmed by enzyme assays of leaf discs from 80 randomly selected plants from each of the six transformed lines. The transformants conformed to the standard agronomic characteristics of the corresponding non-transformed parent. All six transformed lines in non-treated plots and two transformed lines of NC 7 and Wilson in Omega-treated plots showed over 80% lower incidence of Sclerotinia blight than their corresponding non-transformed parents. There were no significant differences between transformed lines and their corresponding non-transformed parent with respect to susceptibility to other diseases, including tomato spotted wilt, early leaf spot, web blotch, southern stem rot, and Cylindrocladium black rot. All six transformed lines yielded equal to or better than the corresponding non-transformed parent. Four transformed lines yielded significantly more than their non-transformed parent in non-treated plots. The trials provided additional evidence that the oxalate oxidase gene confers resistance to Sclerotinia blight and improved yield without altering other crop characteristics. Due to the high economic value of peanut and the importance of Sclerotinia blight in the region, the engineered Sclerotinia-blight resistance is of practical value for the peanut industry and breeding into commercial cultivars. Regulatory approval for commercial release requires a thorough characterization of the transgenic lines, including molecular genetic analyses to determine the number of introduced oxalate oxidase gene copies and DNA arrangement in the candidate lines.

Development of Peanut Genetic “Road-map” for Marker-assisted Breeding. B.Z. GUO*, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793; C.C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; C.Y. CHEN, USDA-ARS National Peanut Research Laboratory, Dawson, GA, 39842.

In the southeastern U.S., tomato spotted wilt virus disease has become a major limiting factor for many peanut producers, while the control

methods are limited. Both early (*Cercospora arachidicola*) and late (*Cercosporidium personatum*) leaf spot diseases are among the worst foliar diseases of cultivated peanut. Leaf spot disease control in the U.S. has depended mainly on routine applications of the fungicides, either on a calendar or advisory schedule. Infection of peanut with *Aspergillus parasiticus* and consequent contamination with aflatoxin, a by-product of fungal metabolism and the most potent naturally-occurring carcinogen, are a serious threat to regional agricultural production and to human and animal safety. The objectives of this research are to develop a genetic linkage map and to conduct QTL (quantitative trait loci) studies of interest traits, such as resistance to TSWV, leaf spots, and reduction in aflatoxin contamination. A genetic map constructed from a population segregating for a trait of interest is required for QTL identification and marker development. Two RIL (recombinant inbred line) mapping populations have been constructed from crosses of Tiftrunner x GT-C20 and SunOleic 97R x NC94022. The populations were advanced to the F_4 by single seed descent. Individual plants were harvested and progeny rows were grown to produce the $F_{4:6}$ RIL populations. The populations consisted of 248 individual lines for Tifrunner x GT-C20 and 356 individual lines for SunOleic 97R x NC94022. In 2009, we will phenotype and genotype these populations. These populations will be made available for the community and the collaborators for marker development and QTL studies.

Transcript Profiling of Developing Peanut Seeds. K.R. KOTTAPALLI*, P. PAYTON, USDA-ARS Cropping Systems Research Laboratory, Lubbock, TX 79415; N. PUPPALA, New Mexico State University Agricultural Science Center, Clovis, NM 88101; and M. BUROW, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.

To investigate regulatory processes and mechanisms underlying the development of peanut seeds, 8 x 15k microarrays were used to monitor changes in the transcriptome of a runner peanut genotype. Developing peanut pods from six development stages corresponding R2 through R8 stages were profiled. Several clusters of gene profiles were identified with different time-scales. We will discuss our findings on genes involved in a variety of cellular functions like lipids and starch synthesis, signal transduction, energy metabolism, seed maturation including desiccation tolerance, and proposed models demonstrating how novel pathways may impinge on the molecular mechanism of pod development in peanut.

Development of Peanut Germplasm with a High Level of Resistance to Leaf Spot and the Peanut Root-Knot Nematode. C.C. HOLBROOK*, B.Z. GUO, P. TIMPER, USDA-ARS, Tifton, GA 31793; W.B. DONG, and A.K. CULBREATH, Univ. of Georgia,

Tifton, GA 31793.
Chemicals control for pathogens such as the peanut root-knot nematode (*Meloidogyne arenaria*) and late leaf spot (*Cercosporidium personatum*) can be expensive. Peanut (*Arachis hypogaea*) producers can increase profitability if they can reduce input costs while maintaining high yield. Development of cultivars with multiple disease resistances would allow growers to reduce input costs. The object of this work was to combine resistance to leaf spot with resistance to the peanut root-knot nematode. Coan, a cultivar with excellent resistance to the peanut root-knot nematode was crossed with Georganic, a cultivar with excellent resistance to leaf spot. Single seed descent was used to advance the material to the F_4 generation. Progeny were evaluated for resistance to leaf spot in unsprayed field plots. Leaf spot resistance selections were then evaluated for resistance to the peanut root-knot nematode in a greenhouse screening trial. Progeny with resistance to both pathogens were identified and will be releases as germplasm.

In silico Analysis of Peanut Leaf Proteome with a Perspective to Identify Proteins Associated with Drought Tolerance. RAMESH KATAM and SHEIKH M. BASHA*, Plant Biotechnology Laboratory, Florida A&M University, Tallahassee, FL 32317-7900.
Peanuts exhibit a narrow genetic base and few markers are available to determine genetic variation in drought tolerance. Proteomics has emerged as a potential tool to determine qualitative and quantitative differences and has been widely used to study the changes in protein composition to abiotic stress responses. We have conducted a high throughput two dimensional PAGE (2-DE) analysis combined with mass spectrometry (LC MS/MS) to develop proteome profile of peanut leaf and to identify drought-responsive proteins among peanut genotypes. Peanut genotypes with varying drought tolerance characteristics were subjected to water stress by withholding irrigation for 3 to 15 days, leaf samples were collected and proteins analyzed by 2-DE. A peanut leaf proteome profile representing the genotypes studied was developed based on their 2-DE profile. Gene ontology annotation was perused to group proteins according to biological processes. The protein data summed up to 192 accessions for which 159 unique identities were retrieved by Entrez GenBank. On further annotation, these accumulated to 61 uniprot identities. Out of 302 total proteins identified in leaves, 57 were differentially expressed to water stress. Further, we have found significant genetic variation in protein profiles, indicating that they can be utilized as potential markers to identify drought-tolerant genotypes.

Peanut Production Trends in the US from 1980-2007. S.P. TALLURY* and T.G. ISLEIB, Department of Crop Science, N.C. State University, Raleigh, NC 27695-7629.
In the US, peanut production regions include, the Virginia-Carolina (VA

and NC), Southeast (SC, GA, FL, AL and MS) and the Southwest (OK, TX and NM). Four different market types are cultivated. The VC area is characterized by the large-seeded virginia market type and the small-seeded runners predominate in Southeastern production. In the Southwest, all four market types are grown with runner and virginia types predominating but with spanish types also grown in OK and TX whereas Valencias are grown in NM. In each of these regions, production trends are influenced by the cultivars, agronomic practices, climate and diseases/pests. The data for this study was obtained from the USDA-National Agricultural Statistics Service Crop Production Reports for the period 1980-2007. The national average in 1980 was 1893 kg/h whereas in 2007 it was almost doubled to 3604 kg/h. Regression analysis indicated about a 16.8 kg/h/yr yield increase from 1980-2007. In the V-C and Southeast, yields remained static during the mid 1980s to early 1990s, but in the last decade, considerable yield increases have occurred in all peanut production regions. The yield increases in the Southwest are about 180-360 kg/h higher than the V-C/Southeast production. In spite of the improved management practices, much of the increases came from breeding for high- yield combined with disease/pest resistance.

BREEDING, BIOTECHNOLOGY AND GENETICS II

Variation in Response to Calcium Fertilization among Four Runner Cultivars. B.L. TILLMAN*, M.W. GOMILLION, and G. PERSON, University of Florida, North Florida Research and Education Center, Marianna, FL 32446.

Seed size of runner peanut cultivars has increased in recent years raising questions about the requirement for gypsum fertilization. Additionally, some late maturing cultivars with very good disease resistance have demonstrated poor seed germination. This study was conducted to determine 1) if large seeded runner peanut cultivars C-99R and AP-3 require more gypsum than Georgia Green, a runner cultivar with typical seed size and 2) if seed germination of DP-1, typical of the late maturing, disease resistant types, would improve with additional calcium nutrition. Studies were conduct in Marianna, FL in 2005, 2006, and 2007. The experimental design was a randomized complete block with a split plot treatment arrangement and three replications. Cultivars were assigned to the sub-plots and gypsum treatments (0, 784, 1680 and 2352 kg/ha) were assigned to main plots. Soil tests recommended an average of 230 kg/ha, 110 kg/ha, and 67 kg/ha elemental calcium in 2005, 2006, and 2007 respectively. Measurements included seed calcium content (ppm), seed germination, pod yield and percentage total sound mature kernels (TSMK). Seed calcium content increased with increasing gypsum applied in 2005, but not in 2006 and 2007. Seed calcium content of Georgia Green was greater than all other cultivars in

2006, greater than DP-1 and AP-3 in 2005, and greater than DP-1 in 2007. Averaged over the three years, seed of DP-1 accumulated less calcium (700 ppm) than all other cultivars and Georgia Green accumulated more (951 ppm). Seed calcium content of AP-3 (817 ppm) and C-99R (845 ppm) was intermediate to Georgia Green and DP-1. Neither pod yield nor the percentage TSMK was affected by gypsum application. However, cultivars differed in percentage TSMK and pod yield. Georgia Green (77.7%) had the highest TSMK and DP-1 (75.1%) had the lowest. AP-3 (4030 kg/ha) had the highest pod yield and Georgia Green (2355 kg/ha) had the lowest. Germination of seeds planted in soil was not affected by gypsum application in any single year, but averaged over the three years of the test, soil germination of C-99R increased as applied gypsum increased (linear trend Pr > F=0.04). The numerical trend of increasing germination of C-99R in response to increased gypsum was apparent in 2005 and 2006, but statistical power was insufficient to detect a difference. The linear trend was also significant in a combined analysis of 2005 and 2006 (Pr >F= 0.02). These data suggest that large seeded runner cultivars may not need additional calcium above current recommendations in order produce satisfactory TSMK and pod yield, but they may require more calcium than typical runners to insure adequate germination. The results also suggest that one reason DP-1 has poor germination could be related to its inability to absorb calcium. Even though DP-1 seed is similar in size to seed of Georgia Green, DP-1 accumulated only 700 ppm calcium compared to 951 ppm for Georgia Green and its germination (60%) was far inferior to germination of Georgia Green (93%).

Release of 'Bailey' Virginia-Type Peanut Cultivar. S.C. COPELAND*, T.G. ISLEIB, and S.R. MILLA-LEWIS, Dept of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629; B.B. SHEW and J.E. HOLLOWELL, Dept. of Plant Pathology, N.C. State Univ., Raleigh, NC 27695-7903; H.E. PATTEE, Dept. of Biological and Agricultural Engineering, N.C. State Univ., Raleigh, NC 27695-7625; T.H. SANDERS, L.L. DEAN, and K.W. HENDRIX, USDA-ARS Market Quality and Handling Res. Unit., Raleigh, NC 27695-7624; M. BALOTA, Va. Polytech. Inst. & State Univ. Tidewater Agric. Res. & Ext. Ctr., Suffolk, VA 23437; and J.W. CHAPIN, Clemson Univ. Edisto Agric. Res. & Educ. Ctr., Blackville, SC 29817.

The peanut breeding program at N.C. State University, in collaboration with state and federal scientists in North Carolina, Virginia, and South Carolina, announces the release of Bailey virginia-type peanut (*Arachis hypogaea* L.) cultivar. Bailey, named in honor of the late Jack E. Bailey, formerly the program's collaborating plant pathologist, was developed by the N.C Agricultural Research Service and was released in 2008. It is a BC_1F_6-derived inbred line deriving 75% of its ancestry from virginia-type cultivar NC 12C and 25% from N96076L, a disease-resistant registered

germplasm line (GP-125, PI 641950) with ancestry from the diploid (2*n*=2*x*=20) wild species *A. cardenasii* Krap. & W.C. Gregory, PI 270806, PI 261942 and NC 5. Bailey is partially resistant to five common diseases in the Virginia-Carolina peanut production area: early leaf spot, Cylindrocladium black rot (CBR), Sclerotinia blight, southern stem rot and tomato spotted wilt virus (TSWV). It has seeds with tan testa averaging 823 mg seed^{-1}, mean jumbo pod content of 36% , fancy pod content of 46%, extra large kernel content of 43%, sound mature kernel content of 66%, and total kernel content of 73%. Yield and grade of Bailey were evaluated over 7 years in the N.C. State Univ. trials, over 4 years in the three-state Peanut Variety and Quality Evaluation (PVQE) program, and over 2 years in the Uniform Peanut Performance Test (UPPT). Its yield has been superior in all those testing programs. In the 2004-2008 PVQE trials, yield of Bailey was greater than the mean yield of other virginia-type cultivars tested over the same period (5391 vs. 4763 kg ha^{-1}, P<0.01) and also greater than the yield of NC-V 11 (5391 vs. 4996 kg ha^{-1}, P<0.01), the next highest-yielding cultivar. Bailey has superior pod brightness for use in in-shell peanut products, and its flavor profile is comparable to that of Florunner, the US peanut industry's flavor standard.

Flavor Profiles and Composition of Runner-and Virginia-Type Cultivars Tested as Part of the Uniform Peanut Performance Test. T.G. ISLEIB*, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629; H.E. PATTEE, Dept. of Biological and Agricultural Engineering, N.C. State Univ., Raleigh, NC 27695-7625; T.H. SANDERS, L.L. DEAN, and K.W. HENDRIX, USDA-ARS Market Quality and Handling Res. Unit., Raleigh, NC 27695-7424

Prior to release, most new public-sector peanut (*Arachis hypogaea* L.) cultivars are tested in the Uniform Peanut Performance Test (UPPT), a cooperative performance trial conducted at a total of ten locations by breeders and agronomists in eight states (VA, NC, SC, GA, FL, AL, TX, OK). Since 2001, sized kernel samples from each UPPT entry at each location have been subjected to compositional and sensory analysis. Older but commonly used cultivars that passed through the UPPT prior to the implementation of quality analysis were included as "local options" in sufficient individual UPPT trials data that comparisons can be made with recent releases. The data are very unbalanced because they were acquired for different cultivars in different years. Therefore, many comparisons between cultivars cannot be made directly, but are estimated as the difference between the differences between the two lines being compared and the checks Florunner and NC 7 that have been constant in the UPPT for the duration of the quality testing program. Runner-type cultivars with superior flavor profiles in the Southeastern production region include ANorden and Florida-07, in the Southwest Tamrun OL07, Tamrun OL02, Georgia-07W, ANorden, and

McCloud. Superior virginia-type cultivars for the Virginia-Carolina region include Gregory and Phillips. Combined with estimates of acreage of the various cultivars grown in a region, predictions can be made regarding the average composition and flavor of the crop in that region. For example, runner-type releases Florida 07 and Tifguard, two cultivars that occupy increasing acreage in the Southeastern production region, have significantly lower oil content than does Georgia Green, the standard Southeastern runner-type cultivar that is decreasing in acreage. Increased use of the newer cultivars is likely to reduce the average oil content of the Southeastern crop.

Marker Assisted Selection (MAS) for Breeding High Oleic Tifguard. Y. CHU*, P. OZIAS-AKINS, Department of Horticulture, The University of Georgia Tifton Campus, Tifton, GA 31793-0748; C.C. HOLBROOK, USDA-ARS, Tifton, GA 31793.

Tifguard, a peanut cultivar released in 2007, has near immunity to root-knot nematode and high resistance to TSWV. However, its oil composition is within the normal O/L range. Pyramiding the disease resistant traits of 'Tifguard' and the high O/L trait using MAS is our current goal for breeding. We chose our previously published dominant resistance marker 909/197 and a dominant susceptibility marker discovered in a population of NemaTam x GP NC-WS 14 for nematode resistance screening. For the high O/L trait, a spontaneous high O/L peanut mutant F435 was first discovered and its genetic mutations were identified as 1) a G448A transitional mutation in the *ahFAD2A* allele and 2) a nonsense frame-shift induced by an A^{442} insertion in the coding region of the *ahFAD2B* allele. Later, high oleic Georgia-02C and Georgia Hi-O/L induced by γ-irradiation mutagenesis were released but their genetic mutations had not been determined. We designed a cleaved amplified polymorphic sequence (CAPS) marker targeting the site of the A^{442} insertion in *ahFAD2B*. Based on the CAPS marker and sequencing data from Georgia-02C and Georgia Hi-O/L, their genetic mutations for the high O/L trait are the same as that of the spontaneous mutant line F435. Two crosses C1804: Tifguard x GA02C and C1805: Tifguard x Florida 07 yielded 28 and 17 F_1 seeds, respectively. We applied the molecular markers for both traits and found the success rate for F_1 crossing to be 86%. We also tested an additional 150 hybrids from our breeding program and found a range of genotypes combining these two traits. It is possible that with MAS, high O/L Tifguard shall be developed within 26 months.

Real-Time PCR Genotyping using Taqman Probes to Detect the Frame Shifted High Oleic Δ^{12} Desaturase Allele in Peanuts. N.A. BARKLEY*, K. CHENAULT-CHAMBERLIN, M.L. WANG, R.N. PITTMAN, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA 30223.

Oleic acid, a monounsaturated, omega-9 fatty acid, is an important agronomic trait in peanuts cultivars because it provides increased shelf life, improved flavor, enhanced fatty acid composition, and a beneficial effect on human health. Currently, most high oleic peanuts confer limited resistance to disease, which makes them highly vulnerable to infection such as TSWV. In an attempt to increase genetic diversity (specifically disease resistance) of high oleic acid lines, crosses between lines containing high oleic to linoleic ratios (HOL), wild species, and cultivated botanical varieties (*Arachis hypogaea* ssp. *hypogaea* var. *hirsuta* or *peruviana*) were prepared. The main bottleneck of breeding research is rapid detection of the trait(s) of interest. Therefore, a Real-Time PCR assay was developed to identify the high oleic trait in the parents and the resulting progenies. This test utilizes Taqman probes to detect an indel that causes a frameshift mutation in *ahFAD2B*. This procedure can distinguish F435 derived material from normal oleic lines. (F435 is recognized to contain a high level of oleic acid). Moreover, this assay differentiates hybrid F1's from the selfed progeny, and furthermore, can be employed from either seed or leaf material. Overall, the Real-Time PCR test facilitates the identification of progeny carrying the high oleic trait, and thus, undesirable non-high oleic lines in the segregating population can be rapidly eliminated.

EXCELLENCE IN EXTENSION EDUCATION

Addressing Grower Needs through Cooperative Extension Programs in Martin County, North Carolina. A. COCHRAN*, and J.B. COLTRAIN, Jr., North Carolina Cooperative Extension Service, Williamston, NC 27892; D.L. JORDAN, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; B.B. SHEW, Department of Plant Pathology, North Carolina State University, Box 7903, Raleigh, NC 27695; and R.L. BRANDENBURG, Department of Entomology, North Carolina State University, Box 7613, Raleigh, NC 27695.

Peanut constitutes a significant part of agricultural income in Martin County. In 2008, 10,408 acres of peanut were grown in the county. Peanuts brought in about 10.6 million dollars in gross income for peanut farmers in Martin County in 2008. Cooperative Extension programs are designed to support peanut growers and associated clientele with many decisions associated with production and pest management strategies. One of the most important and visible activities involves determining pod maturity. Five maturity clinics were held in Martin County with 132 samples checked for 39 farmers representing 5,797 acres of peanuts. Digging dates ranged from September 15 to October 15. Farmers in Martin County were able to increase their income by about $300,000 by digging at the optimum time. Maturity sampling was also performed in conjunction with the Martin County PVQE (Peanut Variety and Quality

Evaluation) program field day to demonstrate differences in maturity among commercial varieties and promising cultivar release candidates.

Utilizing Local Research to Enhance Soilborne Disease Control Strategies in Southeast Georgia. P.M. CROSBY*, Emanuel County Extension, University of Georgia, Swainsboro, GA 30401; and R.C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA 31793-0748.

Farmers in southeastern Georgia are faced with environmental conditions, such as high temperatures, high humidity and variable rainfall patterns that, when coupled with heavier soils and historic peanut-soybean crop rotations, create disease problems different than in most other areas of the state. Peanut growers here face severe outbreaks of southern stem rot and Cylindrocladium black rot (CBR) as well. It is critical for growers in southeastern Georgia that research be conducted locally to enhance the effectiveness of general statewide fungicide programs. In 2007 and 2008, field studies were initiated to evaluate the effectiveness of 13 fungicide programs in southeastern Georgia. All research was conducted at the Southeast Georgia Research and Education Center in Midville, GA. In 2008, a new disease management strategy, the application of fungicides for control of soilborne diseases at night, was also tested. In a factorial design, five fungicide programs with components sprayed only during the day or with soilborne components sprayed at night were compared. Field trials were conducted using a randomized, complete block design with four replications. Prior to harvest, the severity of peanut leaf spot, southern stem rot and CBR was assessed. In 2007 significant yield increases were observed where plots were treated with Provost (10.7 fl oz/A), Moncut + Bravo Weatherstik, and Artisan + Bravo Weatherstik. In the 2008 fungicide trial there were no significant yield differences among treatments. Yield results were variable in the night vs. day fungicide application study. Significant yield increases were observed where Artisan (32 fl oz/A) was applied at night during the 3rd and 5th sprays, and 10.7 oz of Provost applied at night in a four-block program. In all five spray programs, applying fungicides for control of soilborne diseases was never significantly better during the day than at night.

Addressing Inoculant and Nitrogen Issues in New Ground Peanut Production. C. FOUNTAIN*, North Carolina Cooperative Extension Service, Kenansville, NC 28349; and D.L. JORDAN and P.D. JOHNSON, Department of Crop Science, North Carolina State University, Raleigh, NC 27695.

Inoculation of peanut with *Bradyrhizobia* is essential regardless of prior planting history but especially in fields that have never been planted to peanut. Several products can be applied in the seed furrow to deliver *Bradyrhizobia* and making sure applications are precise and inoculant is

handled properly are keys to success. However, when inoculants perform poorly growers are often required to apply nitrogen (N) fertilizer to correct N-deficient peanut. On-farm research suggests that ammonium sulfate is a more effective source than ammonium nitrate, and in some cases as much as 150 pounds actual N/acre are needed to approach yields of non-inoculated peanut. Given expense of N-containing fertilizers, sensitivity of watersheds in some areas of North Carolina, and concerns about delayed crop development while N deficiencies are being corrected, great care in handling and delivering inoculant needs to be emphasized in Extension programs where peanut is being planted in new ground.

Evaluation of Fungicide Application Timing for Management of Sclerotinia Blight of Peanut in West Texas. S.A. RUSSELL*, J.E. WOODWARD, Texas Tech University, Lubbock TX 79416; T.A. WHEELER, A.C. CRAMNER, Texas AgriLIFE Research, Lubbock, TX 79403; and T.A. BAUGHMAN, Texas AgriLIFE Extension Service, Vernon, TX 76385.

Sclerotinia blight, caused by the soilborne fungus *Sclerotinia minor* Jagger, is a serious disease of peanut (*Arachis hypogaea* L.) in portions of West Texas. Management of Sclerotinia blight is achieved through the use of moderately resistant cultivars and fungicides. Fungicides are one of the most expensive inputs costing as much as $150 per acre. Most producers utilize calendar-based spray programs to maximize disease control, using maximum label rates and number of applications. However, other producers rely on a curative approach, waiting until symptoms are visible to initiate fungicide applications. Field trials were conducted in 2005, 2007 and 2008 to compare calendar-based (preventative) and symptom-based (curative) spray programs comprised of the fungicides fluazinam and boscalid. Calendar-based applications were made approximately 75 days after planting while symptom-based applications were made after symptoms were observed. Subsequent applications were made on a 30 day intervals for calendar-based programs and a 21 day interval for symptom-based programs. Disease incidence in non-treated control plots ranged from 37.3% to 50%, for 2005 and 2007, respectively. Fluazinam increased pod yields by 1633, 1220, and 1636 lb/A in 2005, 2007, and 2008, respectively; whereas, boscalid increased yields 1764, 1077, and 1400 lb/A, respectively. Overall, preventative treatments provided better disease control than curative treatments. However, no differences in yield were observed. Additional studies are required to better define initial fungicide applications and maximize profitability.

Evaluation of Top Five Planted Peanut Varieties in Irwin County, GA. P. EDWARDS*, Extension, University of Georgia, Ocilla, GA 31774; J. BEASLEY, Jr., Department of Crop and Soil Science, University of

Georgia, Tifton, GA 31793; R.C. KEMERAIT, Department of Pathology, University of Georgia, Tifton, GA 31793.

Farmers continue to look for successful peanut varieties comparable to Georgia Green as well as the row pattern that will result in the best value. Acreage in Irwin County is evenly split between single and twin row patterns. The field selected for this study was planted using conventional tillage methods and was irrigated as needed. Research was conducted to evaluate the top five planted peanut varieties, including AP-3, AT-3085RO, Georgia Green, Georgia-O2C, and Georgia-O3L. The planting date was May 14, 2008, and the digging date was determined based on maturity sampling. The experimental design was a factorial randomized complete block. Each of the four replications contained 10 plots of the five varieties in single and twin row configurations. The single rows were planted with a John Deere air planter and the twin rows were planted with John Deere 71 planter. Each of the four-row plots was planted on 36-inch row centers with similar row lengths across the trial. The plot lengths were measured using GPS. Stand counts were taken after emergence. Each plot was rated for leaf spot, white mold, and tomato spotted wilt virus. These diseases did not significantly impact yield or grade. Yield was determined on each plot. Each variety was graded in both single and twin rows and single row grades equaled or exceeded twin row pattern grades. Georgia Green and AP-3 in twin rows showed significant yield increase versus single rows, with single row Georgia 02C having the greatest value per acre and AP-3 having the highest yield at 5081 pounds per acre.

Impact and Management of Peanut Diseases in Gaines County, Texas.

M.G. CATTANEO*, Texas AgriLIFE Extension Service, Seminole, TX 79360; J.E. WOODWARD, Texas AgriLIFE Extension Service, Lubbock, TX 79403; and T.A. BAUGHMAN, Texas AgriLIFE Extension Service, Vernon, TX 76385.

Peanut is an economically important crop in areas of West Texas. A survey questionnaire was utilized to measure disease impact as it relates to cultivar selection, cropping history, fungicide applications and rates, irrigation amount, and yield in commercial peanut fields in Gaines County, Texas. *Sclerotinia minor, Sclerotium rolfsii*, *Verticillium dahliae, Rhizoctonia solani*, and *Pythium* spp. were most prevalent in the fields surveyed. These pathogens can occur alone or in the same field simultaneously. There are elevated risks associated with the production of peanuts in fields infested with these pathogens. Risks include high costs associated with fungicide applications, application timing and method, as well as the potential for fungicide resistance. Results from this survey provided valuable insight into current disease issues and management practices of growers in Gaines County. This information will aid in the development of education programs to improve disease control and increase profitability.

Four Year Peanut Variety Test Comparing Peanut Profitability & Disease Resistance. B. HADDOCK*, UGA Cooperative Extension, Randolph County, P.O. Box 282, Cuthbert, GA; E.L. JORDAN, UGA Cooperative Extension, Baker County, P.O. Box 220; T. BRENNEMAN, R.C. KEMERAIT, UGA Cooperative Extension, Plant Pathology, Tifton, GA 31793; J. BEASLEY, J. BALDWIN, UGA Cooperative Extension, Crop & Soil Science, Tifton, GA 31793; J. WILLIAMS, Cooperating Baker County Farmers, Newton, GA 39870.

Severity of soilborne diseases in peanuts in the form of Aspergillus crown rot (*Aspergillus niger*), Limb Rot (*Rhizoctonia Solani*), CBR (*Cylindrocladium Black Rot*), and Southern Stem Rot (white mold*, Sclerotium rolfsii)* were estimated for peanut plots in Randolph and Baker County by the University of Georgia for the 2008 crop season and how these diseases affected yield, grade, and dollar value per acre. Preliminary research results by UGA have determined that yield increases of 500 to 1000 pounds to the acre are not uncommon. The premise is that "relaxed" peanut canopy allows better spray penetration and efficacy during nighttime applications. It should be noted that data collected for the Randolph County location was incomplete although yield information was completed. The plot in Randolph County also had a history of disease including *Rhizoctonia solani*. The Baker County location has a history of CBR disease incidence. Both of these plots were selected to provide an analysis in a "real life" scenario with different disease pressures.

A Three Year Study of The Effects of Certain Fungicides & Combinations of Fungicides on the Incidence of Disease in Peanut. WIGLEY, P.D.* , Calhoun County Extension, University of Georgia, Morgan, GA 39866; and KEMERAIT, R.C., Department of Plant Pathology, University of Georgia, Tifton, GA 31793-0748.

Field experiments were conducted to evaluate five fungicide systems for control of leafspot, white mold, and rhizoctonia pod rot during the 2006 growing season. The systems that were evaluated included a four block Folicur program (sprays 3 - 6) with Bravo (sprays 1, 2 & 7); Tilt Bravo (sprays 1 & 2) + Abound (sprays 3 & 5), with Bravo (sprays 4, 6 & 7); Headline (sprays 1a, 4) Moncut (sprays 3 & 6), Bravo (sprays 3, 5, 6 & 7); Moncut (sprays 3 & 5) with Bravo (sprays 1, 3, 4, 5, 6 & 7) with Tilt Bravo (spray 2); and Provost (sprays 3, 4, 5 & 6) with Bravo (sprays 1, 2 & 7).Field experiments were conducted in 2007 to evaluate seven fungicide systems for control of peanut disease. The systems that were evaluated included a four block Tebuzol program (sprays 3 - 6) with Bravo (sprays 1,2,& 7); Tilt Bravo (sprays 1 & 2) + Abound (sprays 3 & 5), with Bravo (sprays 4, 6, & 7). Headline (sprays 1 & 4) + Provost (sprays 3 & 5) with Bravo (sprays 6 & 7). Headline (spray 1) + Provost

(sprays 3 -6), Bravo (spray 7). Headline (spray 1) + Provost (sprays 3 &4) + Abound (spray 5) + Bravo (sprays 6 & 7). Artisan (sprays 3 & 5) + Tilt-Bravo (sprays 1 & 2) with Bravo (spray 4, 6 & 7). Bravo (sprays 1 - 7). Field experiments were conducted to evaluate nine fungicide systems for control of leafspot, white mold, and rhizoctonia pod rot during the 2008 growing season. The systems that were evaluated included a four block Folicur program (sprays 3 - 6) with Bravo (sprays 1, 2 & 7); Tilt Bravo (sprays 1 & 2) + Abound (sprays 3 & 5), with Bravo (sprays 4, 6 & 7); Headline (spray 1) + 8 oz Provost (sprays 3 -6), Bravo (spray 7); Tilt Bravo (sprays 1 & 2) + Convoy and Bravo (sprays 3 – 6) + Bravo (spray 7); Headline (sprays 1a & 4) + Convoy and Bravo (sprays 3,5,6) + Bravo (spray 7); Headline (sprays 1a & 4) + Folicur (sprays 3,5,& 6) + Bravo (spray 7); Tilt Bravo (sprays 1 & 2) + Evito (sprays 3 & 5) + Bravo (sprays 4,6, & 7); Headline (spray 1) + 10.7 oz Provost (sprays 3 -6), Bravo (spray 7); Bravo(sprays 1 – 7). Treatments were applied according to manufactures recommendation. Disease control ratings were taken from each plot. Disease control ratings for leafspot and white mold showed some statistical differences while rhizoctonia ratings and yield were not statistically different.

PROCESSING

Chemistry and Biochemistry of Peanut Skins. Implications for Utilization.

L.L. DEAN*, J.P. DAVIS, T.H. SANDERS, Market Quality and Handling Research Unit, USDA, ARS, SAA, Raleigh, NC 27695-7624; and W.E. LEWIS, Dept. of Food, Bioprocessing and Nutritional Sciences, North Carolina State University, Raleigh, NC 27695-7624.

Peanut shelling plants in the US produce thousands of tons of peanut skins each year. Currently, this material is considered a waste product with limited end uses and no real monetary value. Peanut skins were obtained from a regional peanut processor and extracted with several types of solvent mixtures. The extracts were analyzed for total phenolic compound content using the Folin-Ciocalteu assay and antioxidant activity using the ORAC assay. Extraction solvent composition was found to affect the resulting ORAC values of the extracts. It is thought that more polar solvent mixtures remove more of the phenolic type compounds which are known for their activity as antioxidants involving hydrogen atom transfer therefore, the total phenolic levels and the ORAC values usually correlate well as was found here. The extract providing the highest ORAC value was subjected to LC-TOFMS to determine the compounds present. The compounds extracted were primarily phenolics such as catechins and procyandins. Solvent extraction can be used as a method of isolating specific types of compounds for specialized uses to produce large quantities of peanut skins with reduced phenolic content making them more acceptable for animal feed ingredient use.

Addition of Astra-Ben 20™ to Sequester Aflatoxin During Protein Extraction of Contaminated Peanut Meal. L.E. SEIFERT, T.H. SANDERS, and J.P. DAVIS*, USDA ARS Market Quality and Handling Research, Raleigh NC 27695.

Peanut meal is an excellent source of high quality protein; however, the relatively high aflatoxin concentrations typically associated with this commodity currently limit applications within the feed market, in addition to being prohibitive for any future food ingredient markets. Accordingly, the efficacy of a sodium bentonite clay, Astra-Ben 20™ (AB20), to sequester aflatoxin from contaminated peanut meal (110 ppb aflatoxin) during aqueous protein extraction was studied. Peanut meal dispersions (10% solids) were adjusted to pH 2.0 or 8.0 and randomly assigned to one of three treatments: control (no clay), 0.2% AB20 (w/w), or 2% AB20 (w/w). Samples underwent a series of separation steps and both the soluble and insoluble fractions were subsequently tested. AB20 addition significantly ($p < 0.05$) reduced the aflatoxin concentration in both water soluble and insoluble fractions such that detectable aflatoxin was less than 2 ppb on a dry weight basis for all treatments at 2% AB20 addition, and all but the pH 2.0 insoluble fraction (~40 ppb) were below 20 ppb at 0.2% AB20 addition. The pH of the soluble samples did not significantly affect the capacity of AB20 to bind aflatoxin. Protein solubility and total soluble solids content were significantly ($p < 0.05$) lower for soluble fractions after 2% AB20 when compared to the respective controls. These results suggest that AB20 could be used as a processing aid to reduce or eliminate the aflatoxin from peanut meal, enabling this high protein material to be processed into value added ingredients for expanded feed and eventually food markets.

Stability of Fatty Acid Composition of High- and Normal-Oleic Breeding Lines Across Production Regions in the Uniform Peanut Performance Test. H.E. PATTEE*, Dept of Biological and Agricultural Engineering, N.C. State Univ., Raleigh, NC 27695-7625; T.G. ISLEIB, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629; D.W. GORBET, Univ. of Fla., N. Fla. Res. & Educ. Center, Marianna, FL 32446; T.H. SANDERS, L.L. DEAN, and K.W. HENDRIX, USDA-ARS, Market Quality and Handling Res. Unit., Raleigh, NC 27695-7624.

Processors of peanut (*Arachis hypogaea* L.) desire uniform raw material for their processes. They would prefer to be able to buy peanuts from any US production region and have them process consistently. As more cultivars with the high-oleic seed oil trait have been released, questions have arisen: whether the fatty acid profiles of high-oleic cultivars are stable across production regions, and whether the profiles of high-oleic virginia- and runner-type cultivars are similar. Data collected on peanut samples from the Uniform Peanut Performance Test (UPPT) from 2001 through 2007 provide the opportunity to examine the effects of these

factors. Orthogonality of the data, *i.e.*, having the same breeding lines grown at all UPPT test locations in a given year, allows separation of the effect of production region from the effect of genotype. Lines tested at all UPPT sites in a given year were characterized as virginia-type if they had more than 70% fancy and jumbo pods, as runner-type if not, as high-oleic if their average linoleic content across all tests was less than 10%, and as normal-oleic if not. Analysis of variance was performed using a linear model that included year (Y), production region (R), YxR interaction, location within region (L), market type, (T), RxT interaction, oleic acid level (O), RxO interaction, TxO interaction, and RxTxO interaction. All other effects were left confounded with residual error. UPPT samples from the Southeastern production region were lower in linoleic acid (13.8%) and higher in oleic acid (68.1%) and oleic-to-linoleic (O/L) ratio (15.01) than samples from the Southwest (17.0%, 65.1%, and 11.42) and Virginia-Carolina regions (16.6%, 65.4%, and 12.16). There was no variation across regions or across market types for oleic or linoleic acid in high-oleic lines, but there was variation for the normal-oleic lines. The converse was true for O/L ratio; high-oleic lines varied across regions and across market types while normal-oleic lines did not. There was no evident three-way interaction; high-oleic runner and virginia market types produced in any of the three regions were indistinguishable with respect to oleic (range 78.6 to 80.6%, mean 79.4%) and linoleic acid content (range 3.0 to 4.6%, mean 4.0%) while normal-oleic lines were affected by market type and region (oleic range 49.4 to 58.9%, mean 53.0%; linoleic range 22.3 to 30.8%, mean 27.6%). O/L ratio varied more across regions for the high-oleic lines (range 19.58 to 28.57, mean 23.12) than for the normal-oleic lines (range 1.63 to 3.31, mean 2.61). Because it is the primary determinant of shelf-life in peanut, content of linoleic acid rather than the O/L ratio is the critical factor to consider, and high-oleic lines exhibit greater stability for linoleic acid content across regions than do normal-oleic lines.

Supplementary Health Benefits of Peanut Sprout Powders. R.Y.-Y. CHIOU*, J.-C. CHANG, Department of Food Science, National Chiayi University, Chiayi, Taiwan; S.-H. HSIAO, Department of Veterinary Medicine, National Taiwan University, Taipei, Taiwan; and B.B.-C. WENG, Y.-W. LIU, Department of Microbiology and Immunology, National Chiayi University, Chiayi, Taiwan.

The potential of peanut sprouts to serve as a functional vegetable has been demonstrated. We have investigated the effect of peanut sprout powders (PSP) containing resveratrol, arachidin-1, arachindin-3 and isopentadienyl resveratrol (IPD) of stilbenoids as bioactive phytochemicals on lifespan extension by dietary supplementation. A stock of 11 month-old BALB/c mice were assigned into treatments with two levels of PSP supplementation and resveratrol was used as a positive control. The supplementation levels were 15 mg PSP

stilbenoids/kg/day, 75 mg PSP stilbenoids/kg/day and 10 mg resveratrol/kg/day. The treatment and basal diets were fed daily to the animals until their natural death (by non-accidental causes). The animal experiments were continued for 750 days (until the death of the last survivor). In comparison, the generalized survival curves showed that mice fed with PSP- and resveratrol-supplemented diets had longer lifespan than that of control mice. Histopathological examinations of mice organs after death revealed that malignant tumor incidence was the prime cause of mortality for all test mice and that the number of mice with tumor incidence was slightly less for the treatment groups than those of the control group.

Peanuts, Peanut Oil and Fat Free Peanut Flour Impede the Development of Cardiovascular Disease in Hamsters. A.M. STEPHENS[1], L.L. DEAN[2], J.P. DAVIS[1,2], T.H. SANDERS[2], Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695[1]; USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC 27695[2]

The prevalence of cardiovascular disease (CVD) in our society is a national concern. Medical professionals now strongly advocate that even young people become knowledgeable about their cholesterol levels and risk for eventual CVD. Human clinical studies have demonstrated that peanuts and peanut oil decrease total and low density lipoprotein (LDL) cholesterol without reducing high density lipoprotein (HDL) cholesterol. The cardio-protective effects of fat free peanut flour have never been evaluated even though the flour contains arginine, flavonoids, folate and other compounds that have been implicated in cardiovascular health. The objective of this study was to evaluate the effects of fat free peanut flour and other peanut components on plasma cholesterol and aortic atherosclerosis in male Syrian golden hamsters. Seventy-six hamsters were randomly divided into four groups and each group was fed one of four diets for 24 weeks. Modifications to the control diet were made by substituting fat free peanut flour (< 0.5% oil), peanut oil or peanuts for isocaloric components in the high fat, high cholesterol control diet. Plasma and tissues were collected from hamsters in each diet group at 0, 12, 18 and 24 weeks. Total plasma cholesterol (TPC) and lipoprotein distributions were determined by high-performance gel chromatography. Atherosclerosis was evaluated as aortic cholesteryl ester (CE), which is an initial marker of the development of atherosclerotic plaque. Peanut oil, peanuts and fat free peanut flour diet groups had significantly ($p<0.05$) lower TPC, and LDL than the control group while HDL was not significantly different among any of the diet groups. Total aortic cholesterol and CE were also significantly lower in fat free peanut flour, peanut oil and peanut diet group hamsters compared to those in the control group. The peanut component diet hamsters' plasma cholesterol and aortic CE levels

remained relatively constant over time while control diet hamsters' levels had a substantial increase. The results indicated that peanuts, peanut oil and fat free peanut flour lower CVD risk factors and development of atherosclerosis, even when added to a high fat, high cholesterol diet.

PLANT PATHOLOGY, NEMATOLOGY, AND MYCOTOXINS I

Yield response and disease control with Peanut Disease Risk Index fungicide programs in Southwest Alabama. A.K. HAGAN*, H.L. CAMPBELL, and K.L. BOWEN, Dept. of Entomology and Plant Pathology, Auburn University, AL 36949; M. PEGUES, Gulf Coast Research and Extension Center, Fairhope, AL 36352.

On 22 May 2008, the peanut cultivars AT3085RO and GA03L were planted using conventional tillage practices in a field cropped to peanut every third year in Fairhope, AL. Weed control and soil fertility recommendations of the Alabama Cooperative Extension System were followed. The test area was not irrigated. A split plot design with peanut cultivar as the whole plot and fungicide program as sub-plots was used. Whole plots were randomized in four complete blocks. Individual sub-plots consisted of four 30-ft rows spaced 3.2-ft apart. Fungicides were applied with an ATV-mounted sprayer with 3 TX-8 nozzles per row at 10 gal/A spray volume at 45 psi. Leaf spot diseases and rust were rated on 25 September using the 1-10 Florida peanut leaf spot scoring system and ICRISAT 1-9 rating scale, respectively. Stem rot incidence was assessed immediately after plot inversion on 30 September. Yields are reported at 10% moisture. Based on Peanut Disease Risk Index guidelines, the site was rated as a low risk for leaf spot and stem rot with GA03L and a medium risk for leaf spot and stem rot for AT3085RO. Since the cultivar x treatment interaction for leaf spot, stem rot, and yield is significant; data was segregated by peanut cultivar. Late leaf spot was the dominant leaf spot disease. With chlorothalonil alone and azoxystrobin programs, higher late leaf spot and rust ratings were recorded for the low risk compared with the medium and high risk programs on AT3085RO but not on GA03L where the ratings for both diseases at all risk categories were similar. While low stem rot pressure on GA03L minimized differences between fungicide programs in the three risk categories, stem rot incidence was higher on AT3085RO for the low risk than medium and high risk chlorothalonil programs. On the latter cultivar, similar stem rot ratings were noted for all azoxystrobin programs. High late leaf spot, rust, and stem rot damage recorded for the low risk chlorothalonil alone and azoxystrobin programs on AT3085RO was reflected in significantly lower yields when compared with the medium and high risk programs with those same fungicides, which had similar yields. Due to the low disease pressure, yields for the low, medium, and high risk programs with chlorothalonil alone and

azoxystrobin on GA03L were similar. On a disease resistant cultivar such as GA03L, the Disease Risk Index is proving to be an effective method of assessing disease risk and adjusting fungicide treatment schedules in response without jeopardizing peanut yield.

Assessment of NemOut (*Paecilomyces lilacinus*) for Management of *Meloidogyne arenaria* Race 1. R. KEMERAIT*, F.H. SANDERS, W. DONG Department of Plant Pathology, The University of Georgia, Tifton, GA 31793; C. HOLBROOK, P. TIMPER, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793; and J.R. RICH, Department of Entomology and Nematology, University of Florida, Quincy, FL 32351.

Peanut root-knot nematode, *Meloidogyne arenaria* race 1, will cause considerable damage to the peanut crop in the southeastern United States if not adequately managed. Field trials were conducted at the North Florida Research and Education Center, Marianna, in 2006, 2007, and 2008 and at the Coastal Plain Experiment Station, Tifton, GA in 2007 and 2008 to assess the efficacy of NemOut, a commercial formulation of the biological control agent *Paecilomyces lilacinus*, to reduce damage from the peanut root-knot nematode and to improve yield. Treatments included in these studies were Thimet (5 lb/A) as a control, Temik 15G (10 lb/A) at-plant and/or at-pegging time, Telone II (4.5-6 gal/A), NemOut HB (dry hopper box treatment, 0.5 lb/100 lb seed), NemOut SP (0.3 lb/A) and NemOut WP (0.15-0.3 lb/A). Peanut cultivars 'AP3', 'Georgia Green', 'C99R', 'Tifguard', and a susceptible isoline to Tifguard were planted in plots naturally infested with *M. arenaria* race 1 in one or more trials. In Marianna, nematode populations were typically not statistically different among treatments. Pod quality, measured on a scale of 1-5 for damage from root-knot nematodes was similar among all treatments. Yields were always numerically greater in plots treated with Temik 15G or NemOut than in those treated with Thimet alone. In 2006 and 2008, at least some treatments that included NemOut yielded better than the control and as well or better than the treatments with Temik 15G. In Tifton in 2007, both Tifguard and the isoline breading line had lower root gall ratings and better yields than Georgia Green. Although often numerically greater than the control, no nematicide treatment statistically improved yields over the control for any cultivar in this study. In 2008, only combined use of Telone II and Temik 15G resulted in a significant reduction in nematode population; however there was no statistical difference among root gall ratings at the end of the season among treatments. Only a combination of NemOut at-plant and Temik 15G at-pegging time significantly improved yields over the control.

Comparison of Reduced Fungicide Programs for Control of Early Leaf Spot of Peanut. J.P. DAMICONE*, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078-3033.

Peanut production in Oklahoma is now located almost entirely in far

western counties where rainfall, relative humidity, and subsequent pressure from early leaf spot are typically lower than in other parts of the state. Nevertheless, leaf spot has been the most damaging disease, particularly where peanuts are cropped after peanuts. Because full-season fungicide programs are not justified, reduced fungicide programs applied according to the calendar and a weather-based, early leaf spot advisory program (http://agweather.mesonet.org) were compared in trials from 2004 to 2008. In the reduced calendar program, three applications were made on 14-day intervals beginning ca.1 Aug. These sprays were timed to coincide with periods of maximum canopy density and historical leaf spot increase. Fungicide treatments were propiconazole + chlorothalonil, applied alone or alternated with pyraclostrobin. The number of applications made according to the advisory program averaged 3.4 per season. Disease incidence (79%) and defoliation (69%) were moderate level in the untreated control. Both fungicide programs were effective and provided similar levels of disease control. Defoliation was 15% or less for all fungicide programs. However, leaf spot incidence for both reduced programs was greater (P=0.05) for the propiconazole + chlorothalonil (27 to 33%) compared to propiconazole + chlorothalonil alternated with pyraclostrobin (10 to 16%). Significant (P=0.05) yield responses of >500 lb/a only occurred for the reduced programs with pyraclostrobin. Both the reduced calendar program and the advisory program were equally effective in providing control of early leaf spot.

Comparison of ELISA and RT-PCR Assays for the Detection of Tomato spotted wilt virus (TSWV) Infection in Peanut. P.M. DANG*, D.L. ROWLAND, and W.H. FAIRCLOTH, USDA-ARS, National Peanut Research Laboratory (NPRL), Dawson, GA 39842.

Peanut (*Arachis hypogaea* L.) plants infected with *tomato spotted wilt virus* (TSWV) can display a wide range of disease incidence and severity depending on the year and location. Diagnosis of TSWV infection can be accomplished using enzyme-linked immunosorbent assay (ELISA) or reverse transcription polymerase chain reaction (RT-PCR) but there has been no report of a direct comparison of the success of the two techniques in evaluating infection rates of field-grown peanut plants. We collected peanut roots from field grown plants, 76 in 2006 and 48 for 2007, and subjected these samples to both ELISA and RT-PCR to test for the presence of TSWV. Out of 124 samples, 50 (40%) vs. 57 (46%) of the samples were positive for TSWV infection by ELISA and RT-PCR respectively. However, statistical analysis showed no significant difference between testing results for TSWV infection between these two methods. This result supports the conclusion that ELISA and RT-PCR are comparable methods for detecting TSWV infection rates in field-grown peanut.

Effects of Fungicides and Cultivar Selection on Sclerotinia Blight of Peanut in Texas. J.E. WOODWARD*, M.L. RATLIFF, J.I. YATES, Texas AgriLIFE Extension Service, Lubbock, TX 79403; C.E. SIMPSON, Texas AgriLIFE Research, Stephenville, TX 76401; and T.A. BAUGHMAN, Texas AgriLIFE Extension Service, Vernon, TX 76385.

Sclerotinia blight, caused by the soilborne fungus *Sclerotinia minor* Jagger, is an economically important disease of peanut in Texas. Management of Sclerotinia blight is primarily achieved through the use of partially resistant cultivars and/or the application fungicides. Field trials were conducted in 2007 and 2008 to evaluate the response of the peanut cultivars Flavor Runner 458 (susceptible), Tamrun OL02 (susceptible), and Tamrun OL07 (moderately resistant) to applications of the fungicides fluazinam and boscalid. These trials were conducted at the Texas AgriLIFE Research and Extension Center located in Stephenville. The field site had a history of severe Sclerotinia blight. Plots were arranged in a split-plot design with four replications. Fungicide treatments served as whole-plots and cultivars served as sub-plots. Disease incidence was similar in both years averaging 24.4% in non-treated control plots. Overall, applications of fluazinam and boscalid reduced disease incidence and increased yield; however, differences in cultivar response were observed. Fluazinam reduced disease incidence by 13.4, 10.0, and 7.3% and boscalid by 12.8, 7.8, and 10.1% for Flavorrunner 458, Tamrun OL02, and Tamrun OL07, respectively. Pod yields were greatest for Tamrun OL07 (4045 lb/A) and lowest for Flavorrunner 458 (3047 lb/A). The use of fungicides increased yields by an average of 1008 and 1056 lb/A over the non-treated control for Tamrun OL07 and Flavor Runner 458, respectively. Yields were not affected by fungicide applications for Tamrun OL02. Grades were similar for non-treated and fungicide treated plots; however, differences were observed among cultivars. Grades were highest for Flavorrunner 458 and lowest for Tamrun OL07. These results indicate that differences in Sclerotinia blight resistance exist in commercially available cultivars; however, additional studies are needed to investigate maximizing profitability when using fungicides.

Continued Evaluations of Virginia-Type Peanut Lines for Resistance to Late Leaf Spot, Stem Rot, and Spotted Wilt Disease. J.W. CHAPIN*, J.S. THOMAS, Department of Entomology, Soils, and Plant Sciences, Clemson University, Edisto REC, 64 Research Road, Blackville, SC 29817; T.G. ISLEIB, Crop Science Department, North Carolina State University, Box 7629, Raleigh, NC 27695; F.M. SHOKES, Virginia Tech University, Tidewater AREC, 6321 Holland Road, Suffolk, VA 23437; W.D. BRANCH, Department of Crop and Soil Sciences, University of Georgia, P.O. Box 748, Tifton GA 31793; and B.L. TILLMAN, Agronomy

Department, University of Florida, North Florida REC, 3925 Highway 71, Marianna FL 32446.
Peanut production in South Carolina has recently expanded to 71,000 acres (2008), with approximately 80% of this acreage in virginia market type varieties. Susceptibility to viral and fungal diseases is a major factor limiting profit in the production of virginia-type peanuts in South Carolina. The most economically important diseases for South Carolina producers are late leaf spot, *Cercosporidium personatum* (Berk. and Curt.) Deighton; stem rot, *Sclerotium rolfsii* Sacc.; and tomato spotted wilt tospovirus. All of the currently available virginia-type varieties are highly susceptible to late leaf spot and stem rot, and highly to moderately susceptible to tomato spotted wilt. Field tests were conducted over a three-year period (2006-08) to evaluate the disease resistance of 47 experimental virginia-type breeding lines and eight cultivars. Relative to commercially available standards, cultivar Bailey (recently released by N. C. State Univ.) and three sister lines (N03088T, N03089T, and N03090T), and N03091T were found to have consistently less susceptibility to tomato spotted wilt, late leaf spot, and stem rot. The level of field resistance measured for these three diseases was comparable to that of a resistant runner-type cultivar, Georgia-03L. Yield was highly correlated with multiple disease resistance, and yield performance of some resistant lines exceeded the best commercial standard cultivars under reduced fungicide programs. Potential negative attributes of Bailey, its sister lines, and N03091T were a greater susceptibility to leafhopper injury, *Empoasca fabae* (Harris), and a relatively larger plant size at maturity, without well defined rows to facilitate digging. Other lines that demonstrated reduced susceptibility to both tomato spotted wilt and stem rot were N03005J and N02009. Although only evaluated in the last test year, five Univ. of Florida lines (FLMR7, FLMR9, FLMR12, FLMR14, and FLMR15) and Georgia-08V (recently released by the Univ. of Georgia) also showed some reduction in stem rot susceptibility relative to the standard (cultivar NC-V 11). Equally important, many experimental lines were identified with significantly greater disease susceptibility than current commercial cultivars. Under South Carolina production conditions, such lines would be poor candidates for advancement. Deployment of the multiple disease resistance found in these experimental cultivars offers several potential benefits beyond direct yield improvement: reduction of fungicide input costs for both foliar and soil disease control, prolonging the utility of currently available fungicides, and reduction of weather related harvest risk by allowing earlier initial planting dates.

Risk Factors for Pre-harvest Aflatoxin Contamination of Peanuts. K.L. BOWEN*, Department of Entomology and Plant Pathology, Auburn University, AL 36849.

Aflatoxin contamination of peanut is most severe when drought conditions occur during the last few weeks prior to harvest. In addition to drought, soil temperature has a critical impact on the pre-harvest occurrence of aflatoxins in peanut. Secondary influences on aflatoxin contamination of peanut include high populations of soil-borne insects and plant parasitic nematodes, a deficiency of soil calcium, and greater sand content of soil in which peanuts are grown. These factors are compiled into an aflatoxin risk index. Maximum points in this index sum to 135, with 50 points attributed to prevailing weather during the 3 to 4 weeks prior to inversion. This index was applied to conditions in particular fields in 2002, 2005, 2007 and 2008, and results are presented.

Disease Incidence, Yield and Maturity of Virginia- and Runner-Type Peanuts in Strip Tillage and Conventional Tillage in 2007 and 2008. P.M. PHIPPS*, and J. HU, Tidewater Agricultural Research & Extension Center, Virginia Tech, Suffolk, VA 23437.

Virginia- and runner-type cultivars were selected for comparison in strip and conventional tillage. Locations in 2007 and 2008 were planted in the fall to a wheat cover crop. Each field had a history of peanut in a 3-yr rotation with cotton and corn. Alternating, 12-ft wide strips were established for conventional and strip tillage with tractor-mounted implements in early April. Conventional tillage included disking, plowing and running a field cultivar to level land. Vapam 42% 7.5 gal/A was applied in conventional tillage with a coulter and trailing chisel 8- to 10-in. under rows and bed shapers. Vapam was applied with a similar coulter and trailing chisel 8- to 10-in. under rows during tillage of a 12-in. wide strip with a pair of fluted coulters and a soil crumbler to firm the tilled strip. Touchdown at 23 fl oz/A was applied to kill the cover crop in strip tillage each year. Plots consisted of two, 35-ft rows spaced 36-in. apart in four randomized complete blocks. Cultivars were planted with Temik 15G 7 lb/A in furrow on 7 May 2007 and 2 May 2008. Standard practices for crop production were followed after planting. Four fungicide sprays (Provost, Provost, Headline, Bravo) were applied in 2007 and three sprays (Folicur, Provost, Headline) in 2008 according to leaf spot advisories. No irrigation was applied. Pod maturity was estimated each year using a power washer to expose mesocarp color. Plants were dug on 10 October 2007 and 2 October 2008, and harvested on 16 October 2007 and 9 October 2008. Yield was determined after drying and adjusting the weight of whole pods to 7% moisture.

Incidence of tomato spotted wilt virus (TSWV) was low in 2007 and not significant except for small differences for Virginia types in conventional tillage. In 2008, GA-05E and Florida Fancy had the lowest TSWV incidence of Virginia types in conventional tillage and highest incidence was in Perry and Wilson. TSWV in runner types was significant only in

conventional tillage where it was highest in GA Green and significantly lower in GA-02C and McCloud. CBR incidence in 2007 was significantly higher in Virginia types under strip tillage, and higher than runner types in strip or conventional tillage. Wilson had significantly greater CBR incidence of Virginia types in strip tillage and significantly more CBR than GA Hi-O/L, GA-05E, and Florida Fancy in conventional tillage. GA Green had significantly greater CBR incidence than most runner types in strip tillage and conventional tillage in 2007. CBR was significantly lower in GA-02C and GA-01R in strip tillage and GA-02C, Florida-07R, and GA-01R in conventional tillage. The incidence of CBR and Sclerotinia blight in 2008 was below levels expected to cause yield loss, except for higher incidence of Sclerotinia blight on GA-05E in strip tillage. Maturity assessments indicated that GA-05E was the only Virginia type that failed to reach maturity (>70%) by October 1. GA-02C and McCloud in the runner types exhibited borderline maturity for Virginia, and GA Green, GA-03L, AP-4, and Florida-07R had acceptable maturity. The yield of Virginia-type cultivars was reduced significantly (822 lb/A) in 2007 under strip-tillage compared to conventional tillage, whereas runner-type cultivars in both tillage regimes yielded similar to Virginia types in conventional tillage. Gregory and Wilson accounted for most of the lower yield of Virginia types in strip tillage. In 2008, the yield of Virginia types under strip tillage was only significantly lower than yield of runner types in conventional tillage. Wilson, Champs and GA-05E accounted for the lower yields of Virginia types in strip tillage. Florida-07R yielded significantly greater than other runner types in strip tillage and significantly greater than McCloud in conventional tillage. The results of trials in 2007 and 2008 indicated that Perry, GA Hi-O/L, and Florida Fancy were the best Virginia types for strip tillage whereas GA Green, GA-03L, AP-4 and Florida-07R were the best runner types. Advantages of strip tillage include reduced soil erosion by wind and water, improved water retention, and an estimated savings of $30/A for land preparation including soil fumigation. Advantages of runner-type cultivars include an estimated savings of $22/A for seed costs and $35/A for land plaster.

PLANT PATHOLOGY, NEMATOLOGY, AND MYCOTOXINS II

Impact of Climate Variability and Weather Patterns on Southern Stem Rot Incidence in Peanut. R.O. OLATINWO, J.O. PAZ*, G. HOOGENBOOM, Department of Biological and Agricultural Engineering, The University of Georgia, Griffin, GA 30223; and T.B. BRENNEMAN, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793.

Southern stem rot (caused by *Sclerotium rolfsii*), known locally as white mold is a common and destructive disease of peanut in the Southeastern U.S. In Georgia, the disease accounted for approximately $32.3 million

damage to peanut production in 2007. The soil temperature, moisture, and relative humidity have been reported to favor the development of southern stem rot. The incidence of the disease and the level of damage to peanut fluctuate annually, even with relatively consistent production methods. The goal of this study was to examine the influence of the variability in climate and weather patterns on stem rot incidence in peanut. The objective was to determine the effect of the El Niño-Southern Oscillation (ENSO) phases and changing weather patterns on stem rot incidence in peanut. The incidence of stem rot was recorded from visual assessments of symptoms from field trials conducted from 1995 to 2007 at field located in Tifton, GA. Weather data were obtained from the nearest weather station of the Georgia Automated Environmental Monitoring Network (AEMN: www.georgiaweather.net). Each season was categorized by ENSO (El Niño, Neutral or La Niña) according to the NOAA Climate Prediction Center classification scheme. A rule-based system was developed to determine a favorable infection day based on specific thresholds of air temperature, soil temperature and relative humidity. Results showed a significantly lower incidence and accumulated infection day during the neutral phase. The accumulated infection day was significantly higher during 1998 and 1999 growing seasons which corresponded to years when a high incidence of stem rot was observed in the field. Information from this study may be useful in developing an integrated management strategy for stem rot in peanut.

Control of Foliar and Soilborne Peanut Pathogens with Morning, Evening or Daytime Applications of Fungicide. T.B. BRENNEMAN* and J. AUGUSTO, Department of Plant Pathology, University of Georgia, Tifton, GA 31794.

Two field experiments were conducted in 2008 to evaluate early morning, evening, and daytime fungicide applications for the control of peanut stem rot (*Sclerotium rolfsii*) and leaf spot (*Cercospora arachidicola*). The fields had been under continuous peanut cultivation with a history of severe disease pressure. Georgia Green was planted in both tests and the experiments were split-plot designs with four replications. The whole-plot treatments were fungicides with four applications of (i) chlorothalonil (1.26 kg a.i. ha^{-1}, Bravo WeatherStik), (ii) pyraclostrobin (0.88 kg a.i. ha^{-1}, Headline), (iii) azoxystrobin (0.88 kg a.i ha^{-1}, Abound F) or, (iv) prothioconazole plus tebuconazole (0.58 kg a.i. ha^{-1}, Provost 433 SC). Sub-plot treatments were spray timings of either (i) early in the morning (3 – 5 am) when leaves were folded and wet, (ii) after daybreak (10 am – 12 pm) with unfolded and dry leaves, or (iii) in the evening (9 – 10 pm) when leaves were folded but dry. All three spray timings provided similar control of early leaf spot with all fungicides except chlorothalonil which had more leaf spot with morning sprays compared with evening and day sprays. Early morning and evening sprays reduced stem rot incidence at digging by 52% and 27%,

respectively, compared with day sprays. Early morning and evening sprays increased yield by 571 kg ha^{-1} (14%) and 335 kg ha^{-1} (8%), respectively, compared with the day sprays. Therefore, dew on the foliage appears to add benefit in addition to the previously documented benefits of improved spray penetration of the canopy due to leaf closure at night. This is apparently due to the increased relocation of the fungicides to the lower stems, pegs and pods where stem rot occurs.

Response of New Peanut Cultivars and Breeding Lines to Phorate Insecticide for Management of Tomato Spotted Wilt. A.K. CULBREATH*, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-0748; W.D. BRANCH, Dept. of Crop and Soil Science, University of Georgia, Tifton, GA 31793-0748; C.C. HOLBROOK, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA, 31793-0748; and B. TILLMAN, North Florida Research and Education Center, University of Florida, Marianna, FL 32446.

In the southeastern U.S., management of tomato spotted wilt (TSW) of peanut (*Arachis hypogaea* L.), caused by *tomato spotted wilt virus* (TSWV), is dependent upon integration of cultivars such as Georgia Green, with partial field resistance, with other factors that suppress TSW epidemics. In-furrow applications of phorate insecticide often provide suppression of TSW in addition to preventing direct injury of peanut foliage by thrips larvae. Several peanut cultivars and breeding lines have been developed with levels of field resistance to TSWV greater than that of the moderately resistant cultivar Georgia Green. The objective of this study was to determine the effects of in-furrow applications of phorate insecticide on severity of TSW and yield in several of these new lines. Field trials were conducted at the UGA-CPES Lang-Rigdon Farm, Tifton, GA in 2007 and 2008. Experimental design was a split-plot with three or four replications. Whole plot treatments consisted of in-furrow application of phorate (1.12 kg ai/ha) and no in-furrow insecticide. Sub-plot treatments consisted of 13 genotypes in 2007 and 14 genotypes in 2008. In 2007, treatment main effects and phorate x genotype interactions were significant for final incidence of TSW. In 2007, final incidence of TSW in Georgia Green was 55.8% and 30.1% (LSD = 11.0) in nontreated and phorate treated plots, respectively. In plots with no insecticide, all other entries had final TSW incidences lower than those of Georgia Green. In plots with insecticide, lowest ranking final TSW incidence was 11.2 % in C 724-19-25, and final incidence in Tifguard, York, and AP-3 were similar. There was no significant reduction in TSW with addition of phorate in those four entries. Addition of phorate resulted in significant reduction of spotted wilt in AT-3085RO, Georgia-06G, AP-4, and Florida-07, and in plots treated with phorate, incidence of TSW in those four cultivars was similar to that in York, Tifguard, C 724-19-25, and AP-3. In 2007, only genotype main effects were significant for yield. Across insecticide treatments,

yields ranged from 3275 kg/ha in AT 3081R to 4969 kg/ha (LSD = 519 kg/ha) in C 724-19-25. Yields of Georgia Green and Georgia-01R were similar to that of AT 3081R, and yields of Florida-07, Tifguard, AP-3, and Georgia-06G were similar to that of C 724-19-25. In 2008, main effects were significant for both TSW incidence and yield, but interaction effects were not. Across genotypes, incidence of spotted wilt was 16.6% and 7.8% (LSD = 2.9) in nontreated and phorate treated plots, respectively. Across insecticide treatments, final incidence of TSW was 26.8, 22.6 and 21.3% in AT-215, Florida Fancy, and Georgia Green, respectively. All other entries had TSW incidence lower (LSD = 6.1%) than those genotypes. Final incidence of TSW was 6.3% in C 724-19-25, and was similar to that in AP-3, Georgia-03L, Florida-07, Georgia Greener, Georgia-06G, Tifguard, AT 3085RO, and Georgia-07W. Across genotypes, yield was 7316 kg/ha and 7884 kg/ha (LSD = 277) for nontreated and phorate treatments, respectively. Across insecticide treatments, yield ranged from 6232 kg/ha in AT-215 to 8363 kg/ha in Georgia-06G (LSD = 615 kg/ha). Yields of Georgia Green were similar to that of AT-215, and yields of AT 3085RO, Florida-07, Tifguard, Georgia-07W, McCloud, and C 724-19-25 were similar to that of Georgia-06G. Yield increase with use of phorate was 1165 kg/ha for AT 3085RO and was over 750 kg/ha for AT 215, Georgia Greener, Florida-07, and Georgia-06G.

Stem Versus Leaflet Inoculation of Peanut with *Sclerortinia minor*. H. MELOUK*, USDA-ARS, Department of Entomology and Plant Pathology Department, Oklahoma State University, Stillwater, OK 74078; M. BROWN, Entomology and Plant Pathology Department, Oklahoma State University, Stillwater, OK 74078.

Tamspan 90, a Spanish peanut cultivar, exhibits physiological resistance to *Sclerotinia minor* (S.M), as indicated by the low rate of lesion expansion (RLE) on inoculated stems. The purpose of this study was to determine the RLE on stems and leaflets of two peanut cultivars (Okrun, a susceptible cultivar to S.M., and Tamspan 90). Stems and distal leaflets of 6 week old plants were inoculated at midpoint with mycelial plugs from two-day-old S.M. cultures grown on potato dextrose agar containing 100 mg/L streptomycin sulfate. Inoculated plants were then placed in clear, polyethylene humidity chambers (95-100%, relative humidity) for up to 7 days. Two days after inoculation visible lesions developed on stems and leaflets of both Okrun and Tamspan 90. Lesion length measurements were taken at 2, 3, 4, and 5 days after inoculation. The experiment was performed twice. In the two experimental runs, mean RLE (mm/24 hr) on stems of Okrun was 17.8 mm, which was significantly (P = 0.05) higher than that of Tamspan 90 which was 8.3 mm. In leaflet inoculation, in the first experimental run, mean RLE (mm/24 hr) on stems of Okrun was 6.1 mm, which was not significantly (P = 0.05) higher than that of Tamspan 90 with 6.0 mm. However, in

leaflet inoculation, in the second experimental run, the RLE data for both Okrun and Tamspan 90 were highly variable where mean RLE on Okrun was 9.0 mm, which was significantly (P = 0.05) higher than that of Tamspan 90 with 3.7 mm. Therefore, more experiments with more genotypes need to be performed to determine the validity of using leaflet inoculation data as a measure to determine physiological resistance in peanut to *S. minor*.

Genetic and Seed Treatment Effects on Stand Establishment in Organically Managed Peanut Fields. E.G. CANTONWINE*, C. KENDRICK, and J. AUERBACH, Department of Biology, Valdosta State University, Valdosta, GA 31698; A.K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793; C.C. HOLBROOK, USDA-ARS, Tifton, GA 31793; and M. BOUDREAU, Hebert Green Agroecology, Ashville, NC 28806.
Poor emergence and uneven stands are common for organic peanuts in the Southeast, even under ideal planting conditions. Experiments were conducted to evaluate the effects of naturally occurring chemical and biological seed treatments, peanut genotype, and shelling procedures (mechanical shelling vs. hand-shelling) on stand establishment, seedling vigor; and incidence of *Rhizopus* spp*.,* the cause of Rhizopus seed rot, and *Aspergillus niger*, the cause of Aspergillus crown rot. Seed of the cultivar Georganic were treated with Kodiak, Actinovate, sulfur, CuSO4, or Kocide alone or in combination at 4oz/100 lb seed and placed on PDA agar plates. Incidence of *Rhizopus* was recorded after 3 days and incidence of *A. niger* after 5 days. The biological treatments, Kodiak and Actinovate, provided a numerical reduction to incidence of *A. niger* by 50% compared to the untreated control (P>0.05), but did not show activity against *Rhizopus*. The copper-based treatments reduced *Rhizopus* incidence by 50% compared to the control (P<0.05), but did not show activity against *A. niger*. Combinations of biological and copper-based treatments provided similar results to the copper-treatments alone. Sulfur showed no activity against either pathogen. In 2007 under field conditions, seed of 13 peanut genotypes, mechanically shelled or hand-shelled, and treated with Kodiak seed treatment or untreated, were planted to monitor seedling emergence, seedling biomass, and incidence of Aspergillus crown rot. Kodiak did not significantly affect the variable observed. There was a 50% reduction of crown rot incidence in the hand-shelled plots compared to the mechanically shelled plots (P=0.06), and the hand-shelling significantly improved seedling emergence compared to mechanical shelling for five of the genotypes evaluated. Genotypes AP3, C34-24-69, and C34-24-124 had the best emergence rates (82-83%), while C724-19-25, C11-154-61, Georgia Green, and AP3 had the greatest biomass after 3 weeks. The cultivar Georganic was among the genotypes with the least amount of biomass. The field experiment will be repeated in 2009.

Greenhouse Evaluations of Virginia-Type Breeding Lines for Resistance to *Sclerotium Rolfsii*. J.E. HOLLOWELL*, B.B. SHEW, Dept. of Plant Pathology, N.C. State Univ., Raleigh, NC 27695-7903; T.G. ISLEIB, S.P. TALLURY, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629.

Southern stem rot caused by *Sclerotium rolfsii* Sacc. is an economically important disease in the Virginia-Carolina production area, and new peanut (*Arachis hypogaea* L.) breeding lines must be evaluated for resistance. However, field evaluations of this disease often fail to produce usable results because it can be to a large extent weather-dependent. A greenhouse technique was used to screen new breeding lines for resistance in two tests during the winter of 2008-2009. Plants grown in a 1:1:1 soil, sand, Metromix™ potting medium in 10 cm pots were inoculated at 7 weeks after planting. A plug of PDA colonized with *S. rolfsii* and protected from desiccation in a BEEM™ embedding capsule was taped with gauze to the stem. Inoculated plants were placed in a mist chamber to maintain high humidity necessary for good *S. rolfsii* growth and infection. Greenhouse temperature was 26 C. Tests were conducted as incomplete block designs with 4 replications. Lesion lengths were measured 7, 12, 17, and 21 days after inoculation, area under the disease progress curve (AUDPC) was calculated, and means were computed. Lines separated at the 5% significance level in both tests, but there was significant test-by-genotype interactions resulting both from changes in rank between tests and from differential variation among genotypes in the two tests. Nevertheless, there were a few lines identified that were not different from the best line in each test.

PRODUCTION TECHNOLOGY

Influence of Application Variables on Efficacy of Manganese-Containing Fertilizers Applied to Peanut. D.L. JORDAN*, S.H. LANCASTER, J.E. LANIER, P.D. JOHNSON, J.B. BEAM, and A.C. YORK, Department of Crop Science, North Carolina State University, Raleigh, NC 27695.

Several formulations of the essential element manganese are commercially available for application to peanut (*Arachis hypogaea* L.). Research was conducted in North Carolina to compare accumulation of manganese in peanut leaves, stems, and pods following application of water soluble manganese sulfate 17.5% manganese (TechMangum or Super Mangro) and liquid manganese formulations including 5.0% manganese (Manganese Xtra) or 8% manganese (Nutrisol 8% Manganese). Experiments were also conducted to determine the influence of herbicides, adjuvants, and selected fungicide and insecticide combinations on manganese accumulation in peanut leaves. Additional

research was conducted to determine if efficacy of clethodim, imazapic, imazethapyr, lactofen, sethoxydim, and 2,4-DB was affected by manganese formulations when applied in mixture with these herbicides. Experiments were also conducted to determine the effect of manganese on efficacy of the fungicides azoxystrobin, chlorothalonil, pyraclostrobin, and tebuconazole. Accumulation of manganese in leaves was higher when dry formulations of manganese were applied compared to liquid formulations, reflecting the higher amount of actual manganese delivered per unit area based on manufacturer recommendations of these products. Accumulation of manganese was higher when manganese was applied with the herbicides clethodim, imazapic, and lactofen compared with manganese alone or manganese plus 2,4-DB. Accumulation of manganese was similar for manganese alone or most combinations of manganese with fungicides and insecticides. Manganese did not affect corn (*Zea mays* L.) control by clethodim or sethoxydim; large crabgrass [*Digitaria sanguinalis* (L.) Scop.] control by clethodim; Palmer amaranth [*Amaranthus palmeri* (S.) Wats.] control by imazethapyr; sicklepod [*Senna obtusifolia* (L.) Irwin and Barneby] control by imazapic, imazethapyr, or 2,4-DB; or tall morningglory [*Ipomoea purpurea* (L.) Roth] control by imazapic. In contrast, common ragweed (*Ambrosia artemisiifolia* L.) control by lactofen was reduced by dry manganese but not by the 8% liquid solution. Peanut canopy defoliation was similar when the fungicides azoxystrobin, chlorothalonil, pyraclostrobin, or tebuconazole individually were compared alone, with manganese, or manganese plus the insecticide lambda cyhalothrin.

A Review of Peanut Response to Plant Growth Regulators and Foliar Fertilizers. R. RHODES*, North Carolina Cooperative Extension Service, Windsor, NC 27983; and D.L. JORDAN and P.D. JOHNSON, Department of Crop Science, North Carolina State University, Raleigh, NC 27695.

A variety of plant growth regulators and foliar fertilizer solutions can be applied to peanut. The plant growth regulator Apogee (prohexadione calcium) has been evaluated in peanut in the North Carolina for many years. When averaged over 94 trials from 1997-2008 with a wide range of cultivars and application variables, pod yield was 130 pounds/acre higher when Apogee was applied at 50% row closure and reported 2-3 weeks later. Several foliar fertilizers including the products X-Cyte, BioForge, ReZist, Sugar Mover, X-Tra Power, Sett, and Sett Advanced, and Rescue have shown mixed results in terms of effects on peanut yield.

Economic Analysis of Cover Crop and Tillage for Peanut. A.R. SMITH*, and N.B. SMITH, Department of Agricultural & Applied Economics, The University of Georgia, Tifton, GA 31793-1209; and R.S. TUBBS, G.H. HARRIS, R.D. LEE, and J.P. BEASLEY, JR.,

Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31793-0748.

Planting cover crops is often done by farmers interested in using a green manure, improving soil quality and reducing soil erosion. As cover crops decompose in the soil, nutrients are released to be used by the peanut plant. Understanding how a cover crop with its associated costs, impacts peanut yield, cost of production, and revenue, may aid farmers in developing cost-effective nutrient management plans. Georgia 03L was grown under conventional or strip tillage methods following the use of three winter cover crops: crimson clover, rye and wheat at The University of Georgia Coastal Plains Experiment Station in Tifton, GA during 2008. Results indicate that peanuts following winter crimson clover have significantly higher production costs on average than peanuts following winter rye ($21.82/ac higher) and winter wheat ($12.52/ac higher) when averaged across conventional and strip tillage systems. Despite the significant cost savings to peanuts produced following winter rye and wheat as compared to crimson clover, there is no significant difference in net revenue per acre by cover crop or tillage.

Performance of Runner Market Type Peanut in North Carolina. B.R. LASSITER*, D.L. JORDAN, G. WILKERSON, R.L. BRANDENBURG, and B.B. SHEW, Departments of Crop Science, Plant Pathology, and Entomology, North Carolina State University, Raleigh, NC 27695.

Interest in growing runner market type peanut in the Virginia-Carolina region has increased over the past few years. Research has been conducted since 1997 in various experiments to compare pod yield of commercially available Virginia market type peanut with runner market type peanut. The cultivars Georgia 03L, Georgia 02C, Georgia 0R1, and Georgia Green were among the most commonly evaluated runner market type peanut. In many cases runner market type peanut have performed as well as Virginia market type peanut. Given the volatility on contract prices for Virginia market type peanut, considering lower production costs for runner market type peanut, and results demonstrating comparable yields of runner market type peanut with Virginia market type peanut, results suggest that runner market type peanut is a viable alternative to Virginia market type peanut production in the Virginia-Carolina production region.

A Fresh Look at Predicting the Optimum Digging Date for Peanuts. W.H. FAIRCLOTH*, and D.L. ROWLAND, USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842; and J.P. BEASLEY, Crop and Soil Sciences Dept., The University of Georgia, Tifton, GA 31793-0748.

Many factors influence the digging of peanuts including weather, soil, and vine conditions, and these conditions often supersede the actual

maturity level reached by the crop. Current methods for determining optimum peanut maturity rely on the relationship between yield and grade, and assume that yield reaches a maximum while grade continues to increase with time. A need exists for new assessment techniques to better predict the maturity of peanut. An analysis of eight peanut cultivars grown under optimum production conditions over a 2-year period clearly illustrated that cultivars increased in value (yield x grade) linearly with time and did not decrease until well beyond what is considered a "normal" digging date. Weekly harvests of the cultivars began at approx 112 d after planting and continued until first frost (five harvests-2005; seven harvests-2006). Harvests included: yield, grade, maturity rating (pod mesocarp boards), TSWV ratings, leafspot ratings, leaf nutrient analysis, several physiological measurements, and remotely sensed images of both plants and pods. Data to be presented includes an analysis of yield and grade and their relationship with predictors such as growing degree days, maturity indices, and development of more comprehensive prediction techniques.

Utilization of Six Digging Dates to Determine the Relative Maturity for the 'Georgia-02C' Peanut Cultivar. W.D. BRANCH*, J.P. BOSTICK, E.J. WILLIAMS, and J.P. BEASLEY, JR., Dept. of Crop and Soil Sciences, University of Georgia, Coastal Plain Exp. Station Tifton, GA; Alabama Crop Improvement Assn., Wiregrass Res. and Ext. Center, Headland, AL; and Dept. of Biol. and Agri. Eng. and Crop and Soil Science, Coastal Plain Experiment Station, Tifton, GA, respectively.

Six digging dates [127, 134, 141, 148, 155, and 162 days after planting (DAP)] were utilized to determine the relative maturity for the 'Georgia-02C' runner-type peanut (*Arachis hypogaea* L.) cultivar. At the Wiregrass Research and Extension Center in 2005 and at the Coastal Plain Experiment Station in 2006, 2007, and 2008, the Georgia-02C cultivar was planted in mid-May each year. Recommended cultural practices with irrigation were used throughout the growing season. Results from these six digging dates reemphasize the importance of year effect on maturity. Maturity varied from year-to-year with 2005 and 2007 having on the average the most mature pod profile; whereas, 2006 and 2008 were the least mature. However, despite these overall year effects on the pod maturity profiles, yields and dollar values of the Georgia-02C cultivar showed only some significant difference ($P \leq 0.05$) across the six digging dates. The highest yields and highest dollar value returns per acre were found most consistently at 134-148 DAP during 2006-08 and at 155-162 DAP in 2005. 2005 was unusual in that it appears to show a split-crop during the 134-148 DAP digging dates with two similar peaks in the black and orange pod mesocarp color percentages. This would explain the delayed optimum harvest period for 2005 vs. 2006-08. These data would suggest that depending upon the year, Georgia-02C

can result in a wide harvest period which would allow for more flexibility among digging dates. The roasted peanutty flavor results also seem to verify the yield and dollar values. The roasted flavor intensity of Georgia-02C was likewise shown by two independent sensory panel evaluations to be very similar in flavor to 'Georgia Green', the current U.S. standard cultivar.

Runner Peanut Growth, Maturity, and Flavor Response to Prohexadione Calcium in West Texas. R.C. NUTI*, C.L. BUTTS, R.B. SORENSEN, M.C. LAMB, USDA-ARS National Peanut Research Laboratory. Dawson, GA 39842; T.H. SANDERS, USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC 27695; and N. PUPPALA, New Mexico State University, Clovis, NM 88101.
A major challenge to producing runner market type peanuts in west Texas is the potential for early frost and poor crop maturity that could result in flavor problems. Prohexadione calcium is a plant growth regulator that inhibits the synthesis of gibberellic acid in peanut resulting in reduced vine growth with the potential to shift resources toward pod production. This product is labeled for reducing vine growth in order to improve row visibility. Reducing vine growth for row visibility is not an issue in west Texas making the recommended rate and timing not applicable for the objectives of this research. A field study was conducted in 2005, 2006, and 2007 to determine if prohexadione calcium positively affects peanut maturity, yield, and biomass partitioning. Prohexadione calcium was applied at first row closure and two weeks after row closure at all combinations of 0, 0.25, and 0.5 kg/ha for a total of seven treatments. Applications were made with a CO_2 backpack sprayer. Plots were established in a grower's field under irrigation and were harvested with research equipment. Crop growth habits, pod yield, grade, maturity, and sensory data are reported.

Effect of Row Configuration on Cultivar Performance. C.B. GODSEY*, and W. VAUGHAN, Dept. of Plant and Soil Sciences, Oklahoma State University, Stillwater, OK 74078.
In the southwestern peanut production region the majority of peanut acreage is planted using a row spacing of 36 in. Research conducted in the southeastern peanut production region has shown an advantage to twin-row planting configuration. The objectives of this study were to 1) determine the effect of row configuration on peanut yield and grade and 2) determine if differences exist between varieties when planted in twin-row and single-row configurations. In 2008, studies were conducted at Stillwater, OK and Fort Cobb, OK to investigate agronomic advantages to twin-row planting. The experimental design was split-plot design with row configuration (twin-row and single-row) as the main plot and variety as the sub-plot. Cultivars evaluated were ARSOK R-1, Tamrun OL07, Tamrun OL02, Jupiter, Spanco, AT98-99-14, and Tamnut 06. The single-

row peanuts were planted in rows spaced at 36 in, while the twin-row treatment was planted in twin-rows on 36 in centers and the spacing between the twin-rows was 7.5 in. Single-row treatments were seeded at 4.8 seeds ft^{-1} of row and the twin-row treatments were planted at a density of 5 seeds ft^{-1} of row. At Stillwater, peanut yields were excellent and averaged 4600 lb/ac when averaged across cultivars. Twin-row row configuration had a significantly higher yield in five out of the seven cultivars. The two cultivars that did not respond to twin-row planting were Spanco and Tamrun OL07. Twin-row increased peanut yield by an average of 1238 lb ac^{-1} with the five varieties that responded favorably to twin-row. No differences were observed at Fort Cobb. Under high yielding environments twin-row planting appears to increase peanut yields.

AgroClimate: Climate-based Decision Support Tools for the Agricultural Community. R. BOYLES, H. DINON*, Marine, Earth, and Atmospheric Science Department, North Carolina State University, Raleigh, NC 27695; and D. JORDAN, B. LASSITER, and G. WILKERSON, Crop Science Department, North Carolina State University, Raleigh, NC 27695.

The Southeast Climate Consortium (SECC) is a partnership of universities aimed at integrating climate information with agricultural needs. The SECC provides decision support tools for the agricultural community on their website, AgroClimate, which is accessible at http://agroclimate.org/. This site provides decision tools based on climate information and seasonal climate patterns for peanut growers, extension agents, and researchers including climate risk, yield risk, chill accumulation, and growing degree day guidance. In addition, periodic climate and commodity-specific agricultural outlooks are available. The authors are working to adapt and develop AgroClimate tools and information for North Carolina. The goal is to implement the current tools available as well as incorporate new products and services which are targeted to the needs of NC growers and extension personnel. Among these new applications are tools to help forecast and manage peanut disease as well as other pest risks for peanuts.

Seeding Rate Evaluation for Runner Peanut Cultivars in Twin Rows. R.S. TUBBS*, and J.P. BEASLEY, JR., Department of Crop and Soil Sciences; A.K. CULBREATH and R.C. KEMERAIT, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793-0748.

Cultivar availability of runner peanuts (*Arachis hypogaea* L.) has recently trended toward those with a large seed size. Increases in seed costs make it imperative that producers plant only enough seed to get an optimal stand (4.0 plants per foot of row) to maximize profit potential. These studies were designed to determine if changes in seeding rate

recommendations will produce optimum yield without adverse severity of tomato spotted wilt (TSWV) and white mold (WM). The experiments took place in 2008 in two locations. At Midville, GA, four cultivars ('Georgia Green', 'AT 3085RO', 'Tifguard', and 'Georgia-06G') and four seeding rates (4.4, 5.2, 6.2, and 7.0 seed per foot of row [SPF]) were tested. In Attapulgus, GA, eight cultivars (Georgia Green, Tifguard, Georgia-06G, 'Florida-07', 'Georgia-01R', 'Georgia-02C', 'C-99R', and 'York') and five seeding rates (5.2, 6.2, 7.0, 8.2, and 8.8 SPF) were evaluated. There were no cultivar x seeding rate interactions and no yield differences among seeding rates at either location. At Midville, Georgia-06G yielded highest (6644 lb/A). The 4.4 and 5.2 SPF rates resulted in final plant stands below 4.0 plants per foot, and were statistically lower than the 6.2 and 7.0 rates. Low incidence of TSWV and WM did not warrant rating. In Attapulgus, Florida-07 (7586 lb/A), Georgia-06G (6973 lb/A), and Tifguard (6970 lb/A) had highest yields. Final plant stands increased from the 5.2 to 7.0 SPF rates, and then leveled, but all remained above the optimum stand. There were no differences in TSWV among the seeding rates, but there was greater occurrence of WM at the 6.2 SPF rate compared to the 5.2 and 7.0 rates. Based on this data, reducing seeding rate below the recommended rate of 6.0 SPF at planting would be suitable for maintaining yield potential without adversely affecting disease incidence, but reduced plant stands could result in yield losses under more stressed conditions.

Conservation tillage systems for peanut cultivars in rotation with green harvest sugarcane in Brazil. D. BOLONHEZI*, O. GENTILIN Jr., Experimental Station of Agronomic Institute - APTA, Ribeirao Preto; M.-A. MUTTON, Campus de Jaboticabal, ao Paulo State, Brazil; I.-J. GODOY, Center of Grains and Fiber, Agronomic Institute-APTA, Campinas, Brazil; A.-L.-M MARTINS, Experimental Station, of Agronomic Institute – APTA, Pindorama, Brazil.

The cultivated area of peanut in Brazil is approximately 115,000 ha, being 80 % of the area located in the state of São Paulo. In general, peanut has been planted in rotation with sugarcane (*Saccharum* spp.) using the deep tillage as the predominant cultivation method. Nowadays, green harvested sugarcane (without burning) is being adopted by 50 % of the plantations reaching 4.2 million hectares. The green harvested system produces great amount of straw (average 15 Mg ha-1 of dry matter) which is deposited on the soil surface, consequently the costs with tillage increases up to 30 %, making conservation systems desirable. Although, no-tillage system is used by growers of different crops in more than 26 million ha in Brazil, studies on peanut are almost non existent. Field studies were conducted from 2000 to 2005 to evaluate the effects of conservation tillage on agronomic characteristics of two peanut cultivars, as well as on some soils properties. Tillage systems included reduced tillage, non-tillage and conventional tillage,

which were arranged in a split-plot randomized complete block design with four replications in two different types of soil, Oxisol and Ultisol, respectively in Ribeirao Preto and Pindorama cities, SP, Brazil. Tillage treatments were main plots while subplots were peanut cultivars, IAC-Tatu (Valencia market-type, erect growth habit, red seed coat, maturity range around 100 days after planting) and IAC-Caiapo (Runner market-type, prostate growth habit, pink testa, maturity range more than 135 days). Results of seven experiments showed no statistic difference on pod and kernel yield, number of pods and pegs, between the conservation and conventional tillage, but a decrease on stand of plants was noticed. On the other hand, no-tillage showed an increase (between 6.5 and 9 %) on kernel maturity rate. Three out of seven experiments had a significant interaction between the cultivar and the tillage system. Furthermore, the results show that no-tillage peanut on sugarcane straw, reduced the CO_2 flux from soil (2.5 times lower), increased the biological activity (nodulation) and the water content (%) in the soil was 16% higher than in the conventional tillage.

HARVESTING, CURING, SHELLING, STORING, and HANDLING

Estimation of the Mass Ratio of Mature Kernels within a Sample of In-Shell Peanuts using RF Impedance Method. CHARI V. KANDALA*, JAYA SUNDARAM, and BRAD HINSON, National Peanut Research Laboratory, Dawson, GA 39842.

We investigated the possibility of estimating the percentage ratio of the weights of mature kernels (within a given mass of in-shell peanuts) and the in-shell peanuts, nondestructively, from RF Impedance measurements. Capacitance and phase angle measurements on in-shell peanut samples of known weights were made at frequencies ranging from 1 to 5 MHz insteps of 1 MHZ. The samples were then shelled, mature kernels were collected and weighed. A calibration equation was developed correlating the percentage ratio of the weights with the measured capacitance and phase angle values. The equation was used to estimate the percentage weight ratio from the measurements made on 30 peanut samples not used in the calibration and the estimated values were compared with the values obtained by weighing the peanuts and the kernels in each sample (reference value). The reference values for the validation samples varied from 68% to 78% and the estimated values were within 3% of the reference values for over 76% of the samples tested.

Identification of Inferior Quality Peanuts Without Shelling During Peanut Grading. J. SUNDARAM, C.V. KANDALA*, C.L. BUTTS, W.R. WINDHAM, and M.C. LAMB, National Peanut Research Laboratory, Dawson, GA 39842.

One of the more labor intensive and subjective processes in grading farmers stock peanuts is identifying and sorting damaged peanut kernels. A 500-g sample of peanut pods is shelled, then the kernels visually inspected for discoloration, mold or physical damage by insects. During the inspection process, all whole kernels are mechanically split in half, and inspected again for hidden damage on the interior surface of the cotyledon. Damaged kernels are visually identified based on a person visually identifying discoloration, mold, or mechanical damage which is somewhat subjective. Efforts to streamline and improve the farmer stock grading process, require the ability to objectively and accurately identify and weigh damaged kernels. The ability to rapidly identify inferior quality peanut kernels without shelling the peanuts would be very useful and essential to achieving significant improvements in the grading process. Near infrared (NIR) reflectance spectra were collected for 300 individual peanut pods in the wavelength ranges from 400 to 2500 nm. Two hundred (200) pods were shelled and identified as damaged or undamaged. These data were analyzed using Partial Least Squares (PLS) to develop a model to predict the whether or not a kernel was damaged or undamaged. The PLS model had a Standard Error of Prediction (SEP) of 0.401 and Bias of -0.109. NIR reflectance data were then collected on the remaining 100 pods, and the model used to predict whether they were damaged or undamaged. After scanning, each pod in the 100 pod validation set was hand shelled and evaluated. Predicted quality character was compared with the actual quality and found that 83.3% of the peanuts were correctly identified. These tests show that NIR spectroscopy shows promise as a tool to non-destructively identify damaged peanut kernels and should be further developed as a tool to reduce the labor and improve the accuracy of identifying damaged peanut kernels in farmers stock grading.

Performance of Semi-Trailer Peanut Drying Units. C.L. BUTTS* and M.C. LAMB, USDA, ARS, National Peanut Research Laboratory, P.O. Box 509, Dawson, GA 39842.

The practice of forcing heated air through a deep bed of peanuts to remove moisture and preserve the quality of farmers stock peanuts has remained relatively unchanged since the 1960's. Drying wagons or trailers were somewhat standardized to 2.4 m wide by 4.3 m long and with 1.3 m peanut depth. These trailers have been used reliably to cure peanuts in 4-t batches for many years. Trailers measuring 6.4 m long and capable of curing approximately 6 t of peanuts were introduced in the late 1980's. Following plenum temperature guidelines with properly matched fan and burner units, these 4 and 6-t batches could be cured to

moisture levels of 10% in less than 24 h consuming approximately 26.5 L of propane (21.7 m^3 of natural gas) per ton of peanuts. Larger containers for curing farmers stock peanuts designed and converted from salvaged over-the-road semi-trailers were introduced in the West Texas growing region. These semi-trailer drying units are typically 13.7 m long with a 46-cm tall plenum and capable of curing peanuts in beds up to 2.3 m deep. Fans were sized appropriately to provide 10 m^3/min per m^3 of peanuts. As use of these drying units migrated to the southeastern U.S., fan capacity was increased to account for increased humidity of the region, along with the greater bed depth and maintain satisfactory drying performance. No data are published regarding the drying time, moisture gradients within the load, or energy consumption. Three semi-trailer dryers and a conventional 4-t dryer were equipped with gas vapor meters to determine natural gas consumption during the 2008 peanut harvest at a commercial peanut drying facility located in Quitman, GA. The entire drying facility was equipped with a network dryer control system that remotely sensed ambient temperature and relative humidity and set the plenum temperature of each dryer accordingly. This system maintained daily records of ambient temperature and relative humidity, and individual dryer temperatures. The facility used the peanut curing management software, PECMAN, to record drying data such as load identification, dryer used, initial and final moisture content, and the date and time of dryer initiation and completion, Buying Point personnel recorded gas meter readings for each of the four dryers before starting and after stopping each load. During the 2008 peanut harvest, 1006 loads of peanuts were cured with an average 17.3% initial moisture content. The average cutoff moisture content was 10.5%. The average time required to dry a load of peanuts was 24.8 h. There was no significant difference in either the initial or final moisture content for the dryer type (semi-trailer or conventional). Twenty percent of the loads dried were semi-trailers. The average drying time for semi-trailer dryers was 26.5 h, and was not significantly different from the 24.4 h required to dry the conventional loads. Energy consumption was monitored on 59 loads during the season. Fifty-five (55) of those loads were semi-loads. Each load of peanuts required 5.33 m^3 of natural gas per ton of peanuts with no significant difference due to size of the load. However, the semi-load required 26.2 kWh electrical energy per ton compared to 10.3 kWh/t for the conventional load. Total energy cost was calculated using a rate of \$0.51/m^3 of gas and \$0.11/kWh. Total energy costs for the semi-trailer averaged \$10.18/t compared to \$7.85/t for the conventional dryer, but was not significantly different. Semi-dryer performance was also analyzed by dryer manufacturer and significant differences were found in operating costs. Differences were most likely due to differences in airflow per m^3 of peanuts. As airflow rate increased, the drying time decreased, but not enough to offset the proportional increase in the gas consumption rate.

MINUTES OF THE BOARD OF DIRECTORS MEETING
41st Annual Meeting, Marriott Hotel
Raleigh, North Carolina
July 15, 2009

President Kelly Chamberlin called the meeting to order and welcomed everyone. Present were: T. Baughman, C. Butts, J. Chapin, C. Johnson, R. Kemerait, R. Myers, E. Prostko, N. Smith, J. Starr, H. Valentine, J. Hollowell, R. Brandenburg, J. Woodward.

Pres. Hagan called on J. Starr, Executive Officer, to present the minutes of the last Board of Directors meeting, conducted at the 2008 Annual Meeting held in Oklahoma City. The minutes as reported in the 2008 Proceedings, Vol. 40, were amended as follows. Under 'Other New Business' the statement

"Howard Valentine requested that the "Seed Summit" which has traditionally met in conjunction with the annual APRES meeting be recognized as a standing committee of APRES." was amended to state "Howard Valentine requested that the "Seed Summit" which has traditionally met in conjunction with the annual APRES meeting be recognized as a regularly scheduled event of the annual meeting."

The minutes of the 2008 Board of Directors were approved as amended.

The following reports were presented and approved by the Board.

Executive Officer Report – J. Starr reviewed the financial status of the society and reported that the society remains in sound financial condition, but that there has been a continued decline in Society membership and attendance at the annual meeting.

Local Arrangements

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

CAST Report – No report given as no member has accepted appointment as the representative for APRES to CAST.

Finance Committee - Chair K. Chamberlin reviewed the current finances of the society, income from all sources for 2008-09 was $114,985.85, whereas expenditures for 2008-9 were $102,650.03. The financial assets of the society

were $189,177.32 on June 30, an increase of $5,370.56.

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

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

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

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

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

Maria Gallo for President.
Robert Sutter for Industry Representative/Production
Wes Shannon for National Peanut Board Representative

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

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

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

Another role of the committee is to recognize members or prominent individuals in the peanut industry that have passed away with a resolution that honors their

contributions. The following four individuals were recognized at the annual meeting with a resolution and a moment of silence: Stanley Drexler from Tifton, GA; John Phillips from Albany, GA; Dr. D.A. Emery from North Carolina State University; and Dr. John Wilcut from North Carolina State University. There resolutions are included below.

Editor of Peanut Science - Peanut Science has done well since June 2008 to present. Volume 35:02 was published November 25, 2008 consisting of 13 journal articles and 84 pages. Volume 36:01 was published April 24, 2009 containing 14 articles and 97 pages. For the 08-09 fiscal year, Peanut Science expenses totaled $14,252 with a total income of $18,165 (attached).

There were 14 manuscripts submitted between July 1 and December 30, 2008. One article has been published; seven have been accepted and awaiting publication; five are in various stages of review; and one has been rejected. From January 1 to June 30, 16 manuscripts have been received. Four have been accepted for publication, one rejected, and eleven are in review/revision. The average time from submission to first reviews for manuscripts submitted since July 1 2008 was 76 days. The average time to decision was 122 days. Allen Press takes an average of 12 days to produce the galley proof.

The following Associate Editors have terms expiring 2009 and do not desire to continue.

Manjeet Chinnan .....Engineering/Food Science (3 years)
Tom Isleib..... Breeding/Genetics (6 years)

The following Associate Editors are completing a 3-year term and desire to serve a second 3-year term to expire in 2012

Tim Brenneman.....Plant Pathology
Wilson Faircloth.....Agronomy/Crop Production
Tim Grey .....Weed Science
Peggy Ozias-Akins..... Genetics/Biotechnology

The following have agreed and are recommended to serve a 3-year term to expire in 2012 as associate editors for Peanut Science.

Engineering/Food Science - Yen-Con Hung, Professor, Department of Food Science and Technology, University of Georgia, Griffin Campus, Griffin, GA
Breeding/Genetics - Naveen Puppala, Assistant Professor, Agricultural Science Center, New Mexico State University, Clovis, NM
Economics - Nathan Smith, Associate Professor, Agricultural Economics, University of Georgia, Tifton, GA.

The editor requests that the Publication and Editorial Committee endorse the request to implement the PeerTrack Essentials on-line manuscript submission and tracking system to provide editorial assistance in managing manuscripts during the submission and review process. Setup cost is $500 and each submission costs $30. Assuming 30 manuscripts will be submitted in FY09-10, the initial year will cost $1400.

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

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

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

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

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

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

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

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

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

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

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

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

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

Bailey Award Committee –

Coyt T. Wilson Distinguished Services Award Committee – Two nominations were received by the Coyt T. Wilson Distinguished Service Award Committee for evaluation. Dr. Fredrick M. Shokes was selected as recipient of the 2008 award. This recommendation was approved by the Board of Directors

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

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

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

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

committee, Bob Kemerait, would bring this discussion to the APRES Board and ask that a preliminary poster competition be scheduled for the 2009 APRES meeting to determine if this session was appropriate or not.

Ad Hoc Long Range Planning Committee

Other New Business

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

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

OPENING REMARKS BY THE PRESIDENT
AT THE 2009 GENERAL SESSION of APRES
President Kelly Chenault Chamberlin
July 15, 2009

Good morning everyone, and welcome to the 2009 APRES Awards Breakfast and Business Meeting. It's a pleasure, as always, to be here and I hope you've enjoyed your stay in Raleigh. And it's a pleasure to be able to tell you, once again, how much I appreciate all the work each of you do promoting our society. I'd like to thank our President Elect Barbara Shew and her team for hosting a fantastic meeting. Thanks to you that stayed for our meeting this morning. With membership declining and the budget becoming tighter, I'm sure that some of you may question the future of our society. Today, I want to reassure you of our value to the peanut industry. Our society is the only one exclusively dedicated to peanuts and peanut research. We are desperately needed by our industry and producers and they do notice and appreciate what we do. In many ways, this has been the year of the peanut. The salmonella outbreak involving peanut products from PCA really took at toll on peanut consumption with the recall of over 1800 peanut products and looked like it would drastically affect the market this year. In January, peanut butter sales were down 22% from the same time the prior year, but have rebounded from that figure, with sales being up almost 11% overall compared to 2008. As your president, I personally had an opportunity to participate in and witness the promotional work the NPB did on the peanut producer's behalf, trying to combat the bad press and declining public opinion of peanuts and peanut products before the fallout of the salmonella panic trickled down to the producer's pocketbook. In March of 2008, the NPB launched its new motto "Peanuts: Energy for the Good Life" at Grand Central Station in NYC. It was the most amazing promotion of peanuts and peanut products I've ever witnessed. With a "peanut field" containing live peanut plants, information on the health benefits of peanut products, celebrities and cooking demonstrations, the display was packed with people 100% of the time for 3 days. No one could pass by the display and not be compelled to stop and take the time to learn about peanuts. I believe the launch had an impact on consumer opinion that will pay off for the peanut industry as a whole for years to come. The recall and the depressed economy also have affected the market price. Responding to a drop in price per ton, our planted acreage is down an estimated 27% this year with the most drastic reduction being in Virginia. Our research and work as a society is more important now than ever before. Our Society has many decisions to make that will affect its financial security. Right now, our finances are stable but the hit we've taken the last several years regarding annual meeting expenditures has not been easy to endure. The decline in membership and meeting attendance has forced us to take a look at changing our basic meeting structure as well as meeting location. Although it may seem like it, there

is really not a correlation with location and meeting attendance being good or poor. However, states like VA, AL and OK simply don't have the number of people dedicated to peanuts that they used to, and it is becoming harder for those states to host meetings alone without help from others. Our ad hoc committee for long range planning has done a great job recommending changes to the BOD regarding this and other issues, and I think if implemented, these changes will positively affect our financial well being in the future.

On a more positive note, Chris Butts has done an excellent job as editor of Peanut Science. The journal was $4K in the black this year and is back on track, publishing two full issues each year. I'd like to thank Chris for all of his efforts (uncompensated, I might add).

APRES has always been a society composed of great researchers and educators and we now honor our outstanding members for this year. As I end my term as APRES President, I'd like to thank you for your dedication to the peanut industry and to our Society. I know APRES can be as successful as any commodity based society. Stability is key and toward that end, we can probably expect some changes in the months and years ahead. I know that's not something we always feel eager about, but we're up to the challenge. We're determined, dedicated, motivated, and most of all we're adaptable. Our people are good and our operation is good and we have a bright future. So now I leave you in the capable hands of your new President, Barbara Shew and I'll see you all next year in Clear Water! Thanks again.

BUSINESS MEETING AND AWARDS CEREMONY
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
The Marriott Hotel
Raleigh, North Carolina
July 17, 2009

President's Report – President Kelly Chamberlin called the meeting to order and presented the annual President's report, recognizinig members of the various committees responsible for organizing the meeting.

Presentation of Awards:
Joe Sugg Graduate Student Competition-
First place went to George Place
Tie for Second place - Chellani Hathorn and Nicole Juba

The Bailey Award - Susana R. Milla-Lewis and coauthor Thomas Isleib for the paper entitled "SSR Allelic Diversity Changes in Virginia-Type Peanut Cultivars Released from 1943 to 2006."

Dow AgroSciences Awards –
Education Award – Dr. Jay Chapin
Research Award - Dr. Barbara Shew

Fellows of the Society -
Dr. Kenneth Booth
Dr. Tim Brenneman
Dr. Albert Culbreath

Past President's Award was presented to Austin Hagan

Summaries of the reports were presented for the Finance Committee and by the Editor of Peanut Science. The full reports are published in the annual proceedings for 2009.

AD Hoc Committee on Long Range Planning – The committee's report was summarized by Carroll Johnson and is published in the 2009 annual proceedings. The committee recommended a change in the traditional meeting schedule, specifically the elimination of the Friday morning awards ceremony and business meeting. These events will be scheduled for other times during the meeting. Further, the committee recommended changing the rotation schedule for the Society's annual meeting, eliminating the tradition of meeting in each of several peanut producing states with a more regional based meeting rotation. The members voted in principle to approve the committees recommendations..

Public Relations Committee – Four deceased members of the Society were recognized at the annual meeting with a resolution and a moment of silence. These were Stanley Drexler from Tifton, GA, John Phillips from Albany, GA, Dr. D.A. Emery from North Carolina State University, and Dr. John Wilcut from North Carolina State University. The resolution is published in the 2009 Proceedings.

Nominating Committee - The following slate of candidates was presented to the

membership:

President Elect – Maria Gallo
Industry Representative/Production - Robert Sutter
National Peanut Board Representative - Wes Shannon

There being no additional nominations from the floor, the candidates were accepted with a unanimous vote.

Other committee reports are also published in the annual Proceedings for 2009.

Kelly Chamberlin recognized our new President, Barbara Shew, who adjourned the meeting.

FINANCE COMMITTEE REPORT

In lieu of a report, the committee presents the proposed budget for 2010/2011, which was approved by the Board of Directors.

Although the financial position of the Society is sound and the reserve funds increased in 2009/2010, the overall reduction in interest rates paid on these funds has declined. Therefore, growth of the reserve funds will be reduced in the coming year.

2009-10 BUDGET

RECEIPTS	
Registration	$ 31,500.00
Membership Dues	27,000.00
Contributions – Ice Cream Social	11,000.00
Contribution – Dow AgroScience	5,500.00
Contribution – Bayer Fund Replenishment	5,000.00
Contribution – Syngenta	5,000.00
Contribution – NC Peanut Growers	750.00
Interest	3,270.00
Peanut Science & Page Charges	16,500.00
Peanut Research	0.00
Spouse Program	0.00
Misc Income	250.00
Total Receipts	**$105,770.00**
EXPENDITURES	
Annual Meeting	$ 29,000.00
Awards (Coyt Wilson, Dow AgroScience, Joe Sugg)	4,000.00
Bank Charges	40.00
CAST Membership	700.00
Corporation Registration	100.00
Legal Fees (tax preparation)	650.00
Peanut Science – publishing	14,500.00
Professional Services – Executive Officer	19,400.00
Professional Services – Secretarial Services	23,890.00
Proceedings	300.00
Travel – Officers	3,500.00
Office Expenses	3,500.00
Postage	350.00
Travel – Bayer – Prog for Ext Agents	5,000.00
American Express fees	40.00
Sterling Credit Card fees	800.00
Total Expenditures	**$105,770.00**

2008-09 BALANCE SHEET

ASSETS	June 30, 2008	June 30, 2009
Petty Cash Fund	$ 582.35	$682.67
Checking Account	53,339.19	40,384.00
Certificate of Deposit #3	11,794.48	12,365.34
Certificate of Deposit #4	15,946.26	16,151.28
Certificate of Deposit #6	17,429.60	18,282.30
Certificate of Deposit #7	14,757.23	15,502.78
Certificate of Deposit #8	11,562.97	12,146.95
Certificate of Deposit #9	10,000.00	15,552.86
Money Market Account	27,539.19	43,132.94
Bayer Account	11,991.37	12,051.82
Computer/Printer/Equipment	723.68	1,316.39
Inventory of PEANUT SCIENCE & TECHNOLOGY Books	1,780.00	108.00
Inventory of ADVANCES IN PEANUT SCIENCE Books	6,660.00	1,500.00
TOTAL ASSETS	**$184,106.32**	**189,177.32**
Liabilities		
No Liabilities	0.00	0.00
Fund Balance	$184,106.32	189,177.32
TOTAL LIABILITIES & FUND BALANCE	**$184,106.32**	**189,177.32**

STATEMENT OF ACTIVITIY FOR YEAR ENDING 06/30/08

RECEIPTS	**June 30, 2008**
Advances Book	$ 32.50
Ann Mtg Reg	33,750.00
Contribution	32,650.00
Dues	27,971.23
Interest	4,592.73
Misc Income (R Sholar's gift & rebate)	115.00
Peanut Science	68.45
Peanut Science Page Charges	10,480.00
Peanut Science & Technology	30.00
TOTAL RECEIPTS	**$109,689.91**

EXPENDITURES	
Annual Meeting (Program-622.44/AV-12,935.23/Awards-4,443.83 Breaks/Meals-9,181.83/Reg-331.36/Breakfast-3,387.72)	$30,902.41
Bank Charges	43.75
CAST Membership	643.00
Corporation Registration	130.00
Legal Fees	644.00
Misc., retirement gifts for R Sholar	644.00
Office Expenses	829.84
Oklahoma Withholding	678.00
Oklahoma Withholding – Exec Off	-200.00
Oklahoma Withholding – Admn Asst	-478.00
Peanut Science	15,592.71
Postage (bulk_182.72/publications-15.05/general-507.86)	705.63
Proceedings expenses	200.00
Refund – Total Library Solutions dues	630.00
Prof Services – Exec Off	18,021.02
Prof Services – Admin Assist	19,496.88
APRES portion of FICA/Medicare	2,870.18
Travel, Bayer	5,191.81
Travel, Officers (Exec Off, Admn Asst)	3,980.66
TOTAL EXPENDITURES	**$103,043.43**
2008 EXCESS RECEIPTS OVER EXPENDITURES	**$ 6,646.48**

STATEMENT OF ACTIVITIY FOR YEAR ENDING 06/30/09

Receipts	
Advances Book	$ 536.76
Ann Mtg Reg	30,896.00
Contributions	33,350.00
Dues	27,651.22
Interest	4,179.10
Misc Income (overpayment of student fees)	150.00
Peanut Science	47.00
Peanut Science Page Charges	17,720.00
PS&T Income	455.77
TOTAL RECEIPTS	**$114,985.85**
Expenditures	
American Express – monthly card fee	$ 34.70
Annual Meeting	32,984.86
(Program-7,437.79/AV-5,832.70/Awards-4,292.53/ Breaks/Meals-14,222.31/Reg-57.42 /Entertainment-500.00 Supplies-equip-235.99)	
Ann Mtg Advance Hotel pymt – Florida	1,000.00
Bank Charges	32.00
CAST Membership	679.00
Corporation Registration	55.00
Legal Fees	632.00
Misc (pay VA Tech – overpayment of student fees)	150.00
Office Expenses	2,764.48
Peanut Science	14,264.75
Postage	313.22
(publications=18.13/general=295.09)	
Refund – Harrassowitz dues	210.00
Salary – Exec Off	18,021.00
(FICA=1,024.21/Medicare=239.58/FWT=2,750.00)	
Salary – Admin Assist	20,179.44
(FICA=1,355.38/Med=316.94/FWT=1,077.00/SWT=440.00)	
FICA – APRES portion	2,368.44
Medicare – APRES portion	553.92
Oklahoma Withholding	360.00
Oklahoma Withholding (Admin Asst)	- 480.00
Sterling Credit Card Fees	775.42
Travel (Exec Off, Admin Asst)	2,196.86
Travel, Bayer	5,554.94
TOTAL EXPENDITURES	**$102,650.03**
EXCESS RECEIPTS OVER EXPENDITURES	**$ 12,335.82**

Cost of Books sold	**$1,694.00**	
Write Down of Books	**5,138.00**	
Depreciation of Assets	**432.82**	
		7,264.82
2009 TOTAL NET INCREASE		**$5,071.00**

ADVANCES IN PEANUT SCIENCE SALES
REPORT 2008-09

Beginning Inventory		666
1st Quarter	64	602
2nd Quarter	102	500
3rd Quarter	0	500
4th Quarter	0	500
TOTAL	**166**	

REMAINING BOOKS 500 X $3.00 (BOOK VALUE) = $1,500.00 total value of remaining book inventory.

Fiscal Year	Books Sold
1995-96	140
1996-97	99
1997-98	66
1998-99	34
1999-00	45
2000-01	33
2001-02	27
2002-03	35
2003-04	37
2004-05	69
2005-06	8
2006-07	0
2007-08	3
2008-09	166

PEANUT SCIENCE AND TECHNOLOGY
SALES REPORT 2008-09

Beginning Inventory		178
1st Quarter	46	132
2nd Quarter	96	36
3rd Quarter	0	36
4th Quarter	0	36
TOTAL	**142**	

REMAINING BOOKS 36 x $3.00 (book value) = $108.00 total value of remaining book inventory.

Fiscal Year	Books Sold
1985-86	102
1986-87	77
1987-88	204
1988-89	136
1989-90	112
1990-91	70
1991-92	119
1992-93	187
1993-94	85
1994-95	91
1995-96	50
1996-97	33
1997-98	49
1998-99	37
1999-00	30
2000-01	22
2001-02	7
2002-03	26
2003-04	33
2004-05	53
2005-06	31
2006-07	0
2007-08	0
2008-09	142

PUBLIC RELATIONS COMMITTEE REPORT

The Public Relations Committee of the American Peanut Research and Education Society met via e-mail prior to the 2009 annual meeting. Members of the PR committee for 2009 are: Joyce Hollowell (Chair), Ryan Lepicier, Amanda Huber, Lee Campbell, Shelly Nutt, and Barry Tillman. News releases were sent to several states from the Executive Officer of APRES to publicize this meeting. In addition to those releases, information was disseminated to research and extension offices, county agents, and the local paper. The committee recommends that all members encourage scientists and county agents working in peanut to join the society. Photographic records of recognized significant achievements of members are to be made at the meeting. Another role of the committee was to recognize members or prominent individuals in the peanut industry that have deceased with resolutions that honor their contributions. This year there was one individual in that category we felt should be remembered. A resolution for Richard Dennis Bennett is included below.

Richard Dennis "R.D." Bennett

Whereas, Richard Dennis "R.D." Bennett of Greenwood, Florida was born on May 23, 1923, graduated from Greenwood High School in 1942, attended the University of Florida in 1943, and

Whereas, he volunteered for the United States Army in 1943, served in the U.S. Army Infantry during World War II from 1943 to 1946 and received a battlefield appointment as Company Commander of the 36th Division for bravery and leadership in combat in the European theater, as well as a Bronze Star and Purple Heart, and

Whereas, he was a peanut farmer and cattleman, near Greenwood, Florida for over 40 years, and

Whereas, he was the first president and a charter member of the Florida Peanut Producers Association, and the president of the Florida Cattleman's Association, and charter member and first president of the Jackson County Cattleman's Association, and board member of the Jackson County Farm Bureau, and president of the Florida Limousin Breeders Association, and was inducted into the North Florida Research and Education Center Hall of Fame in 2005, and

Whereas, he was an agricultural adviser to former Gov. Lawton Chiles and former Commissioners of Agriculture Doyle Conner, Bob Crawford and current Commissioner Charles Bronson, and

Whereas, he died Thursday, July 24, 2008 in Marianna, Florida, be it resolved that the American Peanut Research and Education Society remembers and honors R.D. Bennett's life and contributions to the peanut industry.

Respectively submitted,
Joyce Hollowell, Chair

PUBLICATIONS AND EDITORIAL COMMITTEE REPORT

The P & E committee met on Tuesday July 14 in Raleigh, NC. Those present were Tom Isleib, Naveen Puppala, Tim Brenneman, Jason Woodward, and Peanut Science editor Chris Butts. Chris presented the Editors report with specifics regarding Peanut Science as follows:

The committee was pleased with the current status of the journal and commended Chris for a job well done. They were particularly pleased with the financial status of the journal, and unanimously recommended that APRES approve the proposed budget, including the approximately $1400 to start using the "Peer tracking" system to help manage and track manuscripts. This will help Chris in the short term and be even more valuable to future editors. The committee also approved the listed nominations for Associate Editors.

Dr. Yen-Con Hung presented a proposal asking permission to list APRES annual meeting abstracts and abstracts of Peanut Science article in the web-based peanut information network system he is developing through peanut CRSP. As this will increase exposure and accessibility the committee recommended we make these available to him.

The committee also discussed a previous proposal to scan the legacy issues of Peanut Science, thus making them searchable and increase their accessibility. The organization offering to do this does not currently have the funding, which would be about $10,000. The committee felt this was worthwhile since Peanut Science contains much of the scientific record regarding peanut production and utilization. We suggest the society fund this effort (all or in part) as funds are available.

Respectfully submitted

Tim Brenneman, Chair

PEANUT SCIENCE EDITOR'S REPORT

Peanut Science has done well since June 2008 to present. Volume 35:02 was published November 25, 2008 consisting of 13 journal articles and 84 pages. Volume 36:01 was published April 24, 2009 containing 14 articles and 97 pages. For the 08-09 fiscal year, Peanut Science expenses totaled $14,252 with a total income of $18,165 (attached).

There were 14 manuscripts submitted between July 1 and December 30, 2008. One article has been published; seven have been accepted and awaiting publication; five are in various stages of review; and one has been rejected. From January 1 to June 30, 16 manuscripts have been received. Four have been accepted for publication, one rejected, and eleven are in review/revision. The average time from submission to first reviews for manuscripts submitted since July 1 2008 was 76 d. The average time to decision was 122 d. Allen Press takes an average of 12 d to produce the galley proof.

The following Associate Editors have terms expiring 2009 and do not desire to continue.

Manjeet Chinnan - Engineering/Food Science (3 years)
Tom Isleib - Breeding/Genetics (6 years)

The following Associate Editors are completing a 3-year term and desire to serve a second 3-year term to expire in 2012

Tim Brenneman - Plant Pathology
Wilson Faircloth - Agronomy/Crop Production
Tim Grey- Weed Science
Peggy Ozias-Akins - Genetics/Biotechnology

The following have agreed and are recommended to serve a 3-year term to expire in 2012 as associate editors for Peanut Science.

Engineering/FoodScience - Yen-Con Hung, Professor, Department of Food Science and Technology, University of Georgia, Griffin Campus, Griffin, GA
Breeding/Genetics - Naveen Puppala, Assist. Professor, NMSU, Clovis, NM
Economics -Nathan Smith, Associate Professor, Agricultural Economics, University of Georgia, Tifton, GA.

The editor requests that the Publication and Editorial Committee endorse the request to implement the PeerTrack Essentials on-line manuscript submission and tracking system to provide editorial assistance in managing manuscripts during the submission and review process. Setup cost is $500 and each submission costs $30. Assuming 30 manuscripts will be submitted in FY09-10, the initial year will cost $1400. The projected budget for 2009-2010 is attached.

NOMINATING COMMITTEE REPORT

The Nominating Committee convened at 1 pm on Tuesday, July 14, 2009, in the Governor's Board Room at the Raleigh Marriott City Center. Members present were Chairman Kelly Chamberlin, T. Isleib and Barbara Shew. Absent members included Maria Gallo and Barry Tillman. The committee had conducted much of its business via email before the annual meeting. Nominations were taken for APRES President Elect, 2010 and Industry Representative for the ARPES Board. Only one nomination for each position was taken so both were confirmed. The new 2010 President Elect is Maria Gallo and the Industry Representative is Bob Sutter. The meeting adjourned at 1:30 pm.

FELLOWS COMMITTEE REPORT

The Fellows committee sought and received 5 nominations for APRES fellow. These included: Kenneth Boote, Tim Brenneman, Albert Culbreath, David Jordan, and Mike Schubert. Kenneth Boote, Tim Brenneman, and Albert Culbreath were presented to the Board of Directors as selection as 2009 APRES Fellows.

Recommendation:
Include a Biographical Sketch in the nomination packet.

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

BIOGRAPHICAL SUMMARIES OF FELLOWS RECIPIENTS

Dr. Kenneth Boote is a Professor in the Agronomy Department at the University of Florida. He earned his B.S. degree from Iowa State University, and his M.S. and Ph.D. degrees from Purdue University.

Dr. Boote's program focuses on measuring and modeling crop growth and yield in response to climate, management, soils, and genetic factors. He is a co-developer of crop simulation models for grain legumes including peanut, soybean, and dry bean. He is known worldwide for his research and modeling of physiology and growth of peanuts, soybean, dry bean, and other crops in response to climatic, soils, and genetic factors. He has active Peanut DRSP projects in Ghana and Burkina Faso.

Dr. Boote has authored or co-authored 165 referred journal articles, 62

non-referred articles, 36 book chapters, and 320 abstracts.

He has served as Associated Editor for Peanut Science, Agronomy Journal, and Crop Science, and has served as Division Chair for A=1, C-2,and Software Scene. He is active in APRES, American Society of Agronomy, Crop Science Society of America, American Society of Plant Biologist, and the Biological Systems Simulation Group. He teaches crop physiology and crop simulation courses.

Dr. Tim Brenneman is a Professor with the University of Georgia. Dr. Brenneman is recognized as an expert in soilborne pathogens of peanuts. He uses an integrated approach to improve disease management for peanut producers. He has received the Dow AgroSciences Award for Excellence in Research and two Wallace K. Bailey Awards from the society and has a student awarded the George Washington Carver Award from NPB. Dr. Brenneman has been invited to make presentations to many groups from Crop Improvement Associations to the Bio Y2K Congress in South Africa serving as the keynote speaker for the Disease Management Session. He has authored over 105 refereed journal articles. He has also been recognized for his achievements by the the Southern Division of APS and the Southeastern Pecan Growers Association. He has advised 9 graduate students and served on the committees of 26 graduate students. He has served on numerous committees for APRES including serving as an Associate Editor for Peanut Science.

Dr. Albert Culbreath is a Professor with the University of Georgia. Dr. Culbreath is a former past president of APRES. He has received the following awards from the society Wallace K. Bailey Award as author or co-author on three different occasions, DowElanco Excellence in Research, and has served as co-author on four Joe Sugg Student Paper Competition award winning presentations. He has also been awarded, by the Georgia Peanut Commision, American Peanut Council, University of Georgia, and American Phytopathological Society. He is recognized as a leader in the areas of ecology, epidemiology, and control of thrips-vectored Tomato spotted wilt virus, and in the

quantitative and ecological epidemiology and control of foliar fungal diseases of peanut. This is documented by authorship on over 120 refereed journal articles and book chapters. Dr. Culbreath has been integral part of a multi-disciplinary "team-approach" to managing tomato spotted wilt virus. His expertise was recognized by being invited to write the 2003 Annual Review of Phytopathology article on Epidemiology and Management of Tomatoe Spotted Wilt of Peanut and to give a plenary presentation at the Eight International Symposium on Thysanoptera and Tospoviruses in 2005. Dr. Culbreath has served as advisor or committee member on 22 graduate student committees. He has been very active in APRES serving on numerous committees and as a reviewer for Peanut Science.

GUIDELINES for AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY FELLOW ELECTIONS

Fellows

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

Eligibility of Nominators

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

Eligibility of Nominees

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

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

Nomination Procedures

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

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

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

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

chairman of the Fellows Committee by March 1 each year.

Basis of Evaluation

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

Processing of Nominations

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

Recognition

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

Distribution of Guidelines

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

FORMAT for AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY FELLOW NOMINATIONS

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

DATE SUBMITTED:

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

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

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

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

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

I. Personal Achievements And Recognition (10 points)

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

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

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

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

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

D. Administration or Business

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

III. Service to The Profession (30 Points)

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

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

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

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

BAILEY AWARD COMMITTEE REPORT

The Bailey Award Committee meeting was convened on Tuesday, July 14 by Albert Culbreath, the incoming chair. The committee's business related to the 2008 winner was tended to prior to the annual meeting. Nominees were received from all eight eligible sessions of the 2008 annual meeting. Six manuscripts were received and accepted for final evaluation by the committee. The winning paper is to be presented the Bailey Award at the Friday morning awards ceremony.

The winning paper is from presentation titled "SSR Allelic Diversity changes in Virginia-type Peanut Cultivars released from 1943 to 2005." by S.R. MILLA-LEWIS* and T.G. ISLEIB, Department of Crop Science, North Carolina State University, Raleigh, NC 27695-7629. S. R. Milla-Lewis was the presenter.

The chair would like to thank the committee for serving as reviewers and their timely responses despite the short turn around time given. Appreciation is given to nominees for submitting manuscripts despite their short notification.

2008-09 Bailey Award Committee:
Nathan Smith, Chair (2008)
Diane Rowland (2009)
Peggy Ozias-Akins (2010)
Albert Culbreath (2010)
Kris Balkcom (2010)
Emily Cantonwine (2011)

Respectfully Submitted by:
Nathan Smith, Chair

GUIDELINES for AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY BAILEY AWARD

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

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

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

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

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

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

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

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

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

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

a) notify session moderators for the upcoming meeting of their

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

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

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

JOE SUGG GRADUATE STUDENT AWARD REPORT

The Joe Sugg Graduate Student Committee met from 3:00-4:00 PM, Tuesday 8 July 2008 in the Huckins Room of the Renaissance Hotel in Oklahoma City. Present at the meeting were Dr. Jason Woodward, Dr. Susana Milla Lewis, Dr. Roy Pittman, and Dr. Bob Kemerait.

Dr. Kemerait reported that there had originally been nine papers submitted to the student competition session, but that one had been withdrawn leaving eight total papers in the session to be held on Wednesday morning.

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

COYT T. WILSON DISTINGUISHED SERVICE AWARD REPORT

The announcement requesting nominations for the CTWDSA was distributed to APRES members by e-mail on February 5, 2009. The CTWDSA Chair for 2009 corresponded with the committee members on February 19, providing them with copies of an Excel file listing APRES members' instances of service to the Society (primarily committee appointments and service on the BOD as listed in the annual proceedings) and exhorting them to identify deserving candidates and encourage those individuals' colleagues to prepare and submit nominations. No new nominations were received for the CTWDSA for 2009, and there were no nominations carried over from 2008.

BIOGRAPHICAL SUMMARY OF COYT T. WILSON DISTINGUISHED SERVICE AWARD RECIPIENT

NO AWARD GIVEN.

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

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

Eligibility of Nominators

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

Eligibility of Nominees

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

Nomination Procedures

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

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

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

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

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

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

Qualifications of Nominee

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

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

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

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

Award and Presentation

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

DOW AGROSCIENCES AWARDS COMMITTEE REPORT

The Dow AgroSciences Awards Committee did not meet at the APRES meetings in 2009 because committee business was taken care of prior to the APRES annual meeting. Below is a timeline of Committee functions during 2009:

- Call for nominations was put out in early Feb. and deadline was March 17, 2009

- The committee received three nominations for the Research Award and 2 nominations for the Education Award

- Award selections were voted and made on April 15.

Individuals receiving the Research and Educations award are as follows:
Research Award

Mr. Joe W. Dorner, Microbiologist
USDA-ARS-National Peanut Research Laboratory
P.O. Box 509: 1011 Forrester Dr. SE
Dawson, Georgia 39842
229-995-7408

Education Award

Dr. Robert (Bob) Kemerait Jr.
Department of Plant Pathology
University of Georgia
Tifton Campus
PO Box 748
Tifton, GA 31793-0748

No changes to the committee were discussed and/or recommended.

Respectfully submitted,
Chad Godsey, Chair

BIOGRAPHICAL SUMMARY OF DOW AGROSCIENCES AWARD FOR EXCELLENCE IN RESEARCH RECIPIENT

Mr. Joe Dorner is a Microbiologist with the Agricultural Research Service at the national Peanut Research Laboratory in Dawson, GA. Mr. Dorner earned his B.S. degree in Biology at Furman University and a M.S. degree in Plant Pathology with a Mycology minor from Auburn University. After graduation, Joe started his career at the national Peanut Research Laboratory as a Biological Technician and since has become world renown for aflatxin research.

Joe Dorner was uniquely responsible for transferring technology for biological control of aflatoxin contamination of peanuts to the private sector. Aflatoxin contamination is regulated by the Food and Drug Administration; therefore, all shelled lots of peanuts produced in the United States are monitored for presence of the toxins and must be diverted from edible markets if a concentration of 15 ppb is exceeded.

Mr. Dorner was part of a research team that worked for over 10 years to develop a biological control method for aflatoxin. This method is based on competitive exclusion whereby a non-toxigenic strain of *A. flavus* is established in the soil of developing peanut plants to exclue the toxigenic strains durincrop colonization by the fungus. Three patents were granted concerning this technology. Dorner led the efforts to overcome many obstacles, resulting in the first commercial use of the competitive exclusion technology in 2004.

Circle One Global (COG), Inc., licensed he technology from ARS and assigned the trade name, afla-guard®, to the biocontrol product. Mr. Dorner worked closely with COG in designing a manufacturing facility to produce high-quality afla-guard®. The economic impact of afla-guard® depends on the severity of aflatoxin contaminatin in a given year. The benefit is greater in years when aflatoxin contamination is severe in the crop. This was illustrated in the 2004 study when afla-guard®-treated peanuts from one shelling plant with minimal contamination had a net increase in value of $13/ton or 6.1% compared with untreated peanuts. At another plant, the net value increase was $56/ton or 15.3%. Therefore, not only has use of afla-guard® resulted in increased safety of peanuts for the consumer but it has also had a significant economic impact on the US peanut industry.

At present afla-guard® is being used in commercial peanut production primarily in the southeastern United States where aflatoxin contamination has been historically the highest. In 2007 COG sold afla-guard for treatment of 35,000 acres.

Since aflatoxin is a worldwide problem, Mr. Dorner is currently working with scientists in other countries to evaluate the efficacy of afla-guard® in their unique settings. In 2008, studies were conducted in Brazil, South Africa, Mozambique, and Malawi. Although the transfer of this technology is already having a significant impact on aflatoxin in US-grown peanuts, there is potential for even greater impact around the world.

BIOGRAPHICAL SUMMARY OF DOW AGROSCIENCES AWARD FOR EXCELLENCE IN EDUCATION RECIPIENT

Dr. Robert Kemerait has been a member of APRES since 1999, and began working for the Department of Plant Pathology at the University of Georgia on 1 March 2000 in a 100% Extension appointment on peanut, cotton, soybean, and filed corn. These agronomic crops are critical for Georgia's economy, and disease and nematode management are essential or the successful production of all. Although Dr. Kenerait has responsibility for several major crops, his contributions to the peanut industry during very dynamic and challenging times are especiall noteworthy. He has established himself well as a leader and innovator in integrated disease management, with efforts that have benefited growers on all scales of production. Dr. Kenerait's Extension program is geared heavily toward education and preparedness of county agents. He has a very effective system for technology transfer to Georgia's county agricultural agents

and growers. His collaboration with and mentoring of agents on farm trials has been especially productive both as an educational tool and a means of obtaining research results. His leadership in development of the fungal disease risk index for peanut and melding that index with the Tomato Spotted Wilt Index into what is now “Peanut Rx” is a prime example of his innovation in education about addressing multiple disease problems in peanut. This educational package has already had major positive impact on peanut production efficiency in Georgia and the Southeast, and should provide even greater long term benefits.

Since 2002 Dr. Kemerait has been a Co-PI in a Peanut CRSP project in Guyana, South America, and more recently in a similar project in Haiti. The objectives of these USAID funded projects are to improve the production of peanuts through transfer of appropriate technology, to educate the growers on aflatoxin, to train them in value-added production of peanut products, and to develp cropping systems that will protect fragile ecosystems in undeveloped regions. To achieve these objectives, Dr. Kemerait has been instrumental in development of a production guide specific to the region in Guyana, and in conducting field trials and training sessions.

In summary, Dr. Kemerait has developed an exceptional multi-faceted extension program. He is very much a team player, but is a leader by example.

His efforts and attitude are inspiring, and we believe that his achievements and contributions to the peanut industry through his extension and research activities, involvement with graduate students, and activities in various scientific societies are very appropriate for the Dow AgroSciences Award for Excellence in Educaiton.

GUIDELINES for DOW AGROSCIENCES AWARDS FOR EXCELLENCE IN RESEARCH AND EDUCATION

I. Dow AgroSciences Award for Excellence in Research

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

Eligibility of Nominees

Nominees must be active members of the American Peanut Research and Education Society and must have been active members for the past five years. The nominee or team must have made outstanding contributions to the peanut industry through research projects. An individual may receive either award only once as an individual or as a team member. Members of the Dow AgroSciences Awards Committee are ineligible for the award while serving on the committee.

II. Dow AgroSciences Award for Excellence in Education

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

Eligibility of Nominees

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

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

Eligibility of Nominators

Nominators must be active members of the American Peanut Research and Education Society. Members of the Dow AgroSciences Awards Committee are not eligible to make nominations while serving on the committee. A nominator

may make only one nomination each year.

Nomination Procedures

Nominations will be made on the Nomination Form for Dow AgroSciences Awards. Forms are available from the Executive Officer of APRES. A nominator's submittal letter summarizing the significant professional achievements and their impact on the peanut industry must be submitted with the nomination. Three supporting letters must be submitted with the nomination. Supporting letters may be no more than one page in length. Nominations must be postmarked no later than March 1 and mailed to the committee chair. Unsuccessful nominations will be reconsidered the following year and nominators will be contacted and given the opportunity to provide a letter that updates the nomination. After the second year unsuccessful nominations will be reconsidered only following submission of a new, complete nomination package.

Dow AgroSciences Awards Committee

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

NOMINATION FORM FOR DOW AGROSCIENCES AWARDS

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

****

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

___ Dow AgroSciences Award for Excellence in Education

___ Dow AgroSciences Award for Excellence in Research

****

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

DATE:

Nominee(s): _____

Address _____

Title _____ Tel No. _____

II. Nominator:

Name _____ Signature_____

Address _____

Title _____Tel No._____

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

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

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

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

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

PEANUT QUALITY COMMITTEE REPORT

The quality committee met July 14, 2009 at 3:00PM in Raleigh, NC, to discuss issues involving peanut quality as it relates to consumers. 4 committee members were present with 14 guests listed as follows:

Wilson Faircloth, Chair ** USDA-ARS
Jim Elder ** JM Smucker
Charles Chen USDA-ARS
Rich Wilson Peanut Foundation
Ryan Lepicier ** National Peanut Board
Ron Henning EMD Crop Bioscience
Paul Schmidt EMD Crop Bioscience
Keith Hendrix USDA-ARS
Lisa Dean USDA-ARS
Tim Sanders USDA-ARS
Chris Butts USDA-ARS
Mark Cline Mars
Brian Anthony ** Mars
Mike Jackson ** J Leek Assoc
David Jordan NC State Univ
Joe Dorner USDA-ARS
Doug Smyth Kraft
Jack Davis USDA-ARS

** denotes committee member or designee

Jim Elder began discussion with a question concerning the quality of the 2008 carry-over crop. None were reported, however, David Jordan et al. reported scattered reports of aflatoxin in current pre-harvest checks in NC. Joe Dorner updated the group on the development of AflaGard, an aflatoxin prevention product. Dorner also responded to questions about the peanut spotting issue seen in 2007, to which he replied this was not an issue for the 2008 crop.

Rich Wilson began discussions on high oleic acid (O/L) peanuts. Lengthy discussion ensued from most all sectors represented. Concerns of note were the lack of Virginia market-type cultivars with the high O/L trait, maintenance of flavor while incorporating the trait, and how to promote the health benefits of high O/L peanuts and encourage industry-wide adoption.

Updates were given by scientists Jack Davis, Tim Sanders, and Lisa Dean concerning their work on antioxidant properties of peanut.
No actions were taken by the committee.

Respectfully submitted,
Wilson H. Faircloth, USDA-ARS, Chair

PROGRAM COMMITTEE REPORT

The Program Committee met to review arrangements at 9 a.m. in Raleigh, NC on July 14, 2009. Members present were: David Jordan, Tom Stalker, Joyce Hollowell, Jane Dove Long, and Barbara Shew. Jim Starr also attended.

Various members of the Program Committee met by email and in person several times through the spring of 2009. The Technical Program Committee consisted of Tom Stalker, chair, Jack Davis, David Jordan, Joyce Hollowell, and S. Tallury. The Local Arrangements Committee consisted of David Jordan, chair, Rick Brandenburg, Tom Isleib, Bridget Lassiter, Jane Dove Long, Victor Mascarenhas, Douglas Snyder, and Bob Sutter. Susan Copeland and Helene Stalker completed the Spouses' Program Committee. Also assisting with meeting arrangements were Brian Royals, Brenda Watson, George Place, and Wendy Drake.

A pre-meeting field tour visited the Peanut Belt Research Station on Monday, July 13, 2009 and was attended by 35 people. A small number of people enjoyed the golf outing on Tuesday morning. Rick Brandenburg recommended that this activity be designated as an informal outing rather than a tournament.

One hundred abstracts were submitted prior to the meeting; 21 were for posters, and 79 were for oral presentations, including14 to be presented by graduate students in competition for the Joe Sugg Award. Tom Stalker, Technical Program Chair, expressed concern regarding the length of abstracts. The Program Committee communicated a recommendation to re-institute clear guidelines on abstract length to the Publications Committee.

Prior to the meeting, 128 members and 48 spouses and children were registered; final registration was approximately 195 members and 66 spouses and children. The low number of preregistrations caused a great deal of concern in budgeting for the meeting and in working the hotel and meeting sponsors. The Program Committee strongly recommended institution of a late registration fee to encourage early registration, which would better facilitate meeting planning and estimation of expenses.

Respectfully submitted,
Barbara Shew, chair

CONTRIBUTORS TO 2009 APRES MEETING

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

Special Activities

North Carolina Cooperative Extension Service – Peanut Plot Tour

Bayer CropScience – Wednesday Reception/Dinner

BASF – Wednesday Reception/Dinner

Dow AgroSciences – Awards Breakfast

Syngenta – Daily Breaks

Product Contributors

Alabama Peanut Producers Association
Birdsong Peanuts
Florida Peanut Producers Association
Georgia Peanut Commission
Hershey Foods Corporation
Kraft Foods
North Carolina Peanut Growers Association
Oklahoma Peanut Commission
Sessions Company, Inc.
Southern Peanut Company
Texas Peanut Producers Board
Texoma Peanut
Virginia Peanut Growers Association
Western Peanut Growers Association, Inc.

General Session Contributors

Chem Nut, Inc.
Coastal AgroBusiness, Inc.
National Peanut Board
Neogen Corporation
Pert Laboratories, Inc.
Severn Peanut Company, Inc.

Ice Cream Social

Agrisel

Albaugh

AMVAC

American Peanut Growers Group

Arysta Life Science

Becker Underwood

Birdsong Peanuts

Cheminova

Circle One Global Inc.

DuPont

EMD Crop BioScience

Farm Press Publications

Farm Progress Publications

Golden Peanut Company

Gowan Company

Helena Chemical

J. Leek Associates Inc

Makhteshim-Agan

National Peanut Board

National Peanut Buying Points Association

Nichino Americas

Peanut Grower/Soybean South

Plant Health Care, Inc.

Sipcam Agro USA

Southeast AgNet

Tessenderlo Kerley

The Peanut Foundation

Triangle Chemical Company

United States Gypsum

United Phosphorous

Universal Blnchers LLC

Valent U.S.A.

Vicam

Jennie and Robert Williams, Jr.

41st ANNUAL MEETING
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
Raleigh, North Carolina
JULY 14-17, 2009
Board Of Directors

President ..... Kelly Chamberlin
Past President ..... Austin Hagan
President-Elect ..... Barbara Shew
Executive Officer ..... James L. Starr
State Employee Representatives:
  Virginia-Carolina ..... J.W. Chapin
  Southeast ..... Eric P. Prostko
  Southwest ..... Jason Woodward
USDA Representative ..... W. Carroll Johnson
Industry Representatives:
  Production ..... Randy Myers
  Shelling, Marketing, Storage ..... Emory Murphy
  Manufactured Products ..... Victor Nwosu
American Peanut Council ..... Howard Valentine
National Peanut Board ..... Wes Shannon

Program Committee

Barbara Shew, Chair

——Technical Program——

H. Thomas Stalker, Chair
Jack Davis
David Jordan
Joyce Hollowell
S. Tallury

——Local Arrangements——

David Jordan, Chair
Rick Brandenburg
Tom Isleib
Bridget Lassiter
Jane Dove Long
Victor Mascarenhas
Douglas Snyder
Bob Sutter

Spouses' Program

Susan Copeland
Helene Stalker

PROGRAM HIGHLIGHTS

Monday, July 13

APRES Research Field Tour **Peanut Belt Research Station, Lewiston-Woodville, NC**
Meet in lobby at 1:30 pm, return by 9:00 pm

Tuesday, July 14

APRES Golf Outing **Eagle Ridge Golf Club, Raleigh**
Meet in lobby at 7:00, play begins at 8:00 am

Committee and Other Meetings

9:00-10:00	Program Committee	Chancellor Room
10:00-12:00	Crop Germplasm Committee	University AB
12:00-6:00	APRES Registration	Foyer
1:00-5:00	Spouses' Hospitality Room	Alumni Room
1:00-6:00	Presentation Loading	Foyer
1:00-2:00	Associate Editors, *Peanut Science*	Congressional Room A
1:00-1:30	Site Selection Committee (30 min)	Congressional Room B
1:00-2:00	Fellows Committee	Chancellor Room
1:30-2:00	Bailey Award Committee (30 min)	Congressional Room B
1:00-2:00	Nominating Committee	Governor's Board Room
2:00-3:00	Publications and Editorials Committee	Congressional Room A
2:00-2:30	Joe Sugg Award Committee (30 min)	Congressional Room B
2:00-3:00	Finance Committee	Governor's Board Room
2:00-3:00	Public Relations Committee	Chancellor Room
3:00-4:00	Peanut Quality Committee	Congressional Room A
3:00-4:00	Coyt T. Wilson Dist. Service Award	Congressional Room B
3:00-4:00	Long Range Planning *Ad hoc* Committee	Governor's Board Room
3:00-400	Dow AgroSciences Award Committee	Chancellor Room
4:00-6:00	Peanut CRSP*	Congressional Room B

Committees with business completed before Annual Meeting: Dow AgroSciences Awards Committee, Fellows Committee, Public Relations Committee. Rooms are available for these committee meetings if needed. Contact committee chair for information.

*Meetings in Program marked with * are not official APRES meetings

7:00-9:00 **"Welcome to North Carolina" Ice Cream Social**
University Ballroom ABC

PROGRAM HIGHLIGHTS

Wednesday, July 15

Morning

8:00-4:00	APRES Registration	Foyer
8:00-9:30	Poster and Exhibitor Setup	University Ballroom ABC
8:00-5:00	Spouses' Hospitality Room	Alumni Room
8:00-9:30	General Session	State Ballroom ABC
9:30-10:00	**Break**	**University Ballroom ABC**
10:00-11:45	Weed Science	State Ballroom E
10:00-11:00	Physiology	State Ballroom F
10:00-3:30	Posters Displayed	University Ballroom ABC

Afternoon and Evening

1:00-5:15	Graduate Student Competition	State Ballroom ABC
3:00-3:30	**Break**	**University Ballroom ABC**
3:30-6:00	Presentation Loading	Foyer
5:00-6:30	Board of Directors	Congressional Room
7:30-9:30	**Dinner**	**State Ballroom ABC**

Bayer CropScience and BASF Corporation

Thursday, July 16

8:00-12:00	APRES Registration	Foyer
8:00-5:00	Spouses' Hospitality Room	Alumni Room
8:00-4:00	Posters and Exhibits Displayed*	University Ballroom ABC
8:00-11:15	Breeding, Biotechnology, & Genetics I & II	State Ballroom D
8:00-9:45	Bayer Excellence in Extension	State Ballroom A
9:45-10:15	**Break**	**University Ballroom ABC**
10:00-11:15	Processing and Utilization	State Ballroom A
1:00-3:00	Production Technology	State Ballroom A
1:00-5:00	Plant Pathology I and II	State Ballroom D
2:45-3:15	**Break**	**University Ballroom ABC**
3:00-3:45	Harvesting	State Ballroom A
3:00-5:00	Seed Summit	State Ballroom C
5:00-6:00	Peanut Genomics Initiative	State Ballroom B

*4:00 pm Posters removed

Dinner on your own

PROGRAM HIGHLIGHTS

Friday, July 17

Morning

7:00-8:00	**Awards Breakfast**	**University Ballroom ABC** **Dow AgroSciences**
8:00-10:00	APRES Awards Ceremony and Business Meeting	University Ballroom ABC

GENERAL SESSION Wednesday, July 15

Morning

GENERAL SESSION

State Ballroom ABC

8:00 Call to Order..... Barbara Shew
APRES President-Elect

8:05 Welcome to Raleigh..... Denny Edwards
CEO, Greater Raleigh Convention and Visitor's Bureau

8:15 Welcome from the College of Agriculture
and Life Sciences NC State University ..... Dean Johnny C. Wynne
College of Agriculture and Life Sciences
North Carolina State University

8:30 NPB George Washington Carver Award Presentation.... National Peanut Board

8:35 Peanuts: Energy for the Good Life..... Ryan Lepicier
Director of Communications,
National Peanut Board

8:45 Changing Climate: New Climate Sciences
and Services for Agriculture..... Ryan Boyles
State Climatologist & Director
North Carolina State Climate Office

9:25 Announcements..... Tom Stalker
Technical Program Chair

Morning

WEED SCIENCE

Moderator: ***Victor Mascarenhas, Syngenta Crop Protection, Whitakers, NC***
Meeting Room: ***State Ballroom A***

10:00 (1) **Strongarm and Cadre Comparison for Postemergence Weed Management in Peanut**. B. BRECKE*, West Florida Research and Education Center, University of Florida, Jay, FL 32565; T. GREY, Crop and Soil Science Department, University of Georgia, Tifton, GA; and G.R. WEHTJE, Agronomy and Soils, Auburn University, Auburn, AL 36849.

10:15 (2) **Palmer Amaranth (*Amaranthus palmeri*) Control with Combinations of 2,4-DB and Diphenylether Herbicides.** G.S.H. CHAHAL, D.L. JORDAN*, E.P. PROSTKO, A.C. YORK, and S.B. CLEWIS, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; and Department of Crop and Soil Science, University of Georgia, Tifton, GA 31793.

10:30 (3) **Peanut Response to Dicamba.** E.P. PROSTKO*, T.L. GREY, University of Georgia, Tifton, GA 31793; M. MARSHALL, Clemson University, Blackville, SC 29817; J.A. FERRELL, University of Florida, Gainesville, FL 32611; D.L. JORDAN, North Carolina State University, Raleigh, NC 27695; B.J. BRECKE, University of Florida, Jay, FL 32583; P.A. DOTRAY, Texas Tech University, Lubbock, TX 79409; W.J. GRICHAR, Texas AgriLIFE Research, Beeville, TX 78102; and G.R. WEHTJE, Auburn University, Auburn, AL 36849.

10:45 (4) **Benefits and Risks of Early-Season Applications of Chlorimuron for Broadleaf Weed Control in Peanut.** W.C. JOHNSON, III*, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793-0748.

11:00 (5) **Peanut Response to Flumioxazin**. P.A. DOTRAY*, Texas Tech University, Texas AgriLIFE Research, and Texas AgriLIFE Extension Service, Lubbock; L.V. GILBERT, Texas AgriLIFE Research, Lubbock; K.T. SIDERS, Texas AgriLIFE Extension Service, Levelland; and S.A. RUSSELL, Texas AgriLIFE Extension Service, Brownfield, TX.

11:15 (6) **Weed Control in Peanut (*Arachis hypogaea*) with Brand Name and Generic Formulations of Imazapic and Paraquat**. R.D. WALLACE, E.P. PROSTKO, and T.L. GREY*. Crop and Soil Science Department, University of Georgia, P.O. Box 748, 115 Coastal Way, Tifton, GA 31793.

11:30 (7) **Weed Control with Lactofen.** W.J. GRICHAR*, and P.A. DOTRAY, Texas AgriLIFE Research, Beeville, TX 78102 and Lubbock, TX 79409, respectively.

PHYSIOLOGY

Moderator: ***Russell Nuti, USDA-ARS National Peanut Research Laboratory, Dawson, GA***
Meeting Room: ***State Ballroom B***

10:00 (8) **Relationship of Leaf and Canopy Photosynthesis to Dry Matter Accumulation and Yield as Predicted by the CROPGRO-Peanut Model.** K.J. BOOTE*, J.E. ERICKSON, M. SINGH, Agronomy Department, University of Florida, Gainesville, FL 32611-0500; and G. BOURGEOIS, Agriculture Canada, Saint-Jean-sur-Richelieu, Quebec, Canada J3B 3E6.

10:15 (9) **Assessment of Similarities Between Nontransgenic and Transgenic Peanut with Resistance to Sclerotinia Blight.** J.H. HU*, P.M. PHIPPS, D.E. PARTRIDGE, Tidewater Agricultural Research & Extension Center (AREC), Virginia Tech, Suffolk, VA 23437; and E.A. GRABAU, Dept. of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, VA 24061.

10:30 (10) **Response of Peanut to Differing Irrigation Amounts**. J.P. BEASLEY, JR.*, R.S. TUBBS, J.E. PAULK, III, J.E. HOOK, Crop and Soil Sciences Dept., The University of Georgia, Tifton, GA 31793; and R.T. YAGER, Stripling Irrigation Research Park, The University of Georgia, Camilla, GA 31730.

10:45 (11) **Modeling Peanut (*Arachis hypogaea*) Seed Germination.** T.L. GREY*, J.P. BEASLEY, JR., Crop and Soil Science Department, University of Georgia, P.O. Box 748, 115 Coastal Way, Tifton, GA 31793; C.Y. CHEN, USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842; and T.M. WEBSTER, Crop Protection and Management Unit, USDA-ARS, Tifton, GA 31794.

POSTER SESSIONS

Facilitator: ***Joyce Hollowell, NC State University, Raleigh NC***
Meeting Room: ***University Ballrooms A, B, & C***

Wednesday 10:00-5:00, Thursday 8:00-4:00.
Authors Present Wednesday or Thursday from 11:00-12:00.

(12) **Peanut Response to Fomesafen.** L.V. GILBERT, Texas AgriLIFE Research, Lubbock; P.A. DOTRAY*, Texas Tech University, Texas AgriLIFE Research, and Texas AgriLIFE Extension Service, Lubbock; E.P. PROSTKO, The University of Georgia, Tifton, GA; W.J. GRICHAR, Texas AgriLIFE Research, Beeville; J.A. FERRELL, University of Florida, Gainesville; and D.L. JORDAN, North Carolina State University, Raleigh, NC 27795.

(13) **Association of Stomata Traits and Root Distribution to Water Use Efficiency of Peanut under Different Available Soil Water**. P. SONGSRI, S. JOGLOY*, T. KESMALA, N. VORASOOT, C. AKKASAENG, A. PATANOTHAI, Department of Agronomy, Faculty of Agriculture, Khon Kaen University, Muang, Khon Kaen, 40002, Thailand; and C.C. HOLBROOK,Crop Genetics and Breeding Research Unit,USDA-ARS,Coastal Plain Experiment Station,Tifton,GA-31793-0748.

(14) **Evaluation of the U.S. Peanut Mini Core Collection Using a Molecular Marker for Resistance to Sclerotinia minor Jagger.** K.D. CHENAULT CHAMBERLIN*, H.A. MELOUK, USDA-ARS, Wheat, Peanut and other Field Crops Research Unit, 1301 N. Western, Stillwater, OK 74075; and M.E. PAYTON, Department of Statistics, Oklahoma State University, Stillwater, OK 74078.

(15) **Development of a Rapid Isolation Assay of High Quality RNA and DNA from Several Peanut Tissues Suitable for Molecular Analysis.** C.Y. CHEN*, P.M. DANG, USDA-ARS, National Peanut Research Laboratory (NPRL), Dawson, GA 39842; B.Z. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793.

(16) **Exploring Climate Impacts on Growth and Yield of Peanut in North Carolina Through Simulation.** G.G. WILKERSON*, Z. YANG, G.S. BUOL, D.L. JORDAN, Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620; and H. DINON, R.L. BOYLES, State Climate Office of North Carolina, North Carolina State University, Raleigh, NC 27695.

(17) **Identification of Two Peanut Germin-like Genes and the Potential Superoxide Dismutase Activity.** X. CHEN, T. BRENNEMAN, A. CULBREATH, Department of Plant Pathology, the University of Georgia, Tifton, GA 31793; C.C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; B.Z. GUO*, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793.

(18) **Identification of Putative Peanut TSWV Resistance Gene(s) and Development of Markers for Breeding.** X. CHEN, A. CULBREATH, T. BRENNEMAN, Department of Plant Pathology, the University of Georgia, Tifton, GA 31793; C.C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; and B.Z. GUO*, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793.

(19) **Evaluation of DPX LEM 17 200SC for Control of Foliar and Soil-borne Diseases of Peanut at Two Locations in Alabama**. H.L. CAMPBELL*, A.K. HAGAN, K.L. BOWEN, Dept. of Entomology and Plant Pathology, Auburn University, AL 36849; L.W. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345; and M.D. PEGUES, Gulf Coast Research and Extension Center, Fairhope, AL 36532.

(20) **Efficacy of Anthranilic Diamides Against Peanut Insect Pests.** D.A. HERBERT, JR.*, and S. MALONE, Department of Entomology, Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.

(21) **Variability of Total Oil Content in Peanut across the State of Texas.** M.R. BARING*, M.D. BUROW, C.E. SIMPSON, and J.N. WILSON Soil and Crop Sciences Department, Texas AgriLIFE Research, College Station, TX 77843-2474.

(22) **Screening for Rossette Resistance in Valencia Mini Core Collection.** D.O. KALULE*, National Agricultural Semi Arid Research Institute, Saroti, Uganda; M. DEOM, Department of Plant Pathology, University of Georgia, Athens, GA; B.U. BORIS, Economics Department, University of Connecticut, Storrs, CT; H.D. UPADHYAYA, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, PO 502324, AP, India; P. PAYTON, and K.R. KOTTAPALLI, USDA-ARS Cropping Systems Research Laboratory, Lubbock, TX 79415; and P. KOTTAPALLI, S. SANOGO and N. PUPPALA, New Mexico State University Agricultural Science Center, Clovis, NM 88101.

(23) **Planting Pattern Studies in Valencia Peanuts.** N. PUPPALA*, New Mexico State University, Agricultural Science Center at Clovis, NM 88003; R. NUTI, and R. SORENSEN, USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842.

(24) **Yield and Quality of Valencia Peanut as Affected by Application of Biorational and Chemical Fungicides.** SOUM SANOGO*, New Mexico State University, Department of Entomology, Plant Pathology and Weed Science, Las Cruces, NM 88003; and N. PUPPALA, New Mexico State University Agricultural Science Center, Clovis, NM 88101.

(25) **Molecular Characterization and Assessment of Genetic Diversity in Valencia Mini Core Using SSR Markers.** P. KOTTAPALLI*, New Mexico State University Agricultural Science Center, Clovis, NM 88101; H.D. UPADHYAYA and R. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, PO 502324, AP, India; K.R. KOTTAPALLI and P. PAYTON, USDA-ARS Cropping Systems Research Laboratory, Lubbock, TX 79415; and N. PUPPALA, New Mexico State University Agricultural Science Center, Clovis, NM 88101.

(26) **Combining Ability for Oleic Acid in Peanut.** N. SINGKHAM*, S. JOGLOY, P. JAISIL, Department of Plant Science and Agriculture Resources, Faculty of Agriculture, Khon Kaen University, Khon Kaen, 40002, Thailand; P. SWATSITANG, Department of Biochemistry, Faculty of Science, Khon Kaen University, Khon Kaen, 40002, Thailand; and N. PUPPALA, Agricultural Science Center at Clovis, New Mexico State University, Clovis, NM 88101.

(27) **The Effect of Forage Harvest During Pod-filling on Pod and Forage Yield and Forage Nutritive Value of Valencia Peanut (*Arachis hypogaea* L.) in the Southern High Plains of the USA.** L.M. LAURIAULT, Tucumcari Agric. Sci. Ctr., New Mexico State Univ., 6502 Quay Road AM.5, Tucumcari, NM 88401; and N. PUPPALA*, Clovis Agric. Sci. Ctr., New Mexico State Univ., 2346 St. Hwy 288, Clovis, NM 88101.

(28) **Plant Response to TSWV and Seed Accumulation of Resveratrol in Peanut.** M. WANG, D. PINNOW, N.A. BARKLEY, and R. PITTMAN*, USDA, ARS, SAA, Plant Genetic Resources Conservation Unit, 1109 Experiment St., Griffin, GA 30223.

(29) **SSR Allelic Diversity Shifts in Runner-Type Peanut Breeding.** S.R. MILLA-LEWIS*, M.C. ZULETA, and T.G. ISLEIB, Dept. of Crop Science, North Carolina State Univ., Raleigh, NC 27695-7629.

(30) **An Overview of the Peanut (*Arachis hypogaea* L.) Crop and Agroindustry in Argentine.** S. SANCHEZ-DOMINGUEZ*, Departamento de Fitotecnia, Universidad Autonoma Chapingo, Chapingo Mex, 56230; O. GIAYETTO and G. CERIONNI, FAV-Universidad Nacional de Rio Cuarto, Ruta Nacional No. 36, Km 601,Pcia. de Cordoba, Argentina.

(31) **Evaluating the Use of New and Standard Insecticides for Southern Corn Rootworm Control in Peanuts.** B.M. ROYALS*, and R.L. BRANDENBURG, Department of Entomology, North Carolina State University, Box 7613, Raleigh, NC 27695-7613; and D.A. HERBERT, JR, Tidewater AG RES & EXT Center, 6321 Holland Road, Suffolk, VA 23437.

(32) **Peanut yield in the Brazilian system of conservation tillage and crop rotation with sugarcane.** D. BOLONHEZI*, Experimental Station of Agronomic Institute - APTA, Ribeirão Preto; M.C. MONTEZUMA, Monsanto, Brazil; E.L. FINOTO, M. MICHELOTTO, and A.L.M. MARTINS, Experimental Station, of Agronomic Institute – APTA, Pindorama, Brazil; I.J. GODOY, Center of Grains and Fiber, Agronomic Institute-APTA, Campinas, Brazil; L.M.A. IVAN, R. PALHARES, and G.V. GOMES, Usina Açucareira Guaíra (Sugar Mill), Guaíra, Brazil; L.A. PAIVA, and L.R.P. FERREIRA, Usina Cerradinho (Sugar Mill), Catanduva, Brazil.

(33) **Effect of Phenolic Compounds on Immunoassays of Peanut Allergens.** S.-Y. CHUNG*, Southern Regional Research Center, USDA-ARS, New Orleans, LA 70124.

Afternoon

JOE SUGG GRADUATE STUDENT COMPETITION

Moderator: ***Robert Kemerait, Department of Plant Pathology, University of Georgia, Tifton, GA***

Meeting Room: State Ballrooms A, B, & C

1:00 (34) **Evaluating Florida-07 for Leaf Spot Tolerance.** S. BURNS*, M. GALLO, Agronomy Department, The University of Florida, Gainesville, FL 32611-0300; and B. TILLMAN, Agronomy Department, North Florida Research and Education Center, The University of Florida, Marianna, FL 32446-8091.

1:15 (35) **Etiology and Control of Peanut Pod Rot in Nicaragua.** J. AUGUSTO*, T.B. BRENNEMAN, A.S. CSINOS, A.K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793-0748; and J. BALDWIN, Agronomy Department, The University of Florida, Gainesville, FL 32611-0300.

1:30 (36) **A New Rapid Assay for Detecting Tebuconazole Resistance in *Cercospora arachidicola*.** J. QIU*, K.L. STEVENSON and A.K. CULBREATH, Plant Pathology Department, The University of Georgia, Tifton, GA 31793.

1:45 (37) **Leaf Photosynthesis and Senescence Vary in Response to Late Leaf Spot Infection in Peanut Cultivars of Differing Resistance.** M.P. SINGH*, J.E. ERICKSON, and K.J. BOOTE, Agronomy Department, University of Florida, Gainesville, FL 32611-0500.

2:00 (38) **DNA Markers for Resistance to Post-Harvest Aflatoxin Accumulation in Peanut.** C.E. ROWE*, S.R. MILLA-LEWIS, and T.G. ISLEIB, Dept. of Crop Science, North Carolina State Univ., Raleigh, NC 27695-7629.

2:15 (39) **Effect of *Verticillium dahliae* Infested Peanut Residue on Verticillium Wilt Development in Cotton.** S. CHAWLA* and J.E. WOODWARD, Dept. of Plant and Soil Science, Texas Tech University, Lubbock, TX 79416.

2:45 (40) **Economic Return of Peanut Grown in Various Row Patterns with Different Herbicide Inputs**. G. PLACE*, D.L. JORDAN, and C. REBERG-HORTON, Department of Crop Science, North Carolina State University, Raleigh, NC 27695.

3:00 BREAK

3:15 (41) **Determining Optimal Conditions for Maximum Peanut Profitability Under Reduced Irrigation in West Texas.** J.L. AYERS*, and M.D. BUROW, Texas AgriLIFE Research, Lubbock, TX 79403; and Texas Tech University, Department of Plant and Soil Science, Lubbock, TX 79409.

3:30 (42) **Management of Acetolactate Synthase Resistant Common Ragweed in Peanut and Other Row Crops.** A. CHANDI*, B.R. LASSITER, D.L. JORDAN, A.C. YORK, and J.D. BURTON, Departments of Crop Science and Horticulture, North Carolina State University, Raleigh, NC 27695.

3:45 (43) **Interactions of Tillage, Cultivar, and Planting Date on Virginia Market Type Peanut.** W.L. DRAKE *, D.L. JORDAN, J.L. HEITMAN, and M. SCHROEDER-MORENO, Departments of Crop Science and Soil Science, North Carolina State University, Raleigh, NC 27695.

4:00 (44) **Weed and Disease Control in Peanut as Influenced by Co-Application of Agrichemicals.** G. CHAHAL*, D.L. JORDAN, B.B. SHEW, R.L. BRANDENBURG, J.D. BURTON, and D. DANEHOWER, Departments of Crop Science, Entomology, Plant Pathology, and Horticulture, North Carolina State University, Raleigh, NC 27695.

4:15 (45) **Increasing Folate Content in Peanut.** N. JUBA*, E. GRABAU, Department of Plant Pathology Physiology and Weed Science, Virginia Tech, Blacksburg, VA 24061; and K. HARICH, Depart. of Biochemistry, Virginia Tech, Blacksburg, VA 24061.

4:30 (46) **Quantification of Niacin and Folate Contents in Peanuts.** M.L. EAST*, L.L. DEAN, T.H. SANDERS, Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695.

4:45 (47) **Flavor and Antioxidant Capacity of Peanut Paste Supplemented with Peanut Seed Coat.** C.S. HATHORN*, K.W. HENDRIX, T.H. SANDERS, North Carolina State University, Department of Food, Bioprocessing and Nutrition Sciences, Raleigh, NC 27695, USDA, ARS, Market Quality and Handling Research Unit, Raleigh, NC 27695.

5:00 (48) **The Relationship of Initial Moisture Content to Physical and Chemical Characteristics and Oil Uptake in Virginia-Type Peanuts.** M.T. DEBRUCE*, Department of Food, Bioprocessing and Nutritional Sciences, North Carolina State University, Raleigh, NC 27695-7624; and L.L. DEAN, and T.H. SANDERS, Market Quality and Handling Research Unit, USDA-ARS, Raleigh, NC 27695-7624.

Morning Thursday, July 16

BREEDING, BIOTECHNOLOGY AND GENETICS I

Moderator: ***H. Thomas Stalker, NC State University, Raleigh, NC***
Meeting Room: ***State Ballroom D***

8:00 (49) **Evaluation of Virginia-type Peanuts Engineered with a Barley Oxalate Oxidase Gene to Petition for Deregulated Status Through the Animal and Plant Health Inspection Service.** E.A. GRABAU*, Department of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, VA 24061; J.H. HU, P.M. PHIPPS, Tidewater Agricultural Research & Extension Center (AREC), Virginia Tech, Suffolk, VA 23437.

8:15 (50) **Development of Peanut Genetic "Road-map" for Marker-assisted Breeding.** B.Z. GUO*, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793; C.C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; C.Y. CHEN, USDA-ARS National Peanut Research Laboratory, Dawson, GA, 39842.

8:30 (51) **Transcript Profiling of Developing Peanut Seeds.** K.R. KOTTAPALLI*, P. PAYTON, USDA-ARS Cropping Systems Research Laboratory, Lubbock, TX 79415; N. PUPPALA, New Mexico State University Agricultural Science Center, Clovis, NM 88101; and M. BUROW, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.

8:45 (52) **Development of Peanut Germplasm with a High Level of Resistance to Leaf Spot and the Peanut Root-Knot Nematode.** C.C. HOLBROOK*, B.Z. GUO, P. TIMPER, USDA-ARS, Tifton, GA 31793; W.B. DONG, and A.K. CULBREATH, Univ. of Georgia, Tifton, GA 31793.

9:00 (53) **In silico Analysis of Peanut Leaf Proteome with a Perspective to Identify Proteins Associated with Drought Tolerance.** RAMESH KATAM and SHEIKH M. BASHA*, Plant Biotechnology Laboratory, Florida A&M University, Tallahassee, FL 32317-7900.

9:15 (54) **Peanut Production Trends in the US from 1980-2007.** S.P. TALLURY* and T.G. ISLEIB, Department of Crop Science, N.C. State University, Raleigh, NC 27695-7629.

9:30 BREAK

BREEDING, BIOTECHNOLOGY AND GENETICS II

Moderator: Shyamalrau Tallury, NC State University, Raleigh, NC
Meeting Room : State Ballroom D

9:45 (55) **Variation in Response to Calcium Fertilization among Four Runner Cultivars.** B.L. TILLMAN*, M.W. GOMILLION, and G. PERSON, University of Florida, North Florida Research and Education Center, Marianna, FL 32446.

10:00 (56) **Release of 'Bailey' Virginia-Type Peanut Cultivar.** S.C. COPELAND*, T.G. ISLEIB, and S.R. MILLA-LEWIS, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629; B.B. SHEW and J.E. HOLLOWELL, Dept. of Plant Pathology, N.C. State Univ., Raleigh, NC 27695-7903; H.E. PATTEE, Dept. of Biological and Agricultural Engineering, N.C. State Univ., Raleigh, NC 27695-7625; T.H. SANDERS, L.L. DEAN, and K.W. HENDRIX, USDA-ARS Market Quality and Handling Res. Unit., Raleigh, NC 27695-7624; M. BALOTA, Va. Polytech. Inst. & State Univ. Tidewater Agric. Res. & Ext. Ctr., Suffolk, VA 23437; and J.W. CHAPIN, Clemson Univ. Edisto Agric. Res. & Educ. Ctr., Blackville, SC 29817.

10:15 (57) **Flavor Profiles and Composition of Runner-and Virginia-Type Cultivars Tested as Part of the Uniform Peanut Performance Test.** T.G. ISLEIB*, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629; H.E. PATTEE, Dept. of Biological and Agricultural Engineering, N.C. State Univ., Raleigh, NC 27695-7625; T.H. SANDERS, L.L. DEAN, and K.W. HENDRIX, USDA-ARS Market Quality and Handling Res. Unit., Raleigh, NC 27695-7624.

10:30 (58) **Marker Assisted Selection (MAS) for Breeding High Oleic Tifguard.** Y. CHU*, P. OZIAS-AKINS, Department of Horticulture, The University of Georgia Tifton Campus, Tifton, GA 31793-0748; C. C. HOLBROOK, USDA-ARS, Tifton, GA 31793.

10:45 (59) **Real-Time PCR Genotyping Using Taqman Probes to Detect High Oleic Acid Peanuts.** N.A. BARKLEY*, K.D. CHENAULT CHAMBERLIN, M.L. WANG, and R.N. PITTMAN, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA 30223.

EXCELLENCE IN EXTENSION EDUCATION SPONSORED BY BAYER CROP SCIENCE

Moderator: ***Keith Rucker, Bayer Crop Science***
Meeting Room: ***State Ballroom A***

8:00 (60) **Addressing Grower Needs through Cooperative Extension Programs in Martin County, North Carolina.** A. COCHRAN*, and J.B. COLTRAIN, Jr., North Carolina Cooperative Extension Service, Williamston, NC 27892; D.L. JORDAN, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; B.B. SHEW, Department of Plant Pathology, North Carolina State University, Box 7903, Raleigh, NC 27695; and R.L. BRANDENBURG, Department of Entomology, North Carolina State University, Box 7613, Raleigh, NC 27695.

8:15 (61) **Utilizing Local Research to Enhance Soilborne Disease Control Strategies in Southeast Georgia.** P.M. CROSBY*, Emanuel County Extension, University of Georgia, Swainsboro, GA 30401; and R.C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA 31793-0748.

8:30 (62) **Addressing Inoculant and Nitrogen Issues in New Ground Peanut Production.** C. FOUNTAIN*, North Carolina Cooperative Extension Service, Kenansville, NC 28349; and D.L. JORDAN and P.D. JOHNSON, Department of Crop Science, North Carolina State University, Raleigh, NC 27695.

8:45 (63) **Evaluation of Fungicide Application Timing for Management of Sclerotinia Blight of Peanut in West Texas.** S.A. RUSSELL*, J.E. WOODWARD, Texas Tech University, Lubbock TX 79416; T.A. WHEELER, A.C. CRAMNER, Texas AgriLIFE Research, Lubbock, TX 79403; and T.A. BAUGHMAN, Texas AgriLIFE Extension Service, Vernon, TX 76385.

9:00 (64) **Evaluation of Top Five Planted Peanut Varieties in Irwin County, GA.** P. EDWARDS*, Extension, University of Georgia, Ocilla, GA 31774; J. BEASLEY Jr., Department of Crop and Soil Science, University of Georgia, Tifton, GA 31793; R.C. KEMERAIT, Department of Pathology, University of Georgia, Tifton, GA 31793.

9:15 (65) **Impact and Management of Peanut Diseases in Gaines County, Texas.** M.G. CATTANEO*, Texas AgriLIFE Extension Service, Seminole, TX 79360; J.E. WOODWARD, Texas AgriLIFE Extension Service, Lubbock, TX 79403; and T.A. BAUGHMAN, Texas AgriLIFE Extension Service, Vernon, TX 76385.

9:30 (66) **Four Year Peanut Variety Test Comparing Peanut Profitability & Disease Resistance.** B. HADDOCK*, UGA Cooperative Extension, Randolph County, P.O. Box 282, Cuthbert, GA; E.L. JORDAN, UGA Cooperative Extension, Baker County, P.O. Box 220; T. BRENNEMAN, R.C. KEMERAIT, UGA Cooperative Extension, Plant Pathology, Tifton, GA 31793; J. BEASLEY, J. BALDWIN, UGA Cooperative Extension, Crop & Soil Science, Tifton, GA 31793; and J. WILLIAMS, Cooperating Baker County Farmers, Newton, GA 39870.

9:45 (67) **A Three Year Study of The Effects of Certain Fungicides and Combinations of Fungicides on the Incidence of Disease in Peanut.** P.D. WIGLEY*, Calhoun County Extension, University of Georgia, Morgan, GA 39866; and R.C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA 31793-0748.

10:00 BREAK

PROCESSING

Moderator: ***Tim Sanders, USDA-ARS Market Quality and Handling Research Unit, Raleigh NC***

Meeting Room: ***State Ballroom A***

10:15 (68) **Chemistry and Biochemistry of Peanut Skins. Implications for Utilization.** L.L. DEAN*, J.P. DAVIS, T.H. SANDERS, Market Quality and Handling Research Unit, USDA, ARS, SAA, Raleigh, NC 27695-7624; and W.E. LEWIS, Dept. of Food, Bioprocessing and Nutritional Sciences, North Carolina State University, Raleigh, NC 27695-7624.

10:30 (69) **Addition of Astra-Ben 20™ to Sequester Aflatoxin During Protein Extraction of Contaminated Peanut Meal**. L.E. SEIFERT, T.H. SANDERS, and J.P. DAVIS*, USDA ARS Market Quality and Handling Research, Raleigh NC 27695.

10:45 (70) **Stability of Fatty Acid Composition of High- and Normal-Oleic Breeding Lines Across Production Regions in the Uniform Peanut Performance Test.** H.E. PATTEE*, Dept of Biological and Agricultural Engineering, N.C. State Univ., Raleigh, NC 27695-7625; T.G. ISLEIB, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629; D.W. GORBET, Univ. of Fla., N. Fla. Res. & Educ. Center, Marianna, FL 32446; T.H. SANDERS, L.L. DEAN, and K.W. HENDRIX, USDA-ARS, Market Quality and Handling Res. Unit., Raleigh, NC 27695-7624.

11:00 (71) **Supplementary Health Benefits of Peanut Sprout Powders**. R.Y.-Y. CHIOU*, J.-C. CHANG, Department of Food Science, National Chiayi University, Chiayi, Taiwan; S.-H. HSIAO, Department of Veterinary Medicine, National Taiwan University, Taipei, Taiwan; and B.B.-C. WENG, Y.-W. LIU, Department of Microbiology and Immunology, National Chiayi University, Chiayi, Taiwan.

11:15 (72) **Peanuts, Peanut Oil and Fat Free Peanut Flour Impede the Development of Cardiovascular Disease in Hamsters.** A.M. STEPHENS*, Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 276951; and L.L. DEAN, J.P. DAVIS, and T.H. SANDERS, USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC 276952.

Afternoon

PLANT PATHOLOGY, NEMATOLOGY, AND MYCOTOXINS I

Moderator: ***Barbara Shew, NC State University, Raleigh NC***
Meeting Room: ***State Ballroom D***

1:00 (73) **Yield Response and Disease Control with Peanut Disease Risk Index Fungicide Programs in Southwest Alabama.** A.K. HAGAN*, H.L. CAMPBELL, and K.L. BOWEN, Dept. of Entomology and Plant Pathology, Auburn University, AL 36949; and M. PEGUES, Gulf Coast Research and Extension Center, Fairhope, AL 36352.

1:15 (74) **Assessment of NemOut (*Paecilomyces lilacinus*) for Management of *Meloidogyne arenaria* Race 1.** R. KEMERAIT*, F.H. SANDERS, W. DONG Department of Plant Pathology, The University of Georgia, Tifton, GA 31793; C. HOLBROOK, P. TIMPER, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793; and J.R. RICH , Department of Entomology and Nematology, University of Florida, Quincy, FL 32351.

1:30 (75) **Comparison of Reduced Fungicide Programs for Control of Early Leaf Spot of Peanut.** J.P. DAMICONE*, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078-3033.

1:45 (76) **Comparison of ELISA and RT-PCR Assays for the Detection of Tomato spotted wilt virus (TSWV) Infection in Peanut.** P.M. DANG*, D.L. ROWLAND, and W.H. FAIRCLOTH, USDA-ARS, National Peanut Research Laboratory (NPRL), Dawson, GA 39842.

2:00 (77) **Effects of Fungicides and Cultivar Selection on Sclerotinia Blight of Peanut in Texas.** J.E. WOODWARD*, M.L. RATLIFF, J.I. YATES, Texas AgriLIFE Extension Service, Lubbock, TX 79403; C.E. SIMPSON, Texas AgriLIFE Research, Stephenville, TX 76401; and T.A. BAUGHMAN, Texas AgriLIFE Extension Service, Vernon, TX 76385.

2:15 (78) **Continued Evaluations of Virginia-Type Peanut Lines for Resistance to Late Leaf Spot, Stem Rot, and Spotted Wilt Disease.** J.W. CHAPIN*, J.S. THOMAS, Department of Entomology, Soils, and Plant Sciences, Clemson University, Edisto REC, 64 Research Road, Blackville, SC 29817; T.G. ISLEIB, Crop Science Department, North Carolina State University, Box 7629, Raleigh, NC 27695; F.M. SHOKES, Virginia Tech University, Tidewater AREC, 6321 Holland Road, Suffolk, VA 23437; W.D. BRANCH, Department of Crop and Soil Sciences, University of Georgia, P. O. Box 748, Tifton, GA 31793; and B.L. TILLMAN, Agronomy Department, University of Florida, North Florida REC, 3925 Highway 71, Marianna, FL 32446.

2:30 (79) **Risk Factors for Pre-harvest Aflatoxin Contamination of Peanuts.** K.L. BOWEN*, Department of Entomology and Plant Pathology, Auburn University, AL 36849.

2:45 (80) **Disease Incidence, Yield and Maturity of Virginia- and Runner-Type Peanuts in Strip Tillage and Conventional Tillage in 2007 and 2008.** P.M. PHIPPS*, and J. HU, Tidewater Agricultural Research & Extension Center, Virginia Tech, Suffolk, VA 23437.

3:00 BREAK

PLANT PATHOLOGY, NEMATOLOGY, AND MYCOTOXINS II

Moderator: ***Jason Woodward, Texas Tech University, Lubbock, TX***
Meeting Room: ***State Ballroom D***

3:15 (81) **Impact of Climate Variability and Weather Patterns on Southern Stem Rot Incidence in Peanut.** R.O. OLATINWO, J.O. PAZ*, G. HOOGENBOOM, Department of Biological and Agricultural Engineering, The University of Georgia, Griffin, GA 30223; and T.B. BRENNEMAN, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793.

3:30 (82) **Control of Foliar and Soilborne Peanut Pathogens with Morning, Evening or Daytime Applications of Fungicide.** T.B. BRENNEMAN* and J. AUGUSTO, Department of Plant Pathology, University of Georgia, Tifton, GA 31794.

3:45 (83) **Response of New Peanut Cultivars and Breeding Lines to Phorate Insecticide for Management of Tomato Spotted Wilt.** A.K. CULBREATH*, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-0748; W.D. BRANCH, Dept. of Crop and Soil Science, University of Georgia, Tifton, GA 31793-0748; C.C. HOLBROOK, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA, 31793-0748; and B. TILLMAN, North Florida Research and Education Center, University of Florida, Marianna, FL 32446.

4:00 (84) **Stem Versus Leaflet Inoculation of Peanut with *Sclerotinia minor*.** H. MELOUK*, USDA-ARS, Department of Entomology and Plant Pathology Department, Oklahoma State University, Stillwater, OK 74078; and M. BROWN, Entomology and Plant Pathology Department, Oklahoma State University, Stillwater, OK 74078.

4:15 (85) **Genetic and Seed Treatment Effects on Stand Establishment in Organically Managed Peanut Fields.** E.G. CANTONWINE*, C. KENDRICK, and J. AUERBACH, Department of Biology, Valdosta State University, Valdosta, GA 31698; A.K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793; C.C. HOLBROOK, USDA-ARS, Tifton, GA 31793; and M. BOUDREAU, Hebert Green Agroecology, Ashville, NC 28806.

4:30 (86) **Greenhouse Evaluations of Virginia-Type Breeding Lines for Resistance to *Sclerotium rolfsii*.** J.E. HOLLOWELL*, B.B. SHEW, Dept. of Plant Pathology, N.C. State Univ., Raleigh, NC 27695-7903; and T.G. ISLEIB and S.P. TALLURY, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629.

PRODUCTION TECHNOLOGY

Moderator: ***Douglas Snyder, U.S. Gypsum, Cary, NC***
Meeting Room: ***State Ballroom A***

1:00 (87) **Influence of Application Variables on Efficacy of Manganese-Containing Fertilizers Applied to Peanut.** D.L. JORDAN*, S.H. LANCASTER, J.E. LANIER, P.D. JOHNSON, J.B. BEAM, and A.C. YORK, Department of Crop Science, North Carolina State University, Raleigh, NC 27695.

1:15 (88) **A Review of Peanut Response to Plant Growth Regulators and Foliar Fertilizers.** R. RHODES*, North Carolina Cooperative Extension Service, Windsor, NC 27983; and D.L. JORDAN and P.D. JOHNSON, Department of Crop Science, North Carolina State University, Raleigh, NC 27695.

1:30 (89) **Economic Analysis of Cover Crop and Tillage for Peanut.** A.R. SMITH*, and N.B. SMITH, Department of Agricultural & Applied Economics, The University of Georgia, Tifton, GA 31793-1209; and R.S. TUBBS, G.H. HARRIS, R.D. LEE, and J.P. BEASLEY, JR., Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31793-0748.

1:45 (90) **Performance of Runner Market Type Peanut in North Carolina**. B.R. LASSITER*, D.L. JORDAN, G. WILKERSON, R.L. BRANDENBURG, and B.B. SHEW, Departments of Crop Science, Plant Pathology, and Entomology, North Carolina State University, Raleigh, NC 27695.

2:00 (91) **A Fresh Look at Predicting the Optimum Digging Date for Peanuts.** W.H. FAIRCLOTH*, and D.L. ROWLAND, USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842; and J.P. BEASLEY, Crop and Soil Sciences Dept., The University of Georgia, Tifton, GA 31793-0748.

2:15 (92) **Utilization of Six Digging Dates to Determine the Relative Maturity for the 'Georgia-02C' Peanut Cultivar.** W.D. BRANCH*, J.P. BOSTICK, E.J. WILLIAMS, and J.P. BEASLEY, JR., Dept. of Crop and Soil Sciences, University of Georgia, Coastal Plain Exp. Station Tifton, GA; Alabama Crop Improvement Assn., Wiregrass Res. and Ext. Center, Headland, AL; and Dept. of Biol. and Agri. Eng. and Crop and Soil Science, Coastal Plain Experiment Station, Tifton, GA, respectively.

2:30 (93) **Runner Peanut Growth, Maturity, and Flavor Response to Prohexadione Calcium in West Texas.** R.C. NUTI*, C.L. BUTTS, R.B. SORENSEN, M.C. LAMB, USDA-ARS National Peanut Research Laboratory, Dawson, GA 39842; T.H. SANDERS, USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC 27695; and N. PUPPALA, New Mexico State University, Clovis, NM 88101.

2:45 BREAK

3:00 (94) **Effect of Row Configuration on Cultivar Performance.** C.B. GODSEY*, and W. VAUGHAN, Dept. of Plant and Soil Sciences, Oklahoma State University, Stillwater, OK 74078.

3:15 (95) **AgroClimate: Climate-based Decision Support Tools for the Agricultural Community.** R. BOYLES, H. DINON*, Marine, Earth, and Atmospheric Science Department, North Carolina State University, Raleigh, NC 27695; and D. JORDAN, B. LASSITER, G. WILKERSON, Crop Science Department, North Carolina State University, Raleigh, NC 27695.

3:30 (96) **Seeding Rate Evaluation for Runner Peanut Cultivars in Twin Rows.** R.S. TUBBS*, and J.P. BEASLEY, JR., Department of Crop and Soil Sciences; A.K. CULBREATH and R.C. KEMERAIT, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793-0748.

3:45 (97) **Conservation tillage systems for peanut cultivars in rotation with green harvest sugarcane in Brazil.** D. BOLONHEZI*, O. GENTILIN Jr., Experimental Station of Agronomic Institute - APTA, Ribeirao Preto; M.A. MUTTON, Campus de Jaboticabal, Sao Paulo State, Brazil; I.J. GODOY, Center of Grains and Fiber, Agronomic Institute-APTA, Campinas, Brazil; and A.L.M. MARTINS, Experimental Station of Agronomic Institute - APTA, Pindorama, Brazil.

HARVESTING, CURING, SHELLING, STORING, & HANDLING

Moderator: ***David Jordan, NC State University, Raleigh, NC***
Meeting Room: ***State Ballroom A***

3:45 (98) **Estimation of the Mass Ratio of Mature Kernels within a Sample of In-Shell Peanuts using RF Impedance Method.** C.V. KANDALA*, J. SUNDARAM, and B. HINSON, National Peanut Research Laboratory, Dawson, GA 39842.

4:00 (99) **Identification of Inferior Quality Peanuts Without Shelling During Peanut Grading.** J. SUNDARAM, C.V. KANDALA*, C.L. BUTTS, W.R. WINDHAM, and M.C. LAMB, National Peanut Research Laboratory, Dawson, GA 39842.

4:15 (100) **Performance of Semi-Trailer Peanut Drying Units**. C.L. BUTTS* and M.C. LAMB, USDA, ARS, National Peanut Research Laboratory, P.O. Box 509, Dawson, GA 39842.

SITE SELECTION COMMITTEE REPORT

The committee, led by Greg MacDonald, solicited input from numerous hotels in Orlando, Daytona Beach, Ft. Lauderdale, Jacksonville, and Clearwater Beach. The past experience at the Clearwater Beach Hilton, the private beach for hotel guests, and price made that facility a top choice. Based on a joint meeting with Greg MacDonald, Maria Gallo and Barry Tillman, the recommendation to return to the Clearwater Hilton for the 2010 APRES meeting in Florida was accepted at a room rate of $135/night and $500/day meeting space fee – all space included

The “Texas Site Selection Committee" visited several hotels in San Antonio in April of this year. Those on this committee were: James Grichar, Todd Baughman, Jason Woodward, and Peter Dotray. We visited the Hilton Palacio del Rio, Hyatt Regency, Onmi La Mansion Del Rio, and Menger (the Marriott Riverwalk pulled out at the last minute). We are currently working on a proposal from the Menger with room rates of $129 single or double. This will be discussed at the APRES meeting in July.

Respectfully Submitted,
Rick Brandenburg, Chair

CAST REPORT

NO REPORT GIVEN.

AD-HOC COMMITTEE REPORT
MINUTES OF THE APRES AD-HOC LONG-RANGE PLANNING COMMITTEE, 14 July 2009

The APRES Ad-Hoc Long Range Planning Committee was commissioned to formulate a long-range plan to ensure the continued operations of our society such that we are able to serve the peanut industry through scientific research and outreach efforts. Members of the Ad-Hoc Committee were: Carroll Johnson (Chair), Kelly Chamberlin, Barbara Shew, Tom Isleib, Albert Culbreath, Howard Valentine, and Jim Starr (Ex-Officio). Our specific charges were to:

1. Consider changes in the location and scheduled times of the APRES annual meeting to better accommodate member attendance and participation.
2. Determine whether APRES needs to continue to employ an Executive Secretary and an Administrative Assistant.

The committee discussed these two specific charges, along with other items, by email discussion. The committee continued these discussions at the scheduled meeting on Tuesday 14 July 2009.

The Ad-Hoc Committee would like to make the following recommendations for

action by the APRES Board of Directors:

1. Continue to have the APRES annual meeting scheduled with a full week between Independence Day and the annual meeting. However, expand the possibilities of alternative meeting dates to avoid standing scheduling conflicts. Specifically, minimize scheduling conflicts with the Southeastern Peanut Growers Conference.
2. Continue the rotation of annual meeting sites among the three regions. However, eliminate the need to have each peanut producing state host the meeting on a rotating basis. The Program and Local Arrangements Committees will be composed of personnel from all states in the hosting region.
    a. This may require alteration of the APRES by-laws that address succession of leadership based on states hosting the annual meeting.
3. We endorse the compressed meeting schedule that will be in effect for the 2010 and 2011 annual meetings. From our perspective, a compressed meeting will
    a. Keep members present for the duration of the meeting and help ensure that we meet our contractual room-night obligations.
    b. Greater member participation in the awards ceremony and business meeting.
    c. Potentially reduce travel costs and allow for greater attendance.
4. Continue to employ an Executive Secretary and Administrative Assistant until they either retire or resign. In the interim, begin the process of surveying third parties to manage the business affairs of APRES. This survey should be initiated immediately to allow ample time for transition of managerial duties.
5. Be receptive to combined meetings with other allied organizations as opportunities exist. This is in specific reference to combined meeting with the Southeastern Peanut Growers Conference.

To better address these courses of action, the Ad-Hoc Committee also requests that the Board of Directors take the following actions:

1. Survey the membership using the APRES website for suggestions as part of the long-range plan to ensure continued operations of the society.
2. Keep the Ad-Hoc Committee in place with the same mission until the Board of Directors determines that the mission has been completed.

Respectively submitted;
W. Carroll Johnson, III, Chair

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

ARTICLE I. NAME

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

ARTICLE II. PURPOSE

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

ARTICLE III. MEMBERSHIP

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

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

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

Sustaining members may designate one representative who shall have individual member rights. Also, any organization may hold sustaining memberships for any or all of its divisions or sections with individual member rights accorded each sustaining membership.

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

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

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

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

ARTICLE IV. DUES AND FEES

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

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

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

ARTICLE V. MEETINGS

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

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

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

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

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

ARTICLE VI. QUORUM

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

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

ARTICLE VII. OFFICERS

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

Section 2. The president and president-elect shall serve from the close of the annual meeting of this Society to the close of the next annual meeting. The president-elect shall automatically succeed to the presidency at the close of the annual meeting. If the president-elect should succeed to the presidency to complete an unexpired term, he/she shall then also serve as president for the

following full term. In the event the president or president-elect, or both, should resign or become unable or unavailable to serve during their terms of office, the Board of Directors shall appoint a president, or both president-elect and president, to complete the unexpired terms until the next annual meeting when one or both offices, if necessary, will be filled by normal elective procedure. The most recent available past president shall serve as president until the Board of Directors can make such appointment.

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

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

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

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

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

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

Editorial responsibilities include:

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

ARTICLE VIII. BOARD OF DIRECTORS

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

a. The president
b. The most recent available past-president
c. The president-elect
d. Three University representatives - these directors are to be chosen based on their involvement in APRES activities, and knowledge in peanut research, and/or education, and/or regulatory programs. One director will be elected from each of the three main U.S. peanut producing areas (Virginia-Carolinas, Southeast, Southwest).
e. United States Department of Agriculture representative - this director is one whose employment is directly sponsored by the USDA or one of its agencies, and whose relation to peanuts principally concerns research, and/or education, and/or regulatory pursuits.
f. Three Industry representatives - these directors are (1) the production of peanuts; (2) crop protection; (3) grower association or commission; (4) the shelling, marketing, and storage of raw peanuts; (5) the production or preparation of consumer food-stuffs or manufactured products containing whole or parts of peanuts.
g. The President of the American Peanut Council or a representative of the President as designated by the American Peanut Council.
h. The Executive Officer - non-voting member of the Board of Directors who may be compensated for his services on a part-time or full-time salary stipulated by the Board of Directors in consultation with the Finance Committee.
i. National Peanut Board representative, will serve a three year term.

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

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

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

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

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

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

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

ARTICLE IX. COMMITTEES

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

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

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

b. Nominating Committee: This committee shall consist of four members appointed to one-year terms, one each representing State, USDA, and Private Business segments of the peanut industry with the most recent available past-president serving as chair. This committee shall nominate individual members to fill the positions as described and in the manner set forth in Articles VII and VIII of these By-Laws and shall convey their nominations to the president of this Society by June 15 prior to the year's annual meeting. The president then distribute those nominations to the BOD for their review. The committee shall, insofar as possible, make nominations for the president-elect that will provide a balance among the various segments of the industry and a rotation among federal, state, and industry members. The willingness of any nominee to accept the responsibility of the position shall be ascertained by the committee (or members making nominations at the annual business meeting) prior to the election. No person may succeed him/herself as a member of this committee.

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

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

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

   (1) Membership: Development and implementation of mechanisms to create interest in the Society and increase its membership. These shall include, but not be limited to, preparing news releases for the

home-town media of persons recognized at the meeting for significant achievements.

(2) Cooperation: Advise the Board of Directors relative to the extent and type of cooperation and/or affiliation this Society should pursue and/or support with other organizations.

(3) Necrology: Proper recognition of deceased members.

(4) Resolutions: Proper recognition of special services provided by members and friends of the Society.

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

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

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

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

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

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

ARTICLE X. DIVISIONS

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

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

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

ARTICLE XI. AMENDMENTS

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

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

Amended at the Annual Meeting of the
American Peanut Research and Education Society
July 14, 2006, Portsmouth, Virginia

MEMBERSHIP (1975-2006)

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

MEMBERSHIP (2007-2009)

	2007	2008	2009
Individual, Regular	228	185	184
Individual, Retired	13	13	14
Individual, Post Doc/Tech Support	6	9	7
Individual, Student	20	16	28
Sustaining, Silver	7	8	6
Sustaining, Gold	1	2	3
Sustaining, Platinum	1		1
Institutional	6	21	21
TOTAL	280	254	264

NAME INDEX