49th PROCEEDINGS

Of The

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY, INC.

Annual Meeting

July 11-13, 2017
Hotel Albuquerque at Old Town
Albuquerque, NM

Publication Date
March 2017

Editors: Todd Baughman and Kimberly Cutchins

49th Annual Meeting

July 11-13, 2017 * Albuquerque, NM

Sponsors

Wednesday Night Reception & Dinner
Bayer
BASF

Meeting Breaks
Birdsong Peanuts
Fine Americas, Inc.
Olam Edible Nuts
Syngenta

Ice Cream Social
AmVac
Buhler Group
DuPont
Golden Peanut & Tree Nuts
National Peanut Board
National Peanut Buying Points Association
Neogen
Nichino America
North Carolina Peanut Growers Association
Premium Peanut
The J.M. Smucker Company
U.S. Gypsum
Valent
Virginia Peanut Growers Association

Registration Bags & Product Donations
Texas Peanut Producers Board
Verdesian Life Sciences

Spouses Program
Texas Tech University

Awards Reception
Dow AgroSciences

Spouses Hospitality Suite
Texas Peanut Producers Board

Joe Sugg Graduate Student Competition
North Carolina Peanut Growers Association
Dow AgroSciences
JLA, Inc.

Fun Run
Texas A&M AgriLife Research

Peanut Snacks
Alabama Peanut Producers Association
Bell Plantation
Florida Peanut Producers Association
Georgia Peanut Commission
Hershey's Chocolate
Hormel Foods
Mars Chocolate
Mississippi Peanut Growers Association
North Carolina Peanut Growers Association
Ready Roast Nut Company
The J.M. Smucker Company
Snyder's/Lance
South Carolina Peanut Board
Texas Peanut Producers Board
Virginia Peanut Growers

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AMERICAN PEANUT RESEARCH & EDUCATION SOCIETY
BOARD OF DIRECTORS
2016-17

President……. Corley Holbrook (2018)

Past President…….. Tom Stalker (2017)

President-Elect……. Pete Dotray (2019)

Executive Officer…….. Kimberly Cutchins (2017)

University Representatives:
- Virginia-Carolina……. Rick Brandenburg (2019)
- Southeast……..Peggy Ozias-Akins (2019)
- Southwest…….. Michael Baring (2017)

USDA Representative……. Marshall Lamb (2019)

Industry Representatives:
- Production…….. Wilson Faircloth (2018)
- Shelling, Marketing, Storage…… Darlene Cowart (2019)
- Manufactured Products…… Jim Elder (2017)

Director of Science and Technology of the
- American Peanut Council…… Howard Valentine (2017)

National Peanut Board ……. Dan Ward (2017)

AMERICAN PEANUT RESEARCH & EDUCATION SOCIETY
BOARD OF DIRECTORS
2017-18

President……. Peter Dotray (2019)

Past President…….. C. Corley Holbrook (2018)

President-Elect……. Rick Brandenburg (2020)

Executive Officer…….. Kimberly Cutchins (2018)

University Representatives:
- Virginia-Carolina……. Barbara Shew (2019)
- Southeast……..Peggy Ozias-Akins (2019)
- Southwest…….. Jason Woodward (2020)

USDA Representative……. Marshall Lamb (2019)

Industry Representatives:
- Production…….. Wilson Faircloth (2018)
- Shelling, Marketing, Storage…… Darlene Cowart (2019)
- Manufactured Products……Chris Liebold (2020)

Director of Science and Technology of the
- American Peanut Council…… Steve Brown (2020)

National Peanut Board ……. Dan Ward (2020)

PAST PRESIDENTS

			Walton Mozingo	1992-93
C.Corley Holbrook	2016-17		Charles E. Simpson	1991-92
H. Thomas Stalker	2015-16		Ronald E. Henning	1990-91
Naveen Puppala	2014-15		Johnny C. Wynne	1989-90
Timothy B. Brenneman	2013-14		Hassan A. Melouk	1988-89
Ames Herbert	2012-13		Daniel W. Gorbet	1987-88
Todd Baughman	2011-12		D. Morris Porter	1986-87
Maria Gallo	2010-11		Donald H. Smith	1985-86
Barbara Shew	2009-10		Gale A. Buchanan	1984-85
Kelly Chenault Chamberlin	2008-09		Fred R. Cox	1983-84
Austin K. Hagan	2007-08		David D.H. His	1982-83
Albert K. Culbreath	2006-07		James L. Butler	1981-82
Patrick M. Phipps	2005-05		Allen H. Allison	1980-81
James Grichar	2004-05		James S. Kirby	1979-80
E. Ben Whitty	2003-04		Allen J. Norden	1978-79
Thomas G. Islieb	2002-03		Astor Perry	1977-78
John P. Damicone	2001-02		Leland Tripp	1976-77
Austin K. Hagan	2000-01		J. Frank McGill	1975-76
Robert E. Lynch	1999-00		Kenneth Garren	1974-75
Charles W. Swann	1998-99		Edwin L. Sexton	1973-74
Thomas A. Lee, Jr.	1997-98		Olin D. Smith	1972-73
Fred M. Shokes	1996-97		William T. Mills	1971-72
Harold Pattee	1995-96		J.W. Dickens	1970-71
William Odle	1994-95		David L. Moake	1969-70
Dallas Hartzog	1993-94		Norman D. Davis	1968-69

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
2010 - Clearwater Beach, FL
2011 - San Antonio, TX
2012 - Raleigh, NC
2013 - Young Harris, GA
2014 – San Antonio, TX
2015 – Charleston, SC
2016 - Clearwater Beach, FL
2017 – Albuquerque, NM

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

APRES Committees
2016-17

Bailey Award Committee
John Damicone, Chair (2018)
Charles Chen (2017)
Peter Dotray (2017)
Phat Dang (2018)
Maria Balota (2019)
Kim Moore (2019)

Coyt T. Wilson Distinguished Service Award Committee
Emily Cantowine, Chair (2017)
Jason Woodward (2018)
Albert Culbreath (2019)
Mark Abney (2019)

Dow AgroSciences Awards Committee
Kelly Chamberlain, Chair (2017)
Victor Nwosu (2017)
John Richburg (2017)
Michael Baring (2018)
Bill Branch (2018)
Carroll Johnson (2019)
Dylan Wann (2019)

Fellows Committee
David Jordan, Chair (2017)
Mark Burow (2017)
Diane Rowland (2017)
Eric Prostko (2019)

Finance Committee
Todd Baughman, Chair (2017)
Naveen Puppala (2017)
Scott Tubbs (2017)
Howard Valentine (2018)
Tim Brenneman (2019)

Joe Sugg Graduate Student Award Committee
Robert Kemerait, Chair (2017)
Maria Balota (2017)
Rebecca Bennett (2017)
Juliet Chu (2018)
Hillary Mehl (2018)

Nominating Committee
Tom Stalker, Chair (2017)
Barry Tillman (2017)
Peggy Ozias-Akins (2018)
Corley Holbrook (2018)

Peanut Quality Committee
John Bennett, Chair (2019)
Michael Franke (2017)
Chris Liebold (2017)
Darlene Cowart (2018)
Lisa Dean (2018)
Marshall Lamb (2018)
Barry Tillman (2016)
Robert Moore (2019)

Program Committee
Peter Dotray, Chair (2017)
Todd Baughman, Technical Program Chair
Gary Schwarzlose, Local Arrangements Chair

Publications and Editorial Committee
Chris Butts, Chair (2017)
Shyam Tallury (2017) Co-Editor
Jianping Wang (2017)
Baozhou. Guo (2018)
Chris Liebold (2018) Co-Editor
Michael J. Mulvaney (2018)
Nick Dufault Co-Editor

Public Relations Committee
Jason Woodward, Chair (2017)
Ron Sholar (2018)
Keith Rucker (2019)
William Pearce (2019)

Site Selection Committee
Michael Baring, Chair (2017)
Rebecca Bennett (2017)
Naveen Puppala (2017)
Tom Isleib (2018)
Barbara Shew (2018)
Charles Chen (2019)
Hannah Jones (2019)

APRES Committees
2017-18

Bailey Award Committee
John Damicone, Chair (2018)
Phat Dang (2018)
Maria Balota (2019)
Kim Moore (2019)
Jack Davis (2020)
Peggy Ozias-Akins (2020)

Coyt T. Wilson Distinguished Service Award Committee
Jason Woodward, Chair (2018)
Albert Culbreath (2019)
Mark Abney (2019)
Tim Brenneman (2020)

Dow AgroSciences Awards Committee
Michael Baring, Chair (2018)
Bill Branch (2018)
Carroll Johnson (2019)
Dylan Wann (2019)
Tim Grey (2020)
Tom Stalker (2020)
John Richburg (2020)

Fellows Committee
Eric Prostko, Chair (2019)
Austin Hagan (2018)
Bob Kemerait (2019)
Todd Baughman (2020)

Finance Committee
Tim Brenneman, Chair (2019)
Howard Valentine (2018)
Scott Tubbs (2020)
Maria Balota (2020)

Joe Sugg Graduate Student Award Committee
Robert Kemerait, Chair (2020)
Juliet Chu (2018)
Hillary Mehl (2018)
Steve Li (2020)
James Grichar (2020)

Nominating Committee
C. Corley Holbrook, Chair (2018)
Rebecca Bennett (2018)
Peggy Ozias-Akins (2018)
Robert Moore (2019)

Peanut Quality Committee
John Bennett, Chair (2019)
Darlene Cowart (2018)
Lisa Dean (2018)
Marshall Lamb (2018)
Robert Moore (2019)
Chris Liebod (2020)
Jason Woodward (2020)

Program Committee
Rick Brandenburg, Chair (2018)
Tom Stalker, Technical Program Chair
Maria Balota, Local Arrangements Chair

Publications and Editorial Committee
Chris Liebold, Chair (2018)
Baozhou Guo (2018)
Michael J. Mulvaney (2018)
Allison Floyd (2020)

Public Relations Committee
Ron Sholar, Chair (2018)
Keith Rucker (2019)
William Pearce (2019)
Dylan Wann (2020)

Site Selection Committee
Barbara Shew, Chair (2018)
Tom Isleib (2018)
Charles Chen (2019)
Hannah Jones (2019)
Gary Schwarzlose (2020)
Shelly Nutt (2020)

FELLOWS of the SOCIETY

Dr. Steve Brown	2017
Dr. Eric Prostko	2016
Dr. Robert Kemerait, Jr.	2015
Dr. Todd A. Baughman	2014
Dr. Austin K. Hagan	2014
Mr. Emory Murphy	2014
Dr. Jay W. Chapin	2013
Dr. Barbara B. Shew	2013
Mr. Howard Valentine	2013
Dr. Kelly Chenault	2012
Dr. Robin Y.Y. Chiou	2012
Dr. W. Carroll Johnson III	2012
Dr. Mark C. Black	2011
Dr. John P. Damicone	2011
Dr. David L. Jordan	2011
Dr. Christopher L. Butts	2010
Dr. Kenneth J. Boote	2009
Dr. Timothy Brenneman	2009
Dr. Albert K. Culbreath	2007
Mr. G.M. "Max" Grice	2007
Mr. W. James Grichar	2007
Dr. Thomas G. Isleib	2006
Mr. Dallas Hartzog	2006
Dr. C. Corley Holbrook	2006
Dr. Richard Rudolph	2005
Dr. Peggy Ozias-Akins	2005
Mr. James Ron Weeks	2004
Mr. Paul Blankenship	2004
Dr. Stanley Fletcher	2004
Mr. Bobby Walls, Jr.	2003
Dr. Rick Brandenburg	2003
Dr. James W. Todd	2002
Dr. John P. Beasley, Jr.	2002
Dr. Robert E. Lynch	2002
Dr. Patrick M. Phipps	2001
Dr. Ronald J. Henning	2001
Dr. Norris L. Powell	2001
Mr. E. Jay Williams	2000
Dr. Gale A. Buchanan	2000
Dr. Thomas A. Lee, Jr.	2000
Dr. Frederick M. Shokes	1999
Dr. Jack E. Bailey	1999
Dr. James R. Sholar	1998
Mr. William M. Birdsong, Jr.	1998
Dr. Gene Sullivan	1998
Dr. Timothy H. Sanders	1997
Dr. H. Thomas Stalker	1996
Dr. Charles W. Swann	1996
Dr. Thomas B. Whitaker	1996
Dr. David A. Knauft	1995
Dr. Charles E. Simpson	1995
Dr. William D. Branch	1994
Dr. Frederick R. Cox	1994
Dr. James H. Young	1994
Dr. Marvin K. Beute	1993
Dr. Terry A. Coffelt	1993
Dr. Hassan A. Melouk	1992
Dr. F. Scott Wright	1992
Dr. Johnny C. Wynne	1992
Dr. John C. French	1991
Dr. Daniel W. Gorbet	1991
Mr. Norfleet L. Sugg	1991
Dr. James S. Kirby	1990
Mr. R. Walton Mozingo	1990
Mrs. Ruth Ann Taber	1990
Dr. Darold L. Ketring	1989
Dr. D. Morris Porter	1989
Dr. Donald J. Banks	1988
Mr. J. Frank McGill	1988
Dr. Donald H. Smith	1988
Dr. James L. Steele	1988
Mr. Joe S. Sugg	1988
Dr. Daniel Hallock	1986
Dr. Olin D. Smith	1986
Dr. Clyde T. Young	1986
Mr. Allen H. Allison	1985
Dr. Thurman Boswell	1985
Mr. J. W. Dickens	1985
Dr. William V. Campbell	1984
Dr. Allen J. Norden	1984
Dr. Harold Pattee	1983

BAILEY AWARD RECIPIENTS

2017	J. Wang, H. Zou, Z. Peng, J. Maku, L. Tan, F. Liu, Y. Lopez, and J. Wang of University of Florida; and, M. Gallo, Delaware Valley University
2016	J. Davis, J. Leek, JLA, Inc.; D. Sweigart, The Hershey Company; P. Dang, C. Butts, R. Sorenson, and M. Lamb, USDA-ARS-NPRL
2015	J. Clevenger, Yufang Guo, and P. Ozias-Akins
2014	R. Srinivasan, A. Culbreath, R. Kemerait, and S. Tubbs
2013	A.M. Stephens and T.H. Sanders
2012	D.L. Rowland, B. Colvin. W.H. Faircloth, and J.A. Ferrell
2011	T.G. Isleib, C.E. Rowe, V.J. Vontimitta and S.R. Milla-Lewis
2010	T.B. Brenneman and J. Augusto
2009	S.R. Milla-Lewis and T.G. Isleib
2008	Y. Chu, L. Ramos, P. Ozias-Akins, and C.C. Holbrook
2007	D.E. Partridge, P.M. Phipps, D.L. Coker, and 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
1999	J.L. Starr, C.E. Simpson and T.A. Lee, Jr.
1998	J.W. Dorner, R.J. Cole and P.D. Blankenship
1997	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
1996	J.S. Richburg and J.W. Wilcut
1995	T.B. Brenneman and A.K. Culbreath
1994	A.K. Culbreath, J.W. Todd and J.W. Demski
1993	T.B. Whitaker, F.E. Dowell, W.M. Hagler, F.G. Giesbrecht and J. Wu
1992	P.M. Phipps, D.A. Herbert, J.W. Wilcut, C.W. Swann, G.G. Gallimore and T.B. Taylor
1991	J.M. Bennett, P.J. Sexton and K.J. Boote
1990	D.L. Ketring and T.G. Wheless
1989	A.K. Culbreath and M.K. Beute
1988	J.H. Young and L.J. Rainey
1987	T.B. Brenneman, P.M. Phipps and R.J. Stipes
1986	K.V. Pixley, K.J. Boote, F.M. Shokes and D.W. Gorbet
1985	C.S. Kvien, R.J. Henning, J.E. Pallas and W.D. Branch
1984	C.S. Kvien, J.E. Pallas, D.W. Maxey and J. Evans
1983	E.J. Williams and J.S. Drexler
1982	N.A. deRivero and S.L. Poe
1981	J.S. Drexler and E.J. Williams
1980	D.A. Nickle and D.W. Hagstrum
1979	J.M. Troeger and J.L. Butler
1978	J.C. Wynne
1977	J.W. Dickens and T.B. Whitaker
1976	R.E. Pettit, F.M. Shokes and R.A. Taber

JOE SUGG GRADUATE STUDENT COMPETITION AWARD RECIPIENTS

2017	J. Fountain[1]
2017	O. Carter[2]
2017	L. Christman[3]
2016	J. Clevenger[1]
2016	K. Racette[2]
2015	C. Klevorn
2014	Y. Tseng
2013	A. Fulmer
2012	R. Merchant
2011	S. Thornton
2010	A. Olubunmi
2009	G. Place
2008	J. Ayers
2007	J.M. Weeks, Jr.
2006	W.J. Everman
2005	D.L. Smith
2004	D.L. Smith
2003	D.C. Yoder
2002	S.C. Troxler
2001	S.L. Rideout
2000	D.L. Glenn
1999	J.H. Lyerly
1998	M.D. Franke
1997	R.E. Butchko
1996	M.D. Franke
1995	P.D. Brune
1994	J.S. Richburg
1993	P.D. Brune
1992	M.J. Bell
1991	T.E. Clemente
1990	R.M. Cu
1989	R.M. Cu

COYT T. WILSON DISTINGUISHED SERVICE AWARD

2017	Dr. Austin K. Hagan
2016	Dr. Timothy B. Brenneman
2015	Mr. Howard Valentine
2014	Dr. Tom Isleib
2013	Dr. John P. Bealey, Jr.
2012	Dr. Patrick M. Phipps
2011	Mr. W. James Grichar
2010	Dr. Albert K. Culbreath
2009	No Nominations
2008	Dr. Frederick M. Shokes
2007	Dr. Christopher L. Butts
2006	Dr. Charles E. Simpson
2005	Dr. Thomas B. Whitaker
2004	Dr. Richard Rudolph
2003	Dr. Hassan A. Melouk
2002	Dr. H. Thomas Stalker
2001	Dr. Daniel W. Gorbet
2000	Mr. R. Walton Mozingo
1999	Dr. Ray O. Hammons
1998	Dr. C. Corley Holbrook
1997	Mr. J. Frank McGill
1996	Dr. Olin D. Smith
1995	Dr. Clyde T. Young
1994	No Nominations
1993	Dr. James Ronald Sholar
1992	Dr. Harold E. Pattee
1991	Dr. Leland Tripp
1990	Dr. D.H. Tripp

DOW AGROSCIENCES AWARD FOR EXCELLENCE IN RESEARCH

2017	Marshall Lamb
2016	H. Thomas Stalker
2015	Charles Simpson
2014	Michael Baring
2013	No Nominations Received
2012	Timothy H. Sanders
2011	Timothy Grey
2010	Peter A. Dotray
2009	Joe W. Dorner
2008	Jay W. Chapin
2007	James W. Todd
2006	William D. Branch
2005	Stanley M. Fletcher
2004	John W. Wilcut
2003	W. Carroll Johnson, III
2002	Harold E. Pattee and Thomas G. Isleib
2001	Timothy B. Brenneman
2000	Daniel W. Gorbet
1999	Thomas B. Whitaker
1998	W. James Grichar
1997	R. Walton Mozingo
1996	Frederick M. Shokes
1995	Albert Culbreath
1994	James Todd and James Demski
1993	Hassan Melouk
1992	Rodrigo Rodriguez-Kabana

*1998 Changed to DowAgroSciences Award for Excellence in Research

DOW AGROSCIENCES AWARD FOR EXCELLENCE IN EDUCATION

2017	No Recipient
2016	Timothy Grey
2015	Jay Chapin
2014	Jason Woodward
2013	Peter A. Dotray
2012	Todd A. Baughman
2011	Austin K. Hagan
2010	David L. Jordan
2009	Robert C. Kemerait, Jr.
2008	Barbara B. Shew
2007	John P. Damicone
2006	Stanley M. Fletcher
2005	Eric Prostko
2004	Steve L. Brown
2003	Harold E. Patee
2002	Kenneth E. Jackson
2001	Thomas A. Lee
2000	H. Thomas Stalker
1999	Patrick M. Phipps
1998	John P. Beasley, Jr.
1997	No Nominations Received
1996	John A. Baldwin
1995	Gene A. Sullivan
1994	Drs. Albert Culbreath, James Todd, James Demski
1993	A. Edwin Colburn
1992	J. Ronald Sholar

1992-1996 DowElanco Award for Excellence in Extension

1997 Changed to DowElanco Award for Excellence in Education

1998 Changed to Dow AgroSciences Award for Excellence in Education

PEANUT RESEARCH AND EDUCATION AWARD RECIPIENTS

2017	Tim Brenneman
2016	Bob Kemerait
2015	Tom Stalker and Noelle Barkley
2015	Emory Murphy
2014	Baozhou Guo
2013	John Beasley
2012	Tom Isleib and Corley Holbrook
2011	No Nominee
2010	P. Ozias-Akins
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 G. Sullivan
1990	R.W. Mozingo
1989	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

2017 Annual Meeting
Abstracts of Presentations

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Joe Sugg Graduate Student Competition – Section 1

Wednesday, July 12, 2017		
1:30 - 3:45 p.m. Alvarado A	**Joe Sugg Graduate Student Competition - Section 1** ***Sponsored by: North Carolina Peanut Growers Association*** ***Moderator: Maria Balota, Virginia Tech University***	Page Number
1:30	**Genetic and On-Field Evaluation of the Black Pod (Bp) Gene to Determine Peanut Seed Maturity** **M.D. GOYZUETA***, B.L. TILLMAN, North Florida REC, Agronomy Department, University of Florida, Marianna, FL 32446; D.L. ROWLAND, Agronomy Department, University of Florida, Gainesville, FL 32611.	**22**
1:45	**Evaluating an *Arachis hypogaea* × *Arachis diogoi* Interspecific Hybrid-Derived Population for Multiple Disease Resistance.** **W.G. HANCOCK***, F.R. CANTOR BARREIRO, S.C. COPELAND, J.W. HOLLOWELL, T.G. ISLEIB, and H.T. STALKER, Dept. of Crop and Soil Sci., N.C. State Univ., Raleigh, NC 27695-7629; S.P. TALLURY, Plant Germplasm Resources Conservation Unit, USDA-ARS, Griffin, GA 30223-1797.	**23**
2:00	**Introgression Pathway for Drought Tolerance in Peanut (*Arachis hypogaea* L.).** **J.M. CASON***, C.E. SIMPSON, J.A. BRADY, Texas A&M AgriLife Research, Texas A&M University System, Stephenville, TX 76401.	**24**
2:15:00 AM Paper Withdrawn	**Mapping a New Source of Root-Knot Nematode (RKN) Resistance from the Wild Species A. Stenosperma.** **CAROLINA BALLÉN-TABORDA***, SCOTT JACKSON, DAVID BERTIOLI, SORAYA LEAL-BERTIOLI, Center for Applied Genetic Technologies and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602, USA. YE CHU, PEGGY OZIAS-AKINS, Department of Horticulture and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, 2356 Rainwater Road, Tifton, GA 31793, USA. CORLEY HOLBROOK, PATRICIA TIMPER, USDA-ARS, Tifton, GA 31793, USA	**Not Available**
2:45	**Phenotypic Characterization of the USDA Core and Mini-Core Peanut Germplasm Collection** **S.W. DEZERN***, G.E. MACDONALD, E. VAN SANTEN, M.J. MULVANEY, Agronomy Department, University of Florida, Gainesville, FL 32611-0300; C. HOLBROOK, USDA ARS, Tifton, GA 31793-5766; and N.A. BARKLEY, International Potato Center, Lima, Peru.	**25**
3:00	**Comparative Genomics Analysis of Field Isolates of *Aspergillus flavus* and *A. parasiticus* to Explain Phenotypic Variation in Oxidative Stress Tolerance and Host Preference.** **J.C. FOUNTAIN***, G. AGARWAL, R.C. KEMERAIT, University of Georgia, Department of Plant Pathology, Tifton, GA, 31793; P. BAJAJ, M. PANDEY, R.K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India, 502324; S.N. NAYAK, University of Agricultural Sciences, Dharwad, Karnataka, India, 580005; R.D. LEE, University of Georgia, Department of Crop and Soil Sciences, Tifton, GA, 31793; and B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA, 31793.	**26**

3:15	**Genotyping of Recombinant Inbred Lines Population Provides Evidence of Tetrasomic Recombination in Cultivated Peanutc.** **CHAVARRO***, D. BERTIOLI, S. LEAL-BERTIOLI, S. JACKSON, Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Athens, GA 30602; Y. CHU and P. OZIAS-AKINS, Horticulture Department, University of Georgia Tifton Campus, Tifton, GA 31793; C.C. HOLBROOK, USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; T. G. ISLEIB, Department of Crop Science, North Carolina State University, P.O. Box 7629, Raleigh, NC 27695.	**27**
3:30 Paper Withdrawn	**Particle Induced X-rays Emission (PIXE) Method for Elemental Composition of Groundnut Germplasms** **A.U. REHMAN*** and U. Khan, Department of Botany, Hazara University, Mansehra KPK,	**Not Available**

Genetic and Field Evaluation of the Black Pod (*Bp*) Gene to Determine Peanut Seed Maturity.

M.D. GOYZUETA*, B.L. TILLMAN, North Florida REC, Agronomy Department, University of Florida, Marianna, FL 32446; D.L. ROWLAND, Agronomy Department, University of Florida, Gainesville, FL 32611.

Various methods to determine peanut maturity have been developed, and they have been widely used by growers, extension agents and crop consultants; however, most are based on the assessment of color in the mesocarp layer of the hull. Branch, et al. (1997) evaluated a true breeding accession which expressed pods with a black exocarp as an indicator of maturity, thus making the assessment of maturity much more straightforward. The objectives of this study were, to 1) evaluate the genetics of the black pod (*Bp*) trait and confirm its similarity to previous reports; 2) evaluate the correlation between maturity indices based on both exocarp and mesocarp; 3) assess and evaluate possible maturity prediction models to determine the mesocarp maturity index based in the exocarp maturity index, and 4) assess and evaluate possible maturity prediction models based on pixel color analysis of exocarp digitals scans in the black pod accession. F_2 and F_3 populations were used to evaluate the genetics of the *Bp* trait by fitting them to a 3:1 and 1:2:1 ratios respectively. Mesocarp and exocarp maturity indexes (MMI and EMI) were calculated from an F_5 population, utilizing 10 genetically different lines. Plots were harvested at 2100, 2300 and 2500 aGDDs as determined by the use of PeanutFarm. F_2 and F_3 populations fitted the 3:1 and 1:2:1 ratios respectively ($p>0.05$). A strong and significant ($p<0.05$) correlation was found between the maturity indices calculated using exocarp and mesocarp color classifications at the three harvest dates. Additionally, it was possible to build accurate models for the prediction of the MMI based on the EMI for each harvest time. EMI was more consistent across the harvest dates and the exocarp coloration was found to occur before than the color change in the mesocarp. Lastly, a model was developed that predicts the mesocarp DIM value based on the pixel classes of the exocarp scans of pods from a sample of pods from the whole plots. Although, the model was robust and accurate, the DIM method needs some modifications to classify exocarp color more accurately as it was built on mesocarp coloration. These results indicate that the *Bp* trait is a single and dominant gene similar to the one previously identified by Branch, et al., (1997). It was also confirmed that it is possible to use maturity evaluation of the exocarp color to predict the mesocarp color evaluation. In the same way, the digital analysis of pixel color could also be utilized with some slight modifications. By introducing this trait to commercial varieties, the time required to assess maturity could be significantly reduced and the likelihood of mature harvest would increase.

Evaluating an *Arachis hypogaea* × *Arachis diogoi* Interspecific Hybrid-Derived Population for Multiple Disease Resistance.

W.G. HANCOCK*, F.R. CANTOR BARREIRO, S.C. COPELAND, J.W. HOLLOWELL, T.G. ISLEIB, and H.T. STALKER, Dept. of Crop and Soil Sci., N.C. State Univ., Raleigh, NC 27695-7629; S.P. TALLURY, Plant Germplasm Resources Conservation Unit, USDA-ARS, Griffin, GA 30223-1797.

The peanut (*Arachis hypogaea* L.) crop in North Carolina is subject to yield and quality loss from a number of diseases including Cylindrocladium black rot (CBR) caused by *Cylindrocladium parasiticum*, early leaf spot (ELS) caused by *Cercospora arachidicola*, late leaf spot (LLS) caused by *Cercosporidium personatum*, Sclerotinia blight (SB) caused by *Sclerotinia minor*, and tomato spotted wilt virus (TSWV) caused by *Tomato spotted wilt tospovirus*. Although cultural and chemical management practices are available, they are costly and complete control may be difficult to achieve. Planting resistant cultivars is the preferred disease management strategy for growers, but favorable genetic variation influencing disease resistance can be limited in cultivated peanut germplasm pools. Several wild diploid species of *Arachis* have high levels of resistance to multiple diseases and could serve as a source of favorable alleles to improve these economically important traits. The wild diploid species *A. diogoi*, specifically accession GKP 10602 (PI 276235), is highly resistant to multiple diseases that impact peanut production. The objective of this research was to evaluate resistance to multiple diseases of an interspecific hybrid derived population developed from a cross between cultivated tetraploid peanut, *A. hypogaea* (2*n*=4*x*=40) and the diploid wild species *A. diogoi* (2*n*=2*x*=20). A sterile triploid F_1 hybrid (2*n*=3*x*=30) resulting from the cross between a large seeded virginia-type cultivar 'Gregory' and the *A. diogoi* accession GKP 10602 was chromosome doubled to restore fertility at the hexaploid level (2*n*=6*x*=60). The hexaploid plant and resulting progeny were allowed to self-pollinate with no artificial selection for twelve generations. Spontaneous chromosome loss occurred during the selfing process and led to many segregants with *A. hypogaea* plant growth habit. Preliminary flow cytometry analyses confirmed that many segregants were tetraploid. Approximately 90 fertile lines were isolated from these tetraploids and this set of introgression lines was evaluated for resistance to multiple diseases using greenhouse inoculations and field evaluations. A wide range of resistance to each of the above mentioned diseases was observed in both greenhouse and field evaluations. Fourteen introgression lines are apparently highly resistant to immune to TSWV and early leafspot. Moderate levels of resistance were observed for Sclerotinia blight and CBR, with eight and nine introgression lines having greater resistance than the most resistant check for Sclerotinia blight and CBR, respectively. Eighteen introgression lines had high levels of resistance across multiple disease evaluations compared to resistant cultivars. The results are being confirmed in additional replicated field evaluations. The presence of multiple disease resistance introgression lines will aid in the long term goal of developing multiple disease resistant high yielding good quality virginia-type peanut cultivars.

Introgression Pathway for Drought Tolerance in Peanut (*Arachis hypogaea* L.).

J.M. CASON*, C.E. SIMPSON, J.A. BRADY, Texas A&M AgriLife Research, Texas A&M University System, Stephenville, TX 76401.

Peanut (*Arachis hypogaea* L.) is genetically isolated from many of its wild relatives due to a polyploidization event in its past. Therefore, to transfer desirable genes from most wild relatives of peanut, special breeding and/or molecular techniques are necessary. Introgression pathways have been successfully used to move genes from wild relatives into cultivated peanut in our Texas peanut breeding program for the past forty years. Drought tolerance has become a significant issue in most all crop species, but especially in peanut because it requires significant amounts of water for good yields. *Arachis dardani* (Krapov. and W.C. Greg.) (S-0721) has been described as a species adapted to extreme environmental conditions. It occurs in the northeast region of Brazil where it typically grows in wooded Caatinga shrublands with a shallow stony soil and only two defined seasons per year, a wet season and a dry season. The area is considered a dry forest region which receives less than 250 mm of annual precipitation. In this study a hybrid of *A. vallsii* (Krapov. and W.C. Greg.) (S-2715-1) and *A. dardani* (S-0721) was created to initiate an introgression pathway for movement of possible drought tolerance into the cultivated peanut. In addition, a transcriptome study with imposed drought is being conducted on *A. dardani* (S-0721) and the reference species *A. ipaënsis* (Krapov. and W.C. Greg.) (30076) to identify genes of interest associated with drought tolerance. We will report on the results obtained thus far.

Phenotypic Characterization of the USDA Core and Mini-Core Peanut Germplasm Collection

S.W. DEZERN*, G.E. MACDONALD, E. VAN SANTEN, M.J. MULVANEY, Agronomy Department, University of Florida, Gainesville, FL 32611-0300; C. HOLBROOK, USDA ARS, Tifton, GA 31793-5766; and N.A. BARKLEY, International Potato Center, Lima, Peru.

Peanut (*Arachis hypogaea*) is an economically important leguminous crop grown globally in the tropics and subtropics. *Arachis* contains over 100 documented species, and is thought to have originated in the northeastern region of Paraguay. Cultivated peanut originated from a single chromosome doubling event between *Arachis duranensis* and *Arachis ipaensis*, resulting in an allotetraploid (AABB) genome, where 2n=40. Because of this single ancestral ploidy change, cultivated peanut has a fairly narrow genetic base, which places emphasis on the maintenance and preservation of genetic diversity in order to have effective breeding programs. The USDA peanut core collection was developed by Dr. Corley Holbrook as an effort to represent the entire USDA peanut germplasm collection, which contains over 17,000 accessions, in a more manageable collection of 831 accessions. Additionally, a mini-core collection, made up of 112 accessions, was developed as a subset of the core collection for research purposes where the entire core would be too cumbersome. This project aimed to characterize the core collection over a number of different phenotypic traits, including yield, grade, plant architecture, pod volume, protein content, and oil composition. Pod volume for a 20 peanut sample in the core collection ranged from 45mL to 365mL. Yield ranged from 298.15 kg/ha to 5621.73 kg/ha in the mini-core collection, and from 45.01 kg/ha to 5480.18 kg/ha in the core collection. Percent sound mature kernels ranged from 31.7% to 80.9% in the core collection. Weight per 100 seed ranged from 66.8 grams to 271.85 grams in the mini-core collection, and from 56.5 grams to 288 grams in the core collection. Additionally, an accession profile, including images of flowers, seed, and in-shell peanuts, will be created for each of the core lines. The results from this project will be freely available on the USDA ARS GRIN database, providing researchers with robust data on the core collection to be used in breeding and genetics programs.

Comparative Genomics Analysis of Field Isolates of *Aspergillus flavus* and *A. parasiticus* to Explain Phenotypic Variation in Oxidative Stress Tolerance and Host Preference.

J.C. FOUNTAIN*, G. AGARWAL, R.C. KEMERAIT, University of Georgia, Department of Plant Pathology, Tifton, GA, 31793; P. BAJAJ, M. PANDEY, R.K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India, 502324; S.N. NAYAK, University of Agricultural Sciences, Dharwad, Karnataka, India, 580005; R.D. LEE, University of Georgia, Department of Crop and Soil Sciences, Tifton, GA, 31793; and B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA, 31793.

Aflatoxin contamination of peanut and other crops is a major concern for producers globally, and has been shown to be exacerbated by drought stress. Previous transcriptomic and proteomic examination of the responses of isolates of *Aspergillus flavus* to drought-related oxidative stress *in vitro* have shown that isolate aflatoxin production, pathogenicity, and development may be influenced by such stresses. Individual isolates were also found to exhibit highly distinct responses to oxidative stress which have the potential to influence host and microbial interactions under environmental stress conditions. In order to search for potential mitigation strategies for aflatoxin contamination, and to characterize the specific genomic differences among these isolates contributing to their distinct biological responses as observed earlier, nine field isolates of *A. flavus* and one *A. parasiticus* isolate were used for whole genome re-sequencing (WGRS). An average of 86.6X genome coverage was obtained for each isolate with reads aligned to the reference genome of *A. flavus* NRRL3357 followed by polymorphism and structural variant calling. Overall, a greater number of non-synonymous SNPs than synonymous SNPs were obtained for each isolate suggesting a high degree of diversifying selection. Examination of non-synonymous SNPs obtained for each isolate revealed a high degree of similarity between the highly toxigenic isolates with the greatest observed stress tolerance with 94.6% of SNPs held in common. Atoxigenic biological control isolates were more diverse with only 55.0% of non-synonymous SNPs held in common. Comparison of isolates with the most and least observed oxidative stress tolerance with the reference also yielded SNPs resulting in possible functional changes to proteins involved in both oxidative and nitrosative stress alleviation in the least tolerant isolate. Continuing analyses will focus on *de novo* assembly of select isolate genomes for identifying novel and truncated genomic regions, and continued analyses of polymorphisms and structural variants affecting function and expression of critical gene families including those encoding secondary metabolite biosynthesis, molecular transporters, and oxidation-reduction enzymes. Identification of these differences will provide insights into host and microbial interactions with these fungi under environmental stress, potential mitigation strategies, and novel avenues of enhancing host resistance using biotechnologies.

Genotyping of Recombinant Inbred Lines Population Provides Evidence of Tetrasomic Recombination in Cultivated Peanut

C. CHAVARRO*, D. BERTIOLI, S. LEAL-BERTIOLI, S. JACKSON, Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Athens, GA 30602; Y. CHU and P. OZIAS-AKINS, Horticulture Department, University of Georgia Tifton Campus, Tifton, GA 31793; C.C. HOLBROOK, USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; T. G. ISLEIB, Department of Crop Science, North Carolina State University, P.O. Box 7629, Raleigh, NC 27695.

Recombinant Inbred Lines (RILs) populations have played an important role in cultivated peanut for the genetic mapping of traits of interest. The genotyping of RILs has evolved and currently it is now possible to have more confident associations of markers with phenotypic traits and to better understand the behavior of the genetic recombination. For this research, a RIL population from the cross of Tifrunner by NC 3033 was genotyped with SSRs and SNPs to generate a genetic map that includes 1618 markers. This was used for QTL identification for seed and pod traits phenotyped over three consecutive years for the purpose of developing markers for breeding. The genetic position of the markers was compared with the pseudomolecule sequences from the two diploid ancestor genome sequences to confirm the genetic positions and to analyze potential rearrangements that may be present in the tetraploid genome as compared to the two ancestors. We confirmed the position of the markers but also found some genome regions undergoing tetrasomic recombination in this population based on polymorphic and monomorphic markers in the RIL lines. This was validated by re-sequencing of two RILs and the parents. Although disomic recombination has been expected in peanut, recently tetrasomic recombination was observed in a cultivated by synthetic population. This research is the first evidence of tetrasomic recombination in cultivated x cultivated population as well as the study of its impact on phenotypic traits.

Joe Sugg Graduate Student Competition – Section 2

Wednesday, July 12, 2017		
1:30 - 4:00 p.m. Alvarado B	**Joe Sugg Graduate Student Competition - Section 2** ***Sponsored by: JLA, Inc.*** ***Moderator: Dan Anco, Clemson University***	Page Number
1:30	**Georgia-06G Response to Ele-Max ENC® with Paraquat** **K. M. EASON***, R. S. TUBBS, E. P. PROSTKO, T. L. GREY, O. W. CARTER, Department of Crop & Soil Science, The University of Georgia, Tifton, GA 31793-0748; and, X. S. LI, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 26849.	**29**
1:45	**Evaluating the Impact of Canopy Defoliation at Two Critical Timings in Peanut.** **C.C. ABBOTT***, J.M. SARVER, and R.A. HENN, Mississippi State University, Mississippi State, MS; J. GORE, L.J. KRUTZ, Mississippi State University, Stoneville, MS	**30**
2:00	**Land Preparation and Irrigation Method Impacts on Peanut Pod Yield, Quality and Water Use Efficiency.** **S.D. LEININGER***, L.J. KRUTZ, and J. GORE, Mississippi State University, Stoneville, MS; J.M. SARVER, A. Henn, and C.C. ABBOTT, Mississippi State University, MS	**31**
2:15	**Evaluating the Impact of Magnesium on Calcium Uptake in Runner Peanut** **K.D. PEGUES***, R.S. TUBBS, G.H. HARRIS, and W.S. MONFORT, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA	**32**
2:45	**Using Diclosulam to Reduce Yellow Nutsedge (*Cyperus esculentus*) and Purple Nutsedge (Cyperus rotundus) Tuber Production.** **D. B. SIMMONS***, T.L. GREY, R.S. TUBBS, E.P. PROSTKO, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA, 31793	**33**
3:00	**PEANUT AND COTTON RESPONSE TO FLURIDONE APPLICATIONS.** **D. L. TEETER*1,** T. A. BAUGHMAN1, P. A. DOTRAY2, R. W. PETERSON1; 1Oklahoma State University, Ardmore, OK, 2Texas Tech University, Lubbock, TX.	**34**
3:15	**Potential for Peanut in a Wheat-Peanut Cropping System in North Carolina.** **A.T. HARE*** and D.L. JORDAN, North Carolina Cooperative Extension Service, Raleigh, NC 27695; and T. CORBETT, North Carolina Department of Agriculture and Consumer Services, Lewiston-Woodville, NC 27849.	**35**
3:30	**The Influence of Nozzle Type on Peanut Weed Control Programs** **O.W. CARTER***, E.P. PROSTKO, Crop and Soil Science Department, The University of Georgia, Tifton, Georgia 31793.	**36**
3:45	**The Effect of Plant population and Harvesting Dates on Aflatoxin Contamination in Groundnut** **L M. MKANDAWIRE*** , W. MHANGO, V.W. SAKA, V.H. KABAMBE Lilongwe University of Agriculture and Natural Resources, Bunda Campus, P.O. Box 219, Lilongwe; J. GOODMAN, Exagris Africa Limited, Malawi; and R. BRANDENBURG, North Carolina State University, Box 7613, Raleigh, NC 27695-7613	**37**

Georgia-06G Response to Ele-Max ENC® with Paraquat

K. M. EASON*, R. S. TUBBS, E. P. PROSTKO, T. L. GREY, O. W. CARTER, Department of Crop & Soil Science, The University of Georgia, Tifton, GA 31793; and X. S. LI, Department of Crop, Soil, and Environmental Sciences, Auburn University, Auburn, AL 36849.

Since the cancellation of dinoseb, peanut farmers in the Southeast have used paraquat as a major component in their weed control programs. The window of time in which paraquat can be applied is relatively short and even with proper application, significant foliar damage occurs. While the foliar injury looks severe, the damage does not consistently correlate with peanut yield loss. Currently, producers can include bentazon in their paraquat tank-mixtures to reduce injury and increase the flexibility of application timings. Recently, there has been an increase in the use of Ele-Max ENC®**,** a 11-8-5 fertilizer with EDTA chelated minor elements, by peanut growers in Georgia. This liquid fertilizer is being used in paraquat tank-mixtures as a replacement for bentazon because of its potential ability to reduce foliar injury. While its use is increasing, there is little data available on the specific interactions between Ele-Max ENC® and paraquat on peanut. Research was conducted in 2016 to determine peanut injury and yield effects of Ele-Max ENC® and postemergence herbicide tank-mixtures containing paraquat. Peanut foliage injury, vegetative biomass, pod biomass, yield and grade (% total sound mature kernels [TSMK]) were measured at Plains, GA while peanut foliage injury and yield were measured at Attapulgus, GA. The experiments were arranged according to a randomized complete block design with all treatments being applied at 15 days after planting (DAP). The first factor was the presence of Ele-Max ENC® (with or without Ele-Max ENC®). The second factor was herbicide treatment (control, paraquat, paraquat + S-metolachlor, and paraquat + S-metolachlor + acifluorfen + bentazon).

Generally, the amount of chlorosis/necrosis on the peanut leaf was reduced when Ele-Max ENC® was added to the various paraquat tank-mixtures. At 4, 7, and 11 days after treatment (DAT), herbicide treatments had an effect on leaf injury (P=0.010, P=0.003, and P=0.0001 respectively). The treatments did not have an effect on vegetative biomass at 7, 40, 74, and 110 DAT. There was an interaction between Ele-Max ENC® and herbicide treatment on pod biomass at 110 DAT (P=0.047). At both locations, when averaged over all herbicide treatments, Ele-Max ENC® had no effect on peanut yield (P=0.244 and P=0.360). There were also no differences between herbicide treatments on peanut yield at either location. When averaged over Ele-Max ENC® treatments, herbicides had no effect on grade (P=0.397). There were no interactions on pod grade between Ele-Max ENC® and herbicide treatments (P=0.734). While Ele-Max ENC® shows no added benefit for yield, it does reduce peanut foliar injury and stunting.

Evaluating the Impact of Canopy Defoliation at Two Critical Timings in Peanut.

C.C. ABBOTT*, J.M. SARVER, and R.A. HENN, Mississippi State University, Mississippi State, MS; J. GORE, L.J. KRUTZ, Mississippi State University, Stoneville, MS

Information is lacking regarding strategies to properly manage canopy defoliation in peanut. Canopy defoliation can reduce photosynthetic capacity, and in turn, pod yield. Peanuts are susceptible to defoliation from foliage-feeding insects which can potentially reduce yield throughout the growing season. Preliminary research indicated that peanuts were especially sensitive to defoliation at two critical timings, 40 and 80 days after emergence (DAE). At these two critical timings, yield was significantly and consistently reduced when the canopy was completely defoliated. The objective of this research was to determine the percentage of canopy defoliation that causes a significant yield reduction at these two critical developmental stages. Trials were conducted at two locations in Mississippi in 2015 and 2016. Treatments included 20, 40, 60, 80, and 100% defoliation at either 40 or 80 DAE, with a non-defoliated control. Yield, grade, canopy heights and widths, and plant biomass were all evaluated. Regression analysis found no significant reduction in pod yield at the 40 DAE defoliation timing at any level of defoliation; however, the linear regression equation indicated a pod yield reduction of 3.08 kg/ha for each 1% defoliation. Similar analysis at 80 DAE showed pod yield reductions of 18.6 kg/ha for each 1% increase in defoliation. At 80 DAE, yields may be reduced upwards of 186 kg/ha following 10% defoliation. When considering average crop value and insect control costs, analyses indicated that the economic injury level is 31% defoliation at 40 DAE and 5% defoliation at 80 DAE. This data will be used as a basis for developing action thresholds in peanut production in Mississippi as well as the Southeast U.S. Knowing how current peanut cultivars respond to defoliation at various levels will help extension personnel make informed pest management decisions and will allow growers to become more efficient users of pesticides.

Land Preparation Method and Irrigation Strategy Impacts on Peanut Pod Yield, Canopy Closure, Quality, Water Use Efficiency and Net Return above Irrigation Costs.

S.D. LEININGER*, L.J. KRUTZ, and J. GORE, Mississippi State University, Stoneville, MS; J.M. SARVER, A. HENN, and C.C. ABBOTT, Mississippi State University, MS

Limited data exits on land preparation methods and irrigation strategies for peanut [*Arachis hypogea* (L.)] in furrow irrigated environments. The objective of this study was to identify land preparation methods and irrigation strategies that optimize peanut yield, canopy closure, quality, water use efficiency and net return above irrigation costs in a furrow irrigated environment. Field research was conducted at the Delta Research and Extension Center in Stoneville, MS in 2015 and 2016. The experiment was designed as a three (irrigation strategy; every furrow irrigated, every-other furrow irrigated, non-irrigated) by two (land preparation methods; flat and bedded) factorial. Plots were in a split-plot arrangement within a randomized complete block design with land preparation as the main plot effect and irrigation strategy as the sub-plot effect. Experimental units were replicated eight times. Seed was planted on either formed beds or flat ground, while water was delivered down every furrow or every-other furrow via lay-flat poly tubing. Land preparation had no effect on yield ($p=0.8701$), but canopy closure occurred 24% faster on raised beds ($p=0.0269$). No differences in yield ($p=0.3140$) were detected among irrigation strategies during a generally wet 2016 season. In 2015, a dry season, irrigation improved yield by 51% ($p=0.0028$) compared to the non-irrigated. Quality was not impacted by land preparation ($p=0.1098$) or irrigation strategy ($p=0.4730$). Pooled over land preparation, irrigating every-other furrow improved water use efficiency by 84% ($p=0.0078$). Net return above irrigation cost did not differ between land preparation methods ($p=0.2666$), in either year. Conversely, in 2015, net return above irrigation cost was 43% higher when water was applied every-other furrow relative to every furrow ($p=0.0006$). Our results indicate that in a furrow irrigated environment peanut should be planted on a raised bed and irrigated every-other furrow to maximize yield, canopy closure, water use efficiency and net return above irrigation costs.

Evaluating the Impact of Magnesium on Calcium Uptake in Runner Peanut

K.D. PEGUES*, R.S. TUBBS, G.H. HARRIS, and W.S. MONFORT, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA

Cations such as potassium (K^+) and magnesium (Mg^{2+}) can compete with Calcium (Ca^{2+}) availability to peanut (*Arachis hypogaea L.*), possibly reducing peanut yield or grade. This study was conducted to determine if Mg^{2+} can inhibit Ca^{2+} uptake depending on soil K^+ and Ca^{2+} availability. Peanut was grown in 2016 on a Bonneau loamy sand in Attapulgus, GA. Six treatments of $CaSO_4$ and/or $MgSO_4$ (fixed effect) were applied in a randomized complete block design with four replications. The treatments included: 1. 1X rate of $MgSO_4$ (28 kg Mg^{2+} ha^{-1}); 2. 1X rate of $MgSO_4$ (28 kg Mg^{2+} ha^{-1}) plus $CaSO_4$ (54 kg Ca^{2+} ha^{-1}); 3. 2X rate of $MgSO_4$ (56 kg Mg^{2+} ha^{-1}); 4. 2X rate of $MgSO_4$ (56 kg Mg^{2+} ha^{-1}) plus $CaSO_4$ (54 kg Ca^{2+} ha^{-1}); 5. $CaSO_4$ (54 kg Ca^{2+} ha^{-1}); and 6. a non-treated check that received no supplemental fertilization. Treatments were applied at first bloom (approximately 35 days after planting). Soil Ca^{2+} was initially in the range of 659 – 764 kg Ca^{2+} ha^{-1} in the pegging zone (top 8 cm of soil) at planting with Ca^{2+}:K^+ ratios ranging from 11:1 to 19:1 and soil Ca^{2+}:K^++Mg^{2+} ratios ranging from 3.1:1 to 3.6:1. At the end of the season, Ca^{2+}: K^+ ratios ranged from 10:1 to 25:1 and the soil Ca^{2+}:K^++Mg^{2+} ratios ranged from 2.7:1 to 5.0:1. The 1X rate of $MgSO_4$ treatment had the highest concentration of Mg^{2+} in the leaves (5.3 g Mg^{2+} kg^{-1}) while the $CaSO_4$ plus 2X rate of $MgSO_4$ treatment and the $CaSO_4$ treatment had the lowest concentration of Mg^{2+} in the leaves (4.4 g Mg^{2+} kg^{-1}). The treatments with $CaSO_4$ applications resulted in the highest concentration of pod Ca^{2+} (1.2 g Ca^{2+} kg^{-1}) while the treatments without $CaSO_4$ applications resulted in the lowest concentration of pod Ca^{2+} (0.08 g Ca^{2+} kg^{-1}). The greatest yield was achieved with $CaSO_4$ plus 2X rate of $MgSO_4$ (6646 kg ha^{-1}). The non-treated check yielded the least (4334 kg ha^{-1}). Magnesium might not inhibit Ca^{2+} uptake when the Ca^{2+}:K^++Mg^{2+} ratio is greater than 3:1 and there is adequate Ca^{2+} in the soil. Based on these results the application of Mg^{2+} could increase peanut health and yield. More research is needed to determine the actual impact Mg^{2+} has on Ca^{2+} uptake including more emphasis on Ca^{2+}:K^++Mg^{2+} ratios.

Using Diclosulam to Reduce Yellow Nutsedge (Cyperus esculentus) and Purple Nutsedge (Cyperus rotundus) Tuber Production.

D. B. SIMMONS*, T.L. GREY, R.S. TUBBS, E.P. PROSTKO, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA, 31793

Yellow and purple nutsedge are perennial species that resist numerous control measures, form dense colonies through tuber production, and can significantly reduce crop yield. In the Southern US, yellow and purple nutsedge are among the most troublesome weeds in numerous cropping systems including peanut, cotton, and fruiting vegetables. Due to the similarity in size, tuber contamination issues can persist in harvested peanuts. Diclosulam has activity for control of nutsedge, but only visual control information is usually presented. The objectives of this experiment were to evaluate the effectiveness of diclosulam on yellow and purple nutsedge tuber production and vegetative growth. In 2016 at the Coastal Plains Experiment Station, yellow and purple nutsedge tubers were pre-sprouted and transplanted into outdoor microplots, a single tuber with an emerged shoot was the initial experimental unit. After 7 wk of growth, the transplanted nutsedges were treated with diclosulam at 1/8, 1/4, 1/2, 1 (26 g ai ha^{-1}), 2, and 4 X-rates. A non-treated control was included for comparison. Yellow and purple nutsedge plants were then harvested 8 wk after herbicide application. The experiment had five replications in a RCBD, with blocking based on the number of shoots emerged at time of application. Tuber and shoot data were collected at harvest for marked plants which had emerged prior to diclosulam application and unmarked plants which were not present at the time of application. Yellow and purple nutsedge had equal amounts of vegetative growth at the time of application. For yellow and purple nustsedge, there was a dose-response reduction of biomass (75%), tuber production (50%), and tuber germination (50%) with respect to unmarked shoots and marked tubers at the 2X rate. There was a dose-response with respect to the reduction of the marked and unmarked tubers in reducing overall tuber viability for yellow nutsedge. Overall for purple nutsedge, there was a reduction in tuber viability. Future studies will address the effects of diclosulam on nutsedge tuber persistence in the soil.

PEANUT AND COTTON RESPONSE TO FLURIDONE APPLICATIONS.

D. L. TEETER*[1], T. A. BAUGHMAN[1], P. A. DOTRAY[2], R. W. PETERSON[1];

[1]Oklahoma State University, Ardmore, OK, [2]Texas Tech University, Lubbock, TX.

Fluridone has been a tool for weed management in aquatic environments for many years. It was recently labeled for use in cotton as premix herbicide with either fomesafen or fluometuron. There has been an increased interest in the use of fluometuron in southwestern row crops due to the impact of weed resistance especially Palmer amaranth (*Amaranthus palmeri*). Studies were established in Oklahoma and Texas to evaluate peanut and cotton tolerance to 1 and 2X rates of fluridone applied preemergence alone and in combination with other labeled preemergence herbicides.

Trials were established at the Oklahoma State University Research Station near Fort Cobb during the 2015, 2016, and 2017 growing seasons to evaluate peanut tolerance to fluridone. Fluridone was applied preemergence at 0.168 (1X) and 0.337 (2X) kg ai ha^{-1} alone or in combination with flumioxazin at 0.107 kg ai ha^{-1} and metolachlor at 1.42 kg ai ha^{-1}. Additional trials were planted at the Oklahoma State University Research Stations near Fort Cobb and Tipton and the Texas Agricultural Experiment Station near Lubbock during the 2016 and 2017 growing seasons to evaluate cotton tolerance to fluridone. Cotton was grown under irrigated conditions at Fort Cobb and Lubbock while being rainfed at Tipton. Fluridone was applied preemergence at 0.168 (1X) and 0.337 (2X) kg ai ha^{-1} alone or in combination with fluometuron at 0.84 (1X) and 1.68 (2X) kg ai ha^{-1}. All treatments were applied with a CO_2 backpack sprayer in 93.457 L ha^{-1}. All trials were maintained weed free and standard production practices used throughout the growing season. Cotton and peanuts were evaluated for visual injury, plant stand counts, and yield; and plant height recorded for cotton.

Peanut were initially injured more than 10% with all fluridone treatments in 2015. Peanut stands were reduced more than 15% with 2X applications of fluridone. This same injury and stand loss was observed up to 10 WAP. Peanut injury 8 and 10 WAP was at least 20% with fluridone at 1X and 35% with 2X treatments. Stand loss and injury was attributed to heavy rainfall shortly after planting and soil movement which lead to concentrations of fluridone within the plot area. Peanut injury led to reduced peanut yields in 2015. Peanut yields were reduced with all fluridone PRE treatments when compared to the untreated. Peanut injury was less than 10% season long in 2016, except with 2X applications of fluridone when visually evaluated at 4 WAP. However, this injury had subsided by late season. Peanut yields were not affected in 2016 by any treatment applied. Current visual peanut injury estimates indicate that 2017 is similar to results observed in 2016.

Cotton injury in 2016 was less than 10% early and late season with all PRE applications of fluridone at all 3 location sites except when fluridone was applied in combination with fluometuron at the 2X rate. Cotton injury was less than 5% at both Oklahoma locations when evaluated prior to harvest. Cotton stand counts and heights were not affected by the 1X rate of fluridone applied alone or in combination with fluometuron at any location. Fluridone alone at the 2X rate reduced cotton stand counts at Tipton. Fluridone + fluometuron applied at the 2X rate reduced cotton stand counts and plant height at both Oklahoma locations but did not affect cotton at Lubbock. Cotton yields were not affected by any treatment in Oklahoma or Texas. Similar cotton visual injury is being observed in 2017.

Potential for Peanut in a Wheat-Peanut Cropping System in North Carolina.

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Peanut in North Carolina are generally planted sometime in the month of May to optimize yield. Planting prior to May or in June can be risky. However, commodity prices can encourage growers to consider non-traditional cropping systems. For example, while wheat and soybean are generally double-cropped in North Carolina, if wheat and peanut prices were stronger than other commodities, growers might consider the potential for planting these crops in a double-crop system. Research was conducted in North Carolina from 2013-2016 at Lewiston-Woodville in northeastern North Carolina to determine yield potential of corn, cotton, grain sorghum, peanut, and soybean planted in reduced tillage systems within the recommended planting window for full-season production versus planting these crops following wheat harvest. Yield response of peanut to these planting dates was inconsistent over the 4 years. In 2013 peanut yield was similar when peanut was planted May 2, May 23, or June 20. In 2014, yield was similar when peanut was planted May 2 or 23 and exceeded yield of peanut planted June 20. In 2015 and 2016, planting peanut on either date in May resulted in greater yields than peanut planted following wheat. However, yield was greater when planting peanut in early May compared with late May in 2015. In contrast, peanut planted in late May during 2016 resulted in greater yield than planting in early May. While differential response to planting date was noted when peanut was planted in May, in 3 of 4 years planting during this month resulted in greater yields than planting in June following wheat. These results will be used to determine the price of wheat and peanut needed to justify double-cropping these crops given peanut yield is compromised with the later planting date. The experiment is being repeated during 2017, and economic analyses will be performed using yield response data and various combinations of crop prices.

The Influence of Nozzle Type on Peanut Weed Control Programs

O.W. CARTER*, E.P. PROSTKO, Crop and Soil Science Department, The University of Georgia, Tifton, Georgia 31793.

The increase in herbicide-resistant weeds over the past decade has led to the introduction of crops that are tolerant to auxin herbicides. Strict application procedures will be required for the use of auxin herbicides in auxin-resistant crops to minimize off-target movement. One requirement for application is the use of nozzles that will minimize drift by producing coarse droplets. Generally, an increase in droplet size can lead to a reduction in coverage and efficacy depending upon the herbicide and weed species. In studies conducted in 2015 and 2016, two of the potential required auxin nozzle types (AIXR11002 and TTI11002) were compared to a conventional drift guard nozzle (DG11002) for weed control in peanut herbicide systems. Nozzle type did not influence annual grass or Palmer amaranth control in non-crop tests. Results from in-crop tests indicated that annual grass control was 5% to 6% lower when herbicides were applied with the TTI nozzle when compared to the AIXR or DG nozzles. However, Palmer amaranth control and peanut yield was not influenced by coarse-droplet nozzles. Peanut growers using the coarse-droplet nozzles need to be aware of potential reduced grass control.

The Effect of Plant Population and Harvesting Dates on Aflatoxin Contamination in Groundnut

L M. MKANDAWIRE* **,** W. MHANGO, V.W. SAKA, V.H. KABAMBE Lilongwe University of Agriculture and Natural Resources, Bunda Campus, P.O. Box 219, Lilongwe; J. GOODMAN, Exagris Africa Limited, Malawi; and R. BRANDENBURG, North Carolina State University, Box 7613, Raleigh, Nc27695-7613

Plant density and harvesting time are important agronomic practices in reducing aflatoxin contamination in groundnut production. An experiment was laid out in four replicates to study the effect of three plant densities, 89000 plants/ha, 178000 plants/ha and 285000 plants/ha; and four harvesting dates, 10 days before groundnut physiological maturity, at physiological maturity, 4 weeks and 6 weeks after physiological maturity on aflatoxin contamination on groundnut variety Nsinjiro (ICGV-SM 90704). The groundnuts were planted at Lisungwi farm in Lilongwe before the onset of rains on 50cm and 90cm wide beds on 10m by 10m plots. Aflatoxin levels were detected using a Mobile Assay mReader software utilizing Neogen Reveal Q+ lateral flow strips. Data were analysed using Genstat computer package 18th edition.

Aflatoxin contamination did not occur in groundnut harvested at 10 days before physiological maturity (0ppb) and at physiological maturity (0ppb) in all the plant densities. However, aflatoxin contamination ranged from 15ppb to 56.7ppb, at 4 weeks and 6 weeks after physiological maturity.

Harvesting groundnuts at ten days before physiological maturity and at physiological maturity reduced aflatoxin contamination to 0ppb. High plant density reduced aflatoxin to < 20ppb at 4 weeks after physiological maturity.

Joe Sugg Graduate Student Competition – Section 3

Wednesday, July 12, 2017		
1:30 - 3:45 p.m. Alvarado C	**Joe Sugg Graduate Student Competition - Section 3** ***Sponsored by: Dow AgroSciences*** ***Moderator: David Jordan, North Carolina State University***	Page Number
1:30:00 AM Paper Withdrawn	**Groundnut Yields and Aflatoxin Contaminaton as Influenced by Planting Time** **S. JUMA***, Exagris Africa Ltd, P.O. Box 3291, Lilongwe and L.M. MKANDAWIRE, Lilongwe University of Agriculture and Natural Resource, P.O Box 219, Lilongwe, Malawi	**Not Available**
1:45	**Effect of Pre-Roast Moisture Content and Post Roast Cooling Parameters on Oil Migration During Oil Roasting of Peanuts** **H.K. STRASSER***, Department of Food, Bioprocessing, and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695-7624; L.L. DEAN, K.W. HENDRIX, USDA ARS Market Quality and Handling Research Unit, Raleigh, NC 27695-7624; and C. ARELLANO, Department of Statistics, North Carolina State University, Raleigh, NC 27695-8023	**40**
2:00	**Effect of Planting Date on Two Cultivars on Leaf Spot Severity and Yield when Grown Without Fungicides.** **B. S. JORDAN*** and A. K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-5766, and W. D. BRANCH, Dept. of Crop and Soil Science, University of Georgia, Tifton, GA 31793-5766.	**41**
2:15	**Understanding Peanut Agroecosystem Performance at Current and Projected Climates, Using a Plant-Soil-Environment Approach** **H. E. LAZA***, Dept. of Plant & Soil Sciences, Texas Tech University; J. BAKER, D. GITZ, C. YATES, N. LAYLAND, J. MAHAN, USDA-ARS Cropping Systems Research Laboratory; Diane Rowland, Agronomy Dept., University of Florida; N. PUPPALA, Plant & Environmental Science Dept., New Mexico State University; and, P. PAYTON, USDA-ARS Cropping Systems Research Laboratory.	**42**
2:45	**Population Structure of *Sclerotium rolfsii* in the Southeastern United States** **P.S. SORIA*** and N.S. DUFAULT, Plant Pathology Department, University of Florida, Gainesville, FL 32611.	**43**
3:00	**Applications of Peanut Skins as a Functional Food Ingredient** **L. CHRISTMAN***, Department of Food, Bioprocessing, and Nutritional Sciences, North Carolina State University, Raleigh NC. 27695. L DEAN, Department of Food, Bioprocessing, and Nutritional Sciences, North Carolina, Raleigh, NC 27695	**44**
3:15	**Effect of Groundnut Drying Methods on Drying Rate and Aflatoxin Contamination** **M. CHIMBAZA***, A.M. MWANGWELA, Food science and Technology Department, Lilongwe University of Agriculture and Natural Resources, W. KAMTHUNZI, Agricultural Engineering Department, Lilongwe University of Agriculture and Natural Resources, K. MALLIKARJUNAN, Department of Food Science and Nutrition, University of Minnesota, St. Paul, MN , and K. ADHIKARI, Department of Food Science and Technology, University of Georgia, Griffin, GA, USA	**45**

3:30	**Effect of Blanching on Composition, Physical, and Functionality of Full Fat Groundnut** **T. V LONGWE***, A.M, MWANGWELA, W. KASAPILA, V. MLOTHA, Department of Food and Science and Technology, Lilongwe University of Agriculture and Natural Resources, Bunda College Campus, P.O Box 219, Lilongwe, Malawi, K. MALLIKARJUNAN, Department of Food Science and Nutrition, University of Minnesota, St. Paul, MN, USA and K. ADHIKARI, Department of Food Science and Technology, University of Georgia, Griffin, GA, USA	**46**

Effect of Pre-Roast Moisture Content and Post Roast Cooling Parameters on Oil Migration During Oil Roasting of Peanuts

H.K. STRASSER*, Department of Food, Bioprocessing, and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695-7624; L.L. DEAN, K.W. HENDRIX, USDA ARS Market Quality and Handling Research Unit, Raleigh, NC 27695-7624; and C. ARELLANO, Department of Statistics, North Carolina State University, Raleigh, NC 27695-8023

Oil migration affects the quality and shelf-life of food products and consequently has an impact on overall consumer acceptance. Exchange of oil may occur during or after oil roasting of peanuts but little is known about the factors contributing to this exchange. This study examines the effect of pre-roast moisture content and post roast cooling parameters on oil migration during the oil roasting of peanuts. Peanuts with a range of moisture contents of 3.3%, 4.6%, 6.1%, and 8.4% were oil roasted in peanut oil containing 10% coconut oil. Lauric acid (C12:0) from the coconut oil served as a chemical marker to track oil movement on to the surface or into the peanut seeds. Upon removal from the roasting oil, peanuts were cooled using three different cooling parameters including immediate packing (no cooling), forced cooling (fast cooling), and ambient cooling (slow cooling).

Fatty acid analysis indicated the presence of lauric acid (C12:0) in the oil collected from the surface of the peanuts as well as within the peanut seed. The average fatty acid profile of the surface oil from the peanuts of different moisture contents from the roasted seeds using no cooling, fast cooling and slow cooling revealed that the amount of C12:0 present was very close to that of the roasting oil being 3.3%, 3.5%, and 3.6% respectively. The internal seed C12:0 content was very similar for both the fast cooling and the slow cooling at 0.26% and .25% respectively however much less for the seeds with no cooling at 0.14%. The amount of C12:0 in the total seed oil (surface + internal oil) did not vary with different cooling parameters or moisture contents. However, the amount of C12:0 within the seed and the surface measured separately did vary with moisture content.

Effect of Planting Date on Two Cultivars on Leaf Spot Severity and Yield when Grown Without Fungicides.

B. S. JORDAN and A. K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-5766, and W. D. BRANCH, Dept. of Crop and Soil Science, University of Georgia, Tifton, GA 31793-5766.

Planting date can affect the risk of losses to early and late leaf spot caused by, *Cercospora arachidicola* and *Cercosporidium personatum*, respectively, of peanut, *Arachis hypogaea*, in both conventional and organic systems. The objective of this study was to characterize the effect of planting date on leaf spot epidemics and yield in new cultivars with moderate tolerance to these diseases. Field trials were conducted in 2015 and 2016 in Tifton, GA. Treatments were six planting dates (24 and 27 April, 4, 11, 19, and 26 May in 2015 and 11, 18, 25 April 2, 9, and 16 May in 2016) arranged factorially with two cultivars, Georgia-06G and Georgia-12Y. Experimental design was a randomized complete block design with 4 replications. No foliar fungicides were applied. Late leaf spot was the predominant disease in both years. Epidemics were severe in plots planted at the later dates in both years. Final leaf spot ratings (Florida 1-10 scale) and AUDPC increased linearly with later planting date (Julian day) for both cultivars. Yield of Georgia-06G decreased linearly, and yield of Georgia-12Ydecreased according to a quadratic function with later planting in both years. Across planting dates in both years, final leaf spot severity and AUDPC were lower, and yield was higher for Georgia-12Y than for Georgia-06G. The combination of early planting with Georgia-12Y shows potential for reducing risks of losses leaf spot and maximizing yield in situations such as organic production where fungicide use would be minimal.

Understanding Peanut Agroecosystem Performance at Current and Projected Climates, Using a Plant-Soil-Environment Approach

HAYDEE E. LAZA*, Dept. of Plant & Soil Sciences, Texas Tech University; J. BAKER, D. GITZ, C. YATES, N. LAYLAND, J. MAHAN, USDA-ARS Cropping Systems Research Laboratory; D. ROWLAND, Agronomy Dept., University of Florida; N. PUPPALAPA, Plant & Environmental Science Dept., New Mexico State University; and, P. PAYTON, USDA-ARS Cropping Systems Research Laboratory.

Peanut agroecosystems play a key role in food production and are a major source of protein in many arid and semi-arid regions where extreme weather events are expected to increase in frequency. We are taking a system-level approach to investigate the response of peanut to elevated [CO_2], water deficit and elevated temperature. New insights regarding system performance at projected environmental conditions could be useful in developing reliable simulation models, identifying key traits to screen for in breeding programs, which could be use as target traits to develop high throughput phenotyping technologies. Seasonal continue canopy gas exchange was measured using LiCor 7000 and six open path Canopy Evapotranspiration and Assimilation (CETA) chambers at 400 and 650 ppm atmospheric [CO_2] in the field during two cropping seasons (2015 and 2016) using peanut cultivar C76-16 (*Arachis hypogaea*), a runner market type. Results showed that elevated [CO_2] ameliorated the negative impact of three water deficit episodes, leading to a significant increase in above-ground biomass (47%) and pod yield (17%) compared to ambient growth conditions. Higher water use efficiency was associated with CO_2 fertilization but this was linked with higher system water use.

Population Structure of *Sclerotium rolfsii* in the Southeastern United States.

P.S. SORIA* and N.S. DUFAULT, Plant Pathology Department, University of Florida, Gainesville, FL 32611.

Sclerotium rolfsii is a soilborne fungal pathogen that causes significant yield loss in Southeastern peanut production. The fungus has been assumed to mainly asexually propagate through sclerotia, and little is known about its sexual cycle. Disease management and resistance breeding efforts among Southeastern regions have therefore considered isolates of *S. rolfsii* as belonging to a single clonal population. Preliminary sequence analysis has revealed polymorphic loci, allowing for a multilocus sequence genotyping and analysis. A total of 50 *S. rolfsii* isolates were collected from Florida, Georgia, Mississippi and Alabama. Using concatenated ITS, RPB1, RPB2, MCM7, TEF sequences to determine multilocus genotypes, populations in each state were not found to be clonal. Populations were genetically diverse according to Nei's measure of genetic diversity and Gst measure of population differentiation. An analysis of molecular variance showed a significant percent of variation occurred within populations of *S. rolfsii* within Florida counties, and variation in populations between states. These results indicate a small but significant role of the sexual cycle in the population structure and epidemiology of *S. rolfsii* in the southeastern US, a potential consideration in future resistance breeding and disease management research.

Applications of Peanut Skins as a Functional Food Ingredient.

L. CHRISTMAN*, Department of Food, Bioprocessing, and Nutritional Sciences, North Carolina State University, Raleigh NC. 27695. L DEAN, Department of Food, Bioprocessing, and Nutritional Sciences, North Carolina, Raleigh, NC 27695

Peanut skins are a low-value byproduct of the peanut industry, with hundreds of thousands of tons being produced annually. Following their removal during the preparation of common peanut products, peanut skins are either discarded or used as a minor component of animal feed. Recent studies have found peanuts skins to be rich in health promoting phenolic compounds and thus have potential to create a market for this material. This study evaluated the use of extracts from peanut skins as a nutraceutical food ingredient by incorporating it into a coating for peanuts. In order to reduce the bitterness associated with the high concentration of polyphenols in the extracts, maltodextrin was used as an encapsulation agent. The encapsulated extract was added at varying concentrations to both a honey roasted and chili lime coating that was then applied to roasted peanut through a panning process. The resulting antioxidant potential of the coated peanuts was investigated. A best estimate threshold for 10.5% maltodextrin-encapsulated peanut skin extract in both the honey roasted and chili lime coating was found to be 12.8% (w/w) and 16.6% (w/w) respectively, based on the standard method (American Society of Testing Material; ASTM E-679).

Effect of Groundnut Drying Methods on Drying Rate and Aflatoxin Contamination

M. CHIMBAZA*, A.M. MWANGWELA, Food science and Technology Department, Lilongwe University of Agriculture and Natural Resources, W. KAMTHUNZI, Agricultural Engineering Department, Lilongwe University of Agriculture and Natural Resources, K. MALLIKARJUNAN, Department of Food Science and Nutrition, University of Minnesota, St. Paul, MN , and K. ADHIKARI, Department of Food Science and Technology, University of Georgia, Griffin, GA, USA

A major concern in groundnut production is aflatoxin contamination which negatively affects trade and wellbeing of humans. This study evaluated twelve methods for drying groundnuts used in Malawi namely, Mandela cock, stacking pole, A-Frame, windrows, rack, inverted circular pattern, drying on slab, black plastic sheet, mat, grass roof, bare ground, iron roof and their effect on drying rate and aflatoxin contamination. Moisture content, temperature and relative humidity were recorded each day during the drying period in order to estimate drying rates. After drying was completed, total aflatoxin analysis was done using ELISA method (Agraquant ™).

The drying period for stripped groundnuts was shorter (10 days) than drying a whole plant (18 days). Whole groundnut plants dried using the Mandela cock and stacking pole had the lowest aflatoxin contamination of 0.68 and 1.39 ppb respectively. Stripped groundnuts dried on bare ground had relatively higher aflatoxin contamination (3.5 ppb) as compared to all the other methods.

In conclusion, stripped nuts dries faster than groundnuts dried as a whole plant. In addition Mandela cock system and staking pole has a potential for reducting aflatoxin in groundnuts.

Effect of Blanching on Composition, Physical, and Functionality of Full Fat Groundnut Flour

T. V LONGWE*, A.M, MWANGWELA, W. KASAPILA, V. MLOTHA, Department of Food and Science and Technology, Lilongwe University of Agriculture and Natural Resources, Bunda College Campus, P.O Box 219, Lilongwe, Malawi, K. MALLIKARJUNAN, Department of Food Science and Nutrition, University of Minnesota, St. Paul, MN, USA and K. ADHIKARI, Department of Food Science and Technology, University of Georgia, Griffin, GA, USA

Blanching coupled with sorting of discolored nuts is one way of reducing aflatoxin contamination in groundnut products. Heat involved during blanching may change the structural composition thus impairing the functionality of groundnut flour. Effect of blanching on physicochemical and functional properties of full fat Chalimbana groundnut flour was evaluated. Dry blanching was done at 138°C for 25 minutes.

Blanching significantly ($P<0.05$) increased ash content by 0.41g/100g, total carbohydrate by 7.99g/100g, and improved bulk density by 0.05g/ml. Blanching resulted in an increase of 2.70% in the Least Gelation Concentration. Blanching significantly ($P<0.05$) reduced moisture content by 1.18 g/100g, water activity by 0.147, fibre content by 2.24g/100g, protein content by 3.57g/100g, and reduced aflatoxin content to non-detectable levels.

Blanching slightly enhanced the Oil Absorption Capacity, Water Solubility Index, Water Absorption Index and the gelation temperature of full fat groundnut flour. However, there was no significant change in fat content, colour, Water Absorption Capacity, Water Holding Capacity, and foaming capacity of full fat groundnut flour. Full fat groundnut flour made from blanched nuts can thus be used in local dishes without significant change in functionality. The flour can also be used as a thickener during cooking and can be used to modify food texture because of its high Oil Absorption Capacity.

Bayer Excellence in Extension & Extension Techniques

Thursday, July 13, 2017		
9:00 a.m. - 12 Noon Alvarado A	**Bayer Excellence in Extension & Extension Techniques** ***Sponsored by: Bayer*** *Moderator: Jason Sarver Mississippi State University*	Page Number
9:00	**Evaluating Management Tools for Peanut Burrower Bug (*Pangaeus bilineatus*) in Runner-Type Peanut** **P. M. CROSBY***, University of Georgia, Swainsboro, GA. 30401 and M.R. ABNEY, Department of Entomology, University of Georgia, Tifton, GA. 31793.	**49**
9:15	**Control of Southern Corn Rootworm with Chlorantraniliprole (Prevathon) Applied at Pegging.** **T. BRITTON*,** B. BARROW, J. HURRY, A. COCHRAN, L. GRIMES, B. ROYALS, A.T. HARE, R.L. BRANDENBURG, and D.L. JORDAN, North Carolina Cooperative Extension Service, Raleigh, NC 27695.	**50**
9:30	**Large Plot, On-Farm Replicated Peanut Variety Trials Across Alabama.** **CHRISTY HICKS*,** Regional Extension Agent, K.B. BALKCOM, Crop Soil Environmental Sciences Department, J.A. KELTON, Regional Extension Agent, Farm and Agribusiness Management, Auburn University, Auburn, Alabama 36849.	**51**
9:45	**Evaluating Early-Maturing, High-Oleic Peanut Cultivars for Fit in Mississippi** **C.L. STOKES***, Mississippi State University Extension, Aberdeen, MS 39730; J.M. SARVER, and C.C. ABBOTT, Department of Plant and Soil Sciences, Mississippi State University, Mississippi State, MS 39762; and R.A. HENN, Department of Biochemistry, Entomology, Plant Pathology, Mississippi State University, Mississippi State, MS 39762	**52**
10:15	**Baker County 2016 High Oleic Peanut Variety Test with an at Plant In-Furrow Fungicide, Nematicide & Inoculant Test Plot** **E.L. JORDAN***, University of Georgia, Baker County Extension; B. KEMERAIT, University of Georgia, Plant Pathology, Coastal Plains Research Center, Tifton, GA.; W.S. MONFORT, University of Georgia, Georgia Agronomist, Coastal Plains Research Center, Tifton, GA.	**53**
10:30	**Impact of Ground Speed and Conveyor Speed on Peanut Digging Losses** A. WARNER, Clemson University Cooperative Extension, Hampton County Cooperative Extension Office, **B. FOGLE*** and K. KIRK, Department of Agricultural Sciences, Clemson University, Edisto Research and Education Center, Blackville, SC 29817.	**54**
10:45	**An Evaluation of Fungicide Programs in Two Peanut Genotypes with Contrasting Disease Resistance** **E.T. CARTER***, UF/IFAS Jackson County Extension, Marianna, FL 32446; B.L. TILLMAN, M.W. GOMILLION, North Florida Research and Education Center, Marianna, FL 32446; R.L. BAROCCO, N.S. DUFAULT, Plant Pathology Department, The University of Florida, Gainesville, FL 32611.	**55**

11:00	**2016 Bulloch County Peanut Fungicide Research Results** **W. G. TYSON***, University of Georgia Cooperative Extension, Bulloch County, Statesboro, GA 30458; R. C. KEMERAIT, University of Georgia, Department of Plant Pathology, Tifton, GA 31794; and A. R. SMITH, University of Georgia, Agricultural and Applied Economics, Tifton, GA 31793.	**56**
11:15	**Fluctuation of Peanut (Arachis hypogaea L.) Pests During the 2016 Growing Season.** **D.T. MAYS*,** Texas A&M AgriLife Extension Service, Brownfield, TX 79316; and J.E. WOODWARD, Texas A&M AgriLife Extension Service, and Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79403.	**57**
11:30	**Pest Management in Peanut in North Carolina, South Carolina, and Virginia** **B. MCLEAN***, B. SANDLIN*, B.BARROW, J. HURRY, , M. LEARY, M. SHAW, M. CARROLL, T. ADAMS, A. BRADLEY, P. SMITH, R. THAGARD, A. WHITEHEAD, B. PARISH, J. HOLLAND, T. BRITTON, J. MORGAN, A. COCHRAN, C. ELLISON, M. HUFFMAN, M. SEITZ, D. LILLEY, L. GRIMES, M. MALLOY, D. KING, R. WOOD, A. WILLIAMS, T. WHALEY, N. HARRELL, D.L. JORDAN, B.B SHEW, and R.L. BRANDENBURG, North Carolina Cooperative Extension Service, Raleigh, NC; D.J. ANCO, D.J. CROFT, A. WARNER, P. DEHOND, H. MIKELL, J. VARN, and J. CROUCH, Clemson University, Clemson, SC; M. BALOTA, H. MEHL, S.V. TAYLOR, J. SPENCER, J. REITER, and L. PREISSER, Virginia Cooperative Extension, Blacksburg VA.	**59**
11:45	**Groundnut (*Arachis Hypogaea* L.) Production Constraints and Farmers Preferred Traits in the Northern Region of Mozambique** **A.M. MUITIA***, M.J. MOPECANE and V. SALEGUA, Instituto de Investigação Agrária de Moçambique, Centro Zonal Nordeste, Estrada Via Corrane, 7 km, Nampula, Mozambique	**60**

Evaluating Management Tools for Peanut Burrower Bug (*Pangaeus bilineatus*) in Runner-Type Peanut.

P. M. CROSBY*, University of Georgia, Swainsboro, GA. 30401 and M.R. ABNEY, Department of Entomology, University of Georgia, Tifton, GA. 31793.

The peanut burrower bug, *Pangaeus bilineatus*, is a sporadic but potentially devastating pest of runner-type peanut in Georgia. Peanut loads with more than 2.49% *P. bilineatus* damaged kernels by weight are downgraded and lose approximately two thirds of their economic value. The low damage threshold and limited control tools create a challenge for growers. Significant gaps exist in our knowledge of *P. bilineatus* and effective management options. In addition, Chlorpyrifos 15G may soon lose its registration in peanut; this is the only proven insecticide option for reducing both population of burrower bugs and damage caused by burrower bugs.

In 2106, two replicated studies were conducted on a commercial farm in Summertown, Ga. The site was chosen due to high levels of burrower bug damage recorded in that field in 2015. The first test evaluated twelve runner type peanut cultivars for natural resistance to burrower bug feeding. The second test evaluated eighteen insecticide treatments for their effectiveness in reducing burrower bug populations and damage.

There was no significant difference in burrower bug damage between any of the 12 cultivars. Likewise none of the insecticides tested reduced burrower bug damage relative to the non-treated check. Small plot size may have contributed to the results observed in the insecticide efficacy trial. Additional studies to evaluate burrower bug management options are ongoing.

Control of Southern Corn Rootworm with Chlorantraniliprole (Prevathon) Applied at Pegging.

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The long-term availability of chlorpyrifos to control southern corn rootworm in peanut is uncertain. With the exception of phorate, no other alternatives exist to control this pest. Approximately 25% of peanut acreage in North Carolina is considered at risk to injury from pod damage from southern corn rootworm feeding. Research in Georgia indicated that chlorantraniliprole (Prevathon) controls lesser cornstalk borer as effectively as chlorpyrifos. Efficacy of chlorantraniliprole against southern corn rootworm in peanut is not known. Research was conducted in 19 fields in North Carolina during 2016 to compare granular applications of chlorpyrifos at pegging with foliar sprays of chlorantraniliprole applied at this timing. Treatments in each trial were replicated at least 3 times. Chlorantraniliprole was applied to the peanut foliage using a CO_2-pressurized backpack sprayer calibrated to deliver 15 gpa at 31 psi at an application rate of 18 oz product/acre. Chlorpyrifos was applied at 7 lbs product/acre in a 12-inch band on 36-inch rows. A non-treated control was included. In 11 of 19 trials where all three treatments were included, pod scarring following application of both insecticides was less than the non-treated control in 3 trials. In 6 trials pod scarring following chlorpyrifos was less than the non-treated control while pod scarring following chlorantraniliprole was lower in only 3 trials. Pod scarring following chlorpyrifos never exceeded that of non-treated peanut, although in 1 trial greater pod scarring was noted after chlorantraniliprole was applied compared with the non-treated control. Less pod scarring was observed following chlorpyrifos compared with chlorantraniliprole in 5 trials. When considering all 19 trials that included non-treated peanut compared with chlorantraniliprole (chlorpyrifos was not used in all trials), there was no difference in pod scarring between these treatments in 14 of 19 trials. Less pod scarring following chlorantraniliprole was noted compared with non-treated peanut in 3 trials while greater pod scarring with chlorantraniliprole-treated peanut was observed in 2 trials. These results indicate that with the use pattern in this experiment chlorantraniliprole is less effective than chlorpyrifos in protecting peanut from feeding by southern corn rootworm. Additional research is needed to determine if earlier applications chlorantraniliprole would be more effective than the timing of application used in this experiment.

Large Plot, On-Farm Replicated Peanut Variety Trials Across Alabama.

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Deciding on which variety to plant is one of the most important decisions a grower will make for the growing season. In addition to the small plot university variety test we have a number of these large plot replicated variety trials across the state in all the different growing regions. This gives the producers an idea of how a variety may respond in there growing region compared to from a research station that may be too far away for an equal comparison. This allows for the producer to not only see the research but to help be a part of it. The key in having these varieties in all the different growing regions allows us to see and realize the varieties strengths and weakness. Some areas have more disease pressure than others which correlates to the additional rainfall patterns for certain areas as well as different rotations which plan a role in disease. This research allows us to help determine which variety has the best characteristics for certain situations. Also, the multiple locations allow us to have a better idea of how a particular variety may consistently respond versus looking at just one location one year.

We are continually looking for the replacement variety for Ga O6G since it has been on the market for eleven years and we know it has little life left on the market. Tuf 511, a high oleic variety, shows us its high yield potential in 2015 but also shows us some weakness in disease pressure. Ga 12Y has also performed well at several locations but, being a long season, normal oil chemistry variety, there is not much interest in it. 2016 results continued to show us the yield potential of Tuf 511 and its consistency but also the new variety to take its place, Tuf 297.

Evaluating Early-Maturing, High-Oleic Peanut Cultivars for Fit in Mississippi

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The peanut-producing area in Mississippi encompasses 37 of the state's 82 counties and lies in all four corners of the state. While the south Mississippi production area is similar in climate and soil characteristics to the typical growing regions in Georgia and Alabama, over half of the acres in Mississippi are planted at more northerly latitudes than those in the traditional peanut growing areas. Because the vast majority of runner peanuts are bred in, and adapted for, the climate in South Georgia, South Alabama, and North Florida there is concern that season length and heat units may be limiting to maximize maturity and productivity of these cultivars in these North Mississippi production areas. In northeast Mississippi during the 2016 growing season, four early-maturing cultivars (12-1-0015, 12-1-0752, 12-1-0914, QR14) developed by Algrano Peanuts in Brownfield, TX were evaluated and compared to three standard mid- to late-maturing cultivars (Georgia-06G, Georgia-14N, TufRunner 511) developed and commonly planted in the southeast U.S. All cultivars were evaluated for yield, grade, disease incidence, mature pods at harvest, and visual appearance. Early-maturing cultivars 12-1-0752 and 12-1-0914 had yield and disease incidence equal to Georgia-06G and TufRunner 511. Both of the early-maturing cultivars had a higher percentage of black and brown pods at harvest, indicating that they matured earlier than any of the current standards. Georgia-14N, QR14, and 12-1-0015 all yielded less than the four previously mentioned cultivars. Cultivars 12-1-0015 and QR14 had the highest disease incidence. Georgia-14N had the lowest percentage of black and brown pods at harvest. Visual appeal was greatest for 12-1-0752, 12-1-0914, and Georgia-06G. Results indicate that there is potential for these early-maturing cultivars to fit into Mississippi production systems, even in a high-disease environment. Early-maturing, disease-resistant cultivars could also fit into other more traditional production areas where growers would like to begin harvest earlier in the season.

Baker County 2016 High Oleic Peanut Variety Test with an at Plant In-Furrow Fungicide, Nematicide & Inoculant Test Plot

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Peanuts have been number one cash crop in S.W. Georgia for many years. UGA has developed and released a High Oleic peanut variety resistant to root knot nematodes. This test evaluated the nematode resistant variety against a susceptible variety treated with velum at plant nematicide.

This peanut test also evaluated applying an inoculant in furrow at plant application along with the three way mix of Velum, Proline, and Peanut Inoculant.

The two High Oleic peanut varieties tested were GA14N compared to GA09B. The Inoculant test evaluated GA14N with and without inoculant and GA09B with and without the Inoculant tank mixed with Velum & Proline.

This test was set up with six randomized on farm test plots that included GA14N and GA09B Peanut varieties with the in furrow application of Check, Inoculant, Velum, Velum & Proline and Velum, Proline & Inoculant mixture.Ga14N was planted 14 days before GA09B to allow GA14N time to mature.

The test plots were evaluated for Plant Stand, Thrip Control, and Yield & Grade.

Impact of Ground Speed and Conveyor Speed on Peanut Digging Losses

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A study was conducted at Edisto REC to quantify the effects of ground speed and conveyor speed on peanut digging losses using 2-row Amadas and KMC peanut diggers. The study was directed at providing producers with recommendations for peanut digger setup and operation to maximize yield recovery; previous studies at Edisto REC have focused on quantifying digging losses as a function of digging depth. Proper peanut digger setup and operation is critical to profitability—while manufacturers provide recommendations for proper setup and ground speed, there exist few published studies assessing these recommendations. In this study experiments were conducted to compare digging losses for four ground speeds (3.2, 4.8, 6.4, and 8.0 kph) at 100% relative conveyor speed and five relative conveyor speeds (80%, 90%, 100%, 110%, and 120%) at 4.8 kph ground speed; tests were conducted independently for the two diggers using virginia type peanuts. Results from the ground speed study indicate that the KMC digger had significate losses at all four tested ground speeds with an increase in losses as a function of ground speed; whereas the Amadas digger indicated no significant difference in the 3.2 and 4.8 kph treatments but did demonstration the same trend of losses increasing as a function of ground speed. Results for the conveyor speed tests were not consistent between the two diggers, with the KMC digger showing significantly higher losses at the 120% relative conveyor speed, and the Amadas digger showing no significant differences in losses across tested conveyor speeds. However, the Amadas digger did show a substantial numerical increases in losses when conveyor speed was above 110% of ground speed. From this the results indicated that optimum ground speeds for peanut digging should not exceed 3.2 kph for the KMC digger and 4.8 kph for the Amadas digger; and that a range of conveyor speeds is acceptable, but conveyor speed should not exceed 110% of ground speed.

An Evaluation of Fungicide Programs in Two Peanut Genotypes with Contrasting Disease Resistance.

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Fungicides and cultivar selection are key components of an integrated disease management plan in peanut. However, the effect of interaction between these components on peanut diseases (e.g. white mold (*Sclerotium rolfsii*) and leaf spots (*Cercospora arachidicola*; *Cercosporidium personatum*) is unclear. The objective of this experiment was to quantify differences in disease response between two peanut genotypes (TUFRunner™ '511', Georgia 06G) under seven Peanut Rx based fungicide programs and an untreated control. Leaf spot (LS) disease development was documented throughout the season using the Florida 1-10 scale, but remained relatively low with a majority (94%) of final scale ratings ranging between 3 to 6. TUFRunner™ '511' had significantly higher LS AUDPC (Log-likelihood $\chi^2 = 15.4$, df = 1, $p < 0.001$) and final scale rating (Quade F = 16, num df = 1, denom df = 2, p = 0.06) than Georgia 06G; however, there was no significant effect of treatment on LS AUDPC (p = 0.92) or significant differences in final scale rating (120 DAP) among treatments for TUFRunner™ '511' (p = 0.87) or Georgia 06G (p = 0.18). Stem rot incidence was recorded throughout the season as the number of 1-ft foci/90 ft of row. A near significant interaction effect of fungicide treatment and variety was observed with stem rot incidence (Log-likelihood $\chi^2 = 13.5$, df = 1, p=0.06). Despite differences in disease presence for the cultivars, there were no differences in yield between varieties (p=0.68). However, yield differences among treatments were more variable and possibly attributed to the timing of the different fungicide treatments and the irregular distribution of natural *S. rolfsii* inoculum in the field. Further evaluation is warranted to better understand these results and the impact that variety, application timing, and natural inoculum have on different spray programs.

2016 Bulloch County Peanut Fungicide Research Results.

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Impact of soilborne diseases on peanut production is a problem that has been addressed with on-farm research in Bulloch County. Peanut producers there have experienced severe outbreaks of southern stem rot (white mold) and other diseases. Current management recommendations are based on a combination of resistant varieties and application of fungicides.

The effectiveness of 8 different fungicide treatments was evaluated for the control of white mold. The experimental design was a randomized complete block with 3 replications. Peanut, 'Georgia 06G', was planted on May 4 and harvested on November 10. Fungicides included Provost Opti, Propulse, Muscle ADV, Echo 720, Fontelis, Convoy, Elatus, and Alto. Fungicides were applied with a tractor hitched sprayer on 14 day intervals beginning on June 22. Cost of fungicide programs varied between $53.00 and $115.00. There was a strong negative relationship between incidence of white mold and yield. Top-yielding programs included Elatus and Fontelis. Dry conditions coupled with excessive temperatures during much of the season likely contributed to levels of white mold control observed with the different fungicide programs.

Fluctuation of Peanut (*Arachis hypogaea* L.) Pests During the 2016 Growing Season.

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Texas ranked third in U.S. peanut production in 2016 with the majority of acres in the Southern High Plains. This area is unique in that all four peanut market types (Runner, Spanish, Valencia and Virginia) are grown. In addition, the majority of the states organic production occurs in this region. As such, Texas peanut producers must contend with numerous insects and diseases that affect the crop at various times throughout the growing season. The Texas A&M AgriLife Extension Service's Integrated Pest Management Program (IPM) in Gaines, Terry, and Yoakum Counties scouts cotton and peanut fields to help producers get a better understanding of current pest situations. During the 2016 growing season the IPM program in Gaines, Terry and Yoakum Counties scouted weekly a total of 471.5 hectares across 22 fields for a total of 272 field visits between 18 May and 30 September. Insect pests observed during the 2016 growing season include western flower thrips (*Frankliniella occidentalis*), potato leafhoppers (*Empoasca fabae*), three-cornered alfalfa hoppers (*Spissistilus festinus*), burrower bugs (*Pangaeus bilineatus*), southern corn rootworms (*Diabrotica undecimpunctata*), wireworms (*Conoderus vespertinus*), white grubs (*Phyllophaga* spp.), two-spotted spider mites (*Tetranychus urticae*), and foliage feeding Lepidoptera such as corn earworm (*Helicoverpa zea*). Diseases found in peanut fields during the 2016 growing season included early leafspot (*Cercospora arachidicola*), pod rot (*Rhizoctonia solani* and *Pythium* spp.) was present in 36% of the fields, Verticillium wilt (*Verticillium dahliae*), and Tomato Spotted Wilt Virus. Western flower thrips were observed in 18% of the fields, and was present between 24 May and 2 June, and did not reach a population that needed to be sprayed. Potato leafhoppers were observed in 36% of the fields and were present in fields from 2 June through digging but never reach a level of economic importance. Three-cornered alfalfa hoppers were observed between 11 July and 6 September in 59% of the fields. Burrower bugs were observed for two weeks between 14 June and 20 June in 27% of the fields, and none of the infested fields were sprayed. Southern corn rootworms were observed in 50% of the fields and were found at varying time including 24 May, 6 June – 20 June, 11 July, 8 August through 6 September, and remained below economic importance. Wireworms were present in 41% of fields and occurred between 14 June and 18 July, as well as during the week of 15 August. White grubs were observed between 20 June and 11 July and again during the week of 15 August, and occurred on 36% of the fields scouted. Two spotted spider mites were found on 4.5% of the fields, occurring between 15 August and 22 August, and thanks to beneficial insects the populations crashed. Foliage feeders such as *H. zea* occurred in 91% of the scouted fields, and were occurred every week until digging starting 29 June, but none of the fields in the scouting program needed to be sprayed. Early leafspot was present in 9% of the fields, and was observed during the weeks of 20 June and 27 September. Pod rot was observed in 36 % of the fields, and occurred between 25 July and 6 September, all fields were sprayed promptly after detection to keep infected pods below 2.5%. Verticillium wilt was present in 23% of the fields, and was observed between 12 September and 27 September following heavy rains in the later part of August. Tomato Spotted Wilt Virus was observed in 4.5% of the inspected fields, and was present between 15 August and 6 September on random plants within the field. Overall, observations made during the 2016 season suggest that peanut pest pressure in West

Texas differs by field, and timing of pest occurrence varies over time, thus routine scouting is necessary.

Results from Surveys on Application Variables Associated with Production and Pest Management in Peanut in North Carolina, South Carolina, and Virginia.

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A survey was conducted during 2017 at county and state peanut production meetings in the Virginia-Carolina region to determine spray equipment size and variables associated with applications to manage peanut. Approximately 280 peanut growers representing about 74,000 acres responded to the survey. Reported spray volumes averaged 16.7 gal/A and ranged from 10 to 28 gal/A. Pressure for spray solution delivery averaged 48 psi but ranged from 20 to 90 psi. Average ground speed was 8 mph with a range of 5.0-13.5 mph. Mean tank size and boom width were 484 gal/tank (range 110-1,000 gal/tank) and 65 ft (range 24-100 ft), respectively. Acreage and tank size, boom width, and ground speed were highly correlated ($p \leq 0.0001$, r^2 = 0.34 to 0.44) while correlations of acreage and peanut yield, spray volume, and spray pressure were not significant (p = 0.159 to 0.775). The percentage of growers using flan fan nozzles was 66% while cone only and a combination of flat fan or cone nozzles, depending on target pest, were used by 10% and 18% of growers, respectively. Flood nozzles were used by 1% of growers while 5% of growers used twin fan nozzles. Sixty-five percent of farmers did not designate sprayers for different crops while 35% designated sprayers. Although not included in the written survey, growers were verbally asked to list the maximum number of products they applied in a single tank mixture. Seventy-nine growers responded to the question. Thirty-seven percent of these growers indicated that four was maximum number of products applied simultaneously, and another 32% indicated a maximum of 3 products. Six percent, 10%, 13%, 1%, and 1% of growers indicated that the maximum number of products applied simultaneously was 2, 5, 6, 7, and 8, respectively.

Groundnut (*Arachis Hypogaea* L.) Production Constraints and Farmers Preferred Traits in the Northern Region of Mozambique

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A participatory rural appraisal (PRA) was conducted in the northern region of Mozambique in order to obtain farmers' groundnut variety selection criteria and production constraints which could be considered in future breeding programmes. Two districts, namely Namuno in Cabo Delgado province and Erati in Nampula province were selected for the study. Open-ended interviews with a group of farmers, guided by a questionnaire and with direct participant observation, were undertaken to obtain detailed information on groundnut production in the region. The main issues addressed in the study included major crops grown, farmers' groundnut variety selection criteria, cropping systems, groundnut production constraints.

The study established that the main crops grown in the region were maize, groundnuts, cassava, and cowpea and sorghum. Groundnuts were the third most important crop after cassava and maize. Groundnut is the only crop which appeared in all existing cropping systems in the two districts and it was grown for both cash income and food security. The major constraints for groundnut production were diseases, insect pests and a lack of suitable improved varieties. About 27 % of women and 41 % of men reported that diseases, specifically groundnut rosette disease, were the most important constraint affecting groundnut production.

Farmers identified the disease using descriptive terms, such as plant stunting, leaf deformation and leaf yellowing. In Namuno, 100 % of farmers grew local landraces and recycled their own seed every growing season, but in Erati about 56 % of farmers had replaced landraces with improved varieties. In some cases, farmers' selection criterion for groundnuts differed from that used by women and men in the same village and across villages.

However, farmers in this region preferred groundnut varieties with the following characteristics: erect or runner, medium to large seeded with red seed testa, early to medium maturing, medium to high yielding, high oil content, and resistant/tolerant to drought, diseases and insect pests.

Keywords: Mozambique, groundnut (*Arachis hypogaea*), participatory rural appraisal

Breeding, Biotechnology, & Genetics – Section I

Thursday, July 13, 2017		
9:00-11:30 a.m. Alvarado B	**Breeding, Biotechnology, & Genetics Section I** *Moderator: Barry Tillman, University of Florida*	Page Number
9:00 AM Paper Withdrawn	**Peanut (Arachis Hypogeea) Breeding Studies in Turkey.** **A. KADİROĞLU***, M. KOCATÜRK, Batı Akdeniz Agricultural Research Institute, Antalya, Turkey.	**Not Available**
9:00 AM	**Peanut, Cotton, and Corn Response to Biochar Rate Produced Under Differing Irrigation Amounts** **M.C. LAMB***, R.B. SORENSEN, and C.L. BUTTS. USDA-ARS National Peanut Research Laboratory, Dawson, GA 39842	**63**
9:15	**Using PeanutBase: Features, Examples, and Tips** **E.K.S. Cannon*,** S.B. CANNON, W. HUANG, P. OTYAMA, L. REN, Iowa State University, Ames, IA; S. KALBERER and N. WEEKS, USDA-ARS, Ames, IA; S. DASH and A. FARMER, National Center for Genome Resources, Santa Fe, NM.	**64**
9:30	**Inheritance of Spear-Shaped Leaf in Peanut** **W. D. Branch*,** Dept. of Crop and Soil Sciences, University of Georgia, Coastal Plain, Tifton, GA	**65**
9:45	**Finally, the Cross that Made *Arachis monticola* Krapov. & Rigoni and/or *Arachis hypogaea* L.** **C.E. SIMPSON*.** Texas A&M AgriLife Research. Texas A&M AgriLife Research and Extension Center. Texas A&M University System. Stephenville, Texas 76401-8992.	**66**
10:15	**Testing-Program-by-Genotype Interaction in the Virginia-Type Peanut Breeding Program at North Carolina State University** **T.G. ISLEIB*,** S.C. COPELAND, W.G. HANCOCK, and F.R. CANTOR BARREIRO, Dept. of Crop and Soil Sci., N.C. State Univ., Raleigh, NC 27695-7629; M. BALOTA and J.C. OAKES, Va. Polytech. Inst. and State Univ. Tidewater Agric. Res. and Ext. Ctr., Suffolk, VA 23437, and D.J. ANCO, Clemson Univ. Edisto Res. and Educ. Ctr., Blackville, SC 29817.	**67**
10:30	**Relative Performance of University of Florida Peanut Cultivars for Yield, Grade, Seed Size and Disease Resistance** **B.L. TILLMAN***, Univ. of Florida, Agronomy Dep, North Florida REC, Marianna, FL, 32446; A.K. CULBREATH and T.B. BRENNEMAN, Univ. of Georgia, Plant Pathology, Coastal Plains Exp. Stn., Tifton, GA 31794; J.M. SARVER, Dep.of Plant and Soil Sci., Mississippi State Univ., Mississippi State, MS 39762; D.J. ANCO, Agricultural and Environmental Sci., Edisto REC, Clemson Univ., Blackville, SC 29817. J.D. GASSETT, Crop and Soil Sciences Dep., Univ. of Georgia, Griffin, GA 30223. J.P. BOSTICK, Auburn Univ., Alabama Crop Imp. Assoc., Headland, AL 36345.	**68**
10:45	**Characteristics of a Newly Released Runner-type Peanut Cultivar 'AU-NPL 17'** **C. CHEN***, K. BALKCOM, A. HAGAN, Auburn University, Auburn, AL 36849; P. DANG, M. LAMB, USDA-ARS National Peanut Research Lab, Dawson, GA 39842; M.L. WANG, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA 30223.	**70**
11:00	**Effect of Growing Location on Seed Oil Composition in the Cultivated Peanut Germplasm Collection** **B. TONNIS***, M.L. WANG, D. PINNOW, S. TALLURY, USDA-ARS, Plant Genetic Resources Conservation Unit, Griffin, GA 30223	**71**

11:15	**Development of Two Extra Early, Drought, Leafspots and Rosette Resistant Groundnut Lines with Desirable Agronomic Traits in Uganda** **D.K. OKELLO*** and B. SADINA, National Semi-Arid Resources Research Institute, P.O. Box 56 Soroti, Uganda; C. M. DEOM, Department of Plant Pathology, University of Georgia, Athens, GA 30602, USA; N. PUPPALA, Agricultural Science Center at Clovi+B95s, New Mexico State University, Clovis, NM 88101; B. BRAVO-URETA, Department of Agricultural and Resource Economics, University of Connecticut, Storrs, CT 06269, USA and Department of Agricultural Economics, University of Talca, Chile; E. MONYO, International Crops Research Institute for Semi-Arid Tropics, United Nations Avenue Gigiri, P. O. Box 39063, Nairobi 00623, Kenya; T.L. ODONG T.L, Department of Crop Production, School of Agricultural Sciences, Makerere University, P.O. Box 7062, Kampala, Uganda; P.OKORI, ICRISAT Malawi, Chitedze Research Station, P.O. Box 1096, Lilongwe, Malawi.	**72**

Peanut, Cotton, and Corn Response to Biochar Rate Produced Under Differing Irrigation Amounts

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Application of biochar to soils is hypothesized to increase crop yield. Crop productivity impacts of biochar application in Southeastern cropping systems consisting of peanut, corn, and cotton produced under varying rates of irrigation have not been addressed. The objective of this research was to incorporate biochar at two different rates into a long-term irrigation and cropping systems study to compare yield and quality response of peanut, cotton, and corn. Biochar was incorporated into soil once at the beginning of the 4-yr project at rates of 22.4 and 44.8 Mg ha^{-1}. Peanut, corn, and cotton were produced under three sprinkler irrigation levels (100, 66, and 33%), surface drip irrigation (100%), and a non-irrigated control. Crop input management followed best management practices and irrigation was scheduled by Irrigator Pro for Peanuts, Corn, and Cotton for sprinkler irrigation plots the 100% level with the 66% and 33% rates applied at the same timings. Significant year, irrigation, and year x irrigation effects for corn, cotton, and peanut yield resulted ($P<0.001$). However no differences resulted for the biochar interactions for corn ($p=0.930$) or cotton ($p=0.678$). Peanut showed a significant response to biochar comparing the 44.8 Mg ha^{-1} rate to the untreated control in non-irrigated production at the $P=0.05$ level and in the 33% irrigated treatment at the $P=0.10$ level. No negative yield effect resulted with biochar rates which opens opportunities for biochar application Southeastern cropping systems for purposes related to carbon sequestration without compromising producers and related agricultural sectors.

Using PeanutBase: Features, Examples, and Tips

E.K.S. CANNON*, S.B. CANNON, W. HUANG, P. OTYAMA, L. REN, Iowa State University, Ames, IA; S. KALBERER and N. WEEKS, USDA-ARS, Ames, IA; S. DASH and A. FARMER, National Center for Genome Resources, Santa Fe, NM.

PeanutBase is a community resource. We will describe the main features and use of the PeanutBase website (http://peanutbase.org), including genome browsers, genetic map viewers, sequence search tools, a database of traits and QTLs, marker-assisted selection pages, geographical maps of germplasm accessions, and gene expression information for peanut tissues and conditions. This includes graphical views of gene expression on peanut tissues and developmental stages. The website and database hold the genome sequences of the two closest ancestors of cultivated peanut (*Arachis duranensis* and *Arachis ipaensis* – progenitors of the cultivated tetraploid, *Arachis hypogaea*). New features include tools for exploring genes and gene families, additional QTLs and markers, and more than a thousand images of germplasm accessions (pods, seeds, and plants), with links to the USDA GRIN germplasm database.

Inheritance of Spear-Shaped Leaf in Peanut.

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Recently, a single Spear-shaped Leaf mutant plant was discovered in the 'Georgia-06G' peanut (*Arachis hypogaea* L. ssp. *hypogaea* var. *hypogaea*) cultivar. The mutant had narrow leaflets with each leaflet tapering to a point which gives the appearance of a spear-shape. Three cross combinations were used to determine the inheritance of this new mutant. F_1, F_2, and F_3 segregation data strongly supported a single incompletely dominant gene controlling the inheritance of the Spear-shaped Leaf trait. The $F_{2:3}$ homozygous spear-shaped individual plants had taller mainstem heights, narrower leaflet width, reduced pod weight, and lower SMK percentages compared to the $F_{2:3}$ homozygous normal leaf plants resulting from the same closely related cross combination (Georgia-06G x Spear-shaped Leaf mutant).

Finally, the Cross that Made *Arachis monticola* Krapov. & Rigoni and/or *Arachis hypogaea* L.

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Much has been said and written about what were the progenitors of the cultivated peanut (*Arachis hypogaea* L.). Early in the career of this author, the only non-A, i.e., did not have the small "A pair" of chromosomes, was *A. batizocoi* Krapov. & W.C. Greg. This information was published by Dr. Joe Smartt, Dr. W.C. Gregory and Dr. M.P. Gregory in the mid-1970's. At that time I was working on transferring resistance to leaf spot (Early, *Cercospora arachidicola* S. Hori and Late, *Cercosporidium personatum* (Berk. & M.A. Curtis) Deighton) from *A. cardenasii* Krapov. & W.C. Greg. and *A. chacoensis nom. nud.* (later it was realized that this was *A. diogoi* Hoehne), but I was having serious sterility problems in making the transfer. After the Smartt, et al. paper I incorporated *A. batizocoi* into the program and had immediate success in making the transfer. This same introgression pathway was used to transfer resistance to two of the root knot nematode species (*Meloidogyne arenaria* (Neal) Chitwood and *M. javanica* (Treub) Chitwood) into the cultigen. With this success, these species were included in discussions of the origin of the cultivated peanut. During the 1980's much cytological data was accumulated that did not support the cross I made as being the progenitors of peanut. As the molecular era began to work into the peanut research field, Dr. G. Kochert asked about getting some materials to do molecular studies. From that beginning of identifying *A. duranensis* as the A genome donor and *A. ipaënsis* as the probable B genome donor to the cultigen, adding in Dr. J.G. Seijo's, Dr. M.D. Burow's and others work, we now have a reasonably good foundation to indicate that these two are in fact the donors. However, molecular studies also confirm that *A. duranensis* was the female of the original cross(es). Herein has been the problem. This author has attempted the cross, *A. duranensis* X *A. ipaënsis*, literally hundreds of times without success, as have others, reporting the same results. The reciprocal cross is easily accomplished, and Dra. A.P. Fávero reported the reciprocal cross as part of her PhD research project. She made the cross, doubled the progenies and made numerous crosses with the several varieties of *A. hypogaea*. Fávero did not compare her progenies to *A.* monticola (personal communication) so we do not know if what she crossed was *A.* monticola or *A.* hypogaea, or something else she may have created with the reciprocal cross, to the peanut cultivars. Recently, one of Dr. G. Seijo's students reported that the A genome donor to *A. hypogaea* most probably came from the valley of the Rio Seco in northwest Argentina. Upon this revelation, I decided to use some of these materials and try the cross again, and much to my delight, I was successful in obtaining seeds from the elusive cross. With the chromosomes doubled we have now harvested 14 seeds and will begin a comparison of these progenies to various *A. monticola* accessions as well as representatives of the botanical varieties of *A. hypogaea.* From these efforts I hope to be able to make a definitive answer to the question: did the *Arachis duranensis* X *Arachis ipaënsis* cross produce, when doubled, *Arachis monticola*, or *Arachis hypogaea*?

Testing-Program-by-Genotype Interaction in the Virginia-Type Peanut Breeding Program at North Carolina State University.

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As is common in testing breeding lines for possible release as cultivars, the N.C. State Univ. peanut breeding program uses a hierarchical testing program in which a line must perform well in a preliminary performance test within the state of North Carolina in order to advance or "graduate" to the multi-site Advanced Yield Test (AYT). After two or more years in the AYT, a line could graduate to the three-state, multi-site, regional "official variety test," the Peanut Variety and Quality Evaluation (PVQE) program conducted by Dr. M. Balota at Virginia Tech's Tidewater Agric. Res. and Ext. Ctr. in Suffolk, VA. After a minimum of three years in the PVQE program, a line becomes a candidate for release. Problematically, lines chosen to graduate from the AYT to the PVQE program often fail to perform well their first year in the PVQE. Because most of the entries in the PVQE program are N.C. State Univ. lines, it is not surprising to find that one or more of those lines rank low for crop value in the PVQE. However, it is to be hoped that new PVQE entries will represent improvements in yield and crop value and that the low-ranking entries will be older cultivars or breeding lines. To assess the frequency and magnitude of testing-program-by-genotype interaction, the in-state North Carolina and PVQE databases were queried to obtain yield and grade data for three sets of 20 lines tested one, two, or three or more years in the PVQE program. Each set included data for six cultivars tested during the covered period. Among lines tested only one year in the PVQE program, *i.e.*, discarded after one year, highly significant interaction ($P<0.0001$) was detected for most traits including the two primary ones used for retention of lines in the testing program: crop value and weighted average pod brightness. Unfortunately, similar interaction was detected for those two traits in the sets of more extensively tested lines. Estimation of the individual interaction terms for the 26 lines in each set did not show a decrease in magnitude of interaction with more testing nor did it show a shift toward more lines exhibiting positive interaction effects when tested in the PVQE versus the AYT program. We have been unable to identify definitively the cause of the observed interaction. We have already changed to require three rather than two years of "good" performance in the AYT program before a line graduates to the PVQE; it may be necessary to require a fourth year.

Relative Performance of University of Florida Peanut Cultivars for Yield, Grade, Seed Size and Disease Resistance.

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Each year beginning in 2013, the University of Florida peanut breeding program released a new peanut cultivar as follows: TUFRunner™ '511' (2013), TUFRunner™ '297' (2014), FloRun™ '157' (2015),and FloRun™ '331' (2016). Another experimental line (UF15303) is being considered for release in 2018. Prior to, and since release, these lines were evaluated for their reaction to leaf spot, white mold, and spotted wilt in Marianna, FL and Tifton, GA in tests designed to encourage these diseases. Additionally, tests were conducted in Alabama, Georgia, Florida, Mississippi, and South Carolina to determine their yield potential, grade and seed size. This study compared four University of Florida cultivars and one experimental line to the widely grown cultivar Georgia-06G. As summarized in Table 1, the weight of 100 seeds of FloRun™ '157' and FloRun™ '331' was less than Georgia-06G (Pr<0.01). On the other hand, the weight of 100 seeds of both TUFRunner™ '297' and TUFRunner™ '511' was greater than Georiga-06G (Pr<0.01). In 20 comparisons, the 100 seed weight of UF15303 was not different than that of Georgia-06G (76.3g vs. 76.0g). All of the cultivars and the breeding line from the University of Florida had lower TSMK than Georgia-06G, ranging from 0.09 points to 2.3 points. The yield of FloRun™ '157' was less than Georgia-06G (Pr=0.02) whereas the yield of both FloRun™ '331' and TUFRunner™ '297' was greater than Georgia-06G (Pr≤0.03). Yield of UF15303 and TUFRunner™ '511' was similar to Georgia-06G.

Based on results from tests designed to maximize leaf spot and white mold in Florida, both FloRun™ '331' and TUFRunner™ '511' had lower underground ratings for white mold (Pr≤0.10) and higher yields (Pr<0.01) than Georgia-06G. The performance others was similar to Georgia-06G. Late leaf spot was prevalent in Florida tests and both TUFRunner™ '511' and TUFRunner™ '297' had greater leaf spot ratings than Georgia-06G (Pr<0.10). Yield of TUFRunner™ '297' and TUFRunner™ '511' was 1500 lbs/A less than Georgia-06G. On the other hand, yield of FloRun™ '331' was 449 lb/A greater (Pr= 0.06) than Georgia-06G under severe leaf spot pressure. Spotted wilt tests in Florida were inconclusive, but in Georgia, TUFRunner™ '297' demonstrated good resistance to spotted wilt. Other disease data from the University of Georgia will be discussed.

See Table on next page.

Table 1. Relative performance of University of Florida peanut cultivars compared to Georgia-06G.

	Weight of 100 seeds (g)			TSMK (%)			Yield (lbs./A)		
Entry	%	Prob	# of tests	%	Prob	# of tests	%	Prob	# of tests
FloRun™ '157'	63.1	<0.01	32	76.2	<0.01	32	5776	0.02	28
Georgia-06G	75.0			77.7			6046		
FloRun™ '331'	68.9	<0.01	25	77.4	<0.01	25	6970	0.03	25
Georgia-06G	76.6			79.7			6631		
TUFRunner™ '297'	80.9	<0.01	46	76.2	<0.01	46	5927	0.01	43
Georgia-06G	75.6			77.4			5688		
TUFRunner™ '511'	77.8	<0.01	209	78.0	<0.01	209	6472	0.85	150
Georgia-06G	75.5			78.9			6462		
UF15303	76.3	0.70	20	77.6	<0.01	20	6770	0.56	20
Georgia-06G	76.0			79.9			6670		

Characteristics of a Newly Released Runner-type Peanut Cultivar 'AU-NPL 17'.

C. CHEN*, K. BALKCOM, A. HAGAN, Auburn University, Auburn, AL 36849; P. DANG, M. LAMB, USDA-ARS National Peanut Research Lab, Dawson, GA 39842; M.L. WANG, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA 30223.

'AU-NPL 17' was developed from a pure line population intended for cultivar release. The original pure line, AU14-29, originated as an F_6 single-plant selection from the cross of Tifguard (Holbrook, et al. 2008) x York (Gorbet, et al., 2011) and was composited in the F_6 generation. 'AU-NPL 17' has a prostrate growth habit with main stem. Seeds of 'AU-NPL 17' have a pink testa seed coat. It is a high-yielding, tomato spot wilted (TSW)-resistant, and leaf spot tolerant, high grade, and superior shelling characters. It has high oleic fatty acid content and good flavor. 'AU-NPL 17' is a large-seeded with an average weight of 100 seeds of 69 g, which is a slightly smaller than 'Georgia-06G'. 'AU-NPL 17' flowers approximately 35 days after planting and is of medium maturity of 140 days at Southeastern growing region.

Effect of Growing Location on Seed Oil Composition in the Cultivated Peanut Germplasm Collection

B. TONNIS*, M.L. WANG, D. PINNOW, S. TALLURY, USDA-ARS, Plant Genetic Resources Conservation Unit, Griffin, GA 30223

A particularly important component of seed oils is the content of oleic acid as this fatty acid has several health benefits and contributes to increased oil stability, i.e. longer shelf life. We measured 8835 available accessions of the USDA peanut germplasm collection to gauge the range of variation in oil composition; and we observed a pattern of higher oleic acid content in those accessions where the seeds had been regenerated in Florida. Therefore, we selected a subset of accessions that had multiple inventories grown in different geographical locations: Florida, Georgia, and southwestern states (OK, NM, and TX). The accessions were measured for fatty acid composition to determine the effect of growing location on oleic acid content. Oil from inventories grown in southwestern states averaged 38.70% oleic acid (range 30.61-62.31%) with 86 of 107 total having less than 40%. Inventories grown in Georgia averaged 47.61% oleic acid (range 32.57-81.87%). Those grown in Florida averaged 60.92% oleic acid (range 39.83-74.66%) with 78 of 100 total having more than 60%. Additionally, in direct comparisons of oleic content within 92 accessions, Florida-grown inventories averaged 11.77% higher than their Georgia-grown counterparts. Similarly, in 26 accessions of direct comparison, Florida-grown inventories averaged 15.35% higher than their southwestern-grown counterparts. In every instance, the inventory from Florida had a higher oleic content than the other geographic locations. In contrast, within accessions grown in Georgia and the southwest, Georgia-grown inventories averaged only 4.46% higher. Based on these findings, geographical location and/or environmental conditions appear to affect the composition of peanut seed oil. However, inventories in this study were grown across several different years. We are currently growing 50 accessions in two locations (Florida and Georgia) with replicates to confirm the effect of growing location within the same year. At the same time, we are collecting detailed environmental data to determine the main factors that lead to seed oil composition differences in the accessions investigated.

Development of Two Extra Early, Drought, Leafspots and Rosette Resistant Groundnut Lines with Desirable Agronomic Traits in Uganda

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Groundnut (*Arachis hypogaea* L.) is one of the world's most important legumes grown primarily for its high quality edible oil and protein. Groundnut is grown globally on 35.5 million ha across 82 countries with 70% of the production area falling under arid and semi-arid regions where groundnut are frequently subjected to drought stresses. Drought is also known to predispose peanut to aflatoxin contamination. In Uganda, groundnuts are grown under rainfed agriculture by resource poor farmers making drought mitigation an important breeding agenda. Additionally, Groundnut rosette virus (GRD) and Late leafspots diseases are other two important production constraints. Crosses were made between the high yielding, GRD and drought resistant popular cultivar Serenut 2 and ICGV SM 86715, a high-yielding interspecific backcross derivative interspecific backcross derivative resistant to rust, late leaf spot. Generation advancement and selections were through repeated bulk selection and single seed descent for foliar disease reactions, drought, earliness and desirable agronomic characters. Analyses of variances from National Performance data revealed highly variations in average number of pods, 100 seed weight, and severities of GRD and LLS at harvests. Two superior lines from the national performance trials, DOK 1R and DOK 1T are early maturing (75 to 85 days), late leafspot, rosette virus and drought resistant passed the first DUS test. They will undergo second DUS test prior to release later this year 2017

Breeding, Biotechnology, and Genetics – Section II

Thursday, July 13, 2017		
9:00-11:15 a.m. Alvarado C	**Breeding, Biotechnology, & Genetics Section II** *Moderator: Rebecca Bennett, USDA-ARS*	Page Number
9:00	**Breeding Competitive High-Oleic Peanut Cultivars at the Biotech Division, Shandong Peanut Research Institute** **C.T. Wang***, Y.Y. TANG, X.Z. WANG, Q. WU, Q.X. SUN, Z.W. WANG, Biotech Division, Shandong Peanut Research Institute (SPRI), 126 Wannianquan Street, Licang District, Qingdao 266100, China	**75**
9:15	**High Throughput Phenotyping for Total Oil Content in Peanut Kernels.** **G.C. WRIGHT***, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; K.Y. PHAN-THIEN, University of Sydney, Sydney, NSW Australia 2006; and D.B. FLEISCHFRESSER, AgriSciences Queensland, Department of Agriculture and Fisheries, Kingaroy, Queensland, Australia, 4610.	**76**
9:30	**Axiom_Arachis2 Genotyping Resource for Peanut** J.P. CLEVENGER, Center for Applied Genetic Technologies, University of Georgia, Athens, GA 30602; W. KORANI, Y. CHU, and **P. OZIAS-AKINS***, Department of Horticulture and Institute of Plant Breeding, Genetics & Genomics, University of Georgia Tifton Campus, Tifton, GA 31793.	**77**
9:45	**Phenotyping and Genotyping Parents of Sixteen Recombinant Inbred Peanut Populations** **Y. CHU***, Horticulture Department, University of Georgia Tifton Campus, Tifton, GA 31793; C.C. HOLBROOK, USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; T.G. ISLEIB, Department of Crop Science, North Carolina State University, P.O. Box 7629, Raleigh, NC 27695; M. BUROW, Texas Agricultural Experiment Station, Texas A&M University/Texas Tech University, Lubbock, TX 79401; A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, Georgia 31793; B. TILLMAN, North Florida Research and Extension Center, University of Florida, Marianna, FL 32446; J. CHEN, Shandong Peanut Research Institute, Qingdao, 266100 P.R. China; and P. OZIAS-AKINS, Horticulture Department and Institute of Plant Breeding, Genetics & Genomics, University of Georgia Tifton Campus, Tifton, GA 31793.	**78**
10:15	**Nested Association Mapping for Dissecting Complex Traits Using the Peanut 58K SNP Array.** **G. AGARWAL***, H. WANG, D. CHOUDHARY, A.K. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA, 31793; Y. CHU, P. OZIAS-AKINS, Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, 31793; M.K. PANDEY, S.M. KALE, R.K. VARSHNEY, International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Telangana, India, 580005; T.G. ISLEIB, Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC, 27695; C.C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA, 31793; B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA, 31793.	**79**

10:30:00 AM PAPER WITHDRAWN	**Mutagenesis of FAD2 Genes in Peanut with CRISPR/Cas9.** M. YUAN, Shandong Peanut Research Institute, Qingdao, China; J. ZHU, C. LEE, C.S. PRAKASH, **G. HE***, Tuskegee University, Tuskegee, AL 36088; L. HE, Guangxi Academy of Agricultural Sciences, Nanning, China; S. HAN, Henan Academy of Agricultural Sciences, Zhengzhou, China; P. DANG, USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842; C. CHEN, Auburn University, Auburn, AL 36849	**Not Available**
10:45	**A Comprehensive Meta QTL Analysis for Yield, Quality, Plant Morphology, Drought and Disease Resistance in Peanut (*Arachis hypogaea* L.)** Xinlei YANG, Yi TIAN, Shuzhen HAO and **Lifeng LIU ***,North China Key Laboratory for Crop Germplasm Resources of Education Ministry, Key Laboratory of Crop Germplasm Resources of Hebei, Hebei Agricultural University, No. 2596 Lekai South St, Baoding 071001, P. R. China	**80**
11:00	**Differential Metabolic Proteins and Pathways Signaling High and Low Antioxidant Capacity in Peanuts, Using Quantitative Proteomics for Selective Breeding.** **Y.Y. POON***, S. MURALIDHARAN, #ARC Training Centre for Advanced Technologies in Food Manufacture, School of Chemical Engineering, University of New South Wales, Kensington, NSW 2052, Australia; G. C. WRIGHT, Peanut Company of Australia, Kingaroy, Queensland 4610, Australia; P. HAYNES, ARC ITTC for Molecular Technology in the Food Industry, Macquarie University, Sydney 2109, Australia; N.A LEE#.	**81**

Breeding Competitive High-Oleic Peanut Cultivars at the Biotech Division, Shandong Peanut Research Institute

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At the Biotech Division, Shandong Peanut Research Institute, 4 high-oleic (HO) mutants (2 natural and 2 induced) were identified, and intersectional hybrids obtained with *in situ* embryo rescue technique. Near infra-red spectroscopy (NIRS) calibration equations predictive of major fatty acids, oil and protein content both for bulk seed samples and for individual single seeds, and allele-specific PCR (AS-PCR) for accurate *FAD2* genotyping were developed. With these resources and tools, we were able to develop and release 12 HO peanut cultivars. Among them, Huayu 963 recorded a yield of 6300kg/ha in low-fertility soil under rainfed conditions in 2016, a year with limited rainfall and lots of peanut pops, while Huayu 663 produced a yield of 9750kg/ha under irrigation in a vineyard in the same year. In addition, HO high-yielding lines with chill/saline tolerance, strong peg strength, typical Spanish/Virginia-type pods or high mineral contents were also bred. The HO cultivars/lines proved to have productivity comparable to or higher than normal oleic high yielding local cultivars, making them easier to be accepted by peanut growers.

High Throughput Phenotyping for Total Oil Content in Peanut Kernels.

G.C. WRIGHT*, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; K.Y. PHAN-THIEN, University of Sydney, Sydney, NSW Australia 2006; and D.B. FLEISCHFRESSER, AgriSciences Queensland, Department of Agriculture and Fisheries, Kingaroy, Queensland, Australia, 4610.

Breeding for high and low oil content in peanut is a major quality objective of many global peanut breeding programs. Accurate, repeatable, and low cost phenotyping is a key to success in breeding for total oil content. Advances in Near Infra-Red Spectroscopy (NIRS) assays for non-destructive phenotyping of total oil content have made it possible to cost effectively screen large numbers of breeding lines. Most NIRS systems are designed to accurately assay bulk seed lots (>50 kernels) for total oil content, and hence have mainly been used in later generation selection where larger seed quantities are available for measurement. Ideally, single kernel based oil content measurement could enable screening of segregating populations for selection/culling of high/low oil content kernels in earlier generations, thus potentially speeding up the rate of genetic gain. While modifications to the bulk kernel NIRS systems to allow measurement of individual kernel total oil content have been attempted, it is still slow and time consuming.

A purpose built single kernel NIRS system manufactured by Brimrose Corporation ("SeedMeister" AOTF-NIR Analyzer) was therefore evaluated to determine if more rapid and accurate single kernel assessment of total oil content could be achieved. A calibration model for the "SeedMeister" was developed using 11 diverse peanut genotypes known to differ in total oil content from ~ 45 to 54%. Total oil content of 10 individual kernels per genotype was determined using a modified Soxhlet method. NIR spectra of the 10 individual kernels from each genotype was measured on the "SeedMeister" via stationary and moving absorbance scans over the range of 1120-2280 nm at 2 nm increments. Spectral data were transformed using Savitzkay-Golay 1st or 2nd derivative (polynomial order 2), and calibration models then developed using Partial Least Squares (PLS) regression or Principal Components regression, with spectral data as x-variates (predictors) and oil content as y-variate (response). The best quality calibration models for total oil content prediction were developed using PLS regression of 1st derivative data, using either stationary or moving scans, with best r^2 of ~ 0.83 achieved. This calibration model has been uploaded into the "SeedMeister" NIR system to provide a high throughput semi- quantitative assay for total oil content in individual kernels, with capacity to scan up to 15 kernels per minute. This phenotyping technique is reproducible, robust, rapid, cost-effective, and non-destructive, and can be used in conjunction with high oleic fatty acid screening to provide for simultaneous phenotyping of total oil and high oleic acid content.

Axiom_Arachis2 Genotyping Resource for Peanut

J.P. CLEVENGER, Center for Applied Genetic Technologies, University of Georgia, Athens, GA 30602; W. KORANI, Y. CHU, and **P. OZIAS-AKINS***, Department of Horticulture and Institute of Plant Breeding, Genetics & Genomics, University of Georgia Tifton Campus, Tifton, GA 31793.

Single nucleotide polymorphisms (SNPs) are preferred as molecular markers because of their abundance and genome-wide distribution. Identification of true SNPs in cultivated peanut (*Arachis hypogaea* L.), an allotetraploid plant, has been confounded by the similarity between its two subgenomes. Considerable progress recently has been made on SNP discovery in peanut due to improved computational pipelines built to discriminate between allelic versus homeologous SNPs validated from a large dataset generated with the Affymetrix Axiom_Arachis array. The Axiom_Arachis2 array was designed to combine SNPs verified as polymorphic among tetraploids on the Axiom_Arachis array with additional SNPs identified using the improved computational approaches. The Axiom_Arachis2 array features 47,838 SNPs mined primarily from resequencing of diverse tetraploid genotypes. The version 2 array will be useful for genotyping tetraploid, diploid, and interspecific *Arachis* lines and populations to 1) generate a large dataset that can be used to refine the training/prediction models to apply to sequence-based data, 2) catalog genetic diversity among breeding materials, 3) create genetic maps of populations, 4) identify genomic regions under positive or negative selection or alleles fixed in a breeding program, 5) facilitate genome-wide background selection or genomic selection, 6) identify a subset of polymorphisms to be developed for single-marker analysis for specific traits. The Arachis2 array will be available as a community resource at a per sample cost nearly half that of version 1.

Phenotyping and Genotyping Parents of Sixteen Recombinant Inbred Peanut Populations

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Many agronomically important traits such as yield, disease resistance, and pod quality are quantitatively inherited. Phenotypic selection of these traits in peanut breeding programs is labor intensive and costly. Cost reductions for sequencing and genotyping now empowers breeders with affordable and high throughput selection tools. Applying genetic markers closely associated with phenotypic traits of interest in breeding programs facilitates the selection of targeted individuals at early breeding cycles. However, reliable association between genetic markers and phenotypic traits has to be established and confirmed prior to marker-assisted selection. Genetic mapping of complex traits using structured populations is a powerful method to determine marker-trait associations. Previously, a nested association mapping population of 16 recombinant inbred line populations following a 2 x 8 factorial design was established. The two common female parents, Tifrunner and Florida 07, were paired with eight unique male parents yielding more than 4,000 recombinant inbred lines. Phenotyping the parental lines for yield, pod traits, field maturity, germination, plant morphology, disease resistance to TSWV and LLS and salt tolerance revealed statistically significant phenotypic variation among the parental combinations. Genotyping the parental lines by the *Arachis* Axiom SNP array identified 1,000 to 4,000 SNPs among the population parents. Further phenotyping and genotyping of the NAM population will allow the construction of high density genetic maps and QTL mapping.

Nested Association Mapping for Dissecting Complex Traits Using the Peanut 58K SNP Array.

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Genome-wide association studies (GWAS) and linkage mapping have been the two most predominant strategies to dissect complex traits, but are limited by the occurrence of false positives reported for GWAS, and low resolution in the case of linkage analysis. This has led to the development of a joint approach, nested association mapping (NAM). The US peanut community has developed 16 structured and interrelated RIL populations using a 2 x 8 (common x unique) factorial nested mating association mapping design. Parents were selected in an attempt to maximize genetic diversity while meeting practical breeding objectives. Our objective is to test if the NAM strategy has increased power for QTL detection since NAM uses multiple linkage mapping populations resulting in better QTL resolution without false positives. In the current study, we used eight of these structured cross combinations (Set A) (Tifrunner x N08082olJCT; Tifrunner x SPT 06-06; Tifrunner x C76-16; Tifrunnner x NC 3033; Florida-07 x N08082olJCT; Florida-07 x SPT 06-06; Florida-07 x C76-16; and Florida-07 x NC 3033) to dissect the complex traits. A total of 1090 RILs of these two NAM populations (a sub-set of each NAM, 600 and 490 RILs, respectively) from this collection, with one common and four founder lines for each of the two populations were investigated. The common parents are Tifrunner and Florida-07. A total of 3,596 unique highly polymorphic SNPs (chi-squared test $p < 0.05$, and less than 20% missing data) were obtained from the Peanut 58K SNP array, and have been used to develop a consensus linkage map for each of the two populations. Initially, individual linkage maps for each population were constructed followed by a consensus map using the common SNPs from the populations. With the availability of multiple seasons of phenotyping data for morphological (main stem height, plant size, leaf length and width), disease-related (*Tomato spotted wilt virus* and leaf spots), and seed traits, QTL analyses of the NAM populations will yield greater resolution of the genomic regions responsible for governing these complex traits. This study will provide directions and resources for the peanut community to identify detailed positions of genes controlling peanut morphology and disease resistance along with other studies of individual RILs.

A Comprehensive Meta QTL Analysis for Yield, Quality, Plant Morphology, Drought and Disease Resistance in Peanut (*Arachis hypogaea* L.)

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Peanut or groundnut is an important cash and oilseed crop worldwide. To date, a large number of QTLs associated with yield, quality, plant morphology, drought and disease resistance were mapped so as to better understanding genetic mechanism of important traits in peanut. However, it seems difficult to find “consensus” QTL or QTL “hotspots” because of the different segregating populations under different environmental conditions. To solve this problem, we collected 41 genetic linkage maps with 1,150 QTLs from the papers published in 2009 to 2016 and PeanutBase (https://peanutbase.org/) and constructed an integrated map, including 10,125 loci distributed on 20 chromosomes and covered 3,882.9 cM with an average distance of 0.38 cM between adjacent markers by homothetic function of map projection. Based on this newly consensus map, 902 QTLs conferring yield, quality, plant morphology, drought, and disease resistance were localized, among which, 238 Meta-QTLs were found on 19 chromosomes using meta-analysis of Bio-Mercator 4.2 software. In particularly, many Meta-QTL clusters were located on three chromosomes of A05, A09 and B05. Flanking markers of Meta-QTL clusters were blasted the sequences of diploid genome and genes information of each Meta-QTL cluster was found by Gene ontology (GO) analysis. This study will provide a useful resource for breeders and geneticists in their molecular breeding programs.

Differential Metabolic Proteins and Pathways Signaling High and Low Antioxidant Capacity in Peanuts, Using Quantitative Proteomics for Selective Breeding.

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Peanuts contain polyphenol antioxidants which protect against oxidative stresses commonly present in inflammation, cellular respiration, cancers, neurodegenerative disorders and cardiovascular diseases. In an effort to assess the genetic variation for breeding new cultivars with higher antioxidant content in peanuts, we used recombinant inbred lines (RILs) developed from the hybridisation of a breeding line (D147-p3-115) and a cultivar (Farnsfield) which showed significant variability for total antioxidant expression. Selected RILs (p27-272, p27-036, p27-362) with high or low total antioxidant capacity were chosen for a label-free quantitative proteomics analysis, with the aim of discovering functional proteins indicative of high and low antioxidant capacitating phenotypic traits. Mass spectrometry data were analysed against the recently published genome of the cultivated peanut; and several t-tests and one-way analysis of variance (ANOVA) were performed using logNSAF values to identify and categorize proteins with different abundance patterns. Our findings show differential expression of 88 proteins, of which many involved in specific biological pathways including those involved in antioxidant biosynthesis and metabolism are critical to observed phenotype. Of these, several enzymes including catalase isozyme 1-like and adenosyl homocysteinase were upregulated, whereas ferritin and peptide methionine sulfoxide reductase B5-like were down-regulated. The identification of these antioxidant responsive protein signatures assist breeders to more easily select for high antioxidant peanut lines with improved crop quality and yield.

Plant Pathology, Nematology, Mycotoxins, Entomology

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9:45	**Management of Peanut Root Knot Nematode with Resistant Cultivars and Nematicides in Georgia.** **T. B. BRENNEMAN***, R. C. Kemerait, and A. K. Culbreath, Department of Plant Pathology, University of Georgia, Tifton, GA 31794, 2W. D. Branch, Department of Crop and Soil Science, University of Georgia, Tifton, GA 31794, C. C. Holbrook, USDA-ARS, Tifton, GA 31794, and K. Rucker, Bayer CropScience, Tifton, GA 31794.	**87**
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10:30	**Effects of Imidacloprid Alone or in Mixtures with Fluopyram, on Incidence of Tomato Spotted Wilt.** J.B. CRABTREE, Cooperative Extension, University of Georgia, Sylvester, GA; **A.K. CULBREATH***, R.C. Kemerait, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; R. SRINIVASAN, and M.R. ABNEY, Department of Entomology, University of Georgia, Tifton, GA 31793-5766.	**89**
10:45	**Two Years of Evaluation of Improved Valencia Cultivars for Production in Haiti.** A. M. FULMER, T. B. Brenneman, and **R. C. KEMERAIT***, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793; D. A. CARROLL, G. FAROUTINE and W. M. SHEARD, Meds & Food for Kids, Quatier-Morin, HAITI HT1120; J. A. RHOADS, Athens, GA 30602; and G. E. MACDONALD, Agronomy Department, The University of Florida, Gainesville, FL 32611.	**90**

11:00	**Nozzle Type and Spray Volume Effects on Foliar Disease Control in Peanuts.** **N.S. DUFAULT***, W.M. ELAKIL, R.L. BAROCCO, Department of Plant Pathology, The University of Florida, Gainesville, FL 32611; and K.W. WYNN, Hamilton County Extension, Jasper, FL 32052.	**91**
11:15	**Aflatoxin Contamination through the Village Supply Chain – Examples from Two Rural Villages in Ghana.** W. APPAW, W.O. ELLIS, and R. AKROMAH, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana; M.B. MOCHIAH, M. OWUSU-AKAYAW, G. BOLFREY-ARKU, A. DANKYI, J.Y. ASIBUO, I ADAMA, B.W. AMOABENG, J.N.L. LAMPTEY, and M. LAMPTEY, CSIR-CRI, Kumasi, Ghana; M. ABUDULAI, CSIR-SARI, Tamale, Ghana; I.K. DZOMEKU, University for Developmental Studies/CSIR-SARI, Tamale, Ghana J. NAAB, S. BUAH, and G. MAHAMA, CSIR-SARI, Wa, Ghana; A. BUDU, University of Ghana, Legon, Ghana; **D.L. JORDAN*** and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695; G. MACDONALD, K. BOOTE, and J. ERICKSON, University of Florida, Gainesville, FL 32611; J. CHEN, D. PHILLIPS, M. CHINNAN, and K. ADHIKARI, University of Georgia, Griffin, GA 30224; K. MALLIKARJUNAN, and M. BALOTA, Virginia Tech, Blacksburg, VA 24061; B. BRAVO-URETA and J. JELLIFFE, University of Connecticut, Storrs, CT 06269; and D. HOISINGTON and J. RHOADS, University of Georgia, Athens, GA 30602.	**92**
11:30	**Aspergillus and Aflatoxin Contamination of Groundnut (Arachis hypogaea L.) and Food Products in Eastern Ethiopia.** **A. MOHAMMED HASSEN***, M. DEJENE, College of Agriculture and Environmental Sciences, Haramaya University, Dire Dawa, Ethiopia; A. CHALA, College of Agriculture, Hawassa University, Hawassa, Ethiopia; D.HOISINGTON, College of Agriculture and Environmental Sciences, Peanut and Mycotoxin Innovation Lab, University of Georgia, Athens Georgia, 30602-4356; and V. S. SOBOLEV,R. S. ARIAS,USDA-Agricultural Research Services-National Peanut Research Laboratory, Dawson, GA 39842-0509.	**94**

Disease Occurrence and Yield Response of Selected Peanut Cultivars as Impacted by Fungicide Inputs at Two Alabama Locations

H.L. CAMPBELL*, A.K. HAGAN, and K.L. BOWEN, Dept. of Entomology and Plant Pathology, Auburn University, AL 36849; L. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345 and M. PEGUES and J. JONES, Gulf Coast Research and Extension Center, Fairhope, AL 36532

Twelve runner market-type peanut cultivars were evaluated for their reaction to early leaf spot caused by *Cercospora personatum*, late leaf spot caused by *Cercosporidium arachidicola*, and rust caused by *Puccinia arachidis* along with stem rot caused by *Sclerotium rolfsii* in southeast Alabama at the Wiregrass Research and Extension Center (WREC) in Headland, AL and in southwest Alabama at the Gulf Coast Research and Extension Center (GCREC) in Fairhope, AL. A factorial design, arranged in split plot, with peanut cultivar as whole plots and fungicide treatments as sub-plots was used. Whole plots were randomized in four complete blocks. Sub-plots, which consisted of four 30-foot rows spaced 36-38 in apart, were randomized within each whole plot. Sub-plots included a standard 7-application Bravo Weather Stik fungicide program and a high input program consisting of Absolute 500F, Provost Opti alternated with Abound 2.08SC, and a final application of Bravo Weather Stik. Leaf spot intensity and rust were evaluated using the Florida leaf spot scoring system and ICRISAT 1-9 rust rating scale, respectively. Stem rot incidence was assessed immediately after plot inversion by counting the number of disease loci per row. Plots were mechanically combined several days after inversion and yields were reported at <10% moisture.

At WREC, significant differences in the incidence of TSW among peanut cultivars were noted. FloRun 157 had a higher incidence of TSW than all varieties except for TUFRunner 727. Georgia-12Y and AU NPL 17 were free of TSW symptoms. Leaf spot defoliation differed significantly by peanut cultivar and fungicide program. TUFRunner 511 was the most leaf spot susceptible followed by Georgia-13M. With the exception of Georgia 09B and Georgia 13M, the standard and high input fungicide programs gave similarlyu effective leaf spot control. Stem rot incidence on 14AU/NPRL 10 was matched by all cultivars except for TUFRunner 727, Georgia-12Y, and Georgia-14N. The high input fungicide program decreased stem rot incidence in Georgia 06G but not the remaining cultivars. Significant differences in yield were observed between peanut cultivars with AU NPL 17, Georgia-06G, TUFRunner 297, and TUFRunner 511 having similarly high yields. Lowest yield was reported for 14AU/NPRL 10, Georgia-12Y and Georgia-13M. Significant yield gains with the high input fungicide program were only observed in Georgia 06G.

At GCREC, significant differences in TSW incidence were noted between peanut cultivars with TUFRunner 511 having greater TSW hit counts except for Florida 07, FloRun 107, FloRun 157, and Georgia-06G. Late leaf spot defoliation differed significantly by peanut cultivar and fungicide program. Late leaf spot defoliation differed among the cultivars with Georgia-13M and TUFRunner 511 suffering the heaviest damage. In contrast, the low level of late leaf spot defoliation observed on Georgia-12Y was matched only by FloRun 157. Stem rot incidence was higher on TUFRunner 511 than any other cultivars except for FloRun 157, FloRun 107, TUFRunner 727, and TUFRunner 297. No differences were noted I stem rot control among fungicide the input programs. Equally high yields reported for Georgia-12Y and TUFRunner 297 did not significantly differ from FloRun 157 and Georgia-06G. The low yields noted for FloRun 107 were similar to Georgia-13M, Tifguard, Florida 07, and Georgia-14N. Among cultivars, significant differences in yield among fungicide inputs were noted in TUFRunner 511 but not for the other cultivars.

Impact of Velum Total on Pod and Root Damage, Peanut Root-Knot Nematode Juvenile Populations, Leaf Spot, Stem Rot and Yield of Peanut

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Impact of Velum Total alone or in combination with a pegging-time application of Propulse was compared with Temik 15G/AgLogic aldicarb 15G on peanut root-knot nematode (*Meloidogyne arenaria* race 2) juvenile populations, leaf spot and stem rot suppression, and yield of the peanut variety Georgia-06G on an irrigated site with an established peanut root-knot population at the Wiregrass Research and Extension Center in Headland, AL. Peanut was cropped behind cotton in 2013, peanut in 2014 and 2016, and sunn hemp in 2015. A factorial design arranged as a split plot with year as the whole plot and nematicide treatment as the split plot treatments. At-plant nematicide treatments included Velum Total at 18 fl oz/A applied with a single nozzle centered over the open seed furrow in 5 gal/A spray volume, Temik 15G/AgLogic aldicarb 15G (aldicarb) at 7 lb/A applied in-furrow. A non-treated control was also included. Planting date in all study years was in early June. Propulse at 13.7 fl oz/A was broadcast to Velum Total-treated peanuts at-pegging with a tractor-mounted boom sprayer with three TX-8 nozzles per row calibrated to deliver 15 gal/A of spray volume at 45 psi and immediately watered in with 0.2 inch delivered via a lateral irrigation system. Each plot, which consisted for four 30 ft rows on 3-ft centers, were randomized in four complete blocks. The study site was irrigated as needed in all study years. Leaf spot and stem rot were controlled with a calendar fungicide program that included either four applications of label rates of Provost 433SC or two applications of Provost 433SC alternated with two applications of Abound 2SC along with a total of three applications of Bravo WeatherStik and/or Absolute. Vigor ratings on a 1 = least vigorous to 5 = most vigorous scale were recorded approximately 30 days after planting. Leaf spot intensity and stem rot incidence were recorded immediately before and after inversion, respectively. Root-knot damage to the roots and pods was rated on a 1 to 5 scale where 1 = no visible damage to 5 = 75 to 100% of roots and/or pods damaged immediately after plot inversion. Seedling vigor differed by nematicide treatment but not by study year. Greater vigor ratings were obtained with Velum Total alone or fb Propulse at-peg compared with the non-treated control, while the rating for aldicarb was intermediate between the former and latter treatments. Leaf spot intensity differed by year with the greatest disease ratings recorded in 2013 with similarly minimal leaf spotting and premature defoliation observed in 2014 and 2016. While Velum Total fb Propulse at-peg had lower leaf spot ratings than Velum Total alone as well as aldicarb and the non-treated control in 2013, similar leaf spot ratings were observed for all nematicide treatments and non-treated control in 2014, 2015, and 2016. Stem rot incidence was also lower for Velum Total fb Propulse at-peg in 2013 and 2016 when compared with the non-treated control, however, no differences in disease incidence were noted in any study year between the former nematicide program and Velum Total alone. Greater stem rot indices were reported in 2013 and 2014 for aldicarb than the non-treated control. Velum Total alone suffered less stem rot damage than the aldicarb-treated peanuts in 2013 but had similar disease indices in the remaining study years. Final juvenile populations differed by study years with the greatest counts reported in 2014, while equally low counts were noted in 2015 and 2016. Yields differed by study year and nematicide treatment with 2015 having the greatest, and 2014 and 2016 having equally low yields, when peanut followed peanut. Yield response with the Velum Total alone and Velum Total fb Propulse at-peg but not aldicarb programs was significantly higher than the non-treated control. Yields for Velum Total alone and aldicarb products were similar.

Peanut Disease and Yield Responses to the Fungicides Benzovindiflupyr and Adepidyn in Oklahoma

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Benzovindiflupyr (0.07 lb/A) was applied in a premix with azoxystrobin (0.14 lb/A) as Elatus 45WG at 7.3 oz/A in two mid season applications 4 weeks apart in fungicide programs for control of early leaf spot (*Cercospora arachidicola*) and stem rot (*Sclerotium rolfsii*). In the non-treated check, leaf spot was severe and reached 100% incidence and 85% defoliation. Fungicide programs with Elatus provided excellent control of early leaf spot with disease incidence less than 20% and defoliation near 0%. Control of early leaf spot with Elatus was similar to spray programs with chlorothalonil (1.125 lb/A) as Bravo 6F at 1.5 pt/A and prothioconazole (0.075 lb/A) + tebuconazole (0.15 lb/A) as Provost 3.6F at 8 fl oz/A, and better than spray programs with tebuconazole (0.2 lb/A) alone as Folicur 3.6F at 7.2 fl oz/A. The addition of adepidyn (0.045 lb/A) as Miravus 1.67F at 3.42 fl oz/A to Elatus applications further improved control of early leaf spot to near zero levels, similar to that achieved with pyraclostrobin (0.13 lb/A) + fluxapyroxad (0.065 lb/A) as Priaxor 4.17F at 6 fl oz/A. Stem rot levels were low (less than 2%) and did not differ among treatments. Yield responses (P=0.05) relative to the untreated check ranged from 755 lb/A for Bravo to over 1000 lb/A for Elatus and Elatus + Miravus treatments. Elatus and Elatus + Miravus were applied at the same rates and similar timings as described above for control of Sclerotinia blight (*Sclerotinia minor*). Treatments were compared to standard treatments of fluazinam (0.75 lb/A) as Omega 4F at 1.5 pt/A and boscalid (0.35 lb/A) as Endura 70WG at 8 fl oz/A. While levels of Sclerotinia blight were low in the non-treated check (7%), Elatus + Miravus, but not Elatus alone reduced levels of Sclerotinia blight to that achieved with Omega and Endura. Yield responses (P=0.05) ranged from 350 lb/A for Endura and Elatus, to 620 lb/A for Elatus + Miravus. Benzovindiflupyr and adepidyn appear to be useful fungicides for broad-spectrum disease control in peanuts in Oklahoma, although further tests under higher levels of stem rot and Sclerotinia blight are warranted.

Management of Peanut Root Knot Nematode with Resistant Cultivars and Nematicides in Georgia.

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Peanut root knot nematode (RKN = *Meloidogyne arenaria*) is a devastating pest of peanut in Georgia, particularly in fields with sandy soils and short crop rotations. Tifguard is a runner-type peanut with high resistance to RKN and normal oil chemistry. Georgia-14N and TifNV-High O/L are new runner cultivars with similar nematode resistance to Tifguard, but with high oleic oil chemistry. Velum Total is a new in furrow nematicide registered for use on peanuts to control RKN. In multiple trials, Velum Total reduced damage from RKN, and sometimes increased pod yield of Georgia-06G. The benefits were greater in single row than in twin row peanuts. Both resistant cultivars had virtually no visible nematode galling, even in fields with high nematode populations. Over 6 comparisons in RKN-infested fields in 2015 and 2016, pod yields of Georgia-14N and TifNV-High O/L were similar (4888 and 5103 kg/ha, respectively), and both were higher than the currently grown nematode-susceptible cultivar Georgia-06G (3052 kg/ha). There was no additional benefit in galling reductions or pod yield where Velum Total was used on nematode-resistant cultivars. Velum Total is a viable option for treating nematodes on susceptible cultivars in fields with low or moderate nematode populations. However, resistant cultivars or combined nematicide programs such as Velum Total + Telone will be needed to grow susceptible cultivars in sites with high populations of *M. arenaria*.

Response of the Peanut Cultivars Bailey and Sullivan to Late Season Epidemics of Sclerotinia Blight.

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The cost of fungicides used to control Sclerotinia blight caused by *Sclerotinia minor* is very high, making full-season preventative applications prohibitively expensive. Instead, growers limit their fungicide use to periods that are highly favorable for disease. However, spray decisions are difficult if weather becomes favorable within a few weeks of digging.

The cultivars Bailey and Sullivan were treated with the fungicide fluazinam (Omega 500) in replicated trials in two locations in 2015 and in one location in 2016. The fungicide treatments were applied at various approximate days after planting (DAP) as follows: Early (70 DAP), Mid-season (90 DAP), Late-season (110 DAP), Delayed Full (90 and 110 DAP), or Full-season (70, 90, and 110 DAP). Incidence of Sclerotinia blight was determined by flagging diseased plants and counting flags. Yield per plot was measured at harvest and data from the trials were combined for analysis.

In all three trials, weather became very favorable for Sclerotinia blight late in the season. The mean level of disease in the trials ranged from 4.4% to 16.1%. Averaged across treatments and trials, Bailey had somewhat lower levels of disease than Sullivan ($P = 0.0859$), but the cultivars did not differ in yield ($P = 0.4274$). All fungicide treatments reduced disease relative to the untreated control ($P < 0.0001$). The Late-season, Delayed Full, and Full-season programs were equally effective in providing the highest levels of disease control, whereas the single Early-season application was less effective than the other fungicide treatments. Fungicide application had only marginal effects on yield ($P = 0.0744$). The Full-season program with three fungicide applications had the highest yield, but its yield was not different from that in the Delayed Full (2 applications), Mid-season (1 application) or Late (1 application) programs. Yield was not correlated with incidence of Sclerotinia blight ($r = -0.06$, $P = 0.4470$, $n = 143$) at the levels of disease and conditions in these trials.

Effects of Imidacloprid Alone or in Mixtures with Fluopyram, on Incidence of Tomato Spotted Wilt.

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In the southeastern United States, management of tomato spotted wilt, caused by *Tomato spotted wilt virus* (TSWV), of peanut (*Arachis hypogaea*) is dependent upon integration of field resistant cultivars with cultural practices and insecticide applications that suppress spotted wilt epidemics. Phorate is the only insecticide available that provides suppression of spotted wilt. Other insecticides are available that provide adequate thrips control. Imidacloprid applied as seed treatment or in-furrow treatment at planting provides control of feeding injury caused by thrips larvae, but in previous studies, was reported to exacerbate epidemics of spotted wilt on susceptible cultivars Florunner and Georgia Runner. With cultivars with higher levels of field resistance to TSWV, choice of insecticides for thrips control is not as critical for management of spotted wilt as with susceptible cultivars or those with moderate levels of resistance. Seven field experiments were conducted in Tifton, GA during 2013-2016 to determine the effects of in-furrow applications of imidacloprid alone or in combination with the fungicide/nematicide, fluopyram on incidence tomato spotted wilt on the cultivars Georgia-06G or TUFRunner™ '727'. Treatments included: 1) nontreated control; 2) phorate at 1.12 kg a.i./ha (Thimet 20G); 3) imidacloprid at 0.36 kg a.i./ha (Admire Pro); and 4) imidacloprid at 0.34 kg a.i./ha plus fluopyram at 0.24 kg a.i./ha (Velum Total). Only the phorate treatment had any effect on final incidence of spotted wilt. Across all trials, final incidence of tomato spotted wilt (percentage of the row length severely affected by TSWV) was 18.4, 9.4, 15.6, and 18.3% (LSD = 3.9%) for the 1) nontreated, 2) phorate, 3) imidacloprid, and 4) imidacloprid plus fluopyram treatments, respectively. Across all trials, yields were 6702, 6896, 6796, and 6869 kg/ha for the 1) nontreated, 2) phorate, 3) imidacloprid, and 4) imidacloprid plus fluopyram treatments, (No significant treatment effect, $P = 0.41$), respectively. Our results corroborate previous reports of suppression of spotted wilt with in-furrow applications of phorate. There was no indication that imidacloprid alone or in combination with fluopyram had any effect on final incidence of spotted wilt. There was no indication of differences in yield among any treatments for the range of spotted wilt incidence that occurred in this study.

Two Years of Evaluation of Improved Valencia Cultivars for Production in Haiti.

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Peanut rust (*Puccinia arachidis*) and late leaf spot (*Cercosporidium personatum*) are typically the most important diseases of peanut (*Arachis hypogaea* L.) grown in Haiti. Traditional Haitian peanut varieties are not only susceptible to these diseases but are also typically grown without benefit of a fungicide program. Three trials were conducted (2015, spring 2016 and fall 2016) to evaluate the performance of six Valencia varieties in Quartier-Morin, Haiti with respect to yield, resistance rust and leaf spot diseases, and response to a fungicide program. A split-plot design with four or six replications was used in these studies. In each, "variety" was the whole plot and presence or absence of a fungicide program was the subplot. Valencia of market types 309 Red, 309 Tan, M2, M3, SR6, and local landrace were planted on the study site in Nov 2015, 23 Mar 2016 and 24 Aug 2016. Muscle ADV (tebuconazole + chlorothalonil, Sipcam) (2.3 L/ha) was applied at 30, 45, and 60 days after planting (DAP). Disease ratings (late leaf spot and peanut rust) were assessed approximately 94 DAP and plots were harvested the day following. 309 Tan variety had the least amount of leaf spot and rust, but resulted in the lowest yield, averaging 891, 2170 and 2825 kg ha-1 in the three trials, respectively. M3 was the numerically highest-yielding variety, averaging 1590 and 4648 kg ha-1 in the 2015 and fall, 2016 trials. M2 had the numerically highest yield in spring, 2016 with a yield of 3361 kg ha-1. Three fungicide applications during the season significantly increased yields for all varieties except 309 Tan. Yields for 309 Tan were lower than for all other varieties regardless of whether treated with a fungicide or not. The results from this study conducted over 2 years and 3 seasons document that while resistance to late leaf spot and rust is available in Valencia varieties, yield potential is not directly associated with that resistance. Also, use of fungicide improves yield potential in the higher-yield, yet more susceptible varieties.

Nozzle Type and Spray Volume Effects on Foliar Disease Control in Peanuts.

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Foliar peanut disease management is often best achieved through the use of nozzles that produce fine droplet sizes delivered at high (> 20 GPA) spray volumes. The objective of this research was to examine how different nozzle types and spray volumes affect the management of various fungicide classes with different plant mobilities. Plots of the peanut cultivar 'Georgia 06G' were planted on June 22, 2016 at Citra, Florida in a split-split plot randomized complete block design. The main plot effect was nozzle type (medium, course, or ultra-course), the sub-plot effect was spray volume (10 or 20 GPA), and the sub-sub-plot effect was fungicide treatment (untreated, chlorothalonil, tebuconazole, or pyraclostrobin). Treatments were applied 63, 77, 91, 110, 121 days after planting (DAP). Early and late leaf spot and rust were rated using the Florida 1 to 10 scale approximately every two weeks from 41 to 125 days after planting (DAP). Leaf spot started early at 41 DAP with final scale ratings between 5 to 9 across all plots by 125 DAP. No significant differences were observed in leaf spot (LS) rating, AUDPC or yield among nozzle types (Log-likelihood χ^2=0.22, 1.9; p=0.89, 0.39; respectively) or spray volumes (Log-likelihood χ^2<0.01, 0.40; p=0.97, 0.52; respectively). Differences were observed among fungicide treatments for LS AUDPC (Log-likelihood χ^2=90.6, p<0.01) and yield (Log-likelihood χ^2=33.1, p<0.01), however, no interactions were observed for nozzle type or spray volume) with the fungicide treatments (p > 0.10.

A 3 acre trial with the cultivar 'Georgia 06G' planted on May 11, 2016 was conducted in Live Oak, Florida that compared course and ultra-course nozzle types with a 10 GPA spray volume. Both treatments received the same fungicide program. Leaf spot was rated 94, 107, and 121 DAP. Scale ratings remained at a 3 for all plots and observations, and there were no significant differences between nozzle types in yield (t=0.83, p=0.45). These results indicate that fungicide chemistry is more important in disease control than nozzle type and/or spray volume. Further research is needed to confirm this trend over multiple years as well as further comparisons with nozzle types and spray volumes recommended for disease management in peanut.

Aflatoxin Contamination through the Village Supply Chain – Examples from Two Rural Villages in Ghana.

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A range of management practices can be used to mitigate aflatoxin contamination in peanut and other crops. Interventions during production in the field, improved drying techniques, and more effective storage can reduce aflatoxin contamination. In some countries, like the United States, aflatoxin monitoring occurs at the point of sale and greatly reduces the likelihood that aflatoxin-contaminated peanut will enter processing steps in the value chain. However, in many areas of peanut production, especially where smallholder farmers are involved, challenges exist at each step of production, drying, and storage with limited capacity to prevent aflatoxin contamination of peanut products. Developing a comprehensive strategy to reduce contamination will be beneficial for both consumers at the household level and for commercial trade that is increasingly aware of food safety issues. Evaluating the impact of each intervention on potential contamination will help prioritize investments for producers, commercial aggregators and development interventions. Research was conducted from 2014-2016 in 5 villages in northern and central Ghana to compare the effectiveness of improved practices (IPs) at production, drying, and storage steps compared with traditional farmer practices (FPs) at each step in reducing aflatoxin contamination in peanut. To address this objective, a factorial arrangement of treatments including 2 levels of production in the field (FP versus the IP that included one additional weeding, use of local soap for aphid/rosette suppression, and calcium), 2 levels of drying (FP drying on the ground versus IP drying on tarpaulins), and 2 levels of storage (FP storing in traditional poly bags versus the IP storing in hermetically-sealed bags). The concentration of aflatoxin was determined at the end of each step. While samples are still being processed for many of the locations, results from 2 villages in central Ghana will be presented.

Peanut yield and estimated economic returns were higher with the IP compared to the FP. However, minor but significant differences in aflatoxin concentration in peanut farmer stock were noted when sampling occurred immediately after harvest and prior to drying (1.0 versus 0.5 µg/kg, $p = 0.0015$ at Drobonso and 0.3 versus 0.5 µg/kg, $p = 0.0290$ at Ejura). In both villages, aflatoxin levels increased during drying. At Drobonso, benefits of effective drying on plastic tarpaulins (29-80 µg/kg aflatoxin) became apparent compared with ground drying (153-226 µg/kg) regardless of the level of aflatoxin coming out of the field at harvest. These respective drying practices resulted in 8-31 µg/kg and 68-93 µg/kg at Ejura. As these peanuts continued through the supply chain, the concentration following relatively low input in the field, drying on the ground, and storage in readily available poly sacks with limited protection resulted in an average aflatoxin concentration of 1407 µg/kg at Drobonso. Use of IPs at all stages resulted in the lowest aflatoxin concentration (53 µg/kg) at this location. Adopting a single IP or two of the three possible IPs resulted in aflatoxin concentrations between 100 and 548 µg/kg. At Ejura,

using FPs at all steps resulted in aflatoxin concentration of 766 µg/kg versus only 15 µg/kg when IPs were included in the field and during drying and storage.

These results from two villages in central Ghana provide examples of the importance of each step in the value chain in terms of impact on the concentration of aflatoxin in the final product. Peanut after storage will be consumed directly by individuals in the household or will enter the market in some form. Higher yield and economic return captured immediately after harvest could be lower or higher after storage, depending on quality and seasonal price dynamics, especially if buyers consider aflatoxin contamination in their decision-making process. The potential for adoption of the improved practices to reduce aflatoxin may be determined by the market valuation of aflatoxin and resulting better prices. While productivity interventions showed the least impact on aflatoxin contamination, the increase in yield and profitability may be required for investments in technologies for drying and storage that showed greater impact.

Aspergillus **and Aflatoxin Contamination of Groundnut (*Arachis hypogaea* L.) and Food Products in Eastern Ethiopia.**

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Groundnut (*Arachis hypogaea* L.) is an important cash and food crop in eastern Ethiopia. The lack of awareness and data about *Aspergillus* and aflatoxin contamination of groundnut and groundnut food products in the area is lacking. This study was conducted to: i) assess major *Aspergillus* species and aflatoxins associated with groundnut seeds and *"Halawa"*(local cake) across different agro-ecological zones in eastern Ethiopia; and ii)evaluate growers' management practices that promote fungal contamination. A total of 160 groundnut seed samples were collected from farmers' stores in eastern Ethiopia during the 2013/14 and 2014/15 cropping seasons. Additionally, 50 groundnut cakes collected from open market cafes and restaurants were also included in the study. Fungal isolation was done from groundnut seed samples from both cropping seasons and *Aspergillus* spp. recorded. The species found were *Aspergillus flavus* L and S strains, *A.parasiticus*, *A.niger, A.tamarii, A.caelatus* and *A.ochraceus. Aspergillus flavus* was the most abundant species followed by *A. parasiticus* in both seasons. *Aspergillus flavus L* and *S strains, A. tamarii* and *A. caelatus* associated to groundnut are not yet reported, and this is the first in Ethiopia.

Aflatoxin analyses from groundnut seed samples were performed using UPLC; and 22.5% (from 2013/14) and 41.3% (from 2014/15) were positive for the presence of aflatoxins. Total aflatoxin concentrations of 786 (from 2013/14 samples) and 3135 ng g^{-1}(from 2014/15 samples) were recorded. The level of specific aflatoxin concentrations in seed samples varied from 0.1 of $B_2$to 2526.3 ng $g^{-1}$of B_1. In infected seed samples, aflatoxin B_1 was the most abundant aflatoxin species followed by G_1in both seasons. Among contaminated samples of groundnut cake *"Halawa"*, 68% of the samples exhibited aflatoxin concentrations below 20 ng g^{-1}, though some samples reached158.1ng g^{-1} aflatoxin B_1. The total aflatoxin concentrate on of infected cake sample showed 173.4 ng g^{-1}, much higher than the international standard set by WHO (5ng g^{-1}). The study confirms high levels of contamination of groundnut seeds and cakes in East Ethiopia.

Production and Harvest Technologies

Thursday, July 13, 2017		
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3:30	**Evaluating a Vegetable Double-Crop in a Corn-Peanut Rotation.** **R.S. TUBBS***, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793; P. TIMPER, Crop Protection and Management Research Unit, USDA-ARS, Tifton, GA 31793; J.M. SARVER, Department of Plant and Soil Sciences, Mississippi State University, Mississippi State, MS 39762; T.B. BRENNEMAN, and A.K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793.	**102**
3:45	**Real Time Roasting Analysis using Gerstel TDU-GC/MS.** **M. SCHOLTEN***, C. LIEBOLD, The J.M. Smucker Company, 767 Winchester Rd., Lexington, KY 40505	**103**

Evaluation of a Fine, Liquid Lime as a Calcium Source for Peanut

G.H. HARRIS*, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA

Lime applied at planting is one method of providing calcium to the pegging zone of peanut, which is critical to producing high-quality, high-yielding peanuts. Traditionally regular ground dolomitic or calcitic commercial limestone is used. A new, very fine liquid lime produced by a company called Omya and sold under the trade name “Topflow” has recently been made available to peanut growers. Initial studies by this author showed that high rates (166 gal/a) were very effective at raising soil pH, quickly and long-standing. In 2014, this material was evaluated at lower rates, both broadcasted and banded and compared to commercial limestone at planting and gypsum(calcium sulfate) at early bloom. Evaluated at 3 locations, 5 gal/a Topflow broadcasted was basically ineffective at providing calcium to the pegging zone of peanut. Topflow at 5 gal/a banded or 10 gal/a broadcasted was more effective but still not as effective as lime at planting or gypsum at early bloom. Surprisingly, Topflow at 10 gal/a applied 75 days after planting to simulate an application thru a center pivot did very well as far as providing calcium to developing nuts, almost as well as gypsum at early bloom. In 2016, two field studies were conducted at one location to evaluate the effect of rate and incorporation of Topflow and also timing of application. At both 10 and 20 gal/a rates, when Topflow was incorporated to approximately 6 inches at planting it was much less effective at providing calcium to developing nuts then when simply surface applied. This may be due to dilution. In the timing study, 10 gal/a of Topflow applied at early bloom was more effective than when applied at planting or during peak pod fill at providing calcium into the developing nuts.

No Interactions Between Cultivation Using a Tine Weeder and Diseases in Organic Peanut: Is this Heresy?

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Peanut production recommendations, based on long-standing research and grower experiences, discourage the use of cultivation for weed control. Sweep cultivation moves soil containing disease inoculum onto low-growing peanut plants increasing disease epidemics. Weed management research has shown repeated cultivation with a tine weeder to be the focal point for cost-effective weed management in organic peanut. During many organic peanut research trials, it was observed that disease epidemics were not problematic, which is inconsistent with conventional peanut production philosophy. Structured research trials were conducted from 2012 through 2014 to determine if cultivation using a tine weeder affected disease incidence in organic peanut. Treatments were a factorial arrangement of (a.) three levels of weed control, (b.) two levels of insect control, and (c.) three levels of disease control. Weed control treatments were repeated cultivation with a tine weeder, weed-free using handweeding, and a non-cultivated (weedy) control. Insect control treatments were two early-season applications of spinosad (OMRI approved) and a nontreated control. Disease control treatments were bi-weekly applications of the conventional fungicide azoxystrobin, biweekly applications of copper plus sulfur (OMRI-approved sources), and a nontreated control. The peanut cultivar GA-04S was planted each year of the study. Compared to the non-cultivated control, cultivation with a tine weeder consistently reduced weed densities, but not enough to fully protect peanut yields from weed interference. Spinosad applications provided no benefit. Copper plus sulfur controlled peanut diseases equal to azoxystrobin two years out of three, but peanut yields did not consistently respond to better disease control from the conventional fungicide. There were no interactions among the main effects, indicating that intensive cultivation with a tine weeder does not increase disease epidemics and reduce peanut yield. We speculate that ideal crop rotations to reduce disease inoculum and modern high-yielding peanut cultivars with improved disease tolerance are factors that allow the use of intensive cultivation with a tine weeder in organic peanut without increasing disease incidence.

Runner Cultivar Response to Reduced Rates of Prohexadione Calcium.

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Prohexadione Calcium is commonly used on Virginia type peanuts to manage their excessive vine growth and promote higher digger efficiency. However; minimal acres of runner type peanuts have Prohexadione Calcium applied due to their more compact growth habit. Vine growth of runner type cultivars have slowly changed in the last five years to have a more vigorous growth habit causing a renewed interest in growth regulators. Evaluations of runner cultivar response to reduced rates of Prohexadione Calcium were conducted in small plot and large strip trials in 2016 in Georgia. Application rates of Prohexadione Calcium at 7.25 oz/A (1X, Labeled), 3.63 oz/A (0.5X), 1.81 oz/A (0.25X), and an untreated check were evaluated on Georgia-06G and Georgia-12Y. Application rates of Prohexadione Calcium at 5.44 oz/A (0.75X) and an untreated check was evaluated on 10 runner type cultivars to examine potential variations in growth and yield response among cultivars. Applications were initiated when 50% of lateral vines from adjacent rows were touching. A second application was applied in 14 days. Cultivar and treatment responses were evaluated based on canopy height, yield, and grade. All rates of Prohexadione Calcium reduced canopy growth with rates of 0.5x or higher. Yield and grade response varied by cultivar and rate of Prohexadione Calcium.

Examining the Effect of Seeding Rate and Digging Date on Yield of the Peanut Cultivars Grown in the Virginia-Carolina Region

J.C. OAKES*, M. BALOTA, Virginia Tech Tidewater AREC, Suffolk, VA 23437; D.L. JORDAN, and A.T. HARE, Department of Crop Science, NC State University, Raleigh NC 27695

In Virginia and North Carolina, three Virginia-type cultivars, Bailey, Sullivan, and Wynne, were planted at four seeding rates (3, 4, 5, and 6 seeds/foot). They were dug at three dates in Virginia and four in North Carolina. In North Carolina, the digging dates began in mid-September and were spaced approximately 10 days apart, while in Virginia the digging dates began in mid-October and were spaced 7 days apart.

There was no interaction of cultivar by seeding rate by digging date in either state. In North Carolina, seeding rate did not affect pod yield even though minor differences due to cultivar were noted. However, in Virginia seeding rate did affect pod yield, with the low seeding rate of 3 seeds per foot having the lowest yield. In Virginia, cultivar did not interact with seeding rate, but there were differences in yield due to seeding rate in two of the varieties. For the cultivar Sullivan, the pod yield at 3 seeds per foot (4358 lbs/ac) was significantly lower than the pod weight at six seeds per foot (4933 lbs/ac). Likewise, for Wynne the pod yield at 3 seeds per foot (3779 lbs/ac) was significantly lower than 4 seed per foot (4277 lbs/ac) and 6 seeds per foot (4342 lbs/ac). Cultivar did not interact with digging date in either state, which suggests that only minor differences in pod maturity exist among these cultivars. A quadratic response for yield among digging dates was observed in both states.

In Virginia, remote sensing data collected from an unmanned aerial vehicle (UAV) platform was used to examine differences in emergence, seeding rate, and growth rate. Aerial indices were successful in distinguishing seeding rates and determining emergence during the first few weeks after planting, but not later in the season. Based on these preliminary data, aerial indices were not adequate predictors of yield in peanut.

Effect of Irrigation Scheduling Methods on Yield of Peanut Cultivars.

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Irrigation scheduling methods, along with a rain fed treatment, were tested from 2014 to 2016 at the Stripling Irrigation Research Park near Camilla, GA to identify the best irrigation option for producers in the Southeast. Five irrigation scheduling methods were used in 2014 and 2016, whereas seven methods were used in 2015. The irrigation scheduling methods tested in this research included a UGA developed soil moisture system called the UGA Smart Sensor Array (SSA), a SmartCrop© canopy temperature sensor utilizing a Crop Water Stress Index (CWSI), the UGA EasyPan, the UGA Peanut Checkbook Method, 50% of the UGA Peanut Checkbook Method, USDA-ARS IrrigatorPro and PeanutFARM.

The UGA SSA consisted of three Watermark® sensors at depths of four, eight, and sixteen inches, with an irrigation trigger threshold set at a weighted average from the three sensors of 45-50 KPa. Meaning an irrigation event was triggered each time the weighted average approached 45 KPa. The SmartCrop© canopy temperature sensors used a CWSI based on the 2014 data. The UGA EasyPan is an easy to build galvanized evaporation pan that is set in the field with the crop to simulate crop evapotranspiration. The UGA Peanut Checkbook Method is a historically developed water use curve for peanuts. This method only takes into account rainfall and irrigation applied, without consideration of current environmental conditions. USDA-ARS IrrigatorPro is a model that uses either rainfall and irrigation data, or a combination of that data along with Watermark® sensors to determine irrigation triggers. Lastly, PeanutFARM is an online scheduling tool that uses local weather station data, soil texture, and adjusted Growing Degree Days to estimate peanut maturity and water requirements.

Four cultivars commonly planted in the region, GA-06G, GA-12Y, TUFRunner 511, and TUFRunner 727, were selected and planted in two row plots within each irrigation treatment zone. Total rainfall during the 2014 production season was 12.33 inches, whereas 22.65 and 25.80 inches of rainfall were received during the 2015 and 2016 production seasons, respectively. Differences in yield were observed among the cultivars, with GA-06G generally yielding the highest in 2014 and 2015, and GA-06G and GA-12Y in 2016 compared with the other peanut cultivars. The results for this three-year research also showed that the utilization of any of the irrigation scheduling method studied helps increase yield as well as water use efficiency of the crop throughout the season.

Determining the Optimum Nitrogen Rescue Strategy When Inoculation Fails in Peanut.

J.M. SARVER* and C.C. ABBOTT, Department of Plant and Soil Sciences, Mississippi State University, Mississippi State, MS 39762.

Peanut is a relatively new crop in the state of Mississippi. Peanut, being a legume, forms a symbiotic relationship with a rhizobia bacteria that is able to fix atmospheric nitrogen, converting it into a form usable by the plant. These rhizobia bacteria can then live for years in the soil, meaning that when peanuts are planted into that same field years later, there is a 'native' population of rhizobia available to form the relationship once again. As acreage expands in the state of Mississippi, growers have begun to plant the crop on ground where peanut has not previously been planted, making a supplemental application of rhizobia bacteria crucial to the production of a successful peanut crop. These rhizobia, being living organisms, are sensitive to many outside factors that may inhibit their effectiveness when improperly applied. A set of trials were conducted in both Starkville and Stoneville, MS in 201 to determine the optimum nitrogen rate and product to apply in the event of a failed rhizobia inoculation. The trial was set up as a six (rate; 30, 60, 90, 120, 150, and 180 lb/acre) by three (product; granular urea, granular ammonium sulfate, liquid urea ammonium nitrate [UAN]) factorial with both a positive (inoculated) and negative (non-inoculated) control. Inoculated plots averaged 1924 lb/acre more than non-inoculated plots. Across application rates, UAN, ammonium sulfate, and urea increased yield by 1463, 1117, and 999 lb/acre, respectively, when compared to non-inoculated plots. Across products, each unit of nitrogen applied to plots increased yield by 7.9 lb/acre. The only supplemental applications that yielded equal to the inoculated treatment were 120 and 180 lb/acre UAN. Trials will be continued and results will allow growers, Extension personnel, and consultants to make informed decisions when dealing with rhizobia inoculation failure.

Evaluating a Vegetable Double-Crop in a Corn-Peanut Rotation.

R.S. TUBBS*, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793; P. TIMPER, Crop Protection and Management Research Unit, USDA-ARS, Tifton, GA 31793; J.M. SARVER, Department of Plant and Soil Sciences, Mississippi State University, Mississippi State, MS 39762; T.B. BRENNEMAN, and A.K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793.

Crop rotation is one of the oldest approaches for soil-borne pest management in peanut (*Arachis hypogaea* L.). Peanut is mostly rotated with corn (*Zea mays* L.) and cotton (*Gossypium hirsutum*, L.) in the Southeast, due in large part to the reduced susceptibility of these crops to common peanut pathogens. However, commodity prices are causing growers to look for alternative crop rotations to diversify revenue opportunities. Incorporating vegetables into standard agronomic row crop rotations may provide economic flexibility, but could also potentially affect pathogen incidence. This split-plot trial was designed to evaluate incidence of peanut root-knot nematode (*Meloidogyne arenaria*), southern stem rot (*Sclerotium rolfsii*), and rhizoctonia limb rot (*Rhizoctonia solani*) on peanut, and peanut yield when grown in four crop rotation sequences: 1. corn-corn-peanut, 2. cotton-corn-peanut, 3. double crop of sweet corn and eggplant (*Solanum melongena* L.)-corn-peanut, 4. continuous peanut. A sub-treatment effect of three nematicide treatments were also applied in each rotation plot including a 1. premium, 2. moderate, and 3. non-treated combination of nematicides for the specified crop each year in the rotation. Staggered cycles of rotations were maintained so that cycles were completed each year from 2002 through 2008. Root gall index, stem rot, and limb rot incidences were largest in continuous peanut rotation every time a difference occurred. In 2007, the cotton-corn-peanut rotation had more stem and limb rot than the vegetable-corn-peanut rotation, but that was the only time there were differences among rotations other than continuous peanut for any of the pathogens evaluated. Peanut pod yield was greatest in the corn-corn-peanut and vegetable-corn-peanut rotations, and worst in the continuous peanut rotation in each year of the trial. Yield was negatively correlated with each of these pest evaluations. The premium nematicide program resulted in reduced incidence of root galling, stem rot, and limb rot in each year that differences occurred. An interaction between rotation and nematicide occurred for root gall index and yield. The moderate nematicide program did not provide any benefit over non-treated for root galling or yield, although the premium nematicide reduced galling and increased yield compared to both the moderate and non-treated nematicide programs in continuous peanut, and also reduced galling compared to the non-treated program for the cotton-corn-peanut rotation. The premium nematicide program also had greater yield compared to the non-treated in the vegetable-corn-peanut rotation. These results demonstrate the importance of good rotation for peanut in reducing pest incidence and maximizing yield. Concern over increased pest incidence or reduced yield by incorporating a sweet corn-eggplant double crop into a three year rotation with corn and peanut was not warranted based on these results and produced equally good results as a corn-corn-peanut rotation. The use of a premium nematicide program is pertinent in poor rotation conditions. However, it could not make up for the benefit of maintaining good rotation.

Real Time Roasting Analysis using Gerstel TDU-GC/MS.

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A Gerstel TDU (Thermal Desorption Unit) was used to roast peanuts and subsequently analyze the formation of volatile compounds in real time using GC/MS. The data collected from these experiments were used to calculate relative activation energies for 18 different volatile compounds formed while roasting peanuts. It was discovered that pyrazines which generally have nutty flavors are lower activation energy compounds, while compounds which give rise to brown and caramellic flavors are higher activation energy compounds.

Weed Science, Physiology & Seed Technology

Thursday, July 13, 2017		
1:00 - 4:15 p.m. Alvarado B	**Weed Science, Physiology & Seed Technology** *Moderator: Eric Prostko, University of Georgia*	Page Number
1:30	**Cover Crop Response to Residual Herbicides in Peanut-Cotton Rotation** **S. LI***, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn AL 36849; and A. PRICE, National Soil Dynamics Laboratory, USDA-ARS, Auburn, AL. 36830.	**106**
1:45	**Peanut Response to Engenia™ and Enlist™ Duo.** **E.P. PROSTKO*** and O.W. CARTER III, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31794.	**107**
2:00	**Identification of Virginia-type Peanut Genotypes for Water-Deficit Conditions Based on Early Stomatal Closure with Soil Drying** **T.R. SINCLAIR***, A. SHEKOOFA, T.G. ISLEIB, Crop and Soil Science Department, North Carolina State University, Raleigh, NC 27695 (TRS and TGI); Department of Plant Sciences, University of Tennessee, Jackson, TN 38301 (AS); M. BALOTA, Tidewater Agricultural Research and Experiment Center, Virginia Tech, Suffolk, VA, 23437 (MB); Z. HOU, College of Agriculture, Yangzhou University, Yangzhou City, 225009, China.	**108**
2:15	**Characterization of Genotype by Planting Date Effects on Runner-type Peanut Seed Germination and Vigor Response to Temperature** **T.L. GREY***, University of Georgia, Crop and Soil Science Dept, Tifton, GA 31793; C.Y. Chen, Auburn University, Crop, Soil and Environmental Sciences, Auburn AL 36849; R. Nuti, Dow AgroSciences LLC, P.O. Box 120, Shellman, GA 39886	**109**
3:00	**Know When To Hold Them and When to Dig Them** **C. KVIEN***,University of Georgia, Tifton, GA; C. HOLBROOK, USDA-ARS, Tifton, GA; T. BRENNEMAN, A. CULBREATH, C. PILON, and P. OZIAS-AKINS, M. PODIO, University of Georgia, Tifton, GA; C. BUTTS, M. LAMB and R. SORENSEN, USDA-ARS-NPRL, Dawson, GA.	**110**
4:00	**Prostate Weight Changes of the Orchiectomized Sprague-Dawley Rats as Affected by Dietary Supplementation with Bio-elicited Peanut Sprout Powder.** **P.-H. CHENG***, R. Y.-Y. CHIOU, J.-C. CHANG, S.-M. LIN, Y.-L. CHANG, D.-Y. Lo, Department of Food Science and Department of Veterinary Medicine, National Chiayi University, Chiayi 60004, Taiwan, ROC.	**111**
3:15	**Phenotyping Drought Tolerance in Peanut.** **M. BALOTA***, J. OAKES, Tidewater Agric. Res. & Ext. Center, Virginia Tech, Suffolk, VA 23437-7099; T. R. SINCLAIR, and T.G. ISLEIB, Dept. of Crop and Soil Sci., N.C. State Univ., Raleigh, NC 27695-7629.	**112**
3:30	**Peanut Flavor Compounds from Amino Acid Precursors.** **L.L. DEAN***, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695-7624; and C.M. KLEVORN, Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695-7624.	**113**
3:45	**Hydroxylation of Resveratrol in Biomimetic Production of Piceatannol by Use of Peanut Embryos as Enzyme Source.** Z.-C. CHANG, P. C. CHIU, **ROBIN Y.-Y. CHIOU***, Department of Food Science and Department of Applied Chemistry, National Chiayi University, Chiayi 60004, Taiwan, ROC.	**114**

4:15	**Cotyledon Density Measurements on Valencia Peanuts Grown in the Southwest United States as a Tool for Developing Food Products.** L.L. DEAN, K.W. HENDRIX, U.S.D.A. Market Quality and Handling Research Lab, North Carolina State University, Raleigh, NC 27695-7624, N.D. WILSON, GeneTex, 3701 - 158th Street, Lubbock, TX 79423, N. PUPPALA, College of Agricultural, Consumer and Environmental Sciences, New Mexico State University, Clovis, NM 88101-9998, J.N. WILSON, **D.A. SMYTH***, Ready Roast Nut Company, 42593 U.S. Highway 70, Portales, NM 88130	**115**

Cover Crop Response to Residual Herbicides in Peanut-Cotton Rotation

S. LI*, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn AL 36849; and A. PRICE, National Soil Dynamics Laboratory, USDA-ARS, Auburn, AL. 36830.

Cover crops can provide many benefits to peanut and cotton rotation in terms of suppressing weeds, conserving soil moisture for planting, increasing soil organic matter, reducing soil erosion, etc. However, in fields where residual herbicides were used during the growing season, establishment of cover crops could be negatively affected by the herbicide residues. Therefore, the objective of this study was to investigate the responses of six cover crops (daikon radish, cereal rye, cocker oats, crimson clover, winter wheat, and common vetch) to twelve common soil herbicides used in peanut and cotton. This study was conducted at Wiregrass Research Extension Center in Headland, AL and E.V. Smith Research and Extension Center in Tallassee, AL, from Oct 2016 to April 2017. Growth parameters such as plant height, stand count, and percentage of crop cover were evaluated at 50 and 145 days after planting (DAP), as well as a wet weight biomass at project termination at 145 DAP. Herbicide treatments sprayed at the day of planting included Dual Magnum, Warrant, Zidua, Strongarm, Cadre, Classic, Storm, Staple LX, Envoke, Direx, Caparol, Valor, and a non-treated check (NTC). Each herbicide was sprayed at 10% of label rate.

Analysis showed significant ($p<0.05$) growth reductions of 29.95%-51.58% for stand counts in rye and 28.06% - 75.2% in wheat 50 DAP for Dual Magnum, Warrant, Zidua, Strongarm, Cadre, Classic, and Storm treatments. Vetch showed significant stand count reductions for all twelve treatments at 50 DAP ranging from 12.53% to 80.21%. Dual Magnum, Zidua and Warrant had the largest impacts on stand counts for all three cover crops mentioned above. Daikon radish showed significant reduction of 9.25%-30.52% in plant heights 50 DAP, at the E.V. Smith location for Direx, Cadre, and Classic. At 145-149 DAP, all of the cover crops recovered from herbicide damage and did not show any significant treatment differences in any of the growth parameters collected at the end of the trial. Oats showed the most tolerance with no herbicides affected any growth parameter evaluated ($p<0.05$) throughout this study. Based on experiment data, we recommend producers utilize oats as a cover crop when there is a concern for residual herbicide injury.

Peanut Response to Engenia™ and Enlist™ Duo.

E.P. PROSTKO* and O.W. CARTER III, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31794.

Cotton and peanut are two of the most important row crops grown in Georgia. The recent registration of auxin-tolerant (2,4-D and dicamba) cotton in Georgia has peanut growers concerned about potential drift and sprayer contamination issues. Consequently, research was conducted in Ty-Ty Georgia in 2016 to evaluate the effects of Engenia™ (dicamba-BAPMA) and Enlist™ Duo (glyphosate + 2,4-D choline) on peanut growth and yield. In Test 1, 'Georgia-06' peanut were treated with Engenia™ at 1X, 1/10thX, and 1/100thX labeled rates. These rates were applied at 15, 30, 60, and 90 days after planting (DAP). In Test 2, "Georgia-12Y' peanut were treated with Enlist™ Duo at rates and timings similar to Test 1. Peanut stages of growth at application were as follows: 15 DAP = V4; 30 DAP = V6-V7; 60 DAP = R3-R4; and 90 DAP = R6. Traditional small-plot techniques were used and all herbicides were applied in 15 GPA using AIXR11002 nozzles. In both tests, the experimental design was a randomized complete block with a factorial arrangement of rate and time of application with four replications. The plot areas were maintained weed-free using a combination of traditional peanut herbicides and hand-weeding. For peanut yield loss (%), there was a significant interaction between rate and time of application. Peanut yield losses from Engenia™, depending upon time of application, were as follows: 1X = 38% to 93%; 1/10thX = 3% to 23%; and 1/100thX = 0% to 8%. Peanut yield losses with Enlist™ Duo, depending upon time of application, were as follows: 1X = 45% to 64%; 1/10thX = 3% to 12%; and 1/100thX = 5% to 12%. Generally, peanut yield losses were lowest when either Engenia™ or Enlist™ Duo were applied at 90 DAP. Peanut yield losses from unintentional auxin spray drift or spray tank-contamination are dependent upon rate and time of application (i.e. peanut stage of growth).

Identification of Virginia-type Peanut Genotypes for Water-Deficit Conditions Based on Early Stomatal Closure with Soil Drying

T.R. SINCLAIR*, A. SHEKOOFA, T.G. ISLEIB, Crop and Soil Science Department, North Carolina State University, Raleigh, NC 27695 (TRS and TGI); Department of Plant Sciences, University of Tennessee, Jackson, TN 38301 (AS); M. BALOTA, Tidewater Agricultural Research and Experiment Center, Virginia Tech, Suffolk, VA, 23437 (MB); Z. HOU, College of Agriculture, Yangzhou University, Yangzhou City, 225009, China.

Early closure of stomata as soil progressively dries allows water conservation for sustained crop physiological activity as the water deficit deepens. Studies with maize and soybean have shown this to be an advantageous trait to increase yields in water-deficit environments. For peanut, which is often grown on sandy soil, the possibility of water deficit can be a frequent occurrence. This study was undertaken to identify genotypes that express this water conservation trait and to determine if it confers a yield advantage. Three approaches were taken. (1) Twenty-two elite breeding lines were tested in controlled environments for the response of transpiration rate during progressive soil drying. These lines were characterized for the fraction of transpirable soil water remaining in the soil at the initiation of transpiration rate decrease associated with stomatal closure. Significant differences were found among lines, with three lines having especially high thresholds for decrease in transpiration rate. (2) The lines identified as having early stomatal closure with soil drying were observed under rain shelters and in the field for wilting with progressive soil drying. There were differences in the onset of wilting, and those genotypes shown to have early stomatal closure expressed delayed wilting. (3) Yield trail data were examined to identify those lines that consistently had higher yields than a standard reference (cv. Bailey) at low yield levels that are commonly associated with drier conditions. When expressing total seed yield in monetary return, four lines had yields that were consistently superior to Bailey below the threshold return of $800 per acre. Thus far, all tests demonstrated that N12006ol was a superior genotype for water-deficit conditions.

Characterization of Genotype by Planting Date Effects on Runner-type Peanut Seed Germination and Vigor Response to Temperature

T.L. GREY*, University of Georgia, Crop and Soil Science Dept, Tifton, GA 31793
C.Y. Chen, Auburn University, Crop, Soil and Environmental Sciences, Auburn AL 36849
R. Nuti, Dow AgroSciences LLC, P.O. Box 120, Shellman, GA 39886

Experiments conducted from 2008 and 2009 evaluated the genotype by environment effects on seed germination and vigor of five peanut runner-type cultivars grown under similar production practices, for three planting dates over the course of time (April, May, and June), at two locations in Georgia and Alabama. Irrigated experiments were established in fields with all other variables (fertility, management, and pesticides) kept consistent each growing season. The objective was to determine if time of planting and harvest dates would subsequently affect the germination and vigor of runner-type peanut seed. Cultivar by planting date by location for each test was maintained for each plot to insure integrity was assured subsequent testing after processing. Seed germination and vigor by plot replication were evaluated in Petri-dishes incubated over a thermal gradient ranging from 12 to 36 ºC at approximately 1.0 ºC increments, counted daily up to 7 consecutive days. Growing degree day (GDD) accumulation for each temperature increment was calculated based on daily mean temperature measured by thermocouples. Lorentzian distribution models were used to establish the temperature and time (hours) to maximum germination for each variable. Data indicated differences among the cultivars for each variable. These data will assist in determining phenotypic and genotypic variation between cultivars when grown under known environmental conditions with different planting dates. This information will assist growers with making cultivar seed selections based on vigor testing methods not previously used.

Know When To Hold Them and Know When to Dig

C. KVIEN*, T. BRENNEMAN, A. CULBREATH, C. PILON, and P. OZIAS-AKINS, University of Georgia, Tifton, GA**;** C. HOLBROOK, USDA-ARS, Tifton, GA; C. BUTTS, M. LAMB and R. SORENSEN, USDA-ARS-NPRL, Dawson, GA.

The Hull-Scrape helps maximize yields by projecting an expected weight gain from pods still maturing and balancing that with the expected weight loss from mature pods lost to soil. This projection must also consider the state of leaf and limb diseases in the field, which, if well controlled will not only improve yields – it will provide a few days more buffer before the mature pods really start to come off. Past and expected weather, soil conditions, labor, equipment, and everything else are other considerations included in the dig decision. During the past two years (2015 and 2016) we followed the weekly pod development of 7 cultivars using the Hull-Scape procedure, starting 100 days after planting and continuing to 163 days after planting. We measured the yield and grade of six reps at each of eight digging dates beginning 114 days after planting and ending 163 days after planting, and calculated the growing degree days at each digging date using data from a nearby weather station. In 2016 all cultivars produced higher yields over a longer period than in 2015. These results were due, in part, to improved environmental conditions and a stronger fungicide program. In 2016 the current Hull-Scrape Board predicted the best digging date for 06G and TUFRunner 297 accurately. Yet in 2015 the chart was 6 days early for For Tifguard, GA 14N and TUFRunner 727 found that adding another 7 days to the prediction resulted in higher yields if diseases were under control. Similarly, the best harvest date for TifNV, GA 09B and 12Y was 10 days later than projected by the board. Since the hull of GA 13M never seems to develop a dark black coloration, it was best to hull scrape that variety between 114 to 121 days after planting and then dig on that prediction. In most cases, when disease was well controlled, the penalty for digging early was greater than the penalty for digging late. Some cultivars, like GA 12Y, GA 14N, TUFRunner 297 had less than a 5% penalty for bing one week early or late, while other cultivars, like Tifguard the penalty for being one week early or late was around 15%.

Prostate Weight Changes of the Orchiectomized Sprague-Dawley Rats as Affected by Dietary Supplementation with Bio-elicited Peanut Sprout Powder.

P.-H. CHENG*, R. Y.-Y. CHIOU, J.-C. CHANG, S.-M. LIN, Y.-L. CHANG, D.-Y. Lo, Department of Food Science and Department of Veterinary Medicine, National Chiayi University, Chiayi 60004, Taiwan, ROC.

The bio-elicited peanut sprout powder (BPSP) containing phytoestrogenic stilbenes including resveratrol and arachidin-1 have been demonstrated. Likelihood of benign prostatic hyperplasia (BPH) as prevented by dietary BPSP-supplementation deserves extensive and intensive investigations. In this study, the orchiectomized Sprague-Dawley (SD) rats (12 week-old, 7 rats for a group) were fed with diets respectively formulated with BPSP at 0, 50, 100 and 150 mg/kg bw. From the 91st day on, the rats were injected with testosterone propionate (TP, 3 mg/kg bw) for 4 weeks to induce BPSP. After feeding for additional 4 weeks, the rats were sacrificed for related investigations.

As generalized, no obvious health hazard was observed mainly based on weights and visual examination of major organs as caused by BPSP-supplementation. Body weights and blood analyses deviated in a limited range among the test groups. However, based on the ratio of prostate/body weight for each rat as a prostate index (PI), PI values for the rats fed with normal diets (0 mg BPSP/kg bw) were higher than the rats fed with BPSP-supplemented diets (50 – 150 mg BPSP/bw). Thus, TP-activated prostate weight increase being inhibited by BPSP-supplemented diets is obvious and of merit for further investigations.

Phenotyping Drought Tolerance in Peanut.

M. BALOTA*, J. OAKES, Tidewater Agric. Res. & Ext. Center, Virginia Tech, Suffolk, VA 23437-7099; T. R. SINCLAIR, and T.G. ISLEIB, Dept. of Crop and Soil Sci., N.C. State Univ., Raleigh, NC 27695-7629.

The suitability of Normalized Difference Vegetation Index (NDVI), canopy-air temperature differential (CTD), and RGB color space indices were measured for estimating leaf wilting, pod yield, grading characters, and crop value of 23 peanut cultivars and breeding lines. Genotypes were planted on May 2 at the Tidewater Agricultural Research and Extension Center (TAREC) in Suffolk, VA, in a factorial design using two rain exclusion shelters; genotypes were replicated twice under each shelter (four total replications) for deficit irrigation. At beginning pegging on July 19, shelters were pulled over the water-deficit plots and maintained until Aug 29. These plots only received a survival irrigation of 38 mm on Aug 18. Next to the rain shelters, the same genotypes were planted for a well-watered irrigation regime. Well-watered plots were irrigated on Aug 10 and 24 with a total of 76 mm water.

From July 19 through Sep 8, weekly measurements were taken on the ground for CTD at 9:00, 11:00; 13:00, and 15:00 Eastern Standard Time with negative values denoting cooler, healthier plants and positive values denoting drought-stressed plants. NDVI was measured from 11:00 to noon. On Aug 3 and 10, when plants showed visible stress symptoms all plots were rated for leaf wilting; on Aug 10 they were rated in the morning and in the afternoon. Digital pictures were also taken and RGB color space indices calculated on Aug 3 and 10, in the morning and in the afternoon. These measurements continued after shelters' removal on weekly basis to monitor the recovery of the genotypes from drought stress as a result of a rain event of 76 mm on Sep 2 and 3.

After shelters were removed aerial canopy temperature (CT), RGB, and NDVI were measured using a Falcon 8 octocopter UAV platform. Images were taken at an altitude of 10 m above the plots using waypoint navigation, and were merged in Pix4D software to generate one single orthomosaic image. Individual plots were further extracted in ArcGIS. RGB images saved in a separate *.jpeg* file format for image processing in Image J software. The following color space characteristics were computed: hue angle, intensity, saturation, a*, b*, u*, and v*. RGB-derived vegetation indices Green Area (GA) and Greener Area (GGA) were calculated from the hue angle ranging between 60° and 120° for GA and 80° and 120° for the GGA. The ground and aerial indices were then correlated with leaf wilting, pod yield, Sound Mature Kernel (SMK) content, and crop value.

Wilting, a common water-deficit stress symptom, was best estimated by NDVI and RGB, and least well by CTD; but CTD was best in estimating yield, SMK and crop value in particular when taken on the ground at 15 days after stress imposition. Interestingly, CTD predicted plant wilting even before it occurred with negative correlation coefficients 0.75 when CTD was measured on July 19 and 20 even though wilting was visible only after two weeks. After 3 wk of no additional water, the relationship between CTD and wilting became positive (positive correlation coefficients) showing that hotter plants (higher CTD values) were more visibly wilted and stressed than cooler plants. This indicates that genotypes were cooler and transpired more early on resulting in more rapid use of soil moisture and wilted earlier. This could be a mechanism of drought tolerance to be used by breeders to further improve drought tolerance of peanut in the region. Good predictions for yield, SMK, and value were also obtained indicating that remote sensing technologies, at the ground and aerial, may be suitable for phenotyping drought tolerance in peanut.

Peanut Flavor Compounds from Amino Acid Precursors.

L.L. DEAN*, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695-7624; and C.M. KLEVORN, Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695-7624.

Investigations to determine the chemical compounds responsible for peanut flavor have traditionally depended on the analysis of volatile compounds. The more recent field of the study of metabolomics provides new tools and approaches for the determination of chemical compounds that are lost, created or changed by the roasting of peanuts. By concentrating on the metabolomic pathways most affected by roasting, new insights into roasted peanut flavor have been revealed. Raw runner and virginia-type peanuts were obtained from 3 different warehouses as 10 pound samples from 5 individual commercial lots (n=15 for each market-type). Samples were split into two five-pound subsamples with one subsample remaining raw while the other was roasted (Hunter L-value 48±1). A multi-platform metabolomics approach including RP/UPLC-MS/MS and HILIC/UPLC-MS/MS was utilized to analyze the samples. Employment of this metabolomics-based approach identified 383 compounds within raw and roasted runner- and virginia-type peanuts, 360 of which were confirmed against authentic standards. Utilization of pathway analysis revealed that the biochemical pathways responsible for the small-molecular weight compounds that were most changed as a result of the roasting process were all amino acid pathways. Arginine and proline metabolism, phenylalanine metabolism, alanine, aspartate, and glutamate metabolism, and glutathione metabolism were the metabolic pathways that included the compounds most impacted by the roasting treatment. Specifically, the proline derivative betonicine and 5-oxoproline, a glutathione metabolite, were found to be differentiating (fdr p-value<0.05) metabolites between the raw and roasted peanuts. Coupling of metabolomic pathway analyses provided new insight into the types of amino acid derivatives that are involved in volatile compound generating reactions that occurred during the dry-roasting process.

Hydroxylation of Resveratrol in Biomimetic Production of Piceatannol by Use of Peanut Embryos as Enzyme Source.

Z.-C. CHANG, P. C. CHIU, **ROBIN Y.-Y. CHIOU***, Department of Food Science and Department of Applied Chemistry, National Chiayi University, Chiayi 60004, Taiwan, ROC.

Piceatannol bears one more hydroxyl group of resveratrol molecule and, generally, it follows the same mode of action of resveratrol to exhibit potent bioactivities. Based on the concept that both resveratrol and piceatannol are belonging to peanut secondary metabolites of stilbenes, the enzymes functioning resveratrol hydroxylation in biosynthesis of piceatannol must be present in the specified peanut tissue. In this study, crude enzymes were prepared from the 5-day germinated peanut embryos with phosphate buffer and subjected to ultra-filtration (UF 300K) for hydroxylase collection.

Resveratrol prepared in aqueous DMSO/water (3:7) solution was used as substrate for hydroxylation and biomimetic biosynthesis was initiated by addition of the collected hydroxylase solution. After reaction for 2 h, the reactant solution was extracted with ethyl acetate, evaporated to dryness, and re-dissolved in aqueous methanol solution for HPLC analysis in detection of piceatannol. As affected by co-presence of resorcinol, gallic acid, ascorbic acid and catechol in the reaction system, piceatannol biosynthesis was enhanced by addition of catechol with dose-dependent manner from 1 to 5 mM. In a semi-continuous system, solution containing resveratrol and 5 mM catechol was used as substrate and reacted with intermittent replenishment of the hydroxylase solution. Based on HPLC analyses of the reactant samples withdrawn during reaction, time of continuous biosynthesis of piceatannol was effectively extended. Thus, mass biomimetic production of piceatannol by optimization of the reaction system is likely.

Cotyledon Density Measurements on Valencia Peanuts Grown in the Southwest United States as a Tool for Developing Food Products.

L.L. DEAN, K.W. HENDRIX, U.S.D.A. Market Quality and Handling Research Lab, North Carolina State University, Raleigh, NC 27695-7624, N.D. WILSON, GeneTex, 3701 - 158th Street, Lubbock, TX 79423, N. PUPPALA, College of Agricultural, Consumer and Environmental Sciences, New Mexico State University, Clovis, NM 88101-9998, J.N. WILSON, **D.A. SMYTH***, Ready Roast Nut Company, 42593 U.S. Highway 70, Portales, NM 88130

Valencia seed (*Arachis hypogaea* L. ssp. *fastigiata*) can command a premium in food products as consumers like special properties like the bright red seed coat, pods with 3 or 4 kernels, the roasted and sweet flavor of the end product, or the fact that the plants can be grown using organic methods. This study reports cotyledon density properties as part of a larger study to understand how to optimize the use of High Plains valencia seed in snack nut products utilizing whole kernels. Earlier work on runner and virginia type seeds grown in the High Plains showed correlations between greater raw density and enhanced crunchiness/hardness in roasted kernels compared to seeds grown in other regions.

Raw valencia cotyledon density was evaluated in seed grown on the High Plains of Texas and New Mexico during 2015 and 2016. Traditional valencia cultivars Valencia C, GeneTex 116, GeneTex 118, and GeneTex 136 had cotyledon composition on the dense side with calculated midpoint cotyledon densities in NaCl solution concentrations of 14.3, 13.7, 14, and 13.6 % (w/w), respectively, for 2015 crop year. The valencia cotyledon density profiles of traditional cultivars are similar to those of runner and virginia commercial types grown in the High Plains, suggesting that there may be common biochemical adjustments to severe environmental stresses. Kernel densities are one raw material property that can be selected to satisfy consumers' preference for firmer and crunchier snack peanuts simply by picking growing environment.

Economics, Harvesting, Processing, & Utilization

Thursday, July 13, 2017		
1:00 - 4:30 p.m. Alvarado C	**Economics, Harvesting, Processing, & Utilization** *Moderator: Jack Davis, JLA International*	Page Number
1:30	**Managing Post-Harvest Aflatoxin, Part 1: Minimizing Sample Preparation and Analytical Variation in a Sampling Program.** **J.P. DAVIS***, D. DESHAZO, M. JACKSON, J.M. LEEK, JLA International, Albany, GA 31721; M. SAMADPOUR, IEH Laboratories, Lake Forest Park, WA 98155.	**117**
1:45	**Managing Post-Harvest Aflatoxin, Part 2: A System for Identifying and Quantifying High Risk Components in Samples.** **D. DESHAZO***, J.P. DAVIS, M. JACKSON, J.M. LEEK, JLA International, Albany, GA 31721; M. SAMADPOUR, IEH Laboratories, Lake Forest Park, WA 98155.	**118**
2:00	**Managing Post-Harvest Aflatoxin, Part 3: Minimizing Sampling Variation and Commercial Implications.** **M. JACKSON***, D. DESHAZO, J.P. DAVIS, J.M. LEEK, JLA International, Albany, GA 31721; M. SAMADPOUR, IEH Laboratories, Lake Forest Park, WA 98155.	**119**
2:15	**Effect of Kernel Characteristics on Color and Flavor Development During Peanut Roasting: Two Years of Data.** **K.W. HENDRIX***, L.L. DEAN, and O.T. TOOMER. Market Quality and Handling Research Unit, USDA-ARS, Raleigh, NC, 27695.	**120**
3:00	**"Evaluation and Comparison of Roasted Flavor Profile of Virginia High-Oleic 'Bailey' Derivative Breeding Lines to Normal-Oleic Cultivar 'Bailey' Grown in the Virginia-Carolina Area.** **F.R. CANTOR-BARREIRO***, T.G. ISLEIB, S.C. COPELAND, W.G. HANCOCK, H.E. PATTEE, Dept. of Crop and Soil Sciences, N.C. State Univ., Raleigh, NC 27695-7629, M.A. DRAKE and M.D. YATES, Dept. of Food, Bioprocessing, and Nutrition Sciences N.C. State University, Raleigh, NC 27695-7624, and J. DUGGINS, Department of Statistics, N.C. State Univ., Raleigh, NC 27695-8203"	**121**
3:15	**Unloading Farmers' Stock Warehouses with a Peanut Vac.** **C. L. BUTTS***, R. B. SORENSEN, and M. C. LAMB. USDA, ARS, National Peanut Research Laboratory, Dawson, GA.	**122**
3:30	**PLC Rate Expectation.** **S.M. FLETCHER*,** C.J. RUIZ, Z. SHI. National Center for Peanut Competitiveness (NCPC), University of Georgia, Griffin, GA 30223-1797.	**123**
3:45	**Factors Impacting Acres Planted to Peanuts in the US** **F.D. MILLS, JR.*** and S.S. NAIR, Department of Agricultural Sciences and Engineering Technology, Sam Houston State University, Huntsville, TX 77341	**124**
4:00	**The Economics of Irrigation Scheduling Methods.** **A. RABINOWITZ*** and A.R. SMITH, Department of Agricultural and Applied Economics; C. PILON, W. M. PORTER, C. D. PERRY, W. S. MONFORT, J. L. SNIDER, G. VELLIDIS, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793-0748.	**125**
4:15	**Evaluation of the 2016 Peanut Crop Insurance Program.** **C.J. RUIZ***, S.M. FLETCHER, Z. SHI. National Center for Peanut Competitiveness (NCPC), University of Georgia, Griffin, GA 30223-1797.	**126**

Managing Post-Harvest Aflatoxin, Part 1: Minimizing Sample Preparation and Analytical Variation in a Sampling Program.

J.P. DAVIS*, D. DESHAZO, M.D. JACKSON, J.M. LEEK, JLA International, Albany, GA 31721.

The USDA aflatoxin sampling program for shelled peanuts is an important component of broader industry efforts to minimize aflatoxin occurrence in the edible market. In this program, official samples are milled with either a traditional hammer/automatic sub-sampling mill, commonly called the Dickens Mill (DM) or with a vertical cutter mill (VCM). Particle size reduction and sample homogenization are the primary objectives of sample preparation (milling) to generate subsamples which best represent the parent sample composition for downstream analysis. DM particle size reduction is limited by the 3.2 mm round hole screens internal to the mill which prevent pasting of the sample. VCM grinding converts the sample to a paste while simultaneously homogenizing the sample. Experiments demonstrate that when testing aflatoxin contaminated peanuts for equivalent sized subsamples prepared from the two mill types, made into water slurries per USDA specifications and subsequently extracted and tested for total aflatoxin per USDA specifications, VCM subsamples are more normally distributed around the sample aflatoxin mean, whereas DM subsamples are more positively skewed (median lower than mean) around the sample aflatoxin mean. Accordingly, milling official samples with a DM compared to VCM promotes more lot misclassifications. It is also demonstrated that for a given subsample after extraction and immunoaffinity column purification, the total aflatoxin measured by either high pressure liquid chromatography (HPLC) or standalone fluorometry (both USDA approved) are practically equivalent. There are costs (time and resources) associated with decreasing natural variation due to sampling, sample preparation and analytical testing in an aflatoxin sampling/testing program. Sample preparation is a greater source of variation compared to that of the analytical testing. As demonstrated in these experiments, resources would be better spent replacing DM with VCM mills than converting the final analytical step from standalone fluorometry to HPLC in an effort to best classify peanut lots for the edible market.

Managing Post-Harvest Aflatoxin, Part 2: A System for Identifying and Quantifying High RIisk Components in Samples.

D. DESHAZO*, J.P. DAVIS, M.D. JACKSON, J.M. LEEK, JLA International, Albany, GA 31721.

When present in shelled peanuts, aflatoxin contamination is not normally distributed and typically affects only a small frequency of kernels which can be highly contaminated. A system is demonstrated in which samples are manually classified into categories based on size, density and visual appearance. Aflatoxin is quantified within these categories and this information can be used to adjust processes for most effective management. While not always the case, visually defective kernels are typically the highest risk component and relatively small changes in the frequency of visually defective kernels can result in samples exceeding edible limits.

Managing Post-Harvest Aflatoxin, Part 3: Minimizing Sampling Variation and Commercial Implications.

M.D. JACKSON*, D. DeShazo, J.P. DAVIS, J.M. LEEK, JLA International, Albany, GA 31721.

Shelled peanut lot sizes in commerce are typically 20 metric tons (MT) or ~44,000 lbs but can be as large as 200,000 lbs. In the United States, the Federal State Inspection Service (FSIS) via USDA Agricultural Marketing Service (AMS) regulations, serves as the unbiased third party that collects official samples from positively identified shelled peanut lots. USDA AMS regulations require a 70-75 kg sample per lot and approved random dividers then separate this sample into 3 bags, each ~22 kg, for subsequent official USDA sample preparation and analytical measurement of aflatoxin. The remaining portion of the official sample is used by FSIS to grade the lot for damage, moisture, foreign material, and various kernel size parameters, among other grade factors. Given the heterogeneous nature of aflatoxin contamination in shelled peanuts when present, and the sample size(s) being considered compared to overall lot sizes, sampling is, by far, the largest source of variation in the sampling, sample preparation and analytical chain to determine a test result in the USDA sampling program. Assuming a sound sample preparation and analytical procedures are in place, sample variation can be reduced by increasing the sample size. Implications of changing the sample size are demonstrated.

Effect of Kernel Characteristics on Color and Flavor Development During Peanut Roasting: Two Years of Data.

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Experiments with Crop Year (CY) 2014 samples from the Uniform Peanut Performance Trials (UPPT) revealed that color and flavor profile development were related to kernel moisture content (MC) during dry roasting. That work was repeated with CY 2015 UPPT samples with additional replication. Raw MC, raw oil content, raw kernel color (un-blanched), roast MC%, roast kernel color (blanched) and roast paste color were measured. As for 2015, the 2016 data contained a specific pattern of changes in the flavor descriptors which was invariant with regard to genotype or planting location. The pattern had several parts. Roast peanutty (RP), sweet aromatic (SA) and dark roast (DR) rose above detection threshold together. RP and SA peaked 1 to 4 minutes later. RP and SA then slowly dropped back toward threshold detection levels. DR entered a distinctly different phase in which its rate of upward change was cut in half. This always occurred at the same time RP and SA began dropping. Ashy, an acrid flavor found usually in darker samples, rose above threshold at exactly the same point that DR changed phase.

These threshold points and other changes during roasting were highly correlated with MC level in the roasting kernel and not directly proportional to roasting time. For example, roast peanutty was never detectable (crossed threshold) until MC had dropped to between 2.2 and 2.5 %ww. Likewise, the eventual drop in RP values at longer roast times began only when MC dropped between 1.2 and 1.5 %ww. In contrast, the times at which the appropriate MC levels were reached varied greatly and depended on seed size and oil content. The overall pattern of flavor changes occurred faster as seed size (weight) dropped and/or the oil content rose. This would indicate the crucial importance of MC during flavor development.

Although raw moisture content undoubtedly affects roasting, the range of starting raw MC of the samples in this study was small and statistics suggested only a slight effect. Raw peanut skin color had no effect on flavor or color development in the kernel.

Evaluation and Comparison of Roasted Flavor Profile of Virginia High-Oleic 'Bailey' Derivative Breeding Lines to Normal-Oleic Cultivar 'Bailey' Grown in the Virginia-Carolina Area.

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Virginia-type peanut (*Arachis hypogaea* L.) cultivars are grown in the Virginia-Carolina (Va., N.C., and S.C. or "VC") area for gourmet markets and direct human consumption. Flavor has been identified by processors of Virginia- and runner-type peanuts as the pre-eminent trait of importance in marketing finished product. As new cultivars are developed, it is important that the flavor profiles of new releases meet or exceed those of the cultivars they are intended to replace.

Flavor was measured for the popular normal-oleic cultivar 'Bailey' and seven backcross-derived high-oleic lines (N12006ol, N12007ol, N12008olCLSmT, N12009olCLT, N12010ol, N12014ol, and N12015ol). A trained descriptive sensory panel in the Sensory Service Center at N.C. State Univ. was used. The samples came from nine different trials from 2012 to 2015 conducted entirely on the coastal plain of N.C., and they were processed and submitted to the trained sensory panel from 2013 to 2016. The data were used to determine whether or not there was a difference between the high-oleic lines and Bailey and variation among the high-oleic ones. Four high-oleic Bailey derivatives scored significantly higher than Bailey on the roasted peanut sensory attribute (N12014ol 4.93 vs 4.40 flavor intensity units or "fiu", *P*=.0015, N12015ol 4.82 vs 4.40 fiu, *P*=.0108, N12007ol 4.78 vs 4.40 fiu, *P*=.0284 and N12010ol 4.71 vs 4.40 fiu, *P*=.0363), five on the sweet attribute (N12014ol 4.48 vs 4.03 fiu, *P*=.0007, N12009olCLT 4.40 vs 4.03 fiu, *P*=.0016, N12015ol 4.34 vs 4.03 fiu, *P*=.0109, N12007ol 4.30 vs 4.03 fiu, *P*=.0361, and line N12010ol 4.28 vs 4.03 fiu, *P*=.0472), and two on the nutty attribute (N12014ol 3.98 vs 3.59 fiu, *P*=.0023 and line N12015ol 3.89 vs 3.59 fiu, *P*=.0125) considered a positive improvement. Among high-oleics, the line N12008olCLSmT scored significantly lower than the line N12014ol on the roasted peanut attribute (4.59 vs 4.93 fiu, *P*=.0301) and sweet (4.14 vs 4.48 fiu, *P*=.0064) as well as did line N12006ol (4.10 fiu, *P*=.0051). The line N12014ol scored higher on nutty attribute than the two lines N12006ol (3.98 vs 3.65 fiu, *P*=.0317) and N12010ol (3.98 vs 3.61 fiu, *P*=.0106). The high-oleic line N12014ol scored lower than Bailey in some of the attributes generally thought to be negative including the attributes under roast (1.33 vs 1.90 fiu, *P*=.0001), bitter aftertaste (1.78 vs 2.00 fiu, *P*=.0108) and cardboard (1.34 vs 1.79 fiu, *P*=.0001), the line N12010ol also scored significantly lower than Bailey and the line N12007ol lower on cardboard attribute. More-over, three lines presented a lower perception of the wood/hull/skins attribute (N12010ol 3.79, N12008olCLSmT 3.80 and N12014ol 3.85 vs Bailey 4.08 fiu) associated with peanut skins and phenolic compounds. The effect of the intensity of the off flavors of the high-oleic lines was in a positive direction compared to Bailey. Line N12014ol had a low score on moldy attribute (0.93 vs 1.14 fiu, *P*=.0025) and two lines had significantly lower values on the tongue/throat burn attribute (N12015ol 1.32 vs 1.56 fiu, *P*=.0011, N12007ol 1.40 vs 1.56 fiu, *P*=.0383). The over-roast, painty and petroleum attributes did not differ between cultivar 'Bailey' and the mean of high-oleic lines or among the high-oleics themselves. The high-oleic Bailey derivatives do present an improvement on the roasted peanut profile. These results could be the baseline to propose a suitable replacement of normal-oleic cultivar 'Bailey' for a high-oleic Bailey derivative on the basis of flavor. It is necessary further analyses and evaluation of these high-oleic lines for agronomic traits.

Unloading Farmers' Stock Warehouses with a Peanut Vac.

C. L. BUTTS*, R. B. SORENSEN, and M. C. LAMB. USDA, ARS, National Peanut Research Laboratory, Dawson, GA.

A peanut vacuum has been developed by a company specializing in pneumatic conveying equipment by redesigning their existing grain vacuum (vac) specifically to handle farmers' stock peanuts accounting for the desire to maintain the integrity of the peanut pod throughout the conveyance process. The peanut vac consists of a PTO-driven positive displacement blower, two cyclone separators, and a hydraulically-powered airlock valve. The blower pulls air and farmers' stock peanuts through a length of suction hose into the first cyclone separator where the peanuts are separated from the airstream. The air then travels to a second cyclone separator where the suspended dirt and other fine particles are separated from the airstream. The cleaned air proceeds through the blower and is blown through a discharge chute beneath the outlet of an airlock valve mounted on the bottom of the first cyclone. Farmers' stock peanuts from the first cyclone fall from the outlet of the airlock valve into the airstream in the discharge chute and are conveyed up into a waiting trailer. The peanut vac is powered by a 1000-rpm PTO shaft of a tractor supplying a minimum of 100 hp.

The peanut vac was taken to two locations in South Georgia and used to extract peanuts from farmers' stock warehouses in addition to the conventional equipment used for warehouse bailout. The weight of peanuts on each truck, time to fill each truck, and the farmers' stock grade factors for the peanuts in each truck was recorded and compared by conveyance method. At the first location, the conventional equipment consisted of a skid-steer loader with an oversized bucket driven into the pile of peanuts. The peanuts were emptied into a surge bin feeding a portable conveyor belt that conveyed the peanuts into a waiting truck. The conventional process at the second location was similar to the first, except that a large articulated bucket loader was used in lieu of the skid-steer loader. At the first location, there were no statistically significant differences observed in the farmers' stock grade factors, particularly the loose shelled kernels (LSK) and foreign material (FM), nor the loading rate due to the bailout equipment used. The average loading rate using the peanut vac at location 1 was 69 t/h compared to 84 t/h when loaded with the skid-steer loder. At the second location, peanuts conveyed using the peanut vac had significantly less LSK (4.9%) and FM (2.8%) than those conveyed using the bucket loader (LSK=7.9%, FM=4.9%). The total sound mature kernels (TSMK) was 1.4% higher in the peanuts conveyed using the peanut vac compared to those conveyed using the bucket loader, implying that the additional LSK were generated from the larger, more valuable peanuts. The bucket loader loaded the trucks at a much higher rate (215 t/h) than the peanut vac (47 t/h).

PLC Rate Expectation.

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The 2014 Farm Bill authorized the Price Loss Coverage (PLC) program. This program makes payments to peanut producers if the national marketing year average (MYA) price is less than reference price. Payments are calculated as the difference between the reference price and either the MYA price or the National Loan Rate. PLC rate expectations influence bankers decisions on operating loan applications. Due to uncertainty in prices, farmers need access to the most accurate possible PLC rate estimate by the end of January in order to make financial well-based decisions with their bankers for their economic survival during this period of severely depressed commodity prices. Because of that, NCPC looked at historical data (2006-2015) for accumulated weekly MYA prices in order to develop an analysis on how prices observed by the end of January may serve as an indicator of final MYA prices.

On average, for the last ten years, final MYA prices were higher by 1.05% than prices observed in January. An upward trend for weekly prices was observed for 7 out of 10 years where 100% of these prices observed between February and July were higher than prices observed by the end of January. On the other hand, for 2009, 2012, and 2013 marketing years downward trends were observed where final MYA prices were lower than January prices by 3.75%, 11.4%, and 2.33% respectively. These negative trends were preceded by peaks in prices by the end of the 2008 and 2011 marketing years. When using Olympic average to calculate difference in prices, final MYA prices were higher than January prices by 1.53%. NCPC advises farmers to look at trend on prices observed between August and January as well as the accumulated MYA price by the end of January to gain an understanding on final MYA price. Famers should not expect prices to change by more than 2% of the accumulated August-January price unless an atypical supply-demand condition emerge.

Factors Impacting Acres Planted to Peanuts in the US

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Peanuts are produced across the southern US and compete with corn, cotton, and grain sorghum for available acreage. These crops vie for both irrigated and non-irrigated land. Acreage planted to these crops varies annually due to ecological and economic drivers, and government policies. Historic acreage data for peanuts, corn, cotton, and grain sorghum by state were collected from 1994 to 2015 and analyzed to identify drivers of land use change. Planted acreage for each crop served as the dependent variable. Lag acreage of each crop, the lag fiber:grain price ratio, the lag peanut price paid to farmers, and dummy variables for years each US farm bill was in effect served as explanatory variables. Equations were simultaneously estimated using iterative Seemingly Unrelated Regression (SUR). All estimated equations expressed goodness of fit based on high R^2 values. Lag acreage significantly and positively influenced planted acreage of all four crops ($p<0.001$) indicating resource fixity. As expected, a higher lag fiber:grain price ratio significantly increased cotton acreage ($p<0.001$) at the expense of corn, but interestingly, it also increased acreage planted to peanuts ($p<0.01$). The lag peanut price paid to farmers had a positive effect on planted peanut acreage, but it was non-significant. Conversely, higher peanut prices paid to farmers significantly lowered planted cotton acreage ($p<0.05$). Using the 2008 Farm Bill as a baseline, the 1990 and 1996 Farm Bills lowered planted peanut acreage ($p<0.05$ and $p<0.10$, respectively), while the 2014 Farm Bill prompted more acres planted to peanuts at the expense of cotton ($p<0.10$).

The Economics of Irrigation Scheduling Methods.

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Irrigation provides many economic benefits including improving crop production, reducing yield variability, and increasing profits. However, there are costs involved to obtain these benefits, including substantial fixed costs for equipment and different levels of variable costs and management expenses depending on the complexity of application. Different irrigation methods have substantially different costs associated with them. These include free or very inexpensive online or paper tools, simple estimates of evapotranspiration, and more complex methods using sensors.

A variety of irrigation scheduling methods were tested from 2014 to 2016 at the Stripling Irrigation Research Park near Camilla, GA to identify the best irrigation option for producers in the Southeast. The irrigation scheduling methods tested in this research included a UGA developed soil moisture system called the UGA Smart Sensor Array (SSA), a SmartCrop© canopy temperature sensor utilizing a Crop Water Stress Index (CWSI), the UGA EasyPan, the UGA Peanut Checkbook Method, 50% of the UGA Peanut Checkbook Method, USDA-ARS IrrigatorPro and PeanutFARM.

Four cultivars commonly planted in the region, GA-06G, GA-12Y, TUFRunner 511, and TUFRunner 727, were selected and planted in two row plots within each irrigation treatment zone. We establish a return to capital investment from different scheduling methods in addition to a net dollar benefits controlling for differences in irrigation costs, variations in weed and disease control, and the opportunity cost of management. Results show that net benefits of irrigation vary significantly, depending on the amount and distribution of rainfall as well as the scheduling method selected. In fact, during wet periods with a good distribution of rainfall, irrigation can result in a net loss compared to rain fed crops. Results can help growers understand how different scheduling methods affect profitability in addition to water use efficiency.

Evaluation of the 2016 Peanut Crop Insurance Program.

C.J. RUIZ*, S.M. FLETCHER, Z. SHI. National Center for Peanut Competitiveness (NCPC), University of Georgia, Griffin, GA 30223-1797.

In 2015, 93% of U.S. peanut acres planted participated in the Federal Peanut Insurance Program where a new peanut Revenue Protection (RP) policy came into force. For its first year, 68% of U.S. acres were insured under the RP option. Accordingly, Yield Protection (YP) and CAT policies saw their share reduced to 22% and 10% respectively. For the 2016 crop year, the landscape has remained practically same in terms of share and coverage. 67% of U.S. acres were insured under RP and 22% and 10% for YP and CAT respectively. However, only 86% of U.S. peanut planted acres were insured for 2016. This was basically due to the uninsurable dryland acres planted in Texas.

The loss ratios for the insurance program at the national level were 1.32 and 1.25 for 2015 and 2016 crop years, respectively. These loss ratios are considerable higher when compared to an average of 0.94 for 2005-2014 and significantly much higher when compared to competing crops such as cotton or soybeans. For Georgia, the loss ratio reached a record value of 1.41 in 2016 compared to the average of 0.87 for 2006-2015. This significant increase was driven by extreme dryness and high temperatures.

Breeding, Biotechnology, & Genetics – Section III

Thursday, July 13, 2017		
1:00 - 4:15 p.m. Alvarado F	**Breeding, Biotechnology, & Genetics Section III** *Moderator: Naveen Puppala, New Mexico State University*	Page Number
1:30	**Identification and Mapping of a Major Gene that Controls Pod Reticulation and Pod Brightness in Heavy Soils** N. ZUR, G. KAYAM, A. DORON--FAIGENBOIM, A.S. PATIL, **R. HOVAV***, Department of Field Crops, Plant Science Institute, ARO, Bet-Dagan, Israel	**129**
1:45	**Molecular Breeding Within the Context of Peanut's Complex Segmental Allotetraploid Genome.** **D.J. BERTIOLI***, S.C.M. LEAL-BERTIOLI, C. BALLEN, J. CLEVENGER, B. ABERNATHY, C. CHAVARRO, J. HEE SHIN, S.A. JACKSON, Center for Applied Genetic Technologies, University of Georgia, Athens, GA, 30602-6810, U.S.A.; Y. CHU, P. OZIAS-AKINS, Department of Horticulture, University of Georgia, Tifton, Georgia 31973, U.S.A. ; M.C. MORETZSOHN, Embrapa Genetic Resources and Biotechnology, Brasília, DF, 70770-917, Brazil ; I. GODOY and J. FRANCISCO, 4Campinas Agronomical Institute, Campinas, SP, Brazil	**130**
2:00	**Differential Expression of R-genes to Associate Leaf Spot Resistance in Cultivated Peanut.** **P.M. DANG*** and M.C. LAMB, USDA-ARS National Peanut Research Laboratory, Dawson, GA 39842; C.Y. CHEN, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 36849.	**131**
2:15	**A Journey from a SSR-based Low Density Map to a SNP-based High Density Map for Identification of Disease Resistance Quantitative Trait Loci in Peanut.** **B. GUO***, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793; G. AGARWAL, H. WANG, A. CULBREATH, P OZIAS-AKINS, University of Georgia, Tifton, GA 31793; J.P. CLEVENGER, D.J. Bertioli, S.A. JACKSON, University of Georgia, Center for Applied Genetic Technologies, Athens, GA; M.K. PANDEY, Y. SHASIDHAR, S.M. KALE, R.K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India; Xin LIU, BGI-Shenzhen, Shenzhen, China; C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA.	**132**
3:00	**Efforts on Fine-mapping and Evaluating Effects of a Major Genomic Region Controlling Spotted Wilt Disease Resistance in Peanut** Z. ZHAO, Y-C. TSENG, Z. PENG, B. TILLMAN, AND **J. WANG *** Agronomy Department, University of Florida, Gainesville, FL 32610	**133**

3:15	**Getting Bigger by Starting Smaller – Surprises of Introgression with Wild Relatives** **S. CM Leal-Bertioli*[1,2]**, M.C Moretzsohn1, I.J. Godoy[3], C. Taborda-Ballén[2], J F. Santos[3], J.H. Shin[2], Y. Chu[4], J.P. Clevenger[2,4], P. Ozias-Akins[4], H Tom Stalker[5], C Corley Holbrook[6], Scott A Jackson[2], David J Bertioli[2,7] 1 Embrapa Genetic Resources and Biotechnology, Brasília, DF, Brazil 2 Center for Applied Genetic Technologies, University of Georgia, Athens, GA, U.S.A. 3 Instituto Agronomico, Campinas, SP, Brazil 4 Department of Horticulture, University of Georgia, Tifton, GA, U.S.A. 5 Department of Crop Science, NCSU, Raleigh, NC, U.S.A. 6 USDA ARS 115 Coastal Way, Tifton, U.S.A. 7 Institute of Biological Sciences University of Brasília, Brasília, DF, Brazil	**134**
3:30	**Development of SNP-based Molecular Markers for a Peanut Breeding Program.** **M. D. BUROW***, Texas A&M AgriLife Research, Lubbock, TX 79403, and Texas Tech University, Dept. of Plant and Soil Science, Lubbock, TX 79409; R. CHOPRA, R. KULKARNI, T. TENGEY, V. BELAMKAR, Texas Tech University, Dept. of Plant and Soil Science, Lubbock, TX 79409; J. CHAGOYA, J. WILSON, M. G. SELVARAJ, Texas A&M AgriLife Research, Lubbock, TX 79403; C. E. SIMPSON, Texas A&M AgriLife Research, Stephenville, TX 76401; M. R. BARING, Texas A&M AgriLife Research, College Station, TX 77843; F, NEYA, P. SANKARA, Université Ouaga I Prof. Joseph Ki-Zerbo, Département de Phytopathologie, Ouagadougou 03, BURKINA FASO; NICHOLAS DENWAR, Savannah Agricultural Research Institute, Tamale, GHANA.	**135**
3:45	**Validation of Drought-Associated Markers in Segregating Populations.** **J. C. CHAGOYA***, M. D. BUROW, Texas A&M AgriLife Research, Lubbock, TX 79403, and Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409; M. R. BARING, Texas A&M AgriLife Research, College Station, TX 77843.	**136**

Identification and Mapping of a Major Gene that Controls Pod Reticulation and Pod Brightness in Heavy Soils

N. ZUR, G. KAYAM, A. DORON--FAIGENBOIM, A.S. PATIL, **R. HOVAV***, Department of Field Crops, Plant Science Institute, ARO, Bet-Dagan, Israel

In the within-shell peanut market costumers favor pods with bright yellow shells. Bright shells are resulted from growing the crop on sandy soils. Expanding cultivation to areas with heavier soils usually results in a less desirable dark tint that reduces crop marketability. Previously, we evaluated a collection of 97 genotypes for shell brightness when grown in sandy vs. red soils and identified two Valencia genotypes that had relatively bright shells, even when grown in heavier soils. In the current study we further investigated the genetic nature of this phenomenon. A cross was made between one of these genotypes with extra-smooth pod (IGC99) and a Virginia-type cultivar with semi-smooth pod (Hanoch). The genetic analysis was done on F_2 and F_3 generations. Two F_2 populations were grown at different locations with dark soil. Color variables (brightness, red and yellow) and other pod related traits (e.g. pod weight, pod shape, pod reticulation) were gouged on a single plant basis. No significant correlation was found between the color variables and most of pod related traits, besides the seed ratio and pod reticulation. Interestingly, the later was segregating in both F_2 populations in 1:3 ratio for extra-smooth and semi-smooth pods, respectively, indicating Mendelian (Monogenic) control. We designate this gene *Smoothie* (*Sm*). Individuals with *smsm* phenotype had on average 2.8 higher brightness (L*) and 1.5 lower red (a*) variables than individuals with *SM_* phenotype, indicating extra-smooth pod surface is less tended to absorb red color tint from the soil during development. By using the combination of Bulk Segregant Analysis and deep sequencing approach, *Sm* was mapped on linkage group B6 (~135M). Notably, the same location was found as a significant locus for pod reticulation in another analysis of a RIL population that segregates to rough/semi-smooth pods. In general, the results were repeated in the F_3 generation with families grown on dark soil, but not on semi-sandy loamy (loess) soil, indicating again that absorption of particles from the soil plays an interacting effect. The finding of the simple inheritance pattern of the pod reticulation trait and its connection to pod color will have a strong effect on breeding peanut cultivars with brighter tint when grown in heavier soils.

Comment to the organizers: A similar talk was accepted for last APRES. Unfortunately, eventually I was not able arrive to the conference. We are submitting an updated version again this year.

Molecular Breeding Within the Context of Peanut's Complex Segmental Allotetraploid Genome.

D.J. BERTIOLI, S.C.M. LEAL-BERTIOLI, C. BALLEN, J. CLEVENGER, B. ABERNATHY, C. CHAVARRO, J. HEE SHIN, S.A. JACKSON, Center for Applied Genetic Technologies, University of Georgia, Athens, GA, 30602-6810, U.S.A.; Y. CHU, P. OZIAS-AKINS, Department of Horticulture, University of Georgia, Tifton, Georgia 31973, U.S.A. ; M.C. MORETZSOHN, Embrapa Genetic Resources and Biotechnology, Brasília, DF, 70770-917, Brazil ; I. GODOY and J. FRANCISCO, [4]Campinas Agronomical Institute, Campinas, SP, Brazil

Cultivated peanut (*Arachis hypogaea* L.) is an allotetraploid with closely related subgenomes and well-defined ancestors (*A. duranensis* and *A. ipaënsis*, which contributed the A and B subgenomes respectively). Its origin seems likely to be in a single polyploidy event about 10,000 years ago. Since polyploidy the subgenomes have remained substantially distinct and intact. However, they do occasionally interact and undergo genetic exchange. This has provided a diversifying drive for the species and leads to genetic behaviour that is not entirely as expected for a classic allotetraploid. Despite this genetic complexity, tools for genotyping have recently improved dramatically. This has enabled the identification of new quantitative trait loci and high-value wild species chromosome segments, and the implementation of much more efficient marker assisted breeding. We anticipate that, in the medium and long terms, genomics will contribute very significantly to the release of new improved peanut cultivars.

Differential Expression of *R*-genes to Associate Leaf Spot Resistance in Cultivated Peanut.

P.M. DANG* and M.C. LAMB, USDA-ARS National Peanut Research Laboratory, Dawson, GA 39842; C.Y. CHEN, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 36849.

Breeding for acceptable levels of Early (ELS) or Late Leaf Spot (LLS) resistance in cultivated peanut has been elusive due to extreme variability of plant response in the field and the proper combinations of resistance (*R*)-genes in any particular peanut line. *R*-genes have been shown to be involved in disease resistance in many important crop plants and may contribute to leaf spot resistance in peanuts. The goals of this research are to characterize gene-expression of candidate *R*-genes in peanut and to associate gene-expression profiles in susceptible (Florunner 458), medium resistance (Exp27-1516), and tolerant (GA12Y) runner-peanut genotypes. Out of a 209 gene targets, 110 potential *R*-genes were evaluated utilizing real-time PCR analysis from leaf RNAs extracted from ELS and LLS infected peanut plants. Analysis revealed 54 up- and 56 down-regulated *R*-genes when Florunner 458 was utilized to normalize real-time PCR data. Association of gene-expression profiles to disease resistance levels will facilitate the selection of peanut lines with higher disease resistance.

A Journey from a SSR-based Low Density Map to a SNP-based High Density Map for Identification of Disease Resistance Quantitative Trait Loci in Peanut.

B. GUO*, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793; G. AGARWAL, H. WANG, A. CULBREATH, P OZIAS-AKINS, University of Georgia, Tifton, GA 31793; J.P. CLEVENGER, D.J. Bertioli, S.A. JACKSON, University of Georgia, Center for Applied Genetic Technologies, Athens, GA; M.K. PANDEY, Y. SHASIDHAR, S.M. KALE, R.K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India; Xin LIU, BGI-Shenzhen, Shenzhen, China; C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA.

Mapping and identification of quantitative trait loci (QTLs) are important for efficient marker-assisted breeding. Diseases such as leaf spots and *Tomato spotted wilt virus* (TSWV) cause significant loses to peanut growers. The U.S. Peanut Genome Initiative (PGI) was launched in 2004, and expanded to a global effort in 2006 through coordination of international efforts in genome research beginning with molecular marker development, improvement of map resolution and coverage, and the release of two diploid wild peanut species' genomes in 2014. At the same time, we initiated two recombinant inbred line (RIL) populations, derived from Tifrunner × GT-C20 (T) and SunOleic 97R × NC94022 (S), in 2005, and used them for construction of genetic maps and identification of QTLs for oil content and disease resistance using SSR markers in the early years since 2009. However, these QTL regions cover large segments of the physical map. To generate a high density genetic map and to fine map the SSR-based QTLs, we performed whole genome re-sequencing (WGRS) for these RILs and parental lines. Tifrunner was sequenced to 60X coverage, and the other three parents were sequenced to 10-30X coverage. A total of 261 RILs (118 T-lines and 143 S-lines) were re-sequenced to 2-5X coverage. For the "T" population, a total of 18,000 SNPs were called initially using a newly developed SNP-calling pipeline and 10,500 high quality SNPs were used for construction of a high density genetic map resulting in 9957 SNPs and 3038 cM in length. This genetic map has been improved from 239 SSR markers to 418 SSR markers to 9957 SNPs. This map has also been used for analysis of QTL which have been improved, such as, from QTL_*qTSWV1* with 12.9% phenotypic variation explained (PVE) to *qTSWV_T10_A04_1* with 14.4% PVE with SSR-based maps to *qTSWV_A03_110* with 21.6% PVE using the SNP-based map. For ELS and LLS, the QTLs have been improved from *qELS_T10_A03_2* with 11.5% PVE to *qELS_A03_25* with 46.5% PVE , and *qLLS_T11_A06_1* with 15.12% PVE based on SSR map to *qLLS_B05_85* with 48.55% PVE on the SNP map. This high density map will be used for the tetraploid reference genome assembly, and for possible map-based cloning.

Efforts on Fine-mapping and Evaluating Effects of a Major Genomic Region Controlling Spotted Wilt Disease Resistance in Peanut

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Previously a major quantitative trait locus (QTL) controlling spotted wilt (SW) disease resistance was mapped into an interval with genetic distance of 4.4 cM and physical distance of 28.8 Mb on chromosome A01. To realize marker assisted selection (MAS) of SW resistance in peanut breeding programs, fine-mapping strategies were applied to further validate and narrow down the interval of this major QTL. A fine mapping population of 2200 individuals was developed from 24 heterozygous F_5 lines genotyped at the two flanking markers harboring the major QTL. Based on visual evaluation of the fine mapping population in the field, a total of 194 susceptible lines were selected and seeds from each line were then planted into 194 plots in the field for both visual evaluation of the disease severity and ELISA examination of viral presence. SSR markers flanking the QTL were used to genotype the 194 lines, which revealed a QTL region shifted from the previously reported position. A subfamily segregating only on this major QTL was selected for further fine mapping. Additional InDel markers in the interval were screened and amplicon-seq were applied for marker enrichment in the interval. The presence of the QTL interval in the peanut mini core collection was evaluated to determine its prevalence and association with the SW in peanut germplasm. The refined position, prevalence, and contribution to SW resistance in peanut germplasm of this major QTL will provide critical information for developing markers to realize MAS of resistance to SW in peanut breeding programs.

Financial support: National Peanut Board.

Getting Bigger by Starting Smaller – Surprises of Introgression with Wild Relatives

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The peanut crop suffers from numerous pests and diseases. Development and adoption of resistant varieties is the most cost efficient and effective way to control the spread of the disease and reduce yield losses. Wild species form a secondary gene pool, and provide a source of strong resistance alleles, but they have undesirable agronomic traits, such as small seeds and spreading habit, that are a disincentive to their use in breeding. The identification of genomic regions that harbor disease resistances in wild species is the first step in the implementation of marker assisted selection that can speed the introgression of wild disease resistances and the elimination of linkage drag. We have identified genome regions that control different components of rust, Late leaf spot and nematode resistances in populations developed using various *Arachis* species. In breeding, in some cases, desirable traits were quickly recovered with a few cycles of backcrosses and selection. However, using new, higher resolution genotyping methods uncovered unexpected genomic instability. These findings highlight new mechanisms of introduction of diversity to the peanut crop.

Development of SNP-based Molecular Markers for a Peanut Breeding Program.

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The Peanut Genome Initiative has been successful at producing whole genome sequences of peanut wild species, and is working towards a sequence of cultivated peanut. We are currently working towards development and employment of cost-effective markers for a peanut breeding program. We have produced transcriptome sequences of 22 cultivated and wild species accessions. These have been used to develop KASP markers mapped on an A-genome population and a wild species introgression population. We have also succeeded at producing SNP based markers from a transcriptomic genotype-by-sequencing system. Rad-Seq has also produced SNP sequences from some accessions, and these have been converted to KASP markers. It is hoped that these will provide the ability to screen large numbers of progeny at low cost. We are currently using a combination of SSR- and SNP-based markers to select for the high oleic trait, resistance to root-knot nematodes, and tolerance to water deficit stress. Markers for oil content and composition, and leaf spot resistance have also been developed.

Validation of Drought-Associated Markers in Segregating Populations.

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Compared to conventional approaches, marker-assisted selection can lead to greater efficiency and accelerated cultivar development in breeding programs, especially for complex traits such as drought tolerance. Many markers for drought tolerance in peanut have been identified via QTL and association mapping; however, their utilization in breeding programs thus far has been limited in part because use for selection in populations differing from the mapping populations needs to be validated. In this study, polymorphic SSR markers identified to be associated with drought-tolerance related traits via association mapping were screened in two segregating F_2 populations. The F_2 individual plants were grown under deficit irrigation, and pod yield, SPAD chlorophyll meter reading, leaf closure (paraheliotropism) rating, plant height and plant width were recorded. Markers explained up to 13% of phenotypic variation each. Markers with significant phenotypic effects were different in the two populations, showing differences in different genetic backgrounds. Selection for one, two and three drought markers resulted in yield increases of up to 4, 9, and 14%, respectively, in the first generation of selection. F_2 plants were also segregating for growth habit, which had strong effects on phenotypic traits and marker effects. Additional markers were employed to screen for nematode resistance and the high oleic trait, which greatly reduced the population size at an early generation, thus necessitating large initial populations for breeding for multiple traits.

Posters

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2	**EFFECTS OF 2,4-D AND GLYPHOSATE ON SOUTHWESTERN PEANUT.** **R. W. PETERSON[1],** T. A. BAUGHMAN[1], W.J. GRICHAR[2], D. L. TEETER[1]; 1Oklahoma State University, Ardmore, OK, 2Texas A&M AgriLife Research, Yoakum TX.	**143**
3	**Economic Analysis of Yellow Nutsedge Control in Peanuts.** **A. RABINOWITZ*** and A.R. SMITH, Department of Agricultural and Applied Economics; T. GREY and R. S. TUBBS, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793-0748.	**144**
4	**Comparison of Early Postemergence Residual Herbicides in Peanut.** **M.W. MARSHALL***, C.H. SANDERS, Edisto Research and Education Center, Clemson University, 64 Research Road, Blackville, SC 29817	**145**
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6	**Aggressiveness of Sclerotinia minor and S. sclerotiorum on Runner Peanut.** K. HURD, M. EMERSON, and **T. R. FASKE***, Lonoke Extension Center, University of Arkansas, Division of Agriculture, Lonoke, AR 72086.	**147**
7	**Thimet® for Thrips Management, TSWV Suppression, and Yield Protection in Peanuts in the Southeastern US.** **N. FRENCH*** & L. BEDNARSKI. AMVAC Chemical Corporation, Newport Beach, CA 92600.	**148**
8	**Peanut Burrower Bug (Hemiptera: Cydnidae) Distribution and Management in Southeast US Runner-Type Peanut.** **M.R. ABNEY***, B.L. AIGNER, Department of Entomology, University of Georgia, Tifton, GA 31793; P.M. CROSBY, University of Georgia Extension, Swainsboro GA 30401; S. HOLLIFIELD, University of Georgia Extension, Quitman, GA 31643.	**149**
9	Poster Changed to Oral Presentation	
10	**Peanut Consumption in Malawi: An Opportunity for Innovation** **A.P. GAMA***, K. ADHIKARI, Department of Food Science and Technology, The University of Georgia, 1109 Experiment St, Griffin, GA 30223; D. HOISINGTON, Peanut and Mycotoxin Innovation Lab, The University of Georgia, 217 Hoke Smith Building, Athens, GA 30602.	**150**
11	**Intervention Strategies to Prevent Post-harvest Loss and Contamination in Peanut in Haiti, Ghana, Malawi, Mozambique and Zambia during the 2012-2016 Project Term of the Peanut & Mycotoxin Innovation Lab.** **J. RHOADS*** and D. HOISINGTON, Peanut & Mycotoxin Innovation Lab, The University of Georgia, Athens, GA 30602; and the Entire PMIL Research Team.	**151**

Potential for Anthem Flex Herbicide Use in Peanut.

W. J. GRICHAR*, Texas A&M AgriLife Research, Corpus Christi, TX 78406; T. A. BAUGHMAN, Oklahoma State Univ., Ardmore, OK 73401; P. A. DOTRAY, Texas A&M AgriLife Research, Lubbock, TX 79403.

Field studies were conducted during the 2015 and 2016 growing seasons in south Texas near Yoakum, the High Plains of Texas near Brownfield, and southwestern Oklahoma near Ft. Cobb to determine peanut response and weed control following the use of a pre-mixture of pyroxasulfone plus carfentrazone (Anthem Flex). No injury was noted at either Texas location; however, at the Oklahoma location in 2015, pyroxasulfone plus carfentrazone at 0.11 kg ha^{-1} applied preemergence (PRE) resulted in 8 to 30% injury when rated 11 weeks after planting (WAP) while in 2016 no injury was noted at 13 WAP. The increased injury noted in 2015 was due to excessive rainfall (> 100 mm) received the first 2 WAP.

Texas millet [*Urochloa texana* (Buckl.)] control with pendimethalin plus the premix of pyroxasulfone plus carfentrazone at 0.05 to 0.11 kg ha^{-1} applied PRE has been at least 70% when rated early-season but control has decreased as the growing season progressed especially with the lower rate. Pyroxasulfone plus carfentrazone applied POST has provided inconsistent Texas millet control. Palmer amaranth (*Amaranthus palmeri* S. Wats.) control with PRE applications of pendimethalin plus pyroxasulfone plus carfentrazone have been at least 78% season-long while POST applications of pyroxasulfone plus carfentrazone have provided inconsistent control (24 to 100%). Pendimethalin plus pyroxasulfone plus carfentrazone has provided excellent early-season (> 90%) smellmelon (*Cucumis melo* L. var. *Dudaim* Naud.) control with at least 80% control late-season in most instances. Ivyleaf morningglory (*Ipomoea hederacea* Jacq.) control has been inconsistent with excellent season-long ($\geq$ 80%) in 2015 but poor (< 60%) late-season control in 2016. Reduced peanut yields were noted with pyroxasulfone plus carfentrazone in Oklahoma in 2015 but this was due to the excessive season-long injury issues. Yields were not obtained at any other locations.

In summary, the premix of pyroxasulfone plus carfentrazone appears to have potential for use in peanut especially for control of many small-seeded annual broadleaf weeds that continue to plague many peanut growers across the southwest. For effective broad-spectrum annual weed control season-long, the addition of pendimethalin to PRE applications will be required. Additional studies will be conducted in 2017 to better understand the potential for peanut injury with certain environmental conditions.

Effects of 2,4-D and Glyphosate on Southwestern Peanut

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The inability to control Palmer amaranth (Amaranthus palmeri) has led to a tremendous interest in the new herbicide technologies available for controlling weeds in cotton. Rapid adoption of Xtend and Enlist technologies is expected in the southwest for controlling Palmer amaranth. Most of the peanut acreage in Oklahoma and Texas is grown adjacent to these same cotton acres. There is concern among producers of how combinations of 2,4-D or dicamba + glyphosate will affect peanut. Therefore, studies were established in Oklahoma and Texas to determine how varying rates and application timings of 2,4-D + glyphosate would injure and affect yield of peanut.

Trials were established in 2016 in Southwestern Oklahoma at the Oklahoma State University Research Station near Fort Cobb and in South Texas near Yoakum, TX. 2,4-D + glyphosate were applied at 1X, 1/2X, 1/4X, 1/8X and 1/16X of the labeled rate for each. Thess rates were based on a 1X rate of 1.0 lb ae/A for both 2,4-D and glyphosate. Each of the rates were applied at 30, 60, and 90 days after planting (DAP). All herbicides were applied with a CO2 backpack sprayer calibrated to deliver 10 GPA. Trials were maintained weed free throughout the season by either application of PRE and POST herbicides labeled in peanut or through hand weeding. Plots were visually evaluated for visual injury and stand reduction. Peanut were allowed to field dry and harvested with a commercial combine and weighed to determine yield.
Peanut stands were reduced at the Oklahoma location less than 5% with all application rates and timings except with 2,4-D + glyphosate at the 1X and 1/2X rate applied 30 DAT. These reductions in stands were still observed until over 90 DAP. Peanut injury 2 weeks after treatment (WAT) was greater than 10% with 1/2, 1/4, and 1X rates at all 3 application timings. Injury was greater than 10% when the 1/8X rate was applied at 30 and 60 DAP. Peanut injury was over 75% with the 1X rate applied 30 DAP. Peanut injury evaluated at the end of the season prior to harvest was greater than 10% with the 1/2 and 1X rates applied at all 3 timings and the 1/4X rate applied at 60 DAP. Injury was over 50% at the end of the season with the 1X rate applied at 90 DAP. Peanut injury was greater than 10% in South Texas with all rates of 2,4-D + glyphosate when applied at 30 and 60 DAP season long except when visually evaluating the 1/16X rate applied at 30 DAP (season long) and 60 DAP (2 WAT). Peanut injury was less than 10% with all 90 DAP treatments except the 1X rate evaluated 7 WAT. Peanut yields in the weed free checks were over 6000 lb/A in Oklahoma. Yields were reduced compared to the untreated check with the 1/4, 1/2, and 1X rate at all 3 application timings and the 1/8X rate applied 60 DAP. Peanut yields were reduced in South Texas with the 1/8, 1/4. 1/2, and 1X rates when applied 30 DAP. All 60 DAP application rates reduced yields when compared to the weed free check. While the 1X application rate was the only rate applied at 90 DAP that reduced yields. This research indicates that even low rates of 2,4-D in combination with glyphosate can reduce peanut yields, while spray equipment contamination or higher rates associated with drift can lower yields substantially. Growers should take care to make sure that spray equipment is properly cleaned and avoid spray drift on to neighboring peanut fields.

Economic Analysis of Yellow Nutsedge Control in Peanuts.

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One of the universal weeds to all peanut production areas is the yellow nutsedge (Cyperus esculentus). Yellow nutsedge tubers are similar in size and smoothness to shelled peanut. Extension Specialists from Alabama, Florida, Georgia, Oklahoma, North Carolina, and South Carolina identify nutsedge species as being among the most common and troublesome weeds in peanuts. Nutsedges tubers can lead to the greatest mass of foreign material in shelled peanut due to the similarity in size.

The goal of this research is to evaluate the use of herbicides on yellow nutsedge growth to determine the effect on grade and net return to growers. Peanuts were planted in April and all inputs evaluated based on enterprise budgets. Strongarm (0.45 oz 1x) and Cadre (4 oz 1x) were PRE and POST applied at ¼, ½, and 1x recommended rates in order to evaluate the effects on nutsedge control as compared to a non-treated control. Control was visually rated, as well as the tuber mass quantified by sampling plots before planting and at the end of the season prior to harvest. Within a plot, nutsedge infestation was quantified by excavating 24” wide by 24” long by 6” deep sections. At harvest, each plot was sampled to determine the level of foreign material. Foreign material was analyzed to determine the mass of nutsedge tubers, and then correlated to herbicide rate to establish the effect of reduced rate on tuber contamination. The economic effects was analyzed by using the current UGA enterprise budget for peanut production and grade results including SMK and foreign material to determine costs and returns. Cost associated with cleaning due to foreign material were estimated at the buying point level as well as the processing level to determine the total cost of potential savings benefit of nutsedge control. All data was analyzed with mixed model ANOVA, and regression when appropriate for herbicide rate, tuber number, and foreign material.

Comparison of Early Postemergence Residual Herbicides in Peanut.

M.W. MARSHALL*, C.H. SANDERS**,** Edisto Research and Education Center, Clemson University, 64 Research Road, Blackville, SC 29817

Weeds compete with peanuts for water, nutrients and light. For example, Palmer amaranth is the most common and troublesome weed in row crop fields across South Carolina due to its growth characteristics including rapid growth rate, drought tolerance, and high reproductive potential. Currently, herbicide programs in peanuts rely extensively on two modes of action: PPO-inhibitors (i.e., Valor SX) and ALS-inhibitors (i.e., Cadre). Several new herbicides are being evaluated in peanuts including Outlook and Zidua. Zidua programs in other crops including soybean and corn demonstrate good efficacy on Palmer amaranth. Crop tolerance across multiple environments and years is not known; therefore, the objective of this research is to evaluate the efficacy of herbicide programs with early postemergence (POST) residual herbicides in peanuts combined with a standard herbicide program. Field studies were conducted in 2015 and 2016 at the Clemson University Edisto Research and Education Center near Blackville. Experimental design was a randomized complete block design with 4 replications. Individual plot sizes were 4 rows by 40 ft long. At-plant herbicides were Valor SX at 3.0 oz/A or Solicam at 1.25 lb/A + Valor SX at 1.5 oz/A. Early POST herbicide rates were Outlook at 12 oz/A, Warrant at 3 pt/A, Zidua at 2.0 oz/A, or Dual Magnum at 1.0 pt/A plus Gramoxone at 12 oz/A and Storm at 1.5 pt/A. At 30 days after planting, Cadre at 4.0 oz/A was applied at the mid POST (MPOST) timing to all plots except untreated check. Crop injury visual ratings and weed control efficacy were collected 14, 28, and 42 days after planting, at EPOST timing, at MPOST timing, and 14 days after MPOST application. Peanuts were machine harvested on October 23, 2015 and October 28, 2016. In-season peanut visual injury was minimal across the herbicide treatments. The addition of a residual herbicide in the early postemergence timing provided good to excellent control of Palmer amaranth and large crabgrass at 28 days after preemergence treatment (DAT). However, Palmer amaranth control declined to 83% in treatment #3 at 42 DAT. The remaining treatments provided between 88 and 95% control of Palmer amaranth. Pitted monrningglory population pressure was very high at this test site and control values across all treatments were reduced (74-80% control at 42 DAT). The Cadre application at 28 DAT did not control the existing populations of pitted morningglory. All residual treatments were very effective on large crabgrass. No significant differences were observed in peanut yield across treatments (except untreated control, treatment #9). In summary, postemergence residual tank mix partners including Zidua, Outlook, Warrant, and Dual Magnum provided good to excellent residual control of important weeds, such as Palmer amaranth and large crabgrass.

Disease Interaction of Late Leaf Spot and Stem Rot on Peanut.

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Under standard production conditions in the field, peanuts are commonly exposed to multiple diseases. The occurrence or severity of one disease can potentially affect the development of another disease through such mechanisms as microclimate modification. In 2016, field experiments were initiated to study the potential interaction of late leaf spot and stem rot in peanut. To manipulate levels of late leaf spot defoliation, three programs of late leaf spot management (5, 4 and 3 chlorothalonil applications) were applied across 4 peanut varieties (Georgia 12Y, TUFRunner 511, Georgia 13M, and Georgia 06G) via a split-plot design in three fields. Within canopy and soil temperature were measured from 56 days after planting until inversion. Fungicide management program, variety and the interaction thereof significantly affected late leaf spot severity. However, among these factors only variety significantly affected stem rot severity. Georgia 13M showed the most severe late leaf spot defoliation followed by TUFRunner 511. Within canopy maximum daily temperatures were not significantly different among treatments, despite significant differences in canopy defoliation. Data from 2016 did not suggest the presence of a significant interaction between late leaf spot and stem rot under the conditions experienced in the trial. A lack of an interaction between the two diseases benefits growers and peanut production in the sense that it simplifies management recommendations.

Aggressiveness of *Sclerotinia minor* and *S. sclerotiorum* on Runner Peanut.

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Sclerotinia blight caused by *Sclerotinia minor* and *S. sclerotiorum* were recently reported on peanut in Arkansas. Currently, there is little information on the aggressiveness of these species on runner peanut. Inoculum used in these experiments was an agar plug collected from a culture that was actively growing on PDA. Runner peanut cultivars consisted of 'Georgia 09B' 'Georgia 06G'and 'FloRun 107'. Because *S. sclerotiorum* is the causal agent of white mold of soybean, three soybean cultivars were included in this study. Six-wk-old peanut plants were inoculated on the main stem, while soybean seedlings at V1 growth stage were inoculated on a cotyledonary leaf. Inoculated plants were incubated for six days in a humidity chamber. Percent infection on peanut was 85% for *S. minor* and 33% for *S. sclerotiorum*. In soybean, *S. minor* caused 30% infection, whereas *S. sclerotiorum* caused 75%. Of the infected plants, *S. minor* produced a 50% greater lesion on peanut compared to that of *S. sclerotiorum*; however, in soybean, *S. sclerotiorum* caused a 50% greater lesion compared to that of *S. minor*. In this study, *Sclerotinia minor* was the more aggressive species on peanut, which supports field observations and suggests that between species, *S. minor* is of a greater concern for peanut production in Arkansas.

Thimet® for Thrips Management, TSWV Suppression, and Yield Protection in Peanuts in the Southeastern US.

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Tobacco thrips remain a significant insect pest of peanuts across the southeastern United States, and management challenges have arisen due to reduced sensitivity to neonicotinoid insecticides (imidacloprid and thiamethoxam). In prior research, Thimet®20G insecticide has lowered damage ratings from tobacco thrips, reduced incidence of tomato spotted wilt virus (TSWV), and increased yield compared with untreated peanuts.

In 2016, a regional study consisting of twelve replicated, small plot tests examined the effects of Thimet® 20G on tobacco thrips damage, incidence of TSWV and peanut yield. All peanut seed was treated with a base fungicide treatment of Dynasty® PD. The trials were conducted by University or Extension scientists located in AL, GA, NC, SC, and VA. Insecticide treatments included Thimet 20G, Velum® Total, and Admire® Pro, each applied in-furrow at planting, with an additional treatment of AgLogic™ at four locations (noted as Second Summary).

First Summary (12 locations): Thrips damage ratings were lower with Thimet compared with Admire Pro, Velum Total, and peanuts not treated with insecticide (Dynasty PD). Incidence of TSWV was lower with Thimet compared with all other treatments. Thimet (+309 lb/A or +6%) and Velum Total (+304 lb/A or +6%) increased peanut yield compared with Dynasty PD (4,876 lb/A), and Admire Pro (+48 lb/A or +1%) offered a very slight increase. Combined and summarized across four years of field trials and 110 observations, Thimet averaged a yield gain of 283 lb/A above Dynasty PD alone, a value of $63/A for peanuts at $360/ton.

Second Summary (4 locations in GA): Thrips damage ratings were lower with all at-planting insecticides compared with Dynasty PD. Incidence of TSWV was lower with Thimet compared with all other treatments. Thimet (+388 lb/A or +7%) provided the largest increase in peanut yield above Dynasty PD (5,189 lb/A) followed by AgLogic (+294 lb/A or +6%) and Velum Total (+105 lb/A or +2%), while Admire Pro (-146 lb/A or -3%) did not improve yield.

In an additional peanut varietal study in Georgia, incidence of TSWV was consistently lowered with Thimet (11%) compared with untreated peanuts (19%) across 10 peanut varieties.

Results from 2016 support prior findings that Thimet is a very suitable tool for managing tobacco thrips and lowering incidence of TSWV in peanuts while offering a different insecticide mode of action compared with the neonicotinoid insecticides found in Admire Pro and Velum Total.

Peanut Burrower Bug (Hemiptera: Cydnidae) Distribution and Management in Southeast US Runner-Type Peanut.

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The peanut burrower bug, *Pangaeus bilineatus,* has become an annual pest of peanut in the southeast US, and the insect is capable of causing significant economic loss when environmental conditions are favorable. Our understanding of where and why peanut burrower bug infestations occur is lacking, and this presents a major challenge for the development of pest management tools. The work described here was undertaken to improve knowledge of the pest's distribution and biology and to evaluate the effectiveness of potential management tactics.

This study used light traps to monitor *P. bilineatus* flight activity across two growing seasons at commercial peanut fields in Georgia. On-farm replicated studies in 2015 and 2016 evaluated the effect of tillage practices, insecticide active ingredient and insecticide application timing (days after planting and time of day) on *P. bilineatus* abundance and damage to peanut at harvest. Deep tillage prior to planting and the application of granular chlorpyrifos were shown to reduce the incidence of damage at harvest. *Pangaeus bilineatus* was most abundant in light traps in June, though flight activity was recorded throughout the summer. Additional studies to further characterize environmental risk factors associated with pest abundance and damage and to develop management tools are ongoing.

Peanut Consumption in Malawi: An Opportunity for Innovation

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Prevalence of malnutrition, especially under-nutrition, is high in Malawi. To overcome this problem, the Malawian Government is promoting dietary diversification by supporting production and consumption of underutilized yet nutritious foods such as peanuts. An important first step to promote increased consumption is to identify the needs and wants of the target consumers and then to develop products that address those specific requirements. Unfortunately, peanut consumption habits and the factors that influence peanut consumption in Malawi are not well known. To address this gap, a consumer survey was conducted to investigate the frequency of peanut consumption and preferred forms of peanut consumption in Malawi. Furthermore, factors that influence consumer decisions when choosing peanut products were evaluated.

Out of the 489 respondents surveyed, all but 3 consume peanuts, peanut products, or both. The three who do not eat peanuts and peanut products is due to allergies. A large portion (41%) consumes peanut, peanut products, or both at least three times in a week. The most frequently mentioned forms of peanut consumption in Malawi are roasted peanuts (65%), peanut flour (64%), and peanut butter (63%). However, the most preferred forms are peanut butter (33%), peanut flour (31%), and roasted peanuts (19%). All of these three products were considered to be very nutritious hence; having significant health benefits. Peanut flour preference was mainly due to its versatility since it can be used to season many other foods. The preference for roasted peanuts is primarily due to price and convenience because it is cheap and easy to prepare. Although peanut butter is the most preferred form due to its sensory appeal, its relatively high price hinders consumption.

Given that socioeconomic restrictions often override consumer preferences in Malawi, future peanut-based products' innovations in Malawi should, therefore, explore ways to strike a balance between price and sensory appeal, health benefits, convenience, and versatility.

Intervention Strategies to Prevent Post-harvest Loss and Contamination in Peanut in Haiti, Ghana, Malawi, Mozambique and Zambia during the 2012-2016 Project Term of the Peanut & Mycotoxin Innovation Lab.

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Timely harvest, effective drying and proper storage minimize post-harvest loss and aflatoxin contamination in peanut in five target countries that are the main focus of the Feed the Future Innovation Lab for Collaborative Research on Peanut Productivity and Mycotoxin Control (PMIL). Near the end of a five-year program of research involving scientists in the U.S. and abroad, value chain projects in Haiti, Ghana and southern Africa have demonstrated the effectiveness of certain post-harvest strategies, including specific drying systems. At the same time, research has clarified the source of contamination in marketed peanut products in Malawi and Ghana, creating training opportunities to improve processing and prevent avoidable contamination. A summary of these findings and the implications for scaling to farmers in these countries will be presented.

Resveratrol Content in Thirty Peanut Varieties from Southern Mexico.

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Resveratrol is an organic (polyphenol) molecule produced by peanut seeds under stress conditions. Mexican peanut germplasm has not been characterized for this trait. The purpose of this paper is to present some information about resveratrol content of both peanut commercial varieties and inbred lines. Raw peanut seeds from thirty commercial and inbred lines were analyzed using a HPLC Equipment. Seeds were grown during 2014 rainy season, at State of Morelos, Mexico. A very large variation of resveratrol content was found. The values varied from 271 to 1320 ppm, in C. Chapulhuacan and 2-06Ch, respectively. The first one is adapted to a region (huasteca hidalguense),where rain is over 1000 mm. 2-06 Ch is more adapted to State of Morelos, a region where drought is frequent. Average resveratrol content in peanut bunch growth habit was 440 ppm. Meanwhile in spreaders growth habit, mean resveratrol content was 813.8 ppm. These results show that spreaders and bunch peanut varieties vary in their capability to produce resveratrol, under the same environment conditions. It is clear that spreaders and runners peanut varieties are more sensitive to drought, that those of bunch growth habit. So, it seems that each group of peanut varieties has different ability for producing polyphenol (resveratrol).

Preliminary Work in Measuring Peanut Canopy Architecture with LiDAR.

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Peanuts are susceptible to many diseases, and fungicides account for a significant portion of production costs. Temperature and high humidity, especially within the peanut canopy, are major factors contributing to disease incidence and severity. Physical characteristics of peanut cultivars, such as density, shape, and height, greatly affect canopy microclimates. However, manual approaches to quantify these physical characteristics are laborious and may be subjective. A preliminary study was conducted using a ground-based LiDAR sensor to measure the profiles (density, shape, and height) of peanut canopies. A field data collection system was developed, and data were collected in 2015 using three cultivars (Georgia-04S, Southwest Runner, and McCloud). Algorithms to process the line-scan data into images and to analyze the image data were developed. The three cultivars had unique canopy architecture parameters, and the developed model was able to classify the cultivars with an average accuracy of 89%. This information works toward developing a high-throughput system for phenotyping peanut canopy structure which will be useful to peanut breeders.

Calibration of CROPGRO model for Brazilian Peanut Cultivar.

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Crop simulation models are defined as a set of equations related to biophysical processes to estimate the growth, development and production of a culture from genetic factors and environmental variables, this allows analyzing various components of production. The goal was to calibrate the Peanut CROPGRO model to estimate the growth and development of peanut cultivar Runner IAC 886.

One experiment was conducted in a greenhouse in the experimental area of the Biosystems Engineering Department of ESALQ/USP, Piracicaba, SP, in boxes of 100 L filled with Red-Yellow Latosol (LV) soil, in the period between September 2015 and January 2016. The experimental outline used was randomized blocks with four repetitions. The treatments were composed by biometric and productivity assessments in five seasons (77, 93, 100, 106 and 130 DAP – days after planting) using surface drip irrigation system. The genetic coefficients to cultivate have been modified to obtain the best adjustment between observed and model-simulated data, seeking desirable values for the correlation coefficient (R^2) and Willmott's index (d).

The calibration of the coefficients related to phenology was satisfactory when compared the dates of occurrence of phenological events observed with the simulated. Thus, the model simulated satisfactorily the growth and development of peanut cultivar Runner IAC 886.

Screening of the U.S. Peanut Germplasm Mini-Core Collection for Resistance to Sclerotinia Blight.

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Sixty-seven of the 112 accessions comprising the U.S. Peanut Mini-Core Collection were evaluated in 2013-2015 for resistance to Sclerotinia blight, caused by Sclerotinia minor. Susceptible cultivar Okrun, and resistant cultivars Southwest Runner, Tamnut OL06, and Tamspan 90, were included for reference. Entries were grown in two-row plots, each 1.8-m wide and 4.6-m long, using a randomized complete block design with three replications. Moderate to low levels of Sclerotinia blight were observed in 2013 and 2015, but more disease was observed in 2014, with 69% disease incidence in Okrun, and 6-7% in Southwest Runner, Tamnut OL06, and Tamspan 90. Disease incidence was averaged over the 3 year period. Five mini-core accessions (Core Collection/PI nos.: 227/290566; 233/290536; 287/355271; 342/298854; 805/355268) were highly susceptible to Sclerotinia blight and averaged 39-46% disease incidence. Significant resistance to Sclerotinia blight (<10% disease incidence) was observed in 35 accessions over the three years tested. Mini-Core accessions were also genotyped using a SSR molecular marker shown to be associated with Sclerotinia blight resistance. An r = -0.68 was observed between disease incidence and genotype peak height ratio, suggesting a significant correlation between the marker and disease resistance. This information will be useful to peanut breeders seeking sources of Sclerotinia blight resistance to introgress into elite lines.

Yield Performance of Runner, Spanish and Virginia Cultivars and Breeding Lines in West Texas.

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Field trials were conducted near Brownfield, Seminole (2 locations) and Quail Texas to evaluate the performance of Runner, Spanish and Virginia peanut cultivars and breeding lines. Pod yields for Spanish cultivars and breeding lines varied by location averaging 5174, 4465, 5275 and 3511 kg ha^{-1} at the Brownfield, Seminole 1 and 2, and Quail locations, respectively. Overall, yields were highest for the breeding line Algrano 0247 (4963 kg ha^{-1}) followed by AT 9899 (4913 kg ha^{-1}) and lowest for ACI 236 (4427 kg ha^{-1}) and Schubert (4352 kg ha^{-1}). In the Virginia trials, yields ranged from 3743 kg ha^{-1} at the Quail location to 5087 kg ha^{-1} at the Seminole 2 location. When averaged across all locations, yields were greatest for Florida Fancy (5760 kg ha^{-1}) and Algrano 442 (5664 kg ha^{-1}) and lowest for Sullivan (3039 kg ha^{-1}). Pod yields for Runner cultivars and breeding lines averaged 5799, 5953, 6560 and 4060 kg ha^{-1} at the Brownfield, Seminole 1 and 2, and Quail locations, respectively. The highest yields were produced by the breeding line Algrano 0752 (6432 kg ha^{-1}), followed by the cultivars Lariat (5928 kg ha^{-1}) and Webb (5734 kg ha^{-1}). Although only included in two trials (Brownfield and Quail), pod yields for the breeding lines TX-24306, TX-25602 and TX-1134 where similar to the aforementioned Runner entries averaging 5764, 5598 and 5334 kg ha^{-1}, respectively. Yields were lowest for the cultivars Quick Runner 14 (5097 kg ha^{-1}) and Algrano 808 (5036 kg ha^{-1}), whereas, yields for commercial standards Georgia-09B and Tamrun OL11 averaged 5521 and 5430 5097 kg ha^{-1}, respectively. In general, yields were highest for Runner cultivars and breeding lines. Yields for Spanish and Virginia entries were similar. Additional studies evaluating these and other cultivars and breeding lines are needed.

NuMex-02 – A High Oleic Valencia Peanut with Partial Resistance to Sclerotinia Blight.

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'NuMex 02' is a high oleic Valencia peanut (*Arachis hypogaea* L. subsp. *fastigiata* var. *fastigiata*) cultivar, developed by the New Mexico Agricultural Experiment Station and is ready to be released in 2017. NuMex 02 originated from a cross made between 'New Mexico Valencia A' (NM Valencia A) and 'Olin'. NM Valencia A has predominantly 3 to 4-seeded pods, while Olin has mostly two-seeded small seeded Spanish pods. Pedigree selection was practiced based on oil quality as determined by high oleic (O)/linoleic (L) fatty acid ratio, pod size and shape, seeds per pod, seed size, testa color, market type (Valencia), maturity, yield, and grade characteristics. The selected segregants with these characteristics were advanced by single seed descent method until F_4. Phenotypically uniform progenies were bulk harvested to conduct yield trials in F_5. Performance tests in replicated trials across eastern New Mexico and west Texas began in 2012 and continued until 2016. NuMex 02 was tested under identity as 308-2. It matures in 125 days, similar to the control cultivar, NM Valencia A. Averaged across fifteen season-locations, NuMex 02 has produced 10% higher pod yield and showed 4% greater 100-seed weight than NM Valencia A (average pod yield 3068 kg ha^{-1}; 100 seed weight 46.5 g). NuMex 02 is an high oleic Valencia peanut cultivar released (O/L ratio 23.3 compared to 1.1 in NM Valencia A). It has sweet taste and good roasted flavor attributes and partially resistant to Sclerotinia blight.

Evaluation of Population Parental Lines of Peanut (*Arachis hypogaea* L.) for Juvenile Resistance to Late Leaf Spot (*Cercosporidium personatum*)

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The development and use of resistant cultivars is one of the most desirable ways to manage late leaf spot (*Cercosporidium personatum*) in peanut (*Arachis hypogaea* L.). The creation of large recombinant inbred line populations to develop and use genetic markers for marker-assisted selection has become a primary objective in breeding programs. Screening of diseases in juvenile plants could increase the efficiency of these techniques and provide indication of possible additional mechanisms of resistance. The objective of this study was to compare susceptibility of parental lines of mapping populations at the juvenile growth stage (from emergence to 50 days after planting (DAP)) to infection by *C. personatum*. Field trials were conducted at Attapulgus, GA in 2015 and 2016 and in Tifton, GA in 2016 in which incidence (percentage of leaflets with one or more lesion) in 16 genotypes was compared. The entries included SPT 06-06 and Tifrunner which show a moderate level of field resistance to *C. personatum*, and NC 3033, GTC-20, New Mexico Valencia A, OLin, and Georgia Valencia, which are highly susceptible to *C. personatum*. Susceptible cultivars Georgia Green, Georgia-06G, and Georgia-12Y were also included. In all trials, border rows of susceptible cultivar TUFRunner 511 were planted in May or early June. Plots were planted in September, after epidemics in the border rows were severe. Incidence was evaluated twice, at 30 and 39 DAP in 2015, and five times in each location in 2016 (19-38 DAP in Attapulgus, and 22-50 DAP in Tifton). In 2015, highest incidences were observed in Georgia Valencia and New Mexico Valencia A. In 2016, across locations highest incidences and standardized area under the disease progress curve (SAUDPC) values were in Georgia Valencia, GT-C20, OLin, New Mexico Valencia A, NC 94022, and Florunner. In 2015, lowest incidences were in NC 3033, N08082, OLin, Georgia-09B, Georgia Green, and SPT 06-06. In 2016, lowest incidences were in Georgia-06G, Georgia Green, NC 3033, SPT 06-06, Florida-07, and Tifrunner. Results indicate all genotypes evaluated were susceptible to infection by *C. personatum* before 50 DAP and showed varying levels of disease. There was no indication of resistance to late leaf spot in juvenile plants that would prevent infection in the presence of high amounts of inoculum. Although SPT 06-06 was among the genotypes with the lowest incidence in both years, it was not different from several more susceptible cultivars such as Georgia Green, Georgia-06G, and NC 3033, which had higher severity ratings than SPT 06-06 in previous standard leaf spot evaluations. These results indicate that assessments of late leaf spot on juvenile plants are not good predictors of resistance to late leaf spot in mature plants in season long evaluations.

Field and lab evaluation of Virginia-type germplasm for *Sclerotium rolfsii* tolerance

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Stem rot (white mold), caused by *Sclerotium rolfsii* has caused severe losses in several crops, including peanuts, in the Hula Valley, Israel. Fungicides that efficiently reduce the damage caused by *S. rolfsii* in the USA are not satisfactory in the Hula Valley, probably because of adsorption of the chemical to mineral or peat soil. Peanut cultivars grown in Israel are of the Virginia type, characterized by large pods, and intended for the in-shell market. **The long-term objective** of this project was to reduce peanut sensitivity to *S. rolfsii* by evaluating the genetic tolerance of peanut varieties. **The specific objectives addressed in the present report are:** (i) Phenotype analysis of peanut tolerance to *S. rolfsii* by screening recombinant inbred lines (RIL) derived by crossing the thick-shelled, spreading-type cv. `Hanoch` with the bunch-type, thin-shelled cv. `Harari`; (ii) to develop biological assays to screen tolerance of isolated stem segment. **Methods and Results**: (i) Sixteen RILs and their parental lines were artificially inoculated in the field by placing hyphal plugs of *S. rolfsii* near the root neck of 100-day-old plants, and assessing the vitality of the directly infected plants just before harvest. High correlations were found between the vitality of the directly infected plants and that of adjacent plants (R=0.75) and the infection level of infected pods (R=0.65). The spreading lines were significantly more sensitive to the infection than the bunching lines, with strong correlations, at p=0.08 or p=0.006, with the directly infected or adjacent plants, respectively. Moreover, shell strength was highly correlated with vitality of the infected or adjacent plant, with probabilities of p=0.09 and p=0.06, respectively. No correlations were found between vitality and pod shape or pod reticulation. Estimation of the relative vitality of infected plants showed that RIL-B14 and RIL-B77 had the lowest vitality, and RIL-B65, 256 and 43 the highest. (ii) Infection in the lab of stem segments of ‘B65’, ‘B77’, ‘Hanoch’ and ‘Harari’ revealed that hyphal coverage of the stem was significantly higher in ‘B65’ than in ’B77’ and ‘Harari’ (p<0.05), and necrosis was significantly greater in ‘B65’ than in ‘Harari’. **In conclusion:** We found that spreading growth habit and thin-shelled pods were correlated with sensitivity to *S. rolfsii*. For instance, the bunch-type, thick-shelled ‘B65’ was among the least sensitive lines to *S. rolfsii* infection. These results are in agreement with those of an experiment performed last year in a naturally inoculated field. However, they disagree with *in vitro* assay findings that necrosis and hyphal spread were higher in ‘B65’ stem segments. Further study is needed in order to understand the mechanism of *S. rolfsii* infection and disease spreading.

Overview of a Global Peanut Breeding Initiative during the 2012-2016 Project Term of the Peanut & Mycotoxin Innovation Lab.

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In most low-input peanut production systems in Africa, the greatest potential for improved productivity and income is through the use of improved germplasm. During the 2012-2016 PMIL project cycle, a global breeding initiative was led that included national program breeders from Burkina Faso, Haiti, Ghana, Malawi, Mozambique, Senegal, Uganda and Zambia, in partnership with breeders and scientists from US universities, including University of Florida, University of Georgia, New Mexico State University, and Texas A&M University. This effort resulted in the release of numerous varieties, the exchange and evaluation of new germplasm in multiple locations, and the establishment of better working relationships with regional breeding initiatives. In addition, efforts were made to evaluate the impact of improved varieties introduced during this and a previous research initiative. This poster presents the summary findings and suggests future efforts to improve impact.

Genome Editing Using CRISPR/Cas9 System in Peanut

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CRISPR/Cas9 technology has dramatically impacted functional genomics studies and has become a powerful tool for plant scientists. The CRISPR/Cas9 system has been used to alter gene expression in complex genomes such as soybean. Studies on candidate genes for biotic and abiotic stresses in peanut, an allotetraploid species, is complicated by the laborious effort to obtain transgenic plants and by its large genome size. We transformed the CRISPR/Cas9 vector targeting a TIR-NBS-LRR candidate gene for nematode resistance into embryogenic tissues by biolistic bombardment and also applied *Agrobacterium rhizogenes*-mediated hairy root transformation. In this study, it is demonstrated that CRIPR/Cas9 was functional in transgenic hairy roots and transgenic embryogenic tissues. Target DNA mutations were detected in 72% of the hairy roots and at a frequency of 6.5% in transgenic embryogenic tissues. A polyacrylamide gel electrophoresis-based (PAGE) method was used to screen for biallelic mutations on the transgenic lines to enable further functional validation of the candidate resistance gene.

Microsatellite Markers revealed Genetic Diversity within Cultivated Peanut Varieties

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Fifteen peanut varieties were genotyped with 300 SSR markers. Among the varieties twelve belong to the Spanish-type and three to the Virginia-type. These varieties are constrasting for different traits including drought tolerance, pre-harvest aflatoxin contamination resistance, seed quality traits, earliness, diseases resistance and yield and yield related traits.

Among the markers used, one hundred and sixty SSR markers detected polymorphism among the varieties. The averaged number of allele per marker was 3 and the highest was 7 alleles. TC11H06, Seq19D06, IPAHM103, Seq9A07, Seq14H06, Seq3A08, TC25G11, Seq15C10, TC27H12, TC23H09, Seq9A08 et PM050 were the most polymorphic markers revealing a least 5 alleles among the panel of genotyped varieties.These markers are being used for advancement of different populations involving different parents and for selection of numerous traits.

Development of Diagnostic Markers from Disease Resistance QTLs for Marker-Assisted Breeding in Peanut.

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Breeding for disease resistance in peanut cultivars has been constrained due to both a narrow genetic base and a low degree of polymorphism. Earlier attempts have resulted in the development of a few hundreds of simple sequence repeat (SSR) markers in peanut that could define broad QTL on the physical map. The scarcity of markers on generated maps, however, impeded the development of trait associated markers. In order to narrow these QTL regions, and place additional markers in the SSR-defined QTL previously identified, we used the whole genome re-sequencing (WGRS) and/or 58k SNP array derived SNP markers to genotype RIL mapping population such as the “T” derived from Tifrunner x GT-C20. These markers have been used to develop a high density genetic map for fine-mapping of QTLs. In order to utilize the identified QTLs and the released peanut reference genome sequences, we are attempting to develop and validate diagnostic markers for application in marker-assisted breeding. For example, BLAST results of EST sequences containing the SSR markers defined the originally identified QTL of sizes, 115.43 Mb, 85.2 Mb and 0.8 Mb for *Tomato spotted wilt virus* (TSWV), early, and late leaf spot (ELS and LLS), respectively, on the physical map. This current study has identified 611, 1424 and 21 SNPs within these broad QTL regions on chromosomes A04 and A06 for TSWV, ELS, and LLS, respectively. The newly developed SNP markers within the QTL will not only provide a better resolution of the QTL, but also result in more robust marker-trait associations. Also, with the availability of WGRS data of additional mapping population such as the “S” of SunOleic 97R x NC94022, more SNP markers linked to disease related traits will be identified. This information will be used to develop diagnostic markers that can be utilized for broad applications in marker assisted selection in breeding programs, and for possible map-based cloning of these genes.

Targeted Resequencing in Peanuts using the Fluidigm Access Array

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The presence of homoeologous gene copies in allopolyploid peanut makes it challenging to select for homologous SNPs differentiating two or more cultivars. An integrated approach of improved bioinformatics and targeted resequencing to select homologous SNPs in tetraploid peanut is needed. Raw transcriptome reads were mapped to a synthetic tetraploid genome reference generated by combining A and B genome scaffolds, to separate homoeologous SNPs and homologous SNPs among 10 tetraploid peanut accessions using the GATK pipeline and custom python scripts. SNP containing sequences obtained from GATK were filtered using SWEEP, which is a sliding window protocol that filters SNPs based on haplotypes. SNPs were also identified using the OLin transciptome as reference; also a few SNPs were selected from a peanut SNP chip. Forty-eight targets of around 400 bp length were selected for validation on a Fluidigm Access Array as a proof of concept, followed by mass sequencing on an Illumina MiSeq. Some of these targets consisted of adjacent SNPs that differentiated both A- and B-genome copies together. Eighty–one percent of the SNP calls derived from the Fluidigm–MiSeq protocol were validated for diploids, and 72% of the SNP calls were validated for tetraploids. This approach will benefit tetraploid breeding programs by reducing the cost of genotyping of QTL mapping populations, and contribute to selection of favorable alleles in both genomes.

Towards the Positional Cloning of *Bunch1*, a Single Gene that Controls Branching Habit in Peanut

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Branching habit is an important descriptive and agronomic character of peanut. Yet, both the inheritance and the genetic mechanism that control this trait are not clear. Recently we reported that the spreading/bunch branching habit trait is controlled by a single gene within our Israeli closely related Virginia-type germplasm. The gene termed *Bunch1*, as the recessive allele confers the bunch phenotype. By combining the usage of bulked segregant analysis with NGS, *Bunch1* was initially mapped to the end of A5 linkage group. Here we report about the further fine-mapping and candidate genes analysis that were performed to better characterizing *Bunch1*. Custom Affymetrix Axiom SNP array, recently developed by UGA, was utilized for the fine-mapping procedure. A population of 94 F6:8 RILs derived from the cross Hanoch (spreading) X Harari (bunch) that segregates for *bunch1* was genotyped. Genomic DNA was extracted and applied to the 58,233 SNP clusters of the chip. Out of all of these SNPs, 615 passed through the filtering pipeline, including significant differences between the parental lines and 1:1 segregation among the RILs. Ten SNP markers from the array significantly co-segregated with the phenotype of *Bunch1*, all located in one region at chromosome B5, contrasting our previous study (A5). The best-linked SNP marker (AXX147251194) had only one recombinant out of the 94 checked RILs. The best 3 SNPs markers for *Bunch1* were further validated with Sanger sequencing by using 11 recombinant RILs. This analysis located *Bunch1* within a ~1.1 Mbp segment (B5:145698740..146471101) including ~70 gene models. In order to saturate this genomic segment with additional SNPs, a second round of SNP detection procedure was done by directional mapping of the parental genomic sequences onto the 1.1 Mbp segment, followed by SNP detection by Bowtie2 software and max 2 mismatches restriction. This reveled for dozens new SNPs with several validated by Sanger sequencing. Eventually, the second step decreased the segment to 400kb including ~30 genes. Interestingly, none of previously described genes that control the growth angle in either monocots or dicots (e.g. *LA1*, *TAC1*) were present in that segment, indicating that the genetic controller of *Bunch1* may be novel. Several candidate genes involve in plant hormone metabolism and light reception are located within that region and have been identified as possibly controlling *bunch1*. One of these is a *ATP-binding ABC transporter* (*ABAT*; B05:146200756..146203528) that encodes a family of auxin-specific protein transporters. Interestingly, a "hotspot" for 5-7 SNPs concentration was found in the 2000kb promoter region of *ABAT*, which currently are being analyzed to further narrowing the segment for *Bunch1* in larger segregating populations. This study demonstrates the relatively straight-forward utilization of DNA SNP-array for trait fine-mapping in the low polymeric germplasm of cultivated peanut and provides a baseline for the cloning of *Bunch1*.

Development of a Draft SNP-Based Genetic Linkage Map of a Peanut BC_1 Interspecific Introgression Population.

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Construction of genetic linkage maps for a BC_1 interspecific introgression population derived from a cross between Florunner and TxAG-6 has been done previously using RFLP and SSR markers. Following the development and validation of sub-genome specific SNP markers, efforts have been made to genotype this same BC_1 population. The objective of this study is to develop a draft SNP-based map comprised of KASP markers of this population for high throughput genotyping and QTL analysis. Out of 72 SNP markers scored to date, 37 were placed on nine linkage groups spanning a linkage distance of 561.3 cM and with an average of 15 cM between markers at a LOD score of 2.5. Nineteen SNP markers mapped to two linkage groups on the SSR map whilst 33 SNPs mapped to 13 linkage groups on the RFLP framework map. Most SNP markers in the same linkage group were in the same chromosome of the genome sequence. This provides evidence that the SNP markers designed for this population will be useful for genetic analysis and QTL studies; additional markers are currently under development to increase the density of the map.

Alternative Splicing Eliminates miRNA Binding Sites to Affect Target Gene Expression of CSD1 under Drought Stress

S-Y. PARK and **E.A. GRABAU*,** Department of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, VA 24061

MicroRNA binding sites (MBSs) are frequently interrupted by introns and therefore require proper splicing to generate functional MBSs in mature transcripts. Conversely, MBSs can be excluded from target transcripts during splicing of pre-messenger RNA, leading to different levels of regulation among different isoforms. Cu/Zn superoxide dismutase (CSD) plays a key role in detoxifying reactive oxygen species in response to stress. In this study, levels of miR398 and three different *CSD1* isoforms were analyzed under drought stress in peanut (*Arachis hypogaea*). Expression of miR398 increased under drought stress, but one of the *AhCSD1* isoforms did not show the expected down-regulation. We report that the miR398 binding site of isoform *AhCSD1-2.2* is eliminated as a consequence of alternative splicing, which affects the transcript level under drought conditions. *AhCSD1-2.2* appears to be an allelic polymorphism derived from one of the diploid progenitors (*A. duranensis*) of cultivated allotetraploid peanut. Predicted *CSD1* isoforms from soybean and Arabidopsis revealed a similar pattern where one transcript lacks the miR398 bind site. We hypothesize that under drought stress, *CSD1* transcripts without a MBS allow production of CSD1 proteins for oxidative stress detoxification.

Rapid Progress Through Collaborative Projects in Southeastern Africa: A Peanut and Mycotoxin Innovation Lab Success Story

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Developing a strong data set to improve agronomic practices for peanut production is challenging in areas of southeastern Africa (Zambia, Malawi, and Mozambique). These areas rely upon a single rainy season that historically has seen significant variation in the amount of rainfall and timing of those rains. Linking multiple institutions across three contiguous countries in southeastern Africa permits a more comprehensive evaluation of crop production and pest management strategies over a wide range of weather, soil types, and cultural practices. Collaborations among North Carolina State University, the University of Zambia, the Instituto de Investigacao Agraria de Mocambique, the Universidade Eduardo Mondlane in Mozambique, and the Chitedze Agricultural Research Station, ICRISAT, the Lilongwe University of Agriculture and Natural Resources, and ExAgris in Malawi have all contribute to the development of a useful data base in just three years. Experiments included evaluations of varieties, planting date, row spacing, plant populations, gypsum, crop rotation, pest management, and harvest date.

Overall results indicate consistent findings across the region with a primary focus on optimal planting and harvest dates. Timely planting and harvest provided not only consistent and significant yield increases, but also resulted in higher quality with lower levels of aflatoxin contamination.

Response Surface Optimization of Aqueous-Ethanolic Decontamination of Aflatoxin in Peanut Oil.

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Peanut grade-outs contain high levels of aflatoxin and should be removed from the food chain. Production of oil from such nuts is a safer and profitable diversion because of the lipophobicity of aflatoxin. However aflatoxin carryover in expeller-pressed oils presents a serious safety concern. The aim of the study was to optimize ethanol for decontamination of oil extracted from peanut grade-outs.

Response surface methodology (RSM) coupled with a central composite design (CCD) was employed to optimize ethanol % in aqueous-ethanol solution ($X1$) and aqueous-ethanol/oil ratio ($X2$) for the maximum aflatoxin removal (decontamination) from edible peanut oil. A highly significant ($p < 0.001$) second-order model was obtained to predict aflatoxin decontamination as a function of $X1$ and $X2$. The analysis of variance (ANOVA) indicates that $X1$, $X12$ and $X22$ exerted significant effect at 0.001 significance level (α), while $X1X2$ and $X2$ had effect at 0.05 and 0.1 significance levels, respectively. A maximum aflatoxin decontamination of 96% (from 483µg/kg to 21µg/kg) was obtained under optimum conditions.

Genetic Diversity of *Aspergillus* spp. From Peanut Seeds in Eastern Ethiopia.

P. C. FAUSTINELLI*, A. MOHAMMED, V. S. SOBOLEV, A. MASSA, B. W. HORN, M. C. LAMB, R.S. ARIAS, USDA-ARS-National Peanut Research Laboratory (NPRL), Dawson, GA, 39842, U.S.A.

As an important source of healthy oils, nutrients and proteins, peanut is grown worldwide and its crop area is spraying fast, especially in developing countries. Ethiopia has considerable potential for improving its production area and yield but, as in many other countries, aflatoxins, carcinogen-toxins produced by different *Aspergillus* species, are a major problem for their producers. Weather conditions and farmers' pre and post-harvest practices favor aflatoxin contamination of peanut seeds. Despite all efforts, an effective control in not yet available and, particularly in this country, the data needed for recommendations is rare or nonexistent. The objective of the project was to obtain information about the genetic diversity of the *Aspergillus* species isolated from peanut seeds from Eastern Ethiopia, validating the workflow proposed for Georgia, USA by Faustinelli et al. (in press). More than 180 isolates of *Aspergillus* spp. from the 2014/2015 season were isolated using modified-dichloran rose Bengal (MDRB) medium and 62 were fingerprinted with 23 InDel markers within the aflatoxin-biosynthesis gene cluster (ABC). Cluster analyses were performed and the genomic DNA of 19 isolates representing various clusters were sequenced using illumina® Hiseq2500 at UW-htSEQ, Seattle, WA. Using Geneious R9, the sequence reads were processed and mapped to the aflatoxin cluster of the published *A. flavus* NRRL3357 genome. Three main groups were obtained according to species and strain type.

The workflow already proposed for *Aspergillus* biodiversity studies in Georgia, USA, allowed screening isolates in Ethiopia for aflatoxin production and genotypic variations in the ABC. Cluster analysis permitted the selection of representatives within clusters for whole-genome sequencing, which supplied DNA information necessary to generate an Ethiopia *Aspergillus* database. This new database was added to Georgia's, expanding the *Aspergillus* database generated using DNA-sequencing and providing a full view of the genetic diversity of this toxigenic pathogen.

Aflatoxin Contamination in Whole Peanut Flour Produced by Small Scale Peanut Flour Processors in Malawi: Aflatoxin Awareness and Management Practices

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Whole peanut flour is affordable and widely used in Malawian dishes including in complementary foods for under-five children. Aflatoxins are a major toxins affecting quality and safety of peanuts and peanut products.

A study to determine aflatoxin awareness and management practices among small scale peanut flour processors in Malawi was conducted to understand factors contributing to aflatoxin contamination in peanut flour on the retail market

A total of 166 peanut flour processors were interviewed in open markets from two urban centres (*Lilongwe* n=66, Blantyre n=40) and two peanut growing areas (*Mchin*ji n=28 and *Kasungu* n=31) in Malawi. A kilogram of peanut flour from *Chalimbana*, CG7 and *Nsinjiro* varieties was collected from each participant.

Processors (70.5%) had no awareness of adverse effects of aflatoxin consumption. Drying, cleaning and sorting as implemented by processors, was not in line with appropriate management practices to reduce aflatoxin.

Total aflatoxin content in peanut flours ranged from 0 ppb to 148 ppb. *Mchinji* had the lowest mean contamination; 21.96 ppb (-1.6 to 121.65) followed by Blantyre, 47.03 ppb (0.45 to 148.75); *Lilongwe,* 50.15 ppb (0.7 to 148.4) and *Kasungu,* 56.68 ppb (4.1 to 147.1). Significant differences ($P<0.05$) in aflatoxin content were noted between *Mchinji* and *Kasungu* due to high awareness in *Mchinji* (88.89%) and better management practices (39% sorted their nuts). Peanut flours (68%) exceeded Malawi Bureau of Standard's (MS 1275) aflatoxin limit; 10ppb.

Raising processors' awareness on aflatoxin management might improve quality and safety of peanut flour in Malawi. Hence protecting consumers from aflatoxin consumption.

Findings and Outcomes of Pre-harvest Research in Haiti, Ghana, Malawi, Mozambique and Zambia during the 2012-2016 Project Term of the Peanut & Mycotoxin Innovation Lab.

D. HOISINGTON*, J. RHOADS, Peanut & Mycotoxin Innovation Lab, The University of Georgia, Athens, GA 30602; and the Entire PMIL Research Team.

Numerous factors impact the size and quality of the crop that smallholder farmers are able to produce in five target countries that are the main focus of the Feed the Future Innovation Lab for Collaborative Research on Peanut Productivity and Mycotoxin Control (PMIL). Near the end of a five-year program of research involving scientists in the U.S. and abroad, value chain projects in Haiti, Ghana and southern Africa have shown the impact certain pre-harvest interventions will have on yield and aflatoxin contamination on-station and on-farm. The findings of that research are the basis for interventions introduced to smallholders and on-going analysis of the effectiveness of those interventions in real-world circumstances.

A High-Density Genetic Map for Peanut Based on SLAF (Specific Length Amplified Fragment Sequencing) and SSR

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The cultivated peanut, *Arachis hypogaea* L., is an important oil and food crop in the world. However, the narrow genetic base in cultivated peanut makes it difficult to construct high-density genetic maps. The development of massively parallel genotyping methods and next-generation sequencing (NGS) technologies provides an excellent opportunity to develop single nucleotide polymorphisms (SNPs) markers for linkage map construction and QTL analysis. Specific-length amplified fragment sequencing (SLAF-seq) is a recent marker development technology that allows large-scale SNP discovery and genotyping. In this context, a recombinant inbred population (RIL) of 146 lines was developed by crossing Huayu28 and P76. Genomic DNA extracted from the two parents and 146RILs were subject to high-throughput sequencing and SLAF library construction. A total of 64.2Gb raw data and 322.29M pair-end reads were generated to develop 433,679 high-quality SLAFs, out of which 29,075 were polymorphic.4,817 SLAFs were encoded and grouped into different segregation patterns. A high-resolution genetic map containing 2,334 markers (68 SSRs and 2,266 SNPs)on 20 linkage groups (LGs) was constructed for peanut spanning 2586.37 cM. The average distance between adjacent markers was 2.25 cM. This map exhibited high resolution and accuracy. It will facilitate QTL discovery for essential agronomic traits in peanut.

Development of Next-Generation Mapping Populations: Multi-Parent Advanced Generation Inter-Cross (MAGIC) and Marker-Assisted Recurrent Selection (MARS) Populations in Peanut.

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Over the past decade, next-generation genetic mapping populations such as Multi-parent Advanced Generation Inter-Cross (MAGIC) and Marker-Assisted Recurrent Selection (MARS) have been proposed and used in many crops to dissect complex traits or QTL. MAGIC allows for dissecting genomic structure, and for improving breeding populations by integrating multiple alleles from different parents. MARS utilizes multiple parents derived from one RIL population and aims to take advantage of QTL information generated in breeding populations to develop superior lines with an optimum combination of favorable alleles. In this study, we constructed MAGIC and MARS populations for peanut using the “funnel” breeding scheme. For MAGIC population construction, eight founder varieties were selected based on genomic and phenotypic information: Tifrunner, GT-C20, SunOleic 97R, NC94022, Georgia 13M, TifNV-High O/L, Florida 07, and SPT0606. MAGIC population design was based on a simple crossing scheme as {[(A ×B) ×(C×D)] × [(E×F) × (G×H)]}, where the matched brackets delineate the (two), [four], and {eight}-way crosses. The four two-way crosses were made in the spring of 2015 and the two four-way crosses were made in the fall of 2015 generating 210 and 172 true four-way hybrids, respectively. The last stage was made in 2016, which involved 172 combinations of crosses. Overall, 144 combinations were successful and 906 eight-way hybrid seeds were generated. In 2017, all eight-way hybrids will be planted, verified, and a F_2 MAGIC population (>1000) will be generated. For the MARS population construction, eight RIL lines from the “S” RIL population (SunOleic97R x NC94022) with different traits/QTL including the resistance to TSWV, early and late leaf spot, high oleic acid, and oil content were selected. The first recombination cycle was made between each pair of lines (two-way). The second recombination cycle was made between each group of hybrids (two-way) from the first cycle generating 187 and 122 hybrids (4-way), respectively. The third recombination cycle including at least 100 combinations of crosses is in progress to be completed by the end of 2017 (8-way). These MAGIC and MARS populations will provide a useful genetic resource with diverse allelic combinations to be exploited for “fine” mapping of complex traits for markers and breeding programs.

Progress in Breeding for Early Leafspot Resistance over the Past Two Decades for the TAMU AgriLife Peanut Program.

M.R. BARING*, Soil and Crop Sciences Department, Texas AgriLife Research, College Station, TX 77843-2474; C.E. SIMPSON and J.M. CASON, Soil and Crop Sciences Department, Texas AgriLife Research Center, Stephenville, TX 76401.

The Texas A&M AgriLife peanut breeding program has worked on developing leafspot resistance for over two decades. In the mid 90's, breeding line Tx964117 was developed which has a high level of resistance to early and late leafspot, but has average yield potential, normal oleic fatty acid chemistry and low levels of resistance to either TSWV or *Sclerotinia*. Texas moved towards a completely high oleic peanut crop in the early 2000's so we began crossing between Tx964117 and high oleic lines like Tamrun OL07. At the 2013 APRES meetings we reported on a study in which we looked at correlations between leafspot resistance, Sclerotinia resistance, yield, TSMK%, and O/L ratios. The study indicated that while it would be difficult to select for all of these traits simultaneously, it was not impossible develop a line which was high oleic with resistance to both leafspot and Sclerotinia while maintaining high yield and TSMK%. We chose five of the top performing lines from this study which had various combinations of these traits and set up a crossing scheme in 2013 where we intercrossed these lines at the $F_{2:7}$ generation. F_2 selections were made based on pod, seed, and growth habit characteristics in 2014. $F_{2:3}$ plant rows were grown at Yoakum, Texas in 2015 at a leafspot screening nursery where we selected thirty six lines for resistance to early leafspot. In 2016 we conducted a yield trial at Pearsall, Texas under a complete fungicide regime treating for leafspot as well as a duplicate screening trial at Yoakum, Texas where plots were subjected to no fungicide treatment and were rated for early leafspot resistance. Several of these selections performed equal to the resistant check, Tx964117 for resistance to early leafspot. Twelve lines out of the original thirty-six were selected for multiple location yield testing in 2017.

MINUTES

BOARD OF DIRECTORS MEETING

49th Annual Meeting
Hotel Albuquerque at Old Town
Albuquerque, NM
12 July 2017

Board Members Present:

President Corley Holbrook	Yes
President-elect Peter Dotray	Yes
Past President Tom Stalker	Yes
Mike Baring	Yes
Rick Brandenberg	Yes
Darlene Cowart	Yes
Jim Elder	Yes
Wilson Faircloth	Yes
David Jordan	Yes
Marshall Lamb	Yes
Peggy Ozias-Akins	Yes
Barry Tillman	Yes
Howard Valentine	Yes
Dan Ward	Yes
Executive Officer Kim Cutchins	Yes

President Holbrook called the meeting to order at 5:06 p.m. Members present are noted above and constitute a quorum. Additional attendees are John Takash, Ron Sholar, Craig Kvien, Chris Liebold, Jason Woodward, John Bennett, Chris Butts, John Damicone, Bob Kemerait, and Todd Baughman.

Minutes of June 27, 2017 meeting

Minutes of the June 27, 2017 Board meeting were distributed to the Board for review prior to the meeting. President Holbrook asked for any changes and/or additions. There being no changes/ additions, President Holbrook called for approval of the minutes. It was moved by Jim Elder, seconded by Peggy Ozias-Akins, and unanimously passed to:

Approve the minutes of the June 27, 2017 Board meeting, as presented.

Executive Officer Report

Kim Cutchins stated that APRES day-to-day operations are in good order and running smoothly. She is looking to add a members-only feature to the APRES website shortly. Over the past year, APRES has sent out 26 marketing pieces via the Constant Contact email system. Negotiations for a new Allen Press contract is underway and with the Publications and Editorial Committee is looking at potential options, which will be discussed by the Committee. Two Annual Meeting contracts were finalized. Revisions to the APRES by-laws tasked at last year's meeting for an email vote during the past year was delayed and will be voted on at this year's business meeting. She continue to attend industry meeting when time allows (USA Peanut Congress, Georgia Peanut Farm Show, etc…) She thanked Corley Holbrook, Pete Dotray, Todd Baughman Gary Schwarzlose, Tom Stalker, Jason Woodward and Peggy Dotray for putting

together an excellent meeting, breaking Southwest attendance records. She advised the Board that she will be taking the first 2 weeks of August off for a vacation and looks forward to working with the APRES Board and Committees in 2017-18.

NEW BUSINESS

The following Committee reports were presented to and approved by the Board. Action taken by the Board is in italics. Unless changes were made or action taken for parts of the reports during the business meeting, in which case a note is made that the revisions were accepted, the Board voted to accept each report as presented. Full reports from each committee are to be presented at the July 14th Business Meeting and Awards Ceremony in the Ballroom at 5:00 p.m.

FINANCE COMMITTEE:

Chairman Todd Baughman reported the Finance Committee met July 11th to discuss the APRES financial statements and to discuss the reserve fund. Additionally, several Committees approached the Finance Committee to discuss actions that will have an impact on the 2018 budget, if approved.

Balance Sheet

APRES financial statements (accrual basis) state as of June 30, 2017, assets are $338,233 primarily in cash—checking, CDs. Accounts receivables of $19,896.

Liabilities are credit card charge (book order) employment taxes and withholdings totaling $5,236 plus equity of $332,997.

Profit & Loss Statement

Income through June 30, 2017 is $99,340 and expense is $30,759. Todd reminded the Board that the majority of APRES expenses occur in July/August when the bill for the Annual Meeting are paid.

Budget Comparison 2016 vs. 2017

Chairman Baughman reported APRES is currently looking at a breakeven budget, despite what is shown in the projections columns for 2017 budgeted and actual. Kim shared that she ordered an additional 50 Peanuts-Genetics Processing and Utilization books to have on hand for sale at the Annual Meeting. This is a $5K unbudgeted expense. Additionally, APRES anticipates a $7K loss from institutional (library) memberships now that Peanut Science is Open Access. The larger than expected attendance will also increase meeting expenses. Therefore, Todd asked the Board to look at the anticipated column, which shows income of $620 over expenses.

Reserve Fund & Investment Policy

Upon review of the Society's Balance Sheet and Profit/Loss Statement, the Committee discussed the right balance to hold assets (cash) in reserve vs. how much cash the Society should put to work. The current unrestricted Fund Balance is $263,000. Kim noted that most organizations try to keep at least one year's budget in cash reserve ($100K for APRES). APRES currently has $103K in a money market account for this purpose. Additionally, considerations for holding in cash reserve, is the amount APRES needs for startup funds each year to cover expenses prior to membership renewals; penalties for an (unlikely) Annual Meeting hotel cancellations; and potential loss of income ($1.5K) from university subscriptions as Peanut Science moves to Full Open Access. APRES' current checking account balance should cover these expenses and potential expenses ($100K) Using this scenario, the balance of "uncommitted" funds can be placed into investments or assigned to APRES projects. ($60K) Currently $30K is in CDs and $30K is invested at Vanguard in an index fund.

The Committee is recommending APRES adopt a financial policy of keeping one year's budget ($100K currently)in reserve and the remaining $160K be examined during the

budget process each year to determine how much should be committed to APRES expenses and how much to move to investments.

The Committee has discussed over the past year different scenarios for investing. The Committee is recommending the CDs be liquidated and invested in a similar Vanguard index fund with 50%stock/50% bonds. They are asking for the Board's endorsement to move forward with these recommendations.

Publications Committee Peanut Science Publisher Change

Publications Chairman Chris Butts and incoming chairman Chris Diebold attended the Finance Committee meeting to ask the Finance Committee to consider an unbudgeted request for this fiscal year. They share that both Editor Tim Grey and Executive Officer Kim Cutchins have been unhappy with Allen Press, the printer of Peanut Science. They have attempted over the last 4 years to get improvements to the website and greater web visibility for Peanut Science and have been met with resistance and increased costs from Allen Press. **The Committee is asking for the Finance Committee's endorsement to seek a new host and printer for Peanut Science. Preliminary costs to move Peanut Science are estimated at $15-$30K.** ***The Finance Committee fully endorses this request.***

50th Anniversary AdHoc Committee Request

President Corley Holbrook attended the Finance Committee meeting to ask the Finance Committee to budget in its 2018 a line item of $20K for non-traditional expenses related to the Annual Meeting, which will be celebrating APRES's 50th year. **They are requesting the $20K be moved from reserves, if the Annual Meeting Program Committee is unable to find sponsors to cover additional expenses related to making the 50th Annual Meeting a special occasion.** .***The Finance Committee fully endorses this request.***

Executive Officer Salary Increase Request

The Finance Committee is requesting approval to increase the salary of the APRES Executive Officer by $5K from $23K to $28K, beginning with the 2018 fiscal year.

It was moved by Tom Stalker, seconded by Rick Brandenburg, and unanimously approved to:

Accept the report and recommendations of the Finance Committee.

NOMINATING COMMITTEE

Chairman Tom Stalker presented the slate of 2017-18 Officer and Board nominees, which will be presented at tomorrow's Business Meeting and were reviewed during the June 27th Board of Directors Conference call. He called on the Board and Committee Chairs to urge more members to participate on Committees in order to expand the pool of potential nominees. A nominee must be a APRES member for 5-years, be familiar with APRES and its members, and to have served on 3 different Committees.

Officer Nominees *(in red ink)*:

2017-18 President	Dr. Peter Dotray (2019) Texas A&M University
2017-18 President-Elect	Dr. Rick Brandenburg (2020) North Carolina State University
2017-18 Past President	Dr. Corley Holbrook (2018) USDA-ARS

Board of Directors Nominees *(in red ink)*:

V-C area:	Dr. Barbara Shew (2019) North Carolina State University *(Completes Rick Brandenburg's term as VC rep)*
SE area:	Dr. Peggy Ozias-Akins (2019) University of Georgia
SW area:	Jason Woodward (2020) Texas A&M University
USDA Representative:	Dr. Marshall Lamb (2019) USDA National Peanut Research Lab
Production Representative:	Wilson Faircloth (2018) Syngenta
Industrial Representative:	Darlene Cowart (2019) Birdsong Peanuts
Manufactured Products:	Chris Liebold (2020) The J.M. Smucker Company
American Peanut Council:	Steve Brown (2020)
National Peanut Board:	Dan Ward (2020)
Executive Officer:	Kimberly Cutchins (2018)

Each nominee has been contacted and has agreed to serve, if elected. In concluding his report, Tom re-emphasized the need to get more people involved on APRES Committees in order to expand the number of potential nominees for the Board.

Incoming APRES President Pete Dotray stated he has almost completed his Committee roster assignments for 2017-18.

Mike Baring made the motion, seconded by Darlene Cowart, and unanimously approved:

To accept the report of the Nominating Committee.

PUBLICATIONS & EDITORIAL COMMITTE

Incoming Chairman Chris Liebold reported for Chairman Chris Butts.

Peanut Science

Dr. Liebold stated that ***Peanut Science*** became Open Access July 1st as approved at last year's Business meeting. Revisiting the Committee's ongoing goal of making ***Peanut Science***, THE peer reviewed journal of choice for authors and readers of research pertaining to peanut, the committee reviewed its objectives—establishing an impact factor, competing with other journals, publication costs. Open access was the first step at establishing an impact factor, which should increase viewership and citation. The second step is reducing the cost of publication (and hopefully page charges) to increase submissions.

Editor Tim Grey and Kim Cutchins discussed the unresponsive service provided by Allen Press, the current printer. Kim has been trying to get a new contract in place for 2 years and Allen Press has been very difficult. Allen Press wants to increase their costs; APRES wants to reduce their expenses based on improvements in technology, which make printing/publishing much

easier. APRES is currently without a contract. As a result, the Executive Officer and Editor have begun to search for publishing/archival alternatives, which could result in a one-time fee to move ***Peanut Science*** to a new location/service provider.

The Committee is asking the Board to endorse the following motion, which the Finance Committee addressed earlier in the meeting:

The Publications and Editorial Committee recommends to the Board of Directors to permit the Committee, Executive Director, and Editor to explore and select a publisher for Peanut Science with the goal of improving service and reducing costs and authorize the Executive Board of APRES to secure the service of the publisher recommend by the Committee.

The Committee will continue to review the issue of page charges balanced against the cost of publication.

Editor Tim Grey's report on the status of ***Peanut Science*** will be covered in full at the business meeting.

Peanut: Production and Management Book
The co-editors (Chris Liebold, Shyam Tallury, and Nick Dufault) of the production text book is progressing slowly. Lead authors have been secured for all chapters and they have all secured their co-authors. Chapters are in various stages of completion. None are near completion.

Peanut Newsletter
Corley Holbrook brought up the subject of reviving the APRS Research Newsletter. This was a newsletter that was published quarterly updating the membership on changes in peanut research faculty, industry events, a listing of new research articles published in scientific journals, including Peanut Science, and opportunities for funding and peanut research projects receiving funding. Corley has contacted the librarian at the Coastal Plain Experiment State about assisting with literature searches to find and list newly published research. The Committee agreed that this would be an APRES publication worthy of revival.

Committee Recommendation:

During the Business Meeting, announce and begin recruiting two (2) APRES members highly motivated and dedicated to co-edit and publish the APRES Research newsletter and distribute via email and the APRES website.

It was moved by Wilson Faircloth, seconded by Dan Ward, and unanimously approved:

to accept the report of the Publications & Editorial Committee and forward their recommendations to a vote by the full membership.

PEANUT QUALITY COMMITTEE

Chairman John Bennett and Secretary Chris Liebold updated the Board on the Committee's discussions on:

1) Reducing foreign material;
2) The results of a new report on Raw Peanut Storage conditions, which indicates changing storage temperatures from 38F to 55F is a viable option with regulation of relative humidity;
3) Research assessing aflatoxin risk to HO peanuts—both non-irrigated HO and NO peanuts have aflatoxin issues and in irrigated HO andNO peanuts there is not observed difference, will continue to verify results;
4) The new standards for damage, which rose from 2.5% to 3.5% in Seg. 2 peanuts;
5) A HO peanut flavor study is reporting no different in oil content or flavor between HO and NO

peanuts, with sparked some disagreement among attendees;

6) Peanut Smut, an Argentinian disease, with potential impact in the U.S. Australia, U.S. Growers and USDA provided insights into actions being taken to prevent an outbreak in the U.S.
7) Providing guidance to peanut breeders on a path forward for breeding HO and NO peanuts.

The Committee will meet again prior to the next Annual Meeting to create objectives to address these issues.

John reported some members on the Committee felt very strongly APRES should take a position on peanut smut, ranging from advising APHIS on the danger to the U.S. crop to limiting importation of Argentinian peanuts. After discussing the pros and cons of sending a letter to APHIS, it was moved by John and seconded by Dan Ward and approved to:

draft a letter to USDA-APHIS on the danger of peanut smut and providing information that will assist APHIS is developing guidelines on dealing with it. This letter is to be circulated to the APRES Board for approval and must be unanimously approved by the full Board to move forward as an action item.

PUBLIC RELATIONS COMMITTEE

The Public Relations Committee met jointly with the 50th Anniversary Celebration Ad Hoc Committee, as the Committee's role is to promote APRES.

Opportunities to Increase Membership and Meeting Attendance

At last year's meeting, the Committee developed a list of suggestions for each Annual Meeting to promote membership and increase meeting attendance. Pam Worrell volunteered to tackle these suggested ideas for the 2018 meeting in Williamsburg:

- Develop outreach to local colleges at meeting
- Identify similar groups to contact
- Collegiate/media outreach
- APRES Ad
- Identify opportunities to promote the new book

Resolutions

Jason reported he received 12 names for the necrology report and, in the interest of time, will only recite their names and affiliation at the Business Meeting. A full necrology report of each members service to the industry will be published in the Proceedings. Names provide to Jason are:

Frank Boddiford
Lou Casinos
Jim Demski
Alex Filing
Dan Henard
Thomas A. "Chip" Lee
Glenn Forrester
Aubrey Mixon
Bob Scott
Bob White
Ross Wilson
Herb Womack

Diamond Level Membership Category Vote

At last year's meeting, the Board and APRES membership gave notice of a new membership category. The Diamond Level for APRES supporters who give $5,000 or more—to be added to the current levels of Silver Gold, and Platinum. member categories will be voted on at the Business meeting tomorrow.

BAILEY AWARD COMMITTEE

Chairman John Damicone reported there were nominations for best oral presentation received from all 10 concurrent breakout sessions at the 2016 Annual Meeting in Clearwater Beach, FL. The Bailey Award Committee (Maria Balota, Charles Chen, Peter Dotray, Phat Dang, Kim Moore) received three manuscripts for final ranking. Announcement of the 2017 Bailey Award winner will be made and presented at the Business Meeting. In keeping with the tradition, the winner's identity will not be revealed until the announcement.

John reported the Committee reviewed the Guidelines for the Bailey Award, specifically whether the graduate students competing in the Joe Sugg Graduate Student Competion should be eligible for the Bailey Award, too. Currently, they are. After much discussion, the Committee recommended their eligibility for the Bailey Award should be eliminated.

It was moved by Tom Stalker, seconded by Dan Ward, and approved to:

amend the Bailey award guidelines eligibility rule #2 to state that Joe Sugg Award competitors are <u>not</u> eligible for the Bailey Award.

John also said the Committee discussed the fact that last year's Bailey Award winner did not publish their research in Peanut Science. It was suggested the guidelines be amended to require the winning paper be submitted for publication in Peanut Science. This recommendation brought forward the recommendation that the winners of the Joe Sugg Award should be encouraged to publish their paper *(Page charges are waived for the winners)*, as well as, encourage all competitors to consider publishing their research in Peanut Science, too.

It was moved by Mike Baring, seconded by Marshall Lamb, and unanimously approved to:

amend the Bailey Award Guidelines to require the winning paper be submitted to Peanut Science for publication.

It was moved by Darlene Cowart, seconded by Lamb, and unanimously approved to:

accept the recommendations and report of the Bailey Award Committee.

FELLOWS COMMITTEE

Chairman David Jordan forwarded his report to the Board which was approved at the June 27th meeting. Dr. Steve Brown of the Peanut Foundation will be named a Fellow of the Society at tomorrow's 49th APRES Business Meeting.

SITE SELECTION COMMITTEE

Chairman Mike Baring reported APRES has signed contracts for the 2018 and 2019 Annual Meetings. Shelly Nutt has agreed to check out potential properties in Texas for the 2020 meeting.

2018 Annual Meeting	2019 Annual Meeting	2020 Annual Meeting
July 10-12	July 9-11	July 14-16
Doubletree Williamsburg	Hotel at Auburn University	Southwest Region
Williamsburg, VA	Auburn, AL	
50th Anniversary Celebration		

Proposed Committee Representation Change
The following change to the APRES by-laws will be voted on at the Business Meeting tomorrow:

Article IX. Committees; Secton 2; Point h; first sentence shall be changed to read as follows *(changes and addtions are in **bold**; eliminated words have been ~~struck through~~):*

h. *Site Selection Committee*: This committee shall consist of **six** (~~four~~) members, **two members from each region** that represent the diverse membership of the Society and with each serving three-year terms.

COYT T. WILSON DISTINGUISHED SERVICE COMMITTEE

Chairman Emily Cantonwine could not attend the meeting and asked Jason Woodward to read her report which was approved at the June 27th Board meeting. The Coyt T. Wilson Service Award Committee reached a unanimous recommendation for the 2017 award: Dr. Austin K. Hagan. A full report will be given at the Business Meeting.

JOE SUGG GRADUATE STUDENT COMPETITION COMMITTEE

Chairman Bob Kemerait reported the Joe Sugg Graduate Student Competition attracted another large group of participants—25 participants (22 presented) from 9 different universities (the most university participation to date). Due to the large number of participants and the increasing number of papers for breakout sessions, scheduling an all-encompassing competition was not possible. Therefore, the competition was broken into 3 separate competitions with separate judges and a sponsor was found to support each competition ($500 Winner; $250 runner-up). Winners will be announced at tomorrow's Business Meeting.

The Board was ecstatic at the growth in the competition and discussed several scenarios where the competition could continue to be held as one competition with no other competing sessions. A solution was not found and the Program Chairman will be left with the decision on how to handle the competition each year. **(Later in the meeting, the Board approved the creation of a Poster Competition for graduate students.)**

John Damicone, Bailey Award Committee chair, reminded all of additional perk for winners of the Joe Sugg Graduate Student Competition is the opportunity to publish their research in Peanut Science free of charge. He suggested we remind all the competitors. Chairman Kemerait agreed this is a great suggestion and will make the announcement of the perk in his Business Meeting report.

DOW AGROSCIENCES AWARDS COMMITTEE

Chairman Kelly Chamberlin reported the membership was solicited for award nominees in both the areas of Research and Education. No nominations for the Education Award were received. Kelly encouraged more publicity for the awards.

For the Research Award, one new nomination packet was received and two were carried over from 2016. It was noted that one nominee had not been a member of APRES for 5 years, and thus this nomination was disqualified, leaving two for consideration. The committee reviewed the nomination packets and voted electronically in June of 2017. Dr. Marshall Lamb was selected as the Committee's nomination for the 2017 Dow AgroSciences Award for Research. One nomination packet will be carried forward for consideration in 2018, and the disqualified nomination packet will be held until eligible in 2019.

Award Guidelines Review
The Committee is requesting the award guidelines be amended to use a bold font to the eligibility rule stating the nominee must be a member of APRES for 5 years; and ,

requested a photograph (headshot) of the nominee be provided with the nomination packet to assist in the preparation of the awardees biography.

It was moved byTom Stalker, seconded by Peggy Ozias-Akins, and unanimously approved to:

Accept the recommendations and report of the Dow AgroSciences Awards Committee.

PROGRAM COMMITTEE

Program Chairman Peter Dotray recognized the outstanding help and support of Technical Program Chairman Todd Baughman; Local Arrangements Chairman Gary Schwarzlose; and, Spouses Program Chair, Peggy Dotray. Attendance for 2017 is 329 total; 235 registrants; 64 spouses; 58 children. This is the largest Southwest meeting in recent memory. Feedback from the Opening Session speakers has been outstanding. The symposium was a huge success.

We have a great group of sponsors: Bayer and BASF were co-sponsors of Wednesday night dinner. Dow AgroSciences was recognized as the sponsor of the Thursday night reception. Texas Peanut Producers Board sponsored the Spouses Hospitality Suite and the registration bags. Meeting breaks were sponsored by Olam Edible Nuts; Birdsong Peanuts; Syngenta; and Fine Americas. Texas A&M University sponsored the Fun Run with another record number of participants (65). The North Carolina Peanut Growers Association once again sponsored the Joe Sugg Graduate Student Competition; along with Dow AgroSciences and JLA, Inc.. APRES Sustaining Members supported the Ice Cream Social. APRES continues to have a great group of peanut product suppliers who support our meeting breaks. He encouraged members of the Board to please thank them for making this meeting possible.

Technical Program Chairman Todd Baughman reported the 49th Annual Meeting scheduled 140 technical presentations, including this year's symposium *"UAVs—A Look From Above*" and 34 posters.

The Joe Sugg Graduate Student Competition drew the largest number of participating universities this year. Due to the large number of participants, the competition was divided into 3 separate competitions. Moving forward, the Program Committee needs to discuss how to schedule this wonderful event to allow only one competition, so the winner of the event retains its status. *(Later in the meeting, the Board approved the creation of a Graduate Student Poster Competition.)*

The Spouses Program put together by Peggy Dotray was a huge success. Two and half days of activities in the hospitality suite with lots of prize giveaways (and good food) and great tours of two area museums.

The Fun Run is scheduled for the tomorrow morning morning with a record number of attendees.

OTHER BUSINESS

Publication of APRES Membership List

Executive Officer Kim Cutchins reported she has narrowed down the ap choices for establishing the Members Only section and will have it added to the APRES website shortly. A members name and address section will be part of the Members Only section and will include email and phone numbers, unless a member requests it not be listed.

Recognition of Outgoing Board Members

President Holbrook announced outgoing Board members and thanked them for their APRES service:

Tom Stalker - Past President
Michael Baring - Southwest Rep
Jim Elder - Manufactured Product Rep
Howard Valentine - APC Rep

President Corley Holbrook will recognize the outgoing Board members at the Business meeting tomorrow and present them with a gift of appreciation.

50th Anniversary AdHoc Committee

President Corley Holbrook who will continue to chair this AdHoc Committee reported the group met in May and has gotten off to a great start. Dell Cotton has invited the Virginia Secretariat of Agriculture and Forestry and he is scheduled to attend. The group is planning a Monday afternoon/evening event for those arriving early to tour Chippokes Plantation and tour their peanut fields (near where the first peanuts in North America were grown) and host a barbeque. Birdsong Peanuts is offering to open their shelling operations for a tour and it was mentioned to approach Planters about a tour of their plant.

The Committee also discussed several ways to recognize and celebrate APRES' 50th year from attempting a Guinness World Record to visionary speakers to history of APRES speakers and the industry.

The Committee also attended the Finance Committee meeting to ask the Finance Committee to budget in its 2018 a line item of $20K for non-traditional expenses related to the Annual Meeting, which will be celebrating APRES's 50th year. **They are requesting the $20K be moved from APRES' reserves, if the Annual Meeting Program Committee is unable to find sponsors to cover additional expenses related to making the 50th Annual Meeting a special occasion.** ***The Finance Committee and Board passed this motion earlier in this meeting.***

The Ad Hoc Committee will continue to meet by conference call to plan the celebration.

2018 Additions to the Annual Meeting

Poster Competition - Given the growth in the Joe Sugg Graduate Student Competition and the goal of trying to retain the competition as one competition, the Board discussed another way to help the competition fit into the current footprint of the Annual Meeting. Tom Stalker suggested APRES create a new competition—a Poster Contest—to be held during the Poster Viewing time slot. Hosting such a competition should draw some of the potential graduate student competitors to it, thus reducing the number of competitors in the speech competition, allowing it to fit into the schedule as one competition. The Board discussed the pros and cons of this new contest and its impact on the speech competition. The Board unanimously agreed to:

approve the creation of a Graduate Student Poster Contest for the 2018 Annual Meeting.

Tom Stalker was asked to draft guidelines for the competition and to work with the Joe Sugg Graduate Student Competition Committee to get this new venture off the ground.

Technology Training Sessions - Howard Valentine reported the Peanut Foundation is seeking time before, during, or after the Annual Meeting to run a technology training session on how to PeanutBase. Rebecca Bennett and Lisa Dean has suggested APRES hold a sensory training session on flavor. Incoming President-Elect/2018 Program Chairman Rick Brandenburg was asked to include these sessions in his discussions for the 2018 program.

Graduate Student Participation - Two new ideas have been broached for graduate students. The first is a hosted luncheon with a speaker. The second is to create a graduate student council/committee, with representation on the Board. The Board agreed these are great suggestions and tasked incoming President Peter Dotray to explore the ideas and bring forward

any recommendations to the APRES Board and 2018 Program Committee.

Adjournment
There being no other business, the meeting was adjourned at 6:30 p.m.

BUSINESS MEETING AND AWARDS CEREMONY

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
49th Annual Meeting
Hotel Albuquerque at Old Town
Albuquerque, NM
JULY 13, 2017

1. **President's Report**……..……..Corley Holbrook

2. **Reading of Minutes of Previous Meeting**

3. **Awards Presentation**
   Coyt T. Wilson Distinguished Service Award…..……..……..Emily Cantonwine
   Dow AgroSciences Awards for Research and Education..…….....…….Kelly Chamberlin
   Bailey Award ……..……..……John Damicone
   Joe Sugg Graduate Student Competition…….……...…….Robert Kemerait
   Fellow of the Society Awards……..……..……David Jordan

4. **New Business**
   Committee Reports:
   (a) Nominating Committee …….……..Tom Stalker
   (b) Finance Committee…….……Todd Baughman
   (c) Public Relations Committee .....Jason Woodward
   (d) Peanut Quality Committee …….……John Bennett
   (e) Site Selection Committee……Mike Baring
   (f) Publications and Editorial Committee..... Chris Butts
   (g) Program Committee……Peter Dotray

5. **Other Business**

6. **Installation of New Officers** ……..……Corley Holbrook
   Past President's Award……..……..Peter Dotray

5. **Adjourn**……..……..Peter Dotray

MINUTES

BUSINESS MEETING AND AWARDS CEREMONY
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
49th Annual Meeting
Hotel Albuquerque at Old Town
Albuquerque, NM
July 13, 2017

Report of President C. Corley Holbrook

It has been an honor to serve as your president this past year. I have to admit it has been easy, and I don't feel I have earned this president ribbon attached to my name tag. There are three reasons I have had an easy term.

First, APRES finances are in the black. A few years ago the society was struggling with red ink, however, the Finance Committee and the BOD wrestled with the numbers and made some difficult decisions. Because of their hard work, APRES has operated in the black the past few years. APRES also has a healthy portfolio of assets, and the finance committee is now focusing on how to invest those assets to best benefit the membership…… It is a good time to be president.

Second, membership numbers are healthy. As you have heard, attendance and participation at our 2017 meeting have greatly exceeded expectation. Attendance and participation were also very good last year in Clearwater, and the year before in Charleston. A few years ago the society was struggling with declining numbers, but those days are behind us….. It is a good time to be president.

Third, we have an outstanding Executive Officer. Kim Cutchins does an excellent job, and continues to grow this position and assume more responsibilities…… It is a good time to be president.

As I was thinking about what I would say in this Presidential Address one memory kept flashing through my mind. A few years back I was on the nominating committee and we were debating who to nominate for President-Elect. We all agreed that Tim Brenneman would be an excellent President for APRES. Since Tim's office is just a few door down from mine, I offered to ask him if he would accept if nominated. When I asked Tim, he seemed very conflicted. He said that he had a lot on his plate and had recently promised himself not to add any more. However, he said that he loved APRES, and the society had meant a lot to him as a student and throughout his professional career, so he felt like he had to accept this nomination. Tim did not just say yes, he also proceeded to do an outstanding job during his tenure. Tim was president during a time of great transition for APRES, and I think he was one of our best Presidents. I am not trying to embarrass Tim. The point I want to make is that as I look out I see a room full of Tims. (Tim, I have to say that visualization is a bit disconcerting).

All kidding aside, this room is full of many individuals who have made significant contributions to our society. As President and as President-elect I have had to ask many people if they would do something for APRES. I don't remember anyone saying no, and I don't remember anyone not following through with an excellent job. This is what make APRES great.

Also, as I look out I see many new members. I am aware of three members that are attending their first APRES annual meeting. I am sure there are other that I am not aware of. We also have a large number of students in attendance, and we all hope that many of you will be full members as you transition into the professional stage of your career. I encourage each of you to get fully involved in our society. I guarantee that the benefits you receive from becoming more involved will be greater than the costs.

If you are not already actively involved in APRES, I can suggest three ways you can become more involved with society business:

First, offer yourself for committee assignments. Every year the President-elect is responsible for filling numerous vacancies on APRES committees. Peter Dotray has already completed his committee assignment, but Rick Brandenburg will be looking for several volunteers next year. Let him know you are willing to serve, or let Kim Cutchins know.

Second, we are looking for volunteers to revive the Peanut Research newsletter. For many years APRES had a quarterly newsletter. This newsletter contained items of interest from each of the states where peanuts are grown. It also had information on grants that were funded and a calendar of upcoming events. The newsletter also contained a very comprehensive list of recent scientific publications related to peanut. The newsletter was printed and mailed from Tifton until 1999. Kim Cutchins and I have been discussing the need for an APRES newsletter. We have also discussed this with Duncan McClusky who is the librarian at the Tifton UGA campus. Duncan has agreed to provide literature searches for the newsletter. Of course a modern APRES newsletter would be online and accessible from our website. Maria Bolota has offered to assist anyone who might want to assume leadership of this project. If you are interested in working to revive the Peanut Research Newsletter, please contact me or Kim.

Third, most of you have heard that Dr. Tom Isleib plans to retire next year. For many years Tom has maintained a spread sheet that documents services to APRES. This is not just an important historical document, it is very useful when individual are developing award nomination packages for colleagues, and can be an important resource when members are developing packages for possible promotion. APRES really need someone to step up and maintain this resource. If you are interested, please contact Tom or Kim.

Before I conclude I want to remind everyone that next year is the 50th annual meeting of APRES. The meeting will be held in Williamsburg Virginia. This is a significant milestone for APRES, and should be adequately commemorated. We have a subcommittee to begin making plans for that celebration. The subcommittee consist of Rick Brandenburg, Peter Dotray, Tom Stalker, Pam Woreel, Maria Bolota, Kim Cutchins, and Corley Holbrook. We want to insure that this is an inclusive APRES celebration. Therefore, we need input from the Southwest, and the Southeast, in addition to the Virginia-Carolina region. If you have suggestions/comments, please contact a member of the subcommittee. That subcommittee met with the Public Relations Committee on Tuesday afternoon to brainstorm. We hope to secure extra sponsorship for the activities surrounding our 50th annual meeting. The Finance Committee and the Board of Directors have also voted to provide extra financial support if needed. The local arrangement group in Virginia has already developed some plans that I am sure we will all thoroughly enjoy.

In conclusion I thank you for the privilege of being your president this past year. I would also like to thank all the people who contributed to making 2017 a great annual meeting. In particular I would like to acknowledge Peter Dotray, Todd Baughman and all members of the Technical Committee, Gary Schwarloze and all members of the Local Arrangement Committee, Peggy Dotray and all members of the Spouses Hospitality Committee, Kim Cutchins, Craig Kvien, and Zach Rosenfield. I also extend special thanks to all the sponsors.

I wish everyone safe travels back home. I look forward to seeing you at our 50th annual meeting in Williamsburg.

READING OF THE PREVIOUS MEETING'S MINUTES

The minutes of the 48th Annual Meeting Business Session were distributed via email to the membership and posted online; therefore, the reading of the minutes was waived. President Holbrook asked if there are any corrections to the minutes. There being none, it was moved by and seconded,

to approve the minutes of the 48th Annual Meeting Business Session.

NEW BUSINESS

COMMITTEE REPORTS

NOMINATING COMMITTEE

Chairman Tom Stalker presented the slate of nominees for the 2017-18 APRES Board of Directors, which were reviewed during a June 27th Board of Directors Conference call. Chairman Stalker reminder all of the qualifications needed to be nominated and serve on the APRES Board of Directors—A nominee must be a APRES member for 5-years, be familiar with APRES and its members, and to have served on 3 different Committees.

Officer Nominees for 2017-18 *(in red ink)*:

2017-18 President	Dr. Peter Dotray (2019) Texas A&M University
2017-18 President-Elect	Dr. Rick Brandenburg (2020) North Carolina State University
2017-18 Past President	Dr. Corley Holbrook (2018) USDA-ARS

Board of Directors Nominees for 2017-18 *(in red ink)*/Continuing Directors *(in black ink)*:

V-C area:	Dr. Barbara Shew (2019) North Carolina State University *(Completes Rick Brandenburg's term as VC rep)*
SE area:	Dr. Peggy Ozias-Akins (2019) University of Georgia
SW area:	Jason Woodward (2020) Texas A&M University
USDA Representative:	Dr. Marshall Lamb (2019) USDA National Peanut Research Lab
Production Representative:	Wilson Faircloth (2018) Syngenta
Industrial Representative:	Darlene Cowart (2019) Birdsong Peanuts
Manufactured Products:	Chris Liebold (2020) The J.M. Smucker Company
American Peanut Council:	Steve Brown (2020)

National Peanut Board: Dan Ward (2020)

Executive Officer: Kimberly Cutchins (2018)

Each nominee has been contacted and has agreed to serve, if elected. Additionally, Tom noted the Director's seat for both the American Peanut Council and the National Peanut Board will move from a one-year appointment to a three-year appointment. In concluding his report, Tom re-emphasized the need to get more people involved on APRES Committees in order to expand the number of potential nominees for the Board.

President Holbrook called for additional nominations from the floor. There being none, it was moved by Albert Culbreath, seconded by Steve Brown to close the nominations. It was moved by Peggy Ozias-Akins, seconded by Mike Baring, to:

approve the election of the nominees to the APRES 2017-18 Board of Directors and expanded term of service of the APC and NPB APRES Board of Directors seats.

Committee Reports Continued after Awards:

The reports of all other APRES Committees can be found following the announcements of the 2017 Awards winners, which are presented out of order in these Proceedings to allow special recognition of the individuals.

Presentation of Awards

JOE SUGG GRADUATE STUDENT COMPETITION

Chairman Bob Kemerait reported this year's competition attracted the most university participation in the competition's history—nine—and twenty-five (25) competitors (one less than last year's record). Due to the overwhelming number of competitors the competition was divided into three sections and thanks to the generosity of our sponsors—North Carolina Peanut Growers Association, JLA, Inc. and Dow AgroSciences—a first and second place winner will be awarded in all sections with a prize of $500/$250 prize respectively. This year's winners are:

Section 1 - *Sponsored by North Carolina Peanut Growers Assn.*

Winner : Jake Fountain, University of Georgia
Comparative Genomics Analysis of Field Isolates of Aspergillus flavus and A. parasiticus to Explain Phenotypic Variation in Oxidative Stress Tolerance and Host Preference.

2nd Place: Carolina Chavarro, University of Georgia
Genotyping of Recombinant Inbred Lines Population Provides Evidence to Tetrasomic Recombination in Cultivated Peanut.

Section 2 – *Sponsored by JLA, Inc.*

Winner: Wen Carter, University of Georgia
The Influence of Nozzle Type on Peanut Weed Control Programs.

2nd Place: Stephen Leininger, Mississippi State University
Land Preparation and Irrigation Method Impacts on Peanut Pod Yield, Quality and Water Use Efficiency.

Section 3 – *Sponsored by Dow AgroSciences*

Winner: Lindsey Christman, North Carolina State University
Applications of Peanut Skins as a Functional Food Ingredient.

2nd Place: Brian Jordan, University of Georgia
Effect of Planting Date on Two Cultivars on Leaf Spot Severity and Yield when Grown Without Fungicides.

Poster Competition in 2018 - Chairman Kemerait also announced the Committee will offer a

second competition next year—a Poster Competition. Students will be able to compete in either the Oral Presentation competition or the post competition, but not both. Rules are being drafted and the competition will be publicized during the abstract submission process.

Chairman Kemerait thanked all the students who participated in the competition and supporting sponsors for their support. He reminded the students that in addition to the cash award, all winners of the Joe Sugg Graduate Student Competition will have their page charges waived, if their research is published in Peanut Science.

THE BAILEY AWARD

Chairman John Damicone reported nominations for best oral presentation were received from all 10 concurrent breakout sessions at the 2016 Annual Meeting in Clearwater Beach, FL. The Bailey Award Committee (Maria Balota, Charles Chen, Peter Dotray, Phat Dang, Kim Moore) received three manuscripts for final ranking. The 2017 Bailey Award for the best paper from the 2016 APRES Annual Meeting was presented to:

Jianping Wang
University of Florida

Title:
"Dissecting the Genetic Basis of Peanut Nodulation"

Authors:
H. Zhou, Z. Peng, J. Maku, L. Tan, F. Liu, Y. López, and J. Wang, University of Florida; and M. Gallo, Delaware Valley University

Award Guideline Changes - Chairman Damicone also reported the Committee reviewed the current guidelines for the Bailey Award this year and brought several recommendations to the APRES Board of Directors for a vote. **Beginning with the 2018 Annual Meeting, the winning paper for the Bailey Award is required to be published in Peanut Science. Also, with the creation of the Poster Competition, graduate students will no longer be eligible to win the Bailey Award.** John concluded his remarks by encouraging all who present their research at APRES to consider Peanut Science as their journal of choice for publication

DOW AGROSCIENCES AWARDS FOR EXCELLENCE IN RESEARCH & EDUCATION

Chairman Kelly Chamberlin reported the membership was solicited for award nominees in both the areas of Research and Education. No nominations for the Education Award were received. The Research Award received one new nomination packet and two were carried over from 2016. It was noted that one nominee had not been a member of APRES for 5 years, and thus this nomination was disqualified, leaving two for consideration. The committee reviewed the nomination packets and voted electronically in June of 2017. One nomination packet will be carried forward for consideration in 2018, and the disqualified nomination packet will be held until eligible in 2019.

Guidelines Amendments - The Committee recommended to the Board and received approval to amend the award guidelines to use a bold font to make the 5-year member rule more noticeable, and to also require a headshot photograph be submitted with the nomination.

Chairman Chamberlin thanked Dow AgroSciences for once again sponsoring the awards which recognizes the value of great research and education. In addition to a plaque, recipients

receive a check for $1,000. Dr. Marshall Lamb was selected as the 2017 recipient of the Dow AgroSciences Award for Research.

Dow AgroSciences Research Award - Dr. Marshall Lamb
USDA-ARS-NPRL

Dr. Marshall Lamb's personal research program includes the systems analysis of production agriculture with peanuts at its center and extends beyond the field to the shipping dock of the peanut product manufacturer. He has developed or co-developed decision support tools for farm operations management and irrigation scheduling that are widely used by growers, financing and risk management entities, and conservation groups. Dr. Lamb has participated in team research examining the feasibility of chemical testing for aflatoxin, high moisture grading, and irrigation research. Marshall has led research investigating long-term economic sustainability of various crop rotations and farming enterprises. He has led a diverse team of scientists and industry to investigate the use of timely flower termination to improve peanut maturity, yield, and quality. The following paragraphs highlight just a few of Dr. Lamb's peanut research accomplishments:

* Co-leading the IMPAC (Investigations in Marketing Peanuts to Assure Competiveness) project to determine the feasibility of cleaning and sizing farmer stock peanuts using a high capacity belt sizer, resulting in economic thresholds on which farmers and processors make informed decisions regarding screening individual farmer stock loads prior to marketing.

* Co-led a national study on high moisture peanut grading developing statistically accurate equations for estimating market grade factors, weight, and value from peanuts graded at higher than 10.5% moisture contents. Results of this research led to the official USDA/AMS standard for peanut moisture content to be increased from 10.5% to 18.0% allowing the peanut industry to grade and market peanuts at higher moisture contents improving inventory management and peanut curing technologies at buying points.

* Dr. Lamb has been active in the development of decision support systems. A whole farm planning system (WholeFarm) was developed that allows farm managers to virtually "build" their farm operation to conduct a cadre of economic analyses. Data from crop rotation research is incorporated and coupled with the rotation histories to allow producers to obtain mathematically optimized crop production combinations and schedules based on economic returns specific to their farming operations. Dr. Lamb co-developed irrigation scheduling systems for peanuts, corn, and cotton (Irrigator Pro). Each of these irrigation decision models is widely used by farmers and crop consultants. Validation of Irrigator Pro in research plots and this program resulted in Irrigator Pro's acceptance in the USDA NRCS EQIP (Natural Resource Conservation Service Environmental Quality Incentives Program) as a conservation tool, allowing cost sharing for producers.

* Dr. Lamb has served on the American Peanut Council's Global Strategic Planning Committee and presented the U.S. Peanut Industry Strategic Plan to increase peanut consumption through improving opportunities for US peanut in international markets.

* He also served on the American Peanut Council's Peanut Industry Revitalization Committee (1995-2000), which focused on options to improve peanut quality in early marketing channels to improve processing efficiencies throughout subsequent processing stages.

* He is currently an active member of the Peanut Foundation's and American Peanut Council's Sustainability Task Force. This task force has been highly effective proving the positive environmental impact of United States peanut production and processing. Results of this effort

include a Life Cycle Analysis for peanuts and a comprehensive Keystone report on the national peanut resource footprint.

* Most recently Dr. Lamb has worked with the Sustainability Task Force on quantifying the favorable water footprint of U.S. peanut relative to other protein sources

Dr. Marshall Lamb, an APRES member for over 25 years, has served as the Research Leader and Location Coordinator of the USDA ARS National Peanut Research (NPRL) in Dawson, Georgia since 2004. In 2015, Dr. Lamb served as the Acting Research Leader of the USDA ARS Market Quality and Handling Research Unit in Raleigh, NC. Research at the focuses on improvement and maintenance of flavor, shelf life, functional characteristics, and biochemical/ bioactive components in peanuts and peanut products.

Dr. Lamb is a problem solver, but also a visionary when it comes to peanut research. He is respected throughout the peanut industry for his honesty, integrity, and leadership on all peanut related issues. He uses a common sense approach to tackle big problems and has the ability to communicate scientific information in the most basic way to reach all industry segments. He has built an impressive program of research and is most deserving of this prestigious award.

COYT T. WILSON DISTINGUISHED SERVICE AWARD

The Coyt T. Wilson Distinguished Service Award is given to APRES members who have contributed two or more years of distinguished service to the Society. The award was established in honor of Dr. Coyt T. Wilson who provided leadership in the formative years of the Society. His contributions helped make possible the early and current success of the Society.

Committee members in 2017 were Albert Culbreath, Mark Abney, Jason Woodward, and Emily Cantonwine, Chair. All business for this committee was conducted electronically. After reviewing all nominations, the committee recommended that the 2017 Coyt T. Wilson Distinguished Service Award be presented to Dr. Austin Hagan.

Respectfully submitted,

Emily Cantonwine, Chairman

Dr. Austin K. Hagan
2017 Coyt T. Wilson Award Recipient

Dr. Austin K. Hagan has been an active member of APRES since 1984, participating in at least 33 meetings, and serving on numerous committees, including the Bailey Award Committee, Finance Committee, Joe Suggs Graduate Student Award Committee, Site Selection Committee, Program Committee, Publications and Editorial Committee, and Coty T. Wilson Award Committee. Dr. Hagan served as the President of APRES in 2001 and 2008, making him the only member to be President twice in the nearly 50-year history of the society. As such, Dr. Hagan has provided 6 total years of leadership as President-Elect, President, and Past-President. One of the significant changes that Dr. Hagan supported during this time was the consolidation of the APRES Annual Meeting from 3 full days of programs to $2^1/_2$ days, which came about in part because of the increasing visibility of the

Southeastern Peanut Growers Conference. The shorter APRES program has helped to ease some of the stress experienced by APRES members who participate in both programs, as well as, some financial stress for the society. In 2013, Dr. Hagan received the APRES Dow AgroSciences Award for Excellence in Education, and in 2014 he was named APRES Fellow. Other awards Dr. Hagan has received include the Southern Regional IPM Implementer Award, and College of Agriculture Academy Fellows. Dr. Hagan's outstanding contributions to the society make him a genuinely deserving recipient of the 2017 Coyt T. Wilson Distinguished Service Award.

FELLOW OF THE SOCIETY

Chairman David Jordan stated the Committee forwarded one name for the attribute of Fellow of the Society. The Committee unanimously recommended and the APRES Board of Directors unanimously agreed **to bestow the honor of Fellow of the Society to:**

Steve Brown
National Peanut Foundation

Dr. Steve Brown's contributions to the peanut industry are numerous. He made significant contributions in all aspects of peanut insect management, but his leadership role in addressing the challenge that Tomato spotted wilt presented to peanut production in the southeastern U.S. is particularly noteworthy. In addition to being a key investigator in research efforts to address that new problem, he developed the concept and first version of the Tomato Spotted Wilt Index as a tool for estimating the impacts of combinations of measures used for suppressing spotted wilt and was the leader in in continual efforts to refine and validate the index. Management of tomato spotted wilt has been frequently heralded as example of integration of suppressive factors when no factor alone was adequate.

Dr. Brown has an extraordinary attitude of service that has been evident in all of his efforts. Dr. Brown is also a master communicator, evidenced by his writing, speaking, and dealing with people. The combination of these two attributes has been a key factor in his success as an extension specialist, as a University Administrator, and most recently as Executive Director of the Peanut Foundation. He is a person who can find "common ground" among members of small or large groups, one who can boost morale and instill hope, and one who promotes teamwork and cooperative efforts.

In his roles as administrator, Dr. Brown continued efforts that were very supportive of the peanut industry as a whole as well as to the University research, extension, and education efforts directed toward peanut. Likewise his efforts with the Peanut Foundation are directed largely toward fostering research that will benefit the peanut industry for years to come. Recognition of his accomplishments and impact is evidenced by his being the recipient of major awards from the University of Georgia, Georgia and National Associations of County Agricultural Agents, the American Peanut Council, Georgia Peanut Commission, and our own society. Dr. Brown's character, attitude, efforts, and accomplishments are exemplary of the ideals that Fellowship in APRES represents.

RECOGNITION OF RETIRING APRES BOARD MEMBERS

President Holbrook recognized outgoing Board members—Jim Elder, Tom Stalker, Michael Baring, Howard Valentine (not present)— and thanked them for their service to APRES.

PAST PRESIDENT AWARD

As his first order of business, newly-elected President Peter Dotray presented outgoing President Corley Holbrook with the Past President's award.

Committee Reports

PUBLIC RELATIONS COMMITTEE

The Public Relations Committee met jointly with the 50th Anniversary Celebration Ad Hoc Committee, as the Committee's role is to promote APRES.

Opportunities to Increase Membership and Meeting Attendance

At last year's meeting, the Committee developed a list of suggestions for each Annual Meeting to promote membership and increase meeting attendance. Pam Worrell volunteered to tackle these suggested ideas for the 2018 meeting in Williamsburg:

- Develop outreach to local colleges at meeting
- Identify similar groups to contact
- Collegiate/media outreach
- APRES Ad
- Identify opportunities to promote the new book

Diamond Level Membership Category Vote

The Committee with the Board's endorsement is proposing the creation of a new membership category (Diamond) to recognize cash contributions of $5,000 and above. This proposal requires an amendment to the APRES by-laws and approval of a majority of the APRES membership. The APRES membership has been give 30-day notice of this proposed by-law change and is asked to vote for its approval.

We value your support and offer the following sponsorship levels as a guidepost to assist you in your decision-making process.

Feel free to partner up for any of our social events.

Sponsorship Opportunity	Sponsorship Level
Diamond	$5,000 and above
Platinum	$1,000 and above
Gold	$500 and above
Silver	$300 and above
Social Event Sponsor	
Ice Cream Social	$7,500
Meeting Breaks	$1,500 per break *(4 opportunities)*
Reception & Dinner	$20,000
Spouses' Hospitality Suite	$3,000
Spouses' Tour	Event Cost x # of Participants
Pre-Meeting Tour Transportation	$1,000
Fun Run	T-Shirts and Bottled Water
Pre-Meeting Activity	$3,000
Customized Sponsorship Partnership	Peanut Products, Gift Bags, Thumb Drives, Lanyards, Note Pads, etc…

It was unanimously approved to:

Create a new membership categoary—Diamond Level—for APRES supporters at the $5,000 and above level.

APRES Membership Directory

A motion was made and unanimously approved:

to reinstate the Society's online membership directory (password protected)

Resolutions

It is the honor of this committee to recognize and celebrate the life and/or career of persons involved with APRES or the peanut industry that have passed since the last annual meeting. This year we are saddened by the passing of 12 such individuals.

Be it resolved that the life and contributions to the peanut industry and APRES of the following individuals are honored by the American Peanut Research and Education Society:

Frank Bodiford

Franklin J. Bodiford, former Director of the Georgia Federal State Inspection Service – Agricultural Products Division, Tifton, Georgia passed away October 2, 2016. Mr. Bodiford worked for the Georgia State Inspection Service for over 53 years and was the Director of the Ag Products Division for 35 years. During this time he led the inspection service into the computer age to become #1 in the United States.

Lou Csinos

Lucia V. Csinos passed away March 20, 2017 in Tifton, Ga. She is survived by her husband, Dr. Alex Csinos, UGA Professor Emeritus, Plant Pathology, and daughter, Ali.

Jim Demski

James W. Demski, APRES member and former Plant Virologist for the University of Georgia – Griffin, passed away July 5, 2017. Jim received his PhD in Plant Pathology from Penn State University in 1966 and spent his entire career at UGA-Griffin. Before retiring in 1995, he was awarded UGA's D.W. Brooks Award for Excellence in International Agriculture and the Distinguished Alumnus Award from Clarion University.

Alex Filinow

Alexander B. Filonow, Research Plant Pathologist at Oklahoma State University – Stillwater for more than 20 years passed away January 29, 2016.

Glenn Wayne Forrester

Mr. Forrester an Auburn graduate, Alabama peanut producer, Alabama Farmer of the Year; former President of the Alabama Crop Improvement Association, former President of the Southern Seed Certification, former President of the Alabama Society of Weed Science, and former APRES member, passed away June 4, 2017 in Columbia, Alabama.

Dan Henard

Mr. Henard, a Texas A&M University graduate, Peanut Producer, Parner in Henard Farms and Long-time University Collaborator, from Wellington, Texas passed away March 17, 2017

Thomas A. "Chip" Lee

Dr. Chip Lee, Extension Plant Pathologist, Texas A&M University – Stephenville passed away May 5, 2017. Chip earned his B.S, M.S., and PhD. from Texas A&M University and worked in the in the Texas A&M system as a plant pathologist for over 30 years. Dr. Lee had over 23 services to APRES, serving on almost every Committee, the Board of Directors from 1994-1999, and President of the Society 1997-1998. During his long career in peanuts, he received the APRES Bailey Award, the Dow AgroSciences Award for Excellence in Education, and was elected Fellow of the Society.

Aubrey Clifton Mixon

Dr. Aubrey C. Mixon, a USDA Agronomist (plant pathology and breeding), University of Georgia – Tifton, for over 20 years, passed away October 19, 2016. Dr. Mixon was a graduate of Abraham Baldwin Agricultural College (1948), the University of Georgia (B.S. 1950), the North Carolina State University (M.S. 1953), and Auburn University (PhD. Plant Pathology 1966). Dr. Mixon had over 21 services to APRES, serving on numerous Committees, The Peanut, co-Editor of Peanut Science, and the Board of Directors from 1984-1987.

Bob Scott

Robert E. “Bob” Scott, National Peanut Board inaugural board member for South Carolina, passed away December 9, 2016. An analytical chemistry graduate of University of Tulsa, Bob spent his career with Spencer Chemical Company (later Gulf Oil Corp.) until retiring to Aiken, SC, where he began farming peanuts and established S&S Farm Supply. He served on the South Carolina Peanut Board as member and chairman and was a member of the South Carolina Farm Bureau.

Bob White

Robert H. “Bob” White, Peanut Producer and NPB Representative, passed away October 13, 2016 in Clarendon, Texas. Bob was also a board member of the Panhandle Peanut Growers from 1992-2009 and past member of the Texas Peanut Producers Board. He served on both the National Peanut Board (2009), as Chairman in 2015, and the American Peanut Council Board (1999) for almost 10 years until his untimely death.

Ross Wilson

Luther Ross Wilson, former manager of the Southwestern Peanut Growers Association, Gorman, Texas, passed away February 18, 2017. Ross was selected manager of the Southwestern Peanut Growers Association in 1956, retiring in 2000. During his tenure, he served on the Board every national peanut industry organization. As a member of APRES, Ross had 10 services to the Society, serving on numerous Committees and the Board of Directors from 1969-1970

Herbert Womack

Herbert Womack, APRES member and Extension Entomologist, University of Georgia – Tifton, until his retirement in 1989, passed away March 16, 2017. Mr. Womack was on of the first entomologists in the Southeaster U.S. to organize comprehensive integrated pest management schools. He was a past president of the Georgia Entomological Society (1985). He was awarded the Distinguished Service Award from the National Association of County Agricultural Agents (1984) and the Entomological Society of America (1981), as well as the Georgia Peanut Distinguished Service Award (1985) and the Georgia Peanut Research and Education Award (1986) from the Georgia Peanut Commission.

Respectfully submitted,
Jason Woodward, Chair

FINANCE COMMITTEE

Chairman Todd Baughman reported the Finance Committee met July 11th to discuss the APRES financial statements and to discuss the reserve fund. Additionally, several Committees approached the Finance Committee to discuss actions that will have an impact on the 2017 and 2018 budget, as reported.

Balance Sheet

APRES financial statements (accrual basis) state as of June 30, 2017, assets are $338,233 primarily in cash—checking, CDs. Accounts receivables of $19,896.

Liabilities are credit card charge (book order) employment taxes and withholdings totaling $5,236 plus equity of $332,997.

Profit & Loss Statement

Income through June 30, 2017 is $99,340 and expense is $30,759. Todd reminded the Board that the majority of APRES expenses occur in July/August when the bill for the Annual Meeting are paid.

Budget Comparison 2016 vs. 2017

Chairman Baughman reported APRES is currently looking at a breakeven budget, despite the positive projections in the budgeted vs. actual column. This analysis is based on the unbudgeted purchase of additional Peanuts-Genetics Processing and Utilization books; an anticipated $7K loss from institutional (library) memberships due to the move to Open Access for Peanut Science; and greater Annual Meeting expenses related to larger than expected attendance for this year's annual meeting.

Reserve Fund & Investment Policy

The Board adopted financial and investment policies of keeping one year's budget ($100K currently)in reserve and the remaining $160K in cash assets be examined during the budget process each year to determine how much should be committed to APRES expenses and how much to move to investments.

Additionally, the Board endorsed the Committees's recommendation to liquidate and invest APRES' remaining bank CDs and invest the proceeds in a Vanguard index fund with 50%stock/ 50% bonds.

Publications Committee Peanut Science Publisher Change

The Board endorsed a joint recommendation from the Finance Committee and Publications and Editorial Committee for an unbudgeted request to pursue a new publisher for Peanut Science. It is hoped that this move will reduce printing/web hosting expenses, which APRES can pass on to authors via reduced printing charges. Preliminary costs to move Peanut Science are estimated at $15-$30K.

50th Anniversary AdHoc Committee Request

Last, the Board endorsed a new line item for the 2018 budget for non-traditional expenses up to a maximum of $20K for APRES' 50th Anniversary Celebration.

APRES Financial Statements as of July 1, 2017 and the 2017 Budget
Follow on the Next Page

APRES Balance Sheet
As of 6-30-2017

					Jun 30, 17
ASSETS					
	Current Assets				
		Checking/Savings			
			Vanguard		31,636.79
			Paypal		1,214.85
			Cash - Checking - 2629		139,757.38
			Cash - MMA - 7397		103,223.07
			Cash - CD 4885		18,352.10
			Cash - CD 4647		13,596.98
			Cash - Bayer-1934		10,555.97
		Total Checking/Savings			318,337.14
		Other Current Assets			
			Account Recievable		19,896.00
		Total Other Current Assets			19,896.00
	Total Current Assets				338,233.14
TOTAL ASSETS					**338,233.14**
LIABILITIES & EQUITY					
	Liabilities				
		Current Liabilities			
			Other Current Liabilities		
				Security Bank Card	4,721.25
				State W/H Tax	92.83
				24000 · FICA/FWH Payable	422.23
			Total Other Current Liabilities		5,236.31
		Total Current Liabilities			5,236.31
	Total Liabilities				5,236.31
	Equity				
		31300 · Restricted Fund Balances			250.00
		32000 · Unrestricted Fund Balances			263,985.61
		Net Income			68,761.22
	Total Equity				332,996.83
TOTAL LIABILITIES & EQUITY					**338,233.14**

APRES Profit/Loss Statement
As of 6-30-2017

	Jan - Jun 17
Ordinary Income/Expense	
Income	
Royalty	10.00
Dividend Income	297.73
Book Sales	
Shipping & Handling	13.60
Peanut-Genetics, Processing & U	2,237.20
Total Book Sales	2,250.80
Sponsorship-Annual Meeting	
Meeting Breaks	4,500.00
Contribution - Joe Sugg Award	1,500.00
Awards	1,000.00
Thursday Reception	3,250.00
Wednesday Dinner	9,000.00
Sponsorship-Annual Meeting - Other	15,175.00
Total Sponsorship-Annual Meeting	34,425.00
Peanut Science	
Page Charges	7,831.00
Total Peanut Science	7,831.00
Miscellaneous Income	100.00
Annual Dues	
Sustaining-Platinum Level	1,000.00
Sustaining-Gold Level	1,000.00
Sustaining-Silver Level	350.00
Institutional	1,600.00
Individual-Student	525.00
Individual-Post Doc/Tech Supp	375.00
Individual-Retired	100.00
Individual-Regular	12,600.00
Total Annual Dues	17,550.00
Meeting Registration	
Meeting Registration-Retired	250.00
Meeting Registration-Platinum	0.00
Meeting Registration-Regular	34,650.00
Meeting Registration-Gold	875.00
Meeting registration-Student	1,100.00
Total Meeting Registration	36,875.00
Total Income	99,339.53

APRES Profit/Loss Statement
As of 6-30-2017

Expense	
Book Purchases	4,681.25
Administrative Expense	
66000 · Wages - Executive Officer	11,499.96
Taxes - Payroll	1,335.97
Postage	40.80
Legal Fees	474.00
Credit Card Charges	1.26
Bank Charges	
Paypal Fees	1,412.85
Total Bank Charges	1,412.85
Contract Labor	140.00
License and Permits	30.00
Office Expense	45.00
Accounting	1,315.00
Total Administrative Expense	16,294.84
Annual Meeting	
Awards	2,000.00
Total Annual Meeting	2,000.00
Peanut Science Publishing	
Peanut Science Editor Stipend	3,000.00
Peanut Science Publishing - Other	4,782.45
Total Peanut Science Publishing	7,782.45
Total Expense	30,758.54
Net Ordinary Income	68,580.99
Other Income/Expense	
Other Income	
Interest Income	180.23
Total Other Income	180.23
Net Other Income	180.23
Net Income	**68,761.22**

BUDGET VS. ACTUAL
As of 6-30-2017

INCOME	Budget 2015	Actual 2015	Proposed Budget 2016	Actual 2016	Proposed Budget 2017	Actual Jan - Jun 2017	2017 Budget vs. 2017 Actual
Annual Dues	**$22,000**	**$28,000**	**$28,000**	**$21,900**	**$28,000**	**$17,550**	**Under Budget** Membership Invoices for members who did not pay during registration or at the Annual Meeting will go out next week
AnMeeting Registrations	**$40,000**	**(VC) 39,750**	**(SE) $40,000**	**(SE) $38495**	**(SW) $35,000**	**$36,875**	**Over Budget** Larger than expected attendance for a Southwest meeting
Sponsorships –	**$25,000**	**$25,800**	**$35,000**	**$51,952**	**$37,250**	**$34,425**	**On Budget** Accounts Receivables will bring this in on budget
Ice Cream Social	$0	$800	$3,000	$0	$3,000	$0	
Wednesday Dinner	$0	**$9000	$19,000	$27,000	$19,000	$19,000	
Thursday Reception	$0	$3,000	$3,000	$3,000	$3,000	$3,250	
Meeting Breaks		$6,000	$6,000	$6,000	$6,000	$5,500	
Awards	$0	$2,750	$2,750	$3,500	$2,750	$2,500	
Fun Run		$250	$250	$500	$500		
Other	$0	$4,000	$1,000	$8,952	$3,000	$4,175	
Peanut Science	**$20,050**	**$10,465**	**$20,050**	**$20,059**	**$21,000**	**$7,831**	**Under Budget** Issue 44-1 billed at $7831
Book Sales	**$7,500**	**$336**	**$6,000**	**$4,975**	**$3,600**	**$2,237**	**On Budget** Anticipate Book Sales at Annual Meeting will bring in on budget
Book Shipping			**$300**	**$65**	**$200**	**$14**	Break even account; Reimbursed for Expenses
Miscellaneous Income	**$100**	**$658**	**$650**	**$685**	**$650**	**$408**	**On Budget** Investment accounts are earning more than CDs
TOTAL	**$114,650**	**$105,009**	**$130,000**	**$138,131**	**$125,700**	**$99,340**	**Under Budget**
Interest	$1,300	$961	$750	$453	$500	$180	
Total + Interest	**$115,950**	**$105,970**	**$130,750**	**$138,584**	**$126,200**	**$99,520**	

BUDGET VS. ACTUAL
As of 6-30-2017

EXPENSES	Budget 2015	Actual 2015	Proposed Budget 2016	Actual 2016	Proposed Budget 2017	Actual Jan - Jun 2017	
Annual Meeting	**$45,000**	**(VC) $61,554**	**$60,000**	**(SE) $47,544**	**(SW) $50,000**	**$2,000**	**On Budget** Anticipate expenses will be on budget; most functions have sponsors which cover the majority of expenses
Awards	$5,000	$5,465	$5,500	$5,252	$5,500	$2,000	
Hotel Charges	$33,000	$47,010	$45,000	$36,388	$37,000		
Speaker Expenses				$0	$2,000		
Supplies/Equip/AV	$1,000	$1,603	$1,500	$2,305	$2,000		
Travel - Ext. Agents	$5,000	$1,769	$5,000	$3,598	$5,000		
Other	$1,000	$5,707	$3,000	$0	$3,000		
Peanut Science	**$20,000**	**$13,463**	**$18,500**	**$14,597**	**$20,600**	**$7,782**	**Under Budget** Negotiating a new contract with Allen Press; moving to open Access should reduce costs
Publishing	$3,600	$4,458	$4,500	$1,821	$6,600		
Editor Stipend	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	
Website Hosting	$10,312	$5,109	$10,000	$8,991	$10,000	$4,782	
Peer Review	$387	$621	$650	$477	$650		
Other	$2,701	$275	$350	$308	$350		
Book Purchase - AOCS	**$4,125**	**$0**	**$4,681**	**$9,363**	**$0**	**$4,681**	**Over Budget** Placed 2 orders of books; rather than 1 in anticipation of Annual Meeting Sales
Book Shipping			**$300**	**$0**	**$200**		**Breakeven Account**

BUDGET VS. ACTUAL
As of 6-30-2017

Expenses, Continued	Budget 2015	Actual 2015	Proposed Budget 2016	Actual 2016	Proposed Budget 2017	Actual Jan - Jun 2017	
Administrative Expenses	**$33,475**	**$29,992**	**$34,105**	**$35,375**	**$35,230**	**$16,296**	**On Budget** No Administrative overruns expected
Dues - CAST	$0	$0	$0	$0	$0	$0	
Corp. Registration Fees	$50	$0	$30	$30	$30	$30	
Legal Fees	$250	$525	$525	$0	$525	$474	
Insurance	$100	$100	$100	$100	$100		
Executive Officer	$23,000	$23,000	$23,000	$28,414	$23,000	$11,500	
Taxes: Payroll	$2,000	$1,802	$2,000	$1,802	$2,000	$1,337	
Administrative Assistant	$0	$0	$0	$0	$0		
Web Page Maintenance	$1,500	$648	$1,500	$0	$1,500		
Accounting Services – Herring CPA	$1,950	$1,650	$2,175	$1,895	$2,175	$1,315	
Outside Services	$350	$0	$350	$200	$1,000	$140	
Postage	$50	$88	$50	$72	$50	$41	
Office Expenses	$250	$50	$250	$78	$250	$45	
Travel - Officers	$1,200	$0	$1,200	$0	$1,200		
Bank Charges	$25	$159	$175	$11	$150		
PayPal/Credit Card Fees	$2,500	$1,967	$2,500	$2,773	$3,000	$1,414	
Miscellaneous	$250	$3	$250	$0	$250		
Depreciation	$0	$0	$0	$0	$0		
Total Expenses	**$102,600**	**$105,009**	**$117,586**	**$106,879**	**$106,030**	**$30,759**	**Over Budget** Additional Book order will increase expenses by $4,600

BUDGET VS. ACTUAL
As of 6-30-2017

Income Over Expense	Budget 2015	Actual 2015	Proposed Budget 2016	Actual 2016	Proposed Budget 2017	Actual Jan - Jun 2017	Anticipated 2017
Total Income + Interest	$115,950	$105,970	$130,750	**$138,584**	**$126,200**	**$99,520**	**$111,220**
Total Expenses	$102,600	$105,009	$117,586	**$106,879**	**$106,030**	**$30,759**	**$110,600**
Net Income	**$13,350**	**$960	**$13,164**	**$31,706**	**$20,170**	**$68,761**	**$620**
**Accounts Receivables as of 12-31-2015		**$15,134		$9,515	On Accrual Basis Now		
Net Income with Receivables		**$16,094**					
Total Income					**Income:** Need 100 membership renewals @ $100 to come in on budget=$10,000 Registrations are above budget; potentially bring in another $2,000; Sponsorships will bring in another $4,700 that were billed late; Peanut Science Publishing costs are breakeven--anticipate $5,000 less income Need to sell 12 book to break even on book sales income $15,000 anticipated less income		
Total Expenses					**Expenses:** Anticipate $5,000 more expenses - Book Order		
Net Income					**Income Over Expenses:** $15,000 less income + $5,000 more expenses erases projected surplus Increasing Net Income will require more than projected income from memberships, registrations, and coming in under budget for the Annual Meeting.		

PUBLICATIONS AND EDITORIAL COMMITTEE REPORT

The Publications and Editorial Committee met Monday, July 11, 2017. Present were: Chris Butts (Chair), Chris Liebold, Shyam Tallury, Nick Dufault, Jianping Wang, Baozhou Guo, Maria Balota, Timothy Grey (Editor, ***Peanut Science***), Corley Holbrook (President, APRES), Kim Cutchins (Executive Officer, APRES). The meeting was called to order by incoming chair, Chris Liebold, promptly at 1:00 p.m.

Publisher of Peanut Science

Timothy Grey gave a report on the status of ***Peanut Science*** (see below). Kim Cutchins discussed the unresponsive customer service provided by Allen Press, the current publisher. Kim has been trying to get a new contract in place and Allen Press' response has been very difficult. We are currently publishing without a contract. Tim Grey has also had some issues with response from Allen Press during production of issues of the journal. As a result, the Executive Officer and Editor have begun to search for publishing/archival alternatives. Discussion among the committee members continued touching on page charges and Peanut Science becoming an Open Access journal on July 1, 2017. The ongoing goal of Peanut Science is to be THE peer-reviewed journal of choice for authors and readers of research pertaining to peanut. The committee will continue to review issues such page charges balanced against the cost of publication.

Motion: *The Publications and Editorial Committee recommends to the Board of Directors to permit the Committee, Executive Director, and Editor to explore and select a publisher for Peanut Science with the goal of improving service and reducing costs, and authorize the Executive Board of APRES to secure the services of the publisher recommended by the committee. (Motion, Nick Dufault; 2nd- Chris Liebold, Motion passed).* **This motion was endorsed by the APRES Board and the Finance Committee secured funding from the Board to assist with moving to another publisher.**

Peanut: Production and Management Book

The co-editors (Chris Liebold, Shyam Tallury, and Nick Dufault) of the production text book is progressing slowly. Lead authors have been secured for all chapters and they have all secured their co-authors. Chapters are in various stages of completion. None are near completion.

APRES Newsletter

Corley Holbrook brought up the subject of reviving the APRES Research Newsletter. This was a newsletter that was published quarterly updating the membership on changes in peanut research faculty, industry events, a listing of new research articles published in scientific journals including Peanut Science, and opportunities for funding and peanut research projects receiving funding. Corley has contacted the librarian at the Coastal Plain Experiment Station about assisting with literature searches to find and list newly published research. The committee thought that this would be an APRES publication worthy of revival. Chris asked the present APRES members for volunteers to tackle this new project. Maria Balota and Dave Housington volunteered. Executive Director Kim Cutchins will contact both on how to proceed.

Peanut Science Report

Chris called upon Peanut Science Editor, Tim Grey to give the Editor's Report.

Peanut Science - Editors Report – January 1, 2016 to June 30, 2017

The Associate Editors of *Peanut Science* meeting is set for Tuesday, July 11th, 2017 at the Annual APRES meeting at the Hotel Albuquerque in NM. *Peanut Science* volume 43-1 was released online in June 2016, with Volume 43-2 released December 2016 online via the website with AllenPress. *Peanut Science* Volume 44-1 was released in June 2017 with 9 articles, and Volume 43-2 will be released later in 2017.

No associate editor terms expired in 2016. No new associate editors were added in 2016.

At Google.com and enter '*Peanut Science'*, the journal is the first return and listed returns for *Peanut Science* are the first 4 websites along with APRES (#3). At scholar.google.com the request for *Peanut Science* returns 505,000 hits, with many journal articles, and Dr. Boote's 'Growth Stages of Peanut' from 1982 listed first if sorted by relevance. The goal of APRES is to continue the promotion of *Peanut Science* to a wider audience, improve the number of submissions, and increase the relevance of the journal. Additionally, Kim has been working with Allen Press to address issues with the *Peanut Science* website at http://www.peanutscience.com/. Kim has continued to work with Allen Press on developing new contracts. With the advances in technology, we are examining if there are more effective and less expensive ways to publish *Peanut Science*, while maintaining the user friendly search engine.

For the 12-month time period from January 1, 2016 to Dec 31, 2016 for manuscripts assigned to Dr. Grey as editor, there were 22 total submissions in 2016.

Table 1. Submissions by Year

Month	2010	2011	2012	2013	2014	2015	2016	2017
January	0	2	2	2	0	1	0	4
February	2	2	2	2	0	1	1	1
March	1	1	1	3	3	2	1	2
April	1	2	0	0	0	3	3	1
May	4	0	3	1	1	1	1	0
June	0	2	0	1	1	1	4	0
July	8	0	1	0	0	1	1	
August	1	2	3	5	1	2	2	
September	3	3	1	2	5	2	4	
October	2	3	2	1	1	2	1	
November	0	4	3	3	3	2	2	
December	1	1	2	1	5	1	2	
Totals	**23**	**22**	**20**	**21**	**20**	**19**	**22**	**8**

PEANUT QUALITY COMMITTEE

Chairman John Bennett and Secretary Chris Liebold updated the Board on the Committee's discussions on:

1) Reducing foreign material;
2) The results of a new report on Raw Peanut Storage conditions, which indicates changing storage temperatures from 38F to 55F is a viable option with regulation of relative humidity;
3) Research assessing aflatoxin risk to HO peanuts—both non-irrigated HO and NO peanuts have aflatoxin issues and in irrigated HO andNO peanuts there is not observed difference, will continue to verify results;

4) The new standards for damage, which rose from 2.5% to 3.5% in Seg. 2 peanuts;
5) A HO peanut flavor study is reporting no different in oil content or flavor between HO and NO peanuts, with sparked some disagreement among attendees;
6) Peanut Smut, an Argentinian disease, with potential impact in the U.S. Australia, U.S. Growers and USDA provided insights into actions being taken to prevent an outbreak in the U.S.
7) Providing guidance to peanut breeders on a path forward for breeding HO and NO peanuts.

The Committee will meet again prior to the next Annual Meeting to create objectives to address these issues.

John reported the Board voted to draft a letter to USDA-APHIS on the danger of peanut smut and to provide information on that on peanut smut to assist them in developing guidelines for dealing with peanut smut. This letter must be approved by the full APRES Board before it the letter can be sent to USDA-APHIS.

PROGRAM COMMITTEE REPORT

Program Chairman Peter Dotray recognized the outstanding help and support of Technical Program Chairman Todd Baughman; Local Arrangements Chairman Gary Schwarzlose; and, Spouses Program Chair, Peggy Dotray. Attendance for 2017 is 329 total; 235 registrants; 58 spouses; 36 children. This is the largest Southwest meeting in recent memory. Feedback from the Opening Session speakers has been outstanding. The symposium was a huge success.

Chairman Dotray thanked our wonderful group of sponsors….Bayer and BASF were co-sponsors of Wednesday night dinner; Dow AgroSciences sponsor of the Thursday night reception; Texas Peanut Producers Board sponsored the Spouses Hospitality Suite and the registration bags; Meeting breaks were sponsored by Olam Edible Nuts; Birdsong Peanuts; Syngenta; and Fine Americas; Texas A&M University sponsored the Fun Run with another record number of participants (65). The North Carolina Peanut Growers Association once again sponsored the Joe Sugg Graduate Student Competition; along with Dow AgroSciences and JLA, Inc.. APRES Sustaining Members supported the Ice Cream Social. APRES continues to have a great group of peanut product suppliers who support our meeting breaks. He asked the membership to give them a round of applause for their support.

Technical Program Chairman Todd Baughman reported the 49th Annual Meeting scheduled 140 technical presentations, including this year's symposium *"UAVs—A Look From Above*" and 34 posters.

The Joe Sugg Graduate Student Competition drew the largest number of participating universities this year. Due to the large number of participants, the competition was divided into 3 separate competitions. To address the desire to retain a one-session oral presentation competition, the Board agreed to create a new graduate student poster competition. Graduate students will have a choice of one of the two competitions. Rules are being created and will be announced shortly.

The Spouses Program put together by Peggy Dotray was a huge success. Two and half days of activities in the hospitality suite with lots of prize giveaways (and good food) and great tours of two area museums.

The 2018 Annual Meeting planning has already begun, as it will be APRES's 50th Anniversary. The Program Committee has been asked to add special sessions to the schedule, such as historical talks, technology training and additional grad student activities.

The Fun Run drew over 75 runners, breaking last year's record.

SITE SELECTION COMMITTEE REPORT

Chairman Mike Baring reported APRES has signed contracts for the 2018 and 2019 Annual Meetings. Shelly Nutt has agreed to check out potential properties in Texas for the 2020 meeting.

2018 Annual Meeting	2019 Annual Meeting	2020 Annual Meeting
July 10-12	July 9-11	July 14-16
Doubletree Williamsburg	Hotel at Auburn University	Southwest Region
Williamsburg, VA	Auburn, AL	
50th Anniversary Celebration		

Proposed Committee Representation Change

The following change to the APRES by-laws regarding the number of members of the site selection committee has been sent to the APRES membership for review. The membership was notified more than 30-days in advance of a vote and the membership was asked to vote on the following by-law change:

Proposed By-Laws Change:

Article IX. Committees; Secton 2; Point h; first sentence shall be changed to read as follows *(changes and addtions are in **bold**; eliminated words have been ~~struck through~~):*

h. *Site Selection Committee*: This committee shall consist of **six** (~~four~~) members, **two members from each region** that represent the diverse membership of the Society and with each serving three-year terms.

It was unanimously approved that the APRES by-laws will be amended to state the Site Selection Committee will consist of 6 members, two members from each region, each serving three year terms.

Adjournment

Outgoing President Corley Holbrook handed the gavel to newly-elected President, Peter Dotray President Peter Dotray invited all to stay for the Awards Reception and, as his first official act, adjourned the meeting.

APPENDIX

BY-LAWS

of the

AMERICAN PEANUT RESESEARCH and **EDUCATION SOCIETY, INC.**

ARTICLE 1. 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*, any person who by virtue of professional or academic interests wishes to participate in the affairs of the society.

2. *Retired*, persons who were regular members for at least five consecutive and immediately preceding years may request this status because of retirement from active employment within the peanut or academic community. 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. *Student*, persons who are actively enrolled as a student in an academic institution and who wish to participate in the affairs of the society. Student members have the all rights and privileges of regular members except that they may not serve on the Board of Directors. Student members must be proposed by a faculty member from the student's academic institution and that faculty member must be regular or retired member of 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.

4. *Diamond Level,* four persons designated by the sustaining member would be entitled to an individual membership and 100% discount on annual meeting registration. This benefit cannot be transferred to anyone else.

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. Those members present and entitled to vote at a meeting of the Society, after proper notice of the meeting, shall constitute a quorum.

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. The Board of Directors and all committees may conduct meetings and votes by conference call or by electronic means of communication as needed to carry out the affairs of the Society.

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:
    - Preparing routine correspondence with authors to provide progress report of manuscripts.
    - 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:
    - Development and review of galley proofs of individual articles.
    - Development and review of the journal proof (proof of all revised articles compiled in final publication format with tables of contents, page numbers, etc.)
    - 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, will serve a three-year term.

h. The Executive Officer - non-voting member of the Board of Directors who may be compensated for his/her 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 Board of Directors resign from the board before the end of their term, the president shall request that the Nominating Committee nominate a qualified member of APRES to fill the remainder of the term of that individual and submit their name for approval by the Board of Directors.

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 four members that represent the diverse membership of the Society, each appointed to a three-year term. 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 that year's annual meeting. The president will then distribute those nominations to the Board of Directors 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.

   Nominees to the APRES Board of Directors shall have been a member of APRES for a minimum of five (5) years, served on at least three (3) different committees, and be familiar with a significant number of APRES members and the various institutions and organizations that work with peanut.

c. *Publications and Editorial Committee:* This committee shall consist of four members that represent the diverse membership of the Society and who are appointed to three-year terms. 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 four members that represent the diverse membership of the Society and are appointed for a three-year term. The primary purpose of this committee 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:

   - 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.

- 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.

- Necrology: Proper recognition of deceased members.

- 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 four members that represent the diverse membership of the Society and who are themselves Fellows of the Society. 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 six members that represent the diverse membership of the Society and with each serving three-year terms. The Chairperson of the committee shall be from the region in which the future meeting site is to be selected as outlined in subsections (1) – (3) and the Vice-Chairperson shall be from the region that will host the meeting the following year. The Vice-Chairperson will automatically move up to chairperson. All of the following actions take place two years prior to the annual meeting for which the host city and hotel decisions are being made.

Site Selection Committee shall:
- Identify a host city for the annual in the designated region;
- Solicit and evaluate hotel contract proposals in the selected host city;
- Recommend a host city and hotel for consideration and decision by the Board of Directors.

Board of Directors shall:
- Consider proposal(s) submitted by the Site Selection Committee;
- Make final decision on host city and hotel;
- Direct the Executive Officer to sign the contract with the approved hotel.

i. *Coyt T. Wilson Distinguished Service Award Committee:* This committee shall consist of four members that represent the diverse membership of the Society, each serving three-year terms. 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. 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.

The By-Laws may also be amended by votes conducted by mail or electronic communication, or a combination thereof, provided that the membership has 30 days to review the proposed amendments and then votes cast within a subsequent 30 day period. For such a vote to be valid at least 15% of the regular members of the society must cast a vote. In the absence of a sufficient number of members voting, the proposed amendment will be considered to have failed.

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
APRES Annual Meeting
13 July 2017, Albuquerque, NM

GUIDELINES for AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY

FELLOW of the SOCIETY ELECTIONS

Fellows

Fellows are active members of the Society who have been nominated to receive the honor of fellowship by APRES active members. Fellows of the Society are 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. 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 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.

Deadline
Nominations are to be submitted electronically to the committee chair by the date listed in the Call for Nominations on the APRES website (www.apresinc.com).

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 June 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 with a placque. 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 Nominator.

Distribution of Guidelines
These guidelines and the format are to be published in the APRES PROCEEDINGS. Nominations should be solicited by an announcement published on the APRES website (www.apresinc.com).

Administrative Note:
Fellow of the Society nominees must be approved by the Board of Directors at its June BOD meeting. A congratulatory letter is sent to newly elected Fellow(s) prior to the meeting so that they may have family members present at the Award Ceremony.

Amended July 2015

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."

NOMINEE:
Name, 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.

GUIDELINES for AMERICAN PEANUT RESEARCH & EDUCATION SOCIETY

BAILEY AWARD

The Bailey Award is given to the author(s) of the best paper presented at the APRES Annual Meeting. The Bailey Award was established in honor of Wallace K. Bailey, an eminent peanut scientist.

The award is determined through a two-step process whereby nominations are selected from the oral paper presentations at the APRES Annual Meeting. One nominee is selected from each session category. Nominees are asked to submit a manuscript based on the information presented during the respective meeting. The winner is decided after critiquing the submitted manuscripts.

Initial Selection – Oral Presentation:

Each session moderator 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 moderator in consultation with the Bailey Award chairman, the three judges may agree to 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. Joe Sugg Graduate Student Competitors, oral presentation and poster presentation, are **not** eligible for the Bailey Award.
3. Symposia and Poster presentations are **not** eligible for the Bailey Award.

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

- Well organized.
- Clearly stated.
- Scientifically sound.
- Original research or new concepts in extension or education.
- Presented within the time allowed.

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

Final Evaluation – Submitted Manuscript:

Final evaluation for the Award and determination of the winner will be made from manuscripts submitted to the Bailey 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 APRES Annual Meeting Proceedings.

The following should be considered for eligibility:

1. Authorship of the manuscript should be the same (both in name and order) as the original abstract.
2. Papers with added author(s) will be ruled ineligible.
3. Submission of a manuscript for Bailey Award consideration is an agreement to publish the manuscript in Peanut Science, if the manuscript is the winning paper. (Winning paper is published free of charge)

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.

Chairman Responsibilities:

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

- In collaboration with the session moderator, identify judges for each session at the APRES Annual Meeting.
- Notify session moderators for the upcoming meeting of their responsibilities in relation to judging oral presentations as set in the Bailey Award guidelines, which are published in the APRES Annual Meeting Proceedings.
- Meet with committee at APRES meeting.
- Collect names of nominees from session moderators by Friday a.m. of Annual Meeting.
- Provide Executive Officer and Bailey Award committee members the name of Bailey Award nominees.

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

- Notify nominees within two months of meeting.
- Set deadline in late Fall or early winter for receipt of manuscripts by Bailey Award chair.
- Distribute manuscripts to committee members for judging.
- Provide Executive Officer with Bailey Award winner and paper title by the date provided in the Call for Nominations.
- Notify session moderators for the upcoming meeting of their responsibilities in relation to judging oral presentations as set in the Bailey Award guidelines, which are published in the APRES Annual Meeting Proceedings
- Meet with committee at APRES meeting.
- Collect names of nominees from session moderators by Friday a.m. of Annual Meeting.
- Provide Executive Officer and Bailey Award committee members the name of Bailey Award nominees.
- Bailey Award chair's responsibilities are completed when the Executive Officer receives Bailey Award recipient's name and paper title.

Award

The presentation of peanut bookends will be made to the speaker and other authors appropriately recognized. Publication of winning manuscript will be published free of charge in Peanut Science.

Amended 7---12---2017

Administrative Note:

The Bailey Award winner(s) is announced during the Business Meeting at the APRES Annual Meeting. The winner is **not** notified in advance of the announcement. The BOD does not vote on or endorse the recipient at its June meeting.

GUIDELINES FOR THE AMERICAN PEANUT RESEARCH & EDUCATION SOCIETY'S

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 is listed in the Call for Nominations on the APRES website (www.apresinc.com).

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. Electronic copy or Six (6) hard copies of the nomination packet, plus a headshot photograph of the nominee should be sent to the committee chair.

Format.

TITLE:
Entitle the document "Nomination of *(Enter Nominee Name)* for the Coyt T. Wilson Distinguished Service Award presented by the American Peanut Research and Education Society".

NOMINEE:
Include the name, 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 Nominees.

Personal Achievements and Recognition:

- Education and degrees received: Give field, date and institution
- Membership in professional organization
- Honors and awards
- Employment: Give years, locations and organizations

Service to the Society:

- Number of years membership in APRES
- Number of APRES annual meetings attended
- List all appointed or elected positions held
- Basis for nomination
- Significance of service including changes, which took place in the Society as a result of this work and date it occurred.

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.

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.

Administrative Note:

The BOD votes on the nomination of the award recipient prior to the July Board meeting. The recipient is notified by letter prior to the meeting in order to give them time to bring family to the meeting.

GUIDELINES

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 Research 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 Education 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:

III. 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.

IV. Nomination Procedures

Nominations will be made on the Nomination Form for Dow AgroSciences Awards. Forms are available on the APRES website (www.apresinc.com). A nominator's submittal letter summarizing the significant professional achievements and their impact on the peanut industry must be submitted with the nomination, along with a photograph (headshot) of the nominee. Three supporting letters must also be submitted with the nomination. Supporting letters may be no more than one page in length. Nominations must be postmarked by the date established in the Call for Nominations and mailed (electronically or postal) 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.

V. 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.

Administrative Note:

Recipients of the Dow Awards are not notified in advance of receiving the award. Only the President, President-Elect, and Past President are notified of the recipients in advance of the meeting.

Amended 7-13-2017

NOMINATION FORM FOR DOW AGROSCIENCES AWARDS

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

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. _____

Nominee has been an APRES Member for 5 Years? Yes No

Nominee Photograph Included with Nomination? Yes No

II. Nominator:

Name_____Signature _____

Address _____

Title_____Tel No. _____

III. Education: (include schools, college, universities, date, 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). The material should be suitable for a news release.

49th Annual Meeting

American Peanut Research and Education Society

2017 Program

49th Annual Meeting

July 11-13, 2017 * Albuquerque, NM

Sponsors

Wednesday Night Reception & Dinner
Bayer
BASF

Meeting Breaks
Birdsong Peanuts
Fine Americas, Inc.
Olam Edible Nuts
Syngenta

Ice Cream Social
AmVac
Buhler Group
DuPont
Golden Peanut & Tree Nuts
National Peanut Board
National Peanut Buying Points Association
Neogen
Nichino America
North Carolina Peanut Growers Association
Premium Peanut
The J.M. Smucker Company
U.S. Gypsum
Valent
Virginia Peanut Growers Association

Registration Bags & Product Donations
Texas Peanut Producers Board
Verdesian Life Sciences

Spouses Program
Texas Tech University

Awards Reception
Dow AgroSciences

Spouses Hospitality Suite
Texas Peanut Producers Board

Joe Sugg Graduate Student Competition
North Carolina Peanut Growers Association
Dow AgroSciences
JLA, Inc.

Fun Run
Texas A&M AgriLife Research

Peanut Snacks
Alabama Peanut Producers Association
Bell Plantation
Florida Peanut Producers Association
Georgia Peanut Commission
Hershey's Chocolate
Hormel Foods
Mars Chocolate
Mississippi Peanut Growers Association
North Carolina Peanut Growers Association
Ready Roast Nut Company
The J.M. Smucker Company
Snyder's/Lance
South Carolina Peanut Board
Texas Peanut Producers Board
Virginia Peanut Growers Association

AMERICAN PEANUT RESEARCH & EDUCATION SOCIETY
BOARD OF DIRECTORS
2016-17

President…….. Corley Holbrook (2018)

Past President…….. Tom Stalker (2017)

President-Elect…….. Peter Dotray (2019)

Executive Officer…….. Kimberly Cutchins (2017)

University Representatives:
- Virginia-Carolina…….. Rick Brandenburg (2019)
- Southeast……..Peggy Ozias-Akins (2019)
- Southwest…….. Michael Baring (2017)

USDA Representative…….. Marshall Lamb (2019)

Industry Representatives:
- Production…….. Wilson Faircloth (2018)
- Shelling, Marketing, Storage…… Darlene Cowart (2019)
- Manufactured Products…… Jim Elder (2017)

Director of Science and Technology of the
- American Peanut Council…… Howard Valentine (2017)

National Peanut Board …….. Dan Ward (2017)

2017 Program Committee
Peter Dotray, Chair

Local Arrangements
Gary Schwarzlose

Technical Program
Todd Baughman

Spouses Program
Peggy Dotray

Fun Run
Pete Dotray, Chair

APRES Committees
2016-17

Bailey Award Committee
John Damicone, Chair (2018)
Charles Chen (2017)
Peter Dotray (2017)
Phat Dang (2018)
Maria Balota (2019)
Kim Moore (2019)

Coyt T. Wilson Distinguished Service Award Committee
Emily Cantowine, Chair (2017)
Jason Woodward (2018)
Albert Culbreath (2019)
Mark Abney (2019)

Dow AgroSciences Awards Committee
Kelly Chamberlain, Chair (2017)
Victor Nwosu (2017)
John Richburg (2017)
Michael Baring (2018)
Bill Branch (2018)
Carroll Johnson (2019)
Dylan Wann (2019)

Fellows Committee
David Jordan, Chair (2017)
Mark Burow (2017)
Diane Rowland (2017)
Eric Prostko (2019)

Finance Committee
Todd Baughman, Chair (2017)
Naveen Puppala (2017)
Scott Tubbs (2017)
Howard Valentine (2018)
Tim Brenneman (2019)

Joe Sugg Graduate Student Award Committee
Robert Kemerait, Chair (2017)
Maria Balota (2017)
Rebecca Bennett (2017)
Juliet Chu (2018)
Hillary Mehl (2018)

Nominating Committee
Tom Stalker, Chair (2017)
Barry Tillman (2017)
Peggy Ozias-Akins (2018)
Corley Holbrook (2018)

Peanut Quality Committee
John Bennett, Chair (2019)
Michael Franke (2017)
Chris Liebold (2017)
Darlene Cowart (2018)
Lisa Dean (2018)
Marshall Lamb (2018)
Barry Tillman (2016)
Robert Moore (2019)

Program Committee
Peter Dotray, Chair (2017)
Todd Baughman, Technical Program Chair
Gary Schwarzlose, Local Arrangements Chair

Publications and Editorial Committee
Chris Butts, Chair (2017)
Shyam Tallury (2017) Co-Editor
Jianping Wang (2017)
Baozhou. Guo (2018)
Chris Liebold (2018) Co-Editor
Michael J. Mulvaney (2018)
Nick Dufault Co-Editor

Public Relations Committee
Jason Woodward, Chair (2017)
Ron Sholar (2018)
Keith Rucker (2019)
William Pearce (2019)

Site Selection Committee
Michael Baring, Chair (2017)
Rebecca Bennett (2017)
Naveen Puppala (2017)
Tom Isleib (2018)
Barbara Shew (2018)
Charles Chen (2019)
Hannah Jones (2019)

APRES 49th Annual Meeting
Schedule of Events

Monday, July 10, 2017		
4:00 - 5:30 p.m.	NPF Peanut Genomics Initiative Meeting	Alvarado C
Tuesday, July 11, 2017		
Morning	Golf on Your Own	
8:00 a.m. - 5:00 p.m.	Registration	North Atrium
8:00 - 10:00 a.m.	Seed Summit	Alvarado A
10:00 - 12 Noon	Crop Germplasm Committee	Alvarado B
Mid-day	Lunch on Your Own	
1:00 - 4:30 p.m.	Spouses Hospitality Suite Open	Fireplace Room
Afternoon	Committee Meetings	
1:00 p.m.	Publications and Editorial Committee	Alvarado A
1:00 p.m.	Associate Editors Peanut Science	Alvarado B
1:00 p.m.	Nominating Committee	Alvarado C
2:00 p.m.	Peanut Quality Committee	Alvarado A
2:00 p.m.	Site Selection Committee	Alvarado B
2:00 p.m.	Dow Awards Committee	Alvarado C
2:00 p.m.	Fellows Award Committee	Alvarado F
3:00 p.m.	Public Relations Committee & 50th Anniversary Celebration Committee	Alvarado A
3:00 p.m.	Coyt T. Wilson Award Committee	Alvarado B
3:00 p.m.	Bailey Award Committee	Alvarado C
4:00 p.m.	Finance Committee	Alvarado A
4:00 p.m.	Joe Sugg Graduate Student Competition Committee	Alvarado B
3:00 - 6:00 p.m.	Presentation Uploading	Registration Area North Atrium
6:00 - 8:00 p.m.	Ice Cream Social	Juniper Garden/ Portal Area
Wednesday, July 12, 2017		
8:00 a.m. - 5:00 p.m.	Registration	North Atrium
7:00 a.m. - 8:00 a.m. 1:00 p.m. - 2:30 p.m.	Presentation Uploading	APRES Registration North Atrium
8:00 a.m. - 4:00 p.m.	Spouses Hospitality Suite Open	Fireplace Room
8:00 - 9:55 a.m.	Opening General Session	Alvarado D
9:55 - 10:15 a.m.	Networking Break	East Atrium
10:15 a.m. - 12 Noon	Symposium: UAVs--A Look From Above	Alvarado D
12 Noon - 1:30 p.m.	Lunch on Your Own	
1:30 - 4:00 p.m.	Joe Sugg Graduate Student Competition *(3 Concurrent Sessions)*	Alvarado A, B & C
1:30 - 3:45 p.m.	Joe Sugg Graduate Student Competition - Section 1	Alvarado A
1:30 - 4:00 p.m.	Joe Sugg Graduate Student Competition - Section 2	Alvarado B
1:30 - 3:45 p.m.	Joe Sugg Graduate Student Competition - Section 3	Alvarado C
2:30 - 2:45 p.m.	Networking Break	East Atrium
5:00 - 6:00 p.m.	Board of Directors Meeting	Alvarado H
7:00 - 9:00 p.m.	Evening Meal	Alvarado D & E

APRES 49th Annual Meeting
Schedule of Events

Thursday, July 13, 2017		
6:15 a.m.	APRES Fun Run/Walk	West Atrium
8:00 a.m. - 4:00 p.m.	Registration Open	North Atrium
8:00 a.m. - 4:00 p.m.	Spouses Hospitality Suite Open	Fireplace Room
8:00 - 9:00 a.m.	Poster Viewing and Discussions *(Authors Present)*	East Atrium
9:00 a.m. - 12 Noon	Concurrent Breakout Sessions Bayer Excellence in Extension & Extension Techniques Breeding, Biotechnology & Genetics - Section I Breeding, Biotechnology & Genetics - Section II Plant Pathology, Nematology, Mycotoxins, Entomology	Alvarado A, B, C, F
9:00 a.m. - 12 Noon	Bayer Excellence in Extension & Extension Techniques	Alvarado A
9:00 - 11:30 a.m.	Breeding, Biotechnology, & Genetics Section I	Alvarado B
9:00-11:15 a.m.	Breeding, Biotechnology, & Genetics Section II	Alvarado C
9:00-11:45 a.m.	Plant Pathology, Nematology, Mycotoxins, Entomology	Alvarado F
10-10:15 a.m.	Networking Break	East Atrium
12 Noon - 1:00 p.m.	Lunch on Your Own	
1:00 - 4:30 p.m.	Concurrent Breakout Sessions Production and Harvest Technologies Weed Science, Physiology & Seed Technology Economics, Harvesting, Processing, & Utilization Breeding, Biotechnology & Genetics - Section III	Alvarado A, B, C, F
1:00 - 4:00 p.m.	Production and Post Harvest Technologies	Alvarado A
1:00 - 4:15 p.m.	Weed Science, Physiology & Seed Technology	Alvarado B
1:00 - 4:30 p.m.	Economics, Harvesting, Processing, & Utilization	Alvarado C
1:00 - 4:15 p.m.	Breeding, Biotechnology, & Genetics Section III	Alvarado F
2:30-3:00 p.m.	Networking Break	East Atrium
4:30 - 5:30 p.m.	APRES Business Meeting and Awards Ceremony	Franciscan Ballroom
5:30 - 7:30 p.m.	Awards Reception	Franciscan Ballroom

Monday, July 10, 2017	
4:00 - 5:30 p.m. Alvarado C	**NPF Peanut Genomics Initiative Meeting**

Tuesday, July 11, 2017	
Morning	Golf on Your Own
8:00 a.m. - 5:00 p.m. North Atrium	**Registration**
8:00 - 10:00 a.m. Alvarado A	**Seed Summit**
10:00 a.m. - 12 Noon Alvarado B	**Crop Germplasm Committee**
Mid-day	**Lunch on Your Own**
1:00 - 4:30 p.m. Fireplace Room	**Spouses Hospitality Suite Open** *Sponsored by Texas Peanut Producers Board* *A place to rest, relax, meet and greet, and get a snack while you wait for family and friends.*
Afternoon	**Committee Meetings**
1:00 p.m. Alvarado A Alvarado B Alvarado C	 Publications and Editorial Committee Associate Editors Peanut Science Nominating Committee
2:00 p.m. Alvarado A Alvarado B Alvarado C Alvarado F	 Peanut Quality Committee Site Selection Committe Dow Awards Committee Fellows Award Committee
3:00 p.m. Alvarado A Alvarado B Alvarado C	 Public Relations Committee & 50th Anniversary Celebration Committee Coyt T. Wilson Award Committee Bailey Award Committee
4:00 p.m. Alvarado A Alvarado B	 Finance Committee Joe Sugg Graduate Student Competition Committee
3:00 - 6:00 p.m. Registration Area North Atrium	**Presentation Uploading**
6:00 - 8:00 p.m. Juniper Garden/ Portal Area	**Ice Cream Social** *Sponsored by APRES' Sustaining Members* *The perfect event to kick off the social side of the 49th APRES Annual Meeting. Dessert (or a sweet tooth dinner) for all in a mix and mingle setting with your fellow attendees and guests. (Cash bar)*

Wednesday, July 12, 2017	
8:00 a.m. - 5:00 p.m. North Atrium	**Registration**
7:00 a.m.- 8:00 a.m. 1:00 p.m.-2:30 p.m. APRES Registration North Atrium	**Presentation Uploading**
8:00 a.m. - 4:00 p.m. Fireplace Room	**Spouses Hospitality Suite Open** *Sponsored by Texas Peanut Producers Board* *A place to rest, relax, meet and greet, and get a snack while you wait for family and friends.*
8:00 - 9:55 a.m. Alvarado D	**Opening General Session** *C. Corley Holbrook, APRES President, Presiding* *Pete Dotray, 2017 Program Chairman*
	Welcome to Albuquerque Bruce Hinrichs Associate Director/Eastern District Department Head Cooperative Extension Service New Mexico State University
	Agricultural Biosecurity: ***What Does it Mean and Why Does it Matter to the Peanut Industry?*** Dr. Jacqueline Fletcher Regents Professor, Active Emerita Oklahoma State University
	As Luck Would Have It: Reflections on 40 years as an Accidental Farm Writer Ron Smith Editor Southwest Farm Press
	Southwest Grower Association Updates Shelly Nutt, Executive Director, Texas Peanut Producers Board Ron Sholar, Executive Director, Oklahoma Peanut Commission Jim Chandler, New Mexico Peanut Growers Association

9:55 - 10:15 a.m. East Atrium	**Networking Break** *Sponsored by Syngenta*

10:15 a.m. - 12 Noon Alvarado D	**Symposium: UAVs--A Look From Above** *Moderator: Peter Dotray, Texas Tech University*
	"UnManned Aircraft Today and Tomorrow: ***The Present and Future Applications of Drones in the Field"*** Dr. Jamey Jacob John Hendrix Chair and Professor of Aerospace Engineering Director, Unmanned Systems Research Institute School of Mechanical and Aerospace Engineering Oklahoma State University

	"UAVs for High-Throughput Phenotyping and Agricultural Research" Dr. Josh McGinty Extension Agronomist Texas A&M AgriLife Extension Service Corpus Christie, TX
	"Disease and Phenotypic Evaluations Using Unmanned Aerial Systems" Ms. Sara Beth Pelham PhD Graduate Student Department of Crop and Soil Sciences University of Georgia
	"Using UAVs for Phenotyping Yield and Abiotic Stress" Dr. Maria Batola Associate Professor and Extension Specialist Tidewater Agricultural Research and Experiment Center Virginia Tech University

12 Noon - 1:30 p.m.	**Lunch on Your Own**

1:30 - 4:00 p.m. Alvarado A, B & C	**JOE SUGG GRADUATE STUDENT COMPETITION** *(3 Concurrent Sessions)*
1:30 - 3:45 p.m. Alvarado A	**Joe Sugg Graduate Student Competition - Section 1** ***Sponsored by: North Carolina Peanut Growers Association*** ***Moderator: Maria Balota, Virginia Tech University***
1:30	**Genetic and On-Field Evaluation of the Black Pod (Bp) Gene to Determine Peanut Seed Maturity** **M.D. GOYZUETA***, B.L. TILLMAN, North Florida REC, Agronomy Department, University of Florida, Marianna, FL 32446; D.L. ROWLAND, Agronomy Department, University of Florida, Gainesville, FL 32611.
1:45	**Evaluating an *Arachis hypogaea* × *Arachis diogoi* Interspecific Hybrid-Derived Population for Multiple Disease Resistance.** **W.G. HANCOCK***, F.R. CANTOR BARREIRO, S.C. COPELAND, J.W. HOLLOWELL, T.G. ISLEIB, and H.T. STALKER, Dept. of Crop and Soil Sci., N.C. State Univ., Raleigh, NC 27695-7629; S.P. TALLURY, Plant Germplasm Resources Conservation Unit, USDA-ARS, Griffin, GA 30223-1797.
2:00	**Introgression Pathway for Drought Tolerance in Peanut (*Arachis hypogaea* L.).** **J.M. CASON***, C.E. SIMPSON, J.A. BRADY, Texas A&M AgriLife Research, Texas A&M University System, Stephenville, TX 76401.
2:15:00 AM Paper Withdrawn	**Mapping a New Source of Root-Knot Nematode (RKN) Resistance from the Wild Species A. Stenosperma.** **CAROLINA BALLÉN-TABORDA***, SCOTT JACKSON, DAVID BERTIOLI, SORAYA LEAL-BERTIOLI, Center for Applied Genetic Technologies and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602, USA. YE CHU, PEGGY OZIAS-AKINS, Department of Horticulture and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, 2356 Rainwater Road, Tifton, GA 31793, USA. CORLEY HOLBROOK, PATRICIA TIMPER, USDA-ARS, Tifton, GA 31793, USA

2:30-2:45 East Atrium	**Networking Break** *Sponsored by Fine Americas*

2:45	**Phenotypic Characterization of the USDA Core and Mini-Core Peanut Germplasm Collection** **S.W. DEZERN***, G.E. MACDONALD, E. VAN SANTEN, M.J. MULVANEY, Agronomy Department, University of Florida, Gainesville, FL 32611-0300; C. HOLBROOK, USDA ARS, Tifton, GA 31793-5766; and N.A. BARKLEY, International Potato Center, Lima, Peru.
3:00	**Comparative Genomics Analysis of Field Isolates of *Aspergillus flavus* and *A. parasiticus* to Explain Phenotypic Variation in Oxidative Stress Tolerance and Host Preference.** **J.C. FOUNTAIN***, G. AGARWAL, R.C. KEMERAIT, University of Georgia, Department of Plant Pathology, Tifton, GA, 31793; P. BAJAJ, M. PANDEY, R.K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India, 502324; S.N. NAYAK, University of Agricultural Sciences, Dharwad, Karnataka, India, 580005; R.D. LEE, University of Georgia, Department of Crop and Soil Sciences, Tifton, GA, 31793; and B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA, 31793.
3:15	**Genotyping of Recombinant Inbred Lines Population Provides Evidence of Tetrasomic Recombination in Cultivated Peanut** **C. CHAVARRO***, D. BERTIOLI, S. LEAL-BERTIOLI, S. JACKSON, Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Athens, GA 30602; Y. CHU and P. OZIAS-AKINS, Horticulture Department, University of Georgia Tifton Campus, Tifton, GA 31793; C.C. HOLBROOK, USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; T. G. ISLEIB, Department of Crop Science, North Carolina State University, P.O. Box 7629, Raleigh, NC 27695.
3:30	**Particle Induced X-rays Emission (PIXE) Method for Elemental Composition of Groundnut Germplasms** **A.U. REHMAN*** and U. Khan, Department of Botany, Hazara University, Mansehra KPK,

1:30 - 4:00 p.m. Alvarado B	**Joe Sugg Graduate Student Competition - Section 2** ***Sponsored by: JLA, Inc.*** ***Moderator: Dan Anco, Clemson University***
1:30	**Georgia-06G Response to Ele-Max ENC® with Paraquat** **K. M. EASON***, R. S. TUBBS, E. P. PROSTKO, T. L. GREY, O. W. CARTER, Department of Crop & Soil Science, The University of Georgia, Tifton, GA 31793-0748; and, X. S. LI, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 26849.
1:45	**Evaluating the Impact of Canopy Defoliation at Two Critical Timings in Peanut.** **C.C. ABBOTT***, J.M. SARVER, and R.A. HENN, Mississippi State University, Mississippi State, MS; J. GORE, L.J. KRUTZ, Mississippi State University, Stoneville, MS
2:00	**Land Preparation and Irrigation Method Impacts on Peanut Pod Yield, Quality and Water Use Efficiency.** **S.D. LEININGER***, L.J. KRUTZ, and J. GORE, Mississippi State University, Stoneville, MS; J.M. SARVER, A. Henn, and C.C. ABBOTT, Mississippi State University, MS

2:15	**Evaluating the Impact of Magnesium on Calcium Uptake in Runner Peanut** **K.D. PEGUES***, R.S. TUBBS, G.H. HARRIS, and W.S. MONFORT, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA

2:30-2:45 East Atrium	**Networking Break** *Sponsored by Fine Americas*

2:45	**Using Diclosulam to Reduce Yellow Nutsedge (*Cyperus esculentus*) and Purple Nutsedge (Cyperus rotundus) Tuber Production.** **D. B. SIMMONS***, T.L. GREY, R.S. TUBBS, E.P. PROSTKO, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA, 31793
3:00	**PEANUT AND COTTON RESPONSE TO FLURIDONE APPLICATIONS.** **D. L. TEETER*1,** T. A. BAUGHMAN1, P. A. DOTRAY2, R. W. PETERSON1; 1Oklahoma State University, Ardmore, OK, 2Texas Tech University, Lubbock, TX.
3:15	**Potential for Peanut in a Wheat-Peanut Cropping System in North Carolina.** **A.T. HARE*** and D.L. JORDAN, North Carolina Cooperative Extension Service, Raleigh, NC 27695; and T. CORBETT, North Carolina Department of Agriculture and Consumer Services, Lewiston-Woodville, NC 27849.
3:30	**The Influence of Nozzle Type on Peanut Weed Control Programs** **O.W. CARTER***, E.P. PROSTKO, Crop and Soil Science Department, The University of Georgia, Tifton, Georgia 31793.
3:45	**The Effect of Plant population and Harvesting Dates on Aflatoxin Contamination in Groundnut** **L M. MKANDAWIRE*** , W. MHANGO, V.W. SAKA, V.H. KABAMBE Lilongwe University of Agriculture and Natural Resources, Bunda Campus, P.O. Box 219, Lilongwe; J. GOODMAN, Exagris Africa Limited, Malawi; and R. BRANDENBURG, North Carolina State University, Box 7613, Raleigh, NC 27695-7613

1:30 - 3:45 p.m. Alvarado C	**Joe Sugg Graduate Student Competition - Section 3** ***Sponsored by: Dow AgroSciences*** ***Moderator: David Jordan, North Carolina State University***
1:30:00 AM Paper Withdrawn	**Groundnut Yields and Aflatoxin Contaminaton as Influenced by Planting Time** **S. JUMA***, Exagris Africa Ltd, P.O. Box 3291, Lilongwe and L.M. MKANDAWIRE, Lilongwe University of Agriculture and Natural Resource, P.O Box 219, Lilongwe, Malawi
1:45	**Effect of Pre-Roast Moisture Content and Post Roast Cooling Parameters on Oil Migration During Oil Roasting of Peanuts** **H.K. STRASSER***, Department of Food, Bioprocessing, and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695-7624; L.L. DEAN, K.W. HENDRIX, USDA ARS Market Quality and Handling Research Unit, Raleigh, NC 27695-7624; and C. ARELLANO, Department of Statistics, North Carolina State University, Raleigh, NC 27695-8023
2:00	**Effect of Planting Date on Two Cultivars on Leaf Spot Severity and Yield when Grown Without Fungicides.** **B. S. JORDAN*** and A. K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-5766, and W. D. BRANCH, Dept. of Crop and Soil Science, University of Georgia, Tifton, GA 31793-5766.

2:15	**Understanding Peanut Agroecosystem Performance at Current and Projected Climates, Using a Plant-Soil-Environment Approach** **H. E. LAZA***, Dept. of Plant & Soil Sciences, Texas Tech University; J. BAKER, D. GITZ, C. YATES, N. LAYLAND, J. MAHAN, USDA-ARS Cropping Systems Research Laboratory; Diane Rowland, Agronomy Dept., University of Florida; N. PUPPALA, Plant & Environmental Science Dept., New Mexico State University; and, P. PAYTON, USDA-ARS Cropping Systems Research Laboratory.

2:30-2:45 East Atrium	**Networking Break** *Sponsored by Fine Americas*

2:45	**Population Structure of *Sclerotium rolfsii* in the Southeastern United States** **P.S. SORIA*** and N.S. DUFAULT, Plant Pathology Department, University of Florida, Gainesville, FL 32611.
3:00	**Applications of Peanut Skins as a Functional Food Ingredient** **L. CHRISTMAN***, Department of Food, Bioprocessing, and Nutritional Sciences, North Carolina State University, Raleigh NC. 27695. L DEAN, Department of Food, Bioprocessing, and Nutritional Sciences, North Carolina, Raleigh, NC 27695
3:15	**Effect of Groundnut Drying Methods on Drying Rate and Aflatoxin Contamination** **M. CHIMBAZA***, A.M. MWANGWELA, Food science and Technology Department, Lilongwe University of Agriculture and Natural Resources, W. KAMTHUNZI, Agricultural Engineering Department, Lilongwe University of Agriculture and Natural Resources, K. MALLIKARJUNAN, Department of Food Science and Nutrition, University of Minnesota, St. Paul, MN , and K. ADHIKARI, Department of Food Science and Technology, University of Georgia, Griffin, GA, USA
3:30	**Effect of Blanching on Composition, Physical, and Functionality of Full Fat Groundnut** **T. V LONGWE***, A.M, MWANGWELA, W. KASAPILA, V. MLOTHA, Department of Food and Science and Technology, Lilongwe University of Agriculture and Natural Resources, Bunda College Campus, P.O Box 219, Lilongwe, Malawi, K. MALLIKARJUNAN, Department of Food Science and Nutrition, University of Minnesota, St. Paul, MN, USA and K. ADHIKARI, Department of Food Science and Technology, University of Georgia, Griffin, GA, USA

5:00 - 6:00 p.m. Alvarado H	**Board of Directors Meeting** Committee Chairmen are asked to report on the status of their Committee. APRES members are welcome to attend.
7:00 - 9:00 p.m. Alvarado D &E	**Evening Meal** *Sponsored by Bayer & BASF* *You're invited to join our sponsors for an evening of fun, relaxation, and casual dining. An expansive buffet sure to please all palates and diets is planned. Served with coffee, tea, and desserts. (Cash bar)*

Thursday, July 13, 2017	
6:15 a.m. West Atrium	**APRES Fun Run/Walk**
8:00 a.m. - 4:00 p.m. North Atrium	**Registration Open**
8:00 a.m. - 4:00 p.m. Fireplace Room	**Spouses Hospitality Suite Open** *Sponsored by Texas Peanut Producers Board* *A place to rest, relax, meet and greet, and get a snack while you wait for family and friends.*

8:00 - 9:00 a.m. East Atrium	**Poster Viewing and Discussions *(Authors Present)***
1	**Potential for Anthem Flex Herbicide Use in Peanut.** **W. J. GRICHAR***, Texas A&M AgriLife Research, Corpus Christi, TX 78406; T. A. BAUGHMAN, Oklahoma State Univ., Ardmore, OK 73401; P. A. DOTRAY, Texas A&M AgriLife Research, Lubbock, TX 79403.
2	**EFFECTS OF 2,4-D AND GLYPHOSATE ON SOUTHWESTERN PEANUT.** **R. W. PETERSON[1],** T. A. BAUGHMAN[1], W.J. GRICHAR[2], D. L. TEETER[1]; 1Oklahoma State University, Ardmore, OK, 2Texas A&M AgriLife Research, Yoakum TX.
3	**Economic Analysis of Yellow Nutsedge Control in Peanuts.** **A. RABINOWITZ*** and A.R. SMITH, Department of Agricultural and Applied Economics; T. GREY and R. S. TUBBS, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793-0748.
3	**Comparison of Early Postemergence Residual Herbicides in Peanut.** **M.W. MARSHALL***, C.H. SANDERS, Edisto Research and Education Center, Clemson University, 64 Research Road, Blackville, SC 29817
5	**Disease Interaction of Late Leaf Spot and Stem Rot on Peanut.** **M. MUNIR*** and D. J. ANCO, Department of Plant and Environmental Sciences, Clemson University, Edisto Research and Education Center, Blackville, SC 29817.
6	**Aggressiveness of Sclerotinia minor and S. sclerotiorum on Runner Peanut.** K. HURD, M. EMERSON, and **T. R. FASKE***, Lonoke Extension Center, University of Arkansas, Division of Agriculture, Lonoke, AR 72086.
7	**Thimet® for Thrips Management, TSWV Suppression, and Yield Protection in Peanuts in the Southeastern US.** **N. FRENCH*** & L. BEDNARSKI. AMVAC Chemical Corporation, Newport Beach, CA 92600.
8	**Peanut Burrower Bug (Hemiptera: Cydnidae) Distribution and Management in Southeast US Runner-Type Peanut.** **M.R. ABNEY***, B.L. AIGNER, Department of Entomology, University of Georgia, Tifton, GA 31793; P.M. CROSBY, University of Georgia Extension, Swainsboro GA 30401; S. HOLLIFIELD, University of Georgia Extension, Quitman, GA 31643.
9	Poster Changed to Oral Presentation
10	**Peanut Consumption in Malawi: An Opportunity for Innovation** **A.P. GAMA***, K. ADHIKARI, Department of Food Science and Technology, The University of Georgia, 1109 Experiment St, Griffin, GA 30223; D. HOISINGTON, Peanut and Mycotoxin Innovation Lab, The University of Georgia, 217 Hoke Smith Building, Athens, GA 30602.

11	**Intervention Strategies to Prevent Post-harvest Loss and Contamination in Peanut in Haiti, Ghana, Malawi, Mozambique and Zambia during the 2012-2016 Project Term of the Peanut & Mycotoxin Innovation Lab.** **J. RHOADS*** and D. HOISINGTON, Peanut & Mycotoxin Innovation Lab, The University of Georgia, Athens, GA 30602; and the Entire PMIL Research Team.
12	**Resveratrol Content in Thirty Peanut Varieties from Southern Mexico.** **S. SANCHEZ-DOMINGUEZ***, L. M. SANCHEZ-AVILA, R.GARCIA-MATEOS, G. M. PEÑA-ORTEGA. Departamento de Fitotecnia, Universidad Autónoma Chapingo, Chapingo, Edomex. C. P. 56199.
13	**Preliminary Work in Measuring Peanut Canopy Architecture with LiDAR.** C. PRIETO, M.A. CONTREROS, Tecnológico de Monterrey, Monterrey, Mexico; J. MA, Chinese Academy of Agricultural Sciences, Beijing, China; **R.S. BENNETT***, K.D. CHAMBERLIN, USDA-ARS, Stillwater, OK 74075-2714; and N. WANG, Department of Biosystems and Agricultural Engineering, Oklahoma State University, Stillwater, OK 74078-6016.
14	**Calibration of CROPGRO model for Brazilian Peanut Cultivar.** **B. A. ALVES***, F. R. MARIN, R. D. COELHO. Biosystems Engineering Department, "Luiz de Queiroz" College of Agriculture - University of São Paulo (ESALQ/USP), Piracicaba City, São Paulo State (SP), 13418-900.
15	**Screening of the U.S. Peanut Germplasm Mini-Core Collection for Resistance to Sclerotinia Blight.** **K.D. CHAMBERLIN***, R.S. BENNETT, USDA-ARS, Wheat, Peanut and Other Field Crops Research Unit, Stillwater, OK 74075-2714.
16	**Yield Performance of Runner, Spanish and Virginia Cultivars and Breeding Lines in West Texas.** **J.E. WOODWARD***, Texas A&M AgriLife Extension Service and Plant and Soil Science, Texas Tech University, Lubbock, TX 79403.
17	**NuMex-02 – A High Oleic Valencia Peanut with Partial Resistance to Sclerotinia Blight.** **N. PUPPALA***, New Mexico State University, Clovis, NM 88101-9998, P. PAYTON, U.S.D.A. Cropping System Research Lab., Lubbock, Texas 79401, M. BUROW, Texas A&M AgriLife Research, Lubbock, TX 79403, and Texas Tech University, Department of Plant and Soil Science, Lubbock, TX, 79409; K. CHAMBERLIN, U.S. D. A., Wheat Stillwater OK 74075-2714. L.L. DEAN, U.S.D.A. Market Quality and Handling Research Lab, North Carolina State University, Raleigh, NC 27695-7624. A. MUITIA, Groundnut Breeder, Mozambique Agricultural Research Institute, JUSTUS CHINTU, Groundnut Breeder, Department of Agricultural Research Services, Malawi, LUTANGU MAKWETI, Agricultural Research Institute Zambia.
18	**Evaluation of Population Parental Lines of Peanut (*Arachis hypogaea* L.) for Juvenile Resistance to Late Leaf Spot (*Cercosporidium personatum*)** **S. E. PELHAM***, Department of Plant Pathology, University of Georgia, Tifton, GA 31793; C. C. HOLBROOK, USDA-Agricultural Research Service, Tifton, GA 31793, and A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793

19	**Field and Lab Evaluation of Virginia-type Germplasm for *Sclerotium rolfsii* Tolerance** **M. DAFNY YELIN*** and J MOY, Northern Agricultural Research & Development, Migal Galilee Technology Center, P.O.B. 831, Kiryat Shemona, 11016 Israel; R. HOVAV, Department of Field Crops, Plant Sciences Institute, ARO, Bet-Dagan, 50250 Israel, O. RABINOVICH, Extension Service, Ministry of Agriculture, Kiryat Shemona, 10200 Israel.
20	**Overview of a Global Peanut Breeding Initiative during the 2012-2016 Project Term of the Peanut & Mycotoxin Innovation Lab.** **C. DEOM*,** P. OZIAS-AKINS, J. RHOADS and D. HOISINGTON, Peanut & Mycotoxin Innovation Lab, The University of Georgia, Athens, GA 30602; and the Entire PMIL Research Team.
21	**Genome editing using CRISPR/Cas9 system in Peanut** **L.A. GUIMARAES***; Y. CHU; K. M. MARASIGAN; P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748. T. JACOBS, VIB-UGent Center for Plant Systems Biology UGent-VIB Research Building FSVM, Netherland
22	**Microsatellite Markers revealed Genetic Diversity within Cultivated Peanut Varieties** **I. FAYE***, ISRA-CNRA, Peanut Breeding and Genetics Laboratory, PoBox 53 Bambey-Senegal, A. BODIAN and D. FONCEKA, ISRA-CERAAS, PoBOX 3120, Thiès (Senegal)
23	**Development of Diagnostic Markers from Disease Resistance QTLs for Marker-Assisted Breeding in Peanut.** **D. CHOUDHARY***, H. WANG, G. AGARWAL, A.K. CULBREATH ,University of Georgia, Department of Plant Pathology, Tifton, GA, 31793; Y. CHU, P. OZIAS-AKINS, Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, 31793; M.K. PANDEY, R.K. VARSHNEY, International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Telangana, India, 580005; HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA, 31793; B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA, 31793.
24	**Targeted Resequencing in Peanuts using the Fluidigm Access Array** **R. KULKARNI***, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX; R. CHOPRA, USDA-ARS, Lubbock, TX; J.CHAGOYA Texas A & M, AgriLife Research, Lubbock, TX; P. GROZDANOV, Texas Tech University, Health Science Center, Lubbock, TX; C. E. SIMPSON, Texas A&M AgriLife Research, Stephenville, TX; M.R. BARING, Texas A&M AgriLife Research, College Station, TX; N. PUPPALA, New Mexico State University, Clovis , NM; K. CHAMBERLIN, USDA-ARS, Stillwater, OK and M.D. BUROW Texas A & M, AgriLife Research, Lubbock, TX and Department of Plant and Soil Science, Texas Tech University, Lubbock, TX.
25	**Towards the Positional Cloning of Bunch1, a Single Gene that Controls Branching Habit in Peanut** G. KAYAM, A. PATIL, Y. LEVY, A. FAIGENBOIM, AND **R. HOVAV***, Department of Field Crops, Plant Sciences Institute, ARO, Bet-Dagan, Israel.

26	**Development of a Draft SNP-Based Genetic Linkage Map of a Peanut BC1 Interspecific Introgression Population.** **T.K. TENGEY***, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409; J.N. WILSON, Texas A&M AgriLife Research, Lubbock, TX 79403; R. CHOPRA, USDA-ARS-CSRL, Lubbock, TX 79415; C.E SIMPSON, Texas A&M AgriLife Research, Stephenville, TX 76401; J. CHAGOYA, Texas A&M AgriLife Research, Lubbock, TX 79403; A. HILLHOUSE, Department of Veterinary Pathobiology, College of Veterinary Medicine, Texas A&M University, College Station, TX 77843; V. MENDU, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409; M.D. BUROW, Texas A&M AgriLife Research, Lubbock, TX 79403, and Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.
27	**Alternative Splicing Eliminates miRNA Binding Sites to Affect Target Gene Expression of CSD1 under Drought Stress** S-Y. PARK and **E.A. GRABAU***, Department of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, VA 24061
28	**Rapid Progress Through Collaborative Projects in Southeastern Africa: A Peanut and Mycotoxin Innovation Lab Success Story** A. ABRAHAM, C. SIBAKWE, L. MKANDAWIRE, W. MHANGO, V. SAKA, Lilongwe University of Agriculture and Natural Resources, Lilongwe, Malawi, E. ZUZA, Universidade Eduardo Mondlane, Maputo, Mozambique, A. MUTIA, Instituto de Investigacao Agraria de Mocambique, Nampula, Mozambique, A. MWEETWA, H Chalwe,University of Zambia, Lusaka, Zambia S, Njoroge, ICRISAT, Lilongwe, Malawi, J. CHINTU, Chitedze Agricultural Research Station, Lilongwe, Malawi, **R. L. BRANDENBURG***, D. L. JORDAN, North Carolina State University, Raleigh, NC USA.
29	**Response Surface Optimization of Aqueous-Ethanolic Decontamination of Aflatoxin in Peanut Oil.** **C.T. KASAKULA***, Department of Food Science and Technology, Lilongwe University of Agriculture and Natural Resources (LUANAR)-Bunda Campus, Lilongwe, Malawi; L. MATUMBA, Food Technology and Nutrition Group, LUANAR-NRC campus, Lilongwe, Malawi; and A. MWANGWELA, Faculty of Foods and Human Sciences, (LUANAR)- Bunda Campus, Lilongwe, Malawi; K. ADHIKARI, Department of Food Science and Technology, University of Georgia, Griffin, GA, USA and K. MALLIKARJUNAN; Department of Food Science and Nutrition, University of Minnesota, St. Paul, MN
30	**Genetic Diversity of Aspergillus spp. From Peanut Seeds in Eastern Ethiopia.** **P. C. FAUSTINELLI***, A.MOHAMMED, V. S. SOBOLEV, A. MASSA, B. W. HORN, M. C. LAMB, R.S. ARIAS, USDA-ARS-National Peanut Research Laboratory (NPRL), Dawson, GA, 39842, U.S.A.
31	**Aflatoxin Contamination in Whole Peanut Flour Produced by Small Scale Peanut Flour Processors in Malawi: Aflatoxin Awareness and Management Practices** **C. A. MAGOMBO***, A. M. MWANGWELA, T. NG'ONG'OLA-MANANI, Lilongwe University of Agriculture and Natural Resources (LUANAR), P.O Box 219, Lilongwe, K. MALLIKARJUNAN, Biological Systems Engineering Department, Virginia Polytechnic Institute and State University, Blacksburg, VA, USA, and K. ADHIKARI, Department of Food Science and Technology, University of Georgia, Griffin, GA, USA

32	**Findings and Outcomes of Pre-harvest Research in Haiti, Ghana, Malawi, Mozambique and Zambia during the 2012-2016 Project Term of the Peanut & Mycotoxin Innovation Lab.** **D. HOISINGTON***, J. RHOADS, Peanut & Mycotoxin Innovation Lab, The University of Georgia, Athens, GA 30602; and the Entire PMIL Research Team.
33	**A High-Density Genetic Map for Peanut Based on SLAF (Specific Length Amplified Fragment Sequencing) and SSR** X.H.HU, Shandong Peanut Research Institute, Qingdao,266100 P.R. China; H.R.MIAO, Shandong Peanut Research Institute, Qingdao, 266100 P.R. China; F.G.CUI, Shandong Peanut Research Institute, Qingdao, 266100 P.R. China; W.Q. YANG, Shandong Peanut Research Institute, Qingdao, 266100 P.R. China; T.T. XU, Shandong Peanut Research Institute, Qingdao, 266100 P.R. China; N. CHEN, Shandong Peanut Research Institute, Qingdao, 266100 P.R. China; Xiaoyuan CHI, Shandong Peanut Research Institute, Qingdao, 266100 P.R. China; **Jing CHEN***, Shandong Peanut Research Institute, Qingdao, 266100 P.R. China
34	**"Development of Next-Generation Mapping Populations: Multi-Parent Advanced Generation Inter-Cross (MAGIC) and Marker-Assisted Recurrent Selection (MARS) Populations in Peanut.** **H. WANG***, D. CHOUDHARY, A. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA 31793; X. GUO, Heilongjiang Bayi Agricultural University, Daqing, China, 163000; X. JI, Shanghai Academy of Agricultural Sciences, Ecological Environment Protection Research Institute, Shanghai, China, 201106; G. HE, Tuskegee University, Tuskegee, AL, 36088; M. K. PANDEY, R.K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India, 580005; C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA, 31793; B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793."

9:00 a.m. - 12 Noon Alvarado A, B, C, F	**Concurrent Breakout Sessions** Bayer Excellence in Extension & Extension Techniques Breeding, Biotechnology & Genetics - Section I Breeding, Biotechnology & Genetics - Section II Plant Pathology, Nematology, Mycotoxins, Entomology
9:00 a.m. - 12 Noon Alvarado A	**Bayer Excellence in Extension & Extension Techniques** ***Sponsored by: Bayer*** *Moderator: Jason Sarver Mississippi State University*
9:00	**Evaluating Management Tools for Peanut Burrower Bug (*Pangaeus bilineatus*) in Runner-Type Peanut** **P. M. CROSBY***, University of Georgia, Swainsboro, GA. 30401 and M.R. ABNEY, Department of Entomology, University of Georgia, Tifton, GA. 31793.
9:15	**Control of Southern Corn Rootworm with Chlorantraniliprole (Prevathon) Applied at Pegging.** **T. BRITTON*,** B. BARROW, J. HURRY, A. COCHRAN, L. GRIMES, B. ROYALS, A.T. HARE, R.L. BRANDENBURG, and D.L. JORDAN, North Carolina Cooperative Extension Service, Raleigh, NC 27695.

9:30	**Large Plot, On-Farm Replicated Peanut Variety Trials Across Alabama.** **CHRISTY HICKS*,** Regional Extension Agent, K.B. BALKCOM, Crop Soil Environmental Sciences Department, J.A. KELTON, Regional Extension Agent, Farm and Agribusiness Management, Auburn University, Auburn, Alabama 36849.
9:45	**Evaluating Early-Maturing, High-Oleic Peanut Cultivars for Fit in Mississippi** **C.L. STOKES***, Mississippi State University Extension, Aberdeen, MS 39730; J.M. SARVER, and C.C. ABBOTT, Department of Plant and Soil Sciences, Mississippi State University, Mississippi State, MS 39762; and R.A. HENN, Department of Biochemistry, Entomology, Plant Pathology, Mississippi State University, Mississippi State, MS 39762

10-10:15 a.m. East Atrium	**Networking Break** *Sponsored by Birdsong Peanuts*

10:15	**Baker County 2016 High Oleic Peanut Variety Test with an at Plant In-Furrow Fungicide, Nematicide & Inoculant Test Plot** **E.L. JORDAN***, University of Georgia, Baker County Extension; B. KEMERAIT, University of Georgia, Plant Pathology, Coastal Plains Research Center, Tifton, GA.; W.S. MONFORT, University of Georgia, Georgia Agronomist, Coastal Plains Research Center, Tifton, GA.
10:30	**Impact of Ground Speed and Conveyor Speed on Peanut Digging Losses** A. WARNER, Clemson University Cooperative Extension, Hampton County Cooperative Extension Office, **B. FOGLE*** and K. KIRK, Department of Agricultural Sciences, Clemson University, Edisto Research and Education Center, Blackville, SC 29817.
10:45	**An Evaluation of Fungicide Programs in Two Peanut Genotypes with Contrasting Disease Resistance** **E.T. CARTER***, UF/IFAS Jackson County Extension, Marianna, FL 32446; B.L. TILLMAN, M.W. GOMILLION, North Florida Research and Education Center, Marianna, FL 32446; R.L. BAROCCO, N.S. DUFAULT, Plant Pathology Department, The University of Florida, Gainesville, FL 32611.
11:00	**2016 Bulloch County Peanut Fungicide Research Results** **W. G. TYSON***, University of Georgia Cooperative Extension, Bulloch County, Statesboro, GA 30458; R. C. KEMERAIT, University of Georgia, Department of Plant Pathology, Tifton, GA 31794; and A. R. SMITH, University of Georgia, Agricultural and Applied Economics, Tifton, GA 31793.
11:15	**Fluctuation of Peanut (Arachis hypogaea L.) Pests During the 2016 Growing Season.** **D.T. MAYS*,** Texas A&M AgriLife Extension Service, Brownfield, TX 79316; and J.E. WOODWARD, Texas A&M AgriLife Extension Service, and Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79403.

11:30	**Pest Management in Peanut in North Carolina, South Carolina, and Virginia** **B. MCLEAN***, B. SANDLIN*, B.BARROW, J. HURRY, , M. LEARY, M. SHAW, M. CARROLL, T. ADAMS, A. BRADLEY, P. SMITH, R. THAGARD, A. WHITEHEAD, B. PARISH, J. HOLLAND, T. BRITTON, J. MORGAN, A. COCHRAN, C. ELLISON, M. HUFFMAN, M. SEITZ, D. LILLEY, L. GRIMES, M. MALLOY, D. KING, R. WOOD, A. WILLIAMS, T. WHALEY, N. HARRELL, D.L. JORDAN, B.B SHEW, and R.L. BRANDENBURG, North Carolina Cooperative Extension Service, Raleigh, NC; D.J. ANCO, D.J. CROFT, A. WARNER, P. DEHOND, H. MIKELL, J. VARN, and J. CROUCH, Clemson University, Clemson, SC; M. BALOTA, H. MEHL, S.V. TAYLOR, J. SPENCER, J. REITER, and L. PREISSER, Virginia Cooperative Extension, Blacksburg VA.
11:45	**Groundnut (*Arachis Hypogaea* L.) Production Constraints and Farmers Preferred Traits in the Northern Region of Mozambique** **A.M. MUITIA***, M.J. MOPECANE and V. SALEGUA, Instituto de Investigação Agrária de Moçambique, Centro Zonal Nordeste, Estrada Via Corrane, 7 km, Nampula, Mozambique

9:00-11:30 a.m. Alvarado B	**Breeding, Biotechnology, & Genetics Section I** *Moderator: Barry Tillman, University of Florida*
9:00 AM Paper Withdrawn	**Peanut (Arachis Hypogeea) Breeding Studies in Turkey.** **A. KADİROĞLU***, M. KOCATÜRK, Batı Akdeniz Agricultural Research Institute, Antalya, Turkey.
9:00 AM	**Peanut, Cotton, and Corn Response to Biochar Rate Produced Under Differing Irrigation Amounts** **M.C. LAMB***, R.B. SORENSEN, and C.L. BUTTS. USDA-ARS National Peanut Research Laboratory, Dawson, GA 39842
9:15	**Using PeanutBase: Features, Examples, and Tips** **E.K.S. Cannon*,** S.B. CANNON, W. HUANG, P. OTYAMA, L. REN, Iowa State University, Ames, IA; S. KALBERER and N. WEEKS, USDA-ARS, Ames, IA; S. DASH and A. FARMER, National Center for Genome Resources, Santa Fe, NM.
9:30	**Inheritance of Spear-Shaped Leaf in Peanut** **W. D. Branch*,** Dept. of Crop and Soil Sciences, University of Georgia, Coastal Plain, Tifton, GA
9:45	**Finally, the Cross that Made *Arachis monticola* Krapov. & Rigoni and/or *Arachis hypogaea* L.** **C.E. SIMPSON*.** Texas A&M AgriLife Research. Texas A&M AgriLife Research and Extension Center. Texas A&M University System. Stephenville, Texas 76401-8992.

10-10:15 East Atrium	**Networking Break** *Sponsored by Birdsong Peanuts*

10:15	**Testing-Program-by-Genotype Interaction in the Virginia-Type Peanut Breeding Program at North Carolina State University** **T.G. ISLEIB*,** S.C. COPELAND, W.G. HANCOCK, and F.R. CANTOR BARREIRO, Dept. of Crop and Soil Sci., N.C. State Univ., Raleigh, NC 27695-7629; M. BALOTA and J.C. OAKES, Va. Polytech. Inst. and State Univ. Tidewater Agric. Res. and Ext. Ctr., Suffolk, VA 23437, and D.J. ANCO, Clemson Univ. Edisto Res. and Educ. Ctr., Blackville, SC 29817.

10:30	**Relative Performance of University of Florida Peanut Cultivars for Yield, Grade, Seed Size and Disease Resistance** **B.L. TILLMAN***, Univ. of Florida, Agronomy Dep, North Florida REC, Marianna, FL, 32446; A.K. CULBREATH and T.B. BRENNEMAN, Univ. of Georgia, Plant Pathology, Coastal Plains Exp. Stn., Tifton, GA 31794; J.M. SARVER, Dep.of Plant and Soil Sci., Mississippi State Univ., Mississippi State, MS 39762; D.J. ANCO, Agricultural and Environmental Sci., Edisto REC, Clemson Univ., Blackville, SC 29817. J.D. GASSETT, Crop and Soil Sciences Dep., Univ. of Georgia, Griffin, GA 30223. J.P. BOSTICK, Auburn Univ., Alabama Crop Imp. Assoc., Headland, AL 36345.
10:45	**Characteristics of a Newly Released Runner-type Peanut Cultivar 'AU-NPL 17'** **C. CHEN***, K. BALKCOM, A. HAGAN, Auburn University, Auburn, AL 36849; P. DANG, M. LAMB, USDA-ARS National Peanut Research Lab, Dawson, GA 39842; M.L. WANG, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA 30223.
11:00	**Effect of Growing Location on Seed Oil Composition in the Cultivated Peanut Germplasm Collection** **B. TONNIS***, M.L. WANG, D. PINNOW, S. TALLURY, USDA-ARS, Plant Genetic Resources Conservation Unit, Griffin, GA 30223
11:15	**Development of Two Extra Early, Drought, Leafspots and Rosette Resistant Groundnut Lines with Desirable Agronomic Traits in Uganda** **D.K. OKELLO*** and B. SADINA, National Semi-Arid Resources Research Institute, P.O. Box 56 Soroti, Uganda; C. M. DEOM, Department of Plant Pathology, University of Georgia, Athens, GA 30602, USA; N. PUPPALA, Agricultural Science Center at Clovis, New Mexico State University, Clovis, NM 88101; B. BRAVO-URETA, Department of Agricultural and Resource Economics, University of Connecticut, Storrs, CT 06269, USA and Department of Agricultural Economics, University of Talca, Chile; E. MONYO, International Crops Research Institute for Semi-Arid Tropics, United Nations Avenue Gigiri, P. O. Box 39063, Nairobi 00623, Kenya; T.L. ODONG T.L, Department of Crop Production, School of Agricultural Sciences, Makerere University, P.O. Box 7062, Kampala, Uganda; P.OKORI, ICRISAT Malawi, Chitedze Research Station, P.O. Box 1096, Lilongwe, Malawi.

9:00-11:15 a.m. Alvarado C	**Breeding, Biotechnology, & Genetics Section II** *Moderator: Rebecca Bennett, USDA-ARS*
9:00	**Breeding Competitive High-Oleic Peanut Cultivars at the Biotech Division, Shandong Peanut Research Institute** **C.T. Wang***, Y.Y. TANG, X.Z. WANG, Q. WU, Q.X. SUN, Z.W. WANG, Biotech Division, Shandong Peanut Research Institute (SPRI), 126 Wannianquan Street, Licang District, Qingdao 266100, China
9:15	**High Throughput Phenotyping for Total Oil Content in Peanut Kernels.** **G.C. WRIGHT***, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; K.Y. PHAN-THIEN, University of Sydney, Sydney, NSW Australia 2006; and D.B. FLEISCHFRESSER, AgriSciences Queensland, Department of Agriculture and Fisheries, Kingaroy, Queensland, Australia, 4610.

9:30	**Axiom_Arachis2 Genotyping Resource for Peanut** J.P. CLEVENGER, Center for Applied Genetic Technologies, University of Georgia, Athens, GA 30602; W. KORANI, Y. CHU, and **P. OZIAS-AKINS***, Department of Horticulture and Institute of Plant Breeding, Genetics & Genomics, University of Georgia Tifton Campus, Tifton, GA 31793.
9:45	**Phenotyping and Genotyping Parents of Sixteen Recombinant Inbred Peanut Populations** **Y. CHU***, Horticulture Department, University of Georgia Tifton Campus, Tifton, GA 31793; C.C. HOLBROOK, USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; T.G. ISLEIB, Department of Crop Science, North Carolina State University, P.O. Box 7629, Raleigh, NC 27695; M. BUROW, Texas Agricultural Experiment Station, Texas A&M University/Texas Tech University, Lubbock, TX 79401; A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, Georgia 31793; B. TILLMAN, North Florida Research and Extension Center, University of Florida, Marianna, FL 32446; J. CHEN, Shandong Peanut Research Institute, Qingdao, 266100 P.R. China; and P. OZIAS-AKINS, Horticulture Department and Institute of Plant Breeding, Genetics & Genomics, University of Georgia Tifton Campus, Tifton, GA 31793.

10-10:15 a.m. East Atrium	**Networking Break** *Sponsored by Birdsong Peanuts*

10:15	**Nested Association Mapping for Dissecting Complex Traits Using the Peanut 58K SNP Array.** **G. AGARWAL***, H. WANG, D. CHOUDHARY, A.K. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA, 31793; Y. CHU, P. OZIAS-AKINS, Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, 31793; M.K. PANDEY, S.M. KALE, R.K. VARSHNEY, International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Telangana, India, 580005; T.G. ISLEIB, Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC, 27695; C.C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA, 31793; B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA, 31793.
10:30:00 AM PAPER WITHDRAWN	**Mutagenesis of FAD2 Genes in Peanut with CRISPR/Cas9.** M. YUAN, Shandong Peanut Research Institute, Qingdao, China; J. ZHU, C. LEE, C.S. PRAKASH, **G. HE***, Tuskegee University, Tuskegee, AL 36088; L. HE, Guangxi Academy of Agricultural Sciences, Nanning, China; S. HAN, Henan Academy of Agricultural Sciences, Zhengzhou, China; P. DANG, USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842; C. CHEN, Auburn University, Auburn, AL 36849
10:45	**A Comprehensive Meta QTL Analysis for Yield, Quality, Plant Morphology, Drought and Disease Resistance in Peanut (*Arachis hypogaea* L.)** Xinlei YANG, Yi TIAN, Shuzhen HAO and **Lifeng LIU ***,North China Key Laboratory for Crop Germplasm Resources of Education Ministry, Key Laboratory of Crop Germplasm Resources of Hebei, Hebei Agricultural University, No. 2596 Lekai South St, Baoding 071001, P. R. China

11:00	**Differential Metabolic Proteins and Pathways Signaling High and Low Antioxidant Capacity in Peanuts, Using Quantitative Proteomics for Selective Breeding.** **Y.Y. POON***, S. MURALIDHARAN, #ARC Training Centre for Advanced Technologies in Food Manufacture, School of Chemical Engineering, University of New South Wales, Kensington, NSW 2052, Australia; G. C. WRIGHT, Peanut Company of Australia, Kingaroy, Queensland 4610, Australia; P. HAYNES, ARC ITTC for Molecular Technology in the Food Industry, Macquarie University, Sydney 2109, Australia; N.A LEE#.

9:00-11:45 a.m. Alvarado F	**Plant Pathology, Nematology, Mycotoxins, Entomology** *Moderator: Travis Faske, University of Arkansas*
9:00	**Disease Occurrence and Yield Response of Selected Peanut Cultivars as Impacted by Fungicide Inputs at Two Alabama Locations** **H.L. CAMPBELL***, A.K. HAGAN, and K.L. BOWEN, Dept. of Entomology and Plant Pathology, Auburn University, AL 36849; L. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345 and M. PEGUES and J. JONES, Gulf Coast Research and Extension Center, Fairhope, AL 36532
9:15	**Impact of Velum Total on Pod and Root Damage, Peanut Root-Knot Nematode Juvenile Populations, Leaf Spot, Stem Rot and Yield of Peanut** **A. K. HAGAN***, H. L. Campbell, Auburn University, AL 36849; L. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345.
9:30	**Peanut Diseases and Yield Responses to the Fungicides Benzovindiflupyr and Adepidyn in Oklahoma** **J. DAMICONE*** and T. PIERSON, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078-3033.
9:45	**Management of Peanut Root Knot Nematode with Resistant Cultivars and Nematicides in Georgia.** **T. B. BRENNEMAN***, R. C. Kemerait, and A. K. Culbreath, Department of Plant Pathology, University of Georgia, Tifton, GA 31794, 2W. D. Branch, Department of Crop and Soil Science, University of Georgia, Tifton, GA 31794, C. C. Holbrook, USDA-ARS, Tifton, GA 31794, and K. Rucker, Bayer Cropscience, Tifton, GA 31794.

10-10:15 a.m. East Atrium	**Networking Break** *Sponsored by Birdsong Peanuts*

10:15	**Response of the Peanut Cultivars Bailey and Sullivan to Late Season Epidemics of Sclerotinia Blight.** **B.B. SHEW***, M.C. CANNON, Dept. of Entomology and Plant Pathology, and D.L. JORDAN, Dept. of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695.
10:30	**Effects of Imidacloprid Alone or in Mixtures with Fluopyram, on Incidence of Tomato Spotted Wilt.** J.B. CRABTREE, Cooperative Extension, University of Georgia, Sylvester, GA; **A.K. CULBREATH***, R.C. Kemerait, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; R. SRINIVASAN, and M.R. ABNEY, Department of Entomology, University of Georgia, Tifton, GA 31793-5766.

10:45	**Two Years of Evaluation of Improved Valencia Cultivars for Production in Haiti.** A. M. FULMER, T. B. Brenneman, and **R. C. KEMERAIT***, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793; D. A. CARROLL, G. FAROUTINE and W. M. SHEARD, Meds & Food for Kids, Quatier-Morin, HAITI HT1120; J. A. RHOADS, Athens, GA 30602; and G. E. MACDONALD, Agronomy Department, The University of Florida, Gainesville, FL 32611.
11:00	**Nozzle Type and Spray Volume Effects on Foliar Disease Control in Peanuts.** **N.S. DUFAULT***, W.M. ELAKIL, R.L. BAROCCO, Department of Plant Pathology, The University of Florida, Gainesville, FL 32611; and K.W. WYNN, Hamilton County Extension, Jasper, FL 32052.
11:15	**Aflatoxin Contamination through the Village Supply Chain – Examples from Two Rural Villages in Ghana.** W. APPAW, W.O. ELLIS, and R. AKROMAH, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana; M.B. MOCHIAH, M. OWUSU-AKAYAW, G. BOLFREY-ARKU, A. DANKYI, J.Y. ASIBUO, I ADAMA, B.W. AMOABENG, J.N.L. LAMPTEY, and M. LAMPTEY, CSIR-CRI, Kumasi, Ghana; M. ABUDULAI, CSIR-SARI, Tamale, Ghana; I.K. DZOMEKU, University for Developmental Studies/CSIR-SARI, Tamale, Ghana J. NAAB, S. BUAH, and G. MAHAMA, CSIR-SARI, Wa, Ghana; A. BUDU, University of Ghana, Legon, Ghana; **D.L. JORDAN*** and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695; G. MACDONALD, K. BOOTE, and J. ERICKSON, University of Florida, Gainesville, FL 32611; J. CHEN, D. PHILLIPS, M. CHINNAN, and K. ADHIKARI, University of Georgia, Griffin, GA 30224; K. MALLIKARJUNAN, and M. BALOTA, Virginia Tech, Blacksburg, VA 24061; B. BRAVO-URETA and J. JELLIFFE, University of Connecticut, Storrs, CT 06269; and D. HOISINGTON and J. RHOADS, University of Georgia, Athens, GA 30602.
11:30	**Aspergillus and Aflatoxin Contamination of Groundnut (Arachis hypogaea L.) and Food Products in Eastern Ethiopia.** **A. MOHAMMED HASSEN***, M. DEJENE, College of Agriculture and Environmental Sciences, Haramaya University, Dire Dawa, Ethiopia; A. CHALA, College of Agriculture, Hawassa University, Hawassa, Ethiopia; D.HOISINGTON, College of Agriculture and Environmental Sciences, Peanut and Mycotoxin Innovation Lab, University of Georgia, Athens Georgia, 30602-4356; and V. S. SOBOLEV,R. S. ARIAS,USDA-Agricultural Research Services-National Peanut Research Laboratory, Dawson, GA 39842-0509.

12 Noon - 1:00 p.m.	**Lunch on Your Own**

1:00 - 4:30 p.m. Alvarado A, B, C, F	**Concurrent Breakout Sessions** Production and Harvest Technologies Weed Science, Physiology & Seed Technology Economics, Harvesting, Processing, & Utilization Breeding, Biotechnology & Genetics - Section III
1:00 - 4:00 p.m. Alvarado A	**Production and Post Harvest Technologies** *Moderator: Scott Monfort, Univesity of Georgia*
1:30	**Evaluation of a Fine, Liquid Lime as a Calcium Source for Peanut** **G.H. HARRIS***, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA

1:45	**No Interactions Between Cultivation Using a Tine Weeder and Diseases in Organic Peanut: Is this Heresy?** **W. C. JOHNSON, III***, USDA-ARS, Tifton, GA 31793-0748; and A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793.
2:00	**Runner Cultivar Response to Reduced Rates of Prohexadione Calcium.** **W.S. MONFORT***, R. S. TUBBS, D. H. CONGER, K. PAULK. Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.
2:15	**Examining the Effect of Seeding Rate and Digging Date on Yield of the Peanut Cultivars Grown in the Virginia-Carolina Region** **J.C. OAKES***, M. BALOTA, Virginia Tech Tidewater AREC, Suffolk, VA 23437; D.L. JORDAN, and A.T. HARE, Department of Crop Science, NC State University, Raleigh NC 27695

2:30-3:00 East Atrium	**Networking Break** *Sponsored by Olam Edible Nuts*

3:00	**Effect of Irrigation Scheduling Methods on Yield of Peanut Cultivars.** **C. PILON***, W. M. PORTER*, C. D. PERRY, W. S. MONFORT, J. L. SNIDER, G. VELLIDIS, Department of Crop and Soil Sciences; A.R. SMITH, and A. RABINOWITZ, Department of Agricultural Economics, University of Georgia, Tifton, GA 31793-0748.
3:15	**Determining the Optimum Nitrogen Rescue Strategy When Inoculation Fails in Peanut.** **J.M. SARVER*** and C.C. ABBOTT, Department of Plant and Soil Sciences, Mississippi State University, Mississippi State, MS 39762.
3:30	**Evaluating a Vegetable Double-Crop in a Corn-Peanut Rotation.** **R.S. TUBBS***, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793; P. TIMPER, Crop Protection and Management Research Unit, USDA-ARS, Tifton, GA 31793; J.M. SARVER, Department of Plant and Soil Sciences, Mississippi State University, Mississippi State, MS 39762; T.B. BRENNEMAN, and A.K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793.
3:45	**Real Time Roasting Analysis using Gerstel TDU-GC/MS.** **M. SCHOLTEN***, C. LIEBOLD, The J.M. Smucker Company, 767 Winchester Rd., Lexington, KY 40505

1:00 - 4:15 p.m. Alvarado B	**Weed Science, Physiology & Seed Technology** *Moderator: Eric Prostko, University of Georgia*
1:30	**Cover Crop Response to Residual Herbicides in Peanut-Cotton Rotation** **S. LI***, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn AL 36849; and A. PRICE, National Soil Dynamics Laboratory, USDA-ARS, Auburn, AL. 36830.
1:45	**Peanut Response to Engenia™ and Enlist™ Duo.** **E.P. PROSTKO*** and O.W. CARTER III, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31794.

2:00	**Identification of Virginia-type Peanut Genotypes for Water-Deficit Conditions Based on Early Stomatal Closure with Soil Drying** **T.R. SINCLAIR***, A. SHEKOOFA, T.G. ISLEIB, Crop and Soil Science Department, North Carolina State University, Raleigh, NC 27695 (TRS and TGI); Department of Plant Sciences, University of Tennessee, Jackson, TN 38301 (AS); M. BALOTA, Tidewater Agricultural Research and Experiment Center, Virginia Tech, Suffolk, VA, 23437 (MB); Z. HOU, College of Agriculture, Yangzhou University, Yangzhou City, 225009, China.
2:15	**Characterization of Genotype by Planting Date Effects on Runner-type Peanut Seed Germination and Vigor Response to Temperature** **T.L. GREY***, University of Georgia, Crop and Soil Science Dept, Tifton, GA 31793; C.Y. Chen, Auburn University, Crop, Soil and Environmental Sciences, Auburn AL 36849; R. Nuti, Dow AgroSciences LLC, P.O. Box 120, Shellman, GA 39886

2:30-3:00 p.m. East Atrium	**Networking Break** *Sponsored by Olam Edible Nuts*

3:00	**Know When To Hold Them and Know When to Dig** **C. KVIEN***,University of Georgia, Tifton, GA; C. HOLBROOK, USDA-ARS, Tifton, GA; T. BRENNEMAN, A. CULBREATH, C. PILON, and P. OZIAS-AKINS, M. PODIO, University of Georgia, Tifton, GA; C. BUTTS, M. LAMB and R. SORENSEN, USDA-ARS-NPRL, Dawson, GA.
4:00	**Prostate Weight Changes of the Orchiectomized Sprague-Dawley Rats as Affected by Dietary Supplementation with Bio-elicited Peanut Sprout Powder.** **P.-H. CHENG***, R. Y.-Y. CHIOU, J.-C. CHANG, S.-M. LIN, Y.-L. CHANG, D.-Y. Lo, Department of Food Science and Department of Veterinary Medicine, National Chiayi University, Chiayi 60004, Taiwan, ROC.
3:15	**Phenotyping Drought Tolerance in Peanut.** **M. BALOTA***, J. OAKES, Tidewater Agric. Res. & Ext. Center, Virginia Tech, Suffolk, VA 23437-7099; T. R. SINCLAIR, and T.G. ISLEIB, Dept. of Crop and Soil Sci., N.C. State Univ., Raleigh, NC 27695-7629.
3:30	**Peanut Flavor Compounds from Amino Acid Precursors.** **L.L. DEAN***, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695-7624; and C.M. KLEVORN, Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695-7624.
3:45	**Hydroxylation of Resveratrol in Biomimetic Production of Piceatannol by Use of Peanut Embryos as Enzyme Source.** Z.-C. CHANG, P. C. CHIU, **ROBIN Y.-Y. CHIOU***, Department of Food Science and Department of Applied Chemistry, National Chiayi University, Chiayi 60004, Taiwan, ROC.
4:15	**Cotyledon Density Measurements on Valencia Peanuts Grown in the Southwest United States as a Tool for Developing Food Products.** L.L. DEAN, K.W. HENDRIX, U.S.D.A. Market Quality and Handling Research Lab, North Carolina State University, Raleigh, NC 27695-7624, N.D. WILSON, GeneTex, 3701 - 158th Street, Lubbock, TX 79423, N. PUPPALA, College of Agricultural, Consumer and Environmental Sciences, New Mexico State University, Clovis, NM 88101-9998, J.N. WILSON, **D.A. SMYTH***, Ready Roast Nut Company, 42593 U.S. Highway 70, Portales, NM 88130

1:00 - 4:30 p.m. Alvarado C	**Economics, Harvesting, Processing, & Utilization** *Moderator: Jack Davis, JLA International*
1:30	**Managing Post-Harvest Aflatoxin, Part 1: Minimizing Sample Preparation and Analytical Variation in a Sampling Program.** **J.P. DAVIS***, D. DESHAZO, M. JACKSON, J.M. LEEK, JLA International, Albany, GA 31721
1:45	**Managing Post-Harvest Aflatoxin, Part 2: A System for Identifying and Quantifying High Risk Components in Samples.** **D. DESHAZO***, J.P. DAVIS, M. JACKSON, J.M. LEEK, JLA International, Albany, GA 31721
2:00	**Managing Post-Harvest Aflatoxin, Part 3: Minimizing Sampling Variation and Commercial Implications.** **M. JACKSON***, D. DESHAZO, J.P. DAVIS, J.M. LEEK, JLA International, Albany, GA 31721
2:15	**Effect of Kernel Characteristics on Color and Flavor Development During Peanut Roasting: Two Years of Data.** **K.W. HENDRIX***, L.L. DEAN, and O.T. TOOMER. Market Quality and Handling Research Unit, USDA-ARS, Raleigh, NC, 27695.

2:30-3:00 p.m. East Atrium	**Networking Break** *Sponsored by Olam Edible Nuts*

3:00	**"Evaluation and Comparison of Roasted Flavor Profile of Virginia High-Oleic 'Bailey' Derivative Breeding Lines to Normal-Oleic Cultivar 'Bailey' Grown in the Virginia-Carolina Area.** **F.R. CANTOR-BARREIRO***, T.G. ISLEIB, S.C. COPELAND, W.G. HANCOCK, H.E. PATTEE, Dept. of Crop and Soil Sciences, N.C. State Univ., Raleigh, NC 27695-7629, M.A. DRAKE and M.D. YATES, Dept. of Food, Bioprocessing, and Nutrition Sciences N.C. State University, Raleigh, NC 27695-7624, and J. DUGGINS, Department of Statistics, N.C. State Univ., Raleigh, NC 27695-8203"
3:15	**Unloading Farmers' Stock Warehouses with a Peanut Vac.** **C. L. BUTTS***, R. B. SORENSEN, and M. C. LAMB. USDA, ARS, National Peanut Research Laboratory, Dawson, GA.
3:30	**PLC Rate Expectation.** **S.M. FLETCHER*,** C.J. RUIZ, Z. SHI. National Center for Peanut Competitiveness (NCPC), University of Georgia, Griffin, GA 30223-1797.
3:45	**Factors Impacting Acres Planted to Peanuts in the US** **F.D. MILLS, JR.*** and S.S. NAIR, Department of Agricultural Sciences and Engineering Technology, Sam Houston State University, Huntsville, TX 77341
4:00	**The Economics of Irrigation Scheduling Methods.** **A. RABINOWITZ*** and A.R. SMITH, Department of Agricultural and Applied Economics; C. PILON, W. M. PORTER, C. D. PERRY, W. S. MONFORT, J. L. SNIDER, G. VELLIDIS, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793-0748.
4:15	**Evaluation of the 2016 Peanut Crop Insurance Program.** **C.J. RUIZ***, S.M. FLETCHER, Z. SHI. National Center for Peanut Competitiveness (NCPC), University of Georgia, Griffin, GA 30223-1797.

1:00 - 4:15 p.m. Alvarado F	**Breeding, Biotechnology, & Genetics Section III** *Moderator: Naveen Puppala, New Mexico State University*
1:30	**Identification and Mapping of a Major Gene that Controls Pod Reticulation and Pod Brightness in Heavy Soils** N. ZUR, G. KAYAM, A. DORON--FAIGENBOIM, A.S. PATIL, **R. HOVAV***, Department of Field Crops, Plant Science Institute, ARO, Bet-Dagan, Israel
1:45	**Molecular Breeding Within the Context of Peanut's Complex Segmental Allotetraploid Genome.** **D.J. BERTIOLI***, S.C.M. LEAL-BERTIOLI, C. BALLEN, J. CLEVENGER, B. ABERNATHY, C. CHAVARRO, J. HEE SHIN, S.A. JACKSON, Center for Applied Genetic Technologies, University of Georgia, Athens, GA, 30602-6810, U.S.A.; Y. CHU, P. OZIAS-AKINS, Department of Horticulture, University of Georgia, Tifton, Georgia 31973, U.S.A. ; M.C. MORETZSOHN, Embrapa Genetic Resources and Biotechnology, Brasília, DF, 70770-917, Brazil ; I. GODOY and J. FRANCISCO, 4Campinas Agronomical Institute, Campinas, SP, Brazil
2:00	**Differential Expression of R-genes to Associate Leaf Spot Resistance in Cultivated Peanut.** **P.M. DANG*** and M.C. LAMB, USDA-ARS National Peanut Research Laboratory, Dawson, GA 39842; C.Y. CHEN, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 36849.
2:15	**A Journey from a SSR-based Low Density Map to a SNP-based High Density Map for Identification of Disease Resistance Quantitative Trait Loci in Peanut.** **B. GUO***, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793; G. AGARWAL, H. WANG, A. CULBREATH, P OZIAS-AKINS, University of Georgia, Tifton, GA 31793; J.P. CLEVENGER, D.J. Bertioli, S.A. JACKSON, University of Georgia, Center for Applied Genetic Technologies, Athens, GA; M.K. PANDEY, Y. SHASIDHAR, S.M. KALE, R.K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India; Xin LIU, BGI-Shenzhen, Shenzhen, China; C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA.

2:30-3:00 p.m. East Atrium	**Networking Break** *Sponsored by Olam Edible Nuts*

3:00	**Efforts on Fine-mapping and Evaluating Effects of a Major Genomic Region Controlling Spotted Wilt Disease Resistance in Peanut** Z. ZHAO, Y-C. TSENG, Z. PENG, B. TILLMAN, AND **J. WANG *** Agronomy Department, University of Florida, Gainesville, FL 32610

3:15	**Getting Bigger by Starting Smaller – Surprises of Introgression with Wild Relatives** **S. CM Leal-Bertioli*[1,2]**, M.C Moretzsohn1, I.J. Godoy[3], C. Taborda-Ballén[2], J F. Santos[3], J.H. Shin[2], Y. Chu[4], J.P. Clevenger[2,4], P. Ozias-Akins[4], H Tom Stalker[5], C Corley Holbrook[6], Scott A Jackson[2], David J Bertioli[2,7] 1 Embrapa Genetic Resources and Biotechnology, Brasília, DF, Brazil 2 Center for Applied Genetic Technologies, University of Georgia, Athens, GA, U.S.A. 3 Instituto Agronomico, Campinas, SP, Brazil 4 Department of Horticulture, University of Georgia, Tifton, GA, U.S.A. 5 Department of Crop Science, NCSU, Raleigh, NC, U.S.A. 6 USDA ARS 115 Coastal Way, Tifton, U.S.A. 7 Institute of Biological Sciences University of Brasília, Brasília, DF, Brazil
3:30	**Development of SNP-based Molecular Markers for a Peanut Breeding Program.** **M. D. BUROW***, Texas A&M AgriLife Research, Lubbock, TX 79403, and Texas Tech University, Dept. of Plant and Soil Science, Lubbock, TX 79409; R. CHOPRA, R. KULKARNI, T. TENGEY, V. BELAMKAR, Texas Tech University, Dept. of Plant and Soil Science, Lubbock, TX 79409; J. CHAGOYA, J. WILSON, M. G. SELVARAJ, Texas A&M AgriLife Research, Lubbock, TX 79403; C. E. SIMPSON, Texas A&M AgriLife Research, Stephenville, TX 76401; M. R. BARING, Texas A&M AgriLife Research, College Station, TX 77843; F, NEYA, P. SANKARA, Université Ouaga I Prof. Joseph Ki-Zerbo, Département de Phytopathologie, Ouagadougou 03, BURKINA FASO; NICHOLAS DENWAR, Savannah Agricultural Research Institute, Tamale, GHANA.
3:45	**Validation of Drought-Associated Markers in Segregating Populations.** **J. C. CHAGOYA***, M. D. BUROW, Texas A&M AgriLife Research, Lubbock, TX 79403, and Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409; M. R. BARING, Texas A&M AgriLife Research, College Station, TX 77843.

4:30 - 5:30 p.m. Franciscan Ballroom	**APRES Business Meeting and Awards Ceremony** *Membership Votes on Nominations to the APRES Board of Directors and changes to the By-Laws; Updates from all APRES Committees; Announcement of 2017 Awards Recipients and Winners. All members present please.*
5:30 - 7:30 p.m. Franciscan Ballroom	**Awards Reception** *Sponsored by Dow AgroSciences* *Join us in congratulating the 2017 APRES Awards recipients as well as celebrating the end of the 49th Annual Meeting. Hors' d'oeuvres and a cash bar. A wonderful start to your larger meal in the Albuquerque area.*

- NOTES -

Overview

2017 APRES Annual Meeting

July 11-13 * Albuquerque, NM

The 49th Annual Meeting of the American Peanut Research and Education Society (APRES) was held July 11-13, 2017 at the Hotel Albuquerque at Old Town in Albuquerque, NM. APRES President Corley Holbrook (USDA-ARS) and Program Chairman Peter Dotray presided over the very well attended meeting of 329 attendees from every peanut producing state, grouped as 235 registrants, 58 spouses and 36 children.

Technical Program Chairman Todd Baughman (Oklahoma State University) arranged 140 presentations/posters from peanut scientists around the world. Highlights of the program included opening addresses by:

Dr. Bruce Hinrichs, Associate Director/Eastern District Department Head, Coopertative Extension Service, New Mexico State University, welcomed the crowd to Albuquerque, providing attendees with a wonderful overview of agriculture in New Mexico.

Dr. Jacqueline Fletcher, Regents Professor, Active Emerita, Oklahoma State University, co-keynote speaker, gave an important presentation *Agricultural Biosecurity: What Does It Mean and Why Does it Matter to the Peanut Industry.* Dr. Fletcher began with a historical background on agriculture biosecurity, stating a stable food supply is tied to the security of this nation. She moved on to cover potential risks to the U.S. food supply, ending with a discussion of peanut smut and other potential viruses. Finally, she shared strategic plans OSU has developed and is working with national security agencies to prevent potential food shortages.

Ron Smith, Editor, Southwest Farm Press, was the co-keynote speaker. His presentation, *As Luck Would Have: Reflections on 40 years as an Accidental Writer.* As his title suggestion, Ron shared his lifetime experiences on being in the passenger seat to recording peanut history. He has seen the rise of peanut production from From 500 pounds to 8,000 pounds per acre, Ron has listened to and shared the information of many great research, extension, and industry people, playing a small role in growing the peanut industry.

Shelly Nutt, Executive Director, Texas Peanut Producers Board, was the first of three speakers to discuss the current Southwest Peanut Grower market conditions. Shelly spoke on the importance of marketing and promotion to peanut sales. In addition to supporting the efforts of the National Peanut Board, the Texas Peanut Producers Board works to capture world markets, especially outreach to Mexico and China.

Ron Sholar, Executive Director, Oklahoma Peanut Commission, spoke on the challenges Oklahoma farmers have faced in recent years. Their efforts have focused on research and

education, developing new peanut varieties to address changing weather/water conditions, as well as, educating growers.

Jim Chandler, New Mexico Peanut Growers Association, shared his personal experiences on the importance of irrigation and the availability water to produce peanuts in New Mexico, stating water is a valuable resource growers must not take for granted. Despite these challenges, there is still great demand for Valencia peanuts and NMPG are working hard to keep this market filled.

Two Symposiums on UAVs: *A Look From Above*, moderated by Peter Dotray and the *Bayer Excellence in Extension and Extension Techniques*, moderated by Keith Rucker, Bayer CropScience were held.

Breakout Sessions topics included: Entomology, Weed Science & Mycotoxins; Harvesting, Curing, Shellling, Storing & Handling; Processing and Utilization, Economics; Breeding, Biotechnology and Genetics I and II; Plant Pathology and Nematology I and II; Physiology and Seed Technology; Production Technology.

Thirty-four (34) scientific posters were also displayed.

Another highlight of the APRES meeting is the annual **Joe Sugg Graduate Student Competition**. The largest number of Universities ever competed in our Joe Sugg Graduate Student Competition (9) and 25 competitors. Due to the large number of competitors and limited time, the competition was divided into three concurrent competitions. Session 1 winners are: **First Place – Jake Fountain** (University of Georgia), *" Comparative Genomics Analysis of Field Isolates of Aspergillus flavus and A. parasiticus to Explain Phenotypic Variation in Oxidative Stress Tolerance and Host Preference"* and **Second Place – Carolina Chavarro,** (University of Georgia), *"Genotyping of Recombinant Inbred Lines Population Provides Evidence to Tetrasomic Recombination in Cultivated Peanut"*. Session 2 winners are: **First Place – Wen Carter** (University of Georgia), *"The Influence of Nozzle Type on Peanut Weed Control Programs."* and **Second Place – Stephen Leininger,** (Mississippi State University), "*Land Preparation and Irrigation Method Impacts on Peanut Pod Yield, Quality and Water Use Efficiency.* Session 3 winners are: **First Place – Lindsey Christman** (North Carolina State University), *"The Influence of Nozzle Type on Peanut Weed Control Programs."* and **Second Place – Brian Jordan,** (University of Georgia), *"Effect of Planting Date on Two Cultivars on Leaf Spot Severity and Yield when Grown Without Fungicides."*

During the Annual Meeting, APRES recognized several individuals for their achievements and service to APRES:

The highest honor the Society bestows on an individual, **Fellow of the Society**, was awarded to: **Dr. Steve Brown**, American Peanut Council/Peanut Foundation.

The **Coyt T. Wilson Award for Distinguished Service** to APRES went to **Dr. Austin K. Hagan**, Auburn University.

Dr. Marshall Lamb, USDA-ARS-NPRL was selected as this year's recipient of the **Dow Agrosciences Award for Research**.

The **Bailey Award** for the best paper from the 2016 Annual Meeting went to **Dr. Jianping Wang**, University of Florida (Presenting Author) and co-authors H. Zhou, Z. Peng, J. Maku, L. Tan, F. Liu, Y. Lopez, and J. Wang, University of Florida for their paper "*Dissecting the Genetic Basis of Peanut Nodulation"*.

At the conclusion of the meeting, **new officers and directors** for the Society were inducted. Outgoing President, Dr. Corley Holbrook (USDA-ARS) presented the gavel to incoming President, Dr. Peter Dotray (Texas A&M University). President-Elect is Rick Brandenburg of North Carolina State University. Newly elected Board of Directors are Barbara Shew (North Carolina State University); Jason Woodward (Texas A&M University); Chris Liebold (The J.M. Smucker Company); Steve Brown, (American Peanut Council); and Dan Ward, National Peanut Board. Outgoing Board members Michael Baring (Texas A&M University); Jim Elder (The J.M. Smucker Company); Tom Stalker, Past President (North Carolina State University), and, Howard Valentine (American Peanut Council), were recognized for their support and service with a gift of a canvas print, entitled "Erdnuss". The first action of President Dotray's term was to present Dr. Corley Holbrook (USDA-ARS) with the Past President's Award.

The 2018 APRES meeting (50th Anniversary) will be held July 10-12 at the Doubletree Hotel in Williamsburg, VA.

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