50th PROCEEDINGS

Of The

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY, INC.

Annual Meeting

July 10-12, 2018
Doubletree Hotel * Williamsburg, VA

Publication Date April 2019

50th Annual Meeting

July 10-12, 2018 * Williamsburg, VA

Sponsors

Monday Tour and Dinner
Birdsong Peanuts
Virginia Peanut Growers Association

Awards Reception
Corteva Agriscience™, Agriculture Division of DowDupont™

Meeting Breaks
National Peanut Board
Syngenta

Graduate Student Luncheon
Syngenta

Ice Cream Social
AmVac
Brimrose
Golden Peanut & Tree Nuts
National Peanut Buying Points Association
Nichino America
North Carolina Peanut Growers Association
Olam
Premium Peanut
The J.M. Smucker Company
U.S. Gypsum
Virginia Peanut Growers Association

Wednesday Night Reception & Dinner
Bayer
BASF

Anniversary Cake
American Peanut Shellers Association
The Peanut Institute

Spouses Hospitality Suite
Valent

Spouses Program
American Peanut Council

Joe Sugg Graduate Student Competition
North Carolina Peanut Growers Association

Graduate Student Poster Competition
National Peanut Board

Fun Run
JLA, Inc.

Registration Bags & Lanyards
Visjon Biologics
Verdesian Life Sciences

Peanut Snacks

Alabama Peanut Producers Association
Florida Peanut Producers Association
Georgia Peanut Commission
Hampton Farms
Hershey Chocolate
Hub's Peanuts
KraftHeinz
Mars Wrigley Confectionery
Mississippi Peanut Growers Association
North Carolina Peanut Growers Association
The J.M. Smucker Company
Severn Peanut Company
South Carolina Peanut Board
Texas Peanut Producers Board
Virginia Diner Peanuts
Virginia Peanut Growers Association

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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)

AMERICAN PEANUT RESEARCH & EDUCATION SOCIETY
BOARD OF DIRECTORS
2018-19

President…….. Rick Brandenburg (2020)

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President-Elect…….. Barry Tillman (2021)

Executive Officer…….. Kimberly Cutchins (2019)

University Representatives:
- Virginia-Carolina…….. Barbara Shew (2019)
- Southeast……..Peggy Ozias-Akins (2019)
- Southwest……..Mark Burow* (2020)

USDA Representative…….. Marshall Lamb (2019)

Industry Representatives:
- Production…….. Gary Schwarzlose (2021)
- 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)

APRES Graduate Student Organization President……..Sara Beth Pelham (2019)
(Ex-officio Seat)

* Jason Woodward stepped down October 2018 due to a job change; Mark Burow was elected to fulfill his term.

PAST PRESIDENTS

Peter Dotray	2017-18		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
2018 – Williamsburg, VA

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

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
Beth Langston – Spouse Program Chair
Jack Davis – Fun Run 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)

APRES Committees
2018-19

Bailey Award Committee
Kim Moore, Chair 2019)
Maria Balota (2019)
Jack Davis (2020)
Peggy Ozias-Akins (2020)
Hillary Mehl (2021)
Scott Monfort (2021)

Coyt T. Wilson Distinguished Service Award Committee
Mark Abney, Chair (2019)
Albert Culbreath (2019)
Tim Brenneman (2020)
Dan Anco (2021)

Corteva Agrisciences™ Awards Committee
Dylan Wann, Chair (2019)
Carroll Johnson (2019)
Tim Grey (2020)
Tom Stalker (2020)
John Richburg (2020)
Nick DuFault (2021)
Travis Faske (2021)
Barry Tillman (2021)

Fellows Committee
Eric Prostko, Chair (2019)
Bob Kemerait (2019)
Todd Baughman (2020)
David Jordan (2021)

Finance Committee
Tim Brenneman, Chair (2019)
Scott Tubbs (2020)
Maria Balota (2020)
Victor Nwosu (2021)

Joe Sugg Graduate Student Awards Committee
Robert Kemerait, Chair (2020)
Steve Li (2020)
James Grichar (2020)
Abraham Fulmer (2021)
Mark Burow (2021)

Nominating Committee
Peter Dotray, Chair (2019)
Private – Jack Davis (2019)
State - Greg McDonald (2019)
Robert Moore (2019)

Peanut Quality Committee
John Bennett, Chair (2019
Robert Moore (2019)
Chris Liebod (2020)
Jason Woodward (2020)
Ken Barton (2021)
William Pearce (2021)
Naveen Puppala (2021)

Program Committee
Barry Tillman, Chair (2019)
Charles Chen, Technical Program Chair
Steve Li, Local Arrangements Co- Chair
Kris Balkcom, Local Arrangements Co-Chair
Jennifer Tillman, Spouse Program
Peter Dotray – Fun Run

Publications and Editorial Committee
Chris Liebold, Chair (2019)
Allison Floyd (2020)
Kira Bowen (2021)
Josh Clevenger (2021)

Public Relations Committee
Keith Rucker, Chair (2019)
William Pearce (2019)
Dylan Wann (2020)
Gary Schwarzlose (2021)

Site Selection Committee
Charles Chen, Chair (2019)
Hannah Jones (2019)
Gary Schwarzlose (2020)
Shelly Nutt (2020)
David Jordan (2021)
Jeff Dunne (2021)

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

2018	**M.D. Burow**, R. Chopra, R. Kulkarni, T. Tengey, V. Belamkar, J. Chagoya, J. Wilson, M. G. Selvaraj, C. E. Simpson, M. R. Baring, F, Neya, P. Sankara, and N. Denwar, Texas Tech University
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

2018	D.J. Mahoney
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

2018	Dr. Craig K. Kvien
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

CORTEVA AGRISCIENCE™,
Agriculture Division of DowDuPont™
AWARD FOR EXCELLENCE IN RESEARCH

2018	Barry Tillman
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	No Award Given
2005	William D. Branch
2004	Stanley M. Fletcher
2003	John W. Wilcut
2002	W. Carroll Johnson, III
2001	Harold E. Pattee and Thomas G. Isleib
2000	Timothy B. Brenneman
1999	Daniel W. Gorbet
1998	Thomas B. Whitaker
1997	W. James Grichar
1996	R. Walton Mozingo
1995	Frederick M. Shokes
1994	Albert Culbreath, James Todd and James Demski
1993	Hassan Melouk
1992	Rodrigo Rodriguez-Kabana

1992-1996 DowElanco Award for Excellence in Research
1997 Changed to DowElanco Award for Excellence in Research
1998 Changed to Dow AgroSciences Award for Excellence in Research
2018 Changed to Corteva Agriscience™, Agriculture Division of DowDuPont™ Award for Excellence in Research

CORTEVA AGRISCIENCE™,
Agriculture Division of DowDuPont™
AWARD FOR EXCELLENCE IN EDUCATION

2018	Peggy Ozias-Akins
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
2018 Changed to Corteva Agriscience™, Agriculture Division of DowDuPont™ Award for Excellence in Education

PEANUT RESEARCH AND EDUCATION AWARD RECIPIENTS

2018	Howard Valentine	1989	R.J. Henning
2017	Tim Brenneman	1987	L.M. Redlinger
2016	Bob Kemerait	1986	A.H. Allison
2015	Tom Stalker and Noelle Barkley	1985	E.J. Williams and J.S. Drexler
2015	Emory Murphy	1984	Leland Tripp
2014	Baozhou Guo	1983	R. Cole, T. Sanders, R. Hill and P. Blankenship
2013	John Beasley	1982	J. Frank McGill
2012	Tom Isleib and Corley Holbrook	1981	G.A. Buchanan and E.W. Hauser
2011	No Nominee	1980	T.B. Whitaker
2010	P. Ozias-Akins	1979	J.L. Butler
2009	A. Stephens	1978	R.S. Hutchinson
2008	T.G. Isleib	1977	H.E. Pattee
2007	E. Harvey	1976	D.A. Emery
2006	D.W. Gorbet	1975	R.O. Hammons
2005	J.A. Baldwin	1974	K.H. Garren
2004	S.M. Fletcher	1973	A.J. Norden
2003	W.D. Branch and J. Davidson	1972	U.L. Diener and N.D. Davis
2002	T.E. Whitaker and J. Adams	1971	W.E. Waltking
2001	C.E. Simpson and J.L. Starr	1970	A.L. Harrison
2000	P.M. Phipps	1969	H.C. Harris
1999	H. Thomas Stalker	1968	C.R. Jackson
1998	J.W. Todd, S.L. Brown, A.K. Culbreath and H.R. Pappu	1967	R.S. Matlock and M.E. Mason
1997	O.D. Smith	1966	L.I. Miller
1996	P.D. Blankenship	1965	B.C. Langleya
1995	T.H. Sanders	1964	A.M. Altschul
1994	W. Lord	1963	W.A. Carver
1993	D.H. Carley and S.M. Fletcher	1962	J.W. Kickens
1992	J.C. Wynne	1961	W.C. Gregory
1991	D.J. Banks and J.S. Kirby G. Sullivan		
1990	R.W. Mozingo		

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

2018 Annual Meeting
Abstracts of Presentations

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Joe Sugg Graduate Student Competition – Session 1

Tuesday, July 10, 2018		
3:00 - 5:00 p.m. Auditorium	**Joe Sugg Graduate Student Competition - Session I** Moderator: R.C. Kemerait *Sponsored by: North Carolina Peanut Growers Association*	Page Number
3:00	**Mapping of Resistence to Root-knot Nematode from the Wild Species *A. stenosperma* and Introgression into Peanut *Arachis hypogaea* L.** **C. BALLÉN-TABORDA***, Center for Applied Genetic Technologies and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602; Y. CHU, Department of Horticulture and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Tifton, GA 31793; S. A. JACKSON, Center for Applied Genetic Technologies and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602; P. OZIAS-AKINS, Department of Horticulture and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Tifton, GA 31793; C. C. HOLBROOK, USDA-ARS, Tifton, GA 31793; and D. J. BERTIOLI and S. C. M. LEAL-BERTIOLI, Center for Applied Genetic Technologies and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602.	21
3:15	**Tracking of Wild Allele Introgressions in a Peanut Chromosome Segment Substitution Line Population** **D. GIMODE*** and P. OZIAS-AKINS, Institute of Plant Breeding Genetics and Genomics, University of Georgia, Tifton, GA 31793; Y. CHU, Department of Horticulture, University of Georgia, Tifton, GA 31793; S. LEAL-BERTIOLI and D. BERTIOLI, Center for Applied Genetic Technologies, University of Georgia, Athens, GA 30606; C. C. HOLBROOK United States Department of Agriculture - Agricultural Research Service, Tifton GA 31793; J. CELVENGER, Mars Wrigley Confectionery, Center for Applied Genetic Techonlogies, Athens, GA 30606; L. DEAN, USDA-ARS, Raleigh NC 27695, and D. FONCEKA, Centre d'Etudes Régional pour l'Amélioration de l'Adaptation à la Sécheresse, Thies, Senegal.	22
3:30	**Determination of Peanut (*Arachis hypogaea* L.) Yield Potential by Geographical Location and Planting Date in Georgia.** **S. E. PELHAM*** and W. S. MONFORT, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; GEORGIA COUNTY EXTENSION ANR AGENTS, University of Georgia, Athens, GA 30601.	23
3:45	**Investigation of Planter Parameters for Maximizing Peanut Emergence** **S. VIRK**, W. PORTER, S. MONFORT, C. PILON, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; and S. HOLLIFIELD and P. SAPP, UGA County Extension Agents.	24
4:00	**Planting Conditions Influence Early Season Crop Growth of Peanut Cultivars** **G. VIRK***, C. PILON and J. L. SNIDER, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793-0748.	25
Paper Withdrawn	**Boron Rate and Timing on Runner Peanut** **A. VAN CLEAVE***, A. V. GAMBLE, K. BALKCOM, A. PONCET, and A. CALLWAY, Auburn University, Auburn, AL 36849; J. HOWE, Texas A&M University, College Station, TX 77843; and G. HARRIS, The University of Georgia, Tifton, GA 31793.	
4:15	**Quality and Flavor Profile Following Various Pesticide Inputs in Peanut (*Arachis hypogaea* L.) Grown in North Carolina** **A. A. KAUFMAN***, Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695, L. L. DEAN, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695; D. L. JORDAN and A. T. HARE Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695; B. B. SHEW, R. L. BRANDENBURG, and B. R. ROYALS, Department of Plant Pathology and Entomology, North Carolina State University, Raleigh, NC 27695.	26
Paper Withdrawn	**Elemental Analysis of Groundnut Germplasm Using the Particle Induced X-ray Emission (PIXE) Method** **A. U. REHMAN*** and U. KHAN, Department of Botany, Hazara University Mansehra KPK Pakistan.	

Mapping of Resistance to Root-knot Nematode from the Wild Species *A. stenosperma* and Introgression into Peanut *Arachis hypogaea* L.

C. BALLÉN-TABORDA*, Center for Applied Genetic Technologies and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602; Y. CHU, Department of Horticulture and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Tifton, GA 31793; S. A. JACKSON, Center for Applied Genetic Technologies and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602; P. OZIAS-AKINS, Department of Horticulture and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Tifton, GA 31793; C. C. HOLBROOK, USDA-ARS, Tifton, GA 31793; and D. J. BERTIOLI and S. C. M. LEAL-BERTIOLI, Center for Applied Genetic Technologies and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602.

The cultivated peanut (*Arachis hypogaea* L.) is a very important crop worldwide. It is an allotetraploid species with very low genetic diversity and high susceptibility to root-knot nematode (RKN) *Meloidogyne arenaria*, which reduces yield and quality, and increases the production costs. Although, single source of RKN resistance (derived from the wild species *A. cardenasii*) is available in cultivars widely grown in US, the nematode could eventually breakdown the resistance and cause devastating consequences for the peanut industry. Among other wild diploid species that can be utilized to enrich peanut's genetic diversity, we find the species *A. stenosperma* accession V10309 that has been described as very resistant to the root-knot nematode. Candidate genomic regions that control nematode resistance have been mapped on linkage groups A02, A04 and A09. To confirm these chromosome segments in a tetraploid background, an F_2 population was developed from a cross of *A. hypogaea* RunnerIAC886 with an induced allotetraploid (*A. batizocoi* K9484 x *A. stenosperma* V10309)^{4x} and genotyped using the 'Axiom_Arachis v01' 58K high-density SNP array. A framework map, comprising 1499 polymorphic SNP markers, in combination with phenotyping of three different components of resistance, allowed us to verify previously described QTL. F_2-derived F_3 ($F_{2:3}$) lines harboring these chromosome segments have been selected using RKN resistance-linked SNP makers, crossed and backcrossed with peanut elite breeding lines from Tifton, GA. Unexpected genetic events were observed, such as tetrasomic recombination, gene conversion and unusual marker. Further characterization of BC_3F_2 lines will be done (phenotyping, genotyping and skim sequencing), in order to validate markers, understand the chromosome segments and select the best individuals to continue with the backcrossing process. This work will contribute to the production of advanced peanut lines that incorporate wild-derived genomic regions with strong and durable resistance to RKN, and to the further understanding of the complex genetics of peanut.

Tracking of Wild Allele Introgressions in a Peanut Chromosome Segment Substitution Line Population

D. GIMODE* and P. OZIAS-AKINS, Institute of Plant Breeding Genetics and Genomics, University of Georgia, Tifton, GA 31793; Y. CHU, Department of Horticulture, University of Georgia, Tifton GA 31793; S. LEAL-BERTIOLI and D. BERTIOLI, Center for Applied Genetic Technologies, University of Georgia, Athens GA 30606; C. C. HOLBROOK, United States Department of Agriculture - Agricultural Research Service, Tifton GA 31793; J. CLEVENGER, Mars Wrigley Confectionery, Center for Applied Genetic Technologies, Athens, GA 30606; L. DEAN, USDA-ARS, Raleigh NC 27695; and D. FONCEKA, Centre d'Etudes Régional pour l'Amélioration de l'Adaptation à la Sécheresse, Thies, Senegal.

Cultivated peanut arose from the hybridization of the diploids *Arachis duranensis (A genome progenitor) and Arachis ipaensis (B genome progenitor), followed* by spontaneous chromosome doubling to yield the current allotetraploid state (AABB; *2n=4x=40*). This genetic heritage, short period since polyploidization, self-pollinating breeding system, and domestication bottleneck have resulted in a crop with reduced diversity. In order to harness polymorphism from its wild relatives, a chromosome segment substitution line (CSSL) population was created via the tetraploid route to interspecific hybridization. The CSSL population was derived by crossing the A and B genome progenitors, doubling the chromosomes of the cross, and introgressing chromosome segments from the resultant synthetic allotetraploid into the background of a cultivated variety (Fleur 11). Through SNP genotyping, we have developed high-resolution sets of markers that have enabled us to precisely delineate the regions of wild genetic introgression. In addition, we have observed evidence of tetrasomic recombination events in the population. By comprehensively phenotyping the population, we have uncovered significant variation in canopy, below ground, as well as seed composition traits. Analysis of the genotype and phenotype data has enabled us to deduce how chromosome segments from the wild alter the expression of traits in the cultivated genetic background. This study improves our understanding of how the wild relatives of peanut can be used to confer beneficial traits to cultivated peanut varieties.

Determination of Peanut (*Arachis hypogaea* L.) Yield Potential by Geographical Location and Planting Date in Georgia

S. E. PELHAM* and W. S. MONFORT, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; and GEORGIA COUNTY EXTENSION ANR AGENTS, University of Georgia, Athens, GA 30601.

The use of crop models to predict yield have become increasingly popular in agronomic crops. To implement a crop model for peanut in Georgia it is imperative to understand the effects of geographical location in the state and planting date on yield. The objective of this study was to determine yield potential of peanut by geographic location and planting date in Georgia using a survey. Survey data consisted of latitude and longitude, planting date, row configuration, irrigation method, variety, digging date, yield, and grade for each of the selected fields. Growers were also allowed to leave specific comments about the field allowing for the explanation of low yields. Data collected showed that over 90% of the fields were planted to Georgia-06G in 2017 and 55% of the fields were irrigated. Planting dates ranged from April 15th to June 7th with yields ranging from 2921 kg/ha to 8376 kg/ha. Initial results using linear regression do not show a significant correlation between yield and planting date. Therefore, to improve the model, surveyed fields were segregated based on irrigation practices (Irrigated and Non-irrigated) and then modeled using multiple regression to determine combined effects of planting date, row pattern, growing days, and row configuration on yield potential. The addition of other variables, especially geographic location and growing days, did improve the model but not significant. To further understand the impact geographical location has on yield potential regarding planting data, geostatistical techniques will need to be conducted.

Investigation of Planter Parameters for Maximizing Peanut Emergence

S. VIRK*, W. PORTER, S. MONFORT and C. PILON, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; and S. HOLLIFIELD and P. SAPP, UGA County Extension Agents.

Correct selection of planter parameters based on existing field conditions can help in achieving optimum seeding performance during planting, which generally leads to uniform and maximized crop emergence. Multiple studies were conducted across the state of Georgia to evaluate the effect of critical planter parameters (seeding depth and planter downforce) on crop emergence in peanuts. The selected study sites in Central, Southeast and Southwest Georgia differed by soil type and prevalent field conditions. Two studies were conducted at University of Georgia's research stations located in Central and Southwest Georgia. These studies consisted of planting peanuts at three seeding depths (1.5", 2.5" and 3.5") and three planter downforce settings (100, 200 and 400 lbs.) with four randomized replications of each treatment within the fields. Two other studies were implemented as on-farm trials in growers' fields in Southeast and Southwest Georgia. For these trials, three soil EC zones within each field were delineated to run replicated downforce strips across the field. Test treatments consisted of one grower selected downforce and two other downforce treatments consisting of 50% and 150% of the grower selected value. Data collection for all these studies consisted of stand counts at one, two, and three weeks after planting (WAP) to evaluate the effect of depth and downforce treatments on crop emergence. Emergence data analysis indicated a strong depth-downforce interaction when planting peanuts. An early and uniform emergence was observed in the peanuts planted at 2.5" and 3.5" depth which is typically desired when aiming for higher crop yields. Results from on-farm studies suggested that planter downforce requirements could vary with changes in soil texture (soil EC) within the field. This indicated that growers should consider the in-field soil variability when selecting downforce settings for planting peanuts. On-farm studies have shown that fields with heavier soils (more clay content) require more downforce to achieve the desired seed depth compared to medium downforce requirements in fields with lighter soils (sandy or sandy loam soils). The results from these studies emphasize the importance of understanding and quantifying prevailing field conditions at planting, and the need to optimize planter settings (depth-downforce) based on field conditions to obtain a higher

Planting Conditions Influence Early Season Crop Growth of Peanut Cultivars

G. VIRK*, C. PILON and J. L. SNIDER, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793-0748.

Vigorous early seedling growth increases competitiveness with weeds, lessens the negative impacts of early season pathogens, minimizes the risks of stand loss, and in some instances is correlated with yield. Early season crop growth can be influenced by genotype, field management, and environmental conditions during seed and seedling development. Notably, high or low temperature conditions can have a dramatic effect on plant growth and development. Selection of a planting date with optimal environmental conditions (temperature) is a critical factor for crop production, and can be problematic. To determine the effect of different planting conditions on early season peanut growth, three different peanut cultivars (Georgia-06G, Georgia-14N, and TifNV High O/L) were planted on 04/01/2017 (mid-April), 05/10/2017 (early-May), and 06/05/2017 (early-June) to generate different field conditions, especially differences in temperature conditions. Field measurements consisted of destructively harvesting plants from 2-m sections from each plot at 21 and 35 days after planting (DAP) and measuring stem height, number of nodes, total leaf area per plant (TLA), leaf dry weight (LDW), and stem dry weight (SDW). These measurements were also used to calculate the following crop growth indices between 21 and 35 DAP: Crop Growth Rate (CGR), Net Assimilation Rate (NAR), and average Leaf Area Index (LAI). Initial result analysis showed the effect of cultivar and planting date on plant growth parameters and derived growth indices. At 21 DAP, average height of plants sown in early-May was higher than the other planting dates, whereas at 35 DAP, height was the lowest in early-May. Comparing cultivars, GA-06G and TifNV plants were significantly taller than Georgia-14N. The number of nodes was higher in plants sown in early-June than the other two planting dates at both 21 and 35 DAP. GA-06G and TifNV were the cultivars with highest number of nodes. Higher TLA, SDW, and LDW per plant were observed in early-June for 21 and 35 DAP. In addition, GA-06G and TifNV resulted in higher TLA, SDW, and LDW per plant than GA-14N. Growth analysis results showed that CGR and LAI were significantly higher for GA-06G and TifNV ($p= 0.0035$ and $P<0.0001$, respectively) than GA-14N. However, GA-14N exhibited the highest NAR ($p= 0.0006$) among the cultivars. In addition, when comparing planting dates, the highest NAR was observed in plants sown in early-May, whereas both CGR and LAI were the lowest in early-May. These preliminary results suggested that differences in early crop growth of peanuts were more closely related to leaf area development than photosynthetic efficiency of the canopy.

Quality and Flavor Profile Following Various Pesticide Inputs in Peanut (*Arachis hypogaea* L.) Grown in North Carolina

A. A. KAUFMAN*, Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695; L. L. DEAN, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695; D. L. JORDAN and A. T. HARE Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695; B. B. SHEW, R. L. BRANDENBURG, and B. R. ROYALS, Department of Plant Pathology and Entomology, North Carolina State University Raleigh, NC 27695.

Consumer interest in organically grown products is increasing nation and worldwide and there is an opportunity for growth for organic legume production, especially peanut. The purpose of this research is to investigate the impact various pesticide treatment types have on pest and disease infestations and the flavor profile for the Virginia market type cultivar Sullivan under simulated organic and conventional production systems. Peanut at both locations was planted in late May and treatments consisted of two levels of seeding rate/fungicide seed treatment, two levels of insecticide, and three levels of fungicide. For the purpose of this summary, the best management practice for low pesticide input system simulating insect and disease management in organic production and the best management practice for conventional production are compared. Weeds were controlled using herbicides. For the simulated organic production system, fungicide was not applied to the seed, no insecticides were used and seeds were planted at a rate of 175 lbs/acre. In the conventional production system, seed was treated with fungicide and planted at a rate of 135 lbs/acre with insecticides applied three weeks after planting to control tobacco thrips and at mid-season to control southern corn rootworm. The experimental design was a randomized complete block with treatments replicated four times.

Data for peanut population, canopy width, thrips injury, potato leafhopper burn, pod yield, and market grade characteristics were recorded. The interaction of location by treatment was not significant for most measurements. Significant differences ($p < 0.05$) for the production systems were noted for plant population, canopy width, thrips injury, and pod yield. Plant population and canopy widths were greater in the conventional production system than in the simulated organic system while thrips injury was lower in the conventional production system than in the simulated organic system. Pod yield was 3,620 lbs/acre and 4,310 lbs/acre in the simulated organic and conventional systems respectively. The sound mature kernel fraction was retained and used for sensory evaluation by a trained descriptive analysis panel of 5 – 7 people. The flavor attributes evaluated by the panel included: roast peanutty, sweet aromatic, dark roast, raw beany, woody/hulls/skins, sweet taste, bitter taste and astringency.

General Session:
APRES….Celebrating Our Past; Inspiring Our Future

Wednesday, July 11, 2018		
8:00 - 10:00 a.m. Auditorium	**Opening General Session** *APRES President Peter Dotray, President*	Page Number
8:30	**An Organization, a Family, and Fifty Years of Homecomings: A Historical Reflection of APRES** **K. L. BEASLEY*,** Department of History, Florida State University, Tallahassee, FL 32306.	28
9:00	**Remembering our Past and How it Affects our Present & Future** **H. VALENTINE*** (Retired), The American Peanut Council, Big Canoe, GA 30143	29
9:30	**Peanut Yield Gains Over the Past 50 Years** **C.C. HOLBROOK***, USDA-ARS, TIFTON, GA 31793; T.B. BRENNEMAN, UNIV. OF GEORGIA, TIFTON, GA 31793; H.T. STALKER, North Carolina State Univ., Raleigh, NC 27695; W.C. JOHNSON III, USDA-ARS, Tifton, GA 31793; and P. OZIAS-AKINS, Y. CHU, G. VELLIDIS, and D. MCCLUSKY, Univ. of Georgia, Tifton, GA 31793.	30

Symposium: Industry Challenges of the Next 50 Years

Wednesday, July 11, 2018		
10:30 a.m. - 12 Noon Auditorium	**Symposium: Industry Challenges of the Next 50 Years** *Moderator: Rick Brandenburg*	Page Number
10:30	**The Future of Peanut Agronomic Research - The Sky is Not the Limit** **R. S. TUBBS***, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.	31
10:50	**Future of Pest Management: A Plant Pathologist's Perspective** **N. DUFAULT*** Department of Plant Pathology, The University of Florida, Gainesville, FL 32611-0680, and M. PARET and I. SMALL, North Florida Research and Education Center, The University of Florida, Quincy, FL 32351-5677.	32
11:10	**Not Your Grandma's Goobers: Designing the Future of Peanut Breeding** **K. D. CHAMBERLIN***, USDA-ARS, Stillwater, OK 74075.	33
11:30	**A Retrospective Look at Engineering Innovations in the Peanut Industry** **C. L. BUTTS***, National Peanut Research Laboratory, USDA, ARS, Dawson, GA.	34
11:50	**Rethinking Scales for Measuring Peanut Quality** **J. P. DAVIS***, J. Leek Associates, Inc., Albany, Ga.	35

An Organization, a Family, and Fifty Years of Homecomings: A Historical Reflection of APRES

K. L. BEASLEY*, Department of History, Florida State University, Tallahassee, FL 32306.

From its early days when the Peanut Improvement Working Group (PIWG) became the American Peanut Research and Education Association (APREA), and then, to the American Peanut Research and Education Society (APRES), emphasizes how this organization has evolved into a vital foundation within the peanut industry. For the past 50 years, the APRES meeting has become a juncture that brings together a diverse group of individuals from industry, academia, research, and business, to name a few, creating a space where the latest research, ideas, and concepts are produced, discussed, and shared.

Most importantly, APRES is also about family. It is like having a yearly family reunion. This family-centric orientation makes the society and its yearly meeting very different from other organizations. Each year means seeing old friends, as well as watching children and grandchildren grow up, and strengthening that bond of being part of the APRES family through this connection. The evolution of APRES and the subsequent generations of new graduate students, scientists, researchers, and others continues to shape the direction of the society. APRES facilitates this connection between science, industry and friendship in an environment that mentors and cultivates the next generation of scientists and individuals in peanut production.

By tracing the history of APRES, the role of the society emerges as a reflection of how the peanut industry is evolving, and with it, how the function and role of APRES evolves alongside it. For 50 years, this society and its yearly meeting continues to develop its place as a cornerstone of the peanut industry, as well as create a family atmosphere among its membership.

Remembering our Past and How it Affected our Present and Future

H. VALENTINE, The American Peanut Council, Big Canoe, GA 30143

The history of the peanut industry in the United States including growing, storage, shelling, product manufacturing and the impact of legislation. Each segment has its own unique history that will include where we have been and where we are now. Growing will include early farming practices, effect of seed varieties, improving equipment. Shelling moved from hand trucks to forklifts, and hand sorting to electronic sorting. Storage started in the field in stacks and moved to 10, 00 ton warehouses. Product manufacturing continues to be creative, starting with the very basic roasted peanuts to innovative nutritional bars.

The future will also be a final focus to include probable innovations. Electronics provide new labor saving and quality improvements for all segments. Data mining will continue to make all segments more productive and with better focus on consumer's needs. Al this and more will

Peanut Yield Gains Over the Past Fifty Years.

C. C. HOLBROOK, USDA-ARS, Tifton, GA 31793; T. B. BRENNEMAN, Univ. of Georgia, Tifton, GA 31793; H.T. STALKER, North Carolina State Univ., Raleigh, NC 27695; W. C. JOHNSON III, USDA-ARS, Tifton, GA 31793; and P. OZIAS-AKINS, Y. CHU, G. VELLIDIS, and D. MCCLUSKY, Univ. of Georgia, Tifton, GA 31793.

Average yields of peanut in the United States have greatly increased over the 50 year history of the American Peanut Research and Education Society. Before 1968 the average yield of peanut had never reached 2000 kg ha^{-1}. Average yields of peanut set an all-time record of 4695 kg ha^{-1} in 2012. Favorable weather conditions undoubtedly contributed to the record yields in 2012; however, these record yields would not have been achievable without numerous technological advances that have been made in peanut production. The cumulative effect of these technologies caused U.S. yields to more than double from 1765 kg ha^{-1} in 1967 to 4074 kg ha^{-1} in 2017. During the first 50 years of APRES the average gain for peanut yields was 46.2 kg ha^{-1} yr^{-1}. These yield gains are due to improved cultivars, advances in agronomic practices, improvement in practices and chemistries for control of weeds and diseases, and increased use of precision agriculture, particularly for the digging and harvesting of the crop. Modern peanut cultivars have much higher yield potential; however, because of the synergism between production systems and plant breeding, it is difficult to precisely quantify the amount of the yield gains that are due to improved cultivars. The American Peanut Research and Education Society has played a critical role in facilitating the multidisciplinary research and disseminating results of this research which has been critical in enhancing the U.S. peanut industry for the past 50 years.

The Future of Peanut Agronomic Research - The Sky is Not the Limit

R. S. TUBBS*, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.

Many guidelines for agronomic management of peanut (*Arachis hypogaea* L.) are well-established when considered individually. However, crop productivity is typically driven by more than one variable and the interactions of multiple practices are not as easily derived. With an ever-changing availability of new cultivars with greater disease resistance, improved yield and/or grade potential, and varying growth characteristics, there is a steady need for agronomic research in both the immediate and distant futures. In some cases, traditional agronomic experimentation on variables such as rotations, tillage and land management, timing of planting, row pattern and spacings, seeding rate, irrigation, plant growth regulators, inoculant/biological products and fertilization need to be revisited every several years when a new cultivar becomes commercially relevant. This is especially true with differing climates and soil types in various growing regions. The effects of climate and weather along with pest pressure, pest management programs, and maturity characteristics of cultivars are also drawing the attention of peanut agronomists to improve predictability of optimum maturity. Yet, peanut agronomists are also attempting to adapt new ideas to assist with management decisions and increase revenue potential for growers to stay competitive in a very volatile commodity market domestically and with fluctuating export opportunities. The adoption of technologies such as GPS guidance, seed monitors, aerial imagery, and variable rate planting or spraying equipment are becoming more common to assist growers with better precision in planting and digging practices, ensuring proper seed placement, and assessing problematic areas in the field for site-specific in-season management decisions. So many excellent achievements have been made through the collaborations of scientists of the American Peanut Research and Education Society over the last 50 years, and there is no doubt that similar collaborations remain strong throughout the current membership to lead us into the future.

Future of Peanut Pest Management: A Plant Pathologist's Perspective

N. DUFAULT* Department of Plant Pathology, The University of Florida, Gainesville, FL 32611-0680; and M. PARET and I. SMALL, North Florida Research and Education Center, The University of Florida, Quincy, FL 32351-5677.

Integrated pest management (IPM) is a broad-based approach for pest control that has been used since the 1950s. Basically, this approach uses a variety of management tactics to keep pest levels below an economic threshold. However, choosing the appropriate tactics in a timely manner can be difficult in many agricultural productions systems. Technology is continually revolutionizing agricultural decision making by transforming large quantities of data into useful and timely information. The focus of this presentation will be on what makes a successful integrated pest management strategy, and how novel technologies can possibly be incorporated into them. Novel agricultural technology topics related to pest identification in the field and the lab as well as various management tools will be covered in this presentation. Pests impacting peanut production are continually adapting and evolving, thus the tools used to manage them must also have this capability. The future of pest management lies with finding ways to incorporate novel information into established integrated pest management programs and adapting them for pest changes in the future.

Not Your Grandma’s Goobers: Designing the Future of Peanut Breeding

K.D. CHAMBERLIN*, USDA-ARS, Stillwater, OK 74075.

The peanut producer has realized a 130% increase in yield since 1969, with production averaging 4,074 pounds/acre nationwide for the U.S. in 2017. Advances in agricultural engineering, agricultural practices, and chemicals for pests, diseases and weed management have all contributed to increased peanut production efficiency and profitability. Perhaps greatest contribution to sustainable peanut production has been made by area-targeted peanut breeding programs. Charged with hitting the moving target of a 'perfect peanut cultivar', peanut breeders have managed to deliver to their customers by focusing on developing cultivars with traits of high importance such as disease resistance, high oleic acid content, early maturity, and drought tolerance, while advancing essential traits such as yield and grade. Conventional peanut breeding has provided a continuous supply of improved cultivars over the last 50 years. However, this success may be difficult to exceed if only conventional technologies continue to be used. Fortunately, recent advances in molecular technologies have resulted in the sequencing of both the ancestral and cultivated peanut genomes, opening the door for the mapping of traits and molecular marker development. By extensively phenotyping populations designed for trait mapping, steps can now be taken over the next decade to develop trait-specific markers for use in rapidly mining vast germplasm collections, efficiently identifying useful breeding material, pyramiding traits into cultivars and drastically reducing time and resources required for cultivar development. Future generations of peanut breeders will undoubtedly be well-trained in the use of such markers, and will finally have the tools necessary to break through the bottle-neck of the cultivated peanut narrow genetic base. The age of peanut breeding by design may be just around the corner.

A Retrospective Look at Engineering Innovations in the Peanut Industry.

C. L. BUTTS*, National Peanut Research Laboratory, USDA, ARS, Dawson, GA.

As research scientists and engineers, we are able to gaze into the future of peanut production and processing because we stand on the shoulders of those who blazed the way before us. We have made tremendous progress in the areas of peanut harvest, curing, transportation, storage, and processing during the last 50 years. During the 1960's the digger, shaker, inverter that dug two rows of peanuts into a single inverted windrow was introduced in the Texas and New Mexico production areas. By the early 1970's, inverted windrows were used on approximately 65% of the peanut production in the United States. Today, virtually all commercially produced peanuts are dug using 6-, 8-, or 12-row digger/shaker/inverters. Similarly, in the 1950's, J.L. Shepherd is credited with developing a peanut combine towed by a tractor picking up the windrow, separating the peanuts from the vine, and bagging the peanuts. John Deere manufactured and sold the self-propelled 111 SP Peanut Combine in the mid to late 60's. Today, peanut combines are manufactured by three manufacturers and harvest 6 or 8 rows. The development and improvements to the diggers and the combines have significantly reduced the manpower and time required to harvest the peanut crop each year. Curing has changed from days and months in stackpoles to an average of 24 h or less in a drying wagon increasing the control over the curing process. Many of the peanuts are cured using conveyances holding in excess of 20 t compared to 4 – 6 t cured in the 14- and 21-ft wagons in the past. Instrumentation for the drying control process has improved from a simple mechanical thermostat to networked systems that can be controlled and monitored from anywhere via the internet. Incremental changes have been made to improve the equipment used in sampling and grading peanuts at the peanut buying point. While the basic grading equipment and procedures have remained nearly the same since the 1960's based on research by J.W. Dickens, modifications and control systems are available to fully automate the sampling process and present graders with a consistent 1800-g sample without manual division regardless of the size of the conveyance. In the not too distant past, the average farmers' stock warehouse stored approximately 4,000 t of peanuts for an average of 7 months. Current farmers' stock storage facilities may store as much as 13,000 t for up to one year. This longer storage period increases the requirement of well-designed environmental systems and integrated pest management plans. Improved engineering designs have improved peanut shelling plant capacities and product quality. During the past 30 years, packaging for bulk handling of shelled peanuts has progressed from 100-lb burlap sacks to 1-t Gaylord boxes to 1-t flexible intermediate bulk containers or totes. Each container type carried its own challenges and benefits. Engineering research has shown that controlling relative humidity is of primary importance when storing shelled peanuts and should be maintained between 55 and 70%. If the proper relative humidity is maintained, shelled peanuts can be stored at temperatures up to 55 F for as long as a year with no detrimental effects on flavor or other quality factors.

Engineering challenges still exist in all phases of peanut production, transportation, processing, and storage. Some of these challenges include 1) eliminating foreign material at all points in the value chain; 2) achieving a uniform single kernel distribution during curing; 3)segregating and maintaining segregations of peanuts based on quality and food safety; 4)detecting and eliminating peanuts from the value chain contaminated with aflatoxin; 5) maintaining peanut quality during storage and transportation; and 6) traceability of peanuts to the point of origin.

Rethinking Scales for Measuring Peanut Quality

J.P. DAVIS*, JLA, Inc., Albany, GA

A consistent, affordable, and wholesome supply of peanuts is critical to the safety and performance of established peanut based products and the development of new applications. Success in the market depends on the capacity of the supply base to reliably deliver the most important quality parameters, which must be well defined for a given application and cost balanced. Depending on grade, market type, etc., a 20 MT lot contains roughly 10- 100 million kernels. Despite these large kernel counts, lot quality is often defined with single kernel resolution. For example, the frequency of contaminates in a high oleic lot, frequency of kernels with a given defect, or the frequency of kernels not a meeting a defined oil content (maturity), could all result in finished product quality that limits performance at best, or drives consumer complaints at worst. Despite the inherently understood importance of single kernel chemical data on incoming lots, this data has been historically limited, due to technological, time and/or cost constraints. New technologies and systems should be developed to provide this data, which will promote a new paradigm in ingredient quality, drive more differentiation/value in the supply base, and catalyze new market applications.

Joe Sugg Graduate Student Competition – Session II

Wednesday, July 11, 2018		
1:30 - 3:15 p.m. **Auditorium**	**Joe Sugg Graduate Student Competition II** Moderator: R.C. Kemerait *Sponsored by: North Carolina Peanut Growers Association*	Page Number
1:30	**Development of a New Protocol to Screen Peanut Genotypes with Superior Vigor by Assessing Root Architecture Traits** **M. D. GOYZUETA ALTAMIRANO*** and B. L. TILLMAN, North Florida REC, Agronomy Department, University of Florida, Marianna, FL 32446; and D. L. ROWLAND, Agronomy Department, University of Florida, Gainesville, FL 32611.	37
1:45	**Peanut and Weed Response to Postemergence Herbicide Tank-Mixtures Utilizing Paraquat** **K. M. EASON***, R. S. TUBBS, and T. L. GREY, Crop and Soil Science Department, The University of Georgia, Tifton, GA 31794; and X. S. LI, Crop, Soil, and Environmental Sciences Department, Auburn University, Auburn, AL 36849.	38
2:00	**Examining Peanut Rx 2.0 and the Component Models to Improve Forecast of Spotted Wilt Severity on Peanuts in Georgia** **C. B. CODOD***, R. C. KEMERAIT, A. K. CULBREATH, and M. R. ABNEY, Departments of Plant Pathology and Entomology, University of Georgia, Tifton, GA 31793; and G. G. KENNEDY, Department of Plant Pathology and Entomology, North Carolina State University, Raleigh, NC 27695.	39
2:15	**Ele-Max Nutrient Concentrate Effect on Georgia-06G with Paraquat Tank-Mixtures under Non-Irrigated Conditions** **N. L. HURDLE***, K. M. EASON, R. S. TUBBS, E. P. PROSTKO, and O. W. CARTER, University of Georgia, Tifton, GA; X. S. LI, Auburn University, Auburn, AL; and T. L. GREY, University of Georgia, Tifton, GA.	40
2:30	**Impact of Weed Management on Peanut Yield and Weed Populations the Following Year** **A. T. HARE***, D. L. JORDAN, and R. LEON, North Carolina State University, Raleigh, NC 27695.	41
2:45	**Presence and Distribution of Suspected Palmer Amaranth Resistant to PPO-inhibiting Herbicides in the North Carolina Coastal Plain** **D. J. MAHONEY***, D. L. JORDAN, A. T. HARE, K. M. JENNINGS, R. G. LEON, and M. C. VANN, North Carolina State University, Raleigh, NC 27695; and N. R. BURGOS, University of Arkansas, Fayetteville, AR 72701.	42
3:00	**Characterization of Feeding Behavior of Imidacloprid-Resistant Tobacco Thrips** **N. V. MAHESHALA*** and G. G. KENNEDY, Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC, 27695-7630.	43

The Peanut Black Pod Trait as an Alternative Determine Peanut Seed Maturity

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

Peanut and Weed Response to Postemergence Herbicide Tank-Mixtures Utilizing Paraquat

K. M. EASON*, R. S. TUBBS, and T. L. GREY, Crop and Soil Science Department, The University of Georgia, Tifton, GA 31794; and X. S. LI, Crop, Soil, and Environmental Sciences Department, Auburn University, Auburn, AL 36849.

Paraquat is a commonly used postemergence (POST) herbicide used to control broadleaf and grass weed species in peanut in the Southeast. The objective of this study was to determine the effects of POST herbicide tank-mixtures including paraquat on vegetation, yield, and grade for runner-type peanut cultivars and weed species. Field experiments were conducted in 2016 and 2017 in Ty Ty, GA and Plains, GA. Georgia-06G, Georgia-14N, TUFRunner™ '511', and FloRun™ '157' were the four cultivars evaluated. The herbicide tank-mixtures included 1. paraquat, 2. paraquat + acifluorfen + bentazon, 3. paraquat + acifluorfen + bentazon + S-metolachlor, and 4. paraquat + acifluorfen + bentazon + acetochlor. Leaf burn, stunting, yield, and grade were evaluated. Including bentazon in the tank-mixture reduced foliar injury and stunting. Georgia-06G and TUFRunner™ '511' yielded greater than Georgia-14N and FloRun™ '157'. Overall, the herbicide tank-mixtures did not have a negative effect on yield. With no interactions observed, these herbicide treatments can be used in conjunction with the given runner-type peanut cultivars under irrigated conditions without concern for excessive injury or decline in yield or grade. A greenhouse experiment was conducted as a split-plot design with four replications and repeated twice in time during 2017. The whole plots were the herbicide treatments and sub-plots were the weed species. Paraquat alone significantly reduced biomass for all weed species, but varying effects were observed with the other herbicide tank-mixtures. The appropriate tank-mixture for adequate control differs for each weed species. This experiment showed the need for additional herbicides in tank-mix with paraquat, specifically including *S*-metolachlor with paraquat + bentazon tank-mixtures on broadleaf and grass weed species.

Examining Peanut Rx 2.0 and the Component Models to Improve Forecast of Spotted Wilt Severity on Peanuts in Georgia

C. B. CODOD*, R. C. KEMERAIT, A. K. CULBREATH, and M. R. ABNEY, Departments of Plant Pathology and Entomology, University of Georgia, Tifton, GA 31793; and G. G. KENNEDY, Department of Plant Pathology and Entomology, North Carolina State University, Raleigh, NC 27695.

The use of a risk index, Peanut Rx, was critical in managing the thrips-transmitted spotted wilt disease (SW) in the southeastern US. In this study the ability of Peanut Rx 2.0 in predicting spotted wilt severity at six locations in Georgia was tested. Based on Peanut Rx, combinations of production inputs were chosen to create different levels of risk to spotted wilt. A strong relationship between Peanut Rx risk points and observed spotted wilt severity was found. However, Peanut Rx alone did not explain the high variability in spotted wilt severities at the highest risk situations across locations. Higher numbers of tobacco thrips collected from April to May, were counted in traps from Midville, Plains, and Reidsville compared with other locations. Regression analysis showed a positive relationship between the observed spotted wilt severity and tobacco thrips counts. The TSWV and Thrips Risk Forecasting (TTRF) Tool closely estimated the peak of thrips dispersal overtime across locations, but predictions for the magnitude of peaks for dispersing tobacco thrips was inconsistent. This was linked to the inability of Peanut Rx 2.0 to more accurately predict spotted wilt severity at these locations. When the actual number of tobacco thrips from aerial traps was used in place of the TTRF model estimates, the accuracy of Peanut Rx 2.0 predictions was greatly improved.

Ele-Max Nutrient Concentrate Effect on Georgia-06G with Paraquat Tank-Mixtures under Non-Irrigated Conditions

N. L. HURDLE*, K. M. EASON, R. S. TUBBS, E. P. PROSTKO, and O. W. CARTER, University of Georgia, Tifton, GA; X. S. LI, Auburn University, Auburn, AL; and T. L. GREY, University of Georgia, Tifton, GA.

Peanuts are an important crop in areas throughout the southeastern United States including Virginia and North Carolina. In this region, over 100,000 acres are planted to peanut with an annual value of over $85 million. Peanut is a relatively high value crop on a per acre basis, but inputs for controlling diseases can make peanut production cost prohibitive for some growers. Weather-based disease advisory programs have reduced the number of fungicide sprays required for control of peanut diseases, thereby reducing total fungicide inputs and costs in peanut production. However, disease risk is impacted not only by environmental conditions but also by field history and disease susceptibility of the peanut cultivar planted in a field. New tools that incorporate current information technology and weather-based modeling are needed to improve and disseminate disease advisories for peanut. The Integrated Pest Information Platform for Extension and Education (iPiPE) is a set of information technology tools that allow for the collection and dissemination of crop pest observations and integrated pest management (IPM) based management recommendations. iPiPE Crop-Pest Programs are coordinated by extension personnel and pest observations are collected by student interns who are trained in the concepts of IPM and crop pest diagnostics. The Virginia-Carolina Peanut iPiPE was established in 2017. Eleven fields in VA and NC were selected, and portions of fields were marked with flags and left unsprayed. Fields were scouted weekly for disease, and results were uploaded to iPiPE using a mobile app. Current disease advisory models were run using weather data and compared to disease observations. Dates for when the leaf spot model predicted disease risk ranged from late May to mid-August, but little leaf spot was observed prior to September. The model predicted Sclerotinia blight risk at all locations around July 20, and the first disease observation was August 1. The current disease risk models may overestimate disease risk in some fields, and it may be possible to raise the spray thresholds and reduce and/or delay fungicide applications when moderately resistant varieties are planted and/or fields do not have a history of severe disease outbreaks. Additional data will be collected and uploaded to the iPiPE during the 2018 growing season. Ultimately, data will be used to update the leaf spot and Sclerotinia advisory models and to develop a stem rot risk model for the Virginia-Carolina peanut growing region.

Impact of Weed Management on Peanut Yield and Weed Populations the Following Year

A. T. HARE*, D. L. JORDAN, and R. LEON, North Carolina State University, Raleigh, NC 27695.

Field Studies were conducted in 2016 and 2017 in North Carolina at Lewiston-Woodville and Rocky Mount to evaluate weed control and yield of peanut when herbicides were applied postemergence within the first six weeks after planting. Dominant weeds included common ragweed (129 plants m^{-2}) and Texas millet (75 plants m^{-2}) at Lewiston-Woodville and Palmer amaranth (54 plants m^{-2}) and large crabgrass (54 plants m^{-2}) at Rocky Mount. Commercially-available herbicides were applied at 2 or 6 weeks after planting (WAP) only; 2 and 4 WAP; 4 and 6 WAP; and 2, 4, and 6 WAP. A non-treated control was also included. No preemergence herbicides were applied. Visual estimates of percent weed control were recorded 8 and 10 WAP. Peanut yield was determined. During the following growing season, cotton was planted directly back into the same plots and herbicides were applied postemergence periodically during the season. Emerged weeds were counted 3, 8, and 20 WAP. Cotton lint yield was determined at the end of the growing season.

In absence of herbicides, peanut yield pooled over years was 790 and 990 lbs/acre at Lewiston-Woodville and Rocky Mount, respectively. At Lewiston-Woodville, yield ranged from 1,580 to 2,380 lbs/acre with only one herbicide application while at Rocky Mount peanut yield ranged from 1,850 to 2,210 lbs/acre with this level of weed management. When herbicides were applied twice, peanut yield ranged from 2,400 to 2,930 lbs/acre at Lewiston-Woodville and 3,050 to 3,430 lbs/acre at Rocky Mount. The greatest yields were recorded when herbicides were applied three times (3,310 lbs/acre at Lewiston-Woodville and 4,740 lbs/acre at Rocky Mount). Common ragweed populations at Lewiston-Woodville the following year in cotton were not affected by weed management the previous year in peanut while ranging from 141 to 222, 1 to 18, and 0 plants m^{-2} in cotton at 3, 8, and 20 WAP, respectively. Cotton yield was not affected by herbicide programs in peanut the previous year. At Rocky Mount, Palmer amaranth populations in cotton was not affected by weed management in peanut and ranged from 35 to 72, 12 to 18, and 0 to 1 plants m^{-2} in cotton at 3, 8, and 20 WAP, respectively. Cotton lint yield ranged from 1,620 to 1,750 lbs/acre at Lewiston-Woodville with no differences due to weed management during the previous year in peanut. Similar to results at Lewiston-Woodville, cotton lint yield ranged from 820 to 940 lbs/acre and was not affected by weed management in peanut. At both locations imazapic was applied in one of the weed management programs in peanut but did not impact cotton planted the following year. Although these experiments do not constitute a true time of weed removal or duration of weed interference study, results inform practitioners of the relative importance of timing and duration of weed management for peanut in North Carolina.

Presence and Distribution of Suspected Palmer Amaranth Resistant to PPO-inhibiting Herbicides in the North Carolina Coastal Plain

D. J. MAHONEY*, D. L. JORDAN, A. T. HARE, K. M. JENNINGS, R. G. LEON, and M. C. VANN, North Carolina State University, Raleigh, NC 27695; and N. R. BURGOS, University of Arkansas, Fayetteville, AR 72701.

In a survey conducted by the Weed Science Society of America, Palmer amaranth (*Amaranthus palmeri* S. Wats.) was named the most troublesome weed in the United States. Palmer amaranth is a highly competitive, obligate cross-pollinator whose pollen has been documented to travel great distances. Along with immense herbicide selection pressure, these characteristics have led to Palmer amaranth populations resistant to several modes of action with some populations expressing multiple resistance. Most recently, Palmer amaranth populations resistant to PPO-inhibiting herbicides have been confirmed in Arkansas, Illinois, and Tennessee. Evolved resistance was conferred by a glycine deletion (ΔG210) and/or a glycine (R128G) or methionine (R128M) substitution for arginine within the PPX2 gene. While resistance in North Carolina (NC) has been suspected, it has yet to be confirmed in this species. Peanut producers in NC rely heavily on PPO-inhibiting herbicides for weed management; thus, rapid detection of resistance is critical to ensure management practices are adjusted to minimize wide-spread development of resistant populations. The objective of this research was to determine the presence and distribution of Palmer amaranth populations resistant to PPO-inhibiting herbicides in the NC Coastal Plain. In fall 2016, 125 Palmer amaranth populations were collected from fields predominantly in the NC Coastal Plain, the state's primary peanut producing region. A known resistant population from Arkansas was included for comparison. Following inflorescences being dried, threshed, and cleaned, seeds were sown into cellular trays thinned to one plant cell^{-1}. When plants reached the 2- to 4-leaf stage, they were treated with fomesafen (280 g a.i. ha^{-1}) plus a nonionic surfactant (0.25% v v^{-1}). Plant injury was estimated visually (0 to 100%) and mortality was recorded 3 wks after application. Plants surviving fomesafen were repotted to obtain tissue (100 mg) for genotyping via KASP assay based on the ΔG210, R128G, or R128M mutations. Three experimental runs were completed. Four populations from NC (35, 52, 53, and 56 from Edgecombe and Halifax counties) had survivors through the first two experimental runs, although percent survival was relatively low (1-10%). Therefore, a third experimental run was included using fewer populations to allow for an increase in individual plants to be screened. Four populations (6, 17, 32, and 107) were included and regarded as "susceptible" since no survivors were detected in the first two experimental runs. When pooled over experimental runs, percent survival of the Arkansas population (45%) was greatest. Percent survival from NC populations was as follows: population 56 (37%) > 52 (24%) > 17 (14%) = 32 (13%) > 35 (2%) = 53 (2%) = 6 (< 1%) = 107 (0%). Genotyping determined that all surviving plants from the Arkansas population possessed the ΔG210 mutation while the R128G and R128M mutations were not detected. No mutations were detected in surviving plants from NC suggesting resistance may be conferred by other mechanisms. Further tissue sampling was completed on surviving NC populations in order to sequence the PPX2 gene to determine if other mutations – which confer resistance – exist. Heritability work is ongoing to further characterize the mechanism of resistance in these populations. Whole-plant scale metabolic and tolerance assays with PPO-inhibiting herbicides will be conducted in all 125 collected populations.

Characterization of Feeding Behavior of Imidacloprid-Resistant Tobacco Thrips

N. V. MAHESHALA* and G. G. KENNEDY, Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC, 27695-7630.

We have examined the feeding behaviors of imidacloprid-resistant and -susceptible tobacco thrips, *Frankliniella fusca* on peanut. Imidacloprid-resistant thrips collected from Roxobel, NC were ~313x resistant to imidacloprid relative to the -susceptible lab population. Feeding behavior of adult thrips on imidacloprid-treated (liquid in furrow, Admire® Pro @ 10.5 fl oz/acre) and untreated peanut plants of age 9, 14 and 19 days was studied using Electrical Penetration Graphing system. The number and duration of probes and ingestion events for each plant age groups were recorded. Resistant thrips probe and ingest more on imidacloprid-treated 9-day-old plants than susceptible thrips. In addition, the mean duration per ingestion event were longer for resistant thrips than susceptible thrips on 9 and 14 days old imidacloprid-treated plants. Greater feeding by resistant thrips on newly emerged seedlings can be expected to result in greater damage. This difference is lost over time as seedlings age and susceptible thrips probe and feed more, likely in response to declined residual activity of the imidacloprid treatment. Resistant thrips which feed on neonicotinoid-treated peanut seedlings can cause huge crop losses, and thus call for development of resistant management strategies targeting tobacco thrips.

Breeding Methodologies

Wednesday, July 11, 2018		
1:30 - 3:30 p.m. **Amphitheatre**	**Breeding Methodologies** Moderator: J. Dunn	Page Number
1:30	**Process Innovations in Peanut Breeding and Testing Pipelines at ICRISAT** **J. PASUPULETI***, T. V. MURALI, S. and S. MANOHAR, Groundnut Breeding Unit, Research Program-Asia, International Crops Research Institute (ICRISAT), Patancheru, Telangana, India 502324.	45
1:45	**Peanut Variety and Quality Evaluation – 50 Years of Regional Testing** **M. BALOTA***, Tidewater Agric. Res. & Ext. Center, Virginia Tech, Suffolk, VA 23437-7099; T. G. ISLEIB, Dept. of Crop and Soil Sci., N.C. State Univ., Raleigh, NC 27695-7629; D. ANCO and J. CHAPIN, Plant Environ. Sci. Dept. Edisto Research and Education Center, Clemson Univ., Blackville, S.C.; W. S. MONFORT, University of Georgia, Tifton, GA 31793; and J. OAKES, Eastern Virginia Agric. Res. & Ext. Center, Virginia Tech, Warsaw, VA, 22572.	46
2:00	**Drought-Induced Small Plants within the Pure Line Runner-Type Peanut Cultivar, 'Georgia-10T'** **W. D. BRANCH*** and C. K. KVIEN, Dept. of Crop and Soil Sciences, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793; and A. K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793.	47
2:15	**Genotypic Variation in Tomato Spotted Wilt Virus Infection in Peanut and Methods of Estimating Infection Frequency** Y-C. TSENG, **B. L. TILLMAN***, J. WANG, and D. L. ROWLAND, Agronomy Department, Univ. of Florida, FL.	48
2:30	**Evaluation of the U.S. Minicore Collection under Water Deficit in Three States** **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. BALOTA, Virginia Tech, Suffolk, VA 23437; R. BENNETT, USDA-ARS, Stillwater, OK 74075; N. WANG, Oklahoma State University, Stillwater, OK 74078; P. PAYTON and J. MAHAN, USDA-ARS, Lubbock, TX 79415; J. CHAGOYA, Texas A&M AgriLife Research, Lubbock, TX 79403; and C.-J. SUNG, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.	49
2:45	**Evaluation of the US Mini-core Collection to Identify Drought Tolerant Genotypes Utilizing Environmental Control Rainout Shelters** **P. M. DANG***, R. B. SORENSEN, and M. C. LAMB, USDA-ARS National Peanut Research Lab, Dawson, GA 39842; and C. Y. CHEN, Auburn University, Auburn, AL 36849.	50
3:00	**Relative Performance of a New Multiple Disease Resistant High Oleic Runner Variety from ACI Seeds Compared with Commercially Available Runner Varieties** **K. M. MOORE***, AgResearch Consultants Inc. (ACI) Sumner, GA 31789; and T. B. BRENNEMAN, Univ. of Georgia, Plant Pathology, UGA Tifton Campus, Tifton, GA 31794.	51
3:15	**New Sources from Germplasm Mini Core Collection Enhance Genetic Gains for Oil Content in Peanut** **H. D. UPADHYAYA***, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru -502324, Telangana, India.	52

Process Innovations in Peanut Breeding and Testing Pipelines at ICRISAT

J. PASUPULETI*, T. V. MURALI, and S. S. MANOHAR, Groundnut Breeding Unit, Research Program-Asia, International Crops Research Institute (ICRISAT), Patancheru, Telangana, India 502324.

An annual genetic gain of 0.7% for pod yield equivalent to 57 Kg/ha of pod yield per year was recorded in Spanish Bunch varieties bred at ICRAISAT over a period of 15 years (1996-2000), and suggested a need to focus on enhancing genetic gain for 100-seed mass and shelling outturn to further enhance the pod yield. Peanut breeding program at ICRISAT uses genetic gain as a metric to measure the health of the breeding pipeline. Process innovation such as rapid recycling of elite parents, rapid generation advancement (RGA), cost-effective genotyping, early generation testing in target sites, multi-environment testing to address G X E have contributed to enhanced rate of genetic gain in peanut Breeding and Testing Pipelines at ICRISAT in recent years. For example, the 'process innovations' resulted to drastically cut down the number of years required to develop high oleic lines in Spanish and Virginia Bunch background adapted to Africa and Asia. The hybridization stated in 2011 and in 2017, 16 high oleic lines were advanced to national release testing in India. Use of data management tool and data capturing devices enhanced operational efficiency. The modern work flows that employ these innovations are being optimized.

'Product Design' and stage-gate systems of product development and advancement are some of the key elements of modernizing peanut breeding program at ICRISAT, now being implemented under CRP-GLDC. Peanut Network Groups represented by CG, NARS and private sector is a platform to develop Product Design, Product development and testing, delivery and decisions on Product advancement. In such a network, the CG center Breeder's will play the role of the Network Coordinator. Recently, Asia group workshop has come up with Product plans to implement.

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Peanut Variety and Quality Evaluation – 50 Years of Regional Testing

M. BALOTA*, Tidewater Agric. Res. & Ext. Center, Virginia Tech, Suffolk, VA 23437-7099; T. G. ISLEIB, Dept. of Crop and Soil Sci., N.C. State Univ., Raleigh, NC 27695-7629; D. ANCO and J. CHAPIN, Plant Environ. Sci. Dept. Edisto Research and Education Center, Clemson Univ., Blackville, S.C.; W. S. MONFORT, University of Georgia, Tifton, GA 31793; J. OAKES, Eastern Virginia Agric. Res. & Ext. Center, Virginia Tech, Warsaw, VA 22572; M. BUROW, Texas A&M AgriLife Research and Extension Center, Lubbock, TX, 79403; and R. BENNETT, USDA-Agricultural Research Service, Stillwater OK, 74075.

The peanut breeding project at the North Carolina State University is responsible for the development of high yielding, high ELK and SELK, and disease resistant Virginia-type cultivars for the Virginia-Carolina (VC) region. The Peanut Variety and Quality Evaluation (PVQE) project is responsible for multi-state testing of the best breeding lines of the breeding project. Finally, the breeding project leader makes release decisions based on the PVQE data. The PVQE has provided multi-state variety testing for Virginia-type cultivar development for 50 years (1968 – 2018) (S-1059, S-1038, S-1003, S-140).

Among the priorities of the current S-1059 multi-state project, development of Virginia-type cultivars with the high oleic oil chemistry was determined as the most important for the VC region. Earlier research showed that high oleic peanuts have improved oxidative stability and longer shelf life than non-high oleic peanut. For example, roasted in shell peanuts with 50% oleic acid reached a Peroxide Value (PV) of 20 meq kg^{-1} (as indication of oxidation) after only 2 wk of storage. However, the peanut with 80% oleic fatty acid did not reached 20 meq kg^{-1} until after 40 wk of storage. In the VC region where edible peanut markets are predominant, replacement of normal-high oleic with high oleic cultivars was imperative.

As part of the S-1059 project, four high oleic and high yielding cultivars have been released, Sullivan, Wynne, Emery, and Bailey II, and certified seed is already available for commercial production for Sullivan and Wynne. The presentation will detail on some of the most important achievements of the NCSU breeding project and the PVQE.

Drought-Induced Small Plants within the Pure Line Runner-Type Peanut Cultivar, 'Georgia-10T'

W. D. BRANCH* and C. K. KVIEN, Dept. of Crop and Soil Sciences, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793; and A. K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793.

During 2011 at Tifton and Plains, Georgia, there was an early-season drought stress period during May and June. Drought-tolerant plants were identified and tagged which appeared green and turgid amongst otherwise dry and severely-wilted plants within several runner-type peanut cultivars. Pod and seeds were harvested from these drought-tolerant individual plant selections (IPS) for increase and testing. During the fall and winter of 2014-15, a greenhouse drought study was utilized to test these IPS's compared to the parental check cultivars. Similar, a few green and turgid plants were again found within the same check cultivar, 'Georgia-10T' after exposing the plants to an early-season drought stress period between 60 and 90 days after planting. Seed from IPS of both naturally occurring and artificially drought-induced plants produced similar normal and small-plants. Replicated preliminary yield tests were conducted during 2017 to compare these IPS to the check cultivar, Georgia-10T. Results from these field trials showed that the smaller-plants produced from early-season drought stress had significantly reduced yield, grade, pod size, and seed size as compared to the larger plant selections and the Georgia-10T parental cultivar. In a greenhouse study conducted during the fall and winter of 2017-18, these small plants were found to have a significantly shorter internode length and mainstem height compared to the same small plants treated with gibberellic acid (GA) which were taller and had longer internode lengths after one and two months. These small plants resulted from both artificially and naturally occurring early-season drought-induced stress within the pure-line runner-type peanut cultivar, Georgia-10T, were apparently caused by lack of GA. The normal and small-plants each have bred true-to-type following several self-generations. The ramification of these findings suggest the importance of even early-season irrigation, especially for seed production of peanut cultivars to avoid subsequent development of similar low-yielding, small-plants induced by drought-stress.

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Genotypic Variation in Tomato Spotted Wilt Virus Infection in Peanut and Methods of Estimating Infection Frequency

Y-C. TSENG, **B. L. TILLMAN***, J. WANG, and D. L. ROWLAND, Agronomy Department, Univ. of Florida, FL.

Breeding peanut for resistance to spotted wilt has been successful in the southern US. Cultivars with moderate resistance have reduced the risk of disease losses. The source of resistance appears to be PI203396, Southern Runner, and C-99R which are in the pedigree of cultivars with moderate resistance including DP-1, York, Georgia-06G, Georgia-07W, Florida-07, and Tifguard. Each of these cultivars has an index score of 10 on the TSWV Index. Only the cultivar Georgia-12Y has a lower index score of 5. Georiga-12Y has PI203396 and Southern Runner in its pedigree. However, research has shown that there is a high incidence of asymptomatically infected plants within this germplasm group. This means that there was greater potential for disease to occur than symptoms would predict. This strongly indicates that the resistance/tolerance derived from PI203396, Southern Runner, and C-99R is not a resistance to infection but a resistance to disease expression. In some seasons, these cultivars have succumbed to spotted wilt, indicating that their resistance may not be sufficient in the most severe disease environments.

A new source of resistance based on genotypes with *hirsuta* background has shown outstanding resistance. In over 15 years of testing, even under severe spotted wilt epidemics, these genotypes have not succumbed to spotted wilt. The incidence of TSWV infection in these genotypes was 10% or less compared to 44% in Florida-07 and 67% in Georgia Green. Work with Florida-EP^{TM} '113', a derivative these lines, showed that the frequency of infected plants was 10% or less even in the most risky situations. This source of resistance could drastically reduce the risk of spotted wilt because over 90% of the plants are not infected and are therefore at no risk of disease development. This presentation describes potential methods (ELISA, seed coat symptomology and marker assisted selection) to identify genotypes with low infection frequency characteristic of the *hirsuta*-derived types.

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Evaluation of the U.S. Minicore Collection under Water Deficit in Three States

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The U.S. minicore collection was grown in replicated trials under water limiting conditions in Virginia, Oklahoma, and Texas in 2017. Data collected during the growing season included flower count, SPAD chlorophyll meter reading (SCMR), normalized difference vegetation index (NDVI), canopy temperature, leaf closure rating, wilting rating, plant height and plant width. Pod yield was measured after harvest. Significant differences were observed among genotypes for all traits measured. Many minicore accessions had consistent phenotypic responses across environments, and significant correlations among traits across locations were observed. Additionally, high-throughput phenotypic data were collected utilizing ground-based platforms with light detection and ranging (LiDAR) sensors and unmanned aerial vehicle (UAV) platforms equipped with visible, near infra-red and thermal cameras to determine the efficacy of these technologies compared to older screening methods. A subset of twenty contrasting minicore accessions has been selected for use in more detailed experimentation and validation of high-throughput technologies.

Evaluation of the US Mini-core Collection to Identify Drought Tolerant Genotypes Utilizing Environmental Control Rainout Shelters

P. M. DANG*, R. B. SORENSEN, and M. C. LAMB, USDA-ARS National Peanut Research Lab, Dawson, GA 39842; and C. Y. CHEN, Auburn University, Auburn, AL 36849.

Breeding for drought tolerance in peanut has been challenging due to strong genotype by environment interaction. This complex trait is controlled by many major and minor quantitative trait loci (QTLs). Introgression of exotic genetic sources may facilitate the introduction of novel drought tolerant genes in cultivated peanuts. The goal of this research was to characterize physiological, agronomic, and molecular traits utilizing environmental control rainout shelters to identify drought tolerant genotypes from 162 peanut accessions, including the U.S. mini core collection. A mid-season drought was applied for 30 days, followed by full irrigation for the rest of the growing season. Physiological measurements, such as specific leaf area (SLA), relative water content (RWC), and leaf dry matter content (LDMC) were taken every week during drought and one week following irrigation. Drought was rated on a color scale of 1 (no wilting) to 10 (complete wilting) taken just before irrigation. Pod yield was measured at the end of the growing season. Correlation of all measured traits was utilized to identify drought tolerant peanut genotypes. Multiple growing seasons will confirm findings and drought tolerant genotypes may be utilized in breeding programs.

Relative Performance of a New Multiple Disease Resistant High Oleic Runner Variety from ACI Seeds Compared with Commercially Available Runner Varieties

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The high oleic peanut variety ACI 3321 was developed using the traditional pedigree selection method of breeding. Plant selections were made in breeding nurseries with heavy disease pressure of TSWV, white mold (stem rot), and leaf spot. Chemical applications of fungicides were kept to a minimum at 4 applications during the growing season. This variety has been shown to have high levels of resistance to all three diseases and still maintains high yield potential competitive with both high oleic and low oleic varieties currently in commercial production. The variety has been tested in multiple locations across Georgia, Alabama and South Carolina with consistent results indicating relative stability over environments. Foundation seed will be available in 2019.

New Sources from Germplasm Mini Core Collection Enhance Genetic Gains for Oil Content in Peanut

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Peanut is an important oil crop cultivated in over 110 countries globally. In most cultivars oil content in seed is about 48% and protein about 25%. Genetic gain, the annual increase realized through crop breeding was <1.0 year^{-1} for yield in most crops. Germplasm collections are the source of variability for agronomic and nutritional traits. ICIRSAT genebank at Patancheru, India has the largest collection of peanut germplasm, 15,444 accessions. The core (1704 accessions) and mini core (184 accessions) collections have been developed and sources for high oil content from mini core identified. Using 13 parents, including 10 from mini core, 19 recombinant inbred line (RIL) populations were developed to study genetics of oil content and identifying transgressive lines, Evaluation of these RILs in two seasons showed huge variation for oil contents in all the populations. Eighty-six exceptionally high oil containing breeding lines (>60%) were selected for further evaluation along with parents and high oil control cultivars. Over three seasons, 42 breeding lines had on average 62.2-66.8% oil content. Most of these lines had low protein content, however, some lines had good combination of protein and exceptionally high oil contents (20.2 -22.2% protein, 65.4-66.4% oil). High genotype × environment interaction was observed for oil and protein contents and further multiseason evaluation is in progress to identify stable lines. The exceptionally high oil lines originated from crosses involving normal oil (48%) × high (53%) or high × high parents from mini core collection, indicating exploitable epistatic effects. Occurrence of low oil containing lines also in the populations involving high × high oil parents indicated different sets of loci in the high oil parents. Preliminary results indicated that at least four independent loci were involved in inheritance of oil content in the peanut. Mapping using molecular markers is in progress to confirm genetic basis of oil content.

Production, Physiology and Harvesting

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1:30 - 3:30 p.m. **Rooms 2&3**	**Production, Physiology & Harvesting** Moderator: S. Monfort	Page Number
1:30	**Early-Season Temperature Conditions Effect on Physiology of Peanut Seedlings** **C. PILON***, W. S. MONFORT, C. WEAVER, T. L. GREY, and V. TISHCHENKO, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.	54
1:45	**Evaluation of Aspire as a Boron Source for Peanut** **G. HARRIS***, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA.	55
2:00	**Characterization of Spatial Variability and Its Effects in Peanut Production** **K. R. KIRK***, D. ANCO, J. THOMAS, B. FOGLE, M. HAYNES, and M. MUNIR, Edisto REC, Clemson University, Blackville, SC 29817.	56
2:15	**Agronomic and Economic Effects of Irrigation and Rotation in Peanut** **M. C. LAMB***, R. B. SORENSEN, and C. L. BUTTS, National Peanut Research Laboratory, USDA, ARS, Dawson, GA.	57
2:30	**Selecting Valid and Practical Irrigation Scheduling Methods for Maximizing Yield of Runner Type Peanut Cultivars** **W. M. PORTER***, C. PILON, C. D. PERRY, W. S. MONFORT, J. L. SNIDER, and G. VELLIDIS, Department of Crop and Soil Sciences; and A. RABINOWITZ and A. R. SMITH, Department of Agricultural Economics, University of Georgia, Tifton, GA 31793.	58
2:45	**Quality Changes During Long Term Farmers' Stock Storage** **C. L. BUTTS***, National Peanut Research Laboratory, USDA, ARS, Dawson, GA; L. L. DEAN and K. W. HENDRIX, Market Quality and Handling Research Unit, USDA, ARS, Raleigh, NC; and R. B. SORENSEN and M. C. LAMB, National Peanut Research Laboratory, USDA, ARS, Dawson, GA.	59
3:00	**A Metabolomics Approach to the Volatile Compound Profiles of Raw and Roasted Peanuts** **L. L. DEAN***, Market Quality and Handling Research Unit, USDA, ARS, Raleigh, NC 27695-7624; J. WEISSBURG, Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695-7624; and S. D. JOHANNINGSMEIER, Food Science Unit, USDA, ARS, Raleigh, NC 27695-7624.	60
3:15	**Feeding High-Oleic Peanuts to Layer Hens Enhances Egg Yolk Color and Oleic Fatty Acid Content in Shell Eggs** **O. TOOMER***, Market Quality & Handling Research Unit, ARS-USDA, Raleigh, NC, 27695; A. HULSE-KEMP, Genomics and Bioinformatics Research Unit, ARS-USDA, Raleigh, NC, 27695; and E. SANDERS, R. MALHERIOS, and K. ANDERSON, Prestage Department of Poultry Science, North Carolina State University, Raleigh, NC, 27695.	61

Early-Season Temperature Conditions Effect on Physiology of Peanut Seedlings

C. PILON*, W. S. MONFORT, C. WEAVER, T. L. GREY, and V. TISHCHENKO, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.

Seed storage conditions with high fluctuations of temperature are likely to decrease seed germination and vigor. At planting, a 3-day soil temperature between 20 and 32 ^{o}C is generally optimum for germination. Additionally, optimum air temperature for seedling growth is 30 ^{o}C, but when above 35 ^{o}C or below 15 ^{o}C, growth inhibition can occur. However, the effect of seed storage and sub-optimal planting and growth temperature conditions on the photosynthetic thermotolerance of peanut seedlings has not been investigated. The objective of this study was to assess the photosynthetic thermotolerance of peanut seedlings grown under two temperature regimes. Georgia-06G seeds were maintained in four storage conditions (cold room, greenhouse, office, and wagon) for 72 days, when they were transferred to a cold room until planting. Seeds from each storage condition were planted in pots under two temperature regimes, 18 to 24 ^{o}C and 21 to 29 ^{o}C. Emergence was recorded daily from 5 to 18 days after planting. At 18 DAP, OJIP fluorescence was measured in the uppermost, fully-expanded, mainstem leaf. Leaf discs were also collected from the same leaves for pigment concentrations. Plants were harvested and separated into leaves and stems and oven dried at 60 ^{o}C for dry matter.

Higher emergence was observed in pots grown under 21-29 ^{o}C. Overall quantum efficiencies (φ_{Po} and φ_{Eo}) and performance indices (PI_{ABS} and PI_{total}) were higher in plants grown under 21-29 ^{o}C compared to those grown under 18-24 ^{o}C. Density of PSII reaction centers was higher in plants grown under 18-24 ^{o}C compared to 21-29 ^{o}C. The plants grown under 21-29 ^{o}C also resulted in increased concentrations of chlorophyll b and carotenoids. Dry matter of leaves and stems was higher for the plants grown under 21-29 ^{o}C compared to 18-24 ^{o}C. Overall, plants grown at 21-29 ^{o}C had increased pigment concentrations and were more efficient at absorbing light, and trapping and conserving energy during the thylakoid reactions, which likely contributed to the enhanced growth and development of peanut seedlings. Seed storage did not influence peanut seedling growth. Further studies will be performed to support and validate these results.

Evaluation of Aspire as a Boron Source for Peanut

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

The University of Georgia Extension recommendation for boron on peanut is 0.5 lb B/a. This is usually supplied via foliar applications with early fungicide sprays. Soil applied boron may also be effective but the rates and methods of getting even spreader coverage are not as defined. A new fertilizer granular fertilizer product called “Aspire”, manufactured by the Mosaic Company is now available and is basically boron coated muriate of potash. In 2016 and 2017, field trials were conducted to evaluate Aspire as a boron source for peanut. Aspire was applied at a rate to supply the recommended 0,5 lb B/a and then compared to treatments with the equivalent amount of muriate of potash with and without 0.5 B/a applied foliar. In addition, an untreated check with no B or muriate of potash was included, as well as a treatment with Aspire plus 0.5 lb B/a foliar. Yield and tissue B results will be discussed

Characterization of Spatial Variability and Its Effects in Peanut Production

K. R. KIRK*, D. ANCO, J. THOMAS, B. FOGLE, M. HAYNES, and M. MUNIR**,** Edisto REC, Clemson University, Blackville, SC 29817.

Intensive spatial data collection was conducted to seek to identify and quantify factors critical to peanut yield limitation. Two fields in Barnwell County and Bamberg County, S.C. were each divided into 50 one acre grid sections for the 2017 growing season. The following factors were spatially quantified within each of the grid sections: yield, grade, soil texture, soil electrical conductivity, soil organic matter content, soil temperature, depth to clay layer, canopy temperature, soil moisture content, NDVI, rate of canopy closure, disease ratings, pest ratings, disease ratings, weed pressure, soil fertility analyses, nematode presence, digging losses, and maturity levels. There were no treatments imposed on the fields; the cooperating growers were asked to manage the fields according to their normal practices. One field was planted in Bailey and the other in TUFRunner™ 511. The purpose of the study was to better understand the effects of in-field spatial variability as related to peanut production, to seek to characterize and quantify the multiple factors that influenced peanut production profitability, and to suggest criteria for peanut yield management zone delineation. The datasets generated were used to construct multiple linear regression models seeking to use the measured in-field spatial variability to explain observed differences in yield, digging losses, disease, maturity, and pest pressure. Simulations using the developed models were used to suggest quantifiable effects of the factors involved. Some examples include: yield deficit as functions of observed micronutrient concentrations and TSWV incidence; late leaf spot incidence as functions of mid-season canopy coverage and soil texture; and TSWV incidence as functions of soil fertility and depth to hardpan.

Agronomic and Economic Effects of Irrigation and Rotation in Peanut

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

Although the Southeast U.S. receives an average annual precipitation of 1300 mm, peanut (*Arachis hypogaea L.*) yield is often limited by erratic seasonal distributions. Studies were conducted from 2001 through 2016 at the USDA/ARS Multi-crop Irrigation Research Farm in Shellman, GA (84°36′ W, 30°44′ N) on a Greenville fine sandy loam (fine, kaolinitic, thermic Rhodic Kandiudults). Irrigation scheduling was managed by Irrigator Pro for Peanut (developed by USDA/ARS for irrigation scheduling in peanut). The objective of this long-term study is to evaluate the effects of irrigation and crop rotation sequencing on yield, sound mature kernels and sound splits (SMKSS), and net returns. When averaged across all years, irrigation increased pod yield (1,490 kg/ha: $p<0.001$), SMKSS (5.1%: $p<0.001$), and net returns over variable cost ($385/ha: $p=0.02$) compared to non-irrigated. Six different rotation sequences were addressed inclusive of continuous peanut, one year out of peanut with corn or cotton, and two years out of peanut with combinations of corn and cotton. In both irrigated and non-irrigated peanuts, the lowest and highest yields resulted in continuous peanut and the two year out rotations, respectively. No peanut yield difference resulted for corn or cotton within the rotation sequence but length of rotation influenced peanut yield and net returns. Profitability and optimal rotation sequencing within the entire cropping system will depend on yield, prices, and production costs for peanut, corn, and cotton.

Selecting Valid and Practical Irrigation Scheduling Methods for Maximizing Yield of Runner Type Peanut Cultivars

W. M. PORTER*, C. PILON, C. D. PERRY, W. S. MONFORT, J. L. SNIDER, and G. VELLIDIS, Department of Crop and Soil Sciences; and A. RABINOWITZ and A. R. SMITH, Department of Agricultural Economics, University of Georgia, Tifton, GA 31793.

Irrigation scheduling methods, along with a rain fed treatment, were tested from 2014 to 2017 at the Stripling Irrigation Research Park near Camilla, GA to identify the best irrigation option for producers in the Southeast. Four irrigation-scheduling methods were used in 2014 and 2016, whereas six and seven methods were used in 2015 and 2018, respectively. The irrigation scheduling methods tested in this research included a UGA developed soil moisture system called the UGA Smart Sensor Array (SSA), 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 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 those data along with Watermark® sensors or soil temperature to determine irrigation triggers. In this case, the Watermark® sensors were used in combination with IrrigatorPro. 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 based on a soil water balance model.

Four cultivars commonly grown in the region, GA-06G, GA-12Y, TUFRunner 511, and TUFRunner 727(297 in 2017), were planted in two-row plots within each irrigation treatment zone. Total rainfall during the 2014 production season was 12.33 inches, whereas 22.65, 25.80, and 24.30 inches of rainfall were received during the 2015, 2016, and 2017 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 and 2017 compared to the other peanut cultivars. The results for this four-year research also show that the utilization of any of the irrigation scheduling methods studied helps increase yield as well as water use efficiency of the crop throughout the season, especially when compared to strictly using the UGA Checkbook method.

Quality Changes During Long Term Farmers' Stock Storage

C. L. BUTTS*, National Peanut Research Laboratory, USDA, ARS, Dawson, GA; L. L. DEAN and K. W. HENDRIX, Market Quality and Handling Research Unit, USDA, ARS, Raleigh, NC; and R. B. SORENSEN and M. C. LAMB, National Peanut Research Laboratory, USDA, ARS, Dawson, GA.

Since 2012, U.S. annual peanut production has increased 44% from an average of 2.6 million MT compared with 1.8 million MT (1997 and 2012). This production increase has resulted in longer storage times between harvest and shelling. A study was conducted to observe the changes in quality of farmers' stock peanuts when stored longer than one year. Peanuts were harvested and dried according to conventional practice from the 2014 and 2015 crop years. On 04 Nov 2014, approximately 16 MT of dried normal oleic farmers' stock peanuts were divided among four 1/10th-scale warehouses and stored until 05 May 2016. On 30 Oct 2015, approximately 16 MT of dried high oleic farmers' stock peanuts were divided among four 1/10th-scale monolithic concrete domes and stored until 07 Jul 2017. Temperatures were monitored using sensors installed in a grid across the middle of each storage structure. Samples were retrieved from each storage structure periodically to determine the shelling outturns, free fatty acids, and peroxide values. A trained sensory panel determined the flavor profile of the high oleic peanut samples.

The average hourly temperature in the warehouses storing the normal oleic peanuts averaged 17.5 C and ranged between 2 and 31 C. The average warehouse temperature exceeded 13 C 62% of the total time in storage. The loan value of the normal oleic peanuts decreased an average of 6.4% during the 18 mo storage period at an average rate of -0.36% per month. During that same storage period, the peroxide values (PV) increased from 0.34 to 1.0 meq and free fatty acids (FFA) increased from an average of 0.06 to 0.59%. The high oleic peanuts from the 2015 crop were stored 617 days in monolithic concrete domes. The hourly temperature in the domes averaged 21.6 C and ranged from 8 to 31C. The average warehouse temperature was above 13 C 67% of the total time in storage. The relative humidity in the headspace of the domes averaged 71%. The loan value of the high oleic farmers' stock peanuts decreased an average of 4.5% during the 20 mo storage period at an average rate of -0.22% per month. The high oleic peanuts' PV remained essentially the same at 0.63 meq and the FFA increased from 0.31 to 0.84%. Flavor profiles indicate the intensity of the good flavor attributes, primarily Roasted Peanut (RP), remained nearly constant (3.7-4.0 on 1-10 scale) throughout storage. However, some of the off-flavor attributes (Bitter, Astringent, and Ashy) increased to unacceptable levels by the end of the study.

A Metabolomics Approach to the Volatile Compound Profiles of Raw and Roasted Peanuts

L. L. DEAN*, Market Quality and Handling Research Unit, USDA, ARS, Raleigh, NC 27695-7624; J. WEISSBURG, Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695-7624; and S. D. JOHANNINGSMEIER, Food Science Unit, USDA, ARS, Raleigh, NC 27695-7624.

The flavor of roasted peanuts has been attributed primarily to the volatile compounds found using conventional gas chromatography usually in tandem with quadrupole mass spectrometry. The compounds that were found in the largest concentrations, such as the pyrazines have been theorized to be the most important. Model systems prepared using these compounds did not reproduce roasted peanut flavor. Using time of flight mass spectrometry coupled with two dimensional gas chromatography, more detailed profiles were produced from samples of both runner and virginia peanut cultivars. As a metabolomics based approach, this study gathered a wide range of data for identification and fold changes between samples and treatments rather than targeting specific compounds and attempting to quantify them.

From the analysis, 361 distinct compounds were positively identified. Principle Component analysis of the data showed distinct groupings between the cultivars and between the raw and the roasted samples of each cultivar. Although a number of pyrazine compounds were found, larger numbers of smaller aldehydes, furans and ketones as well as other types of compounds were reported in the roasted peanuts but not in the raw. Typically these compound are furans and aldehydes rather than pyrazines. This study gives information about the volatile compounds that are responsible for roasted peanut flavor as well as those that are linked to the differences in flavor of runner and virgina peanuts. Determining the pathways to the creation of these compounds would allow for links to genetic markers to maintain and improve peanut flavor.

Feeding High-Oleic Peanuts to Layer Hens Enhances Egg Yolk Color and Oleic Fatty Acid Content in Shell Eggs

O. TOOMER*, Market Quality & Handling Research Unit, ARS-USDA, Raleigh, NC, 27695; A. HULSE-KEMP, Genomics and Bioinformatics Research Unit, ARS-USDA, Raleigh, NC, 27695; and E. SANDERS, R. MALHERIOS, and K. ANDERSON, Prestage Department of Poultry Science, North Carolina State University, Raleigh, NC, 27695.

Previous studies have identified normal-oleic peanuts as a suitable and economical broiler feed ingredient. However, no studies to date have examined the use of high-oleic (HO) peanut cultivars as a feed ingredient for poultry and determined the impact of feeding HO peanuts on poultry performance, nutritive or sensory qualities of the eggs produced. This project aimed to examine the use of HO peanuts, as a feed ingredient for layer hens to determine the effect on hen performance, egg lipid chemistry, sensory and quality. Thirty-three 57-week-old layer hens per treatment were fed a conventional soybean meal + corn control diet (SBM), a HO peanut + corn diet or a conventional diet spiked with oleic acid oil (SBM+OA) for 8 weeks in conventional battery cages. Body, feed and egg weights were collected weekly. Egg samples were analyzed for quality, lipid analysis and sensory attributes. There were no differences in hen performance (bodyweights, feed intake), egg quality or number of eggs produced between the treatment groups. Eggs produced from layer hens fed the HO peanut diet had greater yolk color, HO fatty acid and β-carotene levels in comparison to eggs of the other treatment groups. Eggs produced from layer hens fed the conventional diet (SBM) and SBM + OA diet had significantly greater content of saturated fatty acids (palmitic and stearic) in comparison to eggs produced from layer hens fed the HO peanut diet. Additionally, 100 consumer panelist preferred the sensory attributes of eggs produced from layer hens fed the HO peanut diet equally to shell eggs produced from layer hens fed a conventionl SBM diet. This study identifies HO peanuts as an abundant commodity that could be used to support local agricultural markets of peanuts and poultry within the southeastern US and be of economic advantage to producers while providing a potential health benefit to the consumer with improved egg nutrition.

Joe Sugg Graduate Student Competition-Session III

Thursday, July 12, 2018		
8:00 a.m. – 9:30 a.m. **Auditorium**	**Joe Sugg Graduate Student Competition - Session III** Moderator: R.C. Kemerait *Sponsored by: North Carolina Peanut Growers Association*	Page Number
8:00	**Managing Caterpillar Pest in Mississippi Peanut** **B. L. LIPSEY***, Mississippi State University, Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State, MS; J. GORE, Mississippi State University, Delta Research and Extension Center, Stoneville, MS; A. L. CATCHOT, Mississippi State University, Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State, MS; D. R. COOK and J. A. BOND, Mississippi State University, Delta Research and Extension Center, Stoneville, MS; and J. M. SARVER, Mississippi State University, Department of Plant and Soil Science, Mississippi State, MS.	63
8:15	**Effect of Planting Date on Three Cultivars and Three Advanced Breeding Lines on Leaf Spot Severity and Yield when Grown without Fungicides** **B. S. JORDAN***, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-5766; W. D. BRANCH, Dept. of Crop and Soil Science, University of Georgia, Tifton, GA 31793-5766; and A. K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-5766.	64
8:30	**Genotypic and Phenotypic Characterization of Peanut Lines with Interspecific Introgressions Conferring Late Leaf Spot Resistance** **S. LAMON*** and D. BERTIOLI, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31793-0748 and Athens, GA 30605; S. C. M. LEAL-BERTIOLI, Department of Plant Pathology, The University of Georgia, Athens, GA 30605; C. C. HOLBROOK United States Department of Agriculture-Agricultural Research Service, Tifton, GA 31793-0748; and L. A. GUIMARAES, Y. CHU, and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748.	65
8:45	**Deriving Peanut Plant Height from Aerial Imagery and Digital Elevation Models** **S. SARKAR*** and M. BALOTA Tidewater Agric. Res. & Ext. Center, Virginia Tech, Suffolk, VA 23437-7099; J. OAKES, Eastern Virginia Agric. Res. & Ext. Center, Virginia Tech, Warsaw, VA, 22572.	66
9:00 Paper Withdrawn	**Fingerprinting and Aflatoxin Production of *Aspergillus* Section *Flavi* Associated with Groundnut in Eastern Ethiopia** **A. MOHAMMED***, M. DEJENE, C. FININSA, College of Agriculture and Environmental Sciences, Haramaya University, Dire Dawa, Ethiopia; P. C. FAUSTINELLI, V. S. SOBOLEV, R. S. ARIAS, USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842-0509; A. CHALA, College of Agriculture, Hawassa University, Hawassa, Ethiopia; A. AYALEW, Partnership for Aflatoxin Control in Africa (PACA), African Union Commission, Ethiopia; C. OJIEWO, ICRISAT, Ethiopia; D. HOISINGTON, College of Agriculture and Environmental Sciences, Peanut and Mycotoxin Innovation Lab, University of Georgia, Athens, GA 30602-4356; J. M. CASTILLO, Centro de Investigación Científica de Yucatán A.C., Unidad de Recursos Naturales, Calle 43 No. 130, Colonia Chuburná de Hidalgo CP 97200, Mérida, México.	

Managing Caterpillar Pest in Mississippi Peanut

B. L. LIPSEY*, Mississippi State University, Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State, MS; J. GORE, Mississippi State University, Delta Research and Extension Center, Stoneville, MS; A. L. CATCHOT, Mississippi State University, Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State, MS; D. R. COOK and J. A. BOND, Mississippi State University, Delta Research and Extension Center, Stoneville, MS; and J. M. SARVER, Mississippi State University, Department of Plant and Soil Science, Mississippi State, MS.

A complex of defoliating caterpillars commonly infest peanut, *Arachis hypogaea* L., in Mississippi and often require management with foliar insecticide applications. To better understand the effects of defoliation on Mississippi peanut yield, experiments were conducted in Stoneville at the Delta Research and Extension Center and Starkville at the R. R. Foil Research Facility at several important peanut growth stages. To achieve defoliation in the early growth stage experiments, manual hand defoliation was necessary. Late growth stage experiments were infested with corn earworm, *Helicoverpa zea* (Boddie) and fall armyworm, *Spodoptera frujiperda* (J. E. Smith). A maximum of 50% defoliation was achieved in these infestation experiments. A significant relationship between defoliation and peanut yield was observed for both the early season and mid-late-season experiments. Based on the regression analyses, 5.66 lbs and 15.3 lbs of peanuts were lost for every 1% defoliation. These results will be important for improving current IPM strategies for defoliating caterpillar pests of peanut.

Effect of Planting Date on Three Cultivars and Three Advanced Breeding Lines on Leaf Spot Severity and Yield when Grown without Fungicides

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

Planting date can affect the risk of losses to early and late leaf spot caused by, *Passalora arachidicola* and *Nothopassalora personata*, 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 and advanced breeding lines with moderate tolerance to these diseases. Field trials were conducted in 2016 and 2017 in Tifton, GA. Treatments were three planting dates (11 and 25 April, and 16 May in 2016 and 10 and 25 April and 15 May in 2017) arranged factorially with three cultivars and three advanced breeding lines, Georgia-06G, Georgia-12Y, Georgia-14N, GA-072523-1, GA-072525-9, and GA-072523-10. 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. Yield decreased in all lines in later planting dates. Final leaf spot ratings (Florida 1-10 scale) and AUDPC increased linearly with later planting date (ordinal day) for all cultivars and advanced breeding lines. Across planting dates in both years, final leaf spot severity and AUDPC were lower, and yield was highest for Georgia-12Y and lowest 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.

Genotypic and Phenotypic Characterization of Peanut Lines with Interspecific Introgressions Conferring Late Leaf Spot Resistance

S. LAMON* and D. BERTIOLI, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31793-0748 and Athens GA 30605; S. C. M. LEAL-BERTIOLI, Department of Plant Pathology, The University of Georgia, Athens, GA 30605; C. C. HOLBROOK United States Department of Agriculture-Agricultural Research Service, Tifton, GA 31793-0748; and L. A. GUIMARAES, Y. CHU, and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748.

Late Leaf Spot (LLS) disease caused by *Cercosporidium personatum* (Berk. & M.A. Curtis) Deighton affects peanut (*Arachis hypogaea* L.) all around the world. Up to 80% yield loss in LLS infested fields have been reported. In order to achieve effective control, fungicide applications must be implemented before and after the manifestation of the symptoms. However, chemical control is expensive, and can be difficult to apply in small-scale farms, particularly in developing countries. One effective solution to overcome these problems is the employment of resistant cultivars. Varieties with different levels of resistance began to appear in the US after 1985 and have progressed toward greater resistance. The IAC 322 breeding line shows a high level of resistance to LLS similar to that of peanut diploid relatives. It has been confirmed that IAC 322 has alien diploid introgressions from *A. cardenasii* Krapov. & W.C.Gregory. Three major wild segments were detected on chromosomes A02 and A03 previously. The goal of this research is to phenotype lines contain multiple combinations of introgressions in order to understand the contributions of individual wild segments on the different components of resistance and identify the best segments for cultivar development. Preliminary results show that the introgressed regions on the top of chromosome A02 and bottom of chromosome A03 play key roles in LLS resistance.

Deriving Peanut Plant Height from Aerial Imagery and Digital Elevation Models

S. SARKAR* and M. BALOTA, Tidewater Agric. Res. & Ext. Center, Virginia Tech, Suffolk, VA 23437-7099; J. OAKES, Eastern Virginia Agric. Res. & Ext. Center, Virginia Tech, Warsaw, VA, 22572.

Peanut is an important food and oilseed crop in the United States and worldwide. It is an economical crop and nutritious food with multiple health benefits. However, most peanut growing areas experience frequent droughts and disease outbreaks, which leads to reduced yield and quality. Though cultural methods have been successful in mitigating the biotic and abiotic stresses, these methods are expensive. The newly released cultivars have improved yield and disease resistance, but traditional breeding is slow.

Being a unique plant with the harvestable crop below the ground, the only way to detect plant stress is observing the above ground biomass. This makes physiological plant attributes like height, leaf color, and Leaf Area Index important observations in selection for better cultivars and crop management decisions. For example, plant height has been associated with drought tolerance, fungal disease resistance, and nutrient stress. However, direct measurement of plant height on large acreage is impractical.

With the advancement of technology, several methods have been proposed to estimate plant height using remote sensing. Among these, digital elevation models (DEM) from RGB images taken aerially using UAVs were used to create and categorize different plant heights with accuracy to the centimeter. We will present our preliminary data on plant height extraction from DSM in peanut.

Excellence in Extension I

Thursday, July 12, 2018		
8:00 a.m. - 10:00 a.m. **Rooms 2&3**	**Excellence in Extension I** Moderator: D. Jordan	Page Number
8:00	**The History of Peanuts in Virginia** J. REITER, 6380 Scott Memorial Park Rd, Prince George, VA 23875; S. RUTHERFORD, 105 Oak St. Emporia, VA 23847; M. PARRISH, 13915-A Boydton Plank Road, Dinwiddie, VA 23841; **A. PREISSER***, 17100 Monument Circle, Suite B Isle of Wight, VA 23397; and M. BALOTA, 6321 Holland Rd. Suffolk, VA 23437.	68
8:15	**Summary of Farmer Practices in the Virginia-Carolina Region Related to Digging and Harvesting Peanut** **A. BRADLEY***, D. L. JORDAN, B. B. SHEW, R. L. BRANDENBURG, G. ROBERSON, B. SANDLIN, B. BARROW, J. HURRY, B. MCLEAN, M. LEARY, M. SHAW, M. CARROLL, 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, and M. BENNETT, North Carolina Cooperative Extension Service, Raleigh, NC 27695; D. J. ANCO, J. THOMAS, K. KIRK, C. DAVIS, J. CROFT, J. VARN, T. DeHOND, W. HARDEE, H. MIKELL, J. STOKES, D. DeWITT, M. BARNES, and J. BALLEW, South Carolina Cooperative Extension Service, Clemson, SC, Edisto Research and Education Center, Clemson University, Blackville, SC 29817; and M. BALOTA, H. MEHL, S.V. TAYLOR, L. PREISSER, N. NORTON, M. PARRISH, S. REITER, G. SLADE, J. SPENCER, and M. WILLIAMS, Virginia Cooperative Extension Service, Blacksburg, VA 24061.	69
8:30	**Comparison of On-Farm Irrigation Scheduling Practices in Southeast Alabama Peanut Production** A. BOUSELMI, **B. A. DILLARD***, and J. A. KELTON, Alabama Cooperative Extension, Auburn, AL 36849; and K. B. BALKCOM, Crop, Soil and Environmental Sciences, Auburn University, Headland, AL 36345.	70
8:45	**Using the Peanut Belt Research Station to Enhance County Programs in Bertie County North Carolina** **B. BARROW***, J. HURRY, R. RHODES, D. L. JORDAN, B. B. SHEW, and R. L. BRANDENBURG, North Carolina Cooperative Extension Service, Raleigh, NC 27695; and T. CORBETT, North Carolina Department of Agriculture and Consumer Service, Lewiston-Woodville, NC.	71
9:00	**History and Changes in Production and Pest Management in the Old Peanut Belt in North Carolina** **C. ELLISON***, A. WHITEHEAD Jr., D. L. JORDAN, B. B, SHEW, and R. L. BRANDENBURG, North Carolina Cooperative Extension Service, Raleigh, NC 27695.	72
9:15	**Economics of Peanut Root-knot Nematode Control** **T. N. TORRANCE***, Agriculture and Natural Resource Agent, UGA Cooperative Extension Service, Cairo, GA, USA; and T. B. BRENNEMAN, Plant Pathology Department, University of Georgia, Tifton, GA, USA.	73
9:30	**Lessons Learned in a Short Period of Time as Peanut Agents in Northeast North Carolina** **D. LILLEY***, J. HOLLAND, M. LEARY, M. BENNETT, D. L. JORDAN, R. L. BRANDENBURG, and B. B. SHEW, North Carolina Cooperative Extension Service, Raleigh, NC 27695.	74
9:45	**Peanut Response to Twin-Row Planting Patterns in North Carolina** **P. SMITH***, D. L. JORDAN, and A. T. HARE, North Carolina Cooperative Extension Service, Raleigh, NC 27695; and W. HARRELL, Harrell Crop Consulting, Gatesville, NC 27938.	75

The History of Peanuts in Virginia

J. REITER, 6380 Scott Memorial Park Rd, Prince George, VA 23875; S. RUTHERFORD, 105 Oak St. Emporia, VA 23847; M. PARRISH, 13915-A Boydton Plank Road, Dinwiddie, VA 23841; **A. PREISSER***, 17100 Monument Circle, Suite B Isle of Wight, VA 23397; and M. BALOTA, 6321 Holland Rd. Suffolk, VA 23437.

In Virginia, agriculture is both a historical and prosperous industry. Fueling the success of agriculture is diversity of food, fiber, and food products. Virginia boasts five diverse regions with the largest industry being agriculture. According to Terance Rephann's Economic Impact study, agriculture provides $70 billion dollars annually and supports 334,000 jobs throughout the Commonwealth of Virginia. One of the diverse crops showcased in the Coastal Region are peanuts. Peanuts rank number 19 in Virginia commodities with a cash receipt of $15,000,000 according to Virginia Department of Agriculture. Peanuts have been a staple crop in Virginia since the 1900's thanks to Dr. George Washington Carver. The Virginia Peanut Growers Cooperative Marketing Association estimate commercial peanut crops flourished and the first Commercial peanut crop was grown in Sussex County, Virginia in the mid 1840's. The peanut crop has thrived in the Coastal Region due to the sandy soil and ideal growing conditions. Virginia peanuts are desired today due to their large kernels, size, extraordinary flavor, and crunchy texture according to the Buy Virginia Grown Guide. Virginia is also home to numerous peanut processors from small gourmet shops to multi-national corporations.

Summary of Farmer Practices in the Virginia-Carolina Region Related to Digging and Harvesting Peanut

A. BRADLEY*, D. L. JORDAN, B. B. SHEW, R. L. BRANDENBURG, G. ROBERSON, B. SANDLIN, B. BARROW, J. HURRY, B. MCLEAN, M. LEARY, M. SHAW, M. CARROLL, 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, and M. BENNETT, North Carolina Cooperative Extension Service, Raleigh, NC 27695; D. J. ANCO, J. THOMAS, K. KIRK, C. DAVIS, J. CROFT, J. VARN, T. DeHOND, W. HARDEE, H. MIKELL, J. STOKES, D. DeWITT, M. BARNES, and J. BALLEW, South Carolina Cooperative Extension Service, Clemson, SC, Edisto Research and Education Center, Clemson University, Blackville, SC 29817; and M. BALOTA, H. MEHL, S.V. TAYLOR, L. PREISSER, N. NORTON, M. PARRISH, S. REITER, G. SLADE, J. SPENCER, and M. WILLIAMS, Virginia Cooperative Extension Service, Blacksburg, VA 24061.

A survey of over 300 growers in the Virginia-Carolina region was conducted at production meetings in winter 2018 to determine practices associated with digging peanut and harvesting. The time required to harvest was approximately 1.6 times longer than the time required to dig. The percentage of growers applying prohexadione calcium in North Carolina, South Carolina, and Virginia was 56%, 13%, and 51%, respectively. The percentage of farmers using a guidance system to dig in these respective states was 38%, 79%, and 32%. Growers were asked to estimate the number of days a sample of pod-blasted peanut should be dug. Based on yield response in the study from which the image was recorded, optimum maturity was estimated to be 10 days after the image was recorded. Growers were told that soil conditions would be good for digging during the next 3 weeks, no tropical weather was in the forecast, little to no disease was present in the canopy, and no frost was expected over the following 3 weeks. These conditions would be ideal for digging and harvesting conditions. The range of estimates was between 0 days to wait to dig up to 21 days later. In North Carolina the average estimate was 10 days while in both South Carolina and Virginia was 8 days to digging. Very few growers reported that they needed to dig earlier than optimum maturity based on defoliation caused by leaf spot. Although not presented here, growers were asked to provide their acreage, an estimate of yield, and the equipment they use to dig and harvest peanut. Growers were also asked to rank the relative maturity of the cultivars Bailey, Sullivan, and Wynne.

Comparison of On-Farm Irrigation Scheduling Practices in Southeast Alabama Peanut Production

A. BOUSELMI, **B. A. DILLARD***, and J. A. KELTON, Alabama Cooperative Extension, Auburn, AL 36849; and K. B. BALKCOM, Crop, Soil and Environmental Sciences, Auburn University, Headland, AL 36345.

Irrigation scheduling can result in difficult decisions for producers when implementing irrigation on-farm. Farmers can oftentimes be faced with trying to determine if and when irrigation should be used based on highly variable factors such as potential rainfall, different soil types in a field, time needed to irrigate a field adequately, and so forth. For these reasons, there has been a lot of emphasis in the past 5 years on helping farmers schedule irrigation initiation and termination. In 2017, the Alabama Cooperative Extension System initiated research to identify the difference in four of the most common scheduling practices on peanut (*Arachis hypogaea*): checkbook method, PeanutFarm App, watermark probe, and capacitance probe. We also included a rain fed check plot. Each scheduling practice was replicated three times. Four row plots were planted and a drip irrigation line was run between the middle two rows (harvest rows of plot). Plots were irrigated as each treatment called for irrigation to reach the soil water holding capacity. After irrigating plots according to irrigation scheduling practice recommendations, yield was recorded for the peanut crop. The yields averaged 5227 lb. per acre for irrigated plots and 4482 lb. per acre for non-irrigated plots. Although there were some yield differences between treatments, the differences were not statistically significant. However, the 2017 crop season was an unusually wet year that did not require substantial supplemental irrigation applications. Further research is needed not only on peanuts but other crops as well to help growers establish effective irrigation scheduling practices.

Using the Peanut Belt Research Station to Enhance County Programs in Bertie County North Carolina

B. BARROW*, J. HURRY, R. RHODES, D. L. JORDAN, B. B. SHEW, and R. L. BRANDENBURG, North Carolina Cooperative Extension Service, Raleigh, NC 27695; and T. CORBETT, North Carolina Department of Agriculture and Consumer Service, Lewiston-Woodville, NC.

A field day has been conducted in North Carolina at the Peanut Belt Research Station (Lewiston-Woodville, NC in Bertie county) since 2012 in late July or early August to provide information to local farmers and other members of the agricultural sector. Prior to 2012 a broader tour in the county was in place which included one or two stops at this station. Between 45 and 50 people attend the field day each year. Major crops in Bertie county in 2017 included corn (11,305 acres), cotton (21,158 acres), peanut (10,217 acres), clary sage (14,718 acres), soybean (36,465 acres), sweetpotato (1,229 acres), tobacco (5,644 acres), and wheat (8,648 acres). Topics pertaining to peanut have included disease, insect, and weed management; varieties and digging dates; plant growth regulation; and rotation sequence and diversity. Weed management in cotton and clary sage; fertility management in corn and clary sage; variety performance in corn, cotton, grain sorghum, and soybean; factors that influence cotton and soybean maturation; insect management in cotton; and the potential for industrial hemp in the state have been featured in some years. In addition to the Bertie county field tour, the annual North Carolina Peanut Field Day is conducted on this station in early September and several in-service sessions are included to help Cooperative Extension agents.

History and Changes in Production and Pest Management in the Old Peanut Belt in North Carolina

C. ELLISON*, A. WHITEHEAD Jr., D. L. JORDAN, B. B, SHEW, and R. L. BRANDENBURG, North Carolina Cooperative Extension Service, Raleigh, NC 27695.

Prior to changes in the 2003 Federal Farm Bill the combined acreage of peanut in Halifax and Northampton counties was 54,430 (1999) constituting 34% of total acreage in North Carolina. In 1999, acreage in these counties was a combined total of 40,955 (33% of acres in North Carolina). In contrast, acreage in these counties in 2010 was 8,071 or 9% of total acres in the state. More recently, the average number of acres from 2015-2017 for the sum of these counties was 11,565 or 10% of total acres in North Carolina. The change in legislation resulted in a shift from peanut to more grain crops, most notably soybean. Although yield of peanut per acre increased after the change in legislation in these counties, most likely as a result of improved rotations and planting on soils more suitable for peanut, less income across farmers was realized because of the decrease in acreage and shift by small and medium-size farmers to crops other than peanut. Although acreage decreased following the change in legislation in 2003, 25% of growers submitting yield information for the 5,000 Pound Peanut Club for the 2017 season (growers producing an average yield of 5,000 lbs/acre on all acres of production) were from Halifax and Northampton counties. Farmers in these counties have adopted conservation tillage practices for peanut and other crops more rapidly than farmers in many other counties in the state.

Economics of Peanut Root-knot Nematode Control

T. N. TORRANCE*, Agriculture and Natural Resource Agent, UGA Cooperative Extension Service, Cairo, GA, USA; and T. B. BRENNEMAN, Plant Pathology Department, University of Georgia, Tifton, GA, USA.

Peanut root-knot nematode, *Meloidogyne arenaria*, is a well-known pest of peanut. In recent years, new nematicides and nematode-resistant varieties have been developed. This research *was conducted to find the most cost effective way to control peanut nematodes in fields with* varying nematode pressure. Large plots (6 rows by 500-600 ft) were established in 2016 and 2017 on a farm in Decatur County, GA with a history of root-knot nematode problems. This trial featured four treatments including 1) a nematode susceptible variety GA-06G with Velum Total (18 fl. oz./A) applied in furrow, 2) GA-06G with Velum Total (18 fl. oz./A) in furrow followed by Propulse (13.6 fl. oz./A) 60 days after planting, 3) nematode resistant variety GA-14N, and 4) nematode resistant variety Tifguard, each without nematicide. The field was treated uniformly with regard to weed, insect and disease control. Tomato spotted wilt virus (TSWV) was rated before digging and other diseases and nematode damage were rated after digging. Plot yields were determined and the gross return (dollar value per acre) for each treatment was calculated based on the yield and grade, and compared after subtracting any input cost for nematode control. The cost of Velum Total and Propulse applied to variety GA-06G were deducted at the rate of $34/acre and $45/acre, respectively. The value of GA-14N was calculated with and without a $50/acre high oleic premium. The data were analyzed with SAS Proc mixed (P=0.05) to determine significant differences among treatments.
GA-06G exhibited significantly more virus symptoms than GA-14N or Tifguard in 2016. GA-06G also exhibited root and pod galling (77.5% and 82.5%, respectively) despite nematicide treatment, while GA-14N and Tifguard had minimal damage on scattered plants and were not significantly different from each other. Testing seed from these plants showed an absence of the molecular markers for nematode resistance in many of the Tifguard plants. Levels of nematode damage were much lower in 2017. In 2016, Tifguard, GA-06G and GA-14N had yields of 6247, 5872, and 5613, respectively (LSD = 228). There were no significant differences between cultivars in terms of grade or dollar value per acre. In 2017 the GA-06G with Velum Total + Propulse had the highest yield, in part due to this treatment having less white mold than the Velum only treatment. After deducting the cost of the treatments, there were no significant differences found in the economic return among the four treatments. However, when adding the $50 per acre bonus for high O/L, the GA-14N had the highest per acre return ($1097), which was significantly higher than all treatments except the GA-06G with Velum Total and Propulse ($1032). These results demonstrate that growers have several good options to manage root-knot nematodes in peanuts. It should be noted that in year one of this study over half the plot area had moderate nematode pressure while the other half had very little nematode pressure.

In year two the nematode pressure was relatively low throughout plot area.,

Lessons Learned in a Short Period of Time as Peanut Agents in Northeast North Carolina

D. LILLEY*, J. HOLLAND, M. LEARY, M. BENNETT, D. L. JORDAN, R. L. BRANDENBURG, and B. B. SHEW, North Carolina Cooperative Extension Service, Raleigh, NC 27695.

In recent years there has been a substantial change in field crops agents with Cooperative Extension. For example, Cooperative Extension agents in Chowan, Hertford, Nash, and Perquimans counties have from 1½ to 2½, years of experience in their current roles. While peanut acreage in these counties is relatively modest and ranged from 500 to 5,000 lbs/acre (2017), average county yields during 2017 in these counties ranged from 4,000 to 5,000 lbs/acre. A wide range of outreach activities by Cooperative Extension agents are found in these counties and include: establishing a strong on-farm presence; implementing a comprehensive pod blasting program to determine pod maturity for digging date recommendations; utilizing the weather-based advisory system for leaf spot disease and Sclerotinia blight management; providing updates on when to scout and approaches to scouting; recommendations on early season weed and thrips management options; equipment upkeep, pesticide stewardship and farm safety; assisting growers with decisions on digging and harvesting relative to weather, disease, and planning and facilitating annual county or regional peanut meetings for farmers and related agribusiness. In the process of involvement in these activities a number of production related questions have arisen. These include: timing on fungicide spraying, what materials are recommended for use, timing on digging, whether or not acephate should be applied to control thrips, weed identification and herbicide selection, and what varieties will yield the most. These questions are taken into consideration when planning for each county's peanut extension program.

Peanut Response to Twin-Row Planting Patterns in North Carolina

P. SMITH*, D. L. JORDAN, and A. T. HARE, North Carolina Cooperative Extension Service, Raleigh, NC 27695; and W. HARRELL, Harrell Crop Consulting, Gatesville, NC 27938.

Statewide, twin-row planting patterns (rows spaced 7-9 inches apart on 36- to 38-inch centers) account for less than 10% of acres but are popular in some counties. For example, in Gates County approximately 40% of growers use this planting pattern. Although more expensive than single row patterns because of slightly higher seeding rates and increased *Bradyrhizobia* inoculant and in-furrow insecticide costs, growers indicate that using this planting pattern increases yield by 200 to 400 pounds per acre and also results in slightly higher market grade factors (percentages of extra large kernels and sound mature kernels). According to growers indicate that planting in twin-row patterns hastens canopy closures on the sandy soils common in this county and results in cooler soil temperatures in the pegging zone that is more conducive to early peg survival and pod set resulting in earlier and more uniform pod maturation is cited as possible advantages to this planting pattern. Growers also suggest that peanut in both single and twin rows respond similarly to the plant growth regulator prohexadione calcium. Lower incidence of tomato spotted wilt was suggested as another reason twin-row patterns are used. Availability of planters that place seed precisely compared with older units accommodates planting crops other than peanut (corn, grain sorghum, and soybean for example) enabling farmers to extend investment costs for twin-row planters across more acres. Historically, peanut planted in twin row patterns required use of units that were less precise in seed placement and had limited utility for smaller-seeded crops. Research at North Carolina State University supports some of the suggestions made by farmers. Less tomato spotted wilt has been documented and yields in some instances are greater in twin rows compared with single rows. Although twin rows can result in suppression of weeds, the level of suppression does not negate the need for an effective herbicide program. Peanut yield response in twin and single rows can be different based on variety selection. Research also suggests that row visibility within a few weeks prior to digging can be lower in twin rows compared with single rows but this response can be variety dependent.

Excellence in Extension II

Thursday, July 12, 2018		
10:30 a.m. - 12 Noon **Rooms 2&3**	**Excellence in Extension II** Moderator: S. Taylor	Page Number
10:30	**Baker County Georgia 2015, 2016 & 2017 UGA On-Farm Peanut at Plant In-Furrow Fungicide, Nematicide and Inoculant Test** **E. L. JORDAN***, UGA Baker County Extension, GA; B. KEMERAIT, Plant Pathology Department, University of Georgia, Coastal Plains Research Center, Tifton, GA; and S. MONFORT, Department of Crop and Soil Sciences, University of Georgia, Coastal Plains Research Center, Tifton, GA.	77
10:45	**Response of Peanut to Inoculation with Bradyrhizobia and Nitrogen Rate** **D. KING***, D. L. JORDAN, B. SANDLIN, P. D. JOHNSON, and A. T. HARE, North Carolina Cooperative Extension Service, Raleigh, NC 27695; D. ANCO, J. CHAPIN, and J. THOMAS, Edisto Research and Education Center, Clemson University, Blackville, SC 29817; S. MONFORT, University of Georgia, Tifton, GA 31793; and M. BALOTA, Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.	78
11:00	**Thrips Control in Peanut in North Carolina with Insecticides Applied During Planting and After Peanut Emergence** **L. GRIMES***, R. L. BRANDENBURG, D. L. JORDAN, B. R. ROYALS, and A. T. HARE, North Carolina Cooperative Extension Service, Raleigh, NC 27695.	79
11:15	**White Mold Control Efficacy Associated with Nine Peanut Fungicide Treatments** R. C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA 31794; A. R. SMITH, Agricultural and Applied Economics, University of Georgia, Tifton, GA 31793; and **W. G. TYSON***, Bulloch County Cooperative Extension, University of Georgia, Statesboro, GA 30458.	80
11:30	**Evaluating Peanut White Mold Fungicide Programs in Cook County, Georgia – 3 Year Summary** **T. PRICE***, Extension Agent, University of Georgia Cooperative Extension, Cook County, Adel, Georgia 31620; and R. C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, Georgia 31793.	81
11:45	**Influence of Quick-SOL and Peg Power on Peanut Yield in Small-Plot Research** **M. CARROLL***, D. L. JORDAN, and A. T. HARE, North Carolina Cooperative Extension Service, Raleigh, NC 27695.	82

Baker County Georgia 2015, 2016 & 2017 UGA On-Farm Peanut at Plant In-Furrow Fungicide, Nematicide and Inoculant Test

E. L. JORDAN*, UGA Baker County Extension, GA; B. KEMERAIT, Plant Pathology Department, University of Georgia, Coastal Plains Research Center, Tifton, GA; and S. MONFORT, Department of Crop and Soil Sciences, University of Georgia, Coastal Plains Research Center, Tifton, GA.

Peanuts have been the number one cash crop in S. W. Georgia for many years. At plant In-Furrow Treatments are often used to aid in getting a plant stand, controlling early season insects, disease & nematodes. This three year test evaluated plant stand, Thrip Control and Yield when applying the three way mix of Velum, Proline, and Peanut Inoculant. Nematode population at harvest was not adequate to evaluate nematode control. This on-farm test was set up with five to six randomized test plots for three consecutive years 2015, 2016 & 2017. The peanut variety GA09B was planted with in-furrow application Check, Velum, Velum & Proline and Velum, Proline & Inoculant.

Response of Peanut to Inoculation with *Bradyrhizobia* and Nitrogen Rate

D. KING*, D. L. JORDAN, B. SANDLIN, P. D. JOHNSON, and A. T. HARE, North Carolina Cooperative Extension Service, Raleigh, NC 27695; D. ANCO, J. CHAPIN, and J. THOMAS, Edisto Research and Education Center, Clemson University, Blackville, SC 29817; S. MONFORT, University of Georgia, Tifton, GA 31793; and M. BALOTA, Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.

Adequate nitrogen (N) fixation by peanut (*Arachis hypogaea* L.) is essential to optimize yield. In replicated trials in North Carolina, South Carolina, and Virginia from 1998-2017 in-furrow liquid or granular inoculant increased yield from 3,510 lbs/acre to 4,780 lbs/acre in new peanut fields (57 trials) and 4,280 lbs/acre to 4,450 lbs/acre in fields with a previous history of peanut plantings within the past 4 years (43 trials). The increase in economic value from inoculation treatment ($8/acre) at a peanut price of $535/ton was $337/acre and $41/acre in fields with these respective histories. In a second experiment, replicated trials were conducted from 2007-2017 in fields without a history of peanut production or fields not rotated to peanut in recent memory to determine peanut response to N rate. Economic return based on peanut prices described previously was determined to reflect cost of N applied as ammonium sulfate ($0.28/lb) as a single application 40-60 days after planting when canopy foliage began to express N deficiency. A linear response to N rates of 0, 60, 90, 120, and 150 lbs/acre was noted in 5 of 10 experiments with no response to applied N observed in the remaining 5 trials. When these experiments were included with 4 other experiments where non-inoculated and inoculated controls were compared with N applied at one rate only (120 lbs/acre), yield and economic return were higher for inoculated peanut compared with peanut receiving N or the non-inoculated and non-fertilized control; response of both parameters to N was intermediate. Results from these experiments underscore the value of inoculation with *Bradyrhizobia* at planting regardless of field history and the limitations of applied N to correct N deficiencies in peanut.

Thrips Control in Peanut in North Carolina with Insecticides Applied During Planting and After Peanut Emergence

L. GRIMES*, R. L. BRANDENBURG, D. L. JORDAN, B. R. ROYALS, and A. T. HARE, North Carolina Cooperative Extension Service, Raleigh, NC 27695.

Tobacco thrips (*Frankliniella fusca* Hinds) is an important pest in peanut in North Carolina and injury from this insect can result in lower yield. Developing an alternative to aldicarb has been a major focus of research in North Carolina for the past decade. Research was conducted from 2011-2013 in North Carolina to compare visible injury from tobacco thrips feeding and peanut (*Arachis hypogaea* L.) when acephate, imidacloprid, and phorate were applied alone in the seed furrow at planting or followed by acephate applied postemergence 3 weeks after planting. In a final experiment conducted during the same time period, a commercial liquid formulation of *Bradyrhizobia* inoculant was applied alone or with imidaclorpid in fields with and without plantings of peanut in recent years. Peanut foliage in these experiments did not express visible symptoms caused by tomato spotted wilt virus, a *tospovirus* vectored by thrips (*Frankliniella* spp.). Peanut injury from tobacco thrips feeding was reduced by acephate, imidacloprid, and phorate applied in the seed furrow at planting compared with non-treated peanut. Imidacloprid was more effective in protecting peanut from injury than phorate. Applying acephate further reduced injury from thrips. Pod yield was greater when imidacloprid was applied compared with yield following non-treated, acephate, and phorate when acephate was not applied postemergence. Pod yield was similar regardless of in-furrow treatment when acephate was applied postemergence. Thrips control by imidacloprid was not affected by *Bradyrhizobia* inoculant and imidacloprid did not negatively affect efficacy of *Bradyrhizobia* inoculant regardless of previous field history. These data indicate that imidacloprid protects peanut as well or more effectively than other systemic insecticides currently used in peanut and that imidacloprid is compatible with *Bradyrhizobia* inoculant. Other research has demonstrated that the formulated product Velum Total (imidacloprid plus fluopyram) controls thrips as well as imidacloprid alone and is compatible with *Bradyrhizobia* inoculant.

White Mold Control Efficacy Associated with Nine Peanut Fungicide Treatments

R. C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA 31794; A. R. SMITH, Agricultural and Applied Economics, University of Georgia, Tifton, GA 31793; and **W. G. TYSON***, Bulloch County Cooperative Extension, University of Georgia, Statesboro, GA 30458.

The impact of soilborne diseases on peanut production is a problem that needed addressing 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 consist of a combination of resistant varieties and application of fungicides. The effectiveness of nine different fungicide treatments were evaluated for the control of white mold. The experimental design was a randomized complete block with three replications. Peanut, 'Georgia 06G', was planted on May 8 and harvested on October 13. Fungicides included Convoy, Echo 720, Elatus, Fontelis, Muscle ADV, Priaxor, Proline, Provost Opti, and Tebuconazole. Fungicides were applied with a tractor hitched sprayer on 14-day intervals beginning on June 22. Cost of fungicide programs varied between $49.00 and $120.00. There was a strong negative relationship between incidence of white mold and yield. Top-yielding programs included Elatus, Priaxor, Proline, Provost Opti and Convoy. There was a 1615 lb./A difference in yield between the top yielding (4702 lbs./A) Elatus 3-block program and the lowest yielding (3087 lbs./A) Echo 720 program.

Evaluating Peanut White Mold Fungicide Programs in Cook County, Georgia – 3 Year summary

T. PRICE*, Extension Agent, University of Georgia Cooperative Extension, Cook County, Adel, Georgia 31620; and R. C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, Georgia 31793.

White Mold (WM), (*Sclerotium rolfsii*) is considered one of the most destructive diseases in peanut production in Georgia. University of Georgia's, "2015 Georgia Plant Disease Loss Estimates" estimated $59.7 million dollars in damages to Georgia's peanut crop valued at $684.6 million according the Georgia Farm Gate Value report. University of Georgia Extension Agent in Cook County, University of Georgia Extension Peanut Specialist and a Cook County peanut producer collaborate each year to install replicated field trials to evaluate common peanut fungicide programs for controlling white mold. Data showed that Fontelis based programs have been effective for managing white mold in peanuts however 2017 data showed this product may be losing efficacy against the disease. A two block Elatus program has provided acceptable control of white mold in 2015 and 2017 however this program showed less control of the disease compared to all other white mold treatments in 2016. 4 block Convoy programs in all three years were among those programs that consistently showed the greatest control of white mold compared to the checks. Provost has shown to consistently control white mold compared to the untreated checks in all three years however it must be noted that each year this product was paired with other products with white mold efficacy (Propulse, Convoy, and early emergence Proline.) Data generated from these trials are disseminated to local producers and agriculture industry via fact sheets, blogs, email, and one-on-one consultations. The data from these trials is commonly referred to during white mold fungicide recommendations.

Influence of Quick-SOL and Peg Power on Peanut Yield in Small-Plot Research

M. CARROLL*, D. L. JORDAN, and A. T. HARE, North Carolina Cooperative Extension Service, Raleigh, NC 27695.

Research was conducted over three years in separate trials to determine the impact of sequential applications of Quick-SOL (ionized sodium silicate, 50-80% water, 20-50% near sodium silicate) beginning at 2 weeks after peanut emergence at 2-week intervals (10, 10, and 10 oz formulated product/acre at each application) or two sequential applications of Peg Power (fulvic acid complex 12%, ammoniacal nitrogen 1.31%, nitrate nitrogen 0.32%, urea nitrogen 5.37%, available phosphate 4$, soluble potash 9%) beginning at peak flower (16 oz/acre) and repeated 2 weeks later at 16 oz/acre. Ouick-SOL and Peg Power were evaluated in 12 and 9 experiments, respectively. The main effect of treatment and the interaction of experiment by treatment were not significant for Quick-SOL (P>F = 0.6447, F = 0.2 and P>F = 0.9496, F = 0.4, respectively; cv = 12.2, number of experiments = 12) and Peg Power (P>F = 0.5594, F = 0.3 and P>F = 0.8893, F = 0.5, respectively; cv = 11.9, number of experiments = 9). However, the main effect of experiment was highly significant (P>F = <0.0001) for experiments with both products. Variation in yield across Quick-SOL experiments ranged from 3,480 lbs/acre to 5,930 lbs/acre. When pooled over experiments, pod yield following Quick-SOL was 4,630 lbs/acre lbs/acre compared with 4,570 lbs/acre for non-treated peanuts. For Peg Power, pod yield across experiments ranged from 3,600 lbs/acre to 5,780 lbs/acre. When pooled over experiments, yield following application of Peg Power was 4,720 lbs/acre compared with 4,630 lbs/acre for non-treated peanut.

Molecular Breeding I

Thursday, July 12, 2018		
8:00 a.m. - 10:00 a.m. **Amphitheatre**	**Molecular Breeding I** Moderator: S. Jackson	Page Number
8:00	**The Genome Sequence of PeanutD.** **D. BERTIOLI***, Department of Crop & Soil Sciences, The University of Georgia, Athens GA 30605; and MEMBERS of The International Peanut Genome Consortium.	85
8:15	**PeanutBase: New Genome Assemblies and Breeding Support** **E. K. S. CANNON***, Iowa State University, Ames, IA; C. CAMERON, National Center for Genome Resources, Santa Fe, NM; J. D. CAMPBELL and M. O'CONNELL, Iowa State University, Ames, IA; S. B. CANNON, USDA-ARS, Iowa State University, Ames, IA; S. Dash, A. FARMER and S. HOKIN, National Center for Genome Resources, Santa Fe, NM; W. HUANG, Iowa State University, Ames, IA; S. KALBERER, USDA-ARS, Ames, IA; P. OLYAMA, Iowa State University, Ames, IA; and N. WEEKS and A. WILKEY, USDA-ARS, Ames, IA.	86
8:30	**The Next Generation of Peanut Genomics** **J. CLEVENGER***, Mars-Wrigley Confectionary, Center for Applied Genetic Technologies, Athens, GA 30602; S. A. JACKSON and W. KORANI, University of Georgia, Athens GA 30602; and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748.	87
8:45	**Tetrasomic Recombination in a Recombinant Inbreed Line Population Confirmed through Whole Genome Re-sequencing** **C. CHAVARRO***, D. BERTIOLI, S. LEAL-BERTIOLI, J. CLEVENGER, B. ABERNATHY, and S. JACKSON, Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Athens, GA 30602; T. G. ISLEIB, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; C. C. HOLBROOK, USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; and Y. CHU and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748.	88
9:00	**Genomic Diversity Characterization and Genome-Wide Association Mapping of the North Carolina State University Peanut Breeding Lines and Virginia-Type Cultivars** **J. C. DUNNE***, W. G. HANCOCK, and T. G. ISLEIB, Department of Crop and Soil Sciences, North Carolina State University, Raleigh NC, 27695.	89
9:15	**Population Genomics of US Peanut Mini Core Collection using Genome-Wide SNP Genotyping** **B. S. F. MÜLLER***, Y. CHU, and P. OZIAS-AKINS, Institute of Plant Breeding, Genetics & Genomics, Department of Horticulture, The University of Georgia, Tifton, GA 31793; C. CHEN, Auburn University, Auburn, AL 36849; and C. C. HOLBROOK, USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.	90

9:30	**Recombination Bin-Map Facilitates QTL Mapping of Disease Resistance Traits in Peanut (*Arachis hypogaea* L.) Using Whole Genome Re-Sequencing** **G. AGARWAL***, H. WANG, and A. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA; J. CLEVENGER and S. A. JACKSON, University of Georgia, Center for Applied Genetic Technologies, Athens, GA; S. M. KALE, M. K. PANDEY, and R. K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Center of Excellence in Genomics & Systems Biology, Hyderabad, India; Y. CHU and P. OZIAS-AKINS, Horticulture Department, University of Georgia, Tifton, GA 31793; X. LIU, BGI-Shenzhen, Shenzhen, China; M. YUAN, Shandong Academy of Agricultural Sciences, Peanut Research Institute, Qingdao, China; and B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA.	91
9:45	**Genome-Wide Association Study of Sweet, Bitter and Roasted Peanut Sensory Attributes in Cultivated Peanuts** T. JIANG, J. PATEL, and **C. CHEN***, Auburn University, Auburn, AL 36849; L. DEAN, USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC 27695; M. L. WANG, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA 30223; Y, CHU, J. CLEVENGER, and P. OZIAS-AKINS, The University of Georgia, Tifton, GA 31793; P. DANG and M. LAMB, USDA-ARS National Peanut Research Lab, Dawson, GA 39842; and C. C. HOLBROOK, USDA-ARS Plant Breeding and Genetics Unit, Tifton, GA 31793.	92

The Genome Sequence of Peanut

D. BERTIOLI*, Department of Crop & Soil Sciences, The University of Georgia, Athens GA 30605; and MEMBERS of THE INTERNATIONAL PEANUT GENOME CONSORTIUM.

We report the genome sequence of cultivated peanut (*Arachis hypogaea* cv. Tifrunner). As expected, it harbors essentially complete sets of chromosomes from the two ancestral species (*A. duranensis* and *A. ipaënsis*). However, we show that after its origin, the genome has evolved through mobile element activity, deletions and homeologous recombination; the flow of genetic information between corresponding chromosomes derived from the different ancestors. Uniformity of some of the patterns of recombination favors a single origin for cultivated peanut and its wild counterpart *A. monticola*. However, through much of the genome, homeologous recombination has created diversity. Using a new polyploid hybrid made from the ancestral species, we demonstrate how this can generate phenotypic change: a spontaneous change of flower color. This flow of genetic information is strongly influenced by chromosome structure and is asymmetrical: chromosomes derived from *A. duranensis* are more modified over time than the other. Homeologous recombination is ongoing and is orders of magnitude more frequent than mutation. It seems likely that this mechanism, which creates genetic diversity, helped favor the domestication of *A. hypogaea* over other diploid *Arachis* species cultivated by man.

PeanutBase: New Genome Assemblies and Breeding Support

E. K. S. CANNON*, Iowa State University, Ames, IA; C. CAMERON, National Center for Genome Resources, Santa Fe, NM; J. D. CAMPBELL and M. O'CONNELL, Iowa State University, Ames, IA; S. B. CANNON, USDA-ARS, Iowa State University, Ames, IA; S. Dash, A. FARMER and S. HOKIN, National Center for Genome Resources, Santa Fe, NM; W. HUANG, Iowa State University, Ames, IA; S. KALBERER, USDA-ARS, Ames, IA; P. OLYAMA, Iowa State University, Ames, IA; and N. WEEKS and A. WILKEY, USDA-ARS, Ames, IA.

The genome assembly for cultivated peanut (cultivar Tifrunner) was completed and made available at PeanutBase in December, 2017. The gene models were completed and made available in February, 2018. In addition to hosting genomic, genetic, marker, and trait data, PeanutBase is adding to its database of phenotyped germplasm, is now hosting genotype data, and is collaborating with the Integrated Breeding Platform (IBP) and with the developers of BrAPI (Breeders API), a standard protocol that permits breeding resources to exchange data with each other. The goal is to link genetic and genomic data held at PeanutBase to breeding systems. This talk will describe the latest data and features at PeanutBase and plans for the future.

The Next Generation of Peanut Genomics

J. CLEVENGER*, Mars-Wrigley Confectionary, Center for Applied Genetic Technologies, Athens, GA 30602; S. A. JACKSON and W. KORANI, University of Georgia, Athens GA 30602; and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748.

Peanut genomics now suffers from an embarrassment of riches. There are resources available for high throughput genotyping to suit almost any preference. There are two SNP arrays to choose from, an initial 58K chip and an improved 48K chip. There are computational pipelines that identify SNP polymorphisms from sequence data that have been validated with these arrays in numbers not seen in other polyploids. There are resources available to quickly map alien introgressions in interspecific populations to a high resolution with only low coverage sequence data. In 2018 alone two genetic maps were constructed from re-sequencing data with over 10,000 markers each, and hundreds of accessions were assayed for genetic diversity with millions of sequence-based markers. There is now no barrier for efficient genotyping for genetic experiments. The impetus is utilizing these resources effectively, designing experiments with these resources in mind more efficiently, and training the next generation of peanut scientists to think beyond genotyping as a limitation.

Tetrasomic Recombination in a Recombinant Inbreed Line Population Confirmed through Whole Genome Re-sequencing

C. CHAVARRO*, D. BERTIOLI, S. LEAL-BERTIOLI, J. CLEVENGER, B. ABERNATHY, and S. JACKSON, Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Athens, GA 30602; T. G. ISLEIB, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; C. C. HOLBROOK, USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; and Y. CHU and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748.

Genetic analysis in peanut has generally assumed classic allotetraploid genetic behavior with diploid-like disomic recombination occurring exclusively between homologous chromosomes. However, recently, genetic recombination between homeologous chromosomes has been reported between peanut and wild species-derived allotetraploids. Here we provide evidence of tetrasomic recombination at the molecular level in cultivated peanut, in a set of recombinant inbred lines (RIL). Firstly, the analysis demonstrates historical tetrasomic recombination by the identification of regions where numerous identical SNPs occur in homeologous chromosomes; secondly, we analyze the sporadic occurrence of non-parental genotype calls and show that they are caused by spontaneous recombination between subgenomes. Historical tetrasomic recombination was observed at the ends of chromosomes A04, B04 and A06, B06 where one parent was nulliplex and the other tetraplex for one of the subgenomes. For the second approach, we observed a few RILs with occasional, sporadic non-parental genotype calls distributed in discontinuous regions in most of the chromosomes except by A01, B01, A08, B08 and A10. Using whole genome re-sequencing of the parents and two RILs at ~35X coverage we found compelling evidence that these non-parental calls were caused by genetic exchange between subgenomes. QTL previously identified in this population were found to overlap with regions of tetrasomic recombination in linkage groups A04, A07, B07 and B09. Further investigation will be needed to confirm and analyze the effect of tetrasomic recombination on the inheritance of quantitative traits.

Genomic Diversity Characterization and Genome-Wide Association Mapping of the North Carolina State University Peanut Breeding Lines and Virginia-Type Cultivars.

J. C. DUNNE*, W. G. HANCOCK, and T. G. ISLEIB, Department of Crop and Soil Sciences, North Carolina State University, Raleigh NC, 27695.

Significant phenotypic variation exists among the breeding lines and cultivar releases from the North Carolina State University peanut breeding program for several economically important traits of interest to the Virginia-Carolina region. These extensively tested lines and cultivars coupled with genome-wide single nucleotide polymorphic (SNP) markers allow for the characterization of diversity within the breeding program and the identification of marker-trait associations for use in selection for improved yield, seed and pod characteristics, flavor and quality traits, and biotic and abiotic stress resistances. More than 200 lines, including developed breeding lines and cultivar releases from 1991-2018, were genotyped using a 48K SNP marker array. The post-processed marker set, (~12,000) found to be polymorphic among the submitted lines, were subjected to population structure and diversity analysis. Population sub-structure, estimated using principle component analysis and other molecular marker derived relationship estimates, was detected among these lines, which represent nearly four decades of the breeding program. Diversity estimates increased over this time period most likely resulting from intraspecific hybridization of the *A. hypogea* subspecies and botanical varieties used in the crossing program. In addition to the population structure and diversity estimates, phenotypic data were related to the genotypic information for these lines to establish genome-wide associations for yield, early and late leaf spot defoliation ratings, Cylindorcladium black rot (CBR) incidence, Sclerotinia blight incidence, and tomato spotted wilt (TSW) incidence. A total of 8,064 SNPs were used in identifying a multiple marker associations among each of these traits. These associations, given the extensive phenotypic evaluations on these lines, provide a basis for implementing marker-assisted selection (MAS) for improving the parental population and offer opportunities to impose a genomic selection pipeline for cultivar development and release.

Population Genomics of US Peanut Mini Core Collection using Genome-Wide SNP Genotyping

B. S. F. MÜLLER*, Y. CHU, and P. OZIAS-AKINS, Institute of Plant Breeding, Genetics & Genomics, Department of Horticulture, The University of Georgia, Tifton, GA 31793; C. CHEN, Auburn University, Auburn, AL 36849; and C. C. HOLBROOK, USDA-Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.

The US mini core has been a useful genetic resource for peanut breeding. In order to study the population genetics and structure of peanut germplasm, 108 accessions of the mini core, 16 cultivars and 12 accessions from two new botanical types were genotyped using the version 2 of Axiom SNP Array, resulting in 17,298 polymorphic markers. Linkage disequilibrium was calculated for all pairwise physical distances (7,840,819) among all the polymorphic SNPs on each chromosome separately. The average of genome-wide LD for pairs of SNPs (r^2) was 0.18, being 0.16 and 0.20 for A and B subgenomes, respectively. The genome-wide LD decayed to an r^2 below 0.2 within 23 Mb for the whole genome, and the LD of A subgenome (14 Mb) decayed faster than of the B subgenome (38 Mb). Population structure subdivided the accessions into two groups (K = 2), which largely conforms to the two subspecies: *hypogaea* (83 accessions) and *fastigiata* (53 accessions). The genetic divergence between these two subpopulations was high (F_{ST}=0.45) and the first two principal components explained 22% and 15.5% of the genetic variance through principal component analysis (PCA). The observed heterozygosity (H_O=0.09) was lower than expected heterozygosity (H_E=0.26) for the whole population, slightly higher for *fastigiata* (H_O=0.11, H_E=0.19) than *hypogaea* (H_O=0.07, H_E=0.18) subpopulation. The population genomics analyses were performed using non-overlapping 100 Kb sliding windows to estimate the F_{ST}, diversity from Nei (π), nucleotide diversity, Watterson's θ (θ_W) and Tajima's D within the two-subspecies for each window of the genome. F_{ST} was higher than 0.3 between the subspecies for the majority of the chromosomes, with the highest level at chromosomes 8 and 17. On average, the genetic diversity statistics (π, nucleotide diversity and θ_W) were higher for the *hypogaea* than *fastigiata* subpopulation on chromosomes 1 to 6 and 11 to 16, with the opposite for 9 to 10 and 18 to 20. In chromosomes 7 and 8, the diversity between the subspecies had more variation, perhaps due to genome rearrangements. The estimates of diversity between the two-subspecies varied along chromosome 17 mostly in the centromeric region, which had the highest F_{ST} in the whole genome. Negative Tajima's D estimates were observed for *hypogaea* subgroup mainly on chromosomes 18 to 20, which could indicate that a positive selection is driving divergence between these subspecies. The *hypogaea* subgroup may have passed through a recent selective sweep and possible population expansion after a recent bottleneck. The population genomics analyses identified genomic regions under selection putatively involved in the process of adaptation, providing good potential regions for further validation to detect candidate genes through genome-wide scans that can be useful to peanut breeding programs.

Recombination Bin-Map Facilitates QTL Mapping of Disease Resistance Traits in Peanut (*Arachis hypogaea* L.) Using Whole Genome Re-sequencing

G. AGARWAL*, H. WANG, and A. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA; J. CLEVENGER and S. A. JACKSON, University of Georgia, Center for Applied Genetic Technologies, Athens, GA; S. M. KALE, M. K. PANDEY, and R. K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Center of Excellence in Genomics & Systems Biology, Hyderabad, India; Y. CHU and P. OZIAS-AKINS, Horticulture Department, University of Georgia, Tifton, GA 31793; X. LIU, BGI-Shenzhen, Shenzhen, China; M. YUAN, Shandong Academy of Agricultural Sciences, Peanut Research Institute, Qingdao, China; and B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA.

The availability of peanut (*Arachis hypogaea* L.) reference genome information facilitates the identification and development of useful markers, genes, and improvement of peanut disease resistance and quality. A recombination bin-map strategy based on whole-genome re-sequencing could greatly improve mapping accuracy and resolution. In this study, we report a high-density bin-map developed from 141 recombinant inbred lines (RILs) derived from a cross between SunOleic 97R and NC94022. The parents and RILs were evaluated phenotypically for four years in the field for foliar disease ratings including early leaf spot, late leaf spot, and TSWV, and genotyped by whole genome re-sequencing to a depth >20X and 3-5X, respectively. A total of 11,106 high-quality polymorphic SNPs was identified and used to build the first SNP based bin-map for peanut using a sliding window approach, containing 5,816 bins. The total map length was 2,004 cM with 20 linkage groups, and the average bin density was 2.9 bins per cM. A total of 19 QTLs for resistance to both leaf spots and TSWV were identified and account for 7% to 36.5% of the phenotypic variation. The small intervals of the major QTLs contain a cluster of genes, coding for chitinase family protein, strictosidine synthase-like protein and LRR receptor kinase. A major QTL for TSWV resistance on chromosome A01 was located in the small interval of 89.5 Kb, containing several SNPs that have been used to develop KASP markers. These KASP SNP markers have been validated and could be deployed in genomics assisted breeding. This study has not only paved the path to identify the underlying genes for disease resistance in peanut but also provides a basis for marker assisted selection and map based cloning in further studies.

Genome-Wide Association Study of Sweet, Bitter and Roasted Peanut Sensory Attributes in Cultivated Peanuts

T. JIANG, J. PATEL, and **C. CHEN*,** Auburn University, Auburn, AL 36849; L. DEAN, USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC 27695; M. L. WANG, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA 30223; Y, CHU, J. CLEVENGER, and P. OZIAS-AKINS, The University of Georgia, Tifton, GA 31793; P. DANG and M. LAMB, USDA-ARS National Peanut Research Lab, Dawson, GA 39842; and C. C. HOLBROOK, USDA-ARS Plant Breeding and Genetics Unit, Tifton, GA 31793.

Certain roasted peanut quality sensory attributes are very important breeding objectives for peanut manufacturers and consumers. Currently the only means of measuring these traits is the use of a trained sensory panel. This is a costly and time-consuming process. It is desirable, from a cost, time and sample size perspective, to find DNA- marker and trait associations for the implementation of marker-assisted selection (MAS) in breeding programs. One hundred and thirty accessions including the U.S. mini core collection were used for sweet, bitter and roasted peanut sensory attributes analysis including tocopherols, fatty acids and sugars. A total of 17,224 high-quality single nucleotide polymorphisms (SNPs) in the whole peanut genome were revealed. Genome-wide association studies (GWAS) analysis indicated some of the markers are associated with sensory attributes, tocopherols, fatty acids and sugars. Candidate genes responsible for corresponding traits will be further analyzed in genomic regions surrounding the peak SNPs based on genomic data available on PeanutBase. These findings provide a promising insight into the complicated genetic architecture of quality attributes in peanut, and reveal whole-genome SNP markers of beneficial candidate genes for marker-assisted selection (MAS) in future breeding programs.

Molecular Breeding II

Thursday, July 12, 2018		
10:30 a.m. - 12 Noon **Auditorium**	**Molecular Breeding II** Moderator: P. Ozias-Akins	Page Number
10:30	**Marker Assisted Selection of Peanut Storage Proteins for Flavor Potential** W. D. BRANCH, The Crop and Soil Science Department, The University of Georgia, Tifton, GA 31793-5766; C. LIEBOLD, The J.M. Smucker Co., Lexington, KY 40505; and **J. A. MARSHALL***, The Department of Chemistry and Biochemistry, Lubbock Christian University, Lubbock TX 79407.	94
10:45	**High Density Graphic Genotypes of Near Isogenic Lines Revealed Genomic Regions Controlling Peanut Nodulation** Z. PENG, Z. ZHAO, and **J. WANG***, Agronomy Department, The University of Florida, Gainesville, FL 32611-0300.	95
11:00	**Iterative QTL-seq to Discover Functional Markers of Agronomically Important Traits** **W. KORANI*** and J. CLEVENGER, Center of Applied Genetics Technology, The University of Georgia, Athens, GA, 30602; and J. VAUGHN, United States Department of Agriculture, Athens, GA, 30602.	96
11:15	**Major QTLs for Resistance to Early and Late Leafspot Diseases are Identified in Chromosome 3 and 5 in Peanut (*Arachis hypogaea*)** **Y. CHU*** and P. OZIAS-AKINS, Department of Horticulture, University of Georgia, Tifton Campus, Tifton, GA 31793; P. CHEE, Department of Crop and Soil Sciences, University of Georgia, Tifton Campus, Tifton, GA 31793; A. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton Campus, Tifton, GA 31793; T. G. ISLEIB, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; C. C. HOLBROOK, USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.	97
11:30	**Genome-Wide Association Study of Agronomic and Disease Resistance Traits Using Peanut Nested Association Mapping Populations.** **B. GUO***, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793; S. GANGURDE, M. K. PANDEY, and R.K. VARSHNEY, Center of Excellence in Genomics & Systems Biology, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad-502324, India; H. WANG, G. AGARWAL, and A. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793; S. HAN and G. HE, Tuskegee University, AL 36088; X. GUO, Heilongjiang Bayi Agricultural University, Daqing, China; X. JI, Ecological Environment Protection Research Institute, Shanghai Academy of Agricultural Sciences, China; Y. CHU and P. OZIAS-AKINS, Horticulture Department, University of Georgia, Tifton, GA 31793; T. G. ISLEIB, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; and C. C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.	98
11:45	**The Hunt for the "Silver Bullet": Reference Genome Development and Comparative Genomics Analysis of Field Isolates of *Aspergillus flavus* for Identification of Aflatoxin Regulators.** **J. C. FOUNTAIN*** and R. C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; J. P. CLEVENGER, Institute of Plant Breeding, Genetics, and Genomics, University of Georgia, Athens, GA, 30602; J. N. VAUGHN, B. SCHEFFLER, and S. SIMPSON, USDA-ARS Genomics and Bioinformatics Research, Stoneville, MS, 38776; P. OZIAS-AKINS, Department of Horticulture, University of Georgia, Tifton, GA, 31793; and B. GUO, USDA-ARS Crop Protection and Management Research Unit, Tifton, GA, 31793.	99

Marker Assisted Selection of Peanut Storage Proteins for Flavor Potential

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Roasted peanut flavor is a desirable and necessary component of economically viable cultivars in production. Currently, there are no genetic tools to allow peanut breeders to screen germplasm for flavor potential during cultivar development. Using seed samples available from the University of Georgia and the University of Florida breeding programs, and observations regarding organoleptic differences between market types, several different genotypes were selected for analysis. All seed samples were grown under similar, near optimum conditions using recommended production practices, including irrigation, to obtain high quality seed samples. The storage proteins from identified genotypes were compared by SDS-PAGE before and after roasting. Based upon protein level differences post-roasting, Arah1 and Arah2 were determined to be the most thermally reactive of the storage proteins. Primers for Arah1 and Arah2 were used to amplify DNA extracted from peanut seed for two different crop years. A separate portion, from each sample, was roasted and evaluated by expert descriptive sensory panel. The extracted PCR products were sequenced and aligned with an established control. After initial analysis of Arah1 and Arah2 sequences, it was determined that Arah1 had the greatest degree of sequence diversity with respect to the predicted flavor marker. A refined primer from Arah1 exon 4 was used to quantitatively amplify samples from a third crop year. Through, gene expression and sensory data, it was concluded that this refined primer from Arah1 exon 4 is found at a greater degree for higher scored roast peanut flavor samples.

High-density Graphical Genotype Maps of Recombinant Inbred Lines Reveal Genomic Regions Controlling Peanut Nodulation.

Z. PENG, Z. ZHAO, and **J. WANG***, Agronomy Department, The University of Florida, Gainesville, FL 32611-0300. J. CLEVENGER, Center for Applied Genetic Technologies, University of Georgia, Athens, GA 30602, Y. CHU, and P. OZIAS-AKINS, Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Tifton, GA 31793-0748.

Cultivated peanut *(Arachis hypogaea* L.) forms a symbiotic relationship with rhizobia for biological nitrogen fixation. Rhizobia enter peanut roots through an intercellular crack entry, which is different from model legumes and remains understudied. To reveal the genetic mechanisms and genomic regions controlling peanut nodulation, several next generation sequencing (NGS) methods including RNA-sequencing, target enrichment sequencing (TES), genotyping by sequencing (GBS), and the 48K Axiom Arachis2 SNP array were applied to genotype two pairs of sister recombinant inbred lines (RILs) with each pair containing a nodulating (Nod+) and non-nodulating (Nod-) line, and their Nod+ parental lines. The overall genotyping revealed a total of 219 (between one pair of RILs) and 1,072 (between the other pair of RILs) homozygous single nucleotide polymorphisms (SNPs), which were mostly located on five chromosomes. High-density graphical genotype maps of the sister RILs were constructed, which showed the candidate genomic regions controlling nodulation. A total of 229 differentially expressed genes (DEGs) upon infection of rhizobia and 55 orthologs of nodulation-related genes located within these genomic regions were identified as candidate genes for further genetic mapping. The results from this study not only provide a reference for application of different NGS methods for peanut genotyping, but also provide important genetic resources to narrow down the genomic regions and discover the genes controlling peanut nodulation, which will lay the foundation for understanding the genetic control of peanut nodulation and improving nitrogen fixation efficiency in peanut.

Iterative QTL-seq to Discover Functional Markers of Agronomically Important Traits

W. KORANI* and J. CLEVENGER, Center of Applied Genetics Technology, The University of Georgia, Athens, GA, 30602; and J. VAUGHN, United States Department of Agriculture, Athens, GA, 30602.

Iterative QTL-seq (iQTL-seq), as proposed here, makes the discovery of naturally-occurring, desirable genes much more tractable. To illustrate the technique's efficacy, this project aims to address white mold disease in peanut. Resistance to white mold has been sought for a century, yet it still has the highest combined cost to growers of any peanut pathogen ($37M, 2014) with damage losses as well as expensive control measures. We describe our efforts to characterize the genes underlying superior performance using a novel modification QTL-Seq analysis, which uses classical bulk segregant analysis and next generation DNA sequencing to identify genomic intervals containing genes of interest. We have optimized iQTL using simulation of the genetic architecture expected to underlie white-mold resistance and have expanded our analysis to other traits. We also describe the software package developed for broad-scale use of the technique.

Major QTLs for Resistance to Early and Late Leafspot Diseases are Identified in Chromosome 3 and 5 in Peanut (*Arachis hypogaea*)

Y. CHU* and P. OZIAS-AKINS, Department of Horticulture, University of Georgia, Tifton Campus, Tifton, GA 31793; P. CHEE, Department of Crop and Soil Sciences, University of Georgia, Tifton Campus, Tifton, GA 31793; A. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton Campus, Tifton, GA 31793; T. G. ISLEIB, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; C. C. HOLBROOK, USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.

Early (ELS) and late (LLS) leaf spots are major foliar diseases that can severely compromise peanut production without intensive fungicide spray programs. Pyramiding host resistance to leaf spots in elite cultivars is a sustainable solution to mitigate the diseases. In order to determine the genetic controls of leaf spot diseases in peanut, a recombinant inbred line population (Florida-07 x GP-NC WS16) segregating for resistance to both diseases was used to construct a SNP-based linkage map consisting of 855 loci. QTL mapping of the four-year LLS disease ratings revealed three consistent QTLs on chromosome A05, B05 and B03 which confirms published results by QTL-seq analysis. *qLLSB03* and *qLLSB05* protected yield loss caused by LLS disease damage. As for early leaf spot, three consistent GP-NC WS 16-derived resistant QTLs were identified on chromosome A03 and B03. *qELSA03 1.1* overlapped with the previously published LLS resistant genomic region in GPBD 4. Flanking markers of these QTLs were used for genotypic selection of the resistant and susceptible pools from the sister RILs of the same population that were not used for genetic mapping. Significant phenotypic difference between the resistant and susceptible pools of RILs was found. Confirmation of the effectiveness of the leaf spot QTLs should lead to integration of these valuable host resistance resources into peanut breeding programs using marker assisted selection.

Genome-Wide Association Study of Agronomic and Disease Resistance Traits Using Peanut Nested Association Mapping Populations

B. GUO*, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793; S. GANGURDE, M. K. PANDEY, and R.K. VARSHNEY, Center of Excellence in Genomics & Systems Biology, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad-502324, India; H. WANG, G. AGARWAL, and A. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793; S. HAN and G. HE, Tuskegee University, AL 36088; X. GUO, Heilongjiang Bayi Agricultural University, Daqing, China; X. JI, Ecological Environment Protection Research Institute, Shanghai Academy of Agricultural Sciences, China; Y. CHU and P. OZIAS-AKINS, Horticulture Department, University of Georgia, Tifton, GA 31793; T. G. ISLEIB, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; and C. C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.

The U.S. peanut community has developed structured populations with 2 common parents (Tifrunner and Florida 07) and 8 diverse founders which form the basis of 2 nested association mapping (NAM) populations. This NAM approach has great potential for investigating quantitative agronomic traits and finding their genomic control using next generations sequencing. Here, our goal was to demonstrate the utility of peanut NAM populations by using a subset of the available populations (2 x 4) of 1250 RIL lines (Florida 07_NAM with 504 lines and Tifrunner_NAM with 746 lines plus 118 lines from Tifrunner x GTC20 RIL population). These lines were phenotyped for three years including peanut descriptors of leaf length, leaf width, main stem height, plant height, 100 pod weight, and 100 seed weight along with ratings for foliar diseases such as leaf spots and TSWV; and genotyped using the 58K SNP “Axiom_Arachis” Array. Joint inclusive composite interval mapping and genome-wide association analysis (GWAS) were used in this study to identify quantitative trait loci (QTLs) and significant marker-trait associations termed quantitative trait nucleotides (QTNs). Here we report the results of Florida_NAM. A total of 7,672 polymorphic SNPs were identified, and 2,716 SNPs with proper segregation were used for genetic map construction with 2,668 loci spanning 2,393 cM. A total of 162 QTLs were identified through linkage analysis, including 38 for leaf spot resistance (20.1-44.6% PVE), 16 for TSWV resistance (18.8-43.4% PVE), and 108 for the six descriptor traits (16.8-46.6% PVE). Further, 170 QTNs were identified through GWAS using a random effects model, including 92 QTNs for leaf spots resistance (p-value 5-58.6) and 72 QTNs for descriptor traits (p-value 5.2-12.4). Identification of candidate genes for these QTLs/QTNs is still in progress. These results will provide extensive genetic information to dissect the genetic architecture of these traits for the improvement of peanut yield and disease resistance.

The Hunt for the "Silver Bullet": Reference Genome Development and Comparative Genomics Analysis of Field Isolates of *Aspergillus flavus* for Identification of Aflatoxin Regulators

J. C. FOUNTAIN* and R. C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; J. P. CLEVENGER, Institute of Plant Breeding, Genetics, and Genomics, University of Georgia, Athens, GA, 30602; J. N. VAUGHN, B. SCHEFFLER, and S. SIMPSON, USDA-ARS Genomics and Bioinformatics Research, Stoneville, MS, 38776; P. OZIAS-AKINS, Department of Horticulture, University of Georgia, Tifton, GA, 31793; and B. GUO, USDA-ARS Crop Protection and Management Research Unit, Tifton, GA, 31793.

Given the known link between aflatoxin contamination and drought stress observed in peanut and other crops and the serious health concerns of aflatoxin contamination, we continue the search for the so called 'silver bullet' in order to identify the underlying mechanisms regulating the production of aflatoxin by *Aspergillus flavus* and *A. parasiticus*. We have been using a variety of "omics" approaches in *A. flavus* and oxidative stress interactions including transcriptomics, proteomics, and metabolomics. These studies have revealed a number of mechanisms which may link aflatoxin production in responses to environmental oxidative stress under drought, but the causes of isolate-specific variation in these responses remain still unclear. Comparative genomics is a powerful tool to explore such differences, but is made difficult in the absence of a complete, pseudomolecule-level reference genome which is the case for *A. flavus*. Here, our goal is to develop reference genomes for a high (+++) and a moderate (+) aflatoxin producers of *A. flavus*, and to utilize these as reference genomes in a comparative analysis of field isolates to identify key regulatory mechanisms controlling aflatoxin production under drought stress. The isolates AF13 (+++) and NRRL3357 (+) were sequenced using PacBio technology to a depth of >50X coverage and used as a reference for comparing the genomes of 10 additional isolates, each sequenced to >80X coverage using Illumina technology. The detected polymorphisms between AF13 and NRRL3357 in conjunction with "omics" data obtained from the previous experiments will be used to identify gene families, genomic architecture, and pathways/markers associated with aflatoxin production and other traits relevant to fungal biology and pathogenicity including conidiation, conidial morphology, mating type, vegetative compatibility, and microbial competitiveness. These markers can then be utilized for genomic prediction of these traits in other field isolates to further verify marker-trait associations. These findings will allow for a better understanding of the genetic mechanisms regulating aflatoxin production, the targeted focusing of host resistance research efforts through molecular breeding and genetic engineering, and possibly the "silver bullet" for mitigation of aflatoxin production.

Plant Pathology I

10:30 a.m. - 12 Noon Amphitheatre	Plant Pathology I Moderator: B.B. Shew	Page Number
10:30	**Peanut Kernel Shrivel – An Undiagnosed Condition of Peanut Crops in Queensland, Australia** **G. C. WRIGHT***, D. J. O'CONNOR, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; M. SHARMAN, Department of Agriculture and Fisheries, Dutton Park, Queensland, Australia, 4102; and D. L. ADORADA, University of Southern Queensland, Centre for Crop Health, Toowoomba, Queensland, Australia 4350.	101
10:45	**Effects of Seed Treatments and In Furrow Sprays on Peanut Plant Stands, Diseases and Pod Yield** **T. B. BRENNEMAN***, Department of Plant Pathology, University of Georgia, Tifton, GA 31794.	102
11:00	**Velum Total and AgLogic 15G Compared for Peanut Root-Knot Control and Yield Response on Root-Knot Susceptible and Resistant Peanut Cultivars** **A. K. HAGAN*** and H. L. CAMPBELL, Auburn University, AL 36849; and L. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345.	103
11:15	**Evaluating Peanut Cultivars Using a Reduced Cost and a Premium Fungicide Program** **D. S. CURRY***, University of Georgia Extension, Appling County, Baxley, GA 31519; R. C. KEMERAIT and T. B. BRENNEMAN, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; and C. M. RINER, C. R. HILL, and D. R. THIGPEN, University of Georgia Extension, Vidalia Onion & Vegetable Research Center, Lyons, GA 30436.	104
11:30	**Efficacy and Profitability of Nematicide, Insecticide, and Fungicide Chemistries and Pre-Mixes for Pest Management in Peanut** **H. L. MEHL***, S. AHMED, L. BYRD-MASTERS, S. MALONE, D. A. HERBERT, and S. V. TAYLOR, Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.	105
11:45	**Evaluation of Virginia-type Germplasm for *Sclerotium rolfsii* Tolerance in Field Conditions** **M. DAFNY YELIN***, J. MOY, Northern Agricultural Research & Development, Migal Galilee Technology Center, P.O.B. 831, Kiryat Shemona, 11016 Israel; R. HOVAV, and S. AGMON, Department of Field Crops, Plant Sciences Institute, ARO, Bet-Dagan, 50250 Israel; and O. RABINOVICH, Extension Service, Ministry of Agriculture, Kiryat Shemona, 10200 Israel.	106

Peanut Kernel Shrivel – An Undiagnosed Condition of Peanut Crops in Queensland, Australia

G. C. WRIGHT* and D. J. O'CONNOR, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; M. SHARMAN, Department of Agriculture and Fisheries, Dutton Park, Queensland, Australia, 4102; and D. L. ADORADA, University of Southern Queensland, Centre for Crop Health, Toowoomba, Queensland, Australia 4350.

Peanut Kernel Shrivel (PKS) is a currently undiagnosed condition affecting peanut crops growing in Queensland, Australia, particularly in the Bundaberg region in SE Queensland, where peanuts are grown in rotation with sugarcane. PKS is a condition where kernels in some, or all, pods on a plant approaching maturity, cease normal development and fail to reach their full size. This results in shriveled testa, low kernel % and high shell %, which reduces overall crop yield, quality/grading and price/Mt of farmer stock. In more mature kernels, the testa appears to die off, presumably due to a lack of assimilate from the plant, and develops a brown/light tan colour. The 'funiculus' which feeds assimilates from the plant/pod to the developing kernel often appears swollen, darkened, fibrous and prominent compared to its smaller nearly transparent appearance in normal developing kernels. The swollen and unusual funiculus appears to result from some sort of 'physiological blocking' of assimilate flow from the plant to the developing testa/kernel. There are no other obvious symptoms on the vegetative growth of plants which appears quite normal, with the main quality constraint associated with PKS remaining undetected until harvest. The condition has caused yield and quality impacts since 2012, and reduced grower returns by up to A$500-$1000 per ha, and cost industry more than A$2.5M p.a. since this time. Initial detailed investigations showed no evidence of biotic or abiotic causes, including water quality, nutrition, subsoil constraints, insects, nematodes and viruses. Interestingly, large genotypic differences in PKS incidence and damage have however been observed, with some lines only suffering minor PKS effects. All of the currently grown commercial varieties are however susceptible to PKS. More recent research in 2017/18 has narrowed down the possible causes of PKS to an insect vectored *Phytoplasma* and/or fungi *Fusarium oxysporum*. An update on this research will be presented.

Effects of Seed Treatments and In Furrow Sprays on Peanut Plant Stands, Diseases and Pod Yield

T. B. BRENNEMAN*, Department of Plant Pathology, University of Georgia, Tifton, GA 31794.

Peanut seed treatments were compared in field trials in 2016 and 2017 for their effects on seedling diseases, plant stands, and pod yield. The treatments evaluated were Rancona V PD and Dynasty PD, both applied as a wettable powder formulation to otherwise nontreated Tifguard seed at 4 oz per 100 lb of seed. The seeding rate was 6 seed/ft. Lower germination seed lots (77% and 79% germination) were selected and the field sites were previously planted to peanut to increase disease pressure in the trial. Oat grain inoculum of *Rhizoctonia solani* AG-4 was applied at planting. There was no effect of the Rhizoctonia in 2016, and in plots with nontreated seed the tap root count at harvest 0.4 plants/ft, versus 1.5 plants/ft with either seed treatment. The untreated, Rancona and Dynasty treatments had 8.1, 0.6 and 0.1% Aspergillus crown rot (LSD= 5.1), respectively, and 1455, 3264 and 3314 lb/A pod yield (LSD=608). In 2017 the *Rhizoctonia* inoculations reduced stand counts by 33% and yield by 35% in both treated and nontreated plots, but the relative effect of the seed treatments was similar. Severe crown rot developed by early June with 46, 10 and 16% of the emerged plants killed in the nontreated, Rancona and Dynasty plots, respectively. The final tap root counts and pod yield from those treatments were 0.1, 2.1 and 1.5 plants/ft (LSD=0.3), and 386, 4006, and 3632 lb/A (LSD=846), respectively.

A companion study evaluated seed either treated or nontreated with Rancona V PD (4 oz/100 lb) in a split plot with or without in furrow sprays. The in furrow treatments were Abound (3.0 or 6.0 fl oz/A) or Evito (1.0 or 2.0 fl oz/A). The treated seed had much less crown rot, higher tap root counts at harvest, and higher pod yield than the nontreated seed both years. Crown rot was lower in 2016 (7.4% and 0.5% on nontreated and treated seed, respectively) and the in furrow sprays had no effect on disease incidence. The disease was more severe in 2017 (39.4% and 10.6% on nontreated and treated seed, respectively). All in furrow sprays reduced crown rot on the nontreated seed, but did not significantly increase tap root counts at harvest. Pod yield was much higher on treated vs nontreated seed in both years of the study (4205 vs 2599 lb/A and 3601 vs 301 lb/a in 2016 and 2017, respectively. Evito in furrow at 2 fl oz/A increased yield on the treated seed in 2017 only, and other in furrow treatments did not have a significant effect.

Velum Total and AgLogic 15G Compared for Peanut Root-Knot Control and Yield Response on Root-Knot Susceptible and Resistant Peanut Cultivars

A. K. HAGAN* and H. L. CAMPBELL, Auburn University, AL 36849; and L. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345.

The impact of Velum Total and AgLogic 15G were compared for peanut root-knot nematode (*Meloidogyne arenaria* race 2) control and yield response on irrigated nematode susceptible and resistant cultivars at the Wiregrass Research and Extension Center in Headland, AL. Peanut was cropped behind peanut in 2016 and cotton in 2017. In each study year, a factorial design arranged as a split plot with cultivar as the whole plot and nematicide as the split plot treatment. While Velum Total at 18 fl oz/A applied with a single nozzle over the open furrow in 5 gal/A spray volume, AgLogic 15G at 7 lb/A was applied in-furrow. A non-treated control was included. Cultivars grown in 2016 included the root-knot susceptible Georgia-06G along with the root-knot resistant Georgia-14N and Tifguard with the resistant TIF NV High O/L replacing the latter cultivar in 2017. In both study years, the root-knot reproductive index was lower for the resistant cultivars compared with the susceptible Georgia-06G. In contrast, similar root-knot reproduction was recorded for both nematicide programs and the non-treated control. In 2016, Georgia-14N outyielded both Georgia-06G and Tifguard, which had similarly low yields. For the following study year, TIF NV High O/L produced higher yield than Georgia-14N but not Georgia-06G. When compared with the non-treated control, significant yield gains were recorded with Velum Total in 2016 but not 2017. Yield for the AgLogic 15G-treated peanut and non-treated control were similar in both study years. Other factors such as plant vigor, leaf spot-incited defoliation, and stem rot incidence were also recorded.

Evaluating Peanut Cultivars Using a Reduced Cost and a Premium Fungicide Program

D. S. CURRY*, University of Georgia Extension, Appling County, Baxley, GA 31519; R. C. KEMERAIT and T. B. BRENNEMAN, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; and C. M. RINER, C. R. HILL, and D. R. THIGPEN, University of Georgia Extension, Vidalia Onion & Vegetable Research Center, Lyons, GA 30436.

Sclerotium rolfsii and *Rhizoctonia solani* are soilborne pathogens that cause white mold and limb rot, major diseases in peanut production. The most effective control of these diseases has been with good crop rotation and fungicides. Fungicides cost Georgia's peanut farmers an estimated $80 to $100 per acre each year. Release of new varieties and promising fungicides could offer growers improved management options for white mold and limb rot. The objective of this research was to compare the economic return when either a reduced cost fungicide program or a premium fungicide program was applied to two different varieties (Georgia-06G and Georgia-12Y). The trial was established at the Vidalia Onion and Vegetable Research Center in Lyons, GA. The experimental design was randomized and replicated 6 times. Both programs included seven fungicide applications. The reduced cost treatment was developed around a 4-block tebuconazole (7.2 fl oz/A)/chlorothalonil (1.5 pt/A) program. The premium treatment was developed around a 4-block Fontelis (16 fl oz/A) program with a single application of tebuconazole/chlorothalonil as above. Peanuts were planted on June 1, and dug on November 2. Plots were rated for leaf spot, Rhizoctonia limb rot, and white mold.

Efficacy and Profitability of Nematicide, Insecticide, and Fungicide Chemistries and Pre-Mixes for Pest Management in Peanut

H. L. MEHL*, S. AHMED, L. BYRD-MASTERS, S. MALONE, D. A. HERBERT, and S. V. TAYLOR, Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.

Peanuts are impacted by a variety of pests including nematodes, insects, and fungal pathogens; effective management of these pests is critical for maximizing yields. Several in-furrow pesticides with activity against different combinations of pests are available, and these products are highly variable in cost. Thus, the cost-effectiveness of a particular pesticide is likely to be dependent on the level of pest pressure in a particular field. The objective of this study was to evaluate the efficacy and yield benefits of pesticide products containing fluopyram (a nematicide with some fungicidal activity), imidacloprid (an insecticide), prothioconazole (a fungicide), and aldicarb (a nematicide/insecticide). The experiment was conducted in southeastern Virginia over two years (2016-2017) in six different fields varying in pest pressure. Tested products included Admire Pro (imidacloprid), Velum Total (imidacloprid + fluopyram), Propulse (fluopyram + prothioconazole), and Proline (prothioconazole). In the second year of the study, an AgLogic (aldicarb) treatment was included. All products were applied in-furrow at planting, and broadcast treatments of Proline and Propulse at pegging were also included. Treatments were applied in a randomized complete block design with four to six replicates. Thrips numbers and damage, disease incidence and severity, and soil populations of plant parasitic nematodes were evaluated throughout the growing season. Following harvest, peanut yield and quality were determined. Thrips pressure was moderate to high, and treatments including imidacloprid (Admire Pro and Velum Total) or aldicarb (AgLogic) reduced thrips numbers and damage in all experiments. One field in 2016 had low numbers of crop parasitic nematodes, but the remaining five fields had moderate to high levels of root-knot, ring, and/or sting nematode. However, there were no detectable differences in nematode populations among treatments in any of the experiments. Sclerotinia blight and southern stem rot were observed late in the season in both years, and despite the application of a leaf spot fungicide program to all plots, there were outbreaks of late leaf spot in two of the fields in 2017. Soilborne disease incidence did not vary among treatments, but treatments including fluopyram and/or prothioconazole had reduced leaf spot severity. Though significant differences in yield among treatments were only detected in 2016, in-furrow treatments of Velum Total followed by a pegging application of Propulse resulted in the most consistently high yield response across locations with moderate to high nematode pressure. In the field with low nematode pressure, the Proline in-furrow treatment resulted in the highest yield. Treatments including a fungicide (prothioconazole and/or fluopyram) resulted in higher yields compared to treatments without a fungicide (Admire Pro and AgLogic) indicating fungal diseases were limiting yields in all experiments. Treatments had no effect on quality parameters. When considering cost of the pesticides, Velum Total in furrow without a pegging treatment provided the most consistent return on investment if a field had moderate to high nematode pressure. Results of this study demonstrate the benefits of insecticides, nematicides, and fungicides in peanut production, but results also indicate pest pressure must be considered to select the most cost-effective pesticide program.

Evaluation of Virginia-type Germplasm for *Sclerotium rolfsii* Tolerance in Field Conditions

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Stem rot (white mold), caused by *Sclerotium rolfsii*, inflicted severe losses in several crops, including peanuts, in the Hula Valley, Israel. Peanut cultivars grown in Israel are of the Virginia-marketing type, characterized by large pods, and are intended for the in-shell market. The long-term objective of this project is to reduce peanut sensitivity to *S. rolfsii* by genetically introducing tolerance, obtained from local, relatively tolerant Virginia-type peanut varieties. The specific objective addressed in the present report was to perform phenotype analysis of peanut tolerance to *S. rolfsii* by screening a population of recombinant inbred lines (RIL) derived from a cross between the thick-shelled, spreading-type cv. 'Hanoch' with the bunch-type, thin-shelled cv. 'Harari'. Methods: In 2016 sixteen RILs and their parental lines were artificially inoculated in the field by placing hyphal plugs of *S. rolfsii* near the root crown of 100-day-old plants, and assessing the viability of the directly infected plants and of adjacent plants. In 2017 the same method was applied to 100 lines from the same RIL population; the 16 lines examined in 2016 were included. Results: Concentrating only on the 16 lines and their parents in 2016 and 2017 we found high correlation between the years in the vitality percentages of the directly infected and the adjacent plants ($p < 0.01$). Phenotype correlations: (1) the spreading types were more sensitive to the infection than the bunch types, with strong correlations to vitality of the directly infected or adjacent plants, at $p = 0.08$ or 0.006, respectively. In 2017 similar results were found for average daily loss of vitality, which was correlated with the directly infected or adjacent plants at $p = 0.0314$ or 0.0751, respectively. (2) In 2016 Shell strength was highly correlated with viability of the directly infected or adjacent plants, with probabilities of $p = 0.09$ and 0.06, respectively. In 2017 significant correlations were found between shell weight and the vitality of the infected plants at 45 and 60 days after infection (DAI), at $p = 0.0136$ and 0.0102, respectively. (3) In 2017 plants with higher oil content exhibited less viability at 60 DAI than the directly infected and adjacent plants, at $p < 0.05$; and (4) correlations between pod reticulation and viability of the infected plants were found at 34 DAI. In conclusion, our results indicate that local breeding varieties, growing on heavy mineral soil with bunch growth habit, pods with thick and reticulated shells, and high oil content should be preferred in order to promote resistance to *S. rolfsii*. For instance, the bunch-type, thick-shelled B65 line was among the least sensitive to *S. rolfsii* infection.

Plant Pathology II

Thursday, July 12, 2018		
1:30 - 3:00 p.m. **Amphitheatre**	**Plant Pathology II** Moderator: Tim Brenneman	Page Number
1:30	**Management Efficacy of Late Leaf Spot in two Peanut Fields with Fungicides Applied at Varying Sprayer Ground Speeds** **J. VARN***, Clemson University, Barnwell, SC 29812; J. CROFT, Clemson University, Orangeburg, SC 29115; and W. NIX, D. HUTTO, and D. J. ANCO, Clemson University, Blackville, SC 29817.	108
1:45	**Multiyear Evaluation of Peanut Disease Control Programs Incorporating Miravis® Fungicide into Disease Control Systems Including Elatus®** **H. McLEAN***, K. BUXTON, V. MASCARENHAS, P. EURE, M. VANDIVER, and J. HADDEN, Syngenta Crop Protection, LLC, 410 Swing Road, Greensboro, NC 27409.	109
2:00	**Azoxystrobin, Solatenol and Adepidyn to Manage Leaf Spot and Stem Rot** **R. C. KEMERAIT***, T. B. BRENNEMAN, and A. K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793.	110
2:15	**A Re-evaluation of Fungicide Efficacy for Leaf Spot Control in North Carolina** **B. B. SHEW*** Department of Entomology and Plant Pathology, NC State University, Raleigh NC 27695; and D. L. JORDAN, Department of Crop and Soil Sciences, NC State University, Raleigh NC 27695.	111
2:30	**Mixtures of Sulfur with Sterol Biosynthesis Inhibiting Fungicides for Management of Late Leaf Spot of Peanut** **A. K. CULBREATH***, T. B. BRENNEMAN, R. C. KEMERAIT, and K. S. STEVENSON, Department of Plant Pathology, Univ. of Georgia, Tifton, GA 31793-5766.	112
2:45	**Peanut Yield Loss in the Presence of Late or Early Leaf Spot Defoliation** **D. J. ANCO*** and J. S. THOMAS, Clemson University, Blackville, SC, 29817; D. L JORDAN and B. B. SHEW, North Carolina State University, Raleigh, NC 27695; A. K. CULBREATH and W. S. MONFORT, University of Georgia, Tifton, GA 31793; H. L. MEHL, Virginia Tech, Suffolk, VA 23321; N. S. DUFAULT, B. L. TILLMAN, I. M. SMALL, and D. L. WRIGHT, University of Florida, Quincy, FL 32351; and A. K. HAGAN and H. L. CAMPBELL, Auburn University, Auburn, AL 36849.	113

Management Efficacy of Late Leaf Spot in Two Peanut Fields with Fungicides Applied at Varying Sprayer Ground Speeds

J. VARN*, Clemson University, Barnwell, SC 29812; J. CROFT, Clemson University, Orangeburg, SC 29115; and W. NIX, D. HUTTO, and D. J. ANCO, Clemson University, Blackville, SC 29817.

Surveys conducted in early 2017 listed South Carolina peanut growers as applying fungicides at ground speeds ranging from approximately 5 mph to 17.5 mph. To examine the possible effect of fungicide sprayer ground speed on late leaf spot management efficacy, on-farm trials were conducted in two Bailey peanut fields planted in Barnwell and Orangeburg Counties in 2017. Grower fungicide programs were applied at 7.5, 10 and 15 mph in plots 24 rows wide by 150 foot (Orangeburg County) or 1500 foot (Barnwell County) in length and replicated three times according to a randomized complete block design. Growing conditions in both fields favored production of rank canopies. End of season defoliation was not observed to appreciable amounts in either field. Late leaf spot severity in the Barnwell County field was low overall and not significantly different among sprayer speeds ($P = 0.666$), though a general trend could be seen for slightly higher severity with increased sprayer speed. In the Orangeburg County field, there was a marginally significant ($P = 0.0983$) effect of sprayer speed on late leaf spot severity, with a trend for slower speeds to be associated with less late leaf spot severity. At the 0.10 significance level, 15 mph had significantly more severity than the 7.5 mph speed (2.6 vs. 1.2%, respectively), though practically speaking all disease levels were considerably low. This evidence warrants conducting the study under another set of conditions, including somewhat higher disease pressure to determine if a substantial difference in disease management occurs that result in grower economic impact.

Multiyear Evaluation of Peanut Disease Control Programs Incorporating Miravis® Fungicide into Disease Control Systems Including Elatus®

H. McLEAN*, K. BUXTON, V. MASCARENHAS, P. EURE, M. VANDIVER, and J. HADDEN, Syngenta Crop Protection, LLC, 410 Swing Road, Greensboro, NC 27409.

Elatus® (Solatenol + azoxystrobin) is well established as a broad spectrum fungicide in peanut disease management programs that provide control of foliar and soil borne diseases. Miravis (ADEPIDYN™ fungicide) is a new active ingredient in the carboxamide chemical class (FRAC group 7) under development by Syngenta Crop Protection, LLC. Some of the key strengths of Miravis include early and late leaf spot on peanut, but not all soil borne diseases. Field trials have shown the unparalleled residual control with Miravis. The high intrinsic activity and long-lasting duration of control of Miravis on these diseases may provide growers another effective tool for effectively managing leaf spot and other diseases in peanut. Over the last two years Syngenta has conducted numerous trials throughout the peanut belt to select and validate complete integrated disease management programs while maintaining a robust resistance management strategy. These programs have the potential to provide broad spectrum disease control with built-in resistance management strategies. Studies have demonstrated that Elatus®/ Miravis® fungicide programs provide the possibility of a reduction in the number of applications required per season in peanut while providing improved disease control and maintaining optimum yield potential.

Azoxystrobin, Solatenol and Adepidyn to Manage Leaf Spot and Stem Rot

R. C. KEMERAIT*, T. B. BRENNEMAN, and A. K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793.

Leaf spot (*Cercospora arachidicola* and *Cercosporidium personatum*) and stem rot (*Sclerotium rolfsii*) are important diseases that affect the peanut crop in the United States. Programs that integrate different fungicides for management of these diseases are deployed by growers. Since 2015, multiple field trials were conducted at the Attapulgus Research and Education Center to assess combinations of azoxystrobin and solatenol (Elatus, 7.13 and 9.5 fl oz/A) and adepidyn (Miravis, 3.4 fl oz/A) to control stem rot and leaf spot and to improve yields. Trials were planted to 'Georgia-06G' and managed according to guidelines from UGA Extension. The experimental design was a randomized complete block with four replications. Elatus, two or three applications, was compared to programs that included three applications of penthiopyrad (Fontelis, 16 fl oz/A) and four applications of prothioconazole + tebuconazole (Provost, 8 fl oz/A). Elatus programs (7 total applications) were also compared to combinations of adepidyn (Miravis, 3.4 fl oz/A) + Elatus in four, five and seven spray programs. Plots were assessed for leaf spot and stem rot severity and were taken to yield. Data was analyzed using ANOVA and Fisher's protected LSD.

Elatus was compared directly to popular Provost and Fontelis programs in in 2015 and 2016. In 2015, leaf spot ratings, stem rot ratings and yields were significantly better for treated plots than for untreated plots. Disease ratings and yields were better in plots treated with Elatus than in those treated with Fontelis; however differences were only significant for stem rot ratings for Provost versus Elatus. In 2016, all treated plots had significantly lower leaf spot and stem rot ratings and higher yields than the untreated plots. Leaf spot and stem rot ratings and yields were generally similar among fungicide treatments; however plots treated with Fontelis had significantly lower leaf spot ratings than the 3-Elatus programs. Elatus programs had numerically less stem rot than did the Provost or Fontelis programs. Three trials were conducted where seven-spray programs that included two or three applications of Elatus (9.5 and 7.3 fl oz/A, respectively) were compared to Elatus + Miravis (2 application) in 4 and 5-spray programs. In two of three trials, use of Miravis in either program significantly reduced leaf spot, despite reductions in number of applications. Yields were not significantly different between treatments; however in two of the trials, yields in plots treated with Miravis were numerically best in the trial. From these trials, programs that include Elatus, two or three applications per season, performed as well or better than Fontelis and Provost programs. Reduced in-put programs (four or five applications) that included Miravis and Elatus were as good as seven-spray programs that included only Elatus.

A Re-evaluation of Fungicide Efficacy for Leaf Spot Control in North Carolina

B. B. SHEW* Department of Entomology and Plant Pathology, NC State University, Raleigh NC 27695; and D. L. JORDAN, Department of Crop and Soil Sciences, NC State University, Raleigh NC 27695.

Disease management programs depend on the availability of fungicides that consistently provide high levels of disease control when applied according to the label. However, growers, county agents, consultants, and researchers recently have reported poor leaf spot control in some locations in NC. Loss of fungicide efficacy relative to established standards has already been documented in Georgia. However, changes in efficacy can be hard to document in typical field trials, where fungicides usually are tested as part of a complete management program that includes two or more products. Thus, typical testing methods may not detect ineffective fungicides if they mixed or alternated with more effective products within a spray program. Likewise, it can be difficult to isolate efficacy problem from environmental effects when fungicides are applied at different points in the growing season as part of a multi-product spray program. Evaluation of control problems from on-farm reports is difficult for the same reasons. These difficulties were addressed by comparing fungicides in a season-long application trial. An untreated control and nine fungicides commonly used for peanut disease control were applied three times at two-week intervals, starting on August 1, 2017 at Lewiston, NC. The experiment was conducted at the Peanut Belt Research Station in four replicate randomized complete blocks of the cultivar Bailey. Incidence of leaf spot (predominantly late leaf spot) and defoliation were evaluated on a percentage scale on September 19. Incidence of Sclerotinia blight was determined by counting infected plants just prior to digging on October 4, and stem rot incidence was counted on inverted plants immediately after digging. Plots were harvested and yield data collected. Data were subjected to analysis of variance and means compared. Late leaf spot pressure was extremely high, with an average of more than 90% defoliation observed in untreated controls. Moderate to high levels of late leaf spot also developed in fungicide-treated plots. Treatments with the group 11 fungicides Abound and Headline did not reduce leaf spot incidence compared to the untreated control. More than 20% defoliation was seen with Headline and Fontelis and more than 80% defoliation was found with Abound. Compared to more effective treatments, yield was reduced with Abound and to a lesser extent with Headline. Although Bravo provided excellent leaf spot control, yield was not correspondingly high. This probably can be attributed to the high incidence of Sclerotinia blight in this treatment. Results provide preliminary evidence for loss of efficacy of some fungicides against late leaf spot in NC, particularly those belonging to FRAC group 11.

Mixtures of Sulfur with Sterol Biosynthesis Inhibiting Fungicides for Management of Late Leaf Spot of Peanut

A. K. CULBREATH*, T. B. BRENNEMAN, R. C. KEMERAIT, and K. S. STEVENSON, Department of Plant Pathology, Univ. of Georgia, Tifton, GA 31793-5766.

In the southeastern United States, control of early leaf spot (*Passalora arachidicola*) and late leaf spot (*Nothopassalora personata*) of peanut (*Arachis hypogaea*) is heavily dependent on the use of fungicides. In recent years, control provided by several sterol biosynthesis inhibiting (SBI) fungicides has diminished. The objective of this study was to determine the effect of sulfur on efficacy of SBI fungicides on peanut leaf spot. A field experiment was conducted in Tifton, GA in 2017. The cultivar Georgia-06G was used for the plots. Each plot was bordered on one side by another randomly assigned plot, and on one side by nonsprayed rows of Georgia-13M. Treatments included a nontreated control, and cyproconazole (Alto 100 SL) at 40 g a.i./ha; prothioconazole at 84 g a.i./ha + tebuconazole at 168 g a.i./ha (Provost Opti); alone and in combination with 4.5 kg a.i./ha of sulfur (Microthiol Disperss). Except for the control, all plots were sprayed with chlorothalonil (Bravo WeatherStik) at 1.26 kg a.i./ha for sprays 1,2, and 7 of the 7 total applications, and with the different fungicides and combinations for sprays 3-6. Leaf spot epidemics were severe. Late leaf spot was the predominant foliar disease. Final leaf spot ratings (Florida 1-10 scale) were 9.2 for the control, and 8.8 for the Microthiol alone treatment. Leaf spot ratings were 8.3 and 8.7 for the Provost and Alto treatments alone, respectively, and 6.6 and 7.2 for those respective fungicides with Microthiol (LSD = 0.6). These results indicate that sulfur may improve leaf spot control provided by SBI fungicides used in this trial. Investigations are planned to determine whether effects will be consistent and whether sulfur may improve leaf spot control obtained with other SBI fungicides.

Peanut Yield Loss in the Presence of Late or Early Leaf Spot Defoliation

D. J. ANCO* and J. S. THOMAS, Clemson University, Blackville, SC, 29817; D. L JORDAN and B. B. SHEW, North Carolina State University, Raleigh, NC 27695; A. K. CULBREATH and W. S. MONFORT, University of Georgia, Tifton, GA 31793; H. L. MEHL, Virginia Tech, Suffolk, VA 23321; N. S. DUFAULT, B. L. TILLMAN, I. M. SMALL, and D. L. WRIGHT, University of Florida, Quincy, FL 32351; and A. K. HAGAN and H. L. CAMPBELL, Auburn University, Auburn, AL 36849.

Late and early leaf spot, respectively caused by *Cercosporidium personatum* and *Cercospora arachidicola*, are damaging diseases of peanut (*Arachis hypogaea*) capable of defoliating canopies and reducing yield. While these diseases each may be more predominant in a given area, both are important on a global scale. To better guide management decisions and quantify relationships of end-of-season defoliation and yield loss, meta-analyses were conducted over more than 100 data sets meeting established criteria. Slopes of proportion yield loss with increasing defoliation were estimated separately for runner- and Virginia-type varieties. Results for runner-types indicated yield loss to linearly increase 2.3 to 2.9% per 10% increase in defoliation for levels up to approximately 95% defoliation, after which the rate of loss increased more rapidly. Yield loss for Virginia-types was better described by an exponential function with a slope of relative loss increase of 2.2 to 2.7% per percent defoliation. While numerous factors remain important in mitigating overall losses, the integration of these findings should aid recommendations regarding digging under varying defoliation pressures and peanut maturities to assist in minimizing yield losses.

Economics & Marketing

Thursday, July 12, 2018		
1:30 - 3:15 p.m. **Auditorium**	**Economics & Marketing** Moderator: A. Luke-Morgan	Page Number
1:30	**U.S. Peanut Cost of Production** **S. M. FLETCHER*** and C. J. RUIZ. National Center for Peanut Competitiveness (NCPC), University of Georgia, Griffin, GA 30223-1797.	115
1:45	**Representative Peanut Farms 2016 Net Cash Flow** C. J. RUIZ and **S. M. FLETCHER***, National Center for Peanut Competitiveness (NCPC), University of Georgia, Griffin, GA 30223-1797.	116
2:00	**An Analysis of Crop Insurance as a Safety Net for U.S. Peanut Farms** **A. S. LUKE-MORGAN*** and T. T. MARSHALL, School of Agriculture and Natural Resources, Abraham Baldwin Agricultural College, Tifton, GA 31793-2601; S. M. FLETCHER, Department of Agricultural and Applied Economics, The University of Georgia, Griffin, GA 30223-1797; and R. L. SCARBOROUGH, USDA ARS, Tifton, GA 31794.	117
2:15	**Implications of the Elimination of Generic Base and Addition of Seed Cotton Program on South Carolina Peanut Farms** **N. SMITH***, Department of Agricultural Sciences, Clemson University Sandhill Research and Education Center, Columbia, SC 29229; and B. NELSON and S. MICKEY Clemson Cooperative Extension, Clemson University Sandhill Research and Education Center, Columbia, SC 29229.	118
2:30	**Predicting Land Use Competition for US Peanut Acreage Pre- and Post-Quota** **F. D. MILLS, JR.*** and S. S. NAIR, Department of Agricultural Sciences, Sam Houston State University, Huntsville, TX 77341.	119
2:45	**Examining the Economic Contribution of Peanut Production in the Southeast** S. KANE, **K. WOLFE***, Center for Agribusiness and Economic Development, The University of Georgia, Athens, GA 30602; S. FLETCHER, Center for National Peanut Competitiveness, The University of Georgia, Griffin, GA 30212; A. RABINOWITZ and R. PAXTON, Agricultural and Applied Economics, The University of Georgia, Tifton, GA 31793.	120
3:00	**Demand for Peanuts** Z. SHI, and **S. M. FLETCHER***, National Center for Peanut Competitiveness (NCPC), University of Georgia, Griffin, GA 30223-1797.	121

U.S. Peanut Cost of Production

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

Two national data bases are available to determine peanuts' cost of production. One is the United States Department of Agriculture Economic Research Service (USDA-ERS) data base and the other is from The University of Georgia National Center for Peanut Competitiveness (NCPC) data base. NCPC has 22 representative peanut farms stretching from Virginia to New Mexico that are proportioned based on state's share of national peanut production. NCPC is built by personal interviews with peanut farmers while the USDA-ERS peanut budget is built on a survey mailed to peanut farmers.

When comparing the two data bases, the NCPC representative farms variable cost (VC) of production per acre for 2016 was significantly higher than USDA-ERS by approximately 64% while the NCPC total cash flow cost of production per ton (TC) was $552.43 which is 12% higher than USDA-ERS total cost of production for 2016. Significant differences between the two data bases were also found in the 2012 NCPC representative farm update where VC and TC reported were higher than USDA-ERS estimates by 28% and 18% respectively. Historically, farmers may not accurately fill out surveys they receive from USDA-NASS due to time pressure and/or other factors while NCPC interviews with peanut farmers take significant time in order to ensure that all costs are taking into account. These significant differences can have major implications during the farm bill development process.

Representative Peanut Farms 2016 Net Cash Flow

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

The University of Georgia National Center for Peanut Competitiveness (NCPC) has maintained peanut representative farms since 2002 ranging from Virginia to New Mexico. On average this data base has been updated every four years where the most recent update was carried out in summer 2017. The representative peanut farms database is used to provide economic analysis of actual farmer derived data for all crops produced on the farm. Comprehensive data collected from producers include variable cost of production, prices received, expected and actual yields, and acreage associated to each crop planted as well as key data related to whole farm costs, federal program participation and other financial data such as financial terms, off farm incomes and other receipts.

The NCPC used this data to analyze the financial state of all peanut representative farms based on their row crops for 2016 relative to their previous 2013 update. Gross income (GI) received for each row crop planted based on prices received, yields achieved and acreage were calculated as well as cash flow expenses (CFE) based on each row crop budget. Net cash flow income (NCFI) is estimated as the difference between GI and CFE. Government program payments (GPP) are considered a positive cash flow and are calculated based on federal program bases and yields data provided for each representative farm. Row crop Net Farm Income (NFI) is calculated as the sum of NCFI and GPP.

On average, a representative peanut farm in the U.S. achieved a negative NCFI of $473K in 2016 compared to a positive NCFI of $240K achieved in 2012. This decrease in income is due mainly to a drop in commodity prices between 2012 and 2016 which translates into a 22% reduction in GI as well as to an increase in CFE of 10%. Government program payments received increased significantly in 2016 going from $80K in 2012 to $292K in 2016. However, these payments were not enough to offset the negative NCFI. Potential changes in the 2018 Farm Bill will be critical for the financial sustainability of peanut farmers in the US.

An Analysis of Crop Insurance as a Safety Net for U.S. Peanut Farms

A. S. LUKE-MORGAN* and T. T. MARSHALL, School of Agriculture and Natural Resources, Abraham Baldwin Agricultural College, Tifton, GA 31793-2601; S. M. FLETCHER, Department of Agricultural and Applied Economics, The University of Georgia, Griffin, GA 30223-1797; and R. L. SCARBOROUGH, USDA ARS, Tifton, GA 31794.

Risk is prevalent in agricultural production. To alleviate these risks, the federal government intervenes through agricultural policy with policymakers, typically, focusing on assistance to minimize price, market, or production risk. The foundation of agricultural programs is government intervention intended to provide a farm safety net to agricultural producers. These programs aid in managing the food supply while stabilizing agricultural infrastructure. The 2014 Farm Act represents a shift in the direction of agricultural policy toward risk management policies, which offer a variety of programs for producers. Through multiple coverage options, these programs aim to reduce producers' revenue volatility. Specifically, federal crop insurance has expanded over the past two decades and is considered the most extensive component of the safety net provided by the current farm bill given the availability of policies for a considerable portion of U.S. agriculture. With federal crop insurance policies, producers pay a portion of the premium with the remainder subsidized by the federal government.

The relative importance of federal crop insurance for a specific commodity or geographic region may be debatable. The effectiveness of crop insurance as a safety net for U.S. peanut producers was investigated using case study analysis of representative U.S. peanut farms. Specifically, the financial stability of these farms is considered to test for correlations between crop insurance utilization and potential crop insurance indemnity payments under yield and revenue protection plans at different coverage levels. The impact of management decisions, farm size, and geographic location is also considered.

Implications of the Elimination of Generic Base and Addition of Seed Cotton Program on South Carolina Peanut Farms

N. SMITH*, Department of Agricultural Sciences, Clemson University Sandhill Research and Education Center, Columbia, SC 29229; and B. NELSON and S. MICKEY Clemson Cooperative Extension, Clemson University Sandhill Research and Education Center, Columbia, SC 29229.

The 2018 Bipartisan Budget Act made agricultural policy history in February of 2018 by amending the commodity title of the 2014 Farm Bill. Farm program amendment promoted by the cotton sector adds seed cotton to the list of covered commodities making it eligible for the Price Loss Coverage (PLC)/Agricultural Risk Coverage (ARC) program for the 2018 crop season. Generic base acres, over 19 million in total, are eliminated beginning in 2018 and will be reallocated by landowners to either seed cotton or covered commodities that were planted on a farm with generic base during the 2009-2012 time period. The nearly one million acres of peanut plantings temporarily attributed to generic base annually will no longer be allowed. However, farms with generic base may add fixed peanut base if peanuts were planted on the farm during the 2009-2012 seasons. The net effect will be a reduction in total PLC payments tied to peanuts as a result of the elimination of generic base. South Carolina had 78,770 acres of peanut base and 347,713 acres of generic base in 2015-16. A representative South Carolina peanut farm model is developed to calculate the potential impact of the farm program changes on total payments and farm profitability of peanut farms in SC. A group of SC row crop farms are used to benchmark and verify the representative farm model. Seed cotton PLC payments are expected to be about half of the expected peanut PLC payments.

Predicting Land Use Competition for US Peanut Acreage Pre- and Post-Quota

F. D. MILLS, JR.* and S. S. NAIR, Department of Agricultural Sciences, Sam Houston State University, Huntsville, TX 77341.

Peanuts are produced across the southern US and compete with corn, cotton, soybeans, and grain sorghum for arable land. Acreage planted to these crops varies annually due to ecological and economic drivers, and government policies. Historic acreage data for peanuts, corn, cotton, soybeans, and grain sorghum by state were collected from 1994 to 2016 and analyzed to identify drivers of land use change under both a pre- and a post-quota model. Planted acreage for each crop served as the dependent variable. Likewise, lag acreage of each crop, the lag fiber:grain price ratio, the lag peanut price paid to farmers, the peanut:grain price ratio, the peanut:fiber price ratio, a dummy variable expressing lag aflatoxin, and dummy variables for years each US farm bill was in effect served as explanatory variables. Additionally, the post-quota model included a dummy variable for new variety (i.e., GA-06G). Equations were simultaneously estimated using iterative Seemingly Unrelated Regression (SUR). The estimated equations expressed goodness of fit based on high R^2 values for all crops, including both peanut models. As expected, peanut acreage in Georgia was highly significantly different compared to all other states ($p<0.001$), except in the post-quota model where Georgia did not differ significantly from Texas. Lag acreage significantly and positively influenced planted acreage of peanuts pre-quota (coef., 0.51; $p<0.001$), but less so post-quota (coef., 0.13; $p<0.10$) indicating some change in perceived resource fixity. The only other factor that was statistically significant in both models was the 2014 Farm Bill, where more acres were planted to peanuts at the expense of cotton ($p<0.05$), with the 2008 Farm Bill serving as baseline. In the post-quota model, the lag fiber:grain price ratio, the lag peanut price paid to farmers, and the lag aflatoxin variable positively and significantly impacted acres planted to peanuts ($p<0.05$). Fewer peanuts were planted at the expense of grain crops under the 2002 Farm Bill when compared to baseline ($p<0.05$). Finally, the release of GA-06G negatively and significantly impacted acres planted to peanuts ($p<0.01$).

Examining the Economic Contribution of Peanut Production in the Southeast

S. KANE and **K. WOLFE*,** Center for Agribusiness and Economic Development, The University of Georgia, Athens, GA 30602; S. FLETCHER, Center for National Peanut Competitiveness, The University of Georgia, Griffin, GA 30212; and A. RABINOWITZ and R. PAXTON, Agricultural and Applied Economics, The University of Georgia, Tifton, Ga 31793.

Georgia, Alabama, Florida and Mississippi grow the majority of the peanuts consumed in the world. Georgia specifically is consistently ranked number one among peanut-producing states within the United States, with a 2015 Farm Gate production value of nearly $685 million spread throughout the state. A thorough understanding of the role of this industry sector in the four state economies (Georgia, Alabama, Florida, and Mississippi) includes an examination of the relationship between it and the other sectors of the economy that provide the inputs and resources necessary to bring the final product to the farm gate. Another essential component is the spending of employees in all of the sectors, adding to the magnitude of the contribution.

The analysis utilized IMPLAN economic analysis software using the most recent data in conjunction with peanut production figures from the Farm Gate Value Report, USDA and information from the University of Georgia National Center for Peanut Competitiveness representative farms. The analysis revealed that the peanut industry contributed significantly to both the local and stat's economy in terms of economic contribution and employment. These economic consequences signify the interrelationships between the high-value peanut production sectors, sales in the input industries that provide the resources to bring the peanuts to the farm gate, the spending of the workers in each as a result of the income they receive as well as many other sectors across the individual states.

Demand for Peanuts

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

U.S. peanut consumption and exports have increased significantly since 2002 when the peanut program was changed from a supply management type program to a market oriented program. Based on USDA data and U.S. Census data, U.S. per capita peanut consumption has grown from 6.4 lbs per capita in 2012 to 7.4 lbs per capita in 2016 – a 16% increase.

Domestic and export demand has grown significantly. Based on USDA's National Agricultural Statistical Service (NASS) Peanut Stocks and Processing reports and comparing the first 6 months of the 2016-17 marketing year to a comparable time period for previous marketing years. Peanuts used in peanut butter have grown 64.4% since 2002 and 10.6% since 2013-14. Total shelled peanuts use has increased approximately 47% since 2002 and 11.3% since 2013-14. Based on USDA's Foreign Agricultural Service (FAS) database comparing the average exports of peanuts and peanut butter during the 2008 Farm Bill relative to the 2014 Farm Bill, peanut exports increased by approximately 72% while peanut butter exports have grown by 52%.

Utilizing *Arachis* Species

Thursday, July 12, 2018		
3:15 - 4:45 p.m. **Auditorium**	**Utilizing *Arachis* Species** Moderator: S. Tallury	Page Number
3:15	**Phenotypic Variation in Seed Quality of Wild *Arachis* Species** **B. D. TONNIS***, M. L. WANG, A. FANCHER, T. WARE, and S. P. TALLURY, USDA-ARS, Plant Genetic Resources Conservation Unit, Griffin, GA, 30223.	123
3:30	**Using *Arachis Vallsii Krapov.* & *W.C. Greg*. as a Bridge Species for Introgression in *Arachis*** **C. E. SIMPSON***, Texas A&M AgriLife Research, Stephenville, TX 76401; A. R. CUSTODIO, Embrapa Genetic Resources and Biotechnology, C.P. 02372, CEP 70770-917, Brasília, Brazil, DF; L. S. RODRIQUES, UNESP– Botucatu, SP, Brazil; A. P. PENALOZA, Embrapa Genetic Resources and Biotechnology, C.P. 02372, CEP 70770-917, Brasília, Brazil, DF; J. F. M. VALLS, Embrapa Genetic Resources and Biotechnology. Arachis Germplasm Curator. CNPq Research Productivity Fellowship, C.P. 02372, CEP 70770-917, Brasília, Brazil, DF; and J. M. CASON, Texas A&M AgriLife Research, Stephenville, TX 76401.	124
3:45	**Screening of Wild *Arachis* Germplasm for Resistance to Aflatoxin Contamination and Foliar Fungal Pathogens** **A. N. MASSA***, R. S. ARIAS, and V. S. SOBOLEV, USDA-ARS National Peanut Research Laboratory, Dawson, GA; H. T. STALKER, Department of Crop and Soil Sciences, NC State University, Raleigh, NC; S. P. TALLURY, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA; A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793-5766; and R. B. SORRENSEN and M. C. LAMB USDA-ARS National Peanut Research Laboratory, Dawson, GA.	125
4:00	**A Detective Tale: The Worldwide Influence of the Wild Species *Arachis cardenasii* on the Peanut Crop Revealed Through the Lens of Genome Analyses** **S. C. M. LEAL-BERTIOLI***, Department of Plant Pathology , The University of Georgia, Athens, GA 30621; H. T. STALKER, North Carolina State University, Raleigh, NC; I. J. GODOY and J. F. SANTOS, Campinas Agronomical Institute, Campinas, SP. 13020-902; C. C. HOLBROOK USDA, ARS, Tifton, GA 31793; P. OZIAS-AKINS and Y. CHU, Department of Horticulture, The University of Georgia, Tifton, GA 31793; J. CLEVENGER, Mars Wrigley Confectionery, Center for Applied Genetic Technologies, Athens, GA 30602; G. WRIGHT, Peanut Company of Australia, Australia; M. C. MORETZSOHN, Embrapa Cenargen, Brasília, DF, 70770-917, Brazil; and S. A. JACKSON and D.J. BERTIOLI, Department of Crop and Soils Science, The University of Georgia, Athens, GA 30621.	126
4:15	**Morphological Characterization and Genomic Analysis of *Arachis hypogaea* × *A. diogoi* Introgression Lines** **W. G. HANCOCK***, T. G. ISLEIB, and H. T. STALKER, Department of Crop and Soil Sciences, N.C. State Univ., Raleigh, NC 27695-7629; Y. CHU and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; and S. P. TALLURY, Plant Germplasm Resources Conservation Unit, USDA-ARS, Griffin, GA 30223-1797.	127
4:30	**New Sources of Multiple Disease Resistances from *Arachis diogoi* Introgression Lines** **H. T. STALKER***, W. G. HANCOCK, T. G. ISLEIB, and J. E. HOLLOWELL, Department of Crop and Soil Sciences, N.C. State Univ., Raleigh, NC 27695-7629; Y. CHU and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; and A. N. MASSA, R. B. SORRENSEN and M. C. LAMB USDA/ARS National Peanut Research Laboratory, Dawson, GA 39842.	128

Phenotypic Variation in Seed Quality of Wild *Arachis* Species

B. D. TONNIS*, M. L. WANG, A. FANCHER, T. WARE, and S. P. TALLURY, USDA-ARS, Plant Genetic Resources Conservation Unit, Griffin, GA, 30223.

Plant genetic resources offer great potential for crop improvement through breeding. Genetic variation exists which can be used for increasing yield, improving seed quality, and boosting resistance to biotic and abiotic stresses. Additional genetic potential is available in closely-related wild relatives of cultivated crops. In particular, the USDA National Plant Germplasm System (NPGS) maintains a large collection of peanut germplasm including accessions from over 70 different *Arachis* species at the Plant Genetic Resources Conservation Unit (PGRCU) in Griffin, GA. While several of these wild relatives are valued for their potential disease resistance, they and others should also be considered for their variability in seed quality/nutritional traits. To assess some of this variation, we measured seed weight, oil content, fatty acid composition, and protein content in 194 accessions covering 42 *Arachis* species as well as 25 additional, unclassified *Arachis* accessions. Oil content ranged from 30-60% with a mean of 50%, while protein content ranged from 19-37% with a mean of 27%. Oil content was negatively correlated with protein content (R^2 = 0.54). Seed weight ranged from 4-32 g/100 seeds with an average of 14 g. Finally, high levels of variation were observed in the oil composition of these species, most notably in the long-chain fatty acids. Behenic acid (C22:0) ranged from 1.5-18%, while lignoceric acid (C24:0) ranged from 1-8%. The highest values for these fatty acids were much greater than what was observed in cultivated peanut accessions, and they were also species specific. In summary, these data indicate that wild *Arachis* species may be additional useful genetic resources for cultivated peanut seed quality improvement.

Using *Arachis Vallsii* Krapov. & W.C. Greg. as a Bridge Species for Introgression in *Arachis*

C. E. SIMPSON*, Texas A&M AgriLife Research, Stephenville, TX 76401; A. R. CUSTODIO, Embrapa Genetic Resources and Biotechnology, C.P. 02372, CEP 70770-917, Brasília, Brazil, DF; L. S. RODRIQUES, UNESP– Botucatu, SP, Brazil; A. P. PENALOZA, Embrapa Genetic Resources and Biotechnology, C.P. 02372, CEP 70770-917, Brasília, Brazil, DF; J. F. M. VALLS, Embrapa Genetic Resources and Biotechnology, *Arachis* Germplasm Curator, CNPq Research Productivity Fellowship, C.P. 02372, CEP 70770-917, Brasília, Brazil, DF; and J. M. CASON, Texas A&M AgriLife Research, Stephenville, TX 76401.

Introgression in *Arachis* has been used successfully for several different genetic traits. Simpson and Starr released the first introgressed cultivar in 1999 when they brought the 'COAN' peanut to market. This was not the first peanut cultivar released from an interspecific cross because Hammons released 'Spancross' in 1970 and Simpson and Smith released 'Tamnut 74' in 1974. Both of these cultivars were derived from crosses with *A. monticola* that was highly introgressed with *A. hypogaea* genes. However, COAN was the first to be released with identifiable genetic traits being transferred, in this case, resistance to the rootknot nematode, *Meloidogyne arenaria* and *M. javanica*. The key to successful introgression is having a pathway to take the trait from a wild *Arachis* species to the cultivated peanut *A. hypogaea*. This process has been expedited by the use of molecular markers to do MAS (marker assisted selection). However, in many cases, whether using intra- or inter-sectional introgression, a bridge species is essential. In the case of COAN, many unsuccessful attempts to gain fertile hybrids resulted from crossing only A genome materials with cultivated peanut. When the B genome *A. batizocoi* (now K genome) was introduced into the mix, fertile hybrids were obtained, and the introgression of nematode resistance progressed to a conclusion. Many different possible bridge species have been researched over the past 30 years, and now we are using one that appears to have great potential for expanding the viable window of introgression. *Arachis vallsii* Krapov & W.C. Greg. has been working well for crossing with many diverse groups. We have crossed *A.* vallsii with members of 5 sections, three intersectional hybrids, and 5 different genomes and/or genome combinations of the *Arachis* and *Procumbentes* sections. This species was originally placed in the section *Procumbentes* by Krapovickas and Gregory in the Monograph, but several studies and numerous efforts by the authors of this paper, and others, have indicated that the species does not fit well in *Procumbentes* when all aspects of classification are considered, and especially cross-compatibility. Because of the wide range of successful hybrids we have made, *A. vallsii* appears to be an ideal parent to use as a bridge species. *Arachis vallsii* probably fits better in the *Arachis* section, or better yet in a section of its own; Section X.

Screening of Wild *Arachis* Germplasm for Resistance to Aflatoxin Contamination and Foliar Fungal Pathogens

A. N. MASSA*, R. S. ARIAS, and V. S. SOBOLEV USDA-ARS National Peanut Research Laboratory, Dawson, GA; H. T. STALKER, Department of Crop and Soil Sciences, NC State University, Raleigh, NC; S. P. TALLURY, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA; A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793-5766; and R. B. SORRENSEN and M. C. LAMB, USDA-ARS National Peanut Research Laboratory, Dawson, GA.

Wild *Arachis* species provide the genetic diversity needed for peanut breeding and production under stressful environments including those with disease and pest pressure. Among the eighty wild species described in the genus, only taxa within section *Arachis* cross readily with cultivated peanut (*Arachis hypogaea* L.). In the present study, a total of 150 accessions of 21 species of section *Arachis* from the USDA *Arachis* germplasm collection (PGRCU, Griffin, GA) were evaluated in the field for resistance to early leaf spot (ELS) and late leaf spot (LLS). On average, 16% of accessions showed symptoms of ELS, LLS, or both. Patterns of genetic variation within and among species were resolved with more than four thousand high-confidence single nucleotide polymorphism markers distributed across the ten peanut chromosomes. In addition, a set of 20 accessions from a wider range of *Arachis* species was evaluated for resistance to aflatoxin accumulation. We adapted our testing method to wild peanut species and quantified the main four aflatoxins B_1, B_2, G_1, and G_2 for each seed using ultra-performance liquid chromatography. Levels of aflatoxins B_1 and B_2 varied from 0 to 14,000 $ng \cdot g^{-1}$ and from 0 to 155 $ng \cdot g^{-1}$ of aflatoxin B_1 and B_2, respectively. Further studies are in progress to develop and validate resistant germplasm.

A Detective Tale: The Worldwide Influence of the Wild Species *Arachis cardenasii* on the Peanut Crop Revealed through the Lens of Genome Analyses

S. C. M. LEAL-BERTIOLI*, Department of Plant Pathology , The University of Georgia, Athens, GA 30621; H. T. STALKER, North Carolina State University, Raleigh, NC; I. J. GODOY and J. F. SANTOS, Campinas Agronomical Institute, Campinas, SP. 13020-902; C. C. HOLBROOK USDA, ARS, Tifton, GA 31793; P. OZIAS-AKINS and Y. CHU, Department of Horticulture, The University of Georgia, Tifton, GA 31793; J. CLEVENGER, Mars Wrigley Confectionery, Center for Applied Genetic Technologies, Athens, GA 30602; G. WRIGHT, Peanut Company of Australia, Australia; M. C. MORETZSOHN, Embrapa Cenargen, Brasília, DF, 70770-917, Brazil; and S. A. JACKSON and D.J. BERTIOLI, Department of Crop and Soils Science, The University of Georgia, Athens, GA 30621.

Wild crop relatives have been used to introduce genetic diversity into elite cultivars worldwide. For peanuts, one of the pioneering works was done in the 60's and 70's at NCSU, where lines were created from a cross of peanut with *Arachis cardenasii*. The resulting sterile tetraploid hybrids were colchicine-treated, and, after multiple generations of selection and chromosome reduction, stable tetraploid improved lines were obtained. At the time, free germplasm exchange was possible, and exchange was done on the basis of individual agreements. These lines were then shared with colleagues at ICRISAT, India in the early 80's. As in all germplasm banks, names were changed but the pedigrees were not recorded. These lines had various resistances to foliar diseases and therefore, a large impact in breeding worldwide: they were distributed to breeders in several countries, like Australia, Mali and Brazil, and extensively used to create cultivars. By broadening the genetic basis of peanut, the lines also enabled the first works on marker-trait association and marker assisted selection on (then thought as) "pure" peanut. The catch is: for decades the various researchers and breeders didn't even know they were dealing with lines derived from a wild species. Here, we genotyped DNAs from different breeding lines and cultivars, looked at pedigrees, exchanged data, and a myriad of scientific articles and reports. With all this information, we pieced together the history of the amazing impact that these lines, anonymously, had on peanut breeding and genetics worldwide. This presentation will show a clear application of the genome sequence, addressing current issues such as germplasm exchange and breeders' rights.

Morphological Characterization and Genomic Analysis of *Arachis hypogaea* × *A. diogoi* Introgression Lines

W. G. HANCOCK*, T. G. ISLEIB, and H. T. STALKER, Department of Crop and Soil Sciences, N.C. State Univ., Raleigh, NC 27695-7629; Y. CHU and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; and S. P. TALLURY, Plant Germplasm Resources Conservation Unit, USDA-ARS, Griffin, GA 30223-1797.

Eighty-seven introgression lines developed from a cross between cultivated peanut (*Arachis. hypogaea* L) and the diploid wild species *A. diogoi* Hoehne were analyzed for a series of morphological characters and for the introgression of *A. diogoi* chromatin to the cultivated genome. The interspecific hybrid-derived population was developed using the triploid-hexaploid introgression method. Numerous pod, seed, and plant architectural traits were measured. Introgression lines were genotyped using a Single Nucleotide Polymorphism (SNP) marker array. The majority of introgression lines were morphologically intermediate to the two parents with some transgressive segregation for individual traits. Several introgression lines had acceptable seed size for a virginia market-type cultivar, but the majority of lines possessed seed size acceptable for the runner market-type. Of the 7,017 total SNP markers polymorphic between cultivar Gregory and *A. diogoi*, 6,626 markers identified *A. diogoi* chromatin introgression in one or more lines. *Arachis diogoi* introgressions were observed as both large blocks and as single markers. The average amount of *A. diogoi* introgression was 8.12% across the genome of the 87 lines and ranged from 3.00% to 18.14% on individual chromosomes. The average percent *A. diogoi* introgression for single introgression lines was 7.70% and ranged from 0.17% to 51.12%. More introgression was present in the A genome (8.82%) than the B genome (7.42%). No entire *A. diogoi* chromosome or chromosome arm was found in any of the introgression lines suggesting that introgression is due to crossing-over and reciprocal recombination involving both genomes rather than chromosome substitution. Principal component analysis of morphological data and SNP marker data revealed similarities and groupings of introgression lines. A preliminary marker-trait association analysis revealed a large number of significant marker-trait associations for the measured morphological traits. This research demonstrates the potential value of utilizing wild diploid *Arachis* species for peanut improvement.

New Sources of Multiple Disease Resistances from *Arachis diogoi* Introgression Lines

W. G. HANCOCK, **H. T. STALKER***, T. G. ISLEIB, and J. E. HOLLOWELL, Department of Crop and Soil Sciences, N.C. State Univ., Raleigh, NC 27695-7629; S. P. TALLURY, Plant Germplasm Resources Conservation Unit, USDA-ARS, Griffin, GA 30223; Y. CHU and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; and A. N. MASSA, R. B. SORRENSEN and M. C. LAMB, USDA/ARS National Peanut Research Laboratory, Dawson, GA 39842.

Introgression lines (2*n* = 40) derived from 'Gregory' x *Arachis diogoi* (GKP 10602) that are fully compatible in crosses with *A. hypogaea* were studied. Five diseases were evaluated in the greenhouse [Sclerotinia blight (SB) and Cylindrocladium black rot (CBR)], field [early leaf spot (ELS) and late leaf spot (LLS)] or both the field and greenhouse [Tomato Spotted Wilt Virus (TSWV)]. Moderately high levels of resistance were identified for both SB and CBR. Many Single Nucleotide Polymorphism (SNP) marker associations were identified with both diseases, with the greatest effects for SB resistance on chromosome A5 and for CBR resistance on A6 and B1. Early leaf spot was most prevalent in North Carolina (75%) and LLS predominated in Georgia (90%). Defoliation was recorded multiple times using a scale of 1 = no disease to 9 = dead, and lesion number was recorded once each in North Carolina and in Georgia. Ten lines expressed high levels of resistance to ELS (in mid-October, ratings = 4 - 4.5, resistant checks = 6, cultivars = 8 - 9). SNP markers were associated with ELS defoliation on chromosomes A2, A3, A5, A6, B1, B4, B5, B8 and B9. One line had a rating of 3.3 for LLS in Georgia (checks = 6 - 9). SNP marker associations with LLS defoliation were found on chromosomes A2, A3, A4, A6, B1, B2, and B9 and for the number of lesions on B10. Up to 63% of field plots had TSWV in North Carolina. Four lines did not express symptoms in North Carolina, three lines in Georgia, and one line (IL 51) was disease free at both locations. SNP associations with TSWV were observed on nine chromosomes, with the strongest associations on A9 and B9. Additional studies are in progress to better associate SNPs with all five diseases.

Weed Science

Thursday, July 12, 2018		
3:30 - 4:30 p.m. **Amphitheatre**	**Weed Science** Moderator: D. Jordan	Page Number
3:15	**Tine Weeding Integrated with Herbicides in Conventional Peanut Production** **W. C. JOHNSON, III***, USDA-ARS, Tifton, GA 31793-0748.	130
3:30	**Peanut Response to Co-Application of Pyroxasulfone with Paraquat, Bentazon, and Acephate** **D. L. JORDAN***, A. T. HARE, and C. W. CAHOON, North Carolina State University, Raleigh, NC 27695.	131
3:45	**Cover Crop Response to Residual Herbicides in Peanut-Cotton Rotation** **K. PRICE*** and S. LI, Crop, Soils and Environmental Sciences, Auburn University, Auburn, AL 36849.	132
4:00	**Field Evaluation of Flumioxazin Formulations for Weed Control in Peanut** **E. P. PROSTKO*** and O. W. CARTER, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31794; and J. T. MILLER, Jeff Davis County Cooperative Extension, Hazlehurst, GA 31539.	133

Tine Weeding Integrated with Herbicides in Conventional Peanut Production

W. C. JOHNSON, III*, USDA-ARS, Tifton, GA 31793-0748.

Previous research indicated that repeated cultivation with a tine weeder was an effective weed management component in organic peanut production. Studies were conducted for four years in Tifton, GA starting in 2014 to determine if tine weeding could be integrated with herbicides in conventional peanut production. Experiments evaluated a factorial arrangement of two levels of cultivation with a tine weeder and eight herbicide combinations. Cultivation regimes were cultivation with a tine weeder six times at weekly intervals and a non-cultivated control. Herbicides were labelled rates of ethalfluralin PRE, *s*-metolachlor PRE, imazapic POST, ethalfluralin/*s*-metolachlor, ethalfluralin/imazapic, *s*-metolachlor/imazapic, ethalfluralin/*s*-metolachlor/imazapic, and a nontreated control. The herbicides chosen were based on knowledge of the weed species composition at the research sites. Smallflower morningglory was present each year of the study. Treatments that included imazapic effectively controlled smallflower morningglory and did not require cultivation to supplement control from the herbicide. However, cultivation using the tine weeder supplemented ethalfluralin and/or *s*-metolachlor and the integrated combination effectively controlled smallflower morningglory. In the absence of cultivation, ethalfluralin and/or *s*-metolachlor did not effectively control smallflower morningglory. Annual grasses were effectively controlled by treatments that included ethalfluralin and/or *s*-metolachlor and did not need cultivation to supplement control provided by the herbicides. However, imazapic alone did not effectively control annual grasses and needed supplemental control from tine weeding. Interestingly, peanut yields did not respond to improved weed control from the integration of tine weeding with herbicides in two years of four. Peanut were cultivated with the tine weeder in May and June, with 2014 and 2017 having more total rainfall and days of rainfall events during that time period compared to the other years. Rainfall and wet soils reduced performance of the implement, lessening the benefits of cultivation. While weed control was improved by cultivation in 2014 and 2017, the benefit was not enough to affect peanut yield. In years without excessive rainfall during the cultivation period, peanut yields were increased by cultivation used to supplement herbicides. These results indicate that cultivation with the tine weeder can supplement herbicides and perhaps reduce herbicide use.

Peanut Response to Co-Application of Pyroxasulfone with Paraquat, Bentazon, and Acephate

D. L. JORDAN*, A. T. HARE, and C. W. CAHOON, North Carolina State University, Raleigh, NC 27695.

Pyroxasulfone is registered for postemergence application in peanut and the most likely timing of application of this herbicide is within the first month after peanut emergence. Lack of appreciable foliar activity on weeds will require that this herbicide be co-applied with contact herbicides. Field studies were conducted from 2014-2017 to determine peanut response to pyroxasulfone applied with paraquat plus bentazon either alone or with acephate 3 weeks after planting. Foliar pesticide combinations were applied either following phorate applied in the seed furrow or when no systemic insecticide was applied at planting. Visible estimates of percent peanut injury associated with plant stunting were recorded 2 to 3 weeks after application. Pod yield was also recorded. Visual injury and pod yield were similar when comparing among treatments regardless of whether or not paraquat plus bentazon was applied alone or with pyraxasulfone plus acephate or pyraxosulfone alone when phorate was applied in the seed furrow at planting. Greater stunting of plants due to a combination of paraquat and thrips injury was noted when phorate was not applied in the seed furrow at planting. Including acephate in the mixture resulted in less stunting regardless of herbicide combination and in some instances increased peanut yield over treatments not including phorate at planting or acephate applied to emerged peanut.

Cover Crop Response to Residual Herbicides in Peanut-Cotton Rotation

K. PRICE* and S. LI, Crop, Soils and Environmental Sciences, Auburn University, Auburn, AL 36849.

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, and reducing soil erosion. However, in fields where residual herbicides were used during the growing season, establishment of cover crops can be negatively affected by the herbicide residues. 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. A multi-year (2016-2018), multi-location study was conducted in Macon and Henry County in Alabama. At 50 and 150 days after planting (DAP), plant heights and stand counts were evaluated as well as wet biomass at 150 DAP. Herbicide treatments were applied at 10% of labelled rate at planting. Treatments included *S*-metolachlor, acetochlor, pyroxasulfone, diclosulam, imazapic, chlorimuron ethyl, bentazon plus acifluorfen, pyrithiobac sodium, trifloxysulfuron sodium, diuron, prometryn, flumioxazin, and a non-treated check (NTC). In 2016, significant stand reductions ($p \leq 0.05$) of 30-52% in rye and 28- 75% were observed in wheat 50 DAP for *S*-metolachlor, acetochlor, pyroxasulfone, diclosulam, imazapic, chlorimuron ethyl, and bentazon plus acifluorfen treatments over both locations. Vetch had significant stand reductions for all twelve treatments at 50 DAP ranging from 12.53% to 80.21% over both locations. *S*-metolachlor, pyroxasulfone and acetochlor had the largest impacts on stand counts for rye, wheat and vetch. Daikon radish only had significant height reductions of 9, 15, 31% at 50 DAP for diuron, chlorimuron ethyl, and imazapic, respectively, in Macon County. At 145-149 DAP, all affected cover crops had recovered from herbicide damage and did not show any significant treatment differences in any of the growth parameters evaluated in 2016. In 2017, wheat had a significant stand reduction of 24% for flumioxazin at 42-45 DAP over both locations. No other cover crop evaluated in 2017 had a significant stand or height reduction for any treatments at 42-45 DAP. Oats showed the most tolerance with no treatments significantly reducing stands or plant heights in 2016 and 2017. Overall, the type of cover crop planted should be based on the residual herbicides applied to row crops the previous season as well as the biomass and nutrient needs of the field. Although initial injury and stunting may occur, biomass of those cover crops may not be affected by herbicide residues.

Field Evaluation of Flumioxazin Formulations for Weed Control in Peanut

E. P. PROSTKO* and O. W. CARTER, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31794; and J. T. MILLER, Jeff Davis County Cooperative Extension, Hazlehurst, GA 31539.

According to a recent agrichemical use survey, herbicides were applied to 94% of the peanut acres grown in the U.S. The most popular peanut herbicide applied was flumioxazin with 62% of the acreage treated. Flumioxazin, sold under the trade name of Valor® (Valent), was first registered for use in peanut in 2001. Since that time, other flumioxazin formulations have been commercialized including Panther® (Nufarm), RedEagle Flumioxazin (RedEagle), and Rowel® (Monsanto). All of these products are formulated as 51% water dispersible granules (WDG). Newer flumioxazin formulations, Valor® EZ (Valent) and Panther® SC (Nufarm), are liquids (4 lb ai/gallon). In 2017, research was conducted in Georgia to compare the performance of various flumioxazin formulations for use in peanut weed management systems. A small-plot, replicated field trial was conducted at the University of Georgia Ponder Research Farm near Ty Ty, Georgia. The trial was arranged in a randomized complete block design with a 4 by 3 factorial design (4 flumioxazin formulations and 2 application rates). Panther® 4SC, RedEagle Flumioxazin 51WDG, Valor® EZ 4SC, and Valor® SX 51WDG were applied preemergence immediately after planting at 3.0 or 6.0 oz/A in combination with Prowl® H_2O (pendimethalin). Cadre® (imazapic) + Dual Magnum® (*s*-metolachlor) + 2,4-DB were also applied at 32 days after planting. Treatments were replicated four times. All herbicides were applied using a CO_2-powered backpack sprayer calibrated to deliver 15 GPA at 38 PSI using AIXR 11002 nozzles. There were no interactions between flumioxazin formulations and rates. When averaged over rates, the RedEagle formulation caused less peanut injury when compared to the other formulations. When averaged over formulation, the 6.0 oz/A rate caused more peanut injury than the 3.0 oz/A rate. No differences in Palmer amaranth (*Amaranthus palmeri*) control and peanut yield were observed between formulations or rates.

Posters

Wednesday, July 11, 2018		
4:00 - 5:00 p.m.	**Poster Session** Authors Present	Page Number
Poster Number 1	**Evaluating New Tactics for Southern Corn Rootworm, *Diabrotica undecimpunctata*, Management in Peanut** **M. R. ABNEY***, D. B. SUTHERLAND, and K. R. HILL, Department of Entomology, The University of Georgia, Tifton, GA 31793-0748.	138
Poster Number 2	**High-density Genetic Map Using Whole-genome Re-sequencing for Fine Mapping and Candidate Gene Discovery for Disease Resistance in Peanut** **G. AGARWAL***, H. WANG, J. C. FOUNTAIN, D. CHOUDHARY, and A. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA; J. CLEVENGER, D. J. BERTIOLI, and S. A. JACKSON, University of Georgia, Center for Applied Genetic Technologies, Athens, GA; M. K. PANDEY, Y. SHASIDHAR, and R. K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Center of Excellence in Genomics & Systems Biology, Patancheru, India; Y. CHU and P. OZIAS-AKINS, Horticulture Department, University of Georgia, Tifton, GA 31793; X. LIU and G. HUANG, BGI-Shenzhen, Shenzhen, China; X. WANG, Shandong Academy of Agricultural Sciences, Biotechnology Research Center, Jinan, China; C. C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA; and B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA.	139
Poster Number 3	**Resistance to *Sclerotium rolfsii* and *Phoma arachidicola* in the U.S. Mini-core Collection** **R. S. BENNETT*** and K. D. Chamberlin, USDA-ARS, Stillwater, OK 74075-2714.	140
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Evaluating New Tactics for Southern Corn Rootworm, *Diabrotica undecimpunctata*, Management in Peanut

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Field studies were conducted in 2017 to evaluate the efficacy of select insecticide active ingredients and application methods against southern corn rootworm in peanut. The experiments were conducted at the Southwest Georgia Research and Education Center in Plains, GA and at a commercial peanut field in Early Co., GA. Simulated chemigation treatments were applied at both locations. Pod damage evaluations were conducted at approximately 25 or 36 days after treatment and again at harvest. Admire Pro applied in simulated chemigation treatment resulted in significantly less rootworm injury than all other treatments on both evaluation dates at Plains. There were no observable treatment effects on pod injury at either sample date at the on-farm location in Early County. No yield data were collected from the on-farm trial. Yield data were collected at Plains, but no significant treatment effects were observed. These data suggest that peanut can compensate for early season pod injury caused by southern corn rootworm and indicate that Admire Pro applied as a chemigation treatment may significantly reduce pod injury.

High-density Genetic Map Using Whole-genome Re-sequencing for Fine Mapping and Candidate Gene Discovery for Disease Resistance in Peanut.

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Whole genome re-sequencing (WGRS) of mapping populations has facilitated the development of high-density genetic linkage maps essential for fine mapping and candidate gene discovery for traits of interest in crop species. Leaf spots, including early leaf spot (ELS) and late leaf spot (LLS), and Tomato spotted wilt virus (TSWV) are devastating diseases in peanut causing significant yield loss. We generated WGRS data on a recombinant inbred line population, developed a SNP-based high-density genetic map, and conducted fine mapping, candidate gene discovery and marker validation for ELS, LLS, and TSWV. The first sequence-based high-density map was constructed with 8,869 SNPs assigned to 20 linkage groups, representing 20 chromosomes for the “T” population (Tifrunner × GT-C20) with a map length of 3,120 cM and an average distance of 1.45 cM. The quantitative trait locus (QTL) analysis using high-density genetic map and multiple season phenotyping data identified 35 main-effect QTLs with phenotypic variation explained (PVE) from 6.32 to 47.63%. Among major effect QTLs mapped, there were two QTLs for ELS on B05 with 47.42% PVE and B03 with 47.38% PVE, two QTLs for LLS on A05 with 47.63% and B03 with 34.03% PVE, and one QTL for TSWV on B09 with 40.71% PVE. The epistasis and environment interaction analyses identified significant environmental effects on these traits. The identified QTL regions had disease resistance genes including R-genes and transcription factors. KASP markers were developed for major QTLs and validated in the population, and are ready for further deployment in genomics-assisted breeding in peanut.

Resistance to *Sclerotium rolfsii* and *Phoma arachidicola* in the U.S. Mini-core Collection

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Sclerotium rolfsii is one of the most destructive pathogens of peanut, causing the disease collectively known as southern blight, stem rot, and white mold. To identify resistant germplasm, 71 of the 112 accessions comprising the U.S. peanut mini-core collection were evaluated in the field for resistance to *S. rolfsii* in 2016 and 2017. Susceptible cultivar Georgia-06G, and resistant cultivars Georgia-03L and Georgia-07W, 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. Relatively levels of southern blight were observed in both years with 6% and 16% disease incidence in Georgia-06G in 2016 and 2017, respectively. Mean disease incidence over both years in Georgia-03L and Georgia-07W were 3% and 2%, respectively. Mini-core entries ranged from 19% to 0% disease incidence in 2017, the year with higher levels of southern blight. High levels of web blotch, caused by *Phoma arachidicola*, were observed in 2017, with thirteen mini-core accessions exhibiting between 37% and 60% percent web blotch. Thirty-nine accessions and the three commercial cultivars had less than 10% web blotch. These results may help plant breeders seeking sources of resistance to *Sclerotium rolfsii* and *Phoma arachidicola*.

Disease and Yield Response of Two Peanut Cultivars to Recommended Fungicide Programs at Two Alabama Locations

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Recommended fungicide programs were evaluated and three market-type peanut cultivars were evaluated for their reaction to early leaf spot caused by *Cercospora personatum* and late leaf spot caused by *Cercosporidium arachidicola* along with stem rot caused by *Sclerotium rolfsii* in southeast Alabama at the Wiregrass Research and Extension Center (WREC) and in southwest Alabama at the Gulf Coast Research and Extension Center (GCREC). Leaf spot intensity was evaluated using the Florida leaf spot scoring system. Stem rot incidence was assessed immediately after plot inversion by counting the number of disease loci per row. Yields were reported at <10% moisture.

At WREC, leaf spot ratings were lower for Georgia-06G than Georgia-09B. On Georgia-06G, no differences in leaf spot control were noted between any recommended fungicide programs, however, Alto + Echo 720/Echo/Elatus gave significantly better control on Georgia-09B than Priaxor/Muscle ADV/Priaxor/Echo 720, Echo 720/Echo 720 + Convoy, and the season-long Echo 720 standard. The season-long Echo 720 standard had significantly higher stem rot hits than the remaining recommended fungicide programs. Similar yields were recorded for Georgia-06G and Georgia-09B with the non-fungicide treated control having the lowest yield. Significant yield gains were obtained with Echo 720/Fontelis and Echo 720/Abound + Alto compared with the season-long Echo 720 standard.

At GCREC, greater late leaf spot incited defoliation and stem rot loci counts were noted for TUFRunner 511 than Georgia-06G. No differences in late leaf spot defoliation and stem rot incidence were observed between any fungicide programs. Yields were higher for Georgia-06G than TUFRunner 511 for the season-long Echo 720 standard along with Echo 720/Muscle ADV, Echo 720/Abound + Alto, and Alto + Echo 720/Echo 720/Elatus programs, while similar yields were recorded for the remaining fungicide programs on both cultivars.

Evaluation of a Drought Tolerant, High Oleic, Disease Resistant Runner Population

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A population was developed from a cross between a drought tolerant minicore accession and a disease resistant, high oleic breeding line. The population was evaluated as F_2 single plants under drought stress in the field in 2013, and with molecular markers for drought tolerance, nematode resistance, and the high oleic trait. The population was then grown in replicated drought tests as $F_{2:4}$, $F_{2:5}$, and $F_{2:6}$ breeding lines in 2015, 2016, and 2017, respectively. Many breeding lines consistently out-yielded check varieties across years. Additionally, selected $F_{2:6}$ breeding lines were grown in a separate drought test, an irrigated test, and a Sclerotinia blight test in 2017. Some breeding lines out-yielded check varieties under irrigation; however, no statistically significant difference was observed among selected genotypes for yield under drought. Some breeding lines showed moderate resistance to Sclerotinia. Single plant selections have been made from these lines utilizing marker-assisted selection for future evaluation. Selections from these lines have potential for profitable peanut production under reduced irrigation.

Examination of the High-Oleic Trait Effective Germination of Peanut Seed.

K. D. CHAMBERLIN*, USDA-ARS, Stillwater, OK 74075; N. PUPPALA, Department of Plant and Environmental Sciences, New Mexico State University, Clovis, NM 88101; C. C. HOLBROOK, USDA ARS, Tifton, GA 31793; T. ISLEIB and J. DUNNE, Department of Crop Science, North Carolina State University, Raleigh, NC 27607; T. GREY, Department of Weed Science, University of Georgia, Tifton, GA 31793.

Seed oxidative stability is an important factor considered by those in the peanut manufacturing industry. Product stability has been shown to increase up to 10-fold when high-oleic peanuts are used. The percentage of U.S. crop that is high-oleic has increased in the past decade, but many producers are resistant to grow high-oleic cultivars due to the uncertainty of the high-oleic effect on agronomic traits, such as seed germination, yield and grade. Experiments were designed and conducted in 2017 to examine the effect of the high oleic trait on peanut seed germination in field plots and in the laboratory on a thermal gradient table. Genotypes used in these experiments included cultivars from each peanut market-type along with their near-isogenic, high oleic counterparts. Seed germination was tested in the field in 4 geographically different regions, as well as in the laboratory on a thermal gradient table, eliminating environmental effects and allowing testing for the effect of temperature on germination of all seed-types. In 2017, the near-isogenic line pairs were planted in field plots (CRB, 3 replications) in the following locations: OAES Caddo Research Station, Ft. Cobb, OK; NCDA Peanut Belt Research Station, Lewiston-Woodville, NC; Lingo, New Mexico; and Tifton, GA. Stand counts were taken on a weekly basis for the first 3 weeks after planting and averaged over replications. Thermal gradient table experiments on seed germination were conducted on the original seed sources in 2016 and in 2017 on seed harvest from each field location. Results from the 2017 field trials indicated a definite lag in germination in all market-types for high oleic genotypes when compared to their normal oleic counterparts in all locations tested with the exception of New Mexico, where the high-oleic genotypes germinated at a similar rate or earlier than the normal-oleic lines. Thermal gradient table experimental results demonstrated a lag in germination in high oleic genotypes compared to normal oleic counterparts in all market-types, but the effect was lowest in the runner-type pair. Results from these experiments will increase the understanding of the agronomic properties of high-oleic peanut cultivars and could be used to create new standard protocols used by State agencies to test high-oleic peanut germination for registered and certified seed quality labeling.

Biological Activity of Peanut Skins as a Functional Food Ingredient

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Postprandial glycemic control is very important in both the prevention and management of diabetes. Dietary phenolic compounds have been shown to have a beneficial effect on the management of blood glucose levels. Peanut skins, a major byproduct of the peanut industry, are rich in phenolic compounds that may have an effect on the hyperglycemic response. The aim of this study was to evaluate the effect of the phenolic extract from peanut skins on the glycemic response in humans to 50 grams of glucose. The phenolic compounds were extracted from peanut skins using 70% ethanol. This peanut skin extract was then encapsulated in maltodextrin through spray drying. This encapsulated extract was then split in two; half was put into a vegi-capsule and the other half was incorporated into a chili lime flavored coating that was applied to roasted peanuts through a panning process. Fifteen participants aged 21-32 underwent an oral glucose tolerance test with five treatments: 1) 50 g glucose solution (reference); 2). 50-gram glucose solution, followed by 12 mg of vegi-capsulated maltodextrin (placebo); 3) 50-gram glucose solution, followed by 120 mg of vegi-capsulated maltodextrin-encapsulated peanut skin extract (Treatment 1); 4). 50-gram glucose solution, followed by 28 grams (1 serving) of unfortified coated peanuts (Treatment 2; 5) 50-gram glucose solution, followed by 28 grams of chili lime coated peanuts fortified with encapsulated peanut skin extract (Treatment 3). Glucose levels of each subject were measured using a continuous glucose monitor. The glycemic response to each treatment was assessed by calculating the area under the 2.5- hour blood glucose curve using the trapezoidal method. The glycemic profile was also calculated by dividing the incremental blood glucose response by the post-prandial glucose peak. The addition of peanut skin extract and peanut skin extract fortified peanuts to the 50-gram glucose solution did not have a significant on the area under the curve. However, they did significantly lower the peak glycemic response, indicating that it has an effect on glycemic control and regulation. Peanut skin extract also caused an increase in the glycemic profile, further suggesting that it acts by facilitating glucose regulation. This research further confirms that peanut skin can be used as a functional food ingredient and add nutritional value to food.

Comparative Gene Expression and Biochemical Analysis of *Aspergillus*-Resistant and Susceptible Peanut (*Arachis hypogaea*) Testa Cell Walls

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Peanut (*Arachis hypogaea*) is an important crop used for human consumption, fodder, and oil production. Over 1.5 million acres were planted in the United States in 2016, hauling in over 1 billion in USD revenue according to the USDA National Agricultural Statistics Service. Its importance as an economic and food staple cannot be overstated, for both developed countries and rural farmers in developing countries. The threat of contamination from health damaging mycotoxins, namely Aflatoxin B1 (AF), is no new hazard in the community and preventative measures have been studied and implemented globally. However, the cost of maintaining acceptable low levels of AF can be considerable when both pre- and post-harvest storage techniques must be considered. The need for a cost-effective way to handle AF levels in peanut will benefit both the rural and industrialized farmer. A possible solution is the development of improved *Aspergillus*-resistant cultivars, reducing and/or eliminating the need for resources spent on maintaining low AF contamination. Increasing resistance to pathogens by identifying, and understanding cell wall components in peanut testa provides a promising road to developing new resistant cultivars. The cell wall is the primary physical barrier that protects the cell from abiotic and biotic stress in the environment. Cell wall components such as cellulose, hemicellulose, lignin, and pectin along with phenolic acids, condensed tannins and anthocyanins are potential factors important for disease resistance. Here we investigated these cell wall components in *Aspergillus*-resistant (55-437) and susceptible lines (TMV-2) to determine any significance related to increased. Results showed no significant difference in the overall percentage of lignin found within the cells of the two lines. However, lignin composition quantification showed 55-437 having a significant increase in the overall amount of H-lignin. Insoluble proanthocyanidins were shown to also be increased in 55-437. These cell wall factors potentially play important roles in providing the peanut cotyledon with both a chemical and physical barrier, on the cellular level, to infection from fungi.

Providing Peanut Education through County Extension Efforts

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Extension has a significant impact in disseminating unbiased educational efforts that focus on farmer needs concerning all peanut production issues. Providing knowledge through meetings, one on one contacts, on-farm trials, demonstrations, newsletters, text messages and even social media are key educational components. Each year local Extension meetings provide opportunities for UGA Extension Specialists and agents to share the most current information on peanut agronomics, crop budgets, weed control, disease control, nematode control, insect control, peanut maturity determination and other topics of concern. County on-farm trials and demonstrations in cooperation with specialist input generate local data that has focused most recently on such topics as fungicide comparisons, irrigation scheduling, variety evaluation, burrower bug monitoring and twin-row spacing modifications. Funding for educational programming efforts comes from Georgia Peanut Commission grants and private industry. The county Extension program a the conduit for peanut farmers to gain information needed to achieve success, profitability and sustainability.

Drought Stress Effects on Physiological Mechanisms of Peanut Genotypes

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Drought is one of the main abiotic stresses affecting plant growth and ultimately yield. Efforts have been made to identify traits in cultivated peanut plants or wild species that could benefit the plant with higher tolerance to drought without decreasing yield. Breeding programs generally use selection methods for improved drought tolerance based on yield. In addition to yield, physiological mechanisms may serve as components of drought tolerance for selection of new genotypes. Identification of these mechanisms associated with drought tolerance in peanut plants could potentially contribute to developing peanut cultivars with enhanced drought tolerance.

To this end, ten peanut genotypes, including commonly grown cultivars in Georgia and lines selected at the ARS/USDA ANDthe University of Georgia that vary in drought tolerance, were planted under field conditions at the Gibbs Farm, University of Georgia, Tifton Campus in 2017. The irrigation treatments consisted of a well-watered control and water-deficit stress imposed at early season (30-70 days after planting). A rainout shelter was used to prevent rain/irrigation on the plants for the water-deficit stressed plots. Leaf samples were collected to assess pigment concentrations and thermal tolerance of photosystem II (the temperature to reach 15% decline in the photosynthetic efficiency of PSII). After the end of the stress period, all plants (including stressed plants) were irrigated as needed. Pod weights within each genotype and water regime were obtained at the end of the season.

Overall pigment concentrations increased with progress of drought followed by a decrease after recovery. Drought resulted in higher concentrations of chlorophylls *a* and *b* and carotenoids than those in well-watered plants. Seven days after all plants were well irrigated, pigment concentrations did not significantly differ between plants from drought and well-watered treatments. In addition, T_{15} was affected by the water regime × genotype interaction. Drought generally increased thermotolerance of PSII. The highest T_{15} was observed for the genotype C431-1-1 grown under early drought stress. Pod weight was decreased by early drought. Variation in drought and heat tolerance exists among the genotypes; however, further studies are required to clarify and validate the contribution of physiological mechanisms to drought tolerance in peanuts.

Responses of Symbiotic Nitrogen Fixation to Rehydration after Drought Stress in Peanut Genotypes

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Drought stress is an important environmental factor that may severely impair peanut growth and productivity. Previous studies demonstrated that rehydration after a short-term drought might alleviate the negative effects of drought in peanut. The objective of this study was to evaluate the impact of rehydration on symbiotic nitrogen fixation in various peanut genotypes. Two parental lines (Tifrunner and C76-16) and 14 recombinant inbred lines with varying drought tolerance characteristics were planted in rainout shelters using a split plot design with a randomized complete block design within in 2015 and 2016. Two drought-recovery regimes (four-week middle-season or late-season drought followed by two-week rehydration) were applied along with an irrigated control. The 15N natural abundance technique was used to evaluate differences in symbiotic nitrogen fixation among different genotypes after the drought and rehydration periods. Reductions in the percentage of shoot N derived from the atmosphere (%Ndfa) after drought stress were observed in both 2015 and 2016, indicating the negative effects of drought stress on symbiotic nitrogen fixation. Variabilities in %Ndfa were observed among different genotypes after rehydration. In most genotypes, %Ndfa remained unchanged after rehydration. Only a few genotypes showed a slight increase in %Ndfa after rehydration following mid-season or late-season drought. However, no consistent pattern was observed in either year. Our data suggest that unlike other traits, symbiotic nitrogen fixation in many peanut genotypes may not recover from the damage caused by mid- or late-season drought upon rehydration.

Towards Increased Understanding of Prohexadione-calcium Rates When Applied to Stress-induced Peanut

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Field studies conducted in 2017 revealed that use of prohexadione-calcium (PC) as a vegetative growth regulator increased yield in all locations across Mississippi. The rates selected for use in 2017 (530 mL ha^{-1} at 50% and 530mL ha^{-1} at 100% vines touching) were based on labeled recommendations of existing PC products. A leading concern from peanut growers across the state centers on the idea that these rates may be too high if peanuts are already in a stressed-induced situation such as previous application of 2,4-DB or dry growing conditions. Field studies for the 2018 growing season are already underway, located in the same three counties and using the same application rates as 2017. This study was conducted using the peanut varieties grown at each field site from 2017 and 2018 to understand the exact impact of rates of PC applied in stress-induced situations. Stressors included in the study (but not limited to) were: peanuts grown in a low moisture regime for several weeks, peanuts sprayed with 2,4-DB in the same tank mix, peanuts sprayed with low rates of 2,4-DB over subsequent weeks, and peanuts grown in weedy conditions. Applications were made at 10, 25, 50, 75% vines touching as well as an application at R1 using a two-nozzle research track sprayer at 187 L ha^{-1} and 276 kPa pressure. Peanuts were grown in pots outdoors in 96.5 cm rows in order to easily remove individual pots for treatment but maintain realistic field conditions. Pots were measured for weekly growth up to 28 days after treatment (DAT) and harvested for biomass at beginning peg production. Harvested plants were dried for 48 h at 60°C and dry weights were recorded.

It is expected that all varieties of peanut grown in stress-induced conditions will respond aggressively to labeled rates of PC applied at each growth stage. Observing the degree of response by variety will help to tailor rates to be used in the field where stress-induced conditions may persist. Results from this study will aid in the recommendations given to Mississippi peanut growers who incorporate PC applications into their production system to maximize return on investment.

Investigating the Role of Reactive Oxygen Species (ROS) in Host - *Aspergillus flavus* Interactions Under Drought Stress Using Genetic Engineering

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Aspergillus flavus is an opportunistic pathogen of plants such as peanut under conducive environments such as drought resulting in significant aflatoxin production. Drought-associated oxidative stress also exacerbates aflatoxin production by *A. flavus*. Our previous examination of host plant and pathogen responses to drought stress have shown that oxidative stress alleviation is central to these responses. In addition, drought sensitive lines accumulate higher levels of reactive oxygen species (ROS) in their leaf and kernel tissues compared to drought tolerant lines. These ROS levels are also correlated with aflatoxin accumulation in these lines when inoculated with *A. flavus* under drought. These ROS have also been found to stimulate aflatoxin production in *A. flavus in vitro*, and significantly regulate the expression of transcripts, proteins, and metabolites related to fungal secondary metabolism, pathogenicity, development, and reproduction. Therefore, it is hypothesized that ROS accumulation under drought stress in host plant tissues may stimulate aflatoxin production during *A. flavus* infection, and that increasing or decreasing ROS accumulation would increase or decrease aflatoxin contamination. To test this hypothesis, the expression of antioxidant genes in maize and peanut was manipulated using genetic engineering. In maize, *Agrobacterium tumefaciens* was used to introduce a DNA construct overexpressing the maize catalase III (*ZmCAT3*) gene using a kernel specific γ-zein promoter into the hybrid Hi-II. In peanut, using biolistic transformation, constructs constitutively overexpressing the peanut catalase I (*AhCAT1*), ascorbate peroxidase I (*AhAPX1*), or superoxide dismutase I (*AhSOD1*) were independently introduced into the variety Georgia Green. Using the same peanut system, a CRISPR-Cas9 genome editing construct was introduced with a customized polycistronic gRNA to introduce functional mutations in *AhCAT1* at multiple locations. This will allow for the examination of both increased and decreased antioxidant gene expression on ROS accumulation under drought and associated aflatoxin contamination. Effects on host plant agronomics, morphology, and biochemical composition will also be examined. Currently, regeneration and initial characterization of the primary transformants (T_0) is in progress. If successful, this will not only provide a novel approach to mitigating aflatoxin contamination and will also provide insight into the cross-talk between host plants and *A. flavus* during infection under drought, and the underlying mechanisms regulating drought-related aflatoxin production.

Development of a New Protocol to Screen Peanut Genotypes with Superior Vigor by Assessing Root Architecture Traits

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Seed germination and vigor are important traits for peanut farmers, but are largely overlooked in the breeding process. One major hurdle in breeding for seed germination and vigor is the lack of an assay to discriminate among genotypes. The objective of this research was to identify a method to evaluate and select peanut genotypes, which exhibit superior seed germination and/or seedling vigor. Multiple genotypes developed by different breeding programs were assessed based on root traits including total root length, projected area, surface area, fine root length and principal root length by using *in situ* rhizotron chambers (RC). Root traits from the scans of the RCs were highly correlated ($p<.0001$) with the same trait measured after the removal of the roots from the RCs per the Pearson correlation analysis. This confirms that is possible to use the RCs to assess early peanut root traits indestructibly. The correlation diminished at 14 DAP as compared to 7 DAP apparently because the roots expanded throughout the tube and were not visible against the tube wall, therefore the harvested roots tended to be greater in size and number compared to the tube scan. Root traits were more affected by the genotype effect, the treatment effect and their interaction at 7 than at 14 DAP. Therefore, it is suggested to make the assessment of root traits at 7DAP for better results. Seed germination and the seedling vigor index also correlated significantly ($p<0.05$) with the analyzed root architecture traits, and it was possible to find differences among genotypes for seedling vigor index. When emergence in the field affected by cold temperatures was assessed, it was possible to identify that some genotypes performed better than others. The emergence percent also showed correlations ($p<0.05$) with some of the root architecture traits. Suggesting that the root traits from the RCs are representative of the emergence under field conductions to some extent. The results from this study confirm the clear relationship between good development of the root system and seedling vigor index. Genotypes that had more robust root systems tended to have greater seedling vigor.

Virginia-Carolina Peanut iPiPE: Data Sharing to Improve Disease Risk Models

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Peanuts are an important crop in areas throughout the southeastern United States including Virginia and North Carolina. In this region, over 100,000 acres are planted to peanut with an annual value of over $85 million. Peanut is a relatively high value crop on a per acre basis, but inputs for controlling diseases can make peanut production cost prohibitive for some growers. Weather-based disease advisory programs have reduced the number of fungicide sprays required for control of peanut diseases, thereby reducing total fungicide inputs and costs in peanut production. However, disease risk is impacted not only by environmental conditions but also by field history and disease susceptibility of the peanut cultivar planted in a field. New tools that incorporate current information technology and weather-based modeling are needed to improve and disseminate disease advisories for peanut. The Integrated Pest Information Platform for Extension and Education (iPiPE) is a set of information technology tools that allow for the collection and dissemination of crop pest observations and integrated pest management (IPM) based management recommendations. iPiPE Crop-Pest Programs are coordinated by extension personnel and pest observations are collected by student interns who are trained in the concepts of IPM and crop pest diagnostics. The Virginia-Carolina Peanut iPiPE was established in 2017. Eleven fields in VA and NC were selected, and portions of fields were marked with flags and left unsprayed. Fields were scouted weekly for disease, and results were uploaded to iPiPE using a mobile app. Current disease advisory models were run using weather data and compared to disease observations. Dates for when the leaf spot model predicted disease risk ranged from late May to mid-August, but little leaf spot was observed prior to September. The model predicted Sclerotinia blight risk at all locations around July 20, and the first disease observation was August 1. The current disease risk models may overestimate disease risk in some fields, and it may be possible to raise the spray thresholds and reduce and/or delay fungicide applications when moderately resistant varieties are planted and/or fields do not have a history of severe disease outbreaks. Additional data will be collected and uploaded to the iPiPE during the 2018 growing season. Ultimately, data will be used to update the leaf spot and Sclerotinia advisory models and to develop a stem rot risk model for the Virginia-Carolina peanut growing region.

Growth Habit and Phenotypic Variation among Tifrunner, GT-C20, and Their F_1 Hybrids

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Tifrunner (*A. hypogaea* ssp. *hypogaea*) and GT-C20 (*A. hypogaea* ssp. *fastigiata*) have highly contrasting growth habits representing their botanical types. In order to study peanut genetic pathways regulating reproductive behavior and yield, the two genotypes and their F_1 hybrids from reciprocal crosses were planted in the field according to a randomized complete block design. Extensive phenotypic data were collected to quantify their growth habits and reproductive behavior. Compared to GT-C20, Tifrunner had larger canopy size, dry weight, total number of flowers, branch length, and yield, whereas the F_1 hybrids demonstrated hybrid vigor in all of these measured traits. As for the flower distribution, GT-C20 was the only genotype producing flowers on the mainstem confirming the recessive genetic inheritance of this trait. The F_1 hybrids had the largest pod size and, the pod size of GT-C20 was significantly larger than that of Tifrunner. RNA-seq analysis is underway to reveal the genetic controls underlying the contrasting growth habits among these materials.

The Structure and Strategy of the New Feed the Future Innovation Lab for Peanut

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The University of Georgia was awarded the Feed the Future Innovation Lab for Peanut in January of 2018. The five-year Leader with Associates Award is for $14 million, with a potential ceiling of $35 million for additional buy-in and associate awards. The management entity will be housed at UGA Athens campus. Research project sub-awards will be issued to US and international partners in the four Areas of Inquiry: 1) Variety Development, 2) Value-added Gains, 3) Nutrition and 4) Gender and Youth. Additional crosscutting themes of Human and Institutional Capacity Development (HICD) and gender and youth will also be considered in the research portfolio. The Peanut Innovation Lab will be implementing jointly funded projects with the Peanut Foundation, Peanut Institute and International Fertilizer Development Corporation, as projects are identified that provide dual benefits to both overseas partners and US agriculture. The Peanut Innovation Lab's research will align with US Government's Global Food Security Strategy that addresses global hunger and food security by increasing resilience to shocks and focusing on nutrition and market-led development.

Effect of Organic Manure, Calcium and Weeding Regime on Growth and Yield of Peanut (*Arachis hypogaea* L.) in the Guinea Savannah Zone of Ghana

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Field experiments were conducted at the CSIR-Savanna Agricultural Research Institute (SARI) research station during 2015 and 2016 to determine the effects of organic manure, calcium, and weeding regimes and their interactions on growth and yield of peanut. The 2 x 4 x 3 factorial experiment was placed in a randomized complete block design with four replications. Pod number per plant was increased by application of 1.2 ton/ha organic manure (OM) plus hand weeding (HW) at 3 and 6 weeks after planting (WAP). Similarly, calcium at 188 kg/ha plus 1.2 ton/ha OM increased the number of pods. Glyphosate at 1.4 kg a.i./ha used as pre-plant herbicide combined with pendimethalin at 1.3 kg a.i./ha applied preemergence plus HW at 6 WAP or HW at 3 and 6 WAP lowered weed biomass and weed density. The synergy of OM and calcium (563 kg/ha) and the combination of this rate of calcium and glyphosate plus pendimenthalin along with one supplementary HW resulted in the greatest pod yield (2,060 kg/ha and 2,120 kg/ha for these respective treatments). Maximum haulm yield of 4,320 kg/ha was attained with 1.2 ton/ha of OM plus 2 HW at 3 and 6 WAP. The most dominant weeds in the experiment were *Ageratum conyzoides* L and *Commelina benghalensis* L.

Survey on the Adoption of Peanut Production Technologies following Research and Education Programs with PMIL

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A research and outreach was conducted to improve peanut production, raise awareness on nutrition, and increase food safety in Ghana. Three communities in the northern sector of the Ghana with 12 peanut farmers each were selected. The research trials involved research plots managed by researchers with the improved interventions while farmers' plots were managed by the selected. These farmers (referred to as "PMIL farmers") were interviewed in late 2017 to determine the educational value of the project. PMIL farmers were expected to pass on information and technologies learnt from the collaborative research on peanuts to other farmers in their communities (referred to as "Spill-over farmers".) As control portions of the study, one nearby community of each of the 3 trial-communities was also selected (referred to as "General/Other farmers".)

General conclusions and recommendations from the survey results include the following. The local variety "Chinese" was the only improved variety available for the farmers. It is therefore necessary to introduce new varieties developed by SARI to the farmers. The main sources of peanut seeds came from farmers' saved seeds. Therefore, the introduction of improved seeds to farmers is likely to popularize and spread the use of it. None of the farmers bought seeds from seed dealers. Use of “Alata" soap for the suppression of rossette disease and oyster shells to improve kernel quality were practiced by only a few farmers and the value of these interventions need to be shared with farmers. More attention needs to be provided to female farmers with respect to germination testing, planting in rows, and drying of peanut with new approaches. The majority of the PMIL, Spill-over, and the General farmers dried peanut on bare or cemented floors resulting in greater aflatoxin. New approaches to drying peanut are needed to reduce this problem.

Integrated Agronomy, Physiology, and Plant Breeding Approaches to Improve Drought Tolerance Phenotyping in Peanut

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Transpiration efficiency (TE) has been considered as an important component for water use efficiency (WUE) and to screen yield variation under drought stress in peanut. A Recombinant Inbred Lines (RIL's) for Valencia breeding were developed for high WUE from two contrasting parents differed in their drought tolerance. A set of 288 RILs derived from drought tolerant JUG3 and drought susceptible Valencia-C were used along with parents to evaluate TE and pod yield. A lysimetric system was used to grow the plants and to screen the RILs for their water use, dry weight, TE, pod yield and haulm weight. One experiment was conducted during the rainy season 2015 using randomized complete block design with 4 replications. Plants were subjected to drought stress treatment, imposed from 40 days after sowing in the form of an intermittent stress, i.e. the plant were subjected to cycles of drying and re-watering similar to treatments applied under field conditions. A 2-fold variation for TE was observed among the RILs, which was typical of a rainy season environment. Other parameters pod yield, water use and haulm weight showed significant variation among the RILs. A significant association was observed between TE and pod yield in this study, although the coefficient of variation was relatively weak (R^2 = 0.22), which was also quite typical of mild vapor pressure deficit environment. The distribution of TE among the 288 RILs indicates polygenic character of TE controlled by dominant and additive genes. This study further requires quantitative trait loci (QTL) analysis for marker assisted selection to select and breed efficient genotypes for improved TE.

Peanut Tolerance to 2, 4-D and Dicamba

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Increased utilization of 2,4-D and dicamba tolerant cotton and soybeans has increased risk for off target movement and/or spray tank contamination to nontolerant crops. Throughout the southeastern U.S., peanuts are generally grown within close proximity to cotton and soybeans. Therefore, the objective of this study was to evaluate peanut injury and yield responses resulted from various rates of 2,4-D and dicamba applied at two different application timings: 4-5 leaf stage and onset of blooming. Experiments were conducted in Alabama during 2016 and 2017 in Baldwin, Macon, and Henry County, Alabama. In 2016, 2,4-D was evaluated at 0.12, 0.59, 1.2, 3.5, 12 and 35 g ae ha^{-1} as well as dicamba rates of 0.12, 0.62, 1.2, 3.7, 12.4, and 37 g ae ha^{-1}. In 2017, 2,4-D was evaluated at 5, 10,16, 27, 53, and 106 g ae ha^{-1} and dicamba was evaluated at 4, 7, 14, 28, 56, and 112 g ae ha^{-1}. Plant heights were collected at 3 and 6 weeks after application as well as a final yield at harvest. Additionally, plant widths were evaluated in 2017. In 2016, significant height reductions of 15 and 24% were observed with 12 and 37 g ae ha^{-1} of dicamba applied at the 4-5 leaf stage, respectively, only in Macon County. In 2017, significant height reductions of 14-54% were observed with dicamba 28, 56, and 112 g ae ha^{-1} applied at both timings in Macon and Baldwin County. These rates also caused significant width reductions of 16-46% over all three locations. 2,4-D at 106 g ae ha^{-1} applied at the 4-5 leaf stage caused a significant width reduction of 12% over all locations as well as a significant height reduction of 18% in Macon county only. In Baldwin County 2,4-D at 106 g ae ha^{-1} applied at blooming caused a 14% height reduction. In 2017, the significant yield reductions of 24-58% were observed in Baldwin and Henry County for dicamba 27, 56 and 112 g ae ha^{-1} applied at blooming as well as for 56 and 112 g ae ha^{-1} applied at the 4-5 leaf stage. No significant yield loss was observed with any of the 2,4-D rates in 2017 or with any treatment in 2016. Overall, peanuts are more susceptible to dicamba than 2,4-D, and dicamba applied at the 4-5 leaf stage caused more peanut stunting than when applied at blooming. As the rate of dicamba increases, so will the amount of stunting and yield loss. Our data suggests the three highest rates of dicamba evaluated at either timing will likely result in significant yield loss.

Researching on Rhizobiology in Peanuts (*Arachis hypogaea* L.): 1. Studies in Pots

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In Mexico peanut inoculation with Rhizobium, is not common and neither chemical fertilizer applications, so, the objective of this research was to determinate the effect of three different sources (Vault, Optimize, Agribest, and a control) of Bradhirizobium and rhizobium, on peanuts yield components. Twenty four pots were filled with clay- sandy soil. Peanut variety Mahue (bunch), was planted on May 10, 2016. Each rhizobium source (treatments) was applied, on commercial dosages, to soil in 6 pots. Statistical differences among treatments, were not found. Tukey test showed that Vault was the best in peanut yield (18.7g pot^{-1}); however Optimize underlyed on the next peanut yield components: plant diameter (29.5 cm); leaf number per plant (373); leaf weight (24.3 g); Immatute fruits number (19.2); shoot dry weight (15.1 g) and root dry weight (13.5 g). Vault was the best rhizobium treatment in: plant height (16.6 cm); mature fruit number (16) and dry fruit weight (18.7 g). Agribest, a rhizobium recommended for dry beans, was always, the third treatment in most traits measured.

Economic Analysis of Peanut Digger Ground Speed and Conveyor Speed on Digging Yield Losses

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Proper peanut digger setup and operation are important factors in maximizing profit for peanut production. A 2016 study conducted by Clemson University demonstrated significant peanut digging loss effects in virginia type peanut as functions of ground speed and conveyor speed. A second study was performed in 2017 incorporating peanut yield monitor data and using similar tests on both runner and virginia type peanuts. The tests were conducted with Amadas and KMC brand two-row peanut diggers. Ground speed treatments were set at 1.5 mph, 2.5 mph, 3.5 mph, and 4.5 mph with the conveyor speed set at 100% of ground speed for all ground speed tests. Conveyor speed treatments were set at 70%, 85%, 100%, 115%, and 130% of ground speed, which was held at 2.5 mph for all conveyor speed tests. Digging losses from above ground and below ground across types ranged from $83 to $270 per acre for Amadas digger and $42 to $163 per acre for KMC digger. The per acre digging loss for each mph above the optimal ground speed ranged between $19 and $25 per acre and increased at higher speeds. For both diggers in virginia type peanuts, gross revenue was highest at conveyor speeds equal to 85% of ground speed. In runner type peanuts maximum gross revenue was observed at conveyor speeds equal to 70% and 115% of the ground speed for the Amadas and KMC diggers, respectively.

Use of Wild Species for Peanut Breeding in Brazil

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Peanut growers in Brazil demand runner cultivars, adapted to a wide range of environments and with high oleic acid content. Peanut breeding program at Embrapa has used the variability available in interspecific lines derived from *Arachis ipaënsis* and *A. duranensis* for agronomic traits since 2011. As a result, we developed BRS 425, the first cultivar derived from the wild parents adapted to the Central, Southeast and Northern regions. Aiming to improve foliar diseases resistance, new sources of resistance from synthetic polyploids composed of *A. magna* and *A. cardenasii* as well as *A. batizocoi* and *A. cardenasii* will be used to generate new populations, in combination with advanced lines and cultivars. The genotypes derived from the wild parents exhibited high yields and good agronomic traits very early, in the first backcross generation. The genotypes derived from the other combinations of wild species will require more backcrossings for selecting high yielding/resistant genotypes.

Xylem Anatomy Features in Peanut (*Arachis hypogaea* L.) Root

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Plant roots are central elements in the soil–plant–atmosphere water uptake system. Root traits, such as root distribution and anatomy, may contribute to improve plant ability to uptake water and nutrients. The architecture of root systems has been previously studied in peanuts. However, root anatomy of different peanut genotypes has not been clearly investigated. The anatomical structures of roots may be an essential component to assist understanding their efficacy to uptake water and nutrients. Therefore, the objective of this study was to investigate the root xylem anatomy of different peanut genotypes. To this end, three peanut genotypes were grown in rizoboxes in a rainout shelter. The experimental design was a completely randomized design with three replications. Plants were watered daily until 35 days after emergence, followed by rizoboxes disassembling and root sampling. Root samples were taken at approximately 5 cm from the root tip at 0-20 cm below soil surface for anatomical analysis. Anatomy measurements were obtained using the first order lateral roots. The structure of root xylem vessels varied depending on the peanut genotype. At 5 cm, cell division of vascular parenchyma cells was not observed in the vascular cambium tissue at the growth stage samples were taken. Root vascular bundles were displayed as an almost triarch arrangement. Pith tissue was absent in the central part of first order lateral roots. Average diameter of root vessels ranged from 4.50 to 50.2 µm. The average xylem vessel diameter across the three genotypes was 17.4 µm. The genotype ICGV 98324 had the largest diameter and area of xylem vessels, whereas the Tifton 8 generally had smaller diameter and area of vessels per cross section. Genotypes with larger diameter and area of xylem vessel per cross-section are more likely to have improved ability to uptake water and nutrients from the soil and increased water flow throughout the vascular system.

First True Leaf Physiology of Peanut Plants under Different Field Conditions

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Poor stand establishment and low seedling vigor can be a major concern in peanuts (*Arachis hypogaea* L.). Factors such as genotype, field management, and environmental conditions generally influence seedling growth and vigor. In peanuts, the first pair of true leaves is the first aboveground photosynthetic tissue contributing to growth. The importance of rapid differentiation of the first true leaf on seedling growth and vigor has been indicated in other crops, but studies demonstrating the effect of the first true leaf on seedling growth in peanuts are limited. A field study was conducted to determine the physiology of the first true leaf and its relation to growth under different planting conditions. Three peanut cultivars (Georgia-06G, Georgia-14N, and TifNV High O/L) were planted on 04/01/2017 (mid-April), 05/10/2017 (early-May), and 06/05/2017 (early-June) to generate different field conditions, especially differences in temperature conditions. Stand counts were done at 5, 7, 8, 9, 11, 14, and 16 days after planting (DAP). First true leaves from a 2-m section within each plot were collected to measure first true leaf area (FTLA). Gas exchange and fluorescence parameters (net photosynthesis, dark respiration, electron transport rate (ETR), and quantum efficiency of PSII) and pigment concentrations (chlorophyll a, chlorophyll b, and carotenoids) of the first true leaf were assessed at 21 and 35 DAP. Initial data analysis showed the effect of cultivar and planting date on seedling growth parameters. For all three selected planting dates, seedling emergence was generally higher for GA-06G and TifNV compared to GA-14N. For the early-May planting, seedlings started emerging at 5 DAP, whereas for the other two planting dates, seedling emergence was observed only from 8 DAP. Overall, peanuts planted in early-June exhibited higher first true leaf area at 35 DAP as compared to the other two planting dates. Among cultivars, TifNV had the greatest first true leaf area, followed by GA-06G and GA-14N. The planting date effect was also observed in the pigment concentrations ($p < 0.0001$). At 21 and 35 DAP, plants sown in early-June had the lowest concentration of chlorophylls a and b, and carotenoids. No significant differences were observed in net photosynthesis and dark respiration for both cultivar and planting date effect. However, ETR and quantum efficiency of PSII were higher in plants sown in mid-April as compared to early-June ($p < 0.0001$). These preliminary results suggested that early-June was the planting date with most favorable temperature conditions for a more rapid development of first true leaves and overall seedling growth, mainly for GA-06G and TifNV. Further research is required to better understand the underlying processes and contribution of the first true leaf on peanut seedling growth.

Interaction of Oleic acid and Linoleic Acid Composition to *Aspergillus flavus* Development Genes and Aflatoxin Pathway Genes

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High oleic acid peanut, having an oleic acid content from about 80% to about 85% and a linoleic acid content of from about 1.5% to about 2.5%, with a ratio between them from about 20:1 to about 58:1, provides increased shelf life, improved flavor, enhanced fatty acid composition, and has a beneficial effect on human health. Previous research has indicated that pure linoleic acid induces precocious and increased conidial development of *Aspergillus flavus* [Ana M. Calvo.2001]. At the same time low linoleic acid composition had no measurable effect on preharvest aflatoxin contamination in peanut when data were combined across years and locations [Holbrook Et al., 2000]. Therefore, we would like to confirm if the composition of oleic acid and linoleic acid is relevant to resistance to *A. flavus*. Isogenic peanuts lines that differed in oleic acid content were infected with *A. flavus* 3357, and development genes and Aflatoxin pathway genes were detected after 5 days with qPCR. The results revealed the amount of *A. flavus* rRNA (*18S* and *6S* targets) in the high oleic acid peanut sample is ¼ of what is found in the regular isogenic peanut, and the least amount of aflatoxin transcripts were consistently found in the high oleic acid isoline with the most differentiated values of the *omtA/ordA* transcript, as compared with the other three targets in the cluster, indicating that this may be where the control starts and the differences may be found. Further investigations will carry on from pure composition to different peanut varieties and will be useful to breeders and other scientists interested in incorporating genetic resources of resistance against *A. flavus* into peanut germplasm and/or commercial cultivars.

Management of Threecornered Alfalfa Hopper (Hemiptera: Membracidae) in Peanut

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Threecornered alfalfa hopper (TCAH), *Spissistilus festinus*, is a commonly present true bug in mid to late season peanut fields. TCAH injures peanut by feeding on and girdling stems and leaf petioles. While there are currently no empirically-based economic injury levels or thresholds, TCAH is commonly treated with broad-spectrum insecticides which could increase the risk of secondary pest outbreaks. To determine the effect of feeding injury on yield, a caged study was done with various infestation rates (0, 10, 20, 30) at two farm locations. An insecticide efficacy evaluation was also done to identify an effective management option. The cages were infested on August 4th, 2017 when you would commonly see TCAH and feeding injury and dried biomass (vegetative and pod) was recorded at harvest. The insecticide efficacy evaluation involved five foliar treatments and sampling was conducted at 1, 5, 9, and 16 days after treatment.

There was a significant location effect for feeding injury by infestation rate at both locations. Locations were combined to analyze a significant effect on infestation rate and pod weight (yield). There was no significant correlation between yield and injury at either location or when combined. It is suggested that there is a complex feeding and damage relationship in peanut that cannot be explained based on visible injury alone. For the efficacy evaluation, bifenthrin significantly reduced populations at 16 DAT as compared to the untreated check. TCAH adults are highly mobile; the insect's mobility combined with relatively small plot size may have contributed to the lack of treatment effects seen in this trial. TCAH nymphs were rare; additional study is needed to evaluate efficacy of alternative active ingredients against nymphs.

Assessment of Evolving Peanut Fungicide Programs for Yield and Value in Southwest Georgia

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Peanuts (*Arachis hypogea)* are the second largest agronomic commodity in Georgia. Fungicides are heavily applied in peanut production for the protection of the crop from *Sclerotium rolfsii*, *Cercospora arachidicola, and Cercosporidium personatum*. Today's peanut fungicide programs can greatly vary in cost. Careful selection of these programs can bring more profit to an agronomic operation, even if the cost of the program is higher. In 1994, the standard program for peanut fungicides was a tebuconazole/chlorothalonil based program, but over the years newer premium products have been developed. The objective of this experiment was to evaluate the yield potential of peanuts using past and presently labeled fungicide programs.

In 2017 at two commercial field sites (Miller and Decatur Counties), Georgia-06G was planted on May 10th (Miller) and June 10th (Decatur). At each location, five commonly used fungicide programs were initiated approximately 30 DAP with continuous applications every 2 weeks until approximately 115 DAP. This experiment had 3 replications of each treatment at both locations. Peanuts at each location were harvested at maturity (~145 DAP) and plot weights (lb ac^{-1}) were collected and averaged over each fungicide treatment replication. Both locations displayed higher yield potential for the most current fungicide program of ELATUS (azoxystrobin + benzovindiflupyr/solatenol) plus chlorothalonil when compared to all other fungicide programs. Similarly, the 1994 standard fungicide program of tebuconazole/chlorothalonil displayed the lowest yield potential of all tested programs. Future research is focusing on replicating this experiment. Growers in Southwest Georgia expectations for yield are much greater than they were in 1994; therefore, growers should be willing to invest in programs that protect that yield expectation.
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Molecular and Agronomic Evaluation for Genetic Background Recovery of Introgression Lines of *Ahfad2* Mutations

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High oleic acid composition is imperative for the quality of peanut seed in regard to both its nutritional benefit for human health and prolonged shelf-life for peanut products. Fatty acid desaturase (FAD2) is a key enzyme that catalyzes the conversion of oleic acid to linoleic acid. For the tetraploid cultivated peanut, the *AhFad2A* and *AhFad2B* genes function independently on the A and B subgenomes, respectively. High oleic acid phenotype in peanut is caused by loss of function of *AhFad2A* and *AhFad2B*, and thus mutations in these genes can be used as functional markers for trait introgression in high oleic acid peanut breeding. In the present study, four peanut varieties of different market types popular in the main peanut production regions of China, namely YH 15, YZ 9102, YH 9326, and YH 9327, were selected to cross with high oleic acid donors and backcrossed for four generations as recurrent parents. Twelve high oleic acid lines with morphological features and agronomic traits similar to those of the recurrent parents were obtained by *Fad2* marker-assisted backcross selection (MABC). The results demonstrate that the genetic background recovery rates of BC_3F_2 and BC_4F_2 were apparently higher than that of BC_2F_2. The genetic backgrounds of BC_4F_2 were closer to the recurrent parents than those of BC_3F_2 and BC_2F_2 families. To our knowledge, this is also the first application of single nucleotide polymorphism (SNP) markers based on the high-throughput and cost-effective Kompetitive Allele Specific PCR (KASP) technology for genetic background evaluation in peanuts.

Effect of Fungicide Programs on Control of Web Blotch on Spanish-Type Peanuts

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Web blotch (*Phoma arachidicola*) is a sporadic, late-season foliar disease of peanuts in Oklahoma. In general, spanish cultivars are most susceptible, virginia cultivars are intermediate, and runner cultivars are resistant. Fungicide programs that included chlorothalonil + tebuconazole, pyraclostrobin + cyproconazole, and adepidyn + cyproconazole were applied for control of early leaf spot (*Cercospora arachidicola*). The fungicides were applied according to a full-season 14-day schedule (5 applications), a reduced 14-day schedule (3 applications), and according to the weather-based leaf spot advisory program (4 applications; www.mesonet.org). Leaf spot was severe (>90% symptomatic leaflets and >50% defoliation) in the non-treated check when web blotch was first observed on 14 Sep. Web blotch became severe by harvest and the change in defoliation between 14 Sep and 12 Oct was due to web blotch. Averaged over application schedules, web blotch defoliation was highest for pyraclostrobin + cyproconazole (82%) and chlorothalonil + tebuconazole (70%), and lowest for adepidyn + cyproconazole (16%; P=0.05). When the untreated check was removed from the analysis, web blotch defoliation was negatively correlated with yield (r=-0.38, P=0.02). In an adjacent study where fungicide programs were evaluated for control of early leaf spot and stem rot (*Sclerotium rolfsii*). Fungicides were applied on a 14-day schedule totaling five applications in mid-season block or alternation schedules with chlorothalonil. Web blotch defoliation was highest for tebuconazole (73%), chlorothalonil (69%), and azoxystrobin (66%); intermediate for tebuconazole + prothioconazole (52%), pyraclostrobin + fluxapyroxad (41%), and penthiopyrad (35%); and lowest for adepidyn (3%) and solatenol + azoxystrobim + adepidyn (4%) (P=0.05). Yields were not correlated web blotch defoliation in this trial where stem rot was severe. Results showed that adepidyn provided superior control of web blotch while popular fungicides for foliar disease control (chlorothalonil and tebuconazole) were least effective.

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National Peanut Board
Graduate Student Poster Competition

Wednesday, July 11, 2018		
4:00 - 5:00 p.m.	**Graduate Student Poster Competition** Authors Present *Sponsored by National Peanut Board*	Page Number
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Poster Number 34	**Augmentation of In-Furrow Insecticides with Superabsorbent Polymer to Combat Spotted Wilt of Peanut** **J. M. HAYNES*** and D. J. ANCO, Department of Plant and Environmental Sciences, Clemson University, Edisto Research and Education Center, Blackville, SC 29817; A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31794; N. SMITH, Department of Agricultural Sciences, Clemson University, Sandhill Research and Education Center, Columbia, SC 29229.	171
Poster Number 35	**Development of Newly Synthesized Amphidiploids and Their Genome Composition** Y. CHU, **C. M. LEVINSON***, and P. OZIAS-AKIN, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; H. T. Stalker, Department of Crop and Soil Sciences, N.C. State Univ., Raleigh, NC 27695-7629; S. C. M. LEAL-BERTIOLI, Department of Plant Pathology, The University of Georgia, Athens, GA; and D. BERTIOLI Department of Crop and Soil Sciences, The University of Georgia, Athens, GA 30605.	172
Poster Number 36	**Effect of Plant Microclimate Condition Changes Due to Late Leaf Spot on the Development of Southern Stem Rot in Peanut Field** **M. MUNIR*** and D. J. ANCO, Department of Plant and Environmental Sciences, Clemson University, Edisto Research and Education Center, Blackville, SC 29817.	173
Poster Number 37	**Effect of Fungicide on Gas Exchange in Peanut** **M. STUART***, C. PILON, W. S. MONFORT, T. B. BRENNEMAN, A. K. CULBREATH, and J. L. SNIDER, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.	174
Poster Number 38	**Analysis of a BC_3F_6 Interspecific Peanut Introgression Population Using Genome-specific SNP Markers** **T. K. TENGEY***, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409, and CSIR-Savanna Agricultural Research Institute, Nyankpala, Ghana; C. E SIMPSON, Texas A&M AgriLife Research, Stephenville, TX 76401; 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; and M. D. BUROW, Texas A&M AgriLife Research, Lubbock, TX 79403 and Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.	175
Poster Number 39	**The Effects of Storage Conditions on Peanut Seed Quality** **C. C. WEAVER***, W. S. MONFORT, C. PILON, and T. L. GREY. Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.	176

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.

A hybrid of the bridge species *Arachis vallsii* (Krapov. and W.C. Greg.) (VSW 9902-1) and *A. dardani* (Krapov. and W.C. Greg.) (GK12946) was created to initiate an introgression pathway for movement of possible drought tolerance into the cultivated peanut (*A. hypogaea* L.). A hybrid between the two species was successfully created and confirmed based on leaf morphology, pollen counts and intermediated leaf morphology. 175 attempts were made to double the chromosome complement using 3 methods at concentrations of .02% and .03% colchicine for exposure times ranging from 6 to 24 hours. No attempt has been successful to date. In addition, a greenhouse transcriptome study with 7 day imposed drought was conducted on *A. dardani* (12946) and the reference species *A. ipaënsis* (Krapov. and W.C. Greg.) (KGBPScS-30076) (B genome donor of the cultivated peanut). Differential gene expression analysis (EdgeR Test) of the normalized RPKM (Reads Per Kilobase Million mapped reads) values was conducted with a fold value $\geq$ abs (2) at the $p \leq .05$ level using CLC Genomics Workbench v8. Statistically significant transcript levels associated with drought tolerance were found in relation to the putative drought tolerant species (*A. dardani* (12946)) which have not been reported previously. Transcripts were identified that were statistically higher between physiological states and between species. In total 40 genes were identified for further study.

Augmentation of In-Furrow Insecticides with Superabsorbent Polymer to Improve Management of Spotted Wilt of Peanut

J. M. HAYNES* and D. J. ANCO, Department of Plant and Environmental Sciences, Clemson University, Edisto Research and Education Center, Blackville, SC 29817; A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31794; N. SMITH, Department of Agricultural Sciences, Clemson University, Sandhill Research and Education Center, Columbia, SC 29229.

Spotted wilt of peanut (*Arachis hypogaea* L.) is a common disease that causes severe economic losses in peanut producing regions in the United States. The causal agent, *Tomato spotted wilt orthotospovirus,* is transmitted by species of thrips (Thysanoptera: Thripidae) with western flower thrips (*Frankliniella occidentalis*) and tobacco thrips (*F. fusca*) being of importance in the southeast. In 2017, field trails were conducted to determine if management of spotted wilt and subsequent productivity of peanut could be improved by applying a superabsorbent polymer (2.24 kg/ha) with standard in-furrow insecticides at the time of planting. To determine this, insecticides (phorate and imidacloprid) were individually applied with or without polymer across varieties susceptible (FloRun 157 or TUFRunner 511), moderately susceptible (Georgia 06G), and resistant (Sullivan and TifNV-High O/L) to spotted wilt. Untreated controls were included in all trails. The study utilized a randomized complete block design and was conducted at two locations in South Carolina and one Georgia location. Stunting of plants was significantly reduced (reduction of 8%, $P<0.05$) when susceptible varieties were treated with phorate and the polymer. Polymer-associated effects on thrips counts and damage, phytotoxicity and yield were not significant ($P>0.05$) across locations. While there was indication that use of superabsorbent polymer could be beneficial in some cases, further data is needed before its use could be recommended to peanut growers to improve management of spotted wilt.

Development of Newly Synthesized Amphidiploids and Their Genome Composition

Y. CHU, **C. M. LEVINSON***, and P. OZIAS-AKINS Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; H. T. STALKER, Department of Crop and Soil Sciences, N.C. State Univ., Raleigh, NC 27695-7629; S. C. M. LEAL-BERTIOLI, Department of Plant Pathology, The University of Georgia, Athens, GA; and D. BERTIOLI Department of Crop and Soil Sciences, The University of Georgia, Athens, GA 30605.

Cultivar improvement for peanut is limited by the narrow genetic base of this species. In order to introduce new genetic resources into peanut breeding programs, crosses were made among A-genome wild peanut diploids species (male) with several B genome species (female). Nine new amphidiploids were established by colchicine treatment producing a total of 115 S_0 seeds. Four out of the nine new amphidipoids were advanced to S_1 generation yielding 824 seeds. The most productive amphidiploid hybrid was [*A. ipaënsis* KG37006 x *A. correntina* 9530]^{4x}. Genotyping of the amphidiploids and their respective parental lines revealed frequent gene conversion between the parental alleles. Evidence suggests that most of the conversion occurred at the diploid stage. However, further gene conversion was observed in both the S_0 and S_1 generations of the new amphidiploids suggesting genome instability of these new materials. Therefore, these new genetic materials should not be treated as a homogenous bulk for breeding programs. However, crossing the new amphidiploids with cultivated peanut yielded viable F_1 hybrid seeds which have the potential for introducing additional genetic variation into breeding populations and lead to improved lines for agronomic traits.

Effect of Plant Microclimate Condition Changes Due to Late Leaf Spot on the Development of Southern Stem Rot in Peanut Field

M. MUNIR* and D. J. ANCO, Department of Plant and Environmental Sciences, Clemson University, Edisto Research and Education Center, Blackville, SC 29817.

Southern stem rot (SSR) of peanut caused by *Sclerotium rolfsii*, is commonly influenced by microclimate conditions. Meanwhile, defoliation from late leaf spot (LLS), caused by *Cercosporidium personatum*, alters canopy structure and has the potential to affect microclimates. A better understanding of the potential interaction between SSR and LLS through such mechanism as microclimate modification will contribute to improved disease management. In 2017, field experiments were conducted to investigate the effect of LLS on peanut microclimates and SSR severity. To encourage different levels of LLS defoliation, 3 management programs (3, 4 and 5 chlorothalonil applications) were applied across 4 varieties via a split-plot design in two fields. Defoliation was rated every 2 weeks from 75 days after planting (DAP) to harvest. Canopy temperatures were measured from 33 DAP until inversion when SSR severity was rated. Defoliation began to significantly vary by management program and variety starting from 103 DAP ($P = 0.0388$). Management program resulted in significantly different cumulative degree days (DD_{15}) starting from 117 DAP ($P = 0.0470$). Near 135 DAP, logistic function slopes of daily canopy temperature increase were significantly different among treatments ($P < 0.05$). Cumulative daily soil moisture losses within the period between two rainfalls at late season (105 – 111 DAP) were significantly different among treatments ($P = 0.0181$). Although LLS was observed to be capable of significantly affecting peanut microclimates, it did not show a substantial effect on SSR development.

Effect of Fungicide on Gas Exchange in Peanut

M. STUART*, C. PILON, W. S. MONFORT, T. B. BRENNEMAN, A. K. CULBREATH, and J. L. SNIDER, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.

Peanut (*Arachis hypogaea* L.*)* plants are susceptible to several air- and soil-borne diseases throughout the season. Different fungicide chemistries have been used to control these diseases. However, information on short- and/or long-term effects of these fungicides on physiological processes and pod maturity of peanuts is scant. A field experiment was conducted in 2017 at the Lang Farm in Tifton, GA to determine the effects of fungicides on gas exchange and pod maturity of peanut cultivars. The treatments consisted of six fungicides, an untreated control, Bravo Weather Stik (chlorothalonil), Abound (strobilurin), Orius 20AQ (tebuconazole), Elast (dodine), and Prophyt (potassium phosphite), and two cultivars, Georgia-06G and TifNV High O/L, with seven replications. The first treatment application was performed at 30 days after planting (DAP) with 14-day interval between applications for a total of four applications. For the three consecutive application times, Bravo Weather Stik was used on all plots to prevent excessive defoliation and enable plants to be conducted until harvest. Measurements of pigment concentration (chlorophyll a, chlorophyll b, and carotenoids) and gas exchange and fluorescence (photosynthesis, stomatal conductance, intercellular CO_2, actual quantum yield of photosystem II, and electron transport rate) were taken at 3, 7, and 13 days after each application from the first to the fourth applications. At 127 DAP, pod samples were collected for maturity assessment using the peanut profile board. Plants were harvested at 130 DAP for yield. Preliminary analysis of the results suggests that fungicide applications did not affect gas exchange and pigments concentration in peanut plants. Differences in the photosynthetic parameters were observed between the two cultivars, with generally higher gas exchange and pigments concentration for GA-06G than TifNV High O/L. Application of all fungicides delayed pod maturity compared to the untreated control. Abound, Elast, Orius, and Prophyt resulted in higher yields, while lower yield was observed for the untreated control. Further research is required to clarify the effects of single fungicide applications in the photosynthetic process of peanut leaves.

Analysis of a BC_3F_6 Interspecific Peanut Introgression Population Using Genome-specific SNP Markers

T. K. TENGEY*, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409, and CSIR-Savanna Agricultural Research Institute, Nyankpala, Ghana; C. E SIMPSON, Texas A&M AgriLife Research, Stephenville, TX 76401; 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; and M. D. BUROW, Texas A&M AgriLife Research, Lubbock, TX 79403 and Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.

Cultivated peanut is reproductively isolated from its ancestral wild species parents because of differences in ploidy and genomes, and the self pollinating nature of the peanut. There is considerably less polymorphism among cultivated peanuts than among wild species. One way of introducing genetic diversity into cultivated peanut is through hybridization with wild species. A BC_3F_6 population developed from a cross with the synthetic amphidiploid TxAG-6 [*A. batizocoi* x (*A. cardenasii* x *A. diogoi*)]^{4x} as donor and Florunner as recurrent parent has lines having high oil contents, resistance to leaf spot disease, root-knot nematodes, and rust. The aim of this study is to perform a marker analysis of the BC_3F_6 population. Genome-specific SNP-based markers were designed and used to genotype 317 BC_3F_6 individuals from this population on the Fluidigm Biomark system. Results showed that 82 out of 127 A-genome SNPs (65 %) and 64 out of the 128 B-genome SNPs (50 %), altogether averaging 58%, gave the expected theoretical Florunner to TxAG-6 segregation ratio of 15:1. Population structure analysis revealed that the population can be divided into two sub-populations (Q1 and Q2). Q2 had a higher average genetic distance and a lower F_{ST} value whilst Q1 had a lower average genetic distance and higher F_{ST} value. Neighbor joining grouped individuals into three clusters (1, 2 and 3) and showed that individuals with a higher percentage of TxAG-6 allele had longer branch length suggesting a higher level of diversity. Principal coordinate analysis produced clusters similar to neighbor joining. Comparative analysis between individuals in NJ and structure, and NJ and principal coordinates analysis explained the two-sub-populations obtained by population structure analysis.

The Effects of Storage Conditions on Peanut Seed Quality

C. C. WEAVER*, W. S. MONFORT, C. PILON, and T. L. GREY. Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.

Peanut (*Arachis hypogaea* L.) is one of the most important commodities in Georgia with over 291,000 hectares planted in 2017. Seed quality is an important component to overall successful peanut production. Exposure of seeds to unfavorable temperatures and relative humidity over time can result in loss of germination and vigor. The objective of this study was to determine the effects of storage conditions on germination and vigor of runner-type peanut seed. Storage conditions consisted of a greenhouse, office, peanut wagon, and a cold storage room. The experiment was carried out at the University of Georgia Coastal Plain Experiment Station in Tifton, GA in 2017. The storage conditions were selected to obtain extreme diurnal fluctuations which are similar to what growers encounter compared to more stable diurnal fluctuations where temperatures are controlled and seed storage is more consistent. The cultivar used in this experiment was Georgia-06G. One month after the seeds were maintained in each respective storage (April 3- May 3), samples were taken from each storage condition starting at 30 days after initial storage and every 14 days thereafter for a total of 4 sampling dates and maintained in a cold room until measurements were taken. Seed germination and vigor were evaluated using a thermal gradient table with temperature range of 13 to 32.5 °C. Seeds were placed in Petri-dishes and incubated for 7 days. Seeds were considered germinated when radicle length was ≥ 5 mm. Number of seeds that germinated was counted daily up to five consecutive days starting on day three. In addition, a field trial was conducted under optimal planting conditions to assess emergence. Storage condition affected lab germination. Seeds stored in the greenhouse and peanut wagon experienced higher diurnal fluctuations and relative humidity throughout the month of May and early June compared to seeds stored in a cold storage room or office. Seeds from the cold storage had the highest germination percentage throughout the four sample dates. This preliminary study suggested that storage conditions having extreme diurnal fluctuations does affect germination and vigor over time compared to more consistent conditions.

MINUTES

BOARD OF DIRECTORS MEETING

50th Annual Meeting
Doubletree Hotel Williamsburg
Williamsburg, VA
11 July 2018

Board Members Present:

President Peter Dotray	Yes
President-elect Rick Brandenburg	Yes
Past President C. Corley Holbrook	Yes
Steve Brown	Yes
Darlene Cowart	Yes
Chris Liebold	Yes
Wilson Faircloth	Yes
Marshall Lamb	Yes
Peggy Ozias-Akins	Yes
Barbara Shew	Yes
Dan Ward	Yes
Jason Woodward	Yes
Executive Officer Kim Cutchins	Yes

President Peter Dotray called the meeting to order at 5:10 p.m. Members present are noted above and constitute a quorum. Additional attendees are John Takash, Ron Sholar, Craig Kvien, John Bennett, John Damicone, Bob Kemerait, Barry Tillman and Todd Baughman.

Minutes of July 12, 2017 meeting
Minutes of the July 12, 2017 Board meeting were distributed to the Board for review prior to the meeting. President Dotray asked for any changes and/or additions. There being no changes/ additions, President Dotray called for approval of the minutes. It was moved by Corley Holbrook, seconded by Peggy Ozias-Akins, and unanimously passed to:

Approve the minutes of the July 12, 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 noted APRES' bank, Bank SNB (formerly Stillwater Bank), has been sold to Simmons Bank and all APRES accounts will now be held at Simmons Bank in Oklahoma. She is expecting to add a new association management software package this year to assist in managing membership services, creating a membership directory, email contact marketing system, membership dues invoicing, and potentially movement of the APRES website to a new host server. After reviewing over 20 different software packages, she has selected Wild Apricot. The software will combine several stand alone packages APRES is currently using potentially saving money and giving APRES members access to more information to their membership informtion. Over the past year, APRES has sent out 19 marketing pieces via the Constant Contact email system. Negotiations for a new Allen Press contract are still ongoing due to staff changes at Allen Press. Annual Meeting sites for 2020 and 2021contracts are being explored. She continue to attend industry meeting when time allows (USA Peanut Congress, Georgia Peanut

Farm Show, South Carolina Peanut Board, Mississippi Peanut Growers Association, American Peanut Council Winter Meeting, Peanut Leadership Academy, etc…) She thanked Pete Dotray, Rick Brandenburg, Tom Stalker, Maria Balota, David Langston, Beth Langston, Corley Holbrook, Pam Worrell, Brian Royals, Jennifer Tillman and Gary Schwarzlose, for putting together one heck of an anniversary meeting, continuing the attendance record streak. She advised the Board that she will be taking 2 weeks at the end of July for a vacation and looks forward to working with the APRES Board and Committees in 2018-19.

NEW BUSINESS

The following Committee reports were presented to and approved by the Board. Action taken by the Board is in italics. All Committee reports were accepted as presented to the Board. Any actions taken at the Business Meeting on July 13th, which differs from information provided at the Board meeting, is noted in italics. Full reports from each committee are to be presented at the July 13th Business Meeting and Awards Ceremony in the Ballroom at 5:00 p.m.

FINANCE COMMITTEE:

Chairman Tim Brenneman reported the Finance Committee met July 9th to discuss APRES current financial statements and to review and recommend a budget for 2018, which has been delayed as the Executive Officer attended to family issues. The Committee has approved the below items and is seeking the Board's approval.

Balance Sheet as of December 31, 2017

APRES financial statements are reported using the accrual system. Current assets are $274,092, primarily in cash—checking, CDs. Accounts receivables of $9,951 are noted.

Liabilities are a credit card bill of $45 and total equity of $274,047. Total Liabilities and Equity are $274,092.

Profit & Loss Statement as of December 31, 2017

Income through December 31, 2017 is $123,387 and expense is $108,858. Net income for the year is $14,916.

Proposed Budget 2018

A budget of $127,000 income and $144,475 expense is being proposed for 2018, which reflects the anticipated additional expenses for APRES' 50th anniversary celebration approved last year. *(The Board approved pulling $20,000 from reserves to cover any shortfall in 2018.)*

Also included in the proposed 2018 budget is authorization to contract with the association management software service Wilde Apricot at $160 a month. This service has the potential to replace Constant Contact at $40/month and our Web Hosting, Web Security services which total $350 per year.

Balance Sheet as of June 18, 2018

APRES financial statements are now being reported using the accrual system. Current assets are $295, 963, primarily in cash—checking, CDs. Accounts receivables of $9,951 are noted.

Liabilities are credit card bill, employment taxes and withholdings of $1,620 and total equity of $294,342. Total Liabilities and Equity are $295,963.

Profit & Loss Statement as of June 18, 2018

Income through June 18, 2018 is $54,024 and expense is $34,656. Majority of expenses for APRES occur in July/August when the bills for the Annual Meeting arrive and are paid. Contract labor is an email marketing service, which will be re-classified to Outside Services—a better descriptor. Net income for the 6-month period is $19,531.

Vanguard Investments as of June 30, 2018

Balance: $32,725.31

Holdings: Vanguard LifeStrategy Income Fund (VASIX)
84% Bonds; 19% Stocks
$15.34 price per share
Contains only 4 index funds
Largest Holdings: Vanguard Total Stock Market Index Fund
Vanguard Total International Stock Index Fund

Growth Since Inception: Rate of Return is 2.8% since inception (February 2015)

Investment Recommendations:

At the last Committee meeting and approved by the Board, the Committee recommended APRES move its Money Market funds to a new Vanguard index funds with a 50%/50% balance of bonds and stocks. Attached are three recommendations the Committee has reviewed and are asking for the Board's guidance on proceeding.

VSCGX: Vanguard LifeStrategy Conservative Growth Fund – Investor Shares
60% bonds; 40% stocks
$19.74 price per share
Largest holdings are the same as VASIX and the same 4 index funds.

VSMGX: Vanguard LifeStrategy Moderate Growth Fund – Investor Shares
60% stocks; 40% bonds
$26.90 price per share
Largest holdings are the same as VASIX and the same 4 index funds.

VBIAX: Vanguard Balanced Index Fund – Admiral Shares
60% stocks; 40% bonds
$34.84 price per share
Largest holdings are Apple, Microsoft, Amazon, Alphabet, Facebook, etc.
Price is $34.84 per share

The Board agreed with the Finance Committee that all three funds are good recommendations and empowered the Finance Committee to make the decision.

(Post conference the Finance Committee selected VSMGX for future investments.)

Potential Growth Ideas Needed

APRES relies solely upon membership dues and annual meeting registrations/

sponsorships. For APRES to grow, it needs to grow membership, increase registrations, increase sponsorships and/or find other growth opportunities.

It was moved by Corley Holbrook, seconded by Rick Brandenburg, and unanimously approved to:

Accept the report and recommendations of the Finance Committee, including the 2018 proposed budget, as presented.

NOMINATING COMMITTEE

Chairman Corley Holbrook presented the slate of 2018–19 Officer and Board nominees, which will be presented at tomorrow's Business Meeting 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 *(highlighted in yellow)*:

2018-19 President	Dr. Rick Brandenburg (2020) North Carolina State University
2018-19 President-Elect	Dr. Barry Tillman University of Florida
2018-19 Past President	Dr. Peter Dotray(2019) Texas A&M University
2018-19 Executive Officer	Kim Cutchins (2019)

Board of Directors Nominees *(highlighted in yellow)*:

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:	Gary Schwarzlose (2021) Bayer
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.

Incoming APRES President Rick Brandenburg stated he has almost completed his Committee roster assignments for 2018-19.

Peggy Ozias-Akins made the motion, seconded by Darlene Cowart, and unanimously approved:

To accept the report of the Nominating Committee.

PUBLICATIONS & EDITORIAL COMMITTE

Production Book

Chairman Dr. Chris Liebold shared an update on the progress of the book. In summary, it has been difficult to get lead authors engaged. Between the three editors of the book, they have received a total of three completed chapters out of the thirteen proposed. Dr. Shyam Tallury shared the same message of getting lead authors engaged. Many lead authors have indicated they will write their chapters but have other priorities. Deadlines and timelines were shared with lead authors but largely ignored.

Members of the committee shared new thoughts on strategies on dealing with lead authors and provided new innovated thoughts on who to engage, which included engaging grade students in the given subject because many of literature reviews that are very comprehensive. Chairman Liebold shared that book does want to maintain a level of expertise authenticity, but that was quickly dispelled with the thought of ensuring the graduate adviser is engaged in the book (and listed as a author).

President Dotray suggested a letter from the Board on the importance of this book might be helpful to motivate authors to complete their chapters. Chairman Liebold concurred. Incoming President Brandenburg agreed to draft a letter to send.

Peanut Science

Chris stated Peanut Science Editor, Tim Grey, will give a full report at the business meeting. Finding a new publisher has been challenging and Kim is still negotiating with Allen Press.

Peanut Newsletter

Volunteers have been recruited to begin work on reviving the Peanut Newsletter, working toward the first issue in January 2019.

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

to accept the report of the Publications & Editorial Committee.

PEANUT QUALITY COMMITTEE

Chairman John Bennett gave a brief summary of his complete report which is covered in the Business Meeting minutes. No action needed from the Board.

PUBLIC RELATIONS COMMITTEE

The Public Relations Committee met and will make a complete report during the Business Meeting.

BAILEY AWARD COMMITTEE

Chairman John Damicone reported 6 nominations were received for best oral presentation at the 2017 Annual Meeting in Albuquerque, New Mexico. The Bailey Award Committee received three manuscripts for final ranking. Announcement of the 2018 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 received some push back on the new guideline requirement that the winning paper must be submitted to Peanut Science for publication. He asked the Board's guidance on whether this topic should be reviewed again.

The Board asked the Committee to take another look at this new rule and to make a recommendation to the Board.

FELLOWS COMMITTEE

Chairman Eric Prostko announced no applications for Fellow of the Society were received for 2018. Additional effort will be made to identify potential candidates for 2019.

SITE SELECTION COMMITTEE

Chairman Barbara Shew reported APRES has a signed for the2019 Annual Meetings. Potential meeting sites in Texas (outside of San Antonio) are stalled due to the high hotel room rates received from all potential sites—South Padre Island and Austin, TX.

2019 Annual Meeting	2020 Annual Meeting	2021 Annual Meeting
July 9-11	July 14-16	
Hotel at Auburn University	Southwest Region	Virginia-Carolina Region

Chairman Shew asked for the Board's guidance on exceeding the current maximum hotel rate of $145. After much discussion, the Board unanimously agreed the Committee could consider properties with rates up to $185 per night. The Board added if hotels could not be found in these areas for this price point, the Committee should look at properties in Oklahoma City and Tulsa, OK.

COYT T. WILSON DISTINGUISHED SERVICE COMMITTEE

Chairman Jason Woodward stated the Coyt T. Wilson Service Award Committee reached a unanimous recommendation for the 2018 award: Dr. Craig K. Kvien. A full report will be given at the Business Meeting.

JOE SUGG GRADUATE STUDENT ORAL PRESENTATION COMPETITION COMMITTEE

Chairman Bob Kemerait reported the Joe Sugg Graduate Student Oral Presentation Competition attracted another large group of participants—17 competitors from 5 different universities. 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 the same judges. Winners will be announced at tomorrow's Business Meeting and Awards Ceremony.

GRADUATE STUDENT POSTER COMPETITION

Ad Hoc Chairman Tom Stalker reported this inaugural event drew 7 participants, helping alleviate some of the scheduling issues of the oral presentation competition. Tom asked the

Board to decide which Committee will take leadership of this new competition or suggested a new Committee be formed. After much discussion, the Board unanimously agreed to let the Joe Sugg Graduate Student Oral Presentation Committee handle the logistics of the Poster Competition as well and to seek a different sponsor. The National Peanut Board sponsored the 2018 competition and will be asked if they would like to continue to do so in 2019. Winners of the $750 prize and peanut books will be announced at tomorrow's Business meeting and Awards Ceremony.

CORTEVA AGRISCIENCE™, DIVISION OF DOWDUPONT™ AWARDS COMMITTEE

Chairman Kelly Chamberlin reported the membership was solicited for award nominees in both the areas of Research and Education. Nominations for both awards were received and the recipients will be announced at the Business Meeting and Awards Ceremony

PROGRAM COMMITTEE

Program Chairman Rick Brandenburg recognized his outstanding support team—Technical Program Chairman Tom Stalker; Local Arrangements Chairman Maria Balota; Fun Run Chair, Jack Davis; 50th Anniversary Celebration Chair, Corley Holbrook; and, Spouses Program Chair, Beth Langston. Attendance for 2018 is 401 total; 265 registrants; 77 spouses; 59 children. Feedback from the Opening Session speakers has been outstanding. The symposium was a huge success. The commemorative gifts and appearance of Mr. Peanut and Buddy McNutty added to the celebratory occasion. A full report will be given at the Business Meeting

President Dotray commended the entire Program Committee for an excellent meeting, honoring the legacy of APRES and providing a vision for its future..

OTHER BUSINESS

Graduate Student Organization

President Dotray reported he worked with graduate student Sara Beth Pelham to organize the APRES Graduate Student Organization (GSO). A proposed manual of Operating Procedures has been developed and the first meeting of the GSO will be tomorrow after a new event on APRES's Annual Meeting schedule—a graduate student luncheon with a panel of speakers, who will address job opportunities at USDA.

President Dotray suggested that we make the President of the GSO an ex-officio member of the APRES Board of Directors until a vote can be taken to make them a full voting member of the Board.

It was moved by Jason Woodward, seconded by Rick Brandenburg, to

grant APRES Board of Directors ex-officio membership status to the President of APRES' Graduate Student Organization and to move toward making the GSO President an official member of the APRES Board of Directors.

Recognition of Outgoing Board Members

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

Corley Holbrook - Past President
Wilson Faircloth - Production Rep

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

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

2017 Year End Balance Sheet

10:45 AM
06/21/18
Accrual Basis

American Peanut Research and Education Society
Balance Sheet
As of December 31, 2017

	Dec 31, 17	Dec 31, 16	$ Change
ASSETS			
Current Assets			
Checking/Savings			
Vanguard	32,116.20	31,339.06	777.14
Paypal	97.50	97.50	0.00
Cash - Checking - 2629	86,046.15	78,659.33	7,386.82
Cash - MMA - 7397	103,300.29	103,146.33	153.96
Cash - CD 4885	18,375.11	18,339.88	35.23
Cash - CD 4647	13,644.88	13,556.39	88.49
Cash - Bayer-1934	10,561.23	10,550.91	10.32
Total Checking/Savings	264,141.36	255,689.40	8,451.96
Other Current Assets			
Account Recievable	9,951.00	4,411.00	5,540.00
Total Other Current Assets	9,951.00	4,411.00	5,540.00
Total Current Assets	274,092.36	260,100.40	13,991.96
TOTAL ASSETS	**274,092.36**	**260,100.40**	**13,991.96**
LIABILITIES & EQUITY			
Liabilities			
Current Liabilities			
Credit Cards			
Security Bank Card	45.00	40.00	5.00
Total Credit Cards	45.00	40.00	5.00
Other Current Liabilities			
State W/H Tax	0.00	92.83	-92.83
24000 · FICA/FWH Payable	0.00	836.41	-836.41
Total Other Current Liabilities	0.00	929.24	-929.24
Total Current Liabilities	45.00	969.24	-924.24
Total Liabilities	**45.00**	**969.24**	**-924.24**
Equity			
31300 · Restricted Fund Balances	250.00	250.00	0.00
32000 · Unrestricted Fund Balances	258,881.16	232,884.39	25,996.77
Net Income	14,916.20	25,996.77	-11,080.57
Total Equity	**274,047.36**	**259,131.16**	**14,916.20**
TOTAL LIABILITIES & EQUITY	**274,092.36**	**260,100.40**	**13,991.96**

2017 Year End Profit-Loss Statement

10:46 AM
06/21/18
Accrual Basis

American Peanut Research and Education Society
Profit & Loss Prev Year Comparison
January through December 2017

	Jan - Dec 17	Jan - Dec 16	$ Change
Ordinary Income/Expense			
Income			
Royalty	10.00	0.00	10.00
Capital Gain Distribution	19.25	4.50	14.75
Dividend Income	763.27	685.50	77.77
Book Sales			
Shipping & Handling	27.05	51.60	-24.55
Peanut-Genetics, Processing & U	3,197.20	4,255.00	-1,057.80
Book Sales - Other	100.00	0.00	100.00
Total Book Sales	3,324.25	4,306.60	-982.35
Sponsorship-Annual Meeting			
Spouse Hospitality Suite	0.00	3,000.00	-3,000.00
Travel - Bayer Prog Ext Agents	0.00	6,152.44	-6,152.44
Meeting Breaks	6,500.00	6,000.00	500.00
Fun Run	0.00	0.00	0.00
Contribution - Joe Sugg Award	1,500.00	750.00	750.00
Awards	2,500.00	2,000.00	500.00
Thursday Reception	3,250.00	3,000.00	250.00
Wednesday Dinner	19,000.00	27,000.00	-8,000.00
Sponsorship-Annual Meeting - Other	7,000.00	2,800.00	4,200.00
Total Sponsorship-Annual Meeting	39,750.00	50,702.44	-10,952.44
Peanut Science			
Peanut Science Journal	10.00	40.00	-30.00
Page Charges	13,041.16	16,147.00	-3,105.84
Total Peanut Science	13,051.16	16,187.00	-3,135.84
Annual Dues			
Sustaining-Platinum Level	1,000.00	0.00	1,000.00
Sustaining-Gold Level	1,000.00	1,000.00	0.00
Sustaining-Silver Level	700.00	600.00	100.00
Institutional	1,600.00	1,600.00	0.00
Individual-Student	625.00	1,025.00	-400.00
Individual-Post Doc/Tech Supp	375.00	250.00	125.00
Individual-Retired	200.00	175.00	25.00
Individual-Regular	17,000.00	17,250.00	-250.00
Annual Dues - Other	350.00	250.00	100.00
Total Annual Dues	22,850.00	22,150.00	700.00
Meeting Registration			
Meeting Registration-Retired	250.00	0.00	250.00
Meeting Registration-Platinum	0.00	0.00	0.00
Meeting Registration-Regular	40,794.50	35,245.00	5,549.50
Meeting Registration-Gold	1,050.00	1,300.00	-250.00
Meeting registration-Student	1,525.00	1,950.00	-425.00
Total Meeting Registration	43,619.50	38,495.00	5,124.50
Total Income	123,387.43	132,531.04	-9,143.61
Expense			
Book Purchases	4,681.25	9,362.50	-4,681.25
Administrative Expense			
Finance Charges	30.87	0.00	30.87
66000 · Wages - Executive Officer	21,083.26	28,414.11	-7,330.85
Taxes - Payroll	2,072.14	1,801.56	270.58
Postage	47.45	72.16	-24.71
Office Expenses	127.72	78.35	49.37
Legal Fees	474.00	0.00	474.00
Credit Card Charges	1.26	0.00	1.26

10:46 AM
06/21/18
Accrual Basis

American Peanut Research and Education Society
Profit & Loss Prev Year Comparison
January through December 2017

	Jan - Dec 17	Jan - Dec 16	$ Change
Bank Charges			
Paypal Fees	1,648.74	3,000.53	-1,351.79
Bank Charges - Other	6.00	11.00	-5.00
Total Bank Charges	1,654.74	3,011.53	-1,356.79
Dues and Subscriptions	0.00	30.00	-30.00
Contract Labor	455.00	200.00	255.00
License and Permits	30.00	0.00	30.00
Insurance	100.00	100.00	0.00
Foreign Taxes	5.38	5.52	-0.14
Accounting	1,915.00	1,895.00	20.00
Total Administrative Expense	27,996.82	35,608.23	-7,611.41
Annual Meeting			
Travel - Bayer Prog Ext Agents	7,554.29	3,598.29	3,956.00
Awards	4,896.73	5,252.37	-355.64
Hotel Charges	50,000.02	36,388.10	13,611.92
Supplies/Equip/AV	0.00	2,305.06	-2,305.06
Total Annual Meeting	62,451.04	47,543.82	14,907.22
Peanut Science Publishing			
Peanut Science Editor Stipend	3,000.00	3,000.00	0.00
Peanut Science Publishing - Other	10,729.20	11,597.12	-867.92
Total Peanut Science Publishing	13,729.20	14,597.12	-867.92
Total Expense	108,858.31	107,111.67	1,746.64
Net Ordinary Income	14,529.12	25,419.37	-10,890.25
Other Income/Expense			
Other Income			
Interest Income	387.08	577.40	-190.32
Total Other Income	387.08	577.40	-190.32
Net Other Income	387.08	577.40	-190.32
Net Income	14,916.20	25,996.77	-11,080.57

INCOME

Income	Actual 2015	Actual 2016	Approved Budget 2017	Actual 2017	Approved Budget 2018	2017 Budget vs. Actual Comments 2018 Budget Rationale
Annual Dues	**$28,000**	**$21,900**	**$28,000**	**$22,850**	**$25,000**	Under budget; coding changes put sponsors income under annual meeting; some have been included under membership in the past; late second billing pushed income to 2018 Budget lower than YE2017; Lost $1,500 due to library losses from move to Peanut Science Open; Will work to expand membership base and sponsorships
AnMeeting Registrations	**(VC) 39,750**	**(SE) $38,495**	**(SW) $35,000**	**(SW) $43,620+**	**(VC) $35,000**	Over Budget; Better than anticipated attendance; people liked Albuquerque We are on target for $40K; Don't want to overpromise
Sponsorships –	**$25,800**	**$51,952**	**$37,250**	**$39,750+**	**$38,000**	Over budget; We can do better with more personal contacts Continue to build sponsorship support; will work to expand
Ice Cream Social	$800	$0	$3,000	$0	$3,000	Other Category should have been classified as Ice Cream Social Budget same as 2017
Wednesday Dinner	**$9000	$27,000	$19,000	$19,000	$19,000	On budget Bayer and BASF have both requested invoices for 2018; anticipate full funding
Thursday Reception	$3,000	$3,000	$3,000	$3,250	$3,000	Over budget; Dow gave Education award money to Joe Sugg and Reception Anticipate Dow will renew its sponsorship
Meeting Breaks	$6,000	$6,000	$6,000	$6,500	$6,000	Over budget; Coding issue Anticipate sponsors will renew their commitment
Awards	$2,750	$3,500	$2,750	$4,000	$3,500	Over budget; largest ever number of universities in Joe Sugg; second/third sponsors One prize awarded for Joe Sugg; Added Graduate Student Poster Competition
Fun Run	$250	$500	$500	$0	$500	Under budget; Texas A&M University sponsored fun run; Paid T-Shirt bill directly Anticipate JLA will renew its sponsorship
Other	$4,000	$8,952	$3,000	$7,000	$3,000	Over budget; Approximately $4K should have been recorded in Ice Cream Social; $3K for Spouses Hospitality Suite Anticipate obtaining sponsor for Hospitality Suite in 2018
Peanut Science	**$10,465**	**$20,059**	**$21,000**	**$13,050-**	**$25,000**	Under budget; still negotiating contract with Allen press Anticipate billing 2 issues @ $10.5k per issue based on history; Potentially a 3rd issue
Book Sales	**$336**	**$4,975**	**$3,600**	**$3,300-**	**$3,000**	Under budget; Sold or donated 24 PGPU copies, plus Advances book Anticipate selling 30 copies @ $100/copy
Book Shipping		**$65**	**$200**	**$27-**	**$50**	Sales at AnMtg where no shipping charge Anticipate most book sales will occur at Annual Meeting
Miscellaneous Income	**$658**	**$685**	**$650**	**$783+**	**$700**	Over budget; Vanguard investment up Dividends and capital gains from Vanguard investment fund
INCOME TOTAL	**$105,009**	**$138,131**	**$125,700**	**$123,387-**	**$126,750**	
Interest	$961	$453	$500	$387	$250	Under budget;Interest from CDs; over projected; money moved to Vanguard, Money Market while awaiting selection of new Vanguard investment Budget less as money moved to Vanguard investment funds
Income Total + Interest	**$105,970**	**$138,584**	**$126,200**	**$123,774**	**$127,000**	Under budget primarily to only one Peanut Science issue being published Anticipate similar income to 2017

EXPENSES

Expenses	Actual 2015	Actual 2016	Approved Budget 2017	Actual 2017	Approved Budget 2018	2017 Budget vs. Actual Comments 2018 Budget Rationale
Annual Meeting	**(VC) $61,554**	**(SE) $47,544**	**(SW) $50,000**	**$62,451**	**$78,500**	Committee worked hard to increase sponsorships and hold expense (even with larger crowd), resulting in net income over expense 50th Anniversary Celebration expenses; Larger than expected crowd
Awards	$5,465	$5,252	$5,500	$4,897	$5,500	Under budget; one less award plaque (Dow Research) Budgeted same as actual YE2017
Hotel Charges	$47,010	$36,388	$37,000	$50,000	$60,000	Over budget; larger than expected attendance; speaker fees; unbudgeted poster breakfast addition Anticipate more expense related 50th Annivesary celebration; Larger crowd
Speaker Expenses		$0	$2,000	$0	$3,000	Under budget; Coding error Speaker Travel and lodging
Supplies/Equip/AV	$1,603	$2,305	$2,000	$0	$7,000	Coding error included; $1,500 of expense was sponsored Badge stock, printing of signs/program, etc.; Promotional items for 50th Anniversary
Travel - Ext. Agents	$1,769	$3,598	$5,000	$7,554	$0	Bayer not renewing program; Authorized utilizing remaining funds to pay, if needed
Other	$5,707	$0	$3,000	$3,000	$3,000	On target Executive Officer/Editor Expenses
Peanut Science	**$13,463**	**$14,597**	**$20,600**	**$13,729**	**$25,000**	
Publishing	$4,458	$1,821	$6,600	$10,729	$22,000	Billed for 44-1; Negotiating contract Anticipating 3 issues billed in 2018
Editor Stipend	$3,000	$3,000	$3,000	$3,000	$3,000	On budget Same as 2017
Website Hosting	$5,109	$8,991	$10,000			Lumped in publishing lumped in publishing
Peer Review	$621	$477	$650			Lumped in publishing Lumped in publishing
Other	$275	$308	$350			Lumped in publishing Lumped in publishing
Book Purchase - AOCS	**$0**	**$9,363**	**$0**	**$4,681**	**$0**	Additional books purchased in anticipating of 2017 sales No book purchases anticipated in 2018
Book Shipping		**$0**	**$200**		**$50**	Included in Income;Majority of Books sold at Annual Meeting, no shipping fees Minimal shipping anticipated

Expenses continue on the next page

EXPENSES , CONTINUED

Expenses, Continued	Actual 2015	Actual 2016	Approved Budget 2017	Actual 2017	Approved Budget 2018	2017 Budget vs. Actual Comments 2018 Budget Rationale
Administrative Expenses	**$29,992**	**$35,375**	**$35,230**	**$27,997**	**$40,905**	
Dues - CAST	$0	$0	$0	$0	$0	No longer a CAST member
Corp. Registration Fees	$0	$30	$30	$30	$30	On budget Renewed January 2018
Legal Fees	$525	$0	$525	$474	$500	Hotel contracts reviewed in 2016; billed in January 2017 Anticipate need to review Allen Press contracts for Peanut Science in 2017
Insurance	$100	$100	$100	$100	$100	Same as 2017
Executive Officer	$23,000	$28,414	$23,000	$21,083	$28,000	Under budget; out of office for medical leave and personal leave EO Salary increased to $28K
Taxes: Payroll	$1,802	$1,802	$2,000	$2,072	$2,800	Over budget EO Salary increased to $28K, thus more taxes
Administrative Assistant	$0	$0	$0	$0	$0	
Web Page Maintenance	$648	$0	$1,500	$0	$1,500	Under budget; did not hire security specialist not need for 2017 Anticipate hiring network security specialist for assistance when needed
Accounting Services – Herring CPA	$1,650	$1,895	$2,175	$1,915	$2,175	Under budget; Herring did not increase their monthly fee for 2017 Moved to accrual system increase monthly fee to $125/month; Taxes $675
Outside Services	$0	$200	$1,000	$455	$1,000	Under budget; Constant Contact expenses only Constant Contact; Membership Database software
Postage	$88	$72	$50	$47	$50	On budget Stamps/Mailing
Office Expenses	$50	$78	$250	$128	$250	Under budget; Most expenses charged under Annual Meeting Vinyl banner
Travel - Officers	$0	$0	$1,200	$0	$1,200	Under budget; Coding issue with Annual Meeting Travel to Annual Meeting or other industry meeting
Bank Charges	$159	$11	$150	$38	$50	Under budget; Wire transfer fee; Most transactions are by credit card Wire transfer fees
PayPal/Credit Card Fees	$1,967	$2,773	$3,000	$1,649	$3,000	Under budget; not sure why Estimating to be similar to 2017; Should APRES charge a Credit Card Convenience Fee?
Miscellaneous	$3	$0	$250	$0	$250	Contingency fund
Depreciation	$0	$0	$0	$0	$0	
Expenses Total	**$105,009**	**$106,879**	**$106,030**	**$108,858**	**$144,475**	Expenses will be up due to 50th Anniversary Celebration/added functions

INCOME OVER EXPENSES

Income Over Expense	Actual 2015	Actual 2016	Approved Budget 2017	Actual 2017	Approved Budget 2018	
Total Income + Interest	$105,970	**$138,584**	**$126,200**	**$123,774**	**$127,000**	
Total Expenses	$105,009	**$106,879**	**$106,030**	**$108,858**	**$144,475**	
Net Income	**$960	**$31,706**	**$20,170**	**$14,916**	**($17,475)**	APRES will run a deficit this year due to 50th Anniversary celebration, unless additional sponsors or members are found
**Accounts Receivables as of 12-31-2015	**$15,134	$9,515				
Net Income with Receivables	**$16,094**					APRES will change from a cash accounting to accrual accounting system in 2016 which recognizes accounts payable and accounts receivables. Accounts receivables are noted on the balance sheet

American Peanut Research and Education Society
Balance Sheet
As of June 18, 2018

2018 Balance Sheet

	Jun 18, 18
ASSETS	
Current Assets	
Checking/Savings	
Vanguard	32,879.98
Paypal	5,243.55
Cash - Checking - 2629	109,434.28
Cash - MMA - 7397	121,763.92
Cash - CD 4647	13,678.78
Cash - Bayer-1934	3,011.62
Total Checking/Savings	286,012.13
Other Current Assets	
Accounts Receivables	9,951.00
Total Other Current Assets	9,951.00
Total Current Assets	295,963.13
TOTAL ASSETS	**295,963.13**
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Credit Cards	
Security Bank Card	388.73
Total Credit Cards	388.73
Other Current Liabilities	
State W/H Tax	233.34
24000 · FICA/FWH Payable	1,040.66
FUTA Payable	-42.00
Total Other Current Liabilities	1,232.00
Total Current Liabilities	1,620.73
Total Liabilities	1,620.73
Equity	
31300 · Restricted Fund Balances	250.00
32000 · Unrestricted Fund Balances	264,610.14
Net Income	19,531.26
Total Equity	294,342.40
TOTAL LIABILITIES & EQUITY	**295,963.13**

American Peanut Research and Education Society
Profit & Loss
January 1 through June 18, 2018

2018 Profit & Loss Statement

	Jan 1 - Jun 18, 18
Ordinary Income/Expense	
Income	
Book Sales	
Peanut-Genetics, Processing & U	170.00
Total Book Sales	170.00
Sponsorship-Annual Meeting	
Awards	1,500.00
Sponsorship-Annual Meeting - Other	7,800.00
Total Sponsorship-Annual Meeting	9,300.00
Peanut Science	
Page Charges	4,204.00
Total Peanut Science	4,204.00
Annual Dues	
Sustaining-Silver Level	350.00
Individual-Student	175.00
Individual-Post Doc/Tech Supp	375.00
Individual-Retired	100.00
Individual-Regular	8,900.00
Total Annual Dues	9,900.00
Meeting Registration	
Meeting Registration-Retired	250.00
Meeting Registration-Regular	28,500.00
Meeting Registration-Gold	500.00
Meeting registration-Student	1,200.00
Total Meeting Registration	30,450.00
Total Income	54,024.00
Expense	
Administrative Expense	
66000 · Wages - Executive Officer	13,583.31
Taxes - Payroll	1,039.13
Bank Charges	
Paypal Fees	1,445.20
Total Bank Charges	1,445.20
Dues and Subscriptions	30.00
Outside Services	518.73
Accounting	1,426.50
Total Administrative Expense	18,042.87
Annual Meeting	
Travel	1,050.00
Awards	3,000.00
Supplies/Equip/AV	45.00
Annual Meeting - Other	500.00
Total Annual Meeting	4,595.00
Peanut Science Publishing	
Peanut Science Editor Stipend	3,000.00
Peanut Science Publishing - Other	9,018.27
Total Peanut Science Publishing	12,018.27
Total Expense	34,656.14
Net Ordinary Income	19,367.86
Other Income/Expense	
Other Income	
Interest Income	163.40
Total Other Income	163.40
Net Other Income	163.40
Net Income	19,531.26

We usually report APRES finances as of the end of June; however our accountant is out on maternity leave and these are the latest numbers. To give you a better idea of where we will be at the end of June, add $25,600 to income for Paypal credit card payments received to date which are recorded at the end of the month.

BUSINESS MEETING AND AWARDS CEREMONY

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
50th Annual Meeting
Doubletree Hotel Williamsburg
Williamsburg, VA
JULY 12, 2018

1. **President's Report**……..Peter Dotray

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

3. **Awards Presentation**
   Coyt T. Wilson Distinguished Service Award…….……Jason Woodward
   Dow AgroSciences Awards for Research and Education..……..….Michael Baring
   Bailey Award ……..……..……John Damicone
   Joe Sugg Graduate Student Competition…….……...…….Robert Kemerait
   Fellow of the Society Awards..……..……Eric Prostko

4. **New Business**
   Committee Reports:
   (a) Nominating Committee ……..……..Corley Hobrook
   (b) Finance Committee…….……Tim Brenneman
   (c) Public Relations Committee ……Ron Sholar
   (d) Peanut Quality Committee ……..……John Bennett
   (e) Site Selection Committee…….……Barbara Shew
   (f) Publications and Editorial Committee…….……Chris Liebold
   (g) Program Committee……Rick Brandenburg

5. **Other Business**

6. **Installation of New Officers** ……..……..……Peter Dotray
   Recognition of Outgoing Members of the Board of Directors……Peter Dotray
   Past President's Award…….……Rick Brandenburg

5. **Adjourn**……..……..Rick Brandenburg

MINUTES

BUSINESS MEETING AND AWARDS CEREMONY
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
50th Annual Meeting
Doubletree Hotel Williamsburg
Williamsburg, VA
July 12, 2018

Report of President Peter Dotray

Happy Anniversary!

It has been an honor to serve as APRES president this past year. When I first accepted the nomination to become APRES president, I had no idea it would coincide with our 50th Anniversary. A special thanks Corley Holbrook, Chair of the 50th Anniversary Planning Committee, who with his committee started planning this meeting 2 years ago. This society has come a long way in 50 years. Do you remember what was taking place 50 years ago? Technology in 1968 involved the maiden flight of Boeing 747, NASA launched Apollo 7 - the first manned Apollo mission, Allen K. Breed invented an air bag that deployed and inflated automatically on violent impact using nitrogen gas, Dr. Christian Barnard performed the first successful heart transplant, Emergency 911 telephone service started in the US, and First Philadelphia Bank installed the first automated teller machine (ATM). The Big Mac went on sale for $0.49, the Beatles create Apple Records and recorded "Hey Jude"; CBS introduced "60 Minutes", and the Musical Hair opened at Shaftesbury Theatre in London. Popular films in 1968 include The Graduate, Guess Who's Coming to Dinner, Bonnie and Clyde, Valley of the Dolls, The Odd Couple, Planet of the Apes, and Rosemary's Baby. Finally, popular musicians in 1968 included The Rolling Stones, The Supremes, The Beatles with -- "Hey Jude", Fleetwood Mac, Aretha Franklin, Gary Puckett and The Union Gap, The Grateful Dead, The Monkees, Simon and Garfunkel, The Beach Boys, The Bee Gees, Jimi Hendrix, Cream, The Doors, Pink Floyd, Moody Blues, Bobby Goldsboro, Marvin Gaye, and David Bowie.

In 1957, a small working group called the Peanut Improvement Working Group (PIWG) formed because of the need to develop a national peanut research organization. The location of the first Peanut Research Conference was in Atlanta, GA. PIWG evolved into APREA (American Peanut Research and Education Association) in 1968, and APREA became APRES in 1979. The 1969 Program Committee Members included W.K. Bailey, James Earl Mobley, Curtis Jackson, Dan L. Hallock, Sydney C. Reagan, Norman Davis, J. Frank McGill, and P.J. Tiemstra. The 2018 Program Committee members are Rick Brandenburg, Chair; Tom Stalker, Technical Program Chair; Maria Balota, Local Arrangements Chair; Beth Langston, Spouses Program Chair; and Jack Davis, Fun Run Chair. The 2018 Program Committee did an excellent job planning and executing the meeting this year. Thank you! The budget in 1968-69 included $4,392 in income and $495 in expenses, for a balance of $3,897. The budget in 2017 included $123,387 in income and $108,858 in expenses, for a balance of $14,916. APRES total assets rose from

$157,060 in 1998 to $338,233 in 2017, an increase of 115%. The Executive APRES Officers who have played a critical role in guiding APRES to solid financial standing include Leland Tripp, 1969-1974 Executive Secretary-Treasurer; Coyt T. Wilson, 1969-1977 Administrative Assistant; Donald Smith, 1975-1983 Executive Secretary-Treasurer; Broadus Brown, 1978-1983 Administrative Assistant; Ron Sholar, 1983-2007 Executive Officer; Jim Starr, 2007-2013 Executive Officer, and Kim Cutchins, 2013-Current Executive Officer. A special thanks to Ron Sholar, who served the longest term as APRES Executive Officer. Thank you Ron for your dedication and leadership to this organization. I am very thankful to have served my year as president with Kim Cutchins, our current Executive Officer. Kim does an excellent job and continues to expand the responsibilities of the Executive Officer. APRES membership reached 707 in 1987 and has experienced a slow and steady decline to 215 in 2011. Since 2011, our membership has been growing and has exceeded 300 since 2013. APRES meeting attendance was 450 in 1991, 545 in 1999, 201 in 2012, and reached 401 (265 attendees, 77 spouses, 59 children) in 2018. Total meeting presentations in the last 20 years have ranged from 91 in 1998 to 148 in 2016. Presentations in 2018 totaled 132 of which 37 were posters.

We have had several significant accomplishments in the last year or so. Peanut Science became an Open Access Journal (removed membership requirement to access Peanut Science) starting on July 1, 2017. The goal was to establish an impact factor by expanding our viewership and citations, reduce the cost of publication to increase submissions, while at the same time keeping the same high standards of publication. At this meeting, we had a record number of students (25) participate in the graduate student competitions, including the inaugural Graduate Student Poster Contest (7). Also new in 2018 was the creation of an American Peanut Research and Education Society Graduate Student Organization (APRES GSO). This organization will help improve networking among students across universities, create an environment to allow graduate students to play a more active role in meeting planning, including the putting together a graduate student symposium/luncheon at the annual meeting, have a seat at the table of the APRES BOD for direct involvement on topics related to graduate students, and simply provide a forum for professional leadership experience. I thank Sara Beth Pelham for taking the first leadership role in organizing the luncheon this year, which included a panel of scientists talking about careers with the USDA-ARS. We thank Syngenta for sponsoring the first GSO luncheon in 2018 and I would like to thank all of the other meeting sponsors for their continued support of this organization.

In closing, thank you for the honor and privilege of being your president during this 50th Anniversary celebration. I have been a member of APRES since 1997 and am thankful for the many work relationships and friendships that have come because of this organization. There is still a critical need to develop creative, science-based peanut research as it was 50 years ago. There is an equally important critical need to focus on effective and well-articulated communication about our science. We can't be afraid to challenge the current way of thinking. We are very fortunate to do what we do, and we need to resonate this fortune and be "passionate" in everything we do. I challenge you to "get involved" and say "yes" when called. APRES needs you as we create our next 50 years of memories! This has been a tremendous meeting, which started with the Fife and Drum, included a visit from Mr. Peanut and the NUTmobile, involved the first graduate student poster contest, and involved the creation of an APRES Graduate Student Organization. For my last duty as APRES President, I ask Dr. Charles Simpson and his wife LynAnne to cut our 50th Anniversary peanut butter cake. I wish you all safe travels home and I look forward to seeing you in Auburn, AL in 2019.

READING OF THE PREVIOUS MEETING'S MINUTES

The minutes of the 49th Annual Meeting Business Session were distributed via email to the

membership and posted online; therefore, the reading of the minutes was waived. President Dotray asked for corrections/additions. There being none, it was moved Marshall Lamb and seconded by Corley Holbrook, to:

Approve the minutes of the 49th Annual Meeting Business Session, as presented.

NEW BUSINESS

COMMITTEE REPORTS

NOMINATING COMMITTEE

Chairman Corley Holbrook presented the slate of 2018–19 Officer and Board nominees, which are listed below. Expiring Board seats are highlighted in yellow. 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. All nominees have agreed to serve, if elected.

Officer Nominees *(highlighted in yellow)*:

2018-19 President	Dr. Rick Brandenburg (2020) North Carolina State University
2018-19 President-Elect	Dr. Barry Tillman University of Florida
2018-19 Past President	Dr. Peter Dotray(2019) Texas A&M University
2018-19 Executive Officer	Kim Cutchins (2019)

Board of Directors Nominees *(highlighted in yellow)*:

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:	Gary Schwarzlose (2021) Bayer

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)

President Dotray called for additional nominations from the floor. There being none, it was moved, and seconded to close the nominations. It was moved, and seconded to:

Approve the election of the nominees to the APRES 2018-19 Board of Directors, as presented.

<u>Committee Reports Continued after Awards:</u>

The reports of all other APRES Committees can be found following the announcements of the 2018 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 ORAL PRESENTATION COMPETITION

Chairman Bob Kemerait reported the competition drew 17 competitors from 5 universities. The North Carolina Peanut Growers Association sponsored the awards—$500 for first place; $250 for second place; and, due to the strong number of presentations for this year's competition, a third prize of $100 was added. The winner of the competition is invited to submit their research to Peanut Science for publication consideration. If accepted, page charges are waived.

The 2018 winners are:

Winner : **Dennis J. Mahoney (**North Carolina State University)
"*Presence and Distribution of Suspected Palmer Amaranth Resistant to PPO-Inhibiting Herbicides in the North Carolina Coastal Plain".*

2nd Place: **Kayla M. Eason** (The University of Georgia)
"Peanut and Weed Response to Postemergence Herbicide Tank-Mixtures Utilizing Paraquat"

3rd Place: **Samuele Lamon** (The University of Georgia)
"Genotypic and Phenotypic Characterization of Peanut Lines with Interspecific Introgressions Conferring Late Leaf Spot Resistance".

NATIONAL PEANUT BOARD GRADUATE STUDENT POSTER COMPETITION

Ad Hoc Chairman Tom Stalker announced the winners of the inaugural Graduate Student Poster Competition. The National Peanut Board sponsored the competition with a cash prize of $350 to the winner and $200 to second place winner. Both winners also received copies of the APRES book, *Peanuts-Genetics, Processing and Utilization*.

Winner : **Caleb C. Weaver** (The University of Georgia)
"*The Effect of Storage on Peanut Seed Quality."*

2nd Place: **Mitch Haynes** (Clemson University)
"Augmentation of In-furrow Insecticides with Super-absorbent Polymer to Combat Spotted Wilt of Peanut".

Chairman Kemerait thanked all the students who participated in both competitions and the 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 seven (7) concurrent breakout sessions at the 2017 Annual Meeting in Albuquerque, NM. The Bailey Award Committee received five manuscripts for final ranking. The 2018 Bailey Award for the best paper from the 2017 APRES Annual Meeting was presented to:

Dr. Mark Burow
Texas A&M AgriLife Research and Texas Tech University

Title:
"Development of SNP-based Molecular Markers for a Peanut Breeding Program"

***Co*-Authors:**
R. Chropra, 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.

Award Guideline Changes - Chairman Damicone also reported the Committee reviewed the current guidelines for the Bailey Award in 2017 and the Board voted to require the winning paper to be published in Peanut Science. The Committee has been asked to review this rule change and to delay implementation until the Committee can meet again to review the rule change.

CORTEVA AGRISCIENCE, AGRICULTURE DIVISION OF DOWDUPONT, AWARDS FOR EXCELLENCE IN RESEARCH & EDUCATION

Committee member Tim Grey reported for Chairman Mike Baring. The APRES membership was solicited for award nominees in both the areas of Research and Education. One exceptional nomination was received for the Education Award. Two outstanding nominations were received for the Research Award. One nominee had not been a member of APRES for 5 years, and thus this nomination was disqualified. The committee reviewed the nomination packets and voted

electronically in June of 2018. One nomination packet will be carried forward for consideration in 2019.

Dr. Tim Grey announced the winners for this year's Corteva Agriscience, a division of DowDuPont, Award for Excellence in Research, who will receive a plaque commemorating the honor and a $1,000 check. He concluded his remarks with thanks to Corteva AgriScience for the support of these important awards.

Corteva Agrisciences™, Agriculture Division of DowDuPont™, Award for Excellence in Research

2018 Recipient: Dr. Barry Tillman
University of Florida

Dr. Barry Tillman, peanut breeder and Associate Professor of Agronomy at the University of Florida, North Florida Agricultural Research and Education Center, has an outstanding research record. His program emphasizes developing peanut cultivars with multiple pathogen resistance, improved seed quality, and improved oil chemistry of peanut kernels. He has made significant contributions through research on methods for plant breeding, genetic control of the characteristics of interest, genetic and storage factors that affect seed germination, and utilization of partial resistance to one or more pathogens in integrated disease management programs. His productivity is indicated by his release of twelve peanut cultivars from his program, one patented germplasm line with high resistance to tomato spotted wilt virus, his authorship of two book chapters, 46 refereed journal articles, and over 80 abstracts and proceedings.

Since Dr. Tillman began work as an assistant professor at the University of Florida, his research has focused on improving pod yield and grade, major areas of focus in his program as breeding for disease resistance, and improved seed quality and oil chemistry. UFT113, a line he developed with Dan Gorbet, has the highest level of field resistance to TSWV available in cultivated peanut. His research on the effects of peanut storage on seed quality is changing the way breeders select genotypes.

Dr. Tillman helps improve the efficiency and productivity of the breeding process using statistical relationships among important characteristics, novel application of new equipment, genetic markers and phenotypic inheritance. Dr. Tillman is a key participant in the international peanut genomics effort, especially in efforts related to mapping and marker development for disease resistance and oil chemistry.

Dr. Tillman is a key collaborator in multidisciplinary research and extension efforts across multiple states and multiple countries. He is one of the few breeders with extension appointment, and in this capacity provides real-world information on varieties, variety selection and practical aspects of peanut breeding directly to clientele in Florida and the southeast.

To assist practitioners and farmers, he has conducted numerous tests on research stations and in farmers' fields to insure that accurate data are available to help farmers make more informed choices between new and existing cultivars beneficial to their operations.

Barry continues to be the leader in high-oleic varieties and has worked with faculty and producers for several years to promote the adoption of these lines for commercial uses. His efforts concentrate on

development of high oleic cultivars and methods to rapidly test for the elevated oleic fatty acid phenotype. His group has been able to routinely predict fatty acids content of whole peanut seeds with the use of near-infrared reflectance spectroscopy (NIR), and published the first paper on that method in peanut. As a result, other major breeding programs in the United States purchased spectroscopes for the same purpose. That technology is now also being utilized by a major peanut shelling company as part of their quality control process for assuring purity of the high oleic characteristic in their incoming peanuts.

Dr. Tillman has significant international components of his research program. He collaborates in breeding efforts with the Peanut Company of Australia, and has worked extensively with them on evaluations of lines from his program as well as germplasm developed in Australia. In recent years, cultivars from The University of Florida have been planted on as much as 70% of the Australian peanut acreage. Collaborative work there also expanded the use of the NIR technology to predict antioxidant capacity of peanut kernels. Each year he provides 10-20 elite peanut breeding lines from his program, which are carefully selected as being potentially relevant to the Australian industry.

In most developing countries, controlling diseases with pesticides is not economically feasible even when pesticides are available. Dr. Tillman also works closely with partners in Bolivia and Haiti to provide germplasm and breeding expertise to combat issues with yield, performance and disease resistance. This is especially important given the issues with poor soils, leaf rust disease and the overall adverse growing conditions of these very poor countries.

Possibly the most powerful component of Dr. Tillman's research program is his innate skill at being a proactive, supportive, productive and dedicated collaborator. Dr. Tillman approaches collaboration in the true spirit of teamwork. He is willing and able to serve as a team member as well as a team leader and seems to have the rare wisdom in how to navigate that choice. As a research team leader, Dr. Tillman provides a true scientific visionary skill at synthesizing existing research (oftentimes from quite diverse concept areas and sources), identifying elements of knowledge that are lacking or nonexistent, and crafting novel and transformative approaches in scientific research that make impactful and significant progress in the area of inquiry, such as developing cultivars with improved root architectures, drought tolerance, and maturation characteristics. This talent is quite rare in most collaborators and provides a rich and invaluable gift to his colleagues. As a team member, Dr. Tillman provides the utmost in service and support. While we sometimes jest about colleagues that may not deliver on promises regarding sharing of fiscal resources, personnel support, mentoring students, or following through on research activities, these really are barriers to research progress. Dr. Tillman is the ultimate antithesis of this model – he is always consistent in fulfilling his promises and providing meaningful and substantive intellectual support to his colleagues. He consistently and conscientiously mentors graduate students in research training, and possesses a unique focus for completing research objectives in general.

At the national level, Dr. Tillman is a Founding Member of the National Association of Plant Breeders and is a past current president of that society. He is a member of the American Peanut Research and Education Society holding offices as the chair of the site selection committee, member of the nominating committee and public relations committee, a member of the search and screen committee for an executive officer, and a member of the Board of Directors. Clearly, Dr. Tillman has been incredibly active at the national level within his national societies and has been recognized by his peers for his leadership.

Dr. Barry Tillman is an exceptional and extremely productive peanut breeder. His research methods combine traditional and breakthrough technologies to improve disease resistance to multiple pathogens, improve seed and oil quality that have been adapted in the United States and multiple other countries. Corteva Agriscience, Agriculture Division of DowDuPont is pleased to select Dr. Barry Tillman for the 2019 Excellence in Research Award.

Corteva Agrisciences™, Agriculture Division of DowDuPont™, Award for Excellence in Education

2018 Recipient: Dr. Peggy Ozias-Akins
University of Georgia

Dr. Peggy Ozias-Akins is an excellent teacher and mentor, deeply involved in the training of the next generation of peanut researchers and leads a world renowned research program in molecular genetics. And deserving of the 2019 Corteva Agriscience, Agriculture Division of DowDuPont, Award for Excellence in Education.

Dr. Ozias-Akins received her B.S. in Biology from Florida State University in 1975 and her Ph.D. in Botany from University of Florida in 1981 She traveled to Germany as a Alexander von Humboldt Post-doctoral Fellow at the Max-Planck-Institut fur Zuchtungsforschung (1982-84). She was a Visiting Assistant Research Scientist, University of Florida from 1984-86. In 1986, she joined the University of Georgia Department of Horticulture as an Assistant Professor (1986-93), Associate Professor (1993-99); and a full Professor in 1999.

As Dr. Ozias-Akins research program at UGA grew and became widely renowned, so did the importance of passing on this technology to the next generation. She was selected as UGA's Director of the Institute of Plant Breeding, Genetics & Genomics (IPBGG)--a graduate training institute (2012-Present); the recipient of the Creative Research Medal (2015); the D.W. Brooks Distinguished Professor award and was recently honored as a UGA Distinguished Research Professor.

Dr. Ozias-Akins conducts a large research program that is on the cutting edge of science for crop improvement. She is recognized worldwide for her molecular, cell culture and transformation research with multiple crop species. This research has greatly advanced the use of modern genetic technology to improve peanut.

She first began research on in vitro culture and manipulation of peanut in 1986. This resulted in the first significant paper on peanut somatic embryogenesis that was published in 1989 and has been cited over 100 times in subsequent literature. While this work was focused on rescue of inter-specific hybrids using in vitro techniques, it became obvious that the methods she had developed for the initiation and proliferation of somatic embryos could be applied in protocols for foreign gene transfer. The first transgenic peanut plants were produced in her lab using micro-projectile bombardment and *hygromycin* resistance as a selectable marker. The gene transfer protocol, published in 1993, has been cited over 100 times and has been adopted by several laboratories around the world. For many years it was the only reproducible protocol that was applicable to a wide variety of peanut cultivars.

More recently, Dr. Ozias-Akins developed high through put molecular markers that can be used to select for nematode resistance and for high oleic acid content. She has used these techniques in close cooperation with the USDA-ARS peanut breeding program in Tifton to develop TifNV-High O/L, a nematode resistant cultivar with high oleic fatty acid content.

Throughout this long and illustrious career, Dr. Ozias-Akins has mentored 31 post-docs, 22 visiting scientists, 13 PhD, 3 MS students as major professor; served on committees of 16 PhD, 8MS students. Advised undergraduates for Agriscience and Environmental Systems and Biological Sciences Majors at the UGA-Tifton Campus.

Her commitment to educating future researchers and plant breeders on the role and use of technology in agriculture began in 2002 when she developed the UGA undergraduate course Agricultural Biotechnology—a class she still teaches today.

Recognizing a need to develop a graduate level training program in the molecular genetics and plant breeding field, Peggy led the development of one within the IPBGG, which now has 30-40 M.S. and Ph.D. students at any one time. This program spans departments and actively trains the next generation of plant breeders. Many of the students are now leaders in their own right. This is due to her active involvement in the research and in the training of students. Although not an easy path while in her lab, once they graduate these are among the best trained scientists in the world! Graduates of IPBGG hold positions at most of the major seed companies, several universities, and government.

Peggy is a leader in education in the global peanut community for her efforts to translate the genomics work to advances in cultivar development. This educational outreach includes training breeders how to use markers and genomics information effectively to advance breeding programs. Most breeders are already using markers developed in Peggy's lab and through workshops at the APRES meeting Dr. Ozias-Akins delivers new tools and technologies to advance the use of markers for plant breeding. Such training, both formal and informal, is critical in building capacity in the US and developing countries to conduct future research. Peggy has always been a strong advocate for such training working jointly with International Crops Research institute for Semi-Arid Tropics (ICRISAT) in India, CERAAS in Senegal, and others and is always willing to accept students and visiting scientists. I know that all those, who have the opportunity to work with and be trained by her, benefit greatly. These benefits in human capacity translate into better research and ultimately improved agricultural production globally.

As a recognized authority in her field, she also helps educate many of her colleagues in the molecular aspects of Plant Biology. Like other true teachers, this education occurs in the course of conversations, oral exams, research planning sessions, and in the numerous invitations she receives to speak at national and international meetings, workshops and seminars. Her wealth of knowledge and ability to explain it and focus it to solve real problems makes all those around her better at what they do. As such she is an elected Fellow of the American Peanut Research and Education Society; American Association for the Advancement of Science; and Society for In Vitro Biology; and, this year's recipient of the 2019 Corteva Agriscience Award for Excellence in Education.

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.

All business for this committee was conducted electronically. After reviewing all nominations, the committee recommended that the 2018 Coyt T. Wilson Distinguished Service Award be presented to Dr. Craig K. Kvien.

Respectfully submitted,
Jason Woodward, Chairman

Dr. Craig K. Kvien
2018 Coyt T. Wilson Award Recipient

The Coyt T. Wilson Distinguished Service Award was established to recognize those persons within APRES who have provided outstanding service to the society for a long period of time, and deserve special recognition. Anyone spending time with Dr. Craig Kvien can't help but notice his immense energy and enthusiasm for whatever task is at hand. The words "can do" describe him perfectly. He has been an active member of APRES for over 35 years, and brings an immense level of enthusiasm to bear on the organization. This is evident in the multiple committees and official assignments he has completed in exemplary fashion, but even more as a go-to person when things need to be done in numerous unofficial roles that he has stepped up to fill that are often not well recognized, such as recruiting members and sponsors.

Dr. Craig Kvien has been an active member, dedicated workhorse and strong supporter of APRES since 1980. He has attended 26 annual meetings, served on 6 APRES committees—Bailey Award (6 years); Coty T. Wilson Award Committee (3 years); APRES Book Committee (1 year); Fellows Committee (2 years); Public Relations Committee (3 years); Publications and Editorial Committee (7 years)--for a cumulative 22 years of member services.

Additionally, he served as a key contributor to APRES' main communication outreach tools –Peanut Science and Peanut Research. Craig served as an associate editor of Peanut Science for 6 years and as the indexing editor for 5 years. He continues to assist students and colleagues in editing manuscripts in an unofficial capacity. As co-editor with Corley Holbrook, he published APRES' quarterly newsletter, Peanut Research, for 7 years. Peanut Research was distributed to over 750 scientists throughout the world. The newsletter captured peanut related events, highlighted grant opportunities, interesting research, extension and teaching activities and provided members a detailed list of recent publications and served as a vital communication tool for APRES.

Dr. Kvien is author or co-author of 25 APRES presentations, a two-time winner of the Bailey Award and the only back-to-back winner of the Bailey Award.

One of Craig's lesser-known contributions to APRES and the peanut industry is a peanut literature database he created in the 1980s. Seeing a need to preserve peanut history, Craig put together a peanut literature database and reprint collection spanning the years 1525 to 2001, which contains 40,000 references, 16,000 reprints and 600 theses covering all topics peanut related. APRES'

publications are included in this database. The database is available to all at the University of Georgia Tifton Campus library.

More recently Craig has helped the Society's Annual Meeting Local Arrangments committee by providing the AV equipment for the last 5 years and the poster boards and hanging frames for the past three. This has saved APRES $5-$10K in meeting expenses each year. The APRES Annual Meeting is organized by a largely, volunteer organization of people. Craig is always very active behind the scenes, and his grasp of technology has been invaluable to the meeting organizers, often staying on site after others have gone to bed or dinner while he personally sets things up or solves problems. In fact, many of the things Craig does are hard to document or put into a category. If he sees a need that he can fill, he simply steps up and does it.

As for personal qualifications of leadership and merit, Craig's innovative research in the area of peanut physiology contributes greatly to what we know today about the way that a peanut plant grows and develops. Yet it is his desire to help for which he is best known. Craig is an "idea person" and has the rare ability to turn ideas into reality. When he first arrived in Tifton, he worked with Stan Drexler, Jay Williams and Ron Henning on the development of the Hull-Scrape technique for determining peanut growth, development and best harvest date. Another project was the development of a method to rapidly (25 tons/ hr) sort peanut seed into maturity groups, aiding peanut quality and flavor which he was part of along with former grad student Keith Rucker & Kevin Calhoun of Birdsong Peanut. The formation of the National Environmentally Sound Production Agriculture Laboratory (NESPAL), including the raising of $6.8 million to build a core facility, with George Vellidis, Richard Lowrance and Gale Buchanan and others is another example. Craig also helped form a team focused on precision agriculture techniques and technologies for the SE. The variable rate center pivot is one of the key developments coming from this group, which also included Broughton Boydell, Calvin Perry, George Vellidis, Stuart Pocknee, Tasha Wells, and Kim Franke. His work with the American Peanut Council led to the formation of the Peanut Foundation.

Dr. Craig Kvien's many successes are centered around service and APRES is fortunate to have him as one of its members. Our Society is stronger and better because of his many contributions and he is richly deserving of the recognition of the 2018 recipient of the Coyt T. Wilson Distinguished Service Award.

FELLOW OF THE SOCIETY

Chairman Eric Prostko stated the Committee received no nominations for induction as Fellow of the Society. He encouraged the membership to consider nominating one of their fellow colleagues.

Committee Reports

PUBLIC RELATIONS COMMITTEE

The Public Relations Committee met to discuss ways to promote APRES.

Potential Opportunities

The Committee reviewed a list of suggestions to increase APRES membership; increase meeting attendance, and identify potential opportunities for APRES, which benefit the membership of APRES.

- Develop outreach to local colleges at meeting
- Identify similar groups to contact in the area of the Annual Meeting
- Collegiate/media outreach
- APRES Ad in industry newsletters; magazines, and newspapers
- Identify opportunities to promote the new production book
- Explore holding an International Peanut Research meeting
- Identify critical industry issues, hold Workshops or Training Seminars to educate/train

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 3 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:

Jim Butler

James Lee Butler, 90, went to be with his Lord and Savior on January 6, 2018 . Dr. Butler moved to Tifton in 1960, where he was an Agricultural Engineer with USDA,heading up the Southern Agricultural Energy Center until his retirement in 1989. He continued to work as a consultant until 1997, Jim Butler was a member of APRES from as early as 1977 He may have been one of the original members of the PIWG. Jim Butler, a long time APRES member and Past President passed away recently.He served in the Army Air Corps in World War II, and graduated from the University of Tennessee. He got his PhD from Michigan State University in 1958. He married Jane Hollis Butler on November 20, 1948 in Chattanooga, Tennessee, and they celebrated their 69th wedding anniversary in 2017.

Jerry Grimsley

Mr. Jerry Grimsley of Colquitt, Georgia, died Monday, June 11, 2018, at his residence. In 1962, Jerry Grimsley joined Farmers Fertilizer and Milling Company as Vice-President and Co-Owner. He became President of “FFM” in 1974. Under his leadership “FFM” grew from a small feed and fertilizer manufacturer to become an internationally recognized leader in the peanut shelling industry.

From 1985 to 1987, Jerry Grimsley served as Chairman of the National Peanut Council Export Committee (now the APC Export Board). He also served as Chairman of NPC’s Peanut Handling Committee from 1979 to 1980 and again from 1983 to 1984. Jerry was a former Chairman of the Peanut Administrative Committee and was very active in the Southeastern Peanut Association (now American Peanut Shellers Association). He served as President of Southeastern Peanut Shellers Association from 1975 to 1976 and served as the Association’s Chairman of the Board. Jerry served as

President of American Peanut Shellers Association from 1990 to 1991 and served as Chairman of numerous APSA committees.

Moultrie Sessions
We are saddened to report the death of Moultrie Sessions, Sr., 94, of Enterprise, Alabama. At the Sessions Company, Inc. he served as President from 1951 to 1987 and Chairman of the Board for many years after that. He was a capable businessman who dedicated himself to serving peanut growers, customers and employees and at the same time growing a profitable business.

Respectfully submitted,
Ron Sholar, Chair

FINANCE COMMITTEE

Chairman Tim Brenneman reported the Finance Committee met July 9th to discuss APRES current financial statements and to review and recommend a budget for 2018, which has been delayed as the Executive Officer attended to family issues. The Committee presented the below financial statements and 2019 proposed budget to the Board of Directors yesterday. All items were unanimously approved by the Board.

Balance Sheet as of December 31, 2017
APRES financial statements are reported using the accrual system. Current assets are $274,092, primarily in cash—checking, CDs. Accounts receivables of $9,951 are noted.

Liabilities are a credit card bill of $45 and total equity of $274,047. Total Liabilities and Equity are $274,092.

Profit & Loss Statement as of December 31, 2017
Income through December 31, 2017 is $123,387 and expense is $108,858. Net income for the year is $14,916.

Proposed Budget 2018
A budget of $127,000 income and $144,475 expense is being proposed for 2018, which reflects the anticipated additional expenses for APRES' 50th anniversary celebration approved last year. *(The Board approved pulling $20,000 from reserves to cover any shortfall in 2018.)*

Also included in the proposed 2018 budget is authorization to contract with the association management software service Wilde Apricot at $160 a month. This service has the potential to replace Constant Contact at $40/month and our Web Hosting, Web Security services which total $350 per year.

Balance Sheet as of June 18, 2018
APRES financial statements are now being reported using the accrual system. Current assets are $295,963, primarily in cash—checking, CDs. Accounts receivables of $9,951 are noted.

Liabilities are credit card bill, employment taxes and withholdings of $1,620 and total equity of $294,342. Total Liabilities and Equity are $295,963.

Profit & Loss Statement as of June 18, 2018

Income through June 18, 2018 is $54,024 and expense is $34,656. Majority of expenses for APRES occur in July/August when the bills for the Annual Meeting arrive and are paid. Contract labor is an email marketing service, which will be re-classified to Outside Services—a better descriptor. Net income for the 6-month period is $19,531.

Vanguard Investments as of June 30, 2018

Balance: $32,725.31

Holdings: Vanguard LifeStrategy Income Fund (VASIX)
84% Bonds; 19% Stocks
$15.34 price per share
Contains only 4 index funds
Largest Holdings: Vanguard Total Stock Market Index Fund
Vanguard Total International Stock Index Fund

Growth Since Inception: Rate of Return is 2.8% since inception (February 2015)

Investment Recommendations:

At the last Committee meeting and approved by the Board, the Committee recommended APRES move its Money Market funds to a new Vanguard index funds with a 50%/50% balance of bonds and stocks. Attached are three recommendations the Committee has reviewed and are asking for the Board's guidance on proceeding.

VSCGX: Vanguard LifeStrategy Conservative Growth Fund – Investor Shares
60% bonds; 40% stocks
$19.74 price per share
Largest holdings are the same as VASIX and the same 4 index funds.

VSMGX: Vanguard LifeStrategy Moderate Growth Fund – Investor Shares
60% stocks; 40% bonds
$26.90 price per share
Largest holdings are the same as VASIX and the same 4 index funds.

VBIAX: Vanguard Balanced Index Fund – Admiral Shares
60% stocks; 40% bonds
$34.84 price per share
Largest holdings are Apple, Microsoft, Amazon, Alphabet, Facebook, etc.
Price is $34.84 per share

The Board agreed with the Finance Committee that all three funds are good recommendations and empowered the Finance Committee to make the decision.

(Post conference the Finance Committee selected VSMGX for future investments.)

Potential Growth Ideas Needed

APRES relies solely upon membership dues and annual meeting registrations/sponsorships. For APRES to grow, it needs to grow membership, increase registrations, increase sponsorships and/or find other growth opportunities.

APRES Financial Statements as of December 31, 2018 and June 18, 2019 along with 2019 Budget
Follow on the Next Page

2017 Year End Balance Sheet

10:45 AM
06/21/18
Accrual Basis

American Peanut Research and Education Society
Balance Sheet
As of December 31, 2017

	Dec 31, 17	Dec 31, 16	$ Change
ASSETS			
Current Assets			
Checking/Savings			
Vanguard	32,116.20	31,339.06	777.14
Paypal	97.50	97.50	0.00
Cash - Checking - 2629	86,046.15	78,659.33	7,386.82
Cash - MMA - 7397	103,300.29	103,146.33	153.96
Cash - CD 4885	18,375.11	18,339.88	35.23
Cash - CD 4647	13,644.88	13,556.39	88.49
Cash - Bayer-1934	10,561.23	10,550.91	10.32
Total Checking/Savings	264,141.36	255,689.40	8,451.96
Other Current Assets			
Account Recievable	9,951.00	4,411.00	5,540.00
Total Other Current Assets	9,951.00	4,411.00	5,540.00
Total Current Assets	274,092.36	260,100.40	13,991.96
TOTAL ASSETS	274,092.36	260,100.40	13,991.96
LIABILITIES & EQUITY			
Liabilities			
Current Liabilities			
Credit Cards			
Security Bank Card	45.00	40.00	5.00
Total Credit Cards	45.00	40.00	5.00
Other Current Liabilities			
State W/H Tax	0.00	92.83	-92.83
24000 · FICA/FWH Payable	0.00	836.41	-836.41
Total Other Current Liabilities	0.00	929.24	-929.24
Total Current Liabilities	45.00	969.24	-924.24
Total Liabilities	45.00	969.24	-924.24
Equity			
31300 · Restricted Fund Balances	250.00	250.00	0.00
32000 · Unrestricted Fund Balances	258,881.16	232,884.39	25,996.77
Net Income	14,916.20	25,996.77	-11,080.57
Total Equity	274,047.36	259,131.16	14,916.20
TOTAL LIABILITIES & EQUITY	274,092.36	260,100.40	13,991.96

2017 Year End Profit-Loss Statement

10:46 AM
06/21/18
Accrual Basis

American Peanut Research and Education Society
Profit & Loss Prev Year Comparison
January through December 2017

	Jan - Dec 17	Jan - Dec 16	$ Change
Ordinary Income/Expense			
Income			
Royalty	10.00	0.00	10.00
Capital Gain Distribution	19.25	4.50	14.75
Dividend Income	763.27	685.50	77.77
Book Sales			
Shipping & Handling	27.05	51.60	-24.55
Peanut-Genetics, Processing & U	3,197.20	4,255.00	-1,057.80
Book Sales - Other	100.00	0.00	100.00
Total Book Sales	3,324.25	4,306.60	-982.35
Sponsorship-Annual Meeting			
Spouse Hospitality Suite	0.00	3,000.00	-3,000.00
Travel - Bayer Prog Ext Agents	0.00	6,152.44	-6,152.44
Meeting Breaks	6,500.00	6,000.00	500.00
Fun Run	0.00	0.00	0.00
Contribution - Joe Sugg Award	1,500.00	750.00	750.00
Awards	2,500.00	2,000.00	500.00
Thursday Reception	3,250.00	3,000.00	250.00
Wednesday Dinner	19,000.00	27,000.00	-8,000.00
Sponsorship-Annual Meeting - Other	7,000.00	2,800.00	4,200.00
Total Sponsorship-Annual Meeting	39,750.00	50,702.44	-10,952.44
Peanut Science			
Peanut Science Journal	10.00	40.00	-30.00
Page Charges	13,041.16	16,147.00	-3,105.84
Total Peanut Science	13,051.16	16,187.00	-3,135.84
Annual Dues			
Sustaining-Platinum Level	1,000.00	0.00	1,000.00
Sustaining-Gold Level	1,000.00	1,000.00	0.00
Sustaining-Silver Level	700.00	600.00	100.00
Institutional	1,600.00	1,600.00	0.00
Individual-Student	625.00	1,025.00	-400.00
Individual-Post Doc/Tech Supp	375.00	250.00	125.00
Individual-Retired	200.00	175.00	25.00
Individual-Regular	17,000.00	17,250.00	-250.00
Annual Dues - Other	350.00	250.00	100.00
Total Annual Dues	22,850.00	22,150.00	700.00
Meeting Registration			
Meeting Registration-Retired	250.00	0.00	250.00
Meeting Registration-Platinum	0.00	0.00	0.00
Meeting Registration-Regular	40,794.50	35,245.00	5,549.50
Meeting Registration-Gold	1,050.00	1,300.00	-250.00
Meeting registration-Student	1,525.00	1,950.00	-425.00
Total Meeting Registration	43,619.50	38,495.00	5,124.50
Total Income	123,387.43	132,531.04	-9,143.61
Expense			
Book Purchases	4,681.25	9,362.50	-4,681.25
Administrative Expense			
Finance Charges	30.87	0.00	30.87
66000 · Wages - Executive Officer	21,083.26	28,414.11	-7,330.85
Taxes - Payroll	2,072.14	1,801.56	270.58
Postage	47.45	72.16	-24.71
Office Expenses	127.72	78.35	49.37
Legal Fees	474.00	0.00	474.00
Credit Card Charges	1.26	0.00	1.26

10:46 AM
06/21/18
Accrual Basis

American Peanut Research and Education Society
Profit & Loss Prev Year Comparison
January through December 2017

	Jan - Dec 17	Jan - Dec 16	$ Change
Bank Charges			
Paypal Fees	1,648.74	3,000.53	-1,351.79
Bank Charges - Other	6.00	11.00	-5.00
Total Bank Charges	1,654.74	3,011.53	-1,356.79
Dues and Subscriptions	0.00	30.00	-30.00
Contract Labor	455.00	200.00	255.00
License and Permits	30.00	0.00	30.00
Insurance	100.00	100.00	0.00
Foreign Taxes	5.38	5.52	-0.14
Accounting	1,915.00	1,895.00	20.00
Total Administrative Expense	27,996.82	35,608.23	-7,611.41
Annual Meeting			
Travel - Bayer Prog Ext Agents	7,554.29	3,598.29	3,956.00
Awards	4,896.73	5,252.37	-355.64
Hotel Charges	50,000.02	36,388.10	13,611.92
Supplies/Equip/AV	0.00	2,305.06	-2,305.06
Total Annual Meeting	62,451.04	47,543.82	14,907.22
Peanut Science Publishing			
Peanut Science Editor Stipend	3,000.00	3,000.00	0.00
Peanut Science Publishing - Other	10,729.20	11,597.12	-867.92
Total Peanut Science Publishing	13,729.20	14,597.12	-867.92
Total Expense	108,858.31	107,111.67	1,746.64
Net Ordinary Income	14,529.12	25,419.37	-10,890.25
Other Income/Expense			
Other Income			
Interest Income	387.08	577.40	-190.32
Total Other Income	387.08	577.40	-190.32
Net Other Income	387.08	577.40	-190.32
Net Income	14,916.20	25,996.77	-11,080.57

INCOME

Income	Actual 2015	Actual 2016	Approved Budget 2017	Actual 2017	Approved Budget 2018	2017 Budget vs. Actual Comments 2018 Budget Rationale
Annual Dues	**$28,000**	**$21,900**	**$28,000**	**$22,850**	**$25,000**	Under budget; coding changes put sponsors income under annual meeting; some have been included under membership in the past; late second billing pushed income to 2018 Budget lower than YE2017; Lost $1,500 due to library losses from move to Peanut Science Open; Will work to expand membership base and sponsorships
AnMeeting Registrations	**(VC) 39,750**	**(SE) $38,495**	**(SW) $35,000**	**(SW) $43,620+**	**(VC) $35,000**	Over Budget; Better than anticipated attendance; people liked Albuquerque We are on target for $40K; Don't want to overpromise
Sponsorships –	**$25,800**	**$51,952**	**$37,250**	**$39,750+**	**$38,000**	Over budget; We can do better with more personal contacts Continue to build sponsorship support; will work to expand
Ice Cream Social	$800	$0	$3,000	$0	$3,000	Other Category should have been classified as Ice Cream Social Budget same as 2017
Wednesday Dinner	**$9000	$27,000	$19,000	$19,000	$19,000	On budget Bayer and BASF have both requested invoices for 2018; anticipate full funding
Thursday Reception	$3,000	$3,000	$3,000	$3,250	$3,000	Over budget; Dow gave Education award money to Joe Sugg and Reception Anticipate Dow will renew its sponsorship
Meeting Breaks	$6,000	$6,000	$6,000	$6,500	$6,000	Over budget; Coding issue Anticipate sponsors will renew their commitment
Awards	$2,750	$3,500	$2,750	$4,000	$3,500	Over budget; largest ever number of universities in Joe Sugg; second/third sponsors One prize awarded for Joe Sugg; Added Graduate Student Poster Competition
Fun Run	$250	$500	$500	$0	$500	Under budget; Texas A&M University sponsored fun run; Paid T-Shirt bill directly Anticipate JLA will renew its sponsorship
Other	$4,000	$8,952	$3,000	$7,000	$3,000	Over budget; Approximately $4K should have been recorded in Ice Cream Social; $3K for Spouses Hospitality Suite Anticipate obtaining sponsor for Hospitality Suite in 2018
Peanut Science	**$10,465**	**$20,059**	**$21,000**	**$13,050-**	**$25,000**	Under budget; still negotiating contract with Allen press Anticipate billing 2 issues @ $10.5k per issue based on history; Potentially a 3rd issue
Book Sales	**$336**	**$4,975**	**$3,600**	**$3,300-**	**$3,000**	Under budget; Sold or donated 24 PGPU copies, plus Advances book Anticipate selling 30 copies @ $100/copy
Book Shipping		**$65**	**$200**	**$27-**	**$50**	Sales at AnMtg where no shipping charge Anticipate most book sales will occur at Annual Meeting
Miscellaneous Income	**$658**	**$685**	**$650**	**$783+**	**$700**	Over budget; Vanguard investment up Dividends and capital gains from Vanguard investment fund
INCOME TOTAL	**$105,009**	**$138,131**	**$125,700**	**$123,387-**	**$126,750**	
Interest	$961	$453	$500	$387	$250	Under budget;Interest from CDs; over projected; money moved to Vanguard, Money Market while awaiting selection of new Vanguard investment Budget less as money moved to Vanguard investment funds
Income Total + Interest	**$105,970**	**$138,584**	**$126,200**	**$123,774**	**$127,000**	Under budget primarily to only one Peanut Science issue being published Anticipate similar income to 2017

EXPENSES

Expenses	Actual 2015	Actual 2016	Approved Budget 2017	Actual 2017	Approved Budget 2018	2017 Budget vs. Actual Comments 2018 Budget Rationale
Annual Meeting	**(VC) $61,554**	**(SE) $47,544**	**(SW) $50,000**	**$62,451**	**$78,500**	Committee worked hard to increase sponsorships and hold expense (even with larger crowd), resulting in net income over expense 50th Anniversary Celebration expenses; Larger than expected crowd
Awards	$5,465	$5,252	$5,500	$4,897	$5,500	Under budget; one less award plaque (Dow Research) Budgeted same as actual YE2017
Hotel Charges	$47,010	$36,388	$37,000	$50,000	$60,000	Over budget; larger than expected attendance; speaker fees; unbudgeted poster breakfast addition Anticipate more expense related 50th Annivesary celebration; Larger crowd
Speaker Expenses		$0	$2,000	$0	$3,000	Under budget; Coding error Speaker Travel and lodging
Supplies/Equip/AV	$1,603	$2,305	$2,000	$0	$7,000	Coding error included; $1,500 of expense was sponsored Badge stock, printing of signs/program, etc.; Promotional items for 50th Anniversary
Travel - Ext. Agents	$1,769	$3,598	$5,000	$7,554	$0	Bayer not renewing program; Authorized utilizing remaining funds to pay, if needed
Other	$5,707	$0	$3,000	$3,000	$3,000	On target Executive Officer/Editor Expenses
Peanut Science	**$13,463**	**$14,597**	**$20,600**	**$13,729**	**$25,000**	
Publishing	$4,458	$1,821	$6,600	$10,729	$22,000	Billed for 44-1; Negotiating contract Anticipating 3 issues billed in 2018
Editor Stipend	$3,000	$3,000	$3,000	$3,000	$3,000	On budget Same as 2017
Website Hosting	$5,109	$8,991	$10,000			Lumped in publishing lumped in publishing
Peer Review	$621	$477	$650			Lumped in publishing Lumped in publishing
Other	$275	$308	$350			Lumped in publishing Lumped in publishing
Book Purchase - AOCS	**$0**	**$9,363**	**$0**	**$4,681**	**$0**	Additional books purchased in anticipating of 2017 sales No book purchases anticipated in 2018
Book Shipping		**$0**	**$200**		**$50**	Included in Income;Majority of Books sold at Annual Meeting, no shipping fees Minimal shipping anticipated

Expenses continue on the next page

EXPENSES , CONTINUED

Expenses, Continued	Actual 2015	Actual 2016	Approved Budget 2017	Actual 2017	Approved Budget 2018	2017 Budget vs. Actual Comments 2018 Budget Rationale
Administrative Expenses	**$29,992**	**$35,375**	**$35,230**	**$27,997**	**$40,905**	
Dues - CAST	$0	$0	$0	$0	$0	No longer a CAST member
Corp. Registration Fees	$0	$30	$30	$30	$30	On budget Renewed January 2018
Legal Fees	$525	$0	$525	$474	$500	Hotel contracts reviewed in 2016; billed in January 2017 Anticipate need to review Allen Press contracts for Peanut Science in 2017
Insurance	$100	$100	$100	$100	$100	Same as 2017
Executive Officer	$23,000	$28,414	$23,000	$21,083	$28,000	Under budget; out of office for medical leave and personal leave EO Salary increased to $28K
Taxes: Payroll	$1,802	$1,802	$2,000	$2,072	$2,800	Over budget EO Salary increased to $28K, thus more taxes
Administrative Assistant	$0	$0	$0	$0	$0	
Web Page Maintenance	$648	$0	$1,500	$0	$1,500	Under budget; did not hire security specialist not need for 2017 Anticipate hiring network security specialist for assistance when needed
Accounting Services – Herring CPA	$1,650	$1,895	$2,175	$1,915	$2,175	Under budget; Herring did not increase their monthly fee for 2017 Moved to accrual system increase monthly fee to $125/month; Taxes $675
Outside Services	$0	$200	$1,000	$455	$1,000	Under budget; Constant Contact expenses only Constant Contact; Membership Database software
Postage	$88	$72	$50	$47	$50	On budget Stamps/Mailing
Office Expenses	$50	$78	$250	$128	$250	Under budget; Most expenses charged under Annual Meeting Vinyl banner
Travel - Officers	$0	$0	$1,200	$0	$1,200	Under budget; Coding issue with Annual Meeting Travel to Annual Meeting or other industry meeting
Bank Charges	$159	$11	$150	$38	$50	Under budget; Wire transfer fee; Most transactions are by credit card Wire transfer fees
PayPal/Credit Card Fees	$1,967	$2,773	$3,000	$1,649	$3,000	Under budget; not sure why Estimating to be similar to 2017; Should APRES charge a Credit Card Convenience Fee?
Miscellaneous	$3	$0	$250	$0	$250	Contingency fund
Depreciation	$0	$0	$0	$0	$0	
Expenses Total	**$105,009**	**$106,879**	**$106,030**	**$108,858**	**$144,475**	Expenses will be up due to 50th Anniversary Celebration/added functions

INCOME OVER EXPENSES

Income Over Expense	Actual 2015	Actual 2016	Approved Budget 2017	Actual 2017	Approved Budget 2018	
Total Income + Interest	$105,970	**$138,584**	**$126,200**	**$123,774**	**$127,000**	
Total Expenses	$105,009	**$106,879**	**$106,030**	**$108,858**	**$144,475**	
Net Income	**$960	**$31,706**	**$20,170**	**$14,916**	**($17,475)**	APRES will run a deficit this year due to 50th Anniversary celebration, unless additional sponsors or members are found
**Accounts Receivables as of 12-31-2015	**$15,134	$9,515				
Net Income with Receivables	**$16,094**					APRES will change from a cash accounting to accrual accounting system in 2016 which recognizes accounts payable and accounts receivables. Accounts receivables are noted on the balance sheet

American Peanut Research and Education Society
Balance Sheet
As of June 18, 2018

2018 Balance Sheet

	Jun 18, 18
ASSETS	
Current Assets	
Checking/Savings	
Vanguard	32,879.98
Paypal	5,243.55
Cash - Checking - 2629	109,434.28
Cash - MMA - 7397	121,763.92
Cash - CD 4647	13,678.78
Cash - Bayer-1934	3,011.62
Total Checking/Savings	286,012.13
Other Current Assets	
Accounts Receivables	9,951.00
Total Other Current Assets	9,951.00
Total Current Assets	295,963.13
TOTAL ASSETS	**295,963.13**
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Credit Cards	
Security Bank Card	388.73
Total Credit Cards	388.73
Other Current Liabilities	
State W/H Tax	233.34
24000 · FICA/FWH Payable	1,040.66
FUTA Payable	-42.00
Total Other Current Liabilities	1,232.00
Total Current Liabilities	1,620.73
Total Liabilities	1,620.73
Equity	
31300 · Restricted Fund Balances	250.00
32000 · Unrestricted Fund Balances	264,610.14
Net Income	19,531.26
Total Equity	294,342.40
TOTAL LIABILITIES & EQUITY	**295,963.13**

American Peanut Research and Education Society
Profit & Loss
January 1 through June 18, 2018

2018 Profit & Loss Statement

	Jan 1 - Jun 18, 18
Ordinary Income/Expense	
Income	
Book Sales	
Peanut-Genetics, Processing & U	170.00
Total Book Sales	170.00
Sponsorship-Annual Meeting	
Awards	1,500.00
Sponsorship-Annual Meeting - Other	7,800.00
Total Sponsorship-Annual Meeting	9,300.00
Peanut Science	
Page Charges	4,204.00
Total Peanut Science	4,204.00
Annual Dues	
Sustaining-Silver Level	350.00
Individual-Student	175.00
Individual-Post Doc/Tech Supp	375.00
Individual-Retired	100.00
Individual-Regular	8,900.00
Total Annual Dues	9,900.00
Meeting Registration	
Meeting Registration-Retired	250.00
Meeting Registration-Regular	28,500.00
Meeting Registration-Gold	500.00
Meeting registration-Student	1,200.00
Total Meeting Registration	30,450.00
Total Income	54,024.00
Expense	
Administrative Expense	
66000 · Wages - Executive Officer	13,583.31
Taxes - Payroll	1,039.13
Bank Charges	
Paypal Fees	1,445.20
Total Bank Charges	1,445.20
Dues and Subscriptions	30.00
Outside Services	518.73
Accounting	1,426.50
Total Administrative Expense	18,042.87
Annual Meeting	
Travel	1,050.00
Awards	3,000.00
Supplies/Equip/AV	45.00
Annual Meeting - Other	500.00
Total Annual Meeting	4,595.00
Peanut Science Publishing	
Peanut Science Editor Stipend	3,000.00
Peanut Science Publishing - Other	9,018.27
Total Peanut Science Publishing	12,018.27
Total Expense	34,656.14
Net Ordinary Income	19,367.86
Other Income/Expense	
Other Income	
Interest Income	163.40
Total Other Income	163.40
Net Other Income	163.40
Net Income	19,531.26

We usually report APRES finances as of the end of June; however our accountant is out on maternity leave and these are the latest numbers. To give you a better idea of where we will be at the end of June, add $25,600 to income for Paypal credit card payments received to date which are recorded at the end of the month.

PUBLICATIONS AND EDITORIAL COMMITTEE REPORT

Production Book

Chairman Dr. Chris Liebold shared an update on the progress of the book. In summary, it has been difficult to get lead authors engaged. Between the three editors of the book, they have received a total of three completed chapters out of the thirteen proposed. Dr. Shyam Tallury shared the same message of getting lead authors engaged. Many lead authors have indicated they will write their chapters but have other priorities. Deadlines and timelines were shared with lead authors but largely ignored.

Members of the committee shared new thoughts on strategies on dealing with lead authors and provided new innovated thoughts on who to engage, which included engaging grade students in the given subject because many of literature reviews that are very comprehensive. Chairman Liebold shared that book does want to maintain a level of expertise authenticity, but that was quickly dispelled with the thought of ensuring the graduate adviser is engaged in the book (and listed as a author).

President Dotray suggested a letter from the Board on the importance of this book might be helpful to motivate authors to complete their chapters. Chairman Liebold concurred. Incoming President Brandenburg agreed to draft a letter to send.

Peanut Research Newsletter

Volunteers have been recruited to begin work on reviving the Peanut Research Newsletter, working toward the first issue in January 2019.

Peanut Science Report

The Associate Editors of *Peanut Science* meeting is set for Tuesday, July 10th, 2017 at the 50th Annual APRES meeting at the Doubletree Hotel in Williamsburg in VA. *Peanut Science* Volume 44-1 with 9 articles was released online in June 2017, with Volume 44-2 released December 2017 with 9 articles online via the website with AllenPress. *Peanut Science* Volume 45-1 will be released in July 2018 with 7 articles, and Volume 45-2 may be released with 6 articles in August 2018, with the potential for a volume 45-3 in December 2018.

Current Associate Editors:

Mark Abney	Entomology	University of Georgia, Tifton
Maria Balota	Agronomy/Breeding	Virginia Tech University, Suffolk
Chris Butts	Engineering	USDA/ARS, Dawson GA
Albert Culbreath	Plant Pathology	University of Georgia, Tifton
Jack Davis	Food Science	JLA Inc, Albany GA
Nick Dufault	Plant Pathology	University of Florida, Gainesville
Ramon Leon	Weed Science	N.C. State University, Raleigh
Chris Liebold	Food Science	J.M. Smucker Company, Lexington KY
Mike Marshall	Weed Science	Clemson University, Blackville SC
Nathan Smith	Economics	Clemson University, Columbia SC
Shyamlrau Tallury	Plant Breeding	USDA/ARS, Griffin GA
Jason Woodward	Plant Pathology	Texas AgriLife Extension Service, Lubbock TX

Jason Woodward will be rolling off as an Associate Editor in 2018.

Peanut Science has been added to ResearchGate at www.researchgate.net. Under their current system, RG Journal impact average was 0.31 in 2015, the latest year reported. This value is calculated using

ResearchGate data and is based on average citation counts from work published in this journal. Since 2000, the RG impact for *Peanut Science* has averaged 0.29 with 14 years of data. Under Google.com, entering '*Peanut Science*' the journal is the first return and listed returns for *Peanut Science* are the first 4 websites along with APRES (#2). At scholar.google.com the request for *Peanut Science* returns 510,000 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. It has long been a goal of APRES to expand the reach of *Peanut Science* and it became an open access on July 1, 2017, which removed the requirement to be a member of APRES in order to access the journal.

For the 12-month time period from January 1, 2017 to Dec 31, 2017 for manuscripts assigned to Dr. Grey as editor, there were 23 total submissions in 2017 with 18 accept, and 3 reject. From January 1, 2018 to June 8, 2018 there have been 12 submissions.

Table 1. Performance Statistics of Reviewers for Articles Submitted to Peanut Science between 01 January and 31 December 2017

Reviewer Performance Metric	2014	2015	2017
Number of invitations	67	74	112
Number of Reviews	42	41	50
Number of Reviews declined	13	10	14
Un-invited before agreeing	12	18	45
Days to Respond to Invitation	1.1	1.4	1.1
Days to Complete Review (from Date Invited)	16.8	29.2	13.3
Number of Late Reviews	16	13	15
Submitted on or ahead of time	26	37	31

Table 2. Submissions by Year

Month	2010	2011	2012	2013	2014	2015	2016	2017	2018
Jan	0	2	2	2	0	1	0	3	4
Feb	2	2	2	2	0	1	1	1	2
Mar	1	1	1	3	3	2	1	3	3
Apr	1	2	0	0	0	3	3	2	0
May	4	0	3	1	1	1	1	0	3
Jun	0	2	0	1	1	1	4	0	
Jul	8	0	1	0	0	1	1	0	
Aug	1	2	3	5	1	2	2	5	
Sep	3	3	1	2	5	2	4	1	
Oct	2	3	2	1	1	2	1	2	

Nov	0	4	3	3	3	2	2	3	
Dec	1	1	2	1	5	1	2	3	
Totals	**23**	**22**	**20**	**21**	**20**	**19**	**22**	**23**	**12**

PEANUT QUALITY COMMITTEE

The meeting was called to order by Chairman John Bennett at 1:06pm

Meeting Minutes from 2017 were reviewed by Chris Liebold. No new follow ups from Old Business were provided

New Business

Standard Boards Update

- Darlene Cowart of Birdsong Peanut provided an update that the board approved the move to 3.5% of Seg 2 and that it will be implemented this year.

- The Standards Board is looking for new appointments, so they are looking for volunteers. Those interested can reach out to Darlene directly.

UPPT

- Dr. Lisa Dean of USDA-ARS Raleigh introduced Dr. Jeff Dunn of NC State. Jeff Dunn is the new faculty hirer that fills the void left behind by Dr. Tom Islieb's retirement. Dr. Dunn agreed to take on the responsibility of writing the UPPT report that is released yearly based on the data collected by the USDA on varieties sent in for analysis.

- Dr. Lisa Dean agreed to add total protein to the analysis conducted. There will be an increased cost that will need to be considered, along with the time required. The USDA is in a hiring freeze and this is of a concern because her technician recently retired with no plans to rehire anyone to fill that position.

- Dr. Dean reminded the committee that Dr. Bill Branch does not participate in the program, which lead to the question of why does he not participate? (However, Georgia-06G is used as a control for many location sites and its sent).

- Dr. Branch shared that USDA owns the data and that's why he doesn't participate. Dr. Tim Sanders provided that information to him several years ago. The audience challenged that thinking, but Dr. Marshall Lamb shared that he has the information correct and that stance is from past leaders at the USDA and that he doesn't share that same perspective.

- Dr. Corley Holbrook requested the Dr. Lamb ask for clarification on who really owns the data. In many minds of committee members, the USDA is a service lab for this analysis and they really do not own it. They do public share it, so how can they really own it because of that public disclosure. Dr. Lamb agreed to try to understand this more fully for Dr. Branch and the other members of the committee. Chairman Bennett asked if you don't own the data what's the impact? Dr. Branch responded that it's the principle of the matter and asked his own question of "why do they get to dictate how the data is released?"

- Chairman Bennett asked the committee members is there is an opportunity to optimize the UPPT and its report? Dr. Branch has a committee already that looks into the operation and function of the UPPT. The UPPT has varieties that are only getting released.

- Chairman Bennett asked about the ability to add blanchability into the analysis? Dr. Marshall Lamb of the USDA shared that if there is interested that it can be added. There is a standard method for it. However, the amount of samples in the UPPT is large and doing all samples is a lot of work. A committee member suggested doing all of them the first year and then pair it down after looking at the data for year 2. The reason for looking at all of them at first is because of the many factors that dictate blanchability, including genetics, moisture and other environmental aspects.

Storage Study Update

- Dr. Chris Butts of USDA shared at the Peanut Congress that the move to 55F storage temperature is being implemented and was approved on the GMP aspects. He has not heard of any problems from shellers but that it has alleviated a lot of moisture problems.

- Dr. Darlene Cowart of Birdsong shared that humidity is really important. Must maintain below 65% humidity. It's a sheller by sheller decision and for each sheller it's a facility by facility decision case by case decision. Most be cognitive of insect control because the storage conditions are right on the cusp of insect growth.

- Dr. Marshall Lamb of USDA shared that it does require an investment and that there is a rural development fund to help cost share retrofitting of facilities.

- No concerns were shared by the manufacturers with the change of storage temperature.

Additional Agenda Items Added by Questions from Committee Members

Question on Smut - *When you remove the skins it takes heat. So quality concerns?* Chairman Bennett that you have to mindful of the temperature and the moisture. Flavor is not a concerned, but shelf-life can be a concern that manufacturers must be mindful of.

Question on Smut – *Is blanching really take care of the mold spores?* No one had insights on the subject because it's a hard thing to measure. Trying to understand that matter was taken as a follow up that will disseminated to the committee.

Topic - Industry to adopt HO peanuts. – Chairman Bennett shared that a subcommittee is working on getting resolution on the subject for the industry. There was a call for other's to join the subcommittee, in which Dr. Barry Tillman (UF) and Dr. Bill Branch (UGA) agreed to participate in. There was a comment that HO peanuts do not germinate as well. However, this was quickly discussed as a causal vs. causal conclusion because Barry Tillman sees the same issue in normal oleics and Dr. Graeme Wright has not seen this problem in 10-15 years in Australian HO. Dr. Corley Holbrook also shared that he has a study on Atox with isolines to help provide an answer is HO are more susceptible to Atox. The results of that study will be shared sometime next year. Members of The J. M. Smucker Company reiterated the stance of the need of NO peanuts still be available and not a full transition to HO as an industry.

Chairman John Bennett closed the meeting at 2:05pm.

PROGRAM COMMITTEE REPORT

Technical Committee

Tom Stalker, Chair, David Jordan, Barb Shew, Stanley Fletcher

There were 15 sessions of oral presentations (General Session Symposium (8), Joe Sugg Graduate Students (19), Breeding Methods (8), Molecular Breeding (14), Utilizing Wild Species (6) Production Technologies (8), Extension (14), Plant Pathology (12) Economics and Marketing (7), and Weed Science (4) -- with 100 oral presentations total. David Jordan, Barb Shew and Stanley Fletcher helped with the various session. Numerous volunteers helped with the judging for the Joe Sugg student and the graduate student poster competition.

There were 39 posters, with 32 being general posters and 7 in the Graduate Student Poster Competition (1st time for competition).

Total: 139 oral and posters; including 26 graduate student (oral and posters). Note that we started the Joe Sugg Competition on Tuesday 1st time this year to allow less overlap in sessions on Wednesday and Thursday.

In addition to the technical presentations, there was a Breeders Workshop on Molecular Genetics and a meeting of the members on the Peanut Genomics Initiative on Monday and a plantation tour. An International Programs Discussion session was also organized.

On Tuesday morning the industry held a Seed Summit and the Crop Germplasm Committee met. A Graduate Student Luncheon was also held for the 1st time this year.

Spouses Program

Beth Langston, Chair, Helene Stalker, Jennifer Tillman, Peggy Dotray, Donna Holbrook

A hospitality suite was available on Tuesday Wednesday, and Thursday. Program activities included an organized tour to Colonial Williamsburg on Wednesday and organized transportation and visit to the Williamsburg Premium Outlets.

Baskets for raffles were made by Jennifer Tillman and Beth Langston. These baskets were available in the hospitality suite.

Sponsorship was provided by Valent to help cover cost of the hospitality suite.

Local Arrangements

Maria Balota, Chair, David Langston, David Jordan. Barb Shew, Hillary Mehl, Mark Simmons, Dell Cotton

Members of the committee: Dell Cotton, Mark Simmons, Pam Worrell, David Langston. Additional help with the general activities was provided by Doug Redd, and Sayantan Sarkar and Naveen Kumar, technician and graduate students at TAREC.

Main activity was the Chippokes Plantation Tour and BBQ Dinner in the afternoon of Monday, July the 9th. Sponsors were Birdsong Peanut and Virginia Peanut Growers Assoc. Additional help with this activity was provided by Mac and Steve Barryman, local farmers.

50th Anniversary Celebration

Corley Holbrook, Chair, Tom Stalker, Kim Cutchins, Peter Dotray

Partnered with Program Committee to develop an opening session with an interesting set of presentations looking at past achievements and a set of presentations looking at opportunities going forward.
Assisted with the local arrangement to develop the field trip and dinner for Monday afternoon/evening.

Coordinated effort with Kim Cutchins to acquire some very nice commemorative items for all attendees and to develop plans for a special 50th anniversary dinner on Wednesday night.
Also worked with Kim to arrange attendance by the Planters nut mobile and Mr. Peanut and Buddy McNutty at our 50th Annual Meeting.

Fun Run 5K

Jack Davis, Chair

Jack Davis and Kim Cutchins worked together to organize. There were 80+ participants. Those who pre-registered got a t-shirt. The run/walk took place Thursday morning with participants meeting in the lobby and then running/walking a local area adjacent to the hotel.

SITE SELECTION COMMITTEE REPORT

The Site Selection Committee met at 1:00 pm. Also in attendance were John Beasley, John Damicone, Kelly Chamberlin, Kim Cutchins and Peter Dortray.

John Beasley and Charles Chen presented the plans for the 2019 meeting to be held in on the campus of Auburn University on July 9, 10, and 11, 2019. The meeting will be held at the Hotel at Auburn University and conference center. The room rate is $132/night. The site is convenient to the Atlanta airport and frequent shuttles are available throughout the day. Several exciting events and programs are planned and everyone is encouraged to attend. Brochures are available at the meeting desk.

The committee discussed options for the 2020 meeting in the Southwest region. Kim Cutchins received proposals from several properties in Austin, TX but proposed room rates were higher than $149/night. The committee strongly supported meeting in Austin and encouraged further efforts to identify a meeting venue. Further, the committee recommended considering proposed room rates of more than $149/night and agreed that $200/night including parking was an acceptable upper limit on room rates. In the event that an acceptable site cannot be found in Austin, Oklahoma City was recommended as an alternative.

The 2021 meeting will be in the VC area. Charlotte, NC was suggested as a possible meeting site.

The 2022 meeting will be in the SE. Efforts are underway to try to meet jointly with the Southern Peanut Growers Conference. The committee supported this effort. Savannah GA was suggested as an alternative.

2019 Annual Meeting	**2020 Annual Meeting**	**2021 Annual Meeting**
July 9-11	July 14-16	July 13-15
Hotel at Auburn University	Southwest Region	Virginia-Carolina Region
Auburn, AL		

RECOGNITION OF RETIRING APRES BOARD MEMBERS

President Dotray recognized outgoing Board members—Wilson Faircloth, Syngenta; and, Corley Holbrook as one of his last acts. He closed his term by asking Charles and Lynn Simpson to come forward to cut the 50th Anniversary Celebration cake, noting Charles was at the first meeting of the Society and has attended 49 of its 50 meetings. He thanked the American Peanut Shellers Association for their wonderful recognition gift.

ADJOURNMENT

Outgoing President Pete Dotray handed the gavel to newly-elected President Rick Brandenburg. As his first order of business President Rick Brandenburg presented outgoing President Peter Dotray with the Past President's award.

President Rick Brandenburg invited all to stay for the Awards Reception and 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

CORTEVA AGRISCIENCE™, AGRICULTURAL DIVISION OF DOWDUPONT™, AWARDS FOR EXCELLENCE IN RESEARCH AND EDUCATION

I. Corteva Agriscience™, Agricultural Division of DowDuPont™, 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. Corteva Agriscience™, Agricultural Division of DowDuPont™, 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 Corteva Agriscience™, Agricultural Division of DowDuPont™, 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 Corteva Agriscience™, Agricultural Division of DowDuPont™, 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 Corteva Agriscience™, Agricultural Division of DowDuPont™ 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. Corteva Agriscience™, Agricultural Division of DowDuPont™, 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 Corteva Agriscience™, Agricultural Division of DowDuPont™, 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 Corteva Agriscience™, Agricultural Division of DowDuPont™, AWARDS

General Instructions: Listed below is the information to be included in the nomination for individual or teams for the Corteva Agriscience™, Agricultural Division of DowDuPont™, 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.

☐ **Award for Excellence in Education**
☐ **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.

JOE SUGG GRADUATE STUDENT ORAL PRESENTATION COMPETITION

RULES

A. ELIGIBILITY

1. Any student who is a APRES member and has registered to attend the current APRES Annual Meeting is eligible to compete in the poster or oral presentation contest.

2. Students are eligible for participation in the Student Poster Contest and to make an oral presentation in the Joe Sugg Graduate Student Oral Presentation Competition multiple times during a M.S. program and a Ph.D. program; however, a student cannot participate in the oral presentation contest and poster presentation contest during the same year.

B. RULES AND PROCEDURES

1. A contestant may enter the Joe Sugg Graduate Student Oral Presentation multiple years. Persons who have graduated from a degree program (M.S. or Ph.D.) may enter during the first annual meeting following graduation and present the work completed during the respective degree program.

2. Contestants will indicate a preference to enter either the Student Poster Contest or Joe Sugg Graduate Student Oral Presentation Competition when submitting their abstract. Abstracts must be turned in by the deadline posted on the APRES website for abstract submissions.

3. M.S. and Ph. D. students will compete together within the Joe Sugg Graduate Student Oral Presentation Competition.

C. AWARDS

Awards will be presented to 1st and, 2nd place winners in the Joe Sugg Graduate Student Oral Presentation Competition. The winner will receive a check in the amount of $500; the second place finisher will receive a check for $250.

D. CRITERIA FOR THE JOE SUGG GRADUATE STUDENT ORAL PRESENTATION COMPETITION

Competitors for the Joe Sugg Graduate Student Oral Presentation Competition will be judged based on the criteria outlined in the Score Sheet for the Joe Sugg Graduate Student Oral Presentation Competition.

STUDENT NAME/PAPER No.: _____

I. Organization of Presentation: 50 points **TOTAL POINTS (organization):** _____

a. Introduction: 15 points
   i. ____ Hypothesis clearly stated.
   ii. ____ Research objectives stated clearly.
   iii. ____ Introduction material stated succinctly but in enough detail to allow audience to understand importance of problem.
   iv. ____ Important related studies noted.

b. Materials and Methods: 10 points
   i. ____ Materials and methods succinctly presented, yet in enough detail that allows the audience to follow procedures.
   ii. ____ Appropriate method of data analysis noted.

c. Results and Discussion: 20 points
   i. ____ Results summarized with appropriate use of statistics or other techniques for data analysis.
   ii. ____ Importance of results discussed in relation to objectives.
   iii. ____ Plans for future direction of research discussed.

d. Questions: 5 Points
   i. ____ Questions answered fully and effectively.

II. Presentation Techniques: 50 points **TOTAL POINTS (presentation techniques):** _____

a. ____ Speaker presents paper at volume clearly audible to the entire audience.
b. ____ Student speaks at appropriate speed and clarity so as to be understood by the audience. Students for whom English is a second language should take extra care to speak clearly.
c. ____ Students use appropriate inflection in voice, hand gestures, and maintains eye contact with the audience during presentation.
d. ____ Student times presentation to allow enough time for questions (approximately 13 minutes for a 15 minute presentation).
e. ____ Student repeats each question from the audience.
f. ____ Color of font and text of sufficient contrast for maximum clarity.
g. ____ Bullet points succinctly stated for clarity. Text on each slide restricted to most important points.
h. ____ Font size large enough to be read clearly by the audience.
i. ____ Text slides supported with sufficient illustrations to add understanding and interest to the presentation.
j. ____ Graphs and tables easy to read and understand by the audience.

III. Research: 50 points **TOTAL POINTS (research):** _____

a. ____ Uniqueness and creativity of research objectives.
b. ____ Creativity of research approach as presented in “Materials and Methods”
c. ____ Complexity of research efforts.
d. ____ Use of innovative techniques for evaluation and assessment of results.
e. ____ Completeness of results and discussion in achieving research objectives.

IV. **TOTAL POINTS (out of 150):** _____

General Comments:

RULES FOR GRADUATE STUDENT POSTER CONTEST

A. ELIGIBILITY

1. Any student who is a APRES member and has registered to attend the current APRES annual meeting is eligible to compete in the poster or oral presentation contest.

2. Students are eligible for participation in the Student Poster Contest and to make an oral presentation in the Joe Sugg Graduate Student Award Contest multiple times during a M.S. program and a Ph.D. program; however, a student cannot participate in the oral presentation contest and poster presentation contest during the same year.

B. RULES AND PROCEDURES

1. A contestant may enter the Student Poster Contest multiple years. Persons who have graduated from a degree program (M.S. or Ph.D.) may enter during the first annual meeting following graduation and present the work completed during the respective degree program.

2. Contestants will indicate a preference to enter either the Student Poster Contest or Joe Sugg Graduate Student Award Contest when submitting their abstract. Abstracts must be turned in by the deadline posted on the APRES website for abstract submissions.

3. M.S. and Ph. D. students will compete together within the Student Poster Contest.

C. AWARDS

Awards will be presented to 1st and, 2nd place winners in the Student Poster Contest. When there is a tie for 1st place in either contest, there will be no 2nd place winner and the prizes will be equally shared by the two 1st place winners of the respective contest.

D. CRITERIA FOR THE STUDENT POSTER COMPETITION

1. The **abstract** should provide all pertinent information with respect to the research project. Abstract formatting should be judged according to the APRES submission guidelines and standard format. A score of 0 is to be awarded if no abstract is submitted.

2. **Appearance and flow** refers to the physical development of the poster. This includes the organization and pattern of the poster and effective use of text, figures, and pictures to convey information in an easily understandable manner. The use of creative "art work", illustrations, color balance, and general organizational layout of the poster should be a consideration in the category. Proper grammar, sentence structure, spelling, and use of terminology should be considered.

3. The **Introduction** section of the poster should provide an adequate introduction to the problem as well as provide a thorough, yet concise review of relevant previous research. Contestants should clearly justify reasons for conducting the research and then state objectives. Material should be presented in a clear and interesting manner that will make the audience want to learn more. Originality includes scientific merit and the contribution of the research to peanut science.

4. **Materials and Methods** should clearly describe how the research was conducted. All pertinent information with respect to how experiments were conducted should be included. A description of the experimental design utilized should be included as well as statistical analysis of the data. Materials and Methods should be brief but descriptive enough for the audience to understand and evaluate the overall approach used to address the stated objective(s).

5. **Results and Discussion** are an essential part of any research paper. It is important that the Results and Discussion be supported by the data and interpretation of the data is logical. Findings should be related to other work if available. References should be made to graphs, tables, figures etc. as necessary in the Results and Discussion section.

6. **Conclusions** should be clear, concise, and easy to follow. In addition, Conclusions must be supported by results. Conclusions should address stated objectives and/or hypothesis.

7. **Future Research** needs should be included that provide ideas that may result in a greater understanding of the subject. Future Research should address areas of study that are currently lacking data and/or require a greater understanding of the subject matter to determine scientifically sound solutions to the problem at hand.

8. **Student Interaction** is a vital portion of the presentation process. Students should be able to intelligently discuss all aspects of the material they are presenting. In addition, students should present themselves appropriately given that APRES is a professional scientific society. If judges are unable to interact with <u>all</u> students in the contest, no points should be awarded to <u>any</u> student that a judge is assigned to in order to not give one student an advantage over another in terms of scoring.

9. **Poster dimensions** should be <u>no larger</u> than 36 inches high and 36 inches wide.

10. Students are <u>strongly</u> encouraged to provide 8” x 11” color copies of their poster presentations to interested parties. Copies should be made available by displaying them at the poster board.

50th Annual Meeting

American Peanut Research and Education Society

2018 Program

July 10-12
Doubletree by Hilton Hotel
Williamsburg, VA

50th Annual Meeting

July 10-12, 2018 * Williamsburg, VA

Sponsors

Monday Tour and Dinner
Birdsong Peanuts
Virginia Peanut Growers Association

Awards Reception
Corteva Agriscience™, Agriculture Division of DowDupont™

Meeting Breaks
National Peanut Board
Syngenta
Fine Americas

Graduate Student Luncheon
Syngenta

Ice Cream Social
AmVac
Brimrose
Golden Peanut & Tree Nuts
National Peanut Buying Points Association
Nichino America
North Carolina Peanut Growers Association
Olam
Premium Peanut
The J.M. Smucker Company
U.S. Gypsum
Virginia Peanut Growers Association

Wednesday Night Reception & Dinner
Bayer
BASF

Anniversary Cake
American Peanut Shellers Association
The Peanut Institute

Spouses Hospitality Suite
Valent

Spouses Program
American Peanut Council

Joe Sugg Graduate Student Competition
North Carolina Peanut Growers Association

Graduate Student Poster Competition
National Peanut Board

Fun Run
JLA, Inc.

Registration Bags & Lanyards
Visjon Biologics
Verdesian Life Sciences

Peanut Snacks

Alabama Peanut Producers Association
Florida Peanut Producers Association
Georgia Peanut Commission
Hampton Farms
Hershey Chocolate
Hub's Peanuts
KraftHeinz
Mars Wrigley Confectionery
Mississippi Peanut Growers Association
North Carolina Peanut Growers Association
The J.M. Smucker Company
Severn Peanut Company
South Carolina Peanut Board
Texas Peanut Producers Board
Virginia Diner Peanuts
Virginia Peanut Growers Association

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)

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
Beth Langston, Spouses Program 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)

50th APRES Annual Meeting
Schedule of Events

Monday, July 9, 2018	
8:00 - 11:00 a.m. Rooms 2&3	**Peanut Foundation - Peanut Breeders Tools Workshop** Marker Assisted Selection (MAS) Technology Methodology *Steve Brown, Presiding*
11:00 a.m. - 12 Noon Rooms 2&3	**Peanut Foundation - Peanut Genomics Initiative Meeting** *Steve Brown, Presiding*
12 Noon - 1:30 p.m.	**Lunch on Own**
1:30 - 6:00 p.m. Departing from Ballroom Promenade Hotel Entrance	**Chipokes Plantation Tour** *Sponsored by: Birdsong Peanuts & Virginia Peanut Growers Assoc.*
6:00 - 7:30 p.m. Chipokes Conference Shelter	**Barbeque Dinner @ Chipokes Plantation** *Sponsored by: Birdsong Peanuts & Virginia Peanut Growers Assoc.*
8:30 p.m.	**Arrive Back at Hotel**
Tuesday, July 10, 2018	
Morning	Golf on Your Own
8:00 a.m. - 5:00 p.m. Conference Center Lobby	**Registration**
8:00 a.m. - 5:00 p.m. Executive Lounge	**Presentation Uploading**
8:00 - 10:00 a.m. Auditorium	**Seed Summit**
10:00 - 12 Noon Auditorium	**Crop Germplasm Committee**
12 Noon - 1:00 p.m.	**Lunch on Your Own**
1:00 - 4:30 p.m. PDR Room	**Spouses Hospitality Suite Open** *Sponsored by: Valent*
12 Noon - 1:00 p.m.	**Program Committee** - *Chairman - Rick Brandenburg*
1:00 - 5:00 p.m.	**Committee Meetings**
1:00 - 2:00 p.m. Amphitheatre	Peanut Quality Committee - *Chairman: John Bennett*
1:00 - 2:00 p.m. Room 2/3	Site Selection Committee - *Chairman: Barbara Shew*
1:00 - 2:00 p.m. Room A/B	Public Relations Committee - *Chairman: Ron Sholar* 50th Anniversary Celebration Committee - *Chairman: Corley Holbrook*
2:00 - 3:00 p.m. Room 2/3	Publications and Editorial Committee - *Chairman: Chris Liebold*
2:00 - 3:00 p.m. Room 2/3	Associate Editors Peanut Science - *Peanut Science Editor: Tim Grey*
2:00 - 3:00 p.m. Room A/B	Joe Sugg Graduate Student Competition Committee - *Chairman: Bob Kemerait*
2:00 - 3:00 p.m. Room 5	Finance Committee - *Chairman: Tim Brenneman*
3:00 - 3:30 p.m. Room 2/3	Bailey Award Committee - *Chairman: John Damicone*
No Meeting	Nominating Committee - *Chairman: C. Corley Holbrook*

Tuesday, July 10, 2018, Continued	
3:00 - 3:30 p.m. Room A/B	Corteva Agriscience™, Agriculture Division of DowDuPont™, Awards Committee *Chairman: Michael Baring*
3:00 - 3:30 p.m. Room 5	Coyt T. Wilson Award Committee - *Chairman: Jason Woodward*
No Meeting	Fellows Award Committee - *Chairman: Eric Prostko*
3:30 - 5:00 p.m. Room D	**Feed the Future Innovation for Peanut - International Program** *Moderator: Dave Hoisington*
3:00 - 5:00 p.m. Auditorium	**Joe Sugg Graduate Student Competition - Session I** Moderator: R.C. Kemerait *Sponsored by: North Carolina Peanut Growers Association*
6:00 - 8:00 p.m. Adams Ballroom	**Ice Cream Social** *Sponsored by: APRES Supporting Members*
Wednesday, July 11, 2018	
8:00 a.m. - 5:00 p.m. Conference Center Lobby	**Registration**
All Day Executive Lounge	**Presentation Uploading**
8:00 a.m. - 4:00 p.m. PDR Room	**Spouses Hospitality Suite Open** *Sponsored by: Valent*
8:00 - 10:00 a.m. Auditorium	**Opening General Session** *APRES President Peter Dotray, President*
8:00	**Welcome to Virginia** Dr. Jewel Bronaugh Virginia Commissioner of Agriculture
8:15	**Virginia Tech University Research & Extension** David Langston Professor and Director, Virginia Tech, Tidewater Agricultural Experiment Station
8:30	**An Organization, a Family, and Fifty Years of Homecomings: A Historical Reflection of APRES** Katie L. Beasley**,** Department of History, Florida State University, Tallahassee, FL
9:00	**Remembering our Past and How it Affected our Present & Future** Howard Valentine (Retired), The American Peanut Council, Big Canoe, GA
9:30	**Peanut Yield Gains Over the Past 50 Years** C.Corley Holbrook, USDA-ARS, TIFTON, GA
10:00-10:30 a.m. Center Lounge	**Networking Break** *Sponsored by Syngenta*
10:30 a.m. - 12 Noon Auditorium	**Symposium: Industry Challenges of the Next 50 Years** *Moderator: Rick Brandenburg*
10:30	**The Future of Peanut Agronomic Research - The Sky is Not the Limit** Scott Tubbs, Crop and Soil Sciences Department, University of Georgia, Tifton, GA
10:50	**Future of Pest Management: A Plant Pathologist's Perspective** Nick Dufault, Department of Plant Pathology, The University of Florida, Gainesville, FL

50th APRES Annual Meeting
Schedule of Events

Wednesday, July 11, 2018	
11:10	**Not Your Grandma's Goobers: Designing the Future of Peanut Breeding** Kelly D. Chamberlin, USDA-ARS, Stillwater, OK
11:30	**A Retrospective Look at Engineering Innovations in the Peanut Industry** Chris L. Butts, National Peanut Research Laboratory, USDA, ARS, Dawson, GA.
11:50	**Rethinking Scales for Measuring Peanut Quality** Jack P. Davis, J. Leek Associates, Inc., Albany, Ga.
12 Noon - 1:30 p.m.	**Lunch on Your Own**
1:30 - 3:30 p.m.	**Concurrent Breakout Sessions** **Joe Sugg Graduate Student Competition II** *Sponsored by: North Carolina Peanut Growers Association* **Breeding Methodologies** **Production Physiology, & Harvesting**
1:30 - 3:15 p.m. **Auditorium**	**Joe Sugg Graduate Student Competition II** Moderator: R.C. Kemerait *Sponsored by: North Carolina Peanut Growers Association*
1:30 - 3:30 p.m. **Amphitheatre**	**Breeding Methodologies** Moderator: J. Dunn
1:30 - 3:30 p.m. **Rooms 2&3**	**Production, Physiology & Harvesting** Moderator: S. Monfort
3:30 - 5:00 p.m. Center Lounge	**Networking Break** *Sponsored by National Peanut Board*
4:00 - 5:00 p.m. Center Lounge	**Poster Viewing and Discussions *(Authors Present)*** **Scientific Poster Presentations** **Graduate Student Poster Competition** *Sponsored by: National Peanut Board*
5:00 - 6:00 p.m. Room D	**Board of Directors Meeting** President Peter Dotray, Presiding
6:30 - 9:00 p.m. Taylor/Adams Ballrooms	**APRES 50th Anniversary Celebration Dinner** *Sponsored by: Bayer and BASF*
Thursday, July 12, 2018	
6:15 a.m. Ballroom Promenade Hotel Entrance	**APRES Fun Run/Walk** *Sponsored by: JLA, Inc.*
8:00 a.m. - 4:00 p.m. Conference Center Lobby	**Registration Open**
8:00 a.m. - 4:00 p.m. Executive Lounge	**Presentation Uploading**
8:00 a.m. - 4:00 p.m. PDR Room	**Spouses Hospitality Suite Open** *Sponsored by: Valent*

50th APRES Annual Meeting
Schedule of Events

Thursday, July 12, 2018	
8:00 a.m. - 10:00 a.m.	**Concurrent Breakout Sessions** **Joe Sugg Graduate Student Competition - Session III** *Sponsored by: North Carolina Peanut Growers Association* **Molecular Breeding I** **Excellence in Extension I**
8:00 a.m. - 9:30 a.m. **Auditorium**	**Joe Sugg Graduate Student Competition - Session III** Moderator: R.C. Kemerait *Sponsored by: North Carolina Peanut Growers Association*
8:00 a.m. - 10:00 a.m. **Rooms 2&3**	**Excellence in Extension I** Moderator: D. Jordan
10:00 - 10:30 a.m. Center Lounge	**Networking Break** *Sponsored by National Peanut Board*
10:30 a.m. - 12 Noon	**Concurrent Breakout Sessions** **Molecular Breeding II** **Plant Pathology I** **Excellence in Extension II**
10:30 a.m. - 12 Noon **Auditorium**	**Molecular Breeding II** Moderator: P. Ozias-Akins
10:30 a.m. - 12 Noon **Rooms 2&3**	**Excellence in Extension II** Moderator: S. Taylor
1:30 - 3:15 p.m. **Auditorium**	**Economics & Marketing** Moderator: A. Luke-Morgan
3:00-3:30 p.m. Center Lounge	**Networking Break** *Sponsored by National Peanut Board*
3:15 - 4:45 p.m.	**Concurrent Breakout Sessions** **Utilizing *Arachis* Species** **Weed Science**
3:15 - 4:45 p.m. **Auditorium**	**Utilizing Arachis Species** Moderator: S. Tallury
3:30 - 4:30 p.m. **Amphitheatre**	**Weed Science** Moderator: D. Jordan
5:00 - 6:00 p.m. Auditorium	**APRES Business Meeting and Awards Ceremony** *President Peter Dotray, Presiding*
6:00 - 7:30 p.m. Taylor/Adams Ballroom	**Awards Reception** *Sponsored by: Corteva Agriscience™, Agriculture Division of DowDuPont™*

50th APRES Annual Meeting
Detailed Program

Tuesday, July 10, 2018	
Morning	Golf on Your Own
8:00 a.m. - 5:00 p.m. Conference Center Lobby	**Registration**
8:00 a.m. - 5:00 p.m. Executive Lounge	**Presentation Uploading**
8:00 - 10:00 a.m. Auditorium	**Seed Summit**
10:00 - 12 Noon Auditorium	**Crop Germplasm Committee**
12 Noon - 1:00 p.m.	**Lunch on Your Own**
1:00 - 4:30 p.m. PDR Room	**Spouses Hospitality Suite Open** *Sponsored by: Valent*
12 Noon - 1:00 p.m.	**Program Committee -** *Chairman - Rick Brandenburg*
1:00 - 5:00 p.m.	**Committee Meetings**
1:00 - 2:00 p.m. Amphitheatre	Peanut Quality Committee - *Chairman: John Bennett*
1:00 - 2:00 p.m. Room 2/3	Site Selection Committee - *Chairman: Barbara Shew*
1:00 - 2:00 p.m. Room A/B	Public Relations Committee - *Chairman: Ron Sholar* 50th Anniversary Celebration Committee - *Chairman: Corley Holbrook*
2:00 - 3:00 p.m. Room 2/3	Publications and Editorial Committee - *Chairman: Chris Liebold*
2:00 - 3:00 p.m. Room 2/3	Associate Editors Peanut Science - *Peanut Science Editor: Tim Grey*
2:00 - 3:00 p.m. Room A/B	Joe Sugg Graduate Student Competition Committee - *Chairman: Bob Kemerait*
2:00 - 3:00 p.m. Room 5	Finance Committee - *Chairman: Tim Brenneman*
3:00 - 3:30 p.m. Room 2/3	Bailey Award Committee - *Chairman: John Damicone*
No Meeting	Nominating Committee - *Chairman: C. Corley Holbrook*
3:00 - 3:30 p.m. Room A/B	Corteva Agriscience™, Agriculture Division of DowDuPont™, Awards Committee *Chairman: Michael Baring*
3:00 - 3:30 p.m. Room 5	Coyt T. Wilson Award Committee - *Chairman: Jason Woodward*
No Meeting	Fellows Award Committee - *Chairman: Eric Prostko*
3:30 - 5:00 p.m. Room D	**Feed the Future Innovation for Peanut - International Program** *Moderator: Dave Hoisington*

50th APRES Annual Meeting
Detailed Program

3:00 - 5:00 p.m. Auditorium	**Joe Sugg Graduate Student Competition - Session I** Moderator: R.C. Kemerait *Sponsored by: North Carolina Peanut Growers Association*
3:00	**Mapping of Resistence to Root-knot Nematode from the Wild Species A. stenosperma and Introgression into Peanut Arachis hypogaea L.** **C. BALLÉN-TABORDA***, Center for Applied Genetic Technologies and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602; Y. CHU, Department of Horticulture and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Tifton, GA 31793; S. A. JACKSON, Center for Applied Genetic Technologies and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602; P. OZIAS-AKINS, Department of Horticulture and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Tifton, GA 31793; C. C. HOLBROOK, USDA-ARS, Tifton, GA 31793; and D. J. BERTIOLI and S. C. M. LEAL-BERTIOLI, Center for Applied Genetic Technologies and Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602.
3:15	**Tracking of Wild Allele Introgressions in a Peanut Chromosome Segment Substitution Line Population** **D. GIMODE*** and P. OZIAS-AKINS, Institute of Plant Breeding Genetics and Genomics, University of Georgia, Tifton, GA 31793; Y. CHU, Department of Horticulture, University of Georgia, Tifton, GA 31793; S. LEAL-BERTIOLI and D. BERTIOLI, Center for Applied Genetic Technologies, University of Georgia, Athens, GA 30606; C. C. HOLBROOK United States Department of Agriculture - Agricultural Research Service, Tifton GA 31793; J. CELVENGER, Mars Wrigley Confectionery, Center for Applied Genetic Techonlogies, Athens, GA 30606; L. DEAN, USDA-ARS, Raleigh NC 27695, and D. FONCEKA, Centre d'Etudes Régional pour l'Amélioration de l'Adaptation à la Sécheresse, Thies, Senegal.
3:30	**Determination of Peanut (*Arachis hypogaea* L.) Yield Potential by Geographical Location and Planting Date in Georgia.** **S. E. PELHAM*** and W. S. MONFORT, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; GEORGIA COUNTY EXTENSION ANR AGENTS, University of Georgia, Athens, GA 30601.
3:45	**Investigation of Planter Parameters for Maximizing Peanut Emergence** **S. VIRK**, W. PORTER, S. MONFORT, C. PILON, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; and S. HOLLIFIELD and P. SAPP, UGA County Extension Agents.
4:00	**Planting Conditions Influence Early Season Crop Growth of Peanut Cultivars** **G. VIRK***, C. PILON and J. L. SNIDER, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793-0748.
Paper Withdrawn	**Boron Rate and Timing on Runner Peanut** **A. VAN CLEAVE***, A. V. GAMBLE, K. BALKCOM, A. PONCET, and A. CALLWAY, Auburn University, Auburn, AL 36849; J. HOWE, Texas A&M University, College Station, TX 77843; and G. HARRIS, The University of Georgia, Tifton, GA 31793.

4:15	**Quality and Flavor Profile Following Various Pesticide Inputs in Peanut (*Arachis hypogaea* L.) Grown in North Carolina** **A. A. KAUFMAN***, Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695, L. L. DEAN, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695; D. L. JORDAN and A. T. HARE Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695; B. B. SHEW, R. L. BRANDENBURG, and B. R. ROYALS, Department of Plant Pathology and Entomology, North Carolina State University, Raleigh, NC 27695.
4:30	**Elemental Analysis of Groundnut Germplasm Using the Particle Induced X-ray Emission (PIXE) Method** **A. U. REHMAN*** and U. KHAN, Department of Botany, Hazara University Mansehra KPK Pakistan.
6:00 - 8:00 p.m. Adams Ballroom	**Ice Cream Social** *Sponsored by: APRES Supporting Members*

50th APRES Annual Meeting
Detailed Program

Wednesday, July 11, 2018	
8:00 a.m. - 5:00 p.m. Conference Center Lobby	**Registration**
All Day Executive Lounge	**Presentation Uploading**
8:00 a.m. - 4:00 p.m. PDR Room	**Spouses Hospitality Suite Open** *Sponsored by: Valent*
8:00 - 10:00 a.m. Auditorium	**Opening General Session** *APRES President Peter Dotray, President*
8:00	**Welcome to Virginia** Dr. Jewel Bronaugh Virginia Commissioner of Agriculture
8:15	**Virginia Tech University Research & Extension** Saied Mostaghimi Director of Virginia Experiment Stations and Associate Dean for Research and Graduate Studies
8:30	**An Organization, a Family, and Fifty Years of Homecomings: A Historical Reflection of APRES** **K. L. BEASLEY*,** Department of History, Florida State University, Tallahassee, FL 32306.
9:00	**Remembering our Past and How it Affected our Present & Future** **H. VALENTINE*** (Retired), The American Peanut Council, Big Canoe, GA 30143
9:30	**Peanut Yield Gains Over the Past 50 Years** **C.C. Holbrook***, USDA-ARS, TIFTON, GA 31793; T.B. BRENNEMAN, UNIV. OF GEORGIA, TIFTON, GA 31793; H.T. STALKER, North Carolina State Univ., Raleigh, NC 27695; W.C. JOHNSON III, USDA-ARS, Tifton, GA 31793; and P. OZIAS-AKINS, Y. CHU, G. VELLIDIS, and D. MCCLUSKY, Univ. of Georgia, Tifton, GA 31793.
10:00-10:30 a.m. Center Lounge	**Networking Break** *Sponsored by Syngenta*
10:30 a.m. - 12 Noon Auditorium	**Symposium: Industry Challenges of the Next 50 Years** *Moderator: Rick Brandenburg*
10:30	**The Future of Peanut Agronomic Research - The Sky is Not the Limit** **R. S. TUBBS***, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.

10:50	**Future of Pest Management: A Plant Pathologist's Perspective** **N. DUFAULT*** Department of Plant Pathology, The University of Florida, Gainesville, FL 32611-0680, and M. PARET and I. SMALL, North Florida Research and Education Center, The University of Florida, Quincy, FL 32351-5677.
11:10	**Not Your Grandma's Goobers: Designing the Future of Peanut Breeding** **K. D. CHAMBERLIN***, USDA-ARS, Stillwater, OK 74075.
11:30	**A Retrospective Look at Engineering Innovations in the Peanut Industry** **C. L. BUTTS***, National Peanut Research Laboratory, USDA, ARS, Dawson, GA.
11:50	**Rethinking Scales for Measuring Peanut Quality** **J. P. DAVIS***, J. Leek Associates, Inc., Albany, Ga.
12 Noon - 1:30 p.m.	**Lunch on Your Own**
1:30 - 3:30 p.m.	**Concurrent Breakout Sessions** **Joe Sugg Graduate Student Competition II** *Sponsored by: North Carolina Peanut Growers Association* **Breeding Methodologies** **Production Physiology, & Harvesting**
1:30 - 3:15 p.m. **Auditorium**	**Joe Sugg Graduate Student Competition II** Moderator: R.C. Kemerait *Sponsored by: North Carolina Peanut Growers Association*
1:30	**Development of a New Protocol to Screen Peanut Genotypes with Superior Vigor by Assessing Root Architecture Traits** **M. D. GOYZUETA ALTAMIRANO*** and B. L. TILLMAN, North Florida REC, Agronomy Department, University of Florida, Marianna, FL 32446; and D. L. ROWLAND, Agronomy Department, University of Florida, Gainesville, FL 32611.
1:45	**Peanut and Weed Response to Postemergence Herbicide Tank-Mixtures Utilizing Paraquat** **K. M. EASON***, R. S. TUBBS, and T. L. GREY, Crop and Soil Science Department, The University of Georgia, Tifton, GA 31794; and X. S. LI, Crop, Soil, and Environmental Sciences Department, Auburn University, Auburn, AL 36849.
2:00	**Examining Peanut Rx 2.0 and the Component Models to Improve Forecast of Spotted Wilt Severity on Peanuts in Georgia** **C. B. CODOD***, R. C. KEMERAIT, A. K. CULBREATH, and M. R. ABNEY, Departments of Plant Pathology and Entomology, University of Georgia, Tifton, GA 31793; and G. G. KENNEDY, Department of Plant Pathology and Entomology, North Carolina State University, Raleigh, NC 27695.
2:15	**Ele-Max Nutrient Concentrate Effect on Georgia-06G with Paraquat Tank-Mixtures under Non-Irrigated Conditions** **N. L. HURDLE***, K. M. EASON, R. S. TUBBS, E. P. PROSTKO, and O. W. CARTER, University of Georgia, Tifton, GA; X. S. LI, Auburn University, Auburn, AL; and T. L. GREY, University of Georgia, Tifton, GA.
2:30	**Impact of Weed Management on Peanut Yield and Weed Populations the Following Year** **A. T. HARE***, D. L. JORDAN, and R. LEON, North Carolina State University, Raleigh, NC 27695.

2:45	**Presence and Distribution of Suspected Palmer Amaranth Resistant to PPO-inhibiting Herbicides in the North Carolina Coastal Plain** **D. J. MAHONEY***, D. L. JORDAN, A. T. HARE, K. M. JENNINGS, R. G. LEON, and M. C. VANN, North Carolina State University, Raleigh, NC 27695; and N. R. BURGOS, University of Arkansas, Fayetteville, AR 72701.
3:00	**Characterization of Feeding Behavior of Imidacloprid-Resistant Tobacco Thrips** **N. V. MAHESHALA*** and G. G. KENNEDY, Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC, 27695-7630.
1:30 - 3:30 p.m. **Amphitheatre**	**Breeding Methodologies** Moderator: J. Dunn
1:30	**Process Innovations in Peanut Breeding and Testing Pipelines at ICRISAT** **J. PASUPULETI***, T. V. MURALI, S. and S. MANOHAR, Groundnut Breeding Unit, Research Program-Asia, International Crops Research Institute (ICRISAT), Patancheru, Telangana, India 502324.
1:45	**Peanut Variety and Quality Evaluation – 50 Years of Regional Testing** **M. BALOTA***, Tidewater Agric. Res. & Ext. Center, Virginia Tech, Suffolk, VA 23437-7099; T. G. ISLEIB, Dept. of Crop and Soil Sci., N.C. State Univ., Raleigh, NC 27695-7629; D. ANCO and J. CHAPIN, Plant Environ. Sci. Dept. Edisto Research and Education Center, Clemson Univ., Blackville, S.C.; W. S. MONFORT, University of Georgia, Tifton, GA 31793; and J. OAKES, Eastern Virginia Agric. Res. & Ext. Center, Virginia Tech, Warsaw, VA, 22572.
2:00	**Drought-Induced Small Plants within the Pure Line Runner-Type Peanut Cultivar, 'Georgia-10T'** **W. D. BRANCH*** and C. K. KVIEN, Dept. of Crop and Soil Sciences, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793; and A. K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793.
2:15	**Genotypic Variation in Tomato Spotted Wilt Virus Infection in Peanut and Methods of Estimating Infection Frequency** Y-C. TSENG, **B. L. TILLMAN***, J. WANG, and D. L. ROWLAND, Agronomy Department, Univ. of Florida, FL.
2:30	**Evaluation of the U.S. Minicore Collection under Water Deficit in Three States** **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. BALOTA, Virginia Tech, Suffolk, VA 23437; R. BENNETT, USDA-ARS, Stillwater, OK 74075; N. WANG, Oklahoma State University, Stillwater, OK 74078; P. PAYTON and J. MAHAN, USDA-ARS, Lubbock, TX 79415; J. CHAGOYA, Texas A&M AgriLife Research, Lubbock, TX 79403; and C.-J. SUNG, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.
2:45	**Evaluation of the US Mini-core Collection to Identify Drought Tolerant Genotypes Utilizing Environmental Control Rainout Shelters** **P. M. DANG***, R. B. SORENSEN, and M. C. LAMB, USDA-ARS National Peanut Research Lab, Dawson, GA 39842; and C. Y. CHEN, Auburn University, Auburn, AL 36849.
3:00	**Relative Performance of a New Multiple Disease Resistant High Oleic Runner Variety from ACI Seeds Compared with Commercially Available Runner Varieties** **K. M. MOORE***, AgResearch Consultants Inc. (ACI) Sumner, GA 31789; and T. B. BRENNEMAN, Univ. of Georgia, Plant Pathology, UGA Tifton Campus, Tifton, GA 31794.

3:15	**New Sources from Germplasm Mini Core Collection Enhance Genetic Gains for Oil Content in Peanut** **H. D. UPADHYAYA***, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru -502324, Telangana, India.
1:30 - 3:30 p.m. **Rooms 2&3**	**Production, Physiology & Harvesting** Moderator: S. Monfort
1:30	**Early-Season Temperature Conditions Effect on Physiology of Peanut Seedlings** **C. PILON***, W. S. MONFORT, C. WEAVER, T. L. GREY, and V. TISHCHENKO, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.
1:45	**Evaluation of Aspire as a Boron Source for Peanut** **G. Harris***, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA.
2:00	**Characterization of Spatial Variability and Its Effects in Peanut Production** **K. R. KIRK***, D. ANCO, J. THOMAS, B. FOGLE, M. HAYNES, and M. MUNIR, Edisto REC, Clemson University, Blackville, SC 29817.
2:15	**Agronomic and Economic Effects of Irrigation and Rotation in Peanut** **M. C. LAMB***, R. B. SORENSEN, and C. L. BUTTS, National Peanut Research Laboratory, USDA, ARS, Dawson, GA.
2:30	**Selecting Valid and Practical Irrigation Scheduling Methods for Maximizing Yield of Runner Type Peanut Cultivars** **W. M. PORTER***, C. PILON, C. D. PERRY, W. S. MONFORT, J. L. SNIDER, and G. VELLIDIS, Department of Crop and Soil Sciences; and A. RABINOWITZ and A. R. SMITH, Department of Agricultural Economics, University of Georgia, Tifton, GA 31793.
2:45	**Quality Changes During Long Term Farmers' Stock Storage** **C. L. BUTTS***, National Peanut Research Laboratory, USDA, ARS, Dawson, GA; L. L. DEAN and K. W. HENDRIX, Market Quality and Handling Research Unit, USDA, ARS, Raleigh, NC; and R. B. SORENSEN and M. C. LAMB, National Peanut Research Laboratory, USDA, ARS, Dawson, GA.
3:00	**A Metabolomics Approach to the Volatile Compound Profiles of Raw and Roasted Peanuts** **L. L. DEAN***, Market Quality and Handling Research Unit, USDA, ARS, Raleigh, NC 27695-7624; J. WEISSBURG, Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695-7624; and S. D. JOHANNINGSMEIER, Food Science Unit, USDA, ARS, Raleigh, NC 27695-7624.
3:15	**Feeding High-Oleic Peanuts to Layer Hens Enhances Egg Yolk Color and Oleic Fatty Acid Content in Shell Eggs** **O. TOOMER***, Market Quality & Handling Research Unit, ARS-USDA, Raleigh, NC, 27695; A. HULSE-KEMP, Genomics and Bioinformatics Research Unit, ARS-USDA, Raleigh, NC, 27695; and E. SANDERS, R. MALHERIOS, and K. ANDERSON, Prestage Department of Poultry Science, North Carolina State University, Raleigh, NC, 27695.
3:30 - 5:00 p.m. Center Lounge	**Networking Break** *Sponsored by National Peanut Board*

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4:00 - 5:00 p.m. Center Lounge	**Poster Viewing and Discussions *(Authors Present)*** **Scientific Poster Presentations** **Graduate Student Poster Competition** *Sponsored by: National Peanut Board*
4:00 - 5:00 p.m.	**Poster Session** Authors Present
Poster Number 1	**Evaluating New Tactics for Southern Corn Rootworm, Diabrotica undecimpunctata, Management in Peanut** **M. R. ABNEY***, D. B. SUTHERLAND, and K. R. HILL, Department of Entomology, The University of Georgia, Tifton, GA 31793-0748.
Poster Number 2	**High-density Genetic Map Using Whole-genome Re-sequencing for Fine Mapping and Candidate Gene Discovery for Disease Resistance in Peanut** **G. AGARWAL***, H. WANG, J. C. FOUNTAIN, D. CHOUDHARY, and A. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA; J. CLEVENGER, D. J. BERTIOLI, and S. A. JACKSON, University of Georgia, Center for Applied Genetic Technologies, Athens, GA; M. K. PANDEY, Y. SHASIDHAR, and R. K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Center of Excellence in Genomics & Systems Biology, Patancheru, India; Y. CHU and P. OZIAS-AKINS, Horticulture Department, University of Georgia, Tifton, GA 31793; X. LIU and G. HUANG, BGI-Shenzhen, Shenzhen, China; X. WANG, Shandong Academy of Agricultural Sciences, Biotechnology Research Center, Jinan, China; C. C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA; and B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA.
Poster Number 3	**Resistance to *Sclerotium rolfsii* and *Phoma arachidicola* in the U.S. Mini-core Collection** **R. S. BENNETT*** and K. D. Chamberlin, USDA-ARS, Stillwater, OK 74075-2714.
Poster Number 4	**Disease and Yield Response of Two Peanut Cultivars to Recommended Fungicide Programs at Two Alabama Locations** **H. L. CAMPBELL*** and A. K. Hagan, 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.
Poster Number 5	**Evaluation of a Drought Tolerant, High Oleic, Disease Resistant Runner Population** **J. CHAGOYA***, Texas A&M AgriLife Research, Lubbock, TX 79403; R. KULKARNI, Texas Tech University, Lubbock, TX 79409; M. BARING, Texas A&M AgriLife Research, College Station, TX 77843; J. CASON and C. SIMPSON, Texas A&M AgriLife Research, Stephenville, TX 79401; and M. BUROW, Texas A&M AgriLife Research, Lubbock, TX 79403 and Texas Tech University, Lubbock, TX 79409
Poster Number 6	**Examination of the High-Oleic Trait Effective Germination of Peanut Seed** **K. D. CHAMBERLIN***, USDA-ARS, Stillwater, OK 74075; N. PUPPALA, Department of Plant and Environmental Sciences, New Mexico State University, Clovis, NM 88101; C. C. HOLBROOK, USDA ARS, Tifton, GA 31793; T. ISLEIB and J. DUNNE, Department of Crop Science, North Carolina State University, Raleigh, NC 27607; T. GREY, Department of Weed Science, University of Georgia, Tifton, GA 31793.

Poster Number 7	**Biological Activity of Peanut Skins as a Functional Food Ingredient** **L. M. CHRISTMAN*** and J.C. Allen, Department of Food, Bioprocessing, and Nutritional Sciences, North Carolina State University, Raleigh, NC. 27695-7624; and L.L. Dean, Market Quality and Handling Research Unit, USDA, ARS, Raleigh, NC 27695.
Poster Number 8	**Comparative Gene Expression and Biochemical Analysis of Aspergillus-Resistant and Susceptible Peanut (Arachis hypogaea) Testa Cell Walls** **C. COBOS***, V. BALASUMBRAMANIAN, and V. MENDU, Texas Tech University, Department of Plant and Soil Science, 2500 Broadway, Lubbock, TX 79409.
Poster Number 9	**Providing Peanut Education through County Extension Efforts** **R. P. EDWARDS*** and S. A. TROUTMAN, Cooperative Extension, University of Georgia, Ocilla, Georgia 31774; and H. H. ANDERSON, Cooperative Extension, University of Georgia, Fitzgerald, Georgia 31750.
Poster Number 10	**Drought Stress Effects on Physiological Mechanisms of Peanut Genotypes** **B. S. FABRETI***, C. PILON, G. K. VIRK, N. THANGTHONG, and C. K. KVIEN, Department of Crop and Soil Sciences; C. C. HOLBROOK, USDA-ARS; and P. OZIAS-AKINS, Department of Horticulture, University of Georgia, Tifton, GA 31793.
Poster Number 11	**Responses of Symbiotic Nitrogen Fixation to Rehydration after Drought Stress in Peanut Genotypes** X. WANG, **Y. FENG*** and C. CHEN, Dept. of Crop, Soil and Environmental Sciences, Auburn Univ., Auburn, AL 36849; P. DANG and M. LAMB, USDA-ARS National Peanut Research Laboratory, Dawson, GA 39842; C. C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research, Tifton, GA 31793; P. OZIAS-AKINS and Y. CHU, Dept. of Horticulture, Univ. of Georgia, Tifton, GA 31793; and T.G. ISLEIB, Dept. of Crop and Soil Sciences, N.C. State Univ., Raleigh, NC 27695.
Poster Number 12	**Towards Increased Understanding of Prohexadione-calcium Rates When Applied to Stress-induced Peanut** **J. C. FERGUSON***, Department of Plant and Soil Sciences, Mississippi State University, Miss. State, MS 39762.
Poster Number 13	**Investigating the Role of Reactive Oxygen Species (ROS) in Host - *Aspergillus flavus* Interactions Under Drought Stress Using Genetic Engineering** **J.C. FOUNTAIN*** and R. C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; Y. CHU, K. M. MARASIGAN, and P. OZIAS-AKINS, Department of Horticulture, University of Georgia, Tifton, GA, 31793; Z. Y. CHEN, Department of Plant Pathology and Crop Physiology, Louisiana State University Agricultural Center, Baton Rouge, LA, 70802; K. WANG, Department of Agronomy, Iowa State University, Ames, IA, 50011; Y. YANG, Department of Plant Pathology and Environmental Microbiology, Pennsylvania State University, University Park, PA, 16802; and B. GUO, USDA-ARS Crop Protection and Management Research Unit, Tifton, GA, 31793.
Poster Number 14	**The Peanut Black Pod Trait as an Alternative Determine Peanut Seed Maturity** **M. D. GOYZUETA*** and B. L. TILLMAN, North Florida REC, Agronomy Department, University of Florida, Marianna, FL 32446; and D. L. ROWLAND, Agronomy Department, University of Florida, Gainesville, FL 32611.

Poster Number 15 Poster Withdrawn	**Peanut Response to Anthem Flex Applied Preemergence, at Cracking, or Postemergence** **W. J. GRICHAR***, Texas A&M AgriLife Research, Corpus Christi, TX 78406; T. A. BAUGHMAN, Oklahoma State Univ., Ardmore, OK 73401; and P. A. DOTRAY, Texas A&M AgriLife Research, Lubbock, TX 79403.
Poster Number 16	**Virginia-Carolina Peanut iPiPE: Data Sharing to Improve Disease Risk Models** **C. GUILFORD***, L. ASKEW, D. LANGSTON, and H. L. MEHL, Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.
Poster Number 17	**Growth Habit and Phenotypic Variation among Tifrunner, GT-C20, and Their F1 Hybrids** **L. A. GUIMARAES***, K. M. MARAGIGAN, Y. CHU, and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748.
Poster Number 18	**The Structure and Strategy of the New Feed the Future Innovation Lab for Peanut** **D. HOISINGTON*** and J. RHOADS, Feed the Future Innovation Lab for Peanut, The University of Georgia, Athens, GA 30602.
Poster Number 19	**Effect of Organic Manure, Calcium and Weeding Regime on Growth and Yield of Peanut (Arachis hypogaea L.) in the Guinea Savannah Zone of Ghana** I. K. DZOMEKU, Department of Agronomy, University for Development Studies, Tamale, Ghana; M. ABUDULAI, Savannah Agricultural Research Institute, Tamale, Ghana; **D. L. JORDAN***, Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695; and R. L. BRANDENBURG, Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC 27695.
Poster Number 20	**Survey on the Adoption of Peanut Production Technologies following Research and Education Programs with PMIL** **A. A. DANKYI***, CSIR-Crops Research Institute, Fumesua, Kumasi, Ghana; M. ABUDULAI, CSIR-Savanna Agricultural Research Institute, Nyanpkala, Tamale, Ghana; G. Y. MAHAMA, CSIR-Savanna Agricultural Research Institute, Wa, Ghana; D. L. JORDAN, Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695; R. L. BRANDENBURG, Department of Plant Pathology and Entomology, North Carolina State University, Raleigh, NC; and D. A. HOISINGTON, University of Georgia, Athens, GA.
Poster Number 21	**Integrated Agronomy, Physiology, and Plant Breeding Approaches to Improve Drought Tolerance Phenotyping in Peanut** N. PUPPALA* and **J. D. MURA***, New Mexico State University, Agricultural Science Center at Clovis, 2346 State Road 288, Clovis, NM 88101; V. VADEZ, J. PASPULETI, and M. PANDEY, International Crop Research Institute for Semi-Arid Tropics, Patancheru, Telangana, India 502324; and R. VARSHNEY, International Crop Research Institute for Semi-Arid Tropics, Patancheru, Andhra Pradesh, India 502324.
Poster Number 22	**Peanut Tolerance to 2, 4-D and Dicamba** **K. PRICE*** and S. LI, Crop, Soils and Environmental Sciences, Auburn University, Auburn, AL 36849.
Poster Number 23	**Researching on Rhizobiology in Peanuts (Arachis hypogaea L.): 1. Studies in Pots** **S. SANCHEZ-DOMINGUEZ*** and M. LEMUS, Departamento de Fitotecnia, UACH, Chapingo, Edomex, 56230; and N. PUPPALA, New Mexico State University Agricultural Science Center, Clovis, NM, 88101.

Poster Number 24	**Economic Analysis of Peanut Digger Ground Speed and Conveyor Speed on Digging Yield Losses** **N. SMITH***, Department of Agricultural Sciences, Clemson University Sandhill Research and Education Center, Columbia, SC 29229; K. KIRK, B. FOGLE, and J. THOMAS, Edisto Research and Education Center, Clemson University, Blackville, SC 29817; D. ANCO, Department of Agricultural Sciences, Clemson University, Edisto Research and Education Center, Blackville, SC 29817; and A. WARNER, University of Georgia Extension, Seminole County, Donalsonville, GA 39845.
Poster Number 25	**Use of Wild Species for Peanut Breeding in Brazil** **T. SUASSUNA***, N. SUASSUNA, M. MORETZSOHN, J. HEUERT, and K. MARTINS, EMBRAPA Algodão,Campina Grande/PB, Brazil 58428-095 and EMBRAPA Cenargen, Brasília/DF, Brazil, 70770-917.
Poster Number 26	**Xylem Anatomy Features in Peanut (Arachis hypogaea L.) Root** **N. THANGTHONG***, C. PILON, and C. K. KVIEN, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; S. JOGLOY and N. VORASOOT, Department of Plant Science and Agricultural Resources, Khon Kaen University, Khon Kaen, 40002, Thailand.
Poster Number 27	**First True Leaf Physiology of Peanut Plants under Different Field Conditions** **G. VIRK***, C. PILON, and J. L. SNIDER, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793-0748.
Poster Number 28	**Interaction of Oleic acid and Linoleic Acid Composition to Aspergillus flavus Development Genes and Aflatoxin Pathway Genes** **H. L. ZHANG**, Light Industry College, Liaoning University, Shenyang, China; C. C. HOLBROOK, Crop Genetics and Breeding Res. Unit, USDA/ARS, Tifton, GA 31793; P. OZIAS-AKINS, Department of Horticulture, University of Georgia, Tifton, GA 31793; L. SCHARFENSTEIN and P-K CHANG, Southern Regional Research Center, USDA/ARS, New Orleans, LA 70124; and S. A. JACKSON, Center for Applied Genetic Technologies, University of Georgia, Athens, GA 30602.
Poster Number 29	**Management of Threecornered Alfalfa Hopper *(Hemiptera: Membracidae)* in Peanut** **D. B. SUTHERLAND***, M. R. ABNEY, The University of Georgia Extension, Worth County, Sylvester, GA 31791, and Entomology Department, The University of Georgia, Tifton, GA 31793.
Poster Number 30	**Assessment of Evolving Peanut Fungicide Programs for Yield and Value in Southwest Georgia** **B. W. HAYES***, University of Georgia Cooperative Extension, Mitchell County, Camilla Georgia 31730; B. A. WARD, University of Georgia Cooperative Extension, Miller County, Colquitt Georgia, 39837; R.C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, Georgia 31793.

Concurrent Breakout Sessions
Wednesday, July 11, 2018

	Joe Sugg Graduate II Auditorium	Breeding Methodologies Amphitheatre	Production, Physiology, & Harvesting Rooms 2&3
1:30 p.m.	Development of a New Protocol to Screen Peanut Genotypes with Superior Vigor by Assessing Root Architecture Traits	Process Innovations in Peanut Breeding and Testing Pipelines at ICRISAT	Early-Season Temperature Conditions Effect on Physiology of Peanut Seedlings
1:45 p.m.	Peanut and Weed Response to Postemergence Herbicide Tank-Mixtures Utilizing Paraquat	Peanut Variety and Quality Evaluation – 50 Years of Regional Testing	Evaluation of Aspire as a Boron Source for Peanut
2:00 p.m.	Examining Peanut Rx 2.0 and the Component Models to Improve Forecast of Spotted Wilt Severity on Peanuts in Georgia	Drought-Induced Small Plants within the Pure Line Runner-Type Peanut Cultivar, 'Georgia-10T'	Characterization of Spatial Variability and Its Effects in Peanut Production
2:15 p.m.	Ele-Max Nutrient Concentrate Effect on Georgia-06G with Paraquat Tank-Mixtures under Non-Irrigated Conditions	Genotypic Variation in Tomato Spotted Wilt Virus Infection in Peanut and Methods of Estimating Infection Frequency	Agronomic and Economic Effects of Irrigation and Rotation in Peanut
2:30 p.m.	Impact of Weed Management on Peanut Yield and Weed Populations the Following Year	Evaluation of the U.S. Minicore Collection under Water Deficit in Three States	Selecting Valid and Practical Irrigation Scheduling Methods for Maximizing Yield of Runner Type Peanut Cultivars
2:45 p.m.	Presence and Distribution of Suspected Palmer Amaranth Resistant to PPO-inhibiting Herbicides in the North Carolina Coastal Plain	Evaluation of the US Mini-core Collection to Identify Drought Tolerant Genotypes Utilizing Environmental Control Rainout Shelters	Quality Changes During Long Term Farmers' Stock Storage
3:00 p.m.	Characterization of Feeding Behavior of Imidacloprid-Resistant Tobacco Thrips	Relative Performance of a New Multiple Disease Resistant High Oleic Runner Variety from ACI Seeds Compared with Commercially Available Runner Varieties	A Metabolomics Approach to the Volatile Compound Profiles of Raw and Roasted Peanuts
3:15 p.m.	Additional Q&A Time	New Sources from Germplasm Mini Core Collection Enhance Genetic Gains for Oil Content in Peanut	Feeding High-Oleic Peanuts to Layer Hens Enhances Egg Yolk Color and Oleic Fatty Acid Content in Shell Eggs

Concurrent Breakout Sessions
Thursday, July 12, 2018

	Joe Sugg Graduate Student Competition III Auditorium	Molecular Breeding I Amphitheatre	Excellence in Extension I Rooms 2&3
8:00 a.m.	Managing Caterpillar Pest in Mississippi Peanut	The Genome Sequence of Peanut	The History of Peanuts in Virginia
8:15 a.m.	Effect of Planting Date on Three Cultivars and Three Advanced Breeding Lines on Leaf Spot Severity and Yield when Grown without Fungicides	PeanutBase: New Genome Assemblies and Breeding Support	Summary of Farmer Practices in the Virginia-Carolina Region Related to Digging and Harvesting Peanut
8:30 a.m.	Genotypic and Phenotypic Characterization of Peanut Lines with Interspecific Introgressions Conferring Late Leaf Spot Resistance	The Next Generation of Peanut Genomics	Comparison of On-Farm Irrigation Scheduling Practices in Southeast Alabama Peanut Production
8:45 a.m.	Deriving Peanut Plant Height from Aerial Imagery and Digital Elevation Models	Tetrasomic Recombination in a Recombinant Inbreed Line Population Confirmed through Whole Genome Re-sequencing	Using the Peanut Belt Research Station to Enhance County Programs in Bertie County North Carolina
9:00 a.m.	"Fingerprinting" and Aflatoxin Production of Aspergillus Section Flavi Associated with Groundnut in Eastern Ethiopia Paper Withdrawn	Genomic Diversity Characterization and Genome-Wide Association Mapping of the North Carolina State University Peanut Breeding Lines and Virginia-Type Cultivars	History and Changes in Production and Pest Management in the Old Peanut Belt in North Carolina
9:15 a.m.	Additional Time for Q&A	Population Genomics of US Peanut Mini Core Collection using Genome-Wide SNP Genotyping	Economics of Peanut Root-knot Nematode Control
9:30 a.m.		Recombination Bin-Map Facilitates QTL Mapping of Disease Resistance Traits in Peanut (Arachis hypogaea L.) Using Whole Genome Re-sequencing	Lessons Learned in a Short Period of Time as Peanut Agents in Northeast North Carolina
9:45 a.m.		Genome-Wide Association Study of Sweet, Bitter and Roasted Peanut Sensory Attributes in Cultivated Peanuts	Peanut Response to Twin-Row Planting Patterns in North Carolina

Concurrent Breakouts
Thursday, July 12, 2018

	Molecular Breeding II Auditorium	Plant Pathology I Amphitheatre	Excellence in Extension II Rooms 2&3
10:30 a.m.	Marker Assisted Selection of Peanut Storage Proteins for Flavor Potential	Peanut Kernel Shrivel – An Undiagnosed Condition of Peanut Crops in Queensland, Australia	Baker County Georgia 2015, 2016 & 2017 UGA On-Farm Peanut at Plant In-Furrow Fungicide, Nematicide and Inoculant Test
10:45 a.m.	High Density Graphic Genotypes of Near Isogenic Lines Revealed Genomic Regions Controlling Peanut Nodulation	Effects of Seed Treatments and In Furrow Sprays on Peanut Plant Stands, Diseases and Pod Yield	Response of Peanut to Inoculation with Bradyrhizobia and Nitrogen Rate
11:00 a.m.	Iterative QTL-seq to Discover Functional Markers of Agronomically Important Traits	Velum Total and AgLogic 15G Compared for Peanut Root-Knot Control and Yield Response on Root-Knot Susceptible and Resistant Peanut Cultivars	Thrips Control in Peanut in North Carolina with Insecticides Applied During Planting and After Peanut Emergence
11:15 a.m.	Major QTLs for Resistance to Early and Late Leafspot Diseases are Identified in Chromosome 3 and 5 in Peanut *(Arachis hypogaea)*	Evaluating Peanut Cultivars Using a Reduced Cost and a Premium Fungicide Program	White Mold Control Efficacy Associated with Nine Peanut Fungicide Treatments
11:30 a.m.	Genome-Wide Association Study of Agronomic and Disease Resistance Traits Using Peanut Nested Association Mapping Populations.	Efficacy and Profitability of Nematicide, Insecticide, and Fungicide Chemistries and Pre-Mixes for Pest Management in Peanut	Evaluating Peanut White Mold Fungicide Programs in Cook County, Georgia – 3 Year summary
11:45 a.m.	"The Hunt for the "Silver Bullet": Reference Genome Development and Comparative Genomics Analysis of Field Isolates of Aspergillus flavus for Identification of Aflatoxin Regulators.	Evaluation of Virginia-type germplasm for *Sclerotium rolfsii* tolerance in field conditions	Influence of Quick-SOL and Peg Power on Peanut Yield in Small-Plot Research

Concurrent Breakout Sessions
Thursday, July 12, 2018

	Plant Pathology II Amphitheatre	Economics & Marketing Auditorium	
1:30 p.m.	Management Efficacy of Late Leaf Spot in two Peanut Fields with Fungicides Applied at Varying Sprayer Ground Speeds	U.S. Peanut Cost of Production	
1:45 p.m.	Multiyear Evaluation of Peanut Disease Control Programs Incorporating Miravis® Fungicide into Disease Control Systems Including Elatus®	Representative Peanut Farms 2016 Net Cash Flow	
2:00 p.m.	Azoxystrobin, Solatenol and Adepidyn to Manage Leaf Spot and Stem Rot	An Analysis of Crop Insurance as a Safety Net for U.S. Peanut Farms	
2:15 p.m.	A Re-evaluation of Fungicide Efficacy for Leaf Spot Control in North Carolina	Implications of the Elimination of Generic Base and Addition of Seed Cotton Program on South Carolina Peanut Farms	
2:30 p.m.	Mixtures of Sulfur with Sterol Biosynthesis Inhibiting Fungicides for Management of Late Leaf Spot of Peanut	Predicting Land Use Competition for US Peanut Acreage Pre- and Post-Quota	
2:45 p.m.	Peanut Yield Loss in the Presence of Late or Early Leaf Spot Defoliation	Examining the Economic Contribution of Peanut Production in the Southeast	
3:00 p.m.	Additional Time for Q&A	Demand for Peanuts	

Concurrent Breakout Sessions
Thursday, July 12, 2018

	Utilizing Arachis Species Auditorium	Weed Science Amphitheatre	
3:15 p.m.	Phenotypic Variation in Seed Quality of Wild *Arachis* Species	Tine Weeding Integrated with Herbicides in Conventional Peanut Production	
3:30 p.m.	Using Arachis Vallsii Krapov. & W.C. Greg. as a Bridge Species for Introgression in *Arachis*	Peanut Response to Co-Application of Pyroxasulfone with Paraquat, Bentazon, and Acephate	
3:45 p.m.	Screening of Wild Arachis Germplasm for Resistance to Aflatoxin Contamination and Foliar Fungal Pathogens	Cover Crop Response to Residual Herbicides in Peanut-Cotton Rotation	
4:00 p.m.	A Detective Tale: The Worldwide Influence of the Wild Species *Arachis cardenasii* on the Peanut Crop Revealed Through the Lens of Genome Analyses	Field Evaluation of Flumioxazin Formulations for Weed Control in Peanut	
4:15 p.m.	Morphological Characterization and Genomic Analysis of *Arachis hypogaea* × *A. diogoi* Introgression Lines	Additional Time for Q&A	
4:30 p.m.	New Sources of Multiple Disease Resistances from *Arachis diogoi* Introgression Lines		

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Poster Number 31	**Molecular and Agronomic Evaluation for Genetic Background Recovery of Introgression Lines of *Ahfad2* Mutations** B. HUANG and F. QI, Key Laboratory of Oil Crops in Huanghuaihai Plains, Ministry of Agriculture, Industrial Crops Research Institute, Henan Academy of Agricultural Sciences, China, and Henan Provincial Key Laboratory for Oil Crops Improvement, China; Z. SUN, Henan Provincial Key Laboratory for Oil Crops Improvement, China; L. MIAO and Z. ZHANG, Key Laboratory of Oil Crops in Huanghuaihai Plains, Ministry of Agriculture, Industrial Crops Research Institute, Henan Academy of Agricultural Sciences, China, and Henan Provincial Key Laboratory for Oil Crops Improvement, China; H. LIU, Henan Provincial Key Laboratory for Oil Crops Improvement, China; Y. FANG, W. DONG, F. Tang, Z. ZHENG* and **X. ZHANG***, Key Laboratory of Oil Crops in Huanghuaihai Plains, Ministry of Agriculture, Industrial Crops Research Institute, Henan Academy of Agricultural Sciences, China, and Henan Provincial Key Laboratory for Oil Crops Improvement, China.
Poster Number 32	**Effect of Fungicide Programs on Control of Web Blotch on Spanish-Type Peanuts** **J. DAMICONE***, B. ANAYA, R. DEES, and B. KING, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078-3033.
4:00 - 5:00 p.m.	**Graduate Student Poster Competition** Authors Present *Sponsored by National Peanut Board*
Poster Number 33	**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.
Poster Number 34	**Augmentation of In-Furrow Insecticides with Superabsorbent Polymer to Combat Spotted Wilt of Peanut** **J. M. HAYNES*** and D. J. ANCO, Department of Plant and Environmental Sciences, Clemson University, Edisto Research and Education Center, Blackville, SC 29817; A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31794; N. SMITH, Department of Agricultural Sciences, Clemson University, Sandhill Research and Education Center, Columbia, SC 29229.
Poster Number 35	**Development of Newly Synthesized Amphidiploids and Their Genome Composition** Y. CHU, **C. M. LEVINSON***, and P. OZIAS-AKIN, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; H. T. Stalker, Department of Crop and Soil Sciences, N.C. State Univ., Raleigh, NC 27695-7629; S. C. M. LEAL-BERTIOLI, Department of Plant Pathology, The University of Georgia, Athens, GA; and D. BERTIOLI Department of Crop and Soil Sciences, The University of Georgia, Athens, GA 30605.
Poster Number 36	**Effect of Plant Microclimate Condition Changes Due to Late Leaf Spot on the Development of Southern Stem Rot in Peanut Field** **M. MUNIR*** and D. J. ANCO, Department of Plant and Environmental Sciences, Clemson University, Edisto Research and Education Center, Blackville, SC 29817.
Poster Number 37	**Effect of Fungicide on Gas Exchange in Peanut** **M. STUART***, C. PILON, W. S. MONFORT, T. B. BRENNEMAN, A. K. CULBREATH, and J. L. SNIDER, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.

Poster Number 38	**Analysis of a BC_3F_6 Interspecific Peanut Introgression Population Using Genome-specific SNP Markers** **T. K. TENGEY***, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409, and CSIR-Savanna Agricultural Research Institute, Nyankpala, Ghana; C. E SIMPSON, Texas A&M AgriLife Research, Stephenville, TX 76401; 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; and M. D. BUROW, Texas A&M AgriLife Research, Lubbock, TX 79403 and Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.
Poster Number 39	**The Effects of Storage Conditions on Peanut Seed Quality** **C. C. WEAVER***, W. S. MONFORT, C. PILON, and T. L. GREY. Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.
5:00 - 6:00 p.m. Room D	**Board of Directors Meeting** President Peter Dotray, Presiding
6:30 - 9:00 p.m. Taylor/Adams Ballrooms	**APRES 50th Anniversary Celebration Dinner** *Sponsored by: Bayer and BASF*

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Thursday, July 12, 2018	
6:15 a.m. Ballroom Promenade Hotel Entrance	**APRES Fun Run/Walk** *Sponsored by: JLA, Inc.*
8:00 a.m. - 4:00 p.m. Conference Center Lobby	**Registration Open**
8:00 a.m. - 4:00 p.m. Executive Lounge	**Presentation Uploading**
8:00 a.m. - 4:00 p.m. PDR Room	**Spouses Hospitality Suite Open** *Sponsored by: Valent*
8:00 a.m. - 10:00 a.m.	**Concurrent Breakout Sessions** **Joe Sugg Graduate Student Competition - Session III** *Sponsored by: North Carolina Peanut Growers Association* **Molecular Breeding I** **Excellence in Extension I**
8:00 a.m. - 9:30 a.m. **Auditorium**	**Joe Sugg Graduate Student Competition - Session III** Moderator: R.C. Kemerait *Sponsored by: North Carolina Peanut Growers Association*
8:00	**Managing Caterpillar Pest in Mississippi Peanut** **B. L. LIPSEY***, Mississippi State University, Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State, MS; J. GORE, Mississippi State University, Delta Research and Extension Center, Stoneville, MS; A. L. CATCHOT, Mississippi State University, Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State, MS; D. R. COOK and J. A. BOND, Mississippi State University, Delta Research and Extension Center, Stoneville, MS; and J. M. SARVER, Mississippi State University, Department of Plant and Soil Science, Mississippi State, MS.
8:15	**Effect of Planting Date on Three Cultivars and Three Advanced Breeding Lines on Leaf Spot Severity and Yield when Grown without Fungicides** **B. S. JORDAN***, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-5766; W. D. BRANCH, Dept. of Crop and Soil Science, University of Georgia, Tifton, GA 31793-5766; and A. K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-5766.
8:30	**Genotypic and Phenotypic Characterization of Peanut Lines with Interspecific Introgressions Conferring Late Leaf Spot Resistance** **S. LAMON*** and D. BERTIOLI, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31793-0748 and Athens, GA 30605; S. C. M. LEAL-BERTIOLI, Department of Plant Pathology, The University of Georgia, Athens, GA 30605; C. C. HOLBROOK United States Department of Agriculture-Agricultural Research Service, Tifton, GA 31793-0748; and L. A. GUIMARAES, Y. CHU, and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748.

8:45	**Deriving Peanut Plant Height from Aerial Imagery and Digital Elevation Models** **S. SARKAR*** and M. BALOTA Tidewater Agric. Res. & Ext. Center, Virginia Tech, Suffolk, VA 23437-7099; J. OAKES, Eastern Virginia Agric. Res. & Ext. Center, Virginia Tech, Warsaw, VA, 22572.
9:00:00 AM Paper Withdrawn	**Fingerprinting and Aflatoxin Production of Aspergillus Section Flavi Associated with Groundnut in Eastern Ethiopia** **A. MOHAMMED***, M. DEJENE, C. FININSA, College of Agriculture and Environmental Sciences, Haramaya University, Dire Dawa, Ethiopia; P. C. FAUSTINELLI, V. S. SOBOLEV, R. S. ARIAS, USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842-0509; A. CHALA, College of Agriculture, Hawassa University, Hawassa, Ethiopia; A. AYALEW, Partnership for Aflatoxin Control in Africa (PACA), African Union Commission, Ethiopia; C. OJIEWO, ICRISAT, Ethiopia; D. HOISINGTON, College of Agriculture and Environmental Sciences, Peanut and Mycotoxin Innovation Lab, University of Georgia, Athens, GA 30602-4356; J. M. CASTILLO, Centro de Investigación Científica de Yucatán A.C., Unidad de Recursos Naturales, Calle 43 No. 130, Colonia Chuburná de Hidalgo CP 97200, Mérida, México.
8:00 a.m. - 10:00 a.m. **Amphitheatre**	**Molecular Breeding I** Moderator: S. Jackson
8:00	**The Genome Sequence of Peanut** **D. Bertioli***, Department of Crop & Soil Sciences, The University of Georgia, Athens GA 30605; and MEMBERS of The International Peanut Genome Consortium.
8:15	**PeanutBase: New Genome Assemblies and Breeding Support** **E. K. S. CANNON***, Iowa State University, Ames, IA; C. CAMERON, National Center for Genome Resources, Santa Fe, NM; J. D. CAMPBELL and M. O'CONNELL, Iowa State University, Ames, IA; S. B. CANNON, USDA-ARS, Iowa State University, Ames, IA; S. Dash, A. FARMER and S. HOKIN, National Center for Genome Resources, Santa Fe, NM; W. HUANG, Iowa State University, Ames, IA; S. KALBERER, USDA-ARS, Ames, IA; P. OLYAMA, Iowa State University, Ames, IA; and N. WEEKS and A. WILKEY, USDA-ARS, Ames, IA.
8:30	**The Next Generation of Peanut Genomics** **J. CLEVENGER***, Mars-Wrigley Confectionary, Center for Applied Genetic Technologies, Athens, GA 30602; S. A. JACKSON and W. KORANI, University of Georgia, Athens GA 30602; and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748.
8:45	**Tetrasomic Recombination in a Recombinant Inbreed Line Population Confirmed through Whole Genome Re-sequencing** **C. CHAVARRO***, D. BERTIOLI, S. LEAL-BERTIOLI, J. CLEVENGER, B. ABERNATHY, and S. JACKSON, Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Athens, GA 30602; T. G. ISLEIB, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; C. C. HOLBROOK, USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; and Y. CHU and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748.

9:00	**Genomic Diversity Characterization and Genome-Wide Association Mapping of the North Carolina State University Peanut Breeding Lines and Virginia-Type Cultivars** **J. C. DUNNE***, W. G. HANCOCK, and T. G. ISLEIB, Department of Crop and Soil Sciences, North Carolina State University, Raleigh NC, 27695.
9:15	**Population Genomics of US Peanut Mini Core Collection using Genome-Wide SNP Genotyping** **B. S. F. MÜLLER***, Y. CHU, and P. OZIAS-AKINS, Institute of Plant Breeding, Genetics & Genomics, Department of Horticulture, The University of Georgia, Tifton, GA 31793; C. CHEN, Auburn University, Auburn, AL 36849; and C. C. HOLBROOK, USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.
9:30	**Recombination Bin-Map Facilitates QTL Mapping of Disease Resistance Traits in Peanut (Arachis hypogaea L.) Using Whole Genome Re-sequencing** **G. AGARWAL***, H. WANG, and A. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA; J. CLEVENGER and S. A. JACKSON, University of Georgia, Center for Applied Genetic Technologies, Athens, GA; S. M. KALE, M. K. PANDEY, and R. K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Center of Excellence in Genomics & Systems Biology, Hyderabad, India; Y. CHU and P. OZIAS-AKINS, Horticulture Department, University of Georgia, Tifton, GA 31793; X. LIU, BGI-Shenzhen, Shenzhen, China; M. YUAN, Shandong Academy of Agricultural Sciences, Peanut Research Institute, Qingdao, China; and B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA.
9:45	**Genome-Wide Association Study of Sweet, Bitter and Roasted Peanut Sensory Attributes in Cultivated Peanuts** T. JIANG, J. PATEL, and **C. CHEN***, Auburn University, Auburn, AL 36849; L. DEAN, USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC 27695; M. L. WANG, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA 30223; Y, CHU, J. CLEVENGER, and P. OZIAS-AKINS, The University of Georgia, Tifton, GA 31793; P. DANG and M. LAMB, USDA-ARS National Peanut Research Lab, Dawson, GA 39842; and C. C. HOLBROOK, USDA-ARS Plant Breeding and Genetics Unit, Tifton, GA 31793.
8:00 a.m. - 10:00 a.m. **Rooms 2&3**	**Excellence in Extension I** Moderator: D. Jordan
8:00	**The History of Peanuts in Virginia** J. REITER, 6380 Scott Memorial Park Rd, Prince George, VA 23875; S. RUTHERFORD, 105 Oak St. Emporia, VA 23847; M. PARRISH, 13915-A Boydton Plank Road, Dinwiddie, VA 23841; **A. PREISSER***, 17100 Monument Circle, Suite B Isle of Wight, VA 23397; and M. BALOTA, 6321 Holland Rd. Suffolk, VA 23437.

8:15	**Summary of Farmer Practices in the Virginia-Carolina Region Related to Digging and Harvesting Peanut** **A. BRADLEY***, D. L. JORDAN, B. B. SHEW, R. L. BRANDENBURG, G. ROBERSON, B. SANDLIN, B. BARROW, J. HURRY, B. MCLEAN, M. LEARY, M. SHAW, M. CARROLL, 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, and M. BENNETT, North Carolina Cooperative Extension Service, Raleigh, NC 27695; D. J. ANCO, J. THOMAS, K. KIRK, C. DAVIS, J. CROFT, J. VARN, T. DeHOND, W. HARDEE, H. MIKELL, J. STOKES, D. DeWITT, M. BARNES, and J. BALLEW, South Carolina Cooperative Extension Service, Clemson, SC, Edisto Research and Education Center, Clemson University, Blackville, SC 29817; and M. BALOTA, H. MEHL, S.V. TAYLOR, L. PREISSER, N. NORTON, M. PARRISH, S. REITER, G. SLADE, J. SPENCER, and M. WILLIAMS, Virginia Cooperative Extension Service, Blacksburg, VA 24061.
8:30	**Comparison of On-Farm Irrigation Scheduling Practices in Southeast Alabama Peanut Production** A. BOUSELMI, **B. A. DILLARD***, and J. A. KELTON, Alabama Cooperative Extension, Auburn, AL 36849; and K. B. BALKCOM, Crop, Soil and Environmental Sciences, Auburn University, Headland, AL 36345.
8:45	**Using the Peanut Belt Research Station to Enhance County Programs in Bertie County North Carolina** **B. BARROW***, J. HURRY, R. RHODES, D. L. JORDAN, B. B. SHEW, and R. L. BRANDENBURG, North Carolina Cooperative Extension Service, Raleigh, NC 27695; and T. CORBETT, North Carolina Department of Agriculture and Consumer Service, Lewiston-Woodville, NC.
9:00	**History and Changes in Production and Pest Management in the Old Peanut Belt in North Carolina** **C. ELLISON***, A. WHITEHEAD Jr., D. L. JORDAN, B. B, SHEW, and R. L. BRANDENBURG, North Carolina Cooperative Extension Service, Raleigh, NC 27695.
9:15	**Economics of Peanut Root-knot Nematode Control** **T. N. TORRANCE***, Agriculture and Natural Resource Agent, UGA Cooperative Extension Service, Cairo, GA, USA; and T. B. BRENNEMAN, Plant Pathology Department, University of Georgia, Tifton, GA, USA.
9:30	**Lessons Learned in a Short Period of Time as Peanut Agents in Northeast North Carolina** **D. LILLEY***, J. HOLLAND, M. LEARY, M. BENNETT, D. L. JORDAN, R. L. BRANDENBURG, and B. B. SHEW, North Carolina Cooperative Extension Service, Raleigh, NC 27695.
9:45	**Peanut Response to Twin-Row Planting Patterns in North Carolina** **P. SMITH***, D. L. JORDAN, and A. T. HARE, North Carolina Cooperative Extension Service, Raleigh, NC 27695; and W. HARRELL, Harrell Crop Consulting, Gatesville, NC 27938.
10:00 - 10:30 a.m. Center Lounge	**Networking Break** *Sponsored by National Peanut Board*

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10:30 a.m. - 12 Noon	**Concurrent Breakout Sessions** **Molecular Breeding II** **Plant Pathology I** **Excellence in Extension II**
10:30 a.m. - 12 Noon **Auditorium**	**Molecular Breeding II** Moderator: P. Ozias-Akins
10:30	**Marker Assisted Selection of Peanut Storage Proteins for Flavor Potential** W. D. BRANCH, The Crop and Soil Science Department, The University of Georgia, Tifton, GA 31793-5766; C. LIEBOLD, The J.M. Smucker Co., Lexington, KY 40505; and **J. A. MARSHALL***, The Department of Chemistry and Biochemistry, Lubbock Christian University, Lubbock TX 79407.
10:45	**High Density Graphic Genotypes of Near Isogenic Lines Revealed Genomic Regions Controlling Peanut Nodulation** Z. PENG, Z. ZHAO, and **J. WANG***, Agronomy Department, The University of Florida, Gainesville, FL 32611-0300.
11:00	**Iterative QTL-seq to Discover Functional Markers of Agronomically Important Traits** **W. KORANI*** and J. CLEVENGER, Center of Applied Genetics Technology, The University of Georgia, Athens, GA, 30602; and J. VAUGHN, United States Department of Agriculture, Athens, GA, 30602.
11:15	**Major QTLs for Resistance to Early and Late Leafspot Diseases are Identified in Chromosome 3 and 5 in Peanut (Arachis hypogaea)** **Y. CHU*** and P. OZIAS-AKINS, Department of Horticulture, University of Georgia, Tifton Campus, Tifton, GA 31793; P. CHEE, Department of Crop and Soil Sciences, University of Georgia, Tifton Campus, Tifton, GA 31793; A. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton Campus, Tifton, GA 31793; T. G. ISLEIB, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; C. C. HOLBROOK, USDA-Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.
11:30	**Genome-Wide Association Study of Agronomic and Disease Resistance Traits Using Peanut Nested Association Mapping Populations.** **B. GUO***, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793; S. GANGURDE, M. K. PANDEY, and R.K. VARSHNEY, Center of Excellence in Genomics & Systems Biology, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad-502324, India; H. WANG, G. AGARWAL, and A. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793; S. HAN and G. HE, Tuskegee University, AL 36088; X. GUO, Heilongjiang Bayi Agricultural University, Daqing, China; X. JI, Ecological Environment Protection Research Institute, Shanghai Academy of Agricultural Sciences, China; Y. CHU and P. OZIAS-AKINS, Horticulture Department, University of Georgia, Tifton, GA 31793; T. G. ISLEIB, Department of Crop Science, North Carolina State University, Raleigh, NC 27695; and C. C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.

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11:45	**The Hunt for the "Silver Bullet": Reference Genome Development and Comparative Genomics Analysis of Field Isolates of Aspergillus flavus for Identification of Aflatoxin Regulators.** **J. C. FOUNTAIN*** and R. C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; J. P. CLEVENGER, Institute of Plant Breeding, Genetics, and Genomics, University of Georgia, Athens, GA, 30602; J. N. VAUGHN, B. SCHEFFLER, and S. SIMPSON, USDA-ARS Genomics and Bioinformatics Research, Stoneville, MS, 38776; P. OZIAS-AKINS, Department of Horticulture, University of Georgia, Tifton, GA, 31793; and B. GUO, USDA-ARS Crop Protection and Management Research Unit, Tifton, GA, 31793.
10:30 a.m. - 12 Noon **Amphitheatre**	**Plant Pathology I** Moderator: B.B. Shew
10:30	**Peanut Kernel Shrivel – An Undiagnosed Condition of Peanut Crops in Queensland, Australia** **G. C. WRIGHT***, D. J. O'CONNOR, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; M. SHARMAN, Department of Agriculture and Fisheries, Dutton Park, Queensland, Australia, 4102; and D. L. ADORADA, University of Southern Queensland, Centre for Crop Health, Toowoomba, Queensland, Australia 4350.
10:45	**Effects of Seed Treatments and In Furrow Sprays on Peanut Plant Stands, Diseases and Pod Yield** **T. B. BRENNEMAN***, Department of Plant Pathology, University of Georgia, Tifton, GA 31794.
11:00	**Velum Total and AgLogic 15G Compared for Peanut Root-Knot Control and Yield Response on Root-Knot Susceptible and Resistant Peanut Cultivars** **A. K. HAGAN*** and H. L. CAMPBELL, Auburn University, AL 36849; and L. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345.
11:15	**Evaluating Peanut Cultivars Using a Reduced Cost and a Premium Fungicide Program** **D. S. CURRY***, University of Georgia Extension, Appling County, Baxley, GA 31519; R. C. KEMERAIT and T. B. BRENNEMAN, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; and C. M. RINER, C. R. HILL, and D. R. THIGPEN, University of Georgia Extension, Vidalia Onion & Vegetable Research Center, Lyons, GA 30436.
11:30	**Efficacy and Profitability of Nematicide, Insecticide, and Fungicide Chemistries and Pre-Mixes for Pest Management in Peanut** **H. L. MEHL***, S. AHMED, L. BYRD-MASTERS, S. MALONE, D. A. HERBERT, and S. V. TAYLOR, Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.
11:45	**Evaluation of Virginia-type germplasm for *Sclerotium rolfsii* tolerance in field conditions** **M. DAFNY YELIN***, J. MOY, Northern Agricultural Research & Development, Migal Galilee Technology Center, P.O.B. 831, Kiryat Shemona, 11016 Israel; R. HOVAV, and S. AGMON, Department of Field Crops, Plant Sciences Institute, ARO, Bet-Dagan, 50250 Israel; and O. RABINOVICH, Extension Service, Ministry of Agriculture, Kiryat Shemona, 10200 Israel.

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10:30 a.m. - 12 Noon **Rooms 2&3**	**Excellence in Extension II** Moderator: S. Taylor
10:30	**Baker County Georgia 2015, 2016 & 2017 UGA On-Farm Peanut at Plant In-Furrow Fungicide, Nematicide and Inoculant Test** **E. L. JORDAN***, UGA Baker County Extension, GA; B. KEMERAIT, Plant Pathology Department, University of Georgia, Coastal Plains Research Center, Tifton, GA; and S. MONFORT, Department of Crop and Soil Sciences, University of Georgia, Coastal Plains Research Center, Tifton, GA.
10:45	**Response of Peanut to Inoculation with Bradyrhizobia and Nitrogen Rate** **D. KING***, D. L. JORDAN, B. SANDLIN, P. D. JOHNSON, and A. T. HARE, North Carolina Cooperative Extension Service, Raleigh, NC 27695; D. ANCO, J. CHAPIN, and J. THOMAS, Edisto Research and Education Center, Clemson University, Blackville, SC 29817; S. MONFORT, University of Georgia, Tifton, GA 31793; and M. BALOTA, Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.
11:00	**Thrips Control in Peanut in North Carolina with Insecticides Applied During Planting and After Peanut Emergence** **L. GRIMES***, R. L. BRANDENBURG, D. L. JORDAN, B. R. ROYALS, and A. T. HARE, North Carolina Cooperative Extension Service, Raleigh, NC 27695.
11:15	**White Mold Control Efficacy Associated with Nine Peanut Fungicide Treatments** R. C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA 31794; A. R. SMITH, Agricultural and Applied Economics, University of Georgia, Tifton, GA 31793; and **W. G. TYSON***, Bulloch County Cooperative Extension, University of Georgia, Statesboro, GA 30458.
11:30	**Evaluating Peanut White Mold Fungicide Programs in Cook County, Georgia – 3 Year summary** **T. PRICE***, Extension Agent, University of Georgia Cooperative Extension, Cook County, Adel, Georgia 31620; and R. C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, Georgia 31793.
11:45	**Influence of Quick-SOL and Peg Power on Peanut Yield in Small-Plot Research** **M. CARROLL***, D. L. JORDAN, and A. T. HARE, North Carolina Cooperative Extension Service, Raleigh, NC 27695.
12 Noon - 1:30 p.m.	**Lunch on Your Own**
12 Noon - 1:30 p.m. **Harrison Ballroom**	**Graduate Student Luncheon** - *Students Only* *Sponsored by Syngenta*
1:30 - 3:15 p.m.	**Concurrent Breakout Sessions** **Plant Pathology II** **Economics & Marketing**
1:30 - 3:00 p.m. **Amphitheatre**	**Plant Pathology II** Moderator: Tim Brenneman
1:30	**Management Efficacy of Late Leaf Spot in two Peanut Fields with Fungicides Applied at Varying Sprayer Ground Speeds** **J. VARN***, Clemson University, Barnwell, SC 29812; J. CROFT, Clemson University, Orangeburg, SC 29115; and W. NIX, D. HUTTO, and D. J. ANCO, Clemson University, Blackville, SC 29817.

1:45	**Multiyear Evaluation of Peanut Disease Control Programs Incorporating Miravis® Fungicide into Disease Control Systems Including Elatus®** **H. McLEAN***, K. BUXTON, V. MASCARENHAS, P. EURE, M. VANDIVER, and J. HADDEN, Syngenta Crop Protection, LLC, 410 Swing Road, Greensboro, NC 27409.
2:00	**Azoxystrobin, Solatenol and Adepidyn to Manage Leaf Spot and Stem Rot** **R. C. KEMERAIT***, T. B. BRENNEMAN, and A. K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793.
2:15	**A Re-evaluation of Fungicide Efficacy for Leaf Spot Control in North Carolina** **B. B. SHEW*** Department of Entomology and Plant Pathology, NC State University, Raleigh NC 27695; and D. L. JORDAN, Department of Crop and Soil Sciences, NC State University, Raleigh NC 27695.
2:30	**Mixtures of Sulfur with Sterol Biosynthesis Inhibiting Fungicides for Management of Late Leaf Spot of Peanut** **A. K. CULBREATH***, T. B. BRENNEMAN, R. C. KEMERAIT, and K. S. STEVENSON, Department of Plant Pathology, Univ. of Georgia, Tifton, GA 31793-5766.
2:45	**Peanut Yield Loss in the Presence of Late or Early Leaf Spot Defoliation** **D. J. ANCO*** and J. S. THOMAS, Clemson University, Blackville, SC, 29817; D. L JORDAN and B. B. SHEW, North Carolina State University, Raleigh, NC 27695; A. K. CULBREATH and W. S. MONFORT, University of Georgia, Tifton, GA 31793; H. L. MEHL, Virginia Tech, Suffolk, VA 23321; N. S. DUFAULT, B. L. TILLMAN, I. M. SMALL, and D. L. WRIGHT, University of Florida, Quincy, FL 32351; and A. K. HAGAN and H. L. CAMPBELL, Auburn University, Auburn, AL 36849.
1:30 - 3:15 p.m. **Auditorium**	**Economics & Marketing** Moderator: A. Luke-Morgan
1:30	**U.S. Peanut Cost of Production** **S. M. FLETCHER*** and C. J. RUIZ. National Center for Peanut Competitiveness (NCPC), University of Georgia, Griffin, GA 30223-1797.
1:45	**Representative Peanut Farms 2016 Net Cash Flow** C. J. RUIZ and **S. M. FLETCHER***, National Center for Peanut Competitiveness (NCPC), University of Georgia, Griffin, GA 30223-1797.
2:00	**An Analysis of Crop Insurance as a Safety Net for U.S. Peanut Farms** **A. S. LUKE-MORGAN*** and T. T. MARSHALL, School of Agriculture and Natural Resources, Abraham Baldwin Agricultural College, Tifton, GA 31793-2601; S. M. FLETCHER, Department of Agricultural and Applied Economics, The University of Georgia, Griffin, GA 30223-1797; and R. L. SCARBOROUGH, USDA ARS, Tifton, GA 31794.
2:15	**Implications of the Elimination of Generic Base and Addition of Seed Cotton Program on South Carolina Peanut Farms** **N. SMITH***, Department of Agricultural Sciences, Clemson University Sandhill Research and Education Center, Columbia, SC 29229; and B. NELSON and S. MICKEY Clemson Cooperative Extension, Clemson University Sandhill Research and Education Center, Columbia, SC 29229.
2:30	**Predicting Land Use Competition for US Peanut Acreage Pre- and Post-Quota** **F. D. MILLS, JR.*** and S. S. NAIR, Department of Agricultural Sciences, Sam Houston State University, Huntsville, TX 77341.

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2:45	**Examining the Economic Contribution of Peanut Production in the Southeast** S. KANE, **K. WOLFE***, Center for Agribusiness and Economic Development, The University of Georgia, Athens, GA 30602; S. FLETCHER, Center for National Peanut Competitiveness, The University of Georgia, Griffin, GA 30212; A. RABINOWITZ and R. PAXTON, Agricultural and Applied Economics, The University of Georgia, Tifton, Ga 31793.
3:00	**Demand for Peanuts** Z. SHI, and **S. M. FLETCHER***, National Center for Peanut Competitiveness (NCPC), University of Georgia, Griffin, GA 30223-1797.
3:00-3:30 p.m. Center Lounge	**Networking Break** *Sponsored by National Peanut Board*
3:15 - 4:45 p.m.	**Concurrent Breakout Sessions** **Utilizing *Arachis* Species** **Weed Science**
3:15 - 4:45 p.m. **Auditorium**	**Utilizing Arachis Species** Moderator: S. Tallury
3:15	**Phenotypic Variation in Seed Quality of Wild Arachis Species** **B. D. TONNIS***, M. L. WANG, A. FANCHER, T. WARE, and S. P. TALLURY, USDA-ARS, Plant Genetic Resources Conservation Unit, Griffin, GA, 30223.
3:30	**Using Arachis Vallsii Krapov. & W.C. Greg. as a Bridge Species for Introgression in Arachis** **C. E. SIMPSON***, Texas A&M AgriLife Research, Stephenville, TX 76401; A. R. CUSTODIO, Embrapa Genetic Resources and Biotechnology, C.P. 02372, CEP 70770-917, Brasília, Brazil, DF; L. S. RODRIQUES, UNESP– Botucatu, SP, Brazil; A. P. PENALOZA, Embrapa Genetic Resources and Biotechnology, C.P. 02372, CEP 70770-917, Brasília, Brazil, DF; J. F. M. VALLS, Embrapa Genetic Resources and Biotechnology. Arachis Germplasm Curator. CNPq Research Productivity Fellowship, C.P. 02372, CEP 70770-917, Brasília, Brazil, DF; and J. M. CASON, Texas A&M AgriLife Research, Stephenville, TX 76401.
3:45	**Screening of Wild Arachis Germplasm for Resistance to Aflatoxin Contamination and Foliar Fungal Pathogens** **A. N. MASSA***, R. S. ARIAS, and V. S. SOBOLEV, USDA-ARS National Peanut Research Laboratory, Dawson, GA; H. T. STALKER, Department of Crop and Soil Sciences, NC State University, Raleigh, NC; S. P. TALLURY, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA; A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793-5766; and R. B. SORRENSEN and M. C. LAMB USDA-ARS National Peanut Research Laboratory, Dawson, GA.

4:00	**A Detective Tale: The Worldwide Influence of the Wild Species Arachis cardenasii on the Peanut Crop Revealed Through the Lens of Genome Analyses** **S. C. M. LEAL-BERTIOLI***, Department of Plant Pathology , The University of Georgia, Athens, GA 30621; H. T. STALKER, North Carolina State University, Raleigh, NC; I. J. GODOY and J. F. SANTOS, Campinas Agronomical Institute, Campinas, SP. 13020-902; C. C. HOLBROOK USDA, ARS, Tifton, GA 31793; P. OZIAS-AKINS and Y. CHU, Department of Horticulture, The University of Georgia, Tifton, GA 31793; J. CLEVENGER, Mars Wrigley Confectionery, Center for Applied Genetic Technologies, Athens, GA 30602; G. WRIGHT, Peanut Company of Australia, Australia; M. C. MORETZSOHN, Embrapa Cenargen, Brasília, DF, 70770-917, Brazil; and S. A. JACKSON and D.J. BERTIOLI, Department of Crop and Soils Science, The University of Georgia, Athens, GA 30621.
4:15	**Morphological Characterization and Genomic Analysis of Arachis hypogaea × A. diogoi Introgression Lines** **W. G. HANCOCK***, T. G. ISLEIB, and H. T. STALKER, Department of Crop and Soil Sciences, N.C. State Univ., Raleigh, NC 27695-7629; Y. CHU and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; and S. P. TALLURY, Plant Germplasm Resources Conservation Unit, USDA-ARS, Griffin, GA 30223-1797.
4:30	**New Sources of Multiple Disease Resistances from Arachis diogoi Introgression Lines** **H. T. STALKER***, W. G. HANCOCK, T. G. ISLEIB, and J. E. HOLLOWELL, Department of Crop and Soil Sciences, N.C. State Univ., Raleigh, NC 27695-7629; Y. CHU and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; and A. N. MASSA, R. B. SORRENSEN and M. C. LAMB USDA/ARS National Peanut Research Laboratory, Dawson, GA 39842.
3:30 - 4:30 p.m. **Amphitheatre**	**Weed Science** Moderator: D. Jordan
3:15	**Tine Weeding Integrated with Herbicides in Conventional Peanut Production** **W. C. JOHNSON, III***, USDA-ARS, Tifton, GA 31793-0748.
3:30	**Peanut Response to Co-Application of Pyroxasulfone with Paraquat, Bentazon, and Acephate** **D. L. JORDAN***, A. T. HARE, and C. W. CAHOON, North Carolina State University, Raleigh, NC 27695.
3:45	**Cover Crop Response to Residual Herbicides in Peanut-Cotton Rotation** **K. PRICE*** and S. LI, Crop, Soils and Environmental Sciences, Auburn University, Auburn, AL 36849.
4:00	**Field Evaluation of Flumioxazin Formulations for Weed Control in Peanut** **E. P. PROSTKO*** and O. W. CARTER, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31794; and J. T. MILLER, Jeff Davis County Cooperative Extension, Hazlehurst, GA 31539.
5:00 - 6:00 p.m. Auditorium	**APRES Business Meeting and Awards Ceremony** *President Peter Dotray, Presiding*
6:00 - 7:30 p.m. Taylor/Adams Ballroom	**Awards Reception** *Sponsored by: Corteva Agriscience™, Agriculture Division of DowDuPont™*

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Overview

2018 APRES Annual Meeting
50th Anniversary
July 10-12 * Williamsburg, VA

The 50th Annual Meeting of the American Peanut Research and Education Society (APRES) was held July 201-12, 2018 at the Doubletree by Hilton Hotel Williamsburg, VA in Williamsburg, VA. APRES President Peter Dotray (Texas A&M AgriLife Research and Texas Tech University) and Program Chairman Rick Brandenburg (North Carolina State University) presided over the very well attended meeting of 401 attendees from every peanut producing state, grouped as 265 registrants, 77 spouses and 59 children.

The meeting kicked off with an "early bird" tour of two (2) plantations and a BBQ dinner hosted by Birdsong Peanuts and the Virginia Peanut Growers Association.

Technical Program Chairman Tom Stalker (NCSU) arranged 144 presentations/posters (39) from peanut scientists around the world. Highlights of the program included opening addresses by:

Dr. Jewel Bronaugh, Virginia Commissioner of Agriculture, welcomed the attendees to the state of Virginia**,** providing attendees with a wonderful overview of agriculture in Virginia.

Dr. David Langston, Professor and Director, Virginia Tech, Tidewater Agricultural Experiment Station also welcomed the group of attendees to Virginia, stating it was a pleasure to be the host university and wishing all a great meeting.

Katie L. Beasley, PhD Candidate, Department of History, Florida State University, gave a rousing, enthusiastic and informative history of APRES through her presentation "*An Organization, A Family, and Fifty Years of Homecomings: A Historical Reflection of APRES.*

Howard Valentine, Director of Research and Education (retired), American Peanut Council, followed with an excellent history of the peanut industry by *Remembering Our Past and How it Affected our Present and Future.*

Dr. C. Corley Holbrook, USDA-ARS, shared his perspectives on the history of peanut research through an interpretation of *Peanut Yield Gains Over the Past 50 Years*.

The 2018 Symposiums on *Industry Challenges of the Next 50 Years*, moderated by Peter Dotray, brought leaders from agronomy (Dr. Scott Tubbs, UGA); plant pathology (Dr. Nick Dufault, UFL); breeding (Dr. Kelly Chamberlin, USDA-ARS); engineering (Dr. Chris Butts, USDA-ARS); and quality (Dr. Jack Davis, JLA, Inc.) together to share their perspectives by category peanut research challenges on the horizon.

Breakout Sessions topics included: Molecular Breeding I&II, Plant Pathology I&II, Excellence in Extension I&II; Economics & Marketing; Utilizing *Arachis* Species; Weed Science; Breeding Methodologies; Production, Physiology & Harvesting; and, of course, the Poster Session.

Thirty-nine (39) scientific posters were displayed, of which seven (7) were entered in the inaugural graduate student poster competition, sponsored by the National Peanut Board. The winner of the 2018 graduate student poster competition is **Caleb C. Weaver** (The University of Georgia) for his research, *The Effect of Storage on Peanut Seed Quality.* Second place was awarded to **J. Mitch Haynes** (Clemson University) for his research, *"Augmentation of In-furrow Insecticides with Super-absorbent Polymer to Combat Spotted Wilt of Peanut".*

Another highlight of the APRES meeting is the annual **Joe Sugg Graduate Student Competition,** sponsored by the North Carolina Peanut Growers Association. The competition drew 17 competitors from 5 universities. The **winner** ($500) of this year's competition is **Dennis J. Mahoney (**North Carolina State University) who presented his research, "*Presence and Distribution of Suspected Palmer Amaranth Resistant to PPO-Inhibiting Herbicides in the North Carolina Coastal Plain".* Second Place ($250) went to Kayla M. Eason (The University of Georgia) and her research, "*Peanut and Weed Response to Postemergence Herbicide Tank-Mixtures Utilizing Paraquat*". Given the closeness of the voting and excellence of all the presentations in the competition, the judges voted to award a third place prize ($100) to **Samuele Lamon** (The University of Georgia) for his research**, "***Genotypic and Phenotypic Characterization of Peanut Lines with Interspecific Introgressions Conferring Late Leaf Spot Resistance".*

Social functions throughout the meeting included a Wednesday night dinner sponsored by Bayer and BASF; a spouses hospitality suite sponsored by Valent; an awards reception sponsored by Corteva Agriscience™, Agriculture Division of DowDuPont™ and Fine Americas, which included an anniversary cake sponsored by The Peanut Institute and the American Peanut Shellers Association; and, an ice cream social sponsored by APRES' sustaining members. Spouses and guests toured Colonial Williamsburg and the Premium Outlet Mall thanks to the American Peanut Council's sponsorship. The National Peanut Board and Syngenta sponsored the meeting breaks, which included snacks from APRES' grower association and manufacturer members. Syngenta sponsored the first graduate student luncheon with guest speakers from USDA on the subject of job opportunities in the department. Special appearances by Mr. Peanut and the Nutmobile (courtesy of KraftHeinz), and Buddy McNutty (North Carolina Peanut Growers Association) were a big hit with everyone young and old. And, over 100 people registered for the Thursday morning FunRun with 80+ actually participating in the 6:15 a.m. event and snagging a memorable T-shirt sponsored by JLA, Inc.

During the Annual Meeting, APRES recognized several individuals for their achievements and/or service to APRES:

No members of the Society were inducted as **Fellows of the Society** this year.

The **Coyt T. Wilson Award for Distinguished Service** to APRES went to **Dr. Craig K. Kvien,** University of Georgia.

Dr. Barry Tillman, University of Florida was selected as this year's recipient of the **Corteva Agriscience™, Agricultural Division of DowDuPont™, Award for Excellence in Research**.

Dr. Peggy Ozias-Akins, University of Georgia, was selected as this year's recipient of the **Corteva Agriscience™, Agricultural Division of DowDuPont™, Award for Excellence in Education.**

The **Bailey Award** for the **best paper** from the **2017 Annual Meeting** went to **Dr. Mark Burow**, Texas A&M AgriLife Research and Texas Tech University (Presenting Author) and co-authors R. Chropra, 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. for their paper ***"Development of SNP-based Molecular Markers for a Peanut Breeding Program"***.

At the conclusion of the meeting, **new officers and directors** for the Society were inducted. Outgoing President, Peter Dotray (Texas A&M AgriLife Research and Texas Tech University) presented the gavel to incoming President, Dr. Rick Brandenburg (North Carolina State University). President-Elect for 2018-19 is Barry Tillman of University of Florida. Newly elected to the APRES Board of Directors is Gary Schwarzlose (Bayer). Outgoing Board members Wilson Faircloth (Syngenta) and C. Corley Holbrook, Past President (USDA-ARS), were recognized for their support and service with a gift of a canvas print, entitled "Erdnuss". The first action of President Brandenburg's term was to present Dr. Peter Dotray (Texas A&M AgriLife Research and Texas Tech University) with the Past President's Award.

The 2019 APRES meeting (501st Meeting) will be held July 11-13 at the The Hotel at Auburn University & Dixon Conference Center on the campus of Auburn University in Auburn, AL.

MEMBERSHIP (1975-2006)

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

Membership 2007-2017

Categories	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Individuals												
Regular	228	185	184	172	162	204	238	266	262	279	236	
Retired	13	13	14	13	10	9	9	15	14	9	8	
Post Doc	6	9	7	11	4	5	3	8	8	4	7	
Student	20	16	28	22	14	30	26	35	50	26	26	
Sustaining												
Silver	7	8	6	9	6	9	11	6	9	9	9	
Gold	1	2	3	5	3	2	2	4	6	7	6	
Platinum	1		1	1	2	1	1	0	8	8	8	
Diamond									3	3	3	
Institutional	6	21	21	19	21	23	24	26	27	25	16	
TOTAL	**280**	**254**	**264**	**252**	**215**	**283**	**314**	**360**	**387**	**363**	**319**	

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