Proceedings

of the

51st Annual Meeting

American Peanut Research and Education Society

July 9-11, 2019 * Auburn, AL

51st Annual Meeting

July 9-11, 2019 * Auburn, AL

Sponsors

Monday Tour and Dinner
Alabama Peanut Producers Association
Auburn University Peanut Team

Awards Reception
Corteva Agriscience™, Agriculture Division of DowDupont™

Spouses Hospitality Suite
Valent

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

Wednesday Night Reception & Dinner
Bayer
BASF

Meeting Breaks
Birdsong Peanuts
Fine Americas
Syngenta

Joe Sugg Graduate Student Competition
North Carolina Peanut Growers Association

Graduate Student Poster Competition
National Peanut Board

Fun Run
Texas Tech University

Registration Bags & Products
Visjon Biologics
Southern Peanut Farmers Federation

Peanut Snacks

Alabama Peanut Producers Association
Florida Peanut Producers Association
Georgia Peanut Commission
Hershey Chocolate
KraftHeinz
Mars Wrigley Confectionery
Mississippi Peanut Growers Association
National Peanut Board
North Carolina Peanut Growers Association
The J.M. Smucker Company
South Carolina Peanut Board
Southern Peanut Farmers Federation
Texas Peanut Producers Board
Virginia Peanut Growers Association

TABLE OF CONTENTS

Meeting Minutes

2019 Awards Ceremony

Committee Reports

Appendix

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

President………………………………………………………..……………. Rick Brandenburg (2020)

Past President……………………………………………….…………………... Peter Dotray (2019)

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.

AMERICAN PEANUT RESEARCH & EDUCATION SOCIETY
BOARD OF DIRECTORS
2019-20

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

Past President…………………………………………………………………….. Rick Brandenburg (2020)

President-Elect…………………………………………………………………. Gary Schwarzlose (2022)

Executive Officer……………………………………………………………….. Kimberly Cutchins (2020)

University Representatives:
- Virginia-Carolina……………………………………………………………. Nathan Smith (2022)
- Southeast……………………………………………………………………..Bob Kemerait (2021)
- Southwest……………………………………………………………………..Mark Burow (2020)

USDA Representative……………………………………………………………. Lisa Dean (2022)

Industry Representatives:
- Production…………………………………………………………………. Henry McLean (2021)
- Grower Association……………………………………………………… Bob Sutter (2022)
- 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………….Chandler Levinson (2020)

* Industry Representative Gary Schwarzlose was elected as the 2019-20 President-elect; Henry McLean elected October 2019 to fulfill the remainder of Gary's Industry Rep term.

Amended 10-3-2019

PAST PRESIDENTS

Rick Brandenburg	2018-19		Walton Mozingo	1992-93
Peter Dotray	2017-18		Charles E. Simpson	1991-92
C.Corley Holbrook	2016-17		Ronald E. Henning	1990-91
H. Thomas Stalker	2015-16		Johnny C. Wynne	1989-90
Naveen Puppala	2014-15		Hassan A. Melouk	1988-89
Timothy B. Brenneman	2013-14		Daniel W. Gorbet	1987-88
Ames Herbert	2012-13		D. Morris Porter	1986-87
Todd Baughman	2011-12		Donald H. Smith	1985-86
Maria Gallo	2010-11		Gale A. Buchanan	1984-85
Barbara Shew	2009-10		Fred R. Cox	1983-84
Kelly Chenault Chamberlin	2008-09		David D.H. His	1982-83
Austin K. Hagan	2007-08		James L. Butler	1981-82
Albert K. Culbreath	2006-07		Allen H. Allison	1980-81
Patrick M. Phipps	2005-05		James S. Kirby	1979-80
James Grichar	2004-05		Allen J. Norden	1978-79
E. Ben Whitty	2003-04		Astor Perry	1977-78
Thomas G. Islieb	2002-03		Leland Tripp	1976-77
John P. Damicone	2001-02		J. Frank McGill	1975-76
Austin K. Hagan	2000-01		Kenneth Garren	1974-75
Robert E. Lynch	1999-00		Edwin L. Sexton	1973-74
Charles W. Swann	1998-99		Olin D. Smith	1972-73
Thomas A. Lee, Jr.	1997-98		William T. Mills	1971-72
Fred M. Shokes	1996-97		J.W. Dickens	1970-71
Harold Pattee	1995-96		David L. Moake	1969-70
William Odle	1994-95		Norman D. Davis	1968-69
Dallas Hartzog	1993-94			

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
2019 – Auburn, AL

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

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™ Agriscience 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 Award Committee
Robert Kemerait, Chair (2020)
Steve Li (2020)
James Grichar (2020)
Abraham Fulmer (2021)
Mark Burow (2021)

Nominating Committee
Peter Dotray, Chair (2019)
Jack Davis (2019)
Greg McDonald (2019)
Robert Moore (2019)

Peanut Quality Committee
John Bennett, Chair (2019)
Sheller - Robert Moore (2019)
Manufacturer-Chris Liebod (2020)
University-Jason Woodward (2020)
Farmer – Ken Barton (2021)
Services – William Pearce (2021)
Var Develop – 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)

APRES Committees
2019-20

Bailey Award Committee
Scott Monfort, Chair (2021)
Jack Davis (2020)
Peggy Ozias-Akins (2020)
Hillary Mehl (2021)
Brendan Zurweller (2022)
Alicia Massa (2022)

Coyt T. Wilson Distinguished Service Award Committee
Dan Anco, Chair (2021)
Tim Brenneman (2020)
William Pearce (2022)
Alicia Massa (2022)

Corteva™ Agriscience Awards Committee
Nick DuFault, Chair (2021)
Tim Grey (2020)
Tom Stalker (2020)
John Richburg (2020)
Travis Faske (2021)
Barry Tillman (2021)
Soraya Bertioli (2022)
Cristiane Pilon (2022)

Fellows Committee
David Jordan, Chair (2021)
Todd Baughman (2020)
Kelly Chamberlin (2022)
Steve Brown (2022)

Finance Committee
Maria Balota, Chair (2020)
Scott Tubbs (2020)
Victor Nwosu (2021)
Julie Marshall (2022)

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

Nominating Committee
Rick Brandenburg, Chair (2020) Past President
Julie Marshall – University Rep (2020)
Keith Rucker - Private Industry Rep (2020)
Rebecca Bennett – USDA Rep (2020

Peanut Quality Committee
William Pearce, Chair (2021)
Chris Liebold (2020)
Ken Barton (2021)
Naveen Puppala (2021)
Ricky Hartley (2022)
Lyndsay Bashore (2022)
Lisa Dean (2022)

Program Committee
Gary Schwarzlose, Chair (2020)
John Cason – Technical Committee Chair
Emmi Kimura – Local Arrangements Chair
Peter Dotray – Fun Run Chair
To Be Confirmed - Spouse Program Chair

Publications and Editorial Committee
Josh Clevenger, Chair (2021)
Allison Floyd (2020)
Kira Bowen (2021)
Nino Brown (2022)

Public Relations Committee
Dylan Wann, Chair (2020)
Gary Schwarzlose (2021)
Shane Powell (2022)
Wen Carter (2022)

Site Selection Committee
Gary Schwarzlose, Chair (2020)
Shelly Nutt (2020)
David Jordan (2021)
Jeff Dunne (2021)
Jianping Wang (2022)
Jamie Rhoads (2022)

APRES Graduate Student Organization

The Graduate Student Organization (GSO) established in 2018 to bring together students actively pursuing advanced degrees in disciplines related to peanut. The primary purpose of the GSO is to exchange ideas, experiences, opinions, and information in all areas of peanut research and education and to have a representative on the American Peanut Research and Education Society (APRES) Board of Directors.

Officers 2018-19

President: Sara Beth Pelham (University of Georgia)
President-Elect: Davis Gimode (University of Georgia)

Officers 2019-20

President: Chandler Levinson (University of Georgia)
President-elect: Nick Hurdle (University of Georgia)
Social Chair: Kayla Porter

FELLOWS of the SOCIETY

Mr. Michael Baring	2019
Dr. Peter Dotray	2019
Dr. Barry Tilman	2019
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	2009
Mr. G.M. "Max" Grice	2007
Mr. W. James Grichar	2007
Dr. Thomas G. Isleib	2007
Mr. Dallas Hartzog	2006
Dr. C. Corley Holbrook	2006
Dr. Richard Rudolph	2006
Dr. Peggy Ozias-Akins	2005
Mr. James Ron Weeks	2005
Mr. Paul Blankenship	2004
Dr. Stanley Fletcher	2004
Mr. Bobby Walls, Jr.	2004
Dr. Rick Brandenburg	2003
Dr. James W. Todd	2003
Dr. John P. Beasley, Jr.	2002
Dr. Robert E. Lynch	2002
Dr. Patrick M. Phipps	2002
Dr. Ronald J. Henning	2001
Dr. Norris L. Powell	2001
Mr. E. Jay Williams	2001
Dr. Gale A. Buchanan	2000
Dr. Thomas A. Lee, Jr.	2000
Dr. Frederick M. Shokes	2000
Dr. Jack E. Bailey	1999
Dr. James R. Sholar	1999
Dr. John A. Baldwin	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
Dr. Kenneth H. Garren	1982
Dr. Ray O. Hammons	1982
Mr. Astor Perry	1982

BAILEY AWARD RECIPIENTS
1976 - 2019

2019	**Y. Chu,** P. Ozias-Akins, P. Chee, A. Culbreath, University of Georgia; T. G. Isleib, North Carolina State University; C. C. HOLBROOK, USDA- Agricultural Research Service
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. Zhou, 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

Three-time Winner: Tim Brenneman
Two-time Winners: Albert Culbreath
Craig Kvien – Back to Back Winner

JOE SUGG GRADUATE STUDENT COMPETITION AWARD RECIPIENTS

Sponsored by: North Carolina Peanut Growers Association

2019	A. Kaufman
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

GRADUATE STUDENT POSTER COMPETITION WINNERS

2019 Sponsor: National Peanut Board

2019	Alan Peper
2018	Caleb Weaver

COYT T. WILSON DISTINGUISHED SERVICE AWARD

HONOREES

2019	Dr. Timothy Grey
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. Smith

CORTEVA™ AGRISCIENCE AWARD FOR EXCELLENCE IN RESEARCH

2019	David Bertioli
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
2019	Changed to Corteva™ Agriscience Award for Excellence in Research

CORTEVA™ AGRISCIENCE AWARD FOR EXCELLENCE IN EDUCATION

2019	No Nominees
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. Pattee
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
2019	Changed to Corteva™ Agriscience Award for Excellence in Education

PEANUT RESEARCH AND EDUCATION AWARD RECIPIENTS

2019	David & Soraya Bertioli	1989	R.J. Henning
2018	Howard Valentine	1987	L.M. Redlinger
2017	Tim Brenneman	1986	A.H. Allison
2016	Bob Kemerait	1985	E.J. Williams and J.S. Drexler
2015	Tom Stalker and Noelle Barkley	1984	Leland Tripp
2015	Emory Murphy	1983	R. Cole, T. Sanders, R. Hill and P. Blankenship
2014	Baozhou Guo	1982	J. Frank McGill
2013	John Beasley	1981	G.A. Buchanan and E.W. Hauser
2012	Tom Isleib and Corley Holbrook	1980	T.B. Whitaker
2011	No Nominee	1979	J.L. Butler
2010	P. Ozias-Akins	1978	R.S. Hutchinson
2009	A. Stephens	1977	H.E. Pattee
2008	T.G. Isleib	1976	D.A. Emery
2007	E. Harvey	1975	R.O. Hammons
2006	D.W. Gorbet	1974	K.H. Garren
2005	J.A. Baldwin	1973	A.J. Norden
2004	S.M. Fletcher	1972	U.L. Diener and N.D. Davis
2003	W.D. Branch and J. Davidson	1971	W.E. Waltking
2002	T.E. Whitaker and J. Adams	1970	A.L. Harrison
2001	C.E. Simpson and J.L. Starr	1969	H.C. Harris
2000	P.M. Phipps	1968	C.R. Jackson
1999	H. Thomas Stalker	1967	R.S. Matlock and M.E. Mason
1998	J.W. Todd, S.L. Brown, A.K. Culbreath and H.R. Pappu	1966	L.I. Miller
1997	O.D. Smith	1965	B.C. Langleya
1996	P.D. Blankenship	1964	A.M. Altschul
1995	T.H. Sanders	1963	W.A. Carver
1994	W. Lord	1962	J.W. Dickens
1993	D.H. Carley and S.M. Fletcher	1961	W.C. Gregory
1992	J.C. Wynne		
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

2019 Annual Meeting Abstracts

Table of Contents

GENERAL SESSION

	Wednesday, July 10, 2019	
8:00 - 10:00 AM Auditorium	**Opening General Session** *Call to Order: APRES Past President Peter Dotray*	**Page Number**
8:05 AM	**Welcome to Alabama** Rick Pate Commissioner Alabama Department of Agriculture and Industries	Not Available
8:10 AM	**Welcome to Auburn** Dr. Paul Patterson Dean, College of Agriculture Director, Alabama Agricultural Experiment Station	Not Available
8:15 AM	**The Next 50 Years…."What Changes/Opportunities/Challenges Do You Foresee in Your Global Peanut Business** *Moderator: APRES Program Chair Barry Tillman* **Peanut Butter Manufacturers:** Dr. Chris Liebold The J.M. Smucker Company https://youtu.be/7K3Vjk0kWmk	View Presentation
8:35 AM	**Agriculture Perspective:** Donald Chase Georgia Peanut Commission https://youtu.be/aTNnvhXAtQs	View Presentation
8:55 AM	**Peanut Shellers:** Karl Zimmer Premium Peanut https://youtu.be/0I3vtZZKly4	View Presentation
9:15 AM	**Peanut Confectioners:** John Bennett Mars	Not Available

SYMPOSIUM

	Wednesday, July 10, 2019	
10:30 AM- **12:30 PM** *Auditorium*	**Symposium: Synergies from U.S. Global Research Partnership** *Moderator: Dave Hoisington, University of Geogia*	**Page Number**
10:30 AM	**International Collaboration Leverages Peanut Research and Crop Improvement** David Bertioli Professor and GRA Distinguished Investigator University of Georgia	**24**
10:50 AM	**Mobilizing Genetic Diversity for Strengthening Peanut Breeding Program in Africa and the U.S.** Daniel Fonceka Researcher & Scientific Coordinator CIRAD/CERAAS	**25**
11:10 AM	**Partnership Holds the Key to Deploy New Tools in Peanut Breeding Programs** Janila Pasupuleti Principal Groundnut Breeder, ICRISAT	**26**
11:30 AM	**Value of International Projects to Faculty in the United States: Examples of Participation by Individuals at North Carolina State University with the Peanut Innovation Lab** David Jordan William Neal Reynolds Professor North Carolina State University	**27**
11:50 AM	**U.S. Investments in Research for Development and Global Impacts** Nora Lapitan Research Division Chief, Bureau for Food Security USAID	**28**
12:10 PM	**Peanuts and the Fight Against Hunger** Jeff Johnson President Emeritus Birdsong Peanuts	**29**

International Collaboration Leverages Peanut Research and Crop Improvement.

D.J. BERTIOLI*, Department of Crop and Soils Science, The University of Georgia, Athens, GA 30621.

Peanut is the epitome of a global crop. Originating in South America, it has spread around the world and is now a key source of protein for the families of subsistence farmers especially in Africa and Asia. At the same time, via international trade, it provides an important source of income for exporting countries, and an affordable source of high-quality nutrition far from where it is grown. It's very fitting then that many of the greatest advances in peanut research and gains in peanut production have come about through international collaboration - from the botanical collections and exchanges that established germplasm resources for global crop improvement, to the genome project that provided essentially complete catalogues of genes and uniform frameworks of reference for research. For peanut, time and again, international collaboration forms the critical mass for advances in research and production.

Mobilizing Genetic Diversity for Strengthening Peanut Breeding Program in Africa and the US.

D. FONCEKA*, A. SAMBOU, HA TOSSIM, Centre d'Etude Régional pour l'Amélioration de l'Adaptation à la Sécheresse (CERAAS), BP3320 Thiès, Senegal, D. OKELLO, National Semi Arid Ressources Research Institute (NaSARRI), P.O Box 56, Soroti, Uganda, JF. Rami, CIRAD UMR AGAP, TA A-108/03 Avenue d'Agropolis, Montpellier Cedex 5, France, D. BERTIOLI, University of Georgia - Crop & Soil Sciences Department/CAGT. 111 Riverbend Road, Athens, GA, S. LEAL-BERTIOLI, University of Georgia – Department of Plant Pathology / CAGT. 111 Riverbend Road, Athens, GA, USA, P. OZIAS-AKINS, University of Georgia, Department of Horticulture, Rainwater Rd. Tifton, GA, USA.

The aim of breeding is to combine as much as possible desirable alleles for traits of interest in order to produce new varieties that meet the needs of end-users. Thus, genetic diversity is the foundation of any breeding program. Peanut genetic diversity is low and breeding programs have until recently exploited a limited portion of the existing diversity. In an international effort involving several NARS in Africa, UGA, ICRISAT and CIRAD, a two-pronged strategy is being implemented for increasing diversity used by breeders. On one side, synthetic allotetraploids that combines A and B genomes of diverse wild diploid species are developed and used for moving genes from the wild species to the cultivated species. Wild alleles at QTL loci conferring resistance to diseases and other having major effects on yield and seed size have been mapped and are currently being deployed in elite cultivars. On the other side, hundreds of accessions hold by NARS breeders and thousands of US germplasms, including African germplasm maintained at USDA, have been assembled and genotyped using the V2 Axiom-Arachis. A core set of lines will be defined from the genotyping work and phenotyped in 8 countries in West and East Africa. These resources will provide comprehensive analysis of the diversity used by breeders, offer opportunity to breeders to accessing wider genetic variation and will offer the opportunity to map genes of interest via association studies.

Partnership Holds the Key to Deploy New Tools in Peanut Breeding Programs

J. PASUPULETI* International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Telangana, India, Pincode. 502324.

CGIAR Research Program on Grain Legumes and Dry land Cereals (CRP-GLDC) promotes Crop Network Groups (CNGs), represented by multi-stakeholders as a platform for crop Product design, development, testing, advancements and delivery. Peanut regional network in Asia was established and supported by ICRISAT which engages stakeholders from six countries in Asia, Bangladesh, India, Myanmar, Vietnam, Srilanka and Laos PDR. CRP-GDLC engages with a similar multi-crop network in WCA region, supported by IAVAO.

ICRISAT and NARS peanut breeding programs have embarked the agenda of modernizing the peanut breeding and testing pipelines and closely engage with Excellence in Breeding Platform (EiB). Peanut breeding program at ICRISAT has been at forefront in deploying new tools in the breeding pipeline to enhance early generation selection and operational efficiency. ICRISAT and NARS deployed markers for high oleic trait based on the CAPS markers developed by University of Georgia. The seed chip technique shared by UGA was useful to genotype a large number of F2 seeds, thus enhancing operational efficiency in deploying genomic tools in breeding pipeline. The High Throughput Genotyping Platform (HTGP) of EiB enabled regular use of SNP based markers for high oleic trait by ICRISAT and NARS. Partnership of ICRISAT and NARS with advanced research institutes and platforms is important to develop genomic and phenotype tools and techniques for deploying in peanut breeding pipelines. Experience from APRES is useful to manage the regional multi-stakeholder peanut network groups in Africa and Asia.

Value of International Projects to Faculty in the United States: Examples of Participation by Individuals at North Carolina State University with the Peanut Innovation Lab.

D.L. JORDAN* and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695.

The Feed the Future Peanut Innovation Lab is designed to enhance both international and domestic projects that address needs by peanut growers and the broader agricultural community that can be addressed through research and outreach. These programs are tailored to fit local needs in the broader context of both USAID country mission emphasis and the capacity of Peanut Innovation Lab partners. In recent years, the Peanut Innovation Lab focus has been designed to increase cooperation at all levels of production and processing peanut within and across countries. For example, value chain projects in Haiti, Ghana, and southern Africa (Malawi, Mozambique, Zambia) encompassed research at both pre-harvest and post-harvest steps to mitigate aflatoxin contamination. These projects attempted to be both broad in scope and at adequate in depth to explore mechanisms of possible solutions. In the case of Haiti and southern Africa, partners in the private sector were involved, and this interaction enabled a greater emphasis on scale up of known interventions. Establishing and fostering partnerships across countries and among scientists and practitioners was a critical element of the goal and success of these programs. In the case of Ghana, strong and long-term relationships between scientists at North Carolina State University and the Council for Science and Industrial Research (CSIR) institutions including the Crops Research Institute (CRI) and the Savanna Agricultural Research Institute (SARI) and (KNUST) have led to improvements in peanut production and pest management across Ghana. For example, two lines provided by ICRISAT tested beginning in 2002 and were ultimately released in 2012 (Yenyawoso and Otuhia) and are now being distributed to farmers. More recently, the impact of interventions throughout the village supply chain was compared at field, drying and storing steps. Results revealed challenges and benefits at each step and provide farmers with which choices to incorporate based on their logistical and economic constraints. Additionally, these interactions have been important to US participants in several ways including: publications of findings in the peer-reviewed literature, presentations and interactions at professional conferences, publication of book chapters, and documentation of extramural funding. In 2018 a book chapter across all aspects of aflatoxin mitigation was published involving 31 co-authors across all countries and most elements of the Peanut Innovation Lab. A recent book chapter published on weed management in peanuts included authors from the US and Ghana. In both instances interactions and a cooperative spirit among Peanut Innovation Lab made these contributions possible. A portion of budgets from Peanut Innovation Lab funding are used for research focused on issues faced by farmers in North Carolina and the broader US peanut industry.

There are also areas that may contribute in subtle but valuable ways to participant's knowledge as a scientist. Observing specific germplasm and how it performs under specific environmental conditions and soil condition grown with and without input adds to our understanding of peanut production. Working with issues such as groundnut rosette virus provides insight into tomato spotted wilt virus and our research into field contamination by aflatoxin allows us to serve as valuable resources to the U.S. industry.

U.S. Investments in Research for Development and Global Impacts.

N. LAPITAN*, Bureau for Food Security, U.S. Agency for International Development, Washington, DC.

Research is critical for USAID to achieve its goal of advancing inclusive agriculture-led growth, resilience, nutrition, and access to water and sanitation. Analysis has shown that growth in agriculture is the most effective means of reducing extreme poverty. Agricultural research and development (R & D) has been a major driver of this growth. In this talk, I will discuss the global impact of innovations generated from USAID's R & D investments. This includes benefits to the United States' agriculture industry.

Peanuts and the Fight Against Hunger.

J. JOHNSON*, Consultant, Birdsong Peanuts, Suffolk, VA

Peanut-based Ready to Use Therapeutic Food (RUTF) is considered a “medicine” for treating the 20,000,000 severely malnourished children in Africa. However, there are 800,000,000 malnourished people in Africa and peanut products are not widely used in aid programs for them.

Recently there has been a lot more interest in using peanuts for a much broader market. Peanuts are increasingly recognized as a nutritious food with the right balance of protein, fats, fiber, and micronutrients for most people. They are also one of the most sustainable proteins in the world.

The recent Lancet Planetary Diet is the result of a major study funded by the Bill & Melinda Gates Foundation. It was designed to determine the healthiest way to feed the world’s population while meeting the UN’s sustainability goals. It recommends a huge increase in the consumption of nuts and legumes in sub-Saharan Africa. We expect this will have a major influence on diet patterns in Africa. The Peanut Innovation Lab is at the forefront of this work and is poised to play a major role in helping to alleviate hunger.

ECONOMICS & MARKETING

	Thursday, July 11, 2019	
3:30 - 5:00 PM *Oak Room*	**Economics & Marketing** *Moderator: Audrey Luke-Morgan, Abraham Baldwin Agricultural College*	**Page Number**
3:30 PM	**The Effect of Training and Seed Credit Programs on Peanut Productivity: Evidence from Haiti** **G. KOSTANDINI***, Department of Agricultural and Applied Economics, The University of Georgia, Athens, GA, 30602; J. RHOADS, Peanut Innovation Lab, The University of Georgia, Athens, GA, 30602; and G. MACDONALD, Department of Agronomy, The University of Florida, Gainesville, FL 32611-0300.	**31**
3:45 PM	**Agriculture Improvement Act of 2018 – Implications to U.S. Peanut Farmers** **S.M. FLETCHER***, Z. SHI, A. LUKE-MORGAN, Abraham Baldwin Agriculture College, Tifton, GA 31793.	**32**
4:00 PM	**Changes to the Peanut Grading Standards – Implications to Georgia Peanut Farmers** Z. SHI, **S.M. FLETCHER***, A. LUKE-MORGAN, Abraham Baldwin Agriculture College, Tifton, GA 31793.	**33**
4:15 PM	**An Analysis of Crop Insurance as a Risk Management Strategy for U.S. Peanut Producers from a Whole Farm Perspective** **A.S. LUKE-MORGAN***, School of Agriculture and Natural Resources, Abraham Baldwin Agricultural College, Tifton, GA 31793-2601; S.M. FLETCHER, Center for Rural Prosperity and Innovation, Abraham Baldwin Agricultural College, Tifton, GA 31793-2601.	**34**
4:30 PM	**Determining the Relationship Between Peanut Prices and Stocks-to-Use Ratio** F.S.K. ATTAH and **A.N. RABINOWITZ***, Agricultural and Applied Economics, University of Georgia, Tifton, GA, 31793.	**35**

The Effect of Enrollment on Training and Micro Credit Programs on Peanut Productivity: Evidence from Haiti

G. KOSTANDINI*, Department of Agricultural and Applied Economics, The University of Georgia, Athens, GA, 30602; J. RHOADS, Peanut Innovation Lab, The University of Georgia, Athens, GA, 30602; and G. MACDONALD, Department of Agronomy, The University of Florida, Gainesville, FL 32611-0300.

We use a quasi-natural experiment with data from peanut farmers that were qualified to enroll in a program that a for-profit organization offered in Haiti in 2016. We use data collected from farmers that were enrolled in the program and received training and/or seed. We also collected data from farmers that were qualified to enroll in the program but chose not to enroll. This set up allows us to measure the effects of receiving seed and/or training on several outcomes. We asked 609 farmers to provide data for the Spring and Fall seasons in 2016 and are also able to track the decisions of the farmers that were enrolled in the program in Spring 2016 on whether to enroll or not in the Fall. First, we focus on the effects that receiving training and/or seed has on peanut yields. Second, we examine the factors that are associated with the decision to drop out by following the farmers that were enrolled in the Spring and drop out in the Fall. Third, given the high rainfall variability in Haiti, we ask farmers about the amount of insurance that they are willing to pay to insure their peanut crop and examine factors that affect the amount they are willing to pay.

We find that farmers that received training experience an increase in yield ranging between 16 to 40 percent compared to the control group and gains in yield increase with more training. We also find that farmers that receive seed from the organization do not have significantly higher yields compared to the control group suggesting that training is a more effective way to increase farmer's yields in Haiti. Finally we find that a majority of farmers do not pay back the credit received and more than 90 percent of the farmers are interested in insuring their crop

Agriculture Improvement Act of 2018 – Implications to U.S. Peanut Farmers

S.M. FLETCHER*, Z. SHI, A. LUKE-MORGAN, Abraham Baldwin Agriculture College, Tifton, GA 31793.

The 2018 Farm Bill entitled, "Agriculture Improvement Act of 2018," was signed into law by the President on December 20, 2018. For peanut farmers, the Farm Bill starts with the 2019 peanut crop. Many features of the Farm Bill were a continuation of the 2014 Farm Bill. However, there were some changes that could impact U.S. peanut farmers. One key change dealt with base acres. If a farm's entire cropland was planted to grass or pasture as well as the cropland that was idle or fallow during the time period of January 1, 2009 to December 31, 2017, the bases and payment yields for that farm would be maintained. However, no ARC/PLC payments can be made to those bases for the 2019 through 2023 crop years. Farms that have the ARC/PLC payments suspended will have the opportunity to participate in a 5-year grassland incentive contract under the Conservation Stewardship Program at a rate of $18 per base acre. This feature has implication on U.S. peanut farmers that may have had some of their bases assigned to such farms. A second key feature allowed landowners the opportunity to update the payment yield on a covered commodity by covered commodity basis for each of their farms. The new payment yield will be 90% of the average yield per planted acre for the crop years of 2013-2017 multiplied by the yield update factor for that covered commodity. The yield update factor for peanuts is 0.9273. In contrast to the 2014 Farm Bill, the 2018 Farm Bill allows producers to choose between ARC and PLC on a crop by crop and farm by farm basis for the 2019 and 2020 crop years together. For crop years 2021 through 2023, producers will have flexibility to make annual decisions between ARC and PLC on a crop by crop and farm by farm basis. Finally, an effective reference price to be used in the PLC calculation was introduced. All other features of the 2018 Farm Bill dealing with peanuts followed the features in the 2014 Farm Bill.

Changes to the Peanut Grading Standards – Implications to Georgia Peanut Farmers

Z. SHI, **S.M. FLETCHER***, A. LUKE-MORGAN, Abraham Baldwin Agriculture College, Tifton, GA 31793.

Starting with the 2018 peanut crop, the peanut grading standards were modified for determining Segregation 1 peanuts. Prior to the 2018 peanut crop, peanut damage greater than 2.49% required the load of peanuts to be classified as Segregation 2 with a loan support of approximately $125/ton instead of a Segregation 1 loan support of $355/ton. For the 2018 peanut crop, damage less than or equal to 3.49% was classified as a Segregation 1 peanut and anything over 3.49% was classified as a Segregation 2 peanut. The question was whether this redefinition would significantly impact the grading of peanuts. Data was collected from the Georgia Federal State Inspection Service on 2018 Georgia graded peanuts. Preliminary results indicate that volume becoming Segregation 1 versus Segregation 2 as a percent of the total crop was small. However, from a farmer's point of view, it provided an additional approximately $15 million dollars of additional revenue to Georgia peanut farmers. A second component of the analysis was whether Hurricane Michael had a significant impact on peanut grade between Segregation 1 and Segregation 2 peanuts. Preliminary analysis indicate that there was not a major impact.

An Analysis of Crop Insurance as a Risk Management Strategy for U.S. Peanut Producers from a Whole Farm Perspective.

A.S. LUKE-MORGAN*, School of Agriculture and Natural Resources, Abraham Baldwin Agricultural College, Tifton, GA 31793-2601; S.M. FLETCHER, Center for Rural Prosperity and Innovation, Abraham Baldwin Agricultural College, Tifton, GA 31793-2601.

By nature, agricultural production is a risky venture facing uncertainty from multiple factors, many of which cannot be controlled. To ensure long-run viability, economic stability is vital to U.S. peanut producers. The 2018 calendar year provides a harsh example of the economic impact agriculture faces from uncertainty in production and marketing. Many producers utilize risk management tools to mitigate the economic impact of uncertainty.

Crop insurance is one risk management tool often regarded as providing a safety net for producers. This study investigates the effectiveness of crop insurance in providing a safety net for peanut producers. The groundwork for the study began as a doctoral project which considered limited scenarios for peanut production. This study expands to a whole farm scenario utilizing case study analysis of representative U.S. peanut farms. The study considers the impact of rotation, advances in technology and breeding, and resulting increases in productivity on expected yields and actual production history (APH). Relationships between expected, APH, and payment yields are considered to determine the impact on the whole farm budget and, ultimately, economic stability of peanut operations.

Determining the Relationship between Peanut Prices and Stocks-to-Use Ratio

F.S.K. ATTAH and **A.N. RABINOWITZ***, Agricultural and Applied Economics, University of Georgia, Tifton, GA, 31793.

It has been widely established that agricultural commodity prices respond to components of market supply and demand. One common measure of supply and demand is the stocks-to-use ratio (SUR), which captures the relationship between total stocks (supply) and total utilization (demand) at a given point in time. Typically, a current SUR exhibits an inverse relationship with price, i.e. when current SUR is high, the current price will be low. This indicates that market prices respond in real time to changes in production, inventory, and sales.

Peanut markets, however, are less well defined than other commodities. There is a lack of a futures market and there is considerable market power by first-buyers in the industry. Therefore, we hypothesize that the typical relationship between pricing and supply and demand may not be relevant with respect to peanuts. We use regression analysis to empirically test this relationship and show that peanut prices do not exhibit the same relationship as other agricultural commodities like corn, soybeans and wheat. Rather than a current SUR being inversely related to prices, we find a lagged SUR is inversely related. This indicates there is a delay in the price response to changes in supply and demand. Understanding this relationship is important for farmers as they assess marketing opportunities and form expectations for future prices. This also suggests the need for farmers to seek alternative marketing opportunities in an effort to mitigate the market power in the industry and to be able to obtain a price that is more responsive to current supply and demand conditions.

EXCELLENCE IN EXTENSION

	Thursday, July 11, 2019	
8:00 - 10:00 AM Oak Room	**Excellence in Extension** *Moderator: Marshall Lamb, USDA-ARS*	**Page Number**
8:00 AM	**Evaluation of Current Alabama Peanut Production Practices through Producer Surveys** **B.A. DILLARD***, Alabama Cooperative Extension, Auburn University, Hartford, AL 36344 and K.B. BALKCOM, Crop, Soils and Environmental Sciences, Auburn University, Headland, AL 36345.	**38**
8:15 AM	**Survey of Tillage Practices in Peanut across the Virginia-Carolina Region** **B. BARROW***, J. HURREY; B. MCLEAN, Jr., M. LEARY, M. CARROLL, P. SMITH, A. WHITEHEAD, B. PARISH, T. BRITTON, J. MORGAN, C. ELLISON, M. HUFFMAN, M. SEITZ, D. LILLEY, L. GRIMES, M. MALLOY, D. KING, R. WOOD, A. WILLIAMS, and M. BENNETT, L. MILES, G. WELLS, A. GROWE, R. GURGANUS, S. KILLETTE, C. ORTEL, D. ANDERSON, J. ANDERSON, D.L. JORDAN, B.B. SHEW, R.L. BRANDENBURG, and G. ROBERSON, North Carolina State Extension, 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; 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.	**39**
8:30 AM	**Examples of In-Service Educational Opportunities for Extension Agents in North** **C. J. HURRY***, B. BARROW, B. MCLEAN, Jr., M. LEARY, M. CARROLL, P. SMITH, A. WHITEHEAD, B. PARISH, T. BRITTON, J. MORGAN, C. ELLISON, M. HUFFMAN, M. SEITZ, D. LILLEY, L. GRIMES, M. MALLOY, D. KING, R. WOOD, A. WILLIAMS, and M. BENNETT, L. MILES, G. WELLS, A. GROWE, R. GURGANUS, S. KILLETTE, C. ORTEL, D. ANDERSON, J. ANDERSON, D.L. JORDAN, B.B. SHEW, R.L. BRANDENBURG, and G. ROBERSON, North Carolina State Extension, Raleigh, NC 27695.	**40**
8:45 AM	**Nitrogen Credits after Peanut** **M.J. MULVANEY***, West Florida Research and Education Center, University of Florida, Jay, FL, 32565; K.S. BALKCOM, National Soil Dynamics Laboratory, Auburn, AL 36832; D. JORDAN, Crop and Soil Sciences Dept., North Carolina State University, Raleigh, NC 27695; and A.D. JANI, West Florida Research and Education Center, University of Florida, Jay, FL, 32565.	**41**
9:00 AM	**Evaluating Fungicides for Reducing White Mold in Peanuts in Cook County, Georgia** **T. PRICE***, University of Georgia Extension, Cook County, Adel, Georgia 31620; and R.C. KEMERAIT, Extension Plant Pathologist, Department of Plant Pathology, University of Georgia, Tifton, Georgia 31793.	**42**
9:15 AM	**Evaluating Peanut White Mold Fungicide Programs in Bulloch County, Georgia** R. C. KEMERAIT, A. R. SMITH, **W. G. TYSON***, Department of Plant Pathology, The University of Georgia, Tifton, GA 31794; Agricultural and Applied Economics, The University of Georgia, Tifton, GA 31793; and Bulloch County Cooperative Extension, The University of Georgia, Statesboro, GA 30458.	**43**
9:30 AM	**The Value of On-Farm Demonstrations** E.T. CARTER, UF/IFAS Regional Crop IPM Agent, Marianna, FL 32446; **K.M. WATERS***, UF/IFAS Holmes County Extension, Bonifay, FL, 32425; M.D. MAULDIN, UF/IFAS Washington County Extension, Chipley, FL 32428; K.W. WYNN, UF/IFAS Hamilton County Extension, Jasper, FL, 32052; J.M. CAPASSO, UF/IFAS Columbia County Extension, Lake City, FL, 32055; B.L. TILLMAN, M.W. GOMILLION, North Florida Research and Education Center, Marianna, FL 32446.	**44**

Continued on Next Page

	Thursday, July 11, 2019 *(Continued)*	
8:00 - 10:00 AM Oak Room	**Excellence in Extension** *Moderator: Marshall Lamb, USDA-ARS*	**Page Number**
9:45 AM	**Fungicide Efficacy Trial Promotes Agent Training Through Experiential Learning** **K. WYNN***, University of Florida/Institute of Food and Agricultural Sciences, Jasper, FL 32052; N. DUFAULT, University of Florida Associate Professor and Extension Specialist, Gainesville, FL 32611; C. VANN, University of Florida/Institute of Food and Agricultural Sciences, Mayo, FL 32066; D. FENNEMAN, University of Florida/Institute of Food and Agricultural Sciences, Madison, FL. 32340; D. BROUGHTON, University of Florida/Institute of Food and Agricultural Sciences, Regional Specialized Agent, Agronomic Crops, Live Oak Room, FL 32064; K. KORUS, University of Florida/Institute of Food and Agricultural Sciences, Gainesville, FL 32609.	**45**

Evaluation of Current Alabama Peanut Production Practices through Producer Surveys

B.A. DILLARD*, Alabama Cooperative Extension, Auburn University, Hartford, AL 36344 and K.B. BALKCOM, Crop, Soils and Environmental Sciences, Auburn University, Headland, AL 36345.

Effective Extension programming requires an understanding of current practices utilized by producers. Given the rapid pace at which technology is adopted, new varieties are introduced, and management practices are implemented, it can be difficult to identify what issues producers will face for the upcoming crop season. In order to more effectively develop Extension research and outreach objectives for Alabama's peanut producers, producer surveys were incorporated into 2019 Peanut production meetings across the state. Producers were asked a variety of questions pertaining to variety selection, planting practices, disease and weed pressures on farm, as well as planting intentions for the 2019 crop season.

Responses from producers indicate that a majority of Alabama growers continue to plant Ga-06G (64% of respondents), use a twin-row spacing (71% of responses), use residual herbicides in POST applications (80%) as well as experience nematode pressure (71%) but do not currently use nematicides (91 %). Results gathered from these surveys will be used to implement research and programming that better reflect current production practices for growers in Alabama.

Survey of Tillage Practices in Peanut Across the Virginia-Carolina Region

B. BARROW*, J. HURREY; B. MCLEAN, Jr., M. LEARY, M. CARROLL, P. SMITH, A. WHITEHEAD, B. PARISH, T. BRITTON, J. MORGAN, C. ELLISON, M. HUFFMAN, M. SEITZ, D. LILLEY, L. GRIMES, M. MALLOY, D. KING, R. WOOD, A. WILLIAMS, and M. BENNETT, L. MILES, G. WELLS, A. GROWE, R. GURGANUS, S. KILLETTE, C. ORTEL, D. ANDERSON, J. ANDERSON, D.L. JORDAN, B.B. SHEW, R.L. BRANDENBURG, and G. ROBERSON, North Carolina State Extension, 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; 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.

The majority of peanut grown in the Virginia-Carolina region is planted in conventional tillage systems. However, over the past two decades growers in North Carolina have decreased both the intensity of tillage in conventional systems and have increased plantings in reduced tillage systems. For example, the percentage of growers in North Carolina using moldboard plow was 58, 17, 7, 5, and 6 in surveys conducted during 1998, 2004, 2009, 2014, and 2019 at county production meetings, respectively. During these respective years the percentage of growers using reduced tillage on a portion of their farms was 10, 23, 41, 20, and 31. In 2019 the survey was expanded to South Carolina and Virginia.

Examples of In-Service Educational Opportunities for Extension Agents in North Carolina.

J. HURRY*, B. BARROW, B. MCLEAN, Jr., M. LEARY, M. CARROLL, P. SMITH, A. WHITEHEAD, B. PARISH, T. BRITTON, J. MORGAN, C. ELLISON, M. HUFFMAN, M. SEITZ, D. LILLEY, L. GRIMES, M. MALLOY, D. KING, R. WOOD, A. WILLIAMS, and M. BENNETT, L. MILES, G. WELLS, A. GROWE, R. GURGANUS, S. KILLETTE, C. ORTEL, D. ANDERSON, J. ANDERSON, D.L. JORDAN, B.B. SHEW, R.L. BRANDENBURG, and G. ROBERSON, North Carolina State Extension, Raleigh, NC 27695.

In-service educational opportunities for North Carolina Cooperative Extension Service agents include exercises in the field and classroom and well as one-on-one interactions with other agents and Extension Specialists. In recent years, one formal classroom session was offered in January and included topics related to both peanut and cotton. A second session relative to peanuts and cotton occurs in mid-June in the field. Additional educational opportunities are provided at several points later in the season through harvest and include only peanut management. In January 2019, a major component of the session was a test with approximately 75 questions including all aspects of production, pest management and harvesting. A sampling of these questions was discussed at the annual meeting.

Nitrogen Credits after Peanut

M.J. MULVANEY*, West Florida Research and Education Center, University of Florida, Jay, FL, 32565; K.S. BALKCOM, National Soil Dynamics Laboratory, Auburn, AL 36832; D. JORDAN, Crop and Soil Sciences Dept., North Carolina State University, Raleigh, NC 27695; and A.D. JANI, West Florida Research and Education Center, University of Florida, Jay, FL, 32565.

Cooperative Extension throughout the Southeast currently recommends 22-67 kg N/ha credit to subsequent crops following peanut. However, the peer-reviewed literature has shown that N credits to subsequent crops are negligible. Field trials with peanut, cotton, and fallow prior to wheat showed that peanut and fallow N credits to wheat were not different, and yield was lower after cotton, suggesting N immobilization after cotton rather than an N credit after peanut. Data from field litterbag mineralization studies in AL and NC showed that potential N credits from peanut residue potentially contribute 14-24 kg N/ha to wheat and 2-10 kg N/ha to cotton depending on location and residue management. Similar studies in Florida found that potential N available to subsequent crops from peanut residue depended on residue load size, tillage timing, and date of planting of the subsequent crop. That study also found that potential N credits were higher to winter than to spring crops. Potential N credits to winter crops ranged from 5-49 kg N/ha depending on tillage and residue load size, while for cotton the range was 1-23 kg N/ha. The greatest N credits were obtained using spring tillage with 6.7 Mg/ha residue loads, which represents a large amount of peanut residue. Taken together, these research findings corroborate the few existing scientific publications addressing the issue in the literature, namely that Extension recommendations for reducing N fertilization to crops after peanut are not supported. It is recommended that future field research should include fallows to determine if the supposed N credit after peanut actually represents a yield depression following non-legumes, possibly due to N immobilization from carbonaceous residues. The preponderance of peer-reviewed science does not support current Extension recommendations regarding N credits to subsequent crops after peanut.

Evaluating Fungicides for Reducing White Mold in Peanuts in Cook County, Georgia

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

White Mold (WM) (*Sclerotium rolfsii*) is one of the most destructive diseases in peanut production in Georgia and Cook County, Peanut Producers. There are many fungicide options available to control the disease. Costs of the fungicides vary. Effectiveness against WM varies. In 2018, Cook County Extension collaborated with University of Georgia Peanut Specialists to install a trial in a commercial peanut field in Cook County, Georgia to compare and evaluate ten common peanut WM fungicide programs with the objective to generate unbiased, research-based data related to peanut WM fungicide programs to disseminate to peanut producers and agriculture industry. White mold fungicides used in protocol were Muscle ADV (*tebuconazole, chlorothalonil*), Priaxor Xemium (*fluxapyroxad, pyraclostrobin*), Fontelis (*penthiopyrad*), Elatus (*azoxystrobin, benzovendiflupyr*), Tebuzol (*tebuconazole*), Umbra (*flutolanil, flutriafol*), Propulse (*fluopyram, prothioconazole*), Prosaro (*prothioconazole, tebuconazole*), and Convoy (*flutolanil*). All programs showed significantly less WM compared to the control. Leaf Spot and Tomato Spotted Wilt Virus was insignificant in this trial. White Mold incidence was moderate in this trial (control = 24% WM). In this trial, programs applying Elatus (2 and 3 block) and Umbra showed greatest WM control compared to the untreated check. Muscle ADV treatments provided the least WM control compared to other treatments. Those three treatments also showed the highest yields in this trial.

Evaluating Peanut White Mold Fungicide Programs in Bulloch County, Georgia

R. C. KEMERAIT, A. R. SMITH, **W. G. TYSON***, Department of Plant Pathology, The University of Georgia, Tifton, GA 31794; Agricultural and Applied Economics, The University of Georgia, Tifton, GA 31793; and Bulloch County Cooperative Extension, The 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 2 and harvested on September 26. Fungicides included Absolute, Alto, Convoy, Echo 720, Elatus, Fontelis, Miravis, Muscle ADV, Priaxor, Proline, Propulse, Prosaro, and Tebuconazole. Fungicides were applied with a tractor hitched sprayer beginning on June 15. Cost of fungicide programs varied between $66.50 and $149.49. There was a strong negative relationship between incidence of white mold and yield. The difference in yield was attributed to underground white mold. There was a 1436 lb./A difference in yield between the top yielding (5311 lbs./A) Elatus 3-block program and the lowest yielding (3875 lbs./A) 4-block Muscle ADV program.

The Value of On-farm Demonstrations

E.T. CARTER, UF/IFAS Regional Crop IPM Agent, Marianna, FL 32446; **K.M. WATERS***, UF/IFAS Holmes County Extension, Bonifay, FL, 32425; M.D. MAULDIN, UF/IFAS Washington County Extension, Chipley, FL 32428; K.W. WYNN, UF/IFAS Hamilton County Extension, Jasper, FL, 32052; J.M. CAPASSO, UF/IFAS Columbia County Extension, Lake City, FL, 32055; B.L. TILLMAN, M.W. GOMILLION, North Florida Research and Education Center, Marianna, FL 32446.

Land grant universities are a three-legged stool comprised of research, education, and extension programs. Each component necessary in achieving the land grant university mission, and there is no better example of this symbiotic relationship than on-farm demonstrations. The UF/IFAS Extension program has worked to develop a model for on-farm demonstrations that develop an effective collaboration between research and extension. The objectives of this model are 1) to establish a network between producers and Extension faculty; 2) use on farm trials to collect field data on peanut cultivars and fungicide programs; and 3) use on-farm demonstrations to train agents who are unexperienced in peanut production. Partnership for on-farm demonstrations are between a specialist, extension agent, producer, and at times industry representatives. The research component is overseen by the specialist, with trials evaluating new products or varieties often provided by industry to gather unbiased performance data. Extension finds a host location, bridging the gap between researcher and producer while also creating an opportunity for continued education and outreach. This is achieved through the organization of field days, farm tours, and extension scholarship at production meetings. Over the past three years, Extension faculty have worked with a state specialist to collect peanut cultivar performance, fungicide, and nematicide data in large plots on farmers operations and managed by farmers. UF/IFAS Extension faculty have worked with state specialists to complete an average of 8 trials each year between 5 extension agents and 3 specialists. These demonstration trials function as a platform for extension programming, facilitating producer interaction and education on both an individual (host) and group (field day; farm tour) level. These large informal meetings are an excellent way to obtain producer management strategies and learn what obstacles they currently face in the field. In addition, faculty who are unexperienced in peanut production have achieved better understanding of field practices and an ability to better understand and interact with county and regional extension personnel as well as with growers.

Fungicide Efficacy Trial Promotes Agent Training Through Experiential Learning

K. WYNN*, University of Florida/Institute of Food and Agricultural Sciences, Jasper, FL 32052; N. DUFAULT, University of Florida Associate Professor and Extension Specialist, Gainesville, FL 32611; C. VANN, University of Florida/Institute of Food and Agricultural Sciences, Mayo, FL 32066; D. FENNEMAN, University of Florida/Institute of Food and Agricultural Sciences, Madison, FL. 32340; D. BROUGHTON, University of Florida/Institute of Food and Agricultural Sciences, Regional Specialized Agent, Agronomic Crops, Live Oak, FL 32064; K. KORUS, University of Florida/Institute of Food and Agricultural Sciences, Gainesville, FL 32609

Peanut is an important Suwannee River Valley commodity crop. In 2018, 66,246 acres of peanuts were planted in counties adjacent to the North Florida Research and Education Center (NFREC) – Suwannee Valley. An applied peanut disease research program was established to address disease management needs of this commodity. Objectives: To (1) assess the efficacy of commonly used peanut fungicide programs, and (2) provide local Extension agents with experiential learning opportunities related to disease management. Methods: UF/IFAS Plant Pathologist, Nicholas Dufault and UF/IFAS Hamilton County Extension agent, Keith Wynn collaborated with NFREC – Suwannee Valley staff in 2015 to incorporate replicated small plot fungicide trials at the center. This trial evolved into a yearly research program that evaluates the efficacy of various fungicide programs related to Peanut Rx. Dr. Dufault is responsible for determining the fungicides tested, retrieving chemicals, and interpreting data collected from the trials. Local Extension agents are responsible for applying fungicide applications, taking disease ratings and assisting in the data interpretation. Results: Data collected from disease ratings and yields are used to generate fact sheets, publications, and presentations that are distributed in production meetings throughout the state. Extension agents receive hands-on training with fungicide application methods and disease identification which increases their confidence when interacting with producers. Conclusions: This research allowed Extension agents to provide producers with timely information about fungicide product efficacy and monitor diseases throughout the season. Because of these trials, producers have seen the benefit of incorporating novel fungicides into their management programs and adjusting their management plans to the pathogens present.

JOE SUGG GRADUATE STUDENT COMPETITION I

	Tuesday, July 9, 2019	
3:00 - 5:00 PM Auditorium	**Joe Sugg Graduate Student Competition - Session I** *Sponsored by: North Carolina Peanut Growers Association* Moderator: R.C. Kemerait, University of Georgia	**Page Number**
3:00 PM	**Evaluation of QoI Sensitivity in *Aspergillus* spp. Section Nigri from Peanut Fields in Georgia.** **B.S. JORDAN***, A.K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-5766; R.S. ARIAS, USDA-ARS-National Peanut Research Lab (NPRL), Dawson, GA 39842.	**47**
3:15 PM	**Refinement of an Aflatoxin Prediction Model Using Field and Greenhouse Data to Elucidate Physiological Mechanisms of Aflatoxin Contamination in Peanuts.** **K. McAMIS*,** D. L. ROWLAND, B. L. TILLMAN, Agronomy Department, The University of Florida, Gainesville, FL 32611; K. MIGLIACCIO, K. BOOTE, G. HOOGENBOOM, Department of Agricultural and Biological Engineering, The University of Florida, Gainesville, FL 32611; C. BUTTS, M. LAMB, National Peanut Research Lab, Dawson, GA 39842.	**48**
3:30 PM	**"High-Throughput Techniques to Estimate Leaf Area Index in Peanut.** **S. SARKAR*,** A.B. CAZENAVE, and M. BALOTA Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437.	**49**
3:45 PM	**Comparison of Season Long Herbicide Programs in Peanut *(Arachis hypogea)*** **K. L. BROSTER*,** J.C. FERGUSON, T. A. BAUGHMAN, and B. ZURWELLER, Plant and Soil Science Department, Mississippi State University, Mississippi State, MS 39732.	**50**
4:00 PM	**Laboratory Evaluation of Peanut Burrower Bug, Pangaeus bilineatus Say (Hemiptera: *Cydnidae*), Life Cycle and Fecundity** **B. L. AIGNER*,** M. R. ABNEY, Entomology Dept., The University of Georgia, Tifton, 31793.	**51**
4:15 PM	**Peanut Response to Metribuzin** **L.C. HAND*,** E.P. PROSTKO, Dept. of Crop and Soil Science, University of Georgia, Tifton, GA 31793-0748.	**52**
4:30 PM	**Peanut Injury Evaluation of PPO Inhibitor Herbicides as Affected by Application Timings and Surfactants** **K. PRICE*,** S. Li, Crop, Soils and Environmental Sciences, Auburn University, Auburn, AL 36849.	**53**

Evaluation of QoI Sensitivity in *Aspergillus* spp. Section Nigri from Peanut Fields in Georgia.

B. S. JORDAN, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-5766; R. S. ARIAS, ARS-USDA-National Peanut Research Laboratory (NPRL), Dawson, GA 39842; and A. K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-5766.

Crown rot, caused by *Aspergillus* spp. Section Nigri, is a highly destructive disease of peanut (*Arachis hypogaea*) seed and seedlings. Control of crown rot relies heavily on seed treatment with azoxystrobin, a quinone outside inhibitor (QoI). Loss of sensitivity has been reported in other pathosystems. Given the high dependence of azoxystrobin as seed treatment, *Aspergillus* spp. Section Nigri populations could be shifting to non-sensitive populations. In 2017, 288 isolates were collected from seed and seedlings across the state of Georgia. The field isolates were screened for the G143A and F129L mutations in the cytochrome *b* translated gene. Approximately 6 % of the isolates contained the G143A mutation and 40 % contained the F129L mutation. Isolates that contained either the G143A or F129L mutation were subjected to conidial germination assays. Isolates containing the F129L mutation showed reduced sensitivity while isolates containing the G143A mutation were completely insensitive. Data suggest a higher frequency of F129L mutations than G143A mutations in the populations in Georgia. Dependence on azoxystrobin as seed treatment may be selecting for the occurrence of F129L mutations, which can contribute to the reduced fungicide efficacy observed in the field. This work is part of a larger project that includes taxonomic identification of *Aspergillus* spp. Section Nigri isolates colonizing peanut seeds in Georgia and screening these isolates for the production of ochratoxin, mycotoxin produced by some *Aspergillus* spp. Section Nigri.

Refinement of an Aflatoxin Prediction Model Using Field and Greenhouse Data to Elucidate Physiological Mechanisms of Aflatoxin Contamination in Peanut

S. K. McAMIS*, D. L. ROWLAND, B. L. TILLMAN, Agronomy Department, The University of Florida, Gainesville, FL 32611; K. MIGLIACCIO, K. BOOTE, G. HOOGENBOOM, Department of Agricultural and Biological Engineering, The University of Florida, Gainesville, FL 32611; C. BUTTS, M. LAMB, National Peanut Research Lab, Dawson, GA 39842.

Weather, irrigation and aflatoxin concentration data collected over a twelve year period from a peanut irrigation experiment conducted at the USDA-ARS Multi-crop Irrigation Research Farm in Shellman, GA was used to evaluate the performance of the CROPGRO-Peanut-Aflatoxin module of the Decision Support System for Agrotechnology Transfer (DSSAT) crop model. The model's performance of yield and aflatoxin prediction was evaluated by using the Root Mean Square Error (RMSE), index of agreement (d-statistic) and the R^2 of plotted simulated versus observed values. DSSAT's soil temperature module was also examined and compared to the Erosion/Productivity Impact Calculator (EPIC) soil temperature module and to the daily measured soil temperature at 5 centimeters from the field. For yield, DSSAT-CROPGRO-Peanut had an R^2 value of 0.75, a RMSE of 778 kg/ha and d-statistic of 0.911. The aflatoxin model had an R^2 of 0.29 and RMSE of 11 ppb. The model predicted increases in aflatoxin concentrations only during periods of drought stress when the soil temperature was in a certain range. However, aflatoxin concentration was over predicted for small values or values of zero. In comparison to DSSAT, EPIC had inferior predictions of both soil temperature and aflatoxin concentration, indicating that the DSSAT module is the preferred option for further model development.

The aflatoxin model will be further refined using the results of an ongoing fine-scale greenhouse experiment. The effect of environmental conditions on aflatoxin contamination will be examined by using direct inoculation with *Aspergillus parasiticus* within the pod zone while tagging pod cohorts weekly and simultaneously monitoring soil moisture, soil temperature and air temperature. The effect of seed age and maturity on aflatoxin contamination will thus be examined. The current findings of this experiment will be discussed.

High-Throughput Techniques to Estimate Leaf Area Index in Peanut

S. SARKAR*, A.B. CAZENAVE, and M. BALOTA Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437.

Leaf Area Index (LAI) is the ratio of the leaf to ground area, and is an indicator for light capture and radiation use by plants. It has been associated with biomass production and yield in many crop species. Biotic and abiotic stresses can reduce the number and size of the leaves, therefore reducing the LAI, biomass production, and harvestable yield. LAI can be measured directly, which is time consuming, and indirectly using leaf reflectance properties. For example, chlorophyll absorbs light in the blue and red regions of the electromagnetic spectrum (with peaks at 460 nm and 690 nm), and reflects in the green band (with a peak at 550 nm). By measuring reflectance in these bands, LAI can be estimated in a high-throughput (HT) manner. This could be useful for the breeding programs, when fast and inexpensive estimation of LAI is required for selection. The objective of this study was to determine if red, green and blue (RGB) leaf reflectance captured aerially from an unmanned aerial vehicle (UAV) platform can be used as a HT method for LAI estimation for peanut. The RGB images were taken using a Sony® α6000 digital camera (24.3 megapixels), with the UAV flying at 20 m above the crop around 1:00 PM or 90° zenith angle. At the same time with aerial image capture, ground measurements of LAI were taken with an AccuPAR® LP-80 PAR/LAI ceptometer. Aerial and ground measurements included six replications each of 18 genotypes of peanut, Virginia and runner types, and were performed on June 19, June 22, June 29, and July 6, 2017 at approximately peanut growth stages covering beginning bloom (R1) to beginning pod (R3). Data showed that LAI measured with the light bar was logarithmically related (R^2 = 0.66) to the green to blue ratio ($550nm/450nm$) and plant pigment ratio ($550nm-450nm550nm+450nm$) measured aerially. To perform the test, approximately three hours per day was needed when using the ceptometer and about 4 minutes of flight and 10 minutes of image analysis per day when using the UAV. This shows that aerial LAI estimations from RGB images could be a useful HT technique for the breeding programs. In addition, crop biotic and abiotic stress throughout the growing season can be monitored using this technique. Further research will consider use of early season LAI and crop reflectance to predict peanut growth and development and, possibly, yield.

Comparison of Season Long Herbicide Programs in Peanut (*Arachis hypogea*)

K.L. BROSTER*, J.C. FERGUSON, T.A. BAUGHMAN, and B. ZURWELLER Plant and Soil Science Department, Mississippi State University, Mississippi State, MS 39732

Mississippi is an important producer of peanuts for the United States. In 2017 there were 17,400 hectares harvested in Mississippi (USDA NASS, 2018). Weed control in peanuts is crucial to maximize yield, by preventing interference and competition for nutrients, water, and light. Peanuts are a slow growing crop that relies on both pre-emergent (PRE) and post-emergent (POST) herbicides to reduce the effect of weeds. The objective of this study is to determine the most effective PRE and POST combination for weed control in peanut. A field study was conducted at Mississippi State University and Oklahoma State University using 5 PRE and 3 POST herbicide programs. The treatments were compared to a non-treated and weed free treatment to determine the effect of a season-long herbicide program on weed control and peanut yield. Weed control ratings were collected at 7, 14, 28, 42, and 56 days after POST. At harvest, yield data was collected to determine most effective combination for season long weed control. The data indicates that there is no statistical difference between PRE and POST combinations in terms of weed control or yield at the Mississippi location. However, at the Oklahoma location, there is difference among PRE and POST treatments in terms of weed control and yield. This can be due to differences of environmental factors among locations.

Life Cycle and Fecundity of Peanut Burrower Bug, *Pangaeus bilineatus* Say (Hemiptera: Cydnidae), in a Growth Chamber

B. L. AIGNER* AND M. R. ABNEY, Entomology Department, The University of Georgia, Tifton, 31793

The peanut burrower bug, *Pangaeus bilineatus*, is a sporadic but significant economic pest of peanut, *Arachis hypogaea* L., in the Southeast US. Both adults and nymphs cause damage directly to the peanut seed with piercing sucking mouthparts reducing seed quality and value. Although native to Texas and Mexico, this pest was largely of economic unimportance until around 2010 when the first major losses were reported in Georgia and Alabama. Little is known of the insect's biology and life cycle, therefore, a study is being conducted to determine the fecundity of female peanut burrower bugs, as well as, the time required for the bug to mature from egg hatch to imaginal ecdysis. For this study, 10 half pint sized Tupperware containers with screened lids will be used to house 10 mating adult pairs. Each container will contain 20 g of sandy loam soil, water (~15% VWC), and about 1 peanut/in^2 for feed. They will be checked daily for eggs, nymphs, and exuviae as proof of molting to differentiate stadia. Late stage nymphs will be matured to adulthood under isolation to ensure virgin status of mated pairs. Containers will be place in a growth chamber on a 14:10 L:D cycle at a constant temperature of 28°C. Based on observations from rearing this species in laboratory, we expect the development to take about a month from egg hatch to imaginal ecdysis. We also expect females to be capable of laying many eggs and have multiple reproductive events in a lifetime.

Peanut Response to Metribuzin

L.C. HAND* and E.P. PROSTKO, Department of Crop and Soil Science, University of Georgia, Tifton, GA 31793-0748.

Herbicide-resistant Palmer amaranth is one of the most problematic weeds in agronomic cropping systems in Georgia. The wide germination window of Palmer amaranth seed allows it to emerge after field corn harvest, and if left uncontrolled, can contribute significantly to the weed seed-bank causing problems in rotational crops. One option for a lay-by (in-crop) or post-harvest burndown application in field corn for postemergence and residual control of Palmer amaranth is metribuzin. However, the current rotational crop restrictions for metribuzin would prevent peanut planting for 18 months after application. Peanut tolerance to metribuzin has not been well documented. Therefore, the objective of this research was to evaluate the tolerance of peanut to metribuzin. Field studies were conducted in 2017 and 2018 in Ty Ty, GA to evaluate the tolerance of peanut to various rates of metribuzin. The soil type at this location was a Fuquay sand with 0.53-0.76% OM, 94% sand, 4% silt, 2% clay, 6.0 pH, and 3.3-3.5 CEC. 'GA-06G' peanut were planted in late April both years. In a RCBD with four replications, metribuzin was applied preemergence (two days after planting) at 0, 35, 70, 140, 280, 420, and 560 g ai ha^{-1}. The targeted application rate for a lay-by or post-harvest burndown applications in field corn is 280 g ai ha^{-1}. Treatments were applied using a CO_2-pressurized backpack sprayer calibrated to deliver 140 L ha^{-1} using 11002 AIXR nozzles. Rainfall in the first month after planting was 12.95 and 15.93 cm for 2017 and 2018, respectively. Plots were maintained weed-free using a combination of hand-weeding and labeled herbicides. Data collected included visual crop injury, peanut stand reduction, and yield. Data were subjected to nonlinear regression using log-logistic analysis to demonstrate a dose-response relationship. Year by treatment interactions were significant for peanut injury and stand reduction, so data were separated by year. However, yield loss data were pooled over years. There was a direct relationship between rate and the response variables. As metribuzin rate increased, injury, stand loss and yield loss all increased. Generally, visual injury, stand loss, and yield loss were negligible at rates less than or equal to 140 g ai ha^{-1}. With a targeted application rate of 280 g ai ha^{-1} and an estimated half-life of 30-60 days, metribuzin should have limited negative impacts on peanut grown in rotation when used in lay-by or post-harvest treatments for the prevention of Palmer amaranth seed rain in field corn.

Peanut Injury Evaluation of PPO Inhibitor Herbicides as Affected by Application Timings and Surfactants

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

Due to the prevalence of ALS-inhibitor resistant weeds such as Palmer amaranth, more PPO-inhibitors are being utilized to control weeds in peanuts. Some PPO-inhibitors, such as carfentrazone and lactofen, are often used as late-season clean up options since they have short pre-harvest interval. However, PPO-inhibitors often cause crop injury or foliar burns. This issue can be further compounded by different surfactants, application timings, and interactions with environmental stresses, especially at the peanut reproductive stages. Therefore, two studies conducted in Henry and Escambia counties in Alabama in 2018, were designed to evaluate three objectives: 1) the effect of PPO-inhibitor based treatments on dryland peanut growth and yield when applied during sensitive reproduction stages 60 (R4-R5), 75 (R6), and 90 days (R6-R7) after planting (DAP) 2) study the role of surfactants and chloroacetamide herbicides on peanut injury and 3) assess the level of correlation of NDVI data to traditional visual injury ratings. At 60 DAP, tank mixes of lactofen and 2,4-DB with pyroxasulfone, *S*-metolachlor, dimethenamid-P with high surfactant oil concentrate (HSOC), a crop oil, were applied at recommended labeled rates. At 75 DAP tank mixes of lactofen, carfentrazone-ethyl, acifluorfen plus 2,4-DB and either non-ionic surfactant (NIS) or HSOC, were applied at 1) the recommended labeled rates and 2) 1.5 times over the label rate. At 90 DAP tank mixes of 2,4-DB, carfentrazone-ethyl, lactofen were applied at the highest labeled rates with either HSOC or NIS. Visual injury ratings and normalized difference vegetation index (NDVI) readings using a hand held Trimble GreenSeeker were conducted at approximately 7, 14, 21, and 28 days after treatment. Yield was collected at the end of the growing season. Results showed peanuts are more sensitive 75 days after planting to PPO inhibitors in combination with HSOC than any other application timing. Yields losses ranged from 13-31 % with carfentrazone-ethyl 52 g ai ha^{-1} + 2,4-DB 420 g ai ha^{-1} + HSOC 0.9 % v/v causing the most significant yield loss among all treatments evaluated. For treatments applied 60 DAP, lactofen 219 g ai ha^{-1} + 2,4-DB 420 g ai ha^{-1} + *S*-metolachlor 1,700 g ai ha^{-1} + HSOC 0.75% v/v was the only chloroacetamide tank mix evaluated to cause a significant yield loss of 13% relative to NTC. Carfentrazone-ethyl at 35 g ai ha^{-1} + 2,4-DB at 420 g ai ha^{-1} + HSOC 0.75% v/v applied at 90 DAP caused a 21% yield reduction compared to the NTC. A Pearson correlation of injury ratings and NDVI readings, for all applications dates, showed a significant negative correlation ($R= -0.69$, $p<0.0001$), suggesting NDVI readings can provide additional support to subjective visual injury ratings. Overall, treatments with HSOC and/or carfentrazone-ethyl were more likely to cause significant injury, NDVI reductions as well as yield loss than treatments with NIS. Peanuts are most sensitive to injury from PPO-inhibitor herbicides at 75 days after planting (around R6 growth stage).

JOE SUGG GRADUATE STUDENT COMPETITION II

	Wednesday, July 10, 2019	
1:30-3:00 PM *Auditorium*	**Joe Sugg Graduate Student Competition II** *Moderator: R.C. Kemerait, University of Georgia*	**Page Number**
1:30 PM	**Harnessing the Wild Side of Peanuts: Morphological and Reproductive Characterization of Wild Peanut Relative-derived Synthetic Tetraploids** **C.M. LEVINSON***, Y. CHU, P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; and C. C. Holbrook Crop Genetics and Breeding Research Unit, USDA-ARS, Tifton, GA, USA.	**55**
1:45 PM	**Construction of High Density Genetic Map and Mapping Quantitative Trait Loci for Growth Habit Related Traits of Peanut (*Arachis hypogaea L.*)** **L.LI***, X.YANG, S.CUI, X.MENG, G.MU, M.HOU, M.HE, L.LIU, College of Agronomy, Hebei Agricultural University, Baoding 071001, Hebei, China and H. ZHANG, C.Y. CHEN, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 36849, United States.	**56**
2:00 PM	**Characterizing a Peanut Chromosome Segment Substitution Line Population Using High Throughput Phenotyping** **D.M. GIMODE***, Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, USA, Y. CHU, Department of Horticulture, University of Georgia, Tifton, GA, USA, S. BERTIOLI, D. BERTIOLI, Center for Applied Genetic Technologies, University of Georgia, Athens, GA, USA, C.C. HOLBROOK, United States Department of Agriculture - Agricultural Research Service, Tifton GA, USA, J. CLEVENGER, Mars Wrigley Confectionery, Athens, GA, USA , L. LACERDA, D. DAUGHTRY, W. PORTER, Crop and Soil Sciences, University of Georgia, Tifton, GA, USA, D. FONCEKA, CERAAS, Thies, Senegal and P. OZIAS-AKINS, Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, USA and Department of Horticulture, University of Georgia, Tifton, GA, USA.	**57**
2:15 PM	**A New Source of Root-Knot Nematode Resistance from *Arachis stenosperma* Incorporated into Allotetraploid Peanut *(Arachis hypogaea L.)*** **C. BALLÉN-TABORDA***, Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Athens, GA, USA; Y. CHU, P. OZIAS-AKINS, Department of Horticulture and Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, USA; P. TIMPER, C.C. HOLBROOK, USDA-ARS, Tifton, GA, USA; S.A. JACKSON, D.J. BERTIOLI, Institute of Plant Breeding, Genetics and Genomics and Department of Crop and Soil Science, University of Georgia, Athens, GA, USA; S.C.M. LEAL-BERTIOLI, Institute of Plant Breeding, Genetics and Genomics and Department of Plant Pathology, University of Georgia, Athens, GA, USA.	**58**
2:30 PM	**Early Detection of Southern Stem Rot of Peanut Utilizing Spectral Reflectance and Thermal Imaging Technologies** **X. WEI***, H.L. MEHL, D.B. LANGSTON, JR., Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.	**59**
2:45 PM	**Peanut Response to Sub-Lethal Rates of Dicamba + Glyphosate** **K. EASON***, E. Prostko, T. Grey, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA 31793-0748.	**60**
3:00 PM	**Seedling Peanut *(Arachis hypogaea)* Physiological Response to Flumioxazin** **N.L. HURDLE***, T. GREY, C. PILON, E.P. PROSTKO, W.S. MONFORT; Department of Crop and Soil Science, The University of Georgia, Tifton, GA 31793-0748.	**61**

Harnessing the Wild Side of Peanuts: Morphological and Reproductive Characterization of Wild Peanut Relative-derived Synthetic Tetraploids

C.M. LEVINSON*, Y. CHU, P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; and C. C. HOLBROOK, Crop Genetics and Breeding Research Unit, USDA-ARS, Tifton, GA, USA.

Peanut cultivar improvement is limited by peanut's narrow genetic base, yet wild peanut relatives with diverse and strong resistances can be used as donors in breeding programs. To introduce genetic resources from these wild peanut relatives into peanut breeding programs, crosses were made among A-genome wild relatives (male) with several B-genome wild relatives (female) and the genomes of these materials were then doubled to produce four different synthetic tetraploids (*IpaDur*, *IpaCor*, *IpaSten*, and *ValSten*). This study seeked to characterize these materials to assure efficient utilization of these materials when they are released to breeding programs. Therefore, selfed seed from these synthetic tetraploids along with two peanut breeding lines, and F_1 progeny made from crosses between the breeding lines and one synthetic tetraploid (*IpaCor*), were grown in the field in a randomized complete block design. Morphological and reproduction characterization included flower measurements (hypanthium area, banner area and pigment absorption, wing area, and biweekly flower counts), main stem height, average internode length on primary laterals, reproductive vs. vegetative node ratio, plant body weight, leaf measurements (area, dry and fresh weight, and pubescence density), and pod and seed measurements (presence/absence of seed beak, 100 pod and seed weight, and pod and seed count). For most traits, one or more synthetic tetraploid was significantly different from one or both of the cultivated lines. In general, synthetic tetraploids had larger flowers, longer average internode lengths on primary laterals, greater leaf pubescence density, and smaller seeds than peanut breeding lines. These traits should be considered when using these materials in breeding programs to assure maximum effectiveness of breeding efforts.

Construction of High Density Genetic Map and Mapping Quantitative Trait Loci for Growth Habit Related Traits of Peanut (*Arachis hypogaea* L.)

L.LI*, X.YANG, S.CUI, X.MENG, G.MU, M.HOU, M.HE, L.LIU, College of Agronomy, Hebei Agricultural University, Baoding 071001, Hebei, China and H. ZHANG, C.Y. CHEN, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 36849, United States.

Plant growth habit is an important and complex agronomic character, which is associated with yield, disease resistance, and mechanized harvesting in peanuts. There are at least two distinct growth habits (erect and prostrate) and several intermediate forms existing in the peanut germplasm. A recombinant inbred line (RIL) population containing 188 individuals was developed from a cross of 'Jihua 5' and 'M130' for genetically dissecting the architecture of the growth habit. A new high-density genetic linkage map was constructed by using specific locus amplified fragment sequencing (SLAF-seq) technology. The map contains 2,808 SNP markers distributing on 20 linkage groups (LGs) with a total length of 1308.20 cM and an average inter-marker distance of 0.47 cM. The QTL analysis of the growth habit related traits was conducted based on 7 environments phenotyping data. A total of 39 QTLs for growth habit related traits were detected on 10 chromosomes explaining 4.55% to 27.74% of the phenotypic variance, in which 6 QTLs were for lateral branch angle (LBA), 8 QTLs were for extent radius (ER), 7 QTLs were for the index of plant type (IOPT), 11 QTLs were for main stem height (MSH), and 7 QTLs were for lateral branch length (LBL). Among these QTLs, 12 were co-localized on chromosome B05 spanning approximately 6kb physical interval in comparison with allotetraploids reference genome of 'Tifrunner'. Analysis of the co-localized genome region has shown that the putative genes are involved in light and hormones, which will facilitate peanut growth habit molecular breeding and study of peanut domestication.

Characterizing a Peanut Chromosome Segment Substitution Line Population Using High Throughput Phenotyping

D.M. GIMODE*, Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, USA, Y. CHU, Department of Horticulture, University of Georgia, Tifton, GA, USA, S. BERTIOLI, D. BERTIOLI, Center for Applied Genetic Technologies, University of Georgia, Athens, GA, USA, C.C. HOLBROOK, United States Department of Agriculture - Agricultural Research Service, Tifton GA, USA, J. CLEVENGER, Mars Wrigley Confectionery, Athens, GA, USA , L. LACERDA, D. DAUGHTRY, W. PORTER, Crop and Soil Sciences, University of Georgia, Tifton, GA, USA, D. FONCEKA, CERAAS, Thies, Senegal and P. OZIAS-AKINS, Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, USA and Department of Horticulture, University of Georgia, Tifton, GA, USA.

Currently, high throughput genomics aided breeding is being tested in peanut research. This has been facilitated by the recent development of high quality genomic resources, a phenomenal feat considering the genetic heritage of cultivated peanut. Its recent polyploidization, self-pollinating breeding system, and domestication bottleneck have resulted in a crop with reduced diversity. To harness polymorphism from its wild relatives, a chromosome segment substitution line (CSSL) population was created via the tetraploid route to interspecific hybridization. The 58K and 48K peanut Affymetrix SNP chips were used to characterize the genetic makeup of the population. To associate the genotypic differences with specific traits, phenotype data was manually collected in 2017. In 2018, field based high throughput phenotyping (HTP) techniques were deployed to alleviate some of the drawbacks of manual phenotyping such as labor and time intensiveness. Sensors mounted on an unmanned aerial vehicle (UAV) were used to acquire data on various vegetative indices as well as canopy temperature. A combination of aerial imaging and manual scoring showed that CSSL 100, CSSL 84, CSSL 111 and CSSL 15 had remarkably low *tomato spotted wilt virus* (TSWV) incidence, a devastating disease in South Georgia. CSSL 100, CSSL 84, and CSSL 111 also performed well under early leaf spot (ELS) pressure. The vegetative indices strongly correlated with the disease scores, indicating that aerial phenotyping is a reliable way of selecting under disease pressure. In addition to being potentially resistant to foliar diseases, the latter three lines also had high plot pod yields comparable to the cultivated check Tifguard. Using a CSSL population, this study has enabled us to propose that chromosome segments from peanut wild relatives may be a potential source of valuable agronomic traits.

A New Source of Root-knot Nematode Resistance from *Arachis stenosperma* Incorporated into Allotetraploid Peanut (*Arachis hypogaea*)

C. BALLÉN-TABORDA, Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Athens, GA, USA; Y. CHU, P. OZIAS-AKINS, Department of Horticulture and Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, USA; P. TIMPER, C.C. HOLBROOK, USDA-ARS, Tifton, GA, USA; S.A. JACKSON, D.J. BERTIOLI, Institute of Plant Breeding, Genetics and Genomics and Department of Crop and Soil Science, University of Georgia, Athens, GA, USA; S.C.M. LEAL-BERTIOLI, Institute of Plant Breeding, Genetics and Genomics and Department of Plant Pathology, University of Georgia, Athens, GA, USA.

Root-knot nematode is a very destructive pathogen, to which most peanut cultivars are highly susceptible. Strong resistance is present in the wild diploid relatives. Previously, QTL controlling nematode resistance were identified on chromosome A02, A04 and A09 of *Arachis stenosperma*. Here, to study the inheritance of these resistance alleles within the genetic background of tetraploid peanut, an F_2 population was developed from a cross between peanut with an induced allotetraploid that incorporated *A. stenosperma*, [*Arachis batizocoi* x *A. stenosperma*]^{4x}. This population was genotyped using a SNP array and phenotyped for nematode resistance. QTL analysis allowed us to verify the major-effect QTL on chromosome A02, where a TIR-NBS-LRR rich region is present, and a secondary QTL on A09, each contributing to a percentage reduction in nematode multiplication up to 98.2%. In order to incorporate RKN resistance from *A. stenosperma* into peanut cultivars, F_3 lines (derived from the population described above) were firstly selected base on SNPs linked to the resistance and good agronomic traits; and secondly, they have been crossed and backcrossed with several peanut lines. Phenotypic screening for resistance and genotypic characterization of BC_2F_1 lines allowed us to confirm the genomic regions that confer resistance. Currently, high-throughput genotyping of 272 advanced backcrossed lines (BC_3F_1) is in progress, and lines harboring the resistance alleles and that have recovered most of the recurrent genome will be selected. These lines that incorporate strong RKN resistance and the markers tightly-linked to this trait, represent a valuable tool for introgression of nematode resistance into elite peanut genetic backgrounds. I believe that this work will significantly impact peanut production in RKN affected areas.

Early Detection of Southern Stem Rot of Peanut Utilizing Spectral Reflectance and Thermal Imaging Technologies

X. WEI*, H.L. MEHL, D.B. LANGSTON, JR., Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.

Southern stem rot (SSR), caused by *Sclerotium rolfsii* Sacc., is one of the most important soilborne diseases of peanut (*Arachis hypogaea* L.). Deep turning and crop rotation can both reduce losses to SSR, but often multiple applications of fungicides during the growing season are needed to provide adequate control. Fungicides can be applied on a calendar schedule or once disease symptoms and signs are noticed, but calendar sprays are often confounded by year-to-year differences in host and environmental factors and applying fungicides after disease onset can result in poor fungicide performance. Spectral reflectance and thermal imaging have been reported for the early detection of foliar diseases, but few studies have employed these technologies to detect soilborne diseases. Our objectives were to, i) identify spectral and thermal signatures of peanut infected with *S. rolfsii*, ii) determine the earliest time that SSR can be detected via spectral reflectance and thermal imaging.

In greenhouse experiments, *S. rolfsii* inoculated, and mock-inoculated lateral stems of peanut were inspected daily for disease symptoms, and measurements were taken with a Jaz spectrometer and forward-looking infrared (FLIR) camera to detect spectral reflectance and plant surface temperature, respectively. Foliar symptoms such as wilting of terminal leaflets were first observed approximately 1 week after inoculation. Reflectance spectra for leaflets on inoculated and mock-inoculated stems differed in both visible and near-infrared regions. Reflectance at 550 nm and 790 nm was used to calculate a spectral disease index of SSR (SSRI). About three days after first observation of foliar symptoms, inoculated stems demonstrated lower SSRI values and higher leaf temperatures compared to mock-inoculated stems. Results indicate signatures of SSR in peanut can be detected during early stages of symptom expression using spectral reflectance and thermal imaging technologies, and these signatures of SSR may have applications for early disease detection in the field.

Peanut Response to Sub-Lethal Rates of Dicamba + Glyphosate

K. EASON*, E. PROSTKO, T. GREY, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA 31793-0748.

In Georgia, peanut and cotton are grown in close proximity, meaning off-target movement of herbicides is a major concern. Previous research has established peanut tolerance to single exposure occurrences of dicamba or glyphosate; however, there is limited research available for multiple exposure events of dicamba in combination with glyphosate. Therefore, experiments were conducted to evaluate the response of runner-type peanut (*Arachis hypogaea* L.) to multiple sub-lethal rate applications of dicamba + glyphosate tank-mixtures. In 2018, a field experiment was conducted in Ty Ty, GA using the 'Georgia-06G' cultivar. Treatments included herbicide applications at 1/50thX rates of dicamba (Xtendimax® with Vapor Grip) + glyphosate (Roundup PowerMax®) applied at 30 days after planting (DAP), 60 DAP, 90 DAP, and all possible combinations of DAP. Visual stunting injury, dicamba symptomology, yield, grade, seed germination, seed size, and pod abnormalities were evaluated and analyzed. At 39 DAP, all treatments receiving a 30 DAP application had greater stunting (10%) than all other timings (0%). By 69 DAP, there were no differences in stunting between timings. Typical dicamba injury symptoms (stem epinasty, leaf strapping, and leaf roll) were observed from 39 to 108 DAP. Initially, treatments receiving a 30 DAP application showed greater dicamba symptoms than the other timings By 108 DAP, only peanuts receiving 90 DAP applications exhibited dicamba symptoms. No effects on peanut yield were observed. However, grade (% sound mature kernels) was reduced (2.6-3.0%) from applications at 60 and 60 + 90 DAP. No effects on seed germination, seed size, or pod abnormalities were observed.

Seedling Peanut (*Arachis hypogaea*) Physiological Response to Flumioxazin

N.L. HURDLE*, T. GREY, C. PILON, E.P. PROSTKO, W.S. MONFORT; Department of Crop and Soil Science, The University of Georgia, Tifton, GA 31793-0748

Over 50% of U.S. peanut production can be credited to Georgia. The growing season for peanut can extend up to 150 days, it is essential to manage weeds in such a manner as to achieve maximum yield potential. This includes applications of PRE herbicides. Numerous PRE herbicides are registered for peanut including pendimethalin, diclosulam, and flumioxazin. Emerging peanuts will inevitably come into contact with these PRE applied herbicides. A study was performed in Ty Ty and Plains, GA in order to record the physiological effects of emerging peanut to PRE herbicides. A 3x2 factorial RCBD comprising of 3 herbicide treatments and 2 seedling germination rates with 4 replications was utilized at both locations in the 2018 growing season. Treatments included a nontreated control, 107 g ai ha^{-1} of flumioxazin PRE, and diclosulam at 27 g ai ha^{-1} PRE. All plots received an application of pendimethalin at 4480 g ai/ha. Physiological measurements included photosystem II efficiency, photosynthesis, and electron transport using a Li-COR 6800 to record these measurements. Peanut stand counts and diameter measures were also recorded. Data was analyzed by location in SAS 9.4. Both Ty Ty and Plains had treatment differences in electron transport, but no trend was noted. Plains also had a difference in treatment by seed vigor. Intercellular CO_2 differences were noted in Ty Ty by plant date and by seed vigor. Plains had no differences in intercellular CO_2. PRE applications of flumioxazin do affect emerging peanuts physiologically, but are not detrimental to early crop growth with no differences in stand establishment and early season growth.

JOE SUGG GRADUATE STUDENT COMPETITION III

	Thursday, July 11, 2019	
8:00-10:00 AM *Auditorium*	**Joe Sugg Graduate Student Competition III** *Moderator: R.C. Kemerait, University of Georgia*	**Page Number**
8:00 AM	**The Influence of Digging Date on Fatty Acid and Tocopherol Expression in Normal and High-Oleic Virginia Peanut Varieties 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 Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695.	**63**
8:15 AM	**Development of a Web-Based Platform to Monitor Crop Stress in Peanuts Throughout the Growing Season.** **S. E. PELHAM*,** W. S. MONFORT, and V. LIAKOS, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.	**64**
8:30 AM	**Determining the Impact of Planting Pattern on Water-use Efficiency of Peanut** **N. SINGH*,** M.Y. LECLERC, G. ZHANG, Crop and Soil Sciences Department, University of Georgia, Griffin, GA 30223; R.S. TUBBS and W.S. MONFORT, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.	**65**
8:45 AM	**Peanut Immaturity Could be a Stress Event Affecting Seedling Vigor Across Generations** **Y. SONG*,** D. L. ROWLAND, J. E. ERICKSON, Agronomy Department, The University of Florida, Gainesville, FL 32611; and B. L. TILLMAN, North Florida Research and Education Center, Agronomy Department, University of Florida, Marianna, FL 32446.	**66**
9:00 a.m.	**Effect of Fungicide Programs on Plant Health, Maturity, Yield, and Quality on Peanut in Georgia** **M. STUART*,** W.S. MONFORT, C. PILON, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.	**67**
9:15 AM	**Determining the Effect of Prohexadione Calcium Growth Regulator on the Growth and Yield of Peanuts (Arachis hypogaea) in Mississippi** **Z.R. TREADWAY*,** J. C. FERGUSON, J. T. IRBY, B. ZURWELLER, Mississippi State University, Mississippi State, MS; J. GORE, Mississippi State University, Stoneville, MS.	**68**
9:30 AM	**Peanut Seed Germination and Seedling Emergence as Affected by Storage Conditions** **C.C. WEAVER*,** W.S. MONFORT, C. PILON, T.L. GREY, R.S. TUBBS. Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.	**69**

The Influence of Digging Date on Fatty Acid and Tocopherol Expression in Normal and High-Oleic Virginia Peanut Varieties 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 Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695.

Due to the indeterminant growth of the peanut crop, there can be a wide range of maturity within pods on individual plants at the time of harvest. For high-oleic (HO) cultivars, this wide range in maturity can be the difference between a farmer harvesting peanuts that are expressing the HO trait and peanuts that are not. This study explores the expression of fatty acid and tocopherol content in three HO (Emery, Sullivan, and Wynne) and one normal-oleic (NO) (Bailey) Virginia peanut varieties. Two fields were planted in Lewiston-Woodville, NC in a randomized complete block design with four replications. One field was planted in mid-May and harvested four times throughout the season at approximately 110, 120, 130, and 140 days after planting. The second field was planted in early June with harvest dates at approximately 100, 110, 120, 130, and 140 days after planting. After fields were harvested, pods were hand-picked off plants and the hull scrape method was used to determine maturity of individual pods. Color-sorted pods were then dried using ambient air temperature prior to being used for analytical testing.

Data collected included percent maturity (as determined by color) per plot, whole pod and seed weights, total oil content, fatty acid, and tocopherol expression. The results suggest that although immature pods were shown to have reduced amounts of overall total oil content and fatty acid expression, some of the pods from the HO cultivars were still found to exhibit the required 9:1 oleic to linoleic fatty acid ratio to be considered HO. The impact of early digging dates on overall peanut yield was not apparent, but the reduced mass of peanut crop associated with an early digging date may have negative economic impacts on the farmer.

Development of a Web-Based Platform to Monitor Crop Stress in Peanuts Throughout the Growing Season.

S. E. PELHAM*, W. S. MONFORT, and V. LIAKOS, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.

The Peanut Health Network is a web-based peanut (*Arachis hypogaea* L.) management support system built to assess plant health throughout the growing season using Peanut Rx as an initial monitor of risk. The purpose of the Peanut Health Network is to help peanut growers in Georgia understand how stresses throughout the season influence yield and grade across their farm and within a select field. Factors that lead to stress include (but are not limited to) water, initial disease risk, disease management, and production decisions. The grower can set up a farm and input initial factors for each field such as variety, planting date, row pattern, and crop rotation to determine their initial risk. Throughout the season the grower can also input management decisions like irrigation and fungicides applied to the crop. Along with the grower inputs, meteorological data from weather stations and vegetative indices derived from satellite imagery will be utilized to determine and monitor plant stress throughout the season. By compiling this information, a map at harvest can be developed for each field to assist in identifying healthier areas in the field and sections where yield and quality may be lower. The Peanut Health Network was used to follow the health of three fields in Coffee county during the 2018 growing season and a harvest map was created from the information. Pearson's correlation coefficients comparing mean near infrared values for each zone versus yield averaged 0.50 and comparing mean near infrared to total sound mature kernels averaged 0.77. These results show that by following the stresses in a field throughout the season and harvesting zones independently growers can increase overall quality of their crop. The Peanut Health Network is beneficial to growers as well as to industry by making informed management decisions during the season and at harvest resulting in the highest quality crop possible for his/her farm and for the consumer.

Determining the Impact of Planting Pattern on Water-use Efficiency of Peanut.

N. SINGH*, M.Y. LECLERC, G. ZHANG, Crop and Soil Sciences Department, University of Georgia, Griffin, GA 30223; R.S. TUBBS and W.S. MONFORT, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.

Peanut is a major crop in the southeast USA with Georgia producing more than 49% of all U.S. peanut in recent years. Drought is common in the Southeast and with rapid urban development in Georgia competing for water resources. It is vital to study the water-use efficiency of peanut. Peanut is generally grown in single-row and twin-row planting patterns. Yield, disease resistance and market grade advantages of twin-row over single-row has been well documented, yet little information is available regarding water-use efficiency differences between single- and twin-row peanut production. The main objective of this study is to compare the water-use efficiency for single- and twin-row planted peanut using the eddy-covariance method. The other objectives are to compare yield, number of pods per plant, and weight of pods per plant. Data were collected in 2016 and 2018 and analyzed for different growth stages of peanut. The eddy-covariance data were analyzed for different growth stages of peanut. In 2016, no significant difference was observed in yield, the number of pods per plant, or weight of pods per plant between single- and twin-row planting. Conversely, in 2018, twin-row had significantly greater yield by 20%, number of pods per plant by 11.9 %, and weight of pods per plant by 12.2%. The difference between both years lies in the far greater precipitation during 2018 compared to 2016. For analysis and comparison of eddy-covariance data, peanut growing period was divided into the vegetative stage, the stage beginning bloom to full seed, and the stage after beginning maturity. In 2016, water-use efficiency of twin-row was higher than single-row in the vegetative stage and beginning bloom to full seed stage by 30.97% and 12.9% respectively. However, after beginning maturity stage, the water-use efficiency of single-row was significantly higher than twin-row by 10.7%. This may have caused by the reported minimal precipitation during this period. In 2018, water-use efficiency was reported to be significantly higher in the beginning bloom to full seed stage and after beginning maturity stage by 9.1% and 8.8% respectively. The results of both years indicate that the water-use efficiency of twin-row is greater than single-row for the beginning bloom to full seed stage. This period includes flowering and pod filling stages which are very critical to the yield of peanut. This study points out that water-use efficiency could be one of the factors supporting the known advantages of growing twin-row over single-row over yield, disease resistance and market grade.

Peanut Immaturity Could be a Stress Event on Seedling Vigor Throughout Generations

Y. SONG*, D. L. ROWLAND, J. E. ERICKSON, Agronomy Department, The University of Florida, Gainesville, FL 32611; and B. L. TILLMAN, North Florida Research and Education Center, Agronomy Department, University of Florida, Marianna, FL 32446.

Current research is now elucidating that optimal seed maturity is critical for agronomic production because immature seed often lacks vigor characteristics that are essential for successful stand establishment. Despite these new revelations, the effects of seed maturity on vigor and quality of seeds across subsequent generations are under-investigated. We hypothesize that mature seeds will produce more vigorous seed, which can perform better physiologically and lead to optimal maturity of their offspring. To investigate this hypothesis, research was conducted over three generations (G1, G2, and G3) of seed varying in maturity from two cultivars (FloRun™ '107' and TUFRunner™ '727'). Determination of the maturity of source seed was accomplished through separation based on mesocarp color, with yellow hull mesocarp seed considered as immature, while black or brown hull mesocarp seed considered as mature. Starting with the G2 pods, seed was separated according to both parental (G1) and current (G2) pod maturity; when G3 pods were harvested, effects of grandparental (G1), parental (G2) and current (G3) pod maturity could be evaluated. These effects were evaluated using both seedling vigor bioassays and a field experiment.

A grandparental (G1 by G3) and a parental (G2 by G3) "maturity memory" were observed in G3 bioassays. A parental (G1 by G2) memory was found in both G2 and G3 bioassays, but this effect was dependent on variety. No effect of maturity memory was found in the G2 field experiment. All the patterns indicated that the current generation mature seeds with a mature generational history performed better than the mature seeds under an immature generational history. However, the vigor of seeds with a mature generational history was more negatively affected by immaturity compared to the seeds with an immature generational history. These results implied that when the seeds experienced a generational history of immaturity, a "compensating effect" may be occurring in the immature offspring. This compensation related to maturity memory may have similar responses as exposure to an abiotic stress event. Thus, these results indicate that the biochemical and biophysical modifications of immature seed could be considered as a generational "stress" event affecting the early vigor. These results also confirm that maturity memories are impacted by cultivar, such that some cultivars are more "susceptible" to immaturity.

Effect of Fungicide Programs on Plant Health, Maturity, Yield, and Quality on Peanut in Georgia

M. STUART*, W.S. MONFORT, C. PILON, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.

Peanut (*Arachis hypogaea* L.*)* plants are susceptible to a wide spectrum of diseases during the growing season. Various fungicides have been used to provide control for these diseases. Implementing sound fungicide programs is essential to keep peanut plants healthy and protect yield; however, information on the effects that commercially-available fungicides have on pod maturity and quality of peanut is scant. In 2018, a field experiment was conducted on the University of Georgia Ponder Farm in Tifton, GA and at a grower's non-irrigated field to determine the effects of different fungicide programs on pod maturity, yield, and quality of two peanut cultivars across four harvest dates. Fungicide programs consisted of a low-input control utilizing Bravo Weather Stik (chlorothalonil), Bravo Weather Stik plus Tebuconazole, and Elatus (azoxystrobin, Solatenol). The two cultivars evaluated were Georgia-06G and Georgia-09B. The four harvest dates were determined by adjusted growing degree day units of 2400, 2500, 2600, and 2700 GDD's. All treatments were replicated four times and arranged in a randomized complete block design. Leaf spot occurrence was recorded 113 DAP and at the digging of each harvest date. Tomato spotted wilt virus and southern stem blight were also assessed prior to harvest. Pods samples were collected and assessed for maturity, yield, and grade at each of the four harvest dates. The pods from each harvest date was saved and stored. Each bag was shelled, and seeds were sorted, placed into seed bags, and placed back in storage. Germination samples were taken from the shelled seed of each harvest date and sent to the Georgia Department of Agriculture for testing. Preliminary analysis of the results suggested that fungicide programs influenced yield and the overall health of the crop throughout the growing season. The Elatus program seemed to provide higher disease control than the two other fungicide programs, resulting in higher yield and lower disease incidence. Harvest date resulted in variations among grade, maturity, and disease severity, and 2500 GDD indicated to be the most suitable for a high yield and low disease incidence. At the irrigated location, fungicide programs had no effect on germination and cold germination tests. Harvest date did prove to have an influence on both, showing significantly decreased rates of germination by the fourth harvest date. At the non-irrigated location, the Elatus and Bravo plus Tebuconazole programs had significantly higher cold germination rates than the Bravo only program.

Determining the Effect of Prohexadione Calcium Growth Regulator on the Growth and Yield of Peanuts (*Arachis hypogaea*) Mississippi

Z. R. TREADWAY*. J. C. FERGUSON,, J. T. IRBY, B. ZURWELLER, Mississippi State University, Mississippi State, MS J. GORE, Mississippi State University, Stoneville, MS

The use of prohexadione calcium growth regulators among peanut (*Arachis hypogaea*) producers has become a common practice. The use of this foliar applied growth regulator is responsible for reducing unnecessary vegetative growth, while increasing reproductive growth, therefore, increasing pod yield. Prior research has proven that the use of prohexadione calcium is successful in increasing peanut yields. The problem faced by producers is finding the “perfect rate” of prohexadione calcium to apply. Previous research has found that highest yields resulted when rates below the full label rate were applied at these two growth stages. Current labeled recommendations call for a blanket rate to be applied to peanut when 50% of vines touch in the centers of the row and again at 100% vines touching.

Research was undertaken to better assess improved methods to determine optimal prohexadione calcium rates applied to peanut. To determine the optimal rates applied to Georgia 06-G and TUF Runner 297, methods including growth rate measurements, growing degree days (GDD) and the use of a Crop Circle NDVI sensor were undertaken. The methodology to determine rates will be presented and yields will help to confirm the rates applied during this study. The measurement of vine density will be an accurate representation of the need for an application of prohexadione calcium to combat the excessive growth of unnecessary vegetation. It is expected that these methods can be easily used by a grower to apply optimal rates of prohexadione calcium to result in maximum yield and return on investment. Based on the methods developed in this study, guidelines will be released to be implemented for the 2020 growing season.

Peanut Seed Germination and Seedling Emergence as Affected by Storage Conditions

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

High germination and vigor of peanut seeds are important constituents to overall successful peanut production. Exposure of seeds to unfavorable conditions of temperature and relative humidity (RH) over time can result in loss of germination and vigor. The objective of this experiment was to determine the differences in seed germination and emergence of runner-type peanut seed when stored in different conditions across a broad range of temperatures and RH. Three storage environments were evaluated in this study. Two storage environments had extreme diurnal fluctuations in temperature (12-46 °C) and RH (33-85%). These environments were compared to a consistent temperature (18-27 °C) and RH (42-54%) environment. Seeds from the cultivar GA-06G were maintained in each respective storage environment for 72 days. Seeds were then removed from the storages and maintained in a cold room until germination and vigor measurements were taken. Seed germination and vigor were evaluated using a thermal gradient table with temperature ranges of 13 to 32.5 °C. Seeds were placed in Petri-dishes and incubated for a total of 7 days. The number of germinated seeds were counted daily up to five consecutive days starting on day three. In addition, seedling emergence was evaluated by planting seeds from each storage condition in pots in two growth chambers under different temperatures. Temperatures of 18 to 24 °C and 21 to 29 °C were established as the two temperature regimes to simulate an early planting and an optimum planting. Emergence was recorded daily from 5 to 18 days after planting (DAP). Storage environment affected peanut seed germination on the thermal gradient table. Seeds that experienced the higher diurnal temperatures and RH had the lowest germination percentages. Seeds stored in more consistent conditions of temperature and RH had the highest germination percentage throughout the storage duration. Emergence of seedlings grown under controlled environments were significantly affected by chamber temperature regime from 6 to 10 DAP, with higher emergence in pots grown under 21-29 °C. From 9 to 12 DAP, emergence was significantly affected by temperature regime and storage, with higher emergence in pots grown under 21-29 °C. From 12 to 18 DAP, storage condition significantly affected emergence, with higher emergence in pots grown under 21-29 °C. Seeds planted in suboptimal temperature conditions will affect emergence, but overall emergence was significantly affected by storage. This study suggested that storage conditions with extreme diurnal fluctuations of temperature and RH negatively affect seed germination, vigor and seedling emergence when compared to more consistent storage conditions.

PEANUT BREEDING, BIOTECHNOLOGY & GENOMICS I

Table of Contents Continues on Next Page

	Wednesday, July 10, 2019 *(Continued)*	
1:30-3:30 PM	**Peanut Breeding, Biotechnology & Genomics I**	**Page Number**
Terrace Room	*Moderator: Phat Dang, USDA-ARS-NPRL*	
3:15 PM	**A Major Seed Size QTL on Chromosome A05 of a Peanut Cultivar is Conserved in the U.S. Mini Core Germplasm Collection** **Y. CHU*,** P. OZIAS-AKINS Horticulture Department, University of Georgia Tifton Campus, Tifton, GA 31793; P. CHEE Department of Crop and Soil Sciences, University of Georgia Tifton Campus, Tifton, GA 31793; T. G. ISLEIB Department of Crop Science, North Carolina State University, P.O. Box 7629, Raleigh, NC 27695; C. C. HOLBROOK USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.	**79**

Resolving Genes for White Mold Resistance in Peanut Using Large-population QTL-seq Coupled with Iterative Genotyping (iQTL-seq)

J. N. VAUGHN*, USDA-ARS, Athens, GA 30601; W. KORANI, University of Georgia, Athens, GA 30601; and J. C. CLEVENGER, Mars-Wrigley Confectionary, Athens, GA 30601.

Gene-level mapping of semi-quantitative traits, such as white mold resistance in peanut, requires substantial effort and time but has numerous benefits in the post-genomic, post-CRISPR era. QTL-Seq uses classical bulk segregant analysis and next generation DNA sequencing to identifying associations between genomic loci and phenotypes. By accommodating large populations, QTL-Seq offers the possibility of achieving gene discovery in a single cross. We use extensive simulation to further explore if applying an iterative amplicon-design step (iQTL-seq), first proposed in mutation mapping, would allow more genetic resolution at a lower cost. We find that at a cost comparable or lower than 70x resequencing of the bulked pools, iQTL-seq delivers 4-fold improvement in resolution on average and locates QTLs to within ~75 kb (median) of the causal variant. Moreover, the methodology can be applied in the F2 advancement stage, suggesting gene level mapping for oligogenic traits within 1 to 2 years. We also describe the software package developed for broad-scale application of the technique.

QTLs for Leaf Spot Resistance, Yield, and Maturity in an Interspecific Peanut Introgression Population in West Africa and Texas using KASP Markers.

T. K. TENGEY, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409 USA, and CSIR-Savanna Agricultural Research Institute, Nyankpala, Ghana; C. E SIMPSON, Texas A&M AgriLife Research, Stephenville, TX 76401 USA; N. DENWAR, CSIR-Savanna Agricultural Research Institute, Nyankpala, Ghana; P. SANKARA, Département de Biologie Végétale et Physiologie Végétale, Université Ouaga I Prof Joseph Ki-Zerbo, Ouagadougou, Burkina Faso; A. HILLHOUSE, Department of Veterinary Pathobiology, Texas A&M University, College Station, TX 77843 USA; V. MENDU, Fiber and Biopolymer Research Institute, 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 USA.

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 resulted in isolation of individual lines having high oil contents, resistance to leaf spot disease, root-knot nematodes, and rust. Genome-specific SNP-based markers were designed and used to make a genetic map from 63 BC_1 individuals for making a genetic map using KASP markers, and genotypes of 317 BC_3F_6 individuals from this population were obtained on the Fluidigm Biomark system. Phenotypic evaluation was performed in Ghana, Burkina Faso, and Texas. QTLs were identified for resistance to early leaf spot, late leaf spot, and rust. Several QTLs were consistent across environments while others were environment-specific. Additional QTLs were identified for yield and maturity. It is expected that resistant accessions and markers will be useful for marker-assisted breeding, to introgress resistance into suitable agronomic backgrounds.

Natural Mutations in Peanut Genomes Involved in Nodulation.

Z. PENG, H. ZHOU, L. TAN, **J. WANG*,** Agronomy Department, University of Florida, Gainesville, FL 32611.

Understanding the genetic and molecular mechanisms of peanut nodulation will not only reveal novel insights into nodule organogenesis, but also will provide the bases for improving peanut nitrogen fixation efficiency. Though map-based cloning and QTL-seq approach, we discovered a pair of homoeologous gene of transcription factor controlling nodulation in peanut and exhibiting non-Mendelian and Mendelian inheritance, respectively. Overexpression and complement test of this pair of genes validated their function in governing peanut nodulation. This pair of homoeologous gene were complementary to each other. The expression patterns of genes upstream or downstream of these genes during nodule organogenesis in peanut were different from that in model legumes, implying a different regulation mechanism of nodulation in peanut. Genotyping peanut mini core collection indicated that much more loss of function mutations on the gene copy on B sub-genome (13%) than on the copy on A sub-genome (4%) exit in the natural germplasm. To date, this is the first report of identification and cloning of a nodulation gene in the symbiosis signaling pathway in polyploidy legume crops. Our findings provided implications and insights into the evolution of homoeologous genes between sub-genomes in allopolyploid species.

Development of a Suitable Gene Editing System in Peanut

S. TRAORE*, X. MA, C. LEE, G. HE, Tuskegee University, Tuskegee, AL 36088; D. WRIGHTS, A. NEELAKANDAN, M. SPALDING, Iowa State University, Ames, IA 50011.

Peanut (*Arachis hypogaea* L) is an important economical crop belonging to the Fabaceae family. As a legume, peanut is grown in the tropic and subtropics region of the world. In 2016, the world production was estimated at 44 million tones. Peanut seed is rich in fatty acid, high content of oleic acid have been found to be more desirable and nutritious for human consumption and health. The conversion from oleic acid to linoleic is catalyzed by the fatty acid desaturase 2 (FAD2) enzyme. Our aim is to decrease the content of linoleic acid and increase the content of oleic acid of peanut oil by gene editing. This study would allow us to better understand the expression, regulation and mechanism of *FAD2* gene. Designation of the suitable CRISPR/Cas9 system will not only for editing on *FAD2* gene but also for other desirable genes of interest. The coding as well as the promoter sequences of the *FAD2* have been analyze, several gRNA have been designed targeting at promoter region for repression of gene expression, while others gRNA have been targeting on the coding region for disruption of gene with insertion/deletion. Furthermore, we investigated the functionality of different constructs by developing protoplast, yeast, hairy root, and infiltration systems. Our testing results selected several functional constructs that are used in tissue culture to develop peanut lines with improved oil quality.

GWAS and Co-expression Network Reveal Ionomic Variation in Peanut

H. ZHANG*, T. JIANG, and C.Y. CHEN, Crop Soil & Environmental Sciences, Auburn University, Auburn, AL, 36849; M.L. WANG, USDA-ARS, Plant Germplasm Resource Conservation Unit, Griffin, GA 30223; P.M. DANG, USDA-ARS National Peanut Research Lab, Dawson, GA 39842.

Peanut is an important legume providing products with nutrient dense including mineral nutrition. However, the genetic basis underlying the variations in the mineral composition in peanut is still unknown. A genome-wide association studies (GWAS) of the concentrations of 13 mineral elements combine with co-expression network were performed using a diverse panel of 120 U.S. peanut mini core collections cultivated in two years to study genetic variation in peanut ionome. A total of 36 significant quantitative trait loci (QTLs) associated with 5 elemental concentrations were identified with phenotypic variation explained (PVE) from 18.35% to 27.56%, in which 24 QTLs for boron (B), 2 QTLs for copper (Cu), 6 QTLs for sodium (Na), 3 QTLs for sulfur (S), and 1 QTL for zinc (Zn). Of the 36 major QTLs, 21 were located on the B sub-genome and 15 were on the A sub-genome, which suggested that the B sub-genome has more ionome related genomic regions than the A sub-genome. A total of 114 non-redundant candidate causal genes were identified significantly associated with elements accumulation, which include one high-priority overlap (HPO) candidate gene *arahy.KQD4NT* and it is an important elemental/metal transporter gene located on LGB04 with position 5,413,913-5,417,353. The QTLs and candidate genes obtained from this study provide insight into the genetic basis of peanut seed elemental accumulation and will be useful in breeding peanut with mineral nutrition.

Gene Expression in the Interaction between *Aspergillus* and an Aflatoxin-Resistant Peanut Germplasm

A.N. MASSA*, R.S. ARIAS, V.S. SOBOLEV, M.C. LAMB, National Peanut Research Laboratory, Agricultural Research Service, United States Department of Agriculture, Dawson, GA 39842, United States

This study explores the seed-*Aspergillus* interaction that leads to aflatoxin accumulation. Gene expression changes in peanut seeds and *Aspergillus flavus* at early hours of infection, as well as seed viability and aflatoxin accumulation after 72 h were evaluated. A simultaneous RNA sequencing approach was used to capture both seed and pathogen specific transcripts. The experiments were performed on two aflatoxin-resistant genotypes of the wild diploid species *Arachis cardenasii* Krapov. & W.C. Greg. and on a cultivated peanut variety, which accumulates aflatoxin when incubated with *A. flavus*. For each experiment, gene expression analysis and identification of differentially expressed genes was based on paired-end sequence reads of two biological replicates. Differentially regulated transcripts detected in the resistant seeds of *A. cardenasii*, but not in the cultivated peanut variety, encode genes involved in phytoalexin biosynthesis, including stilbenes and isoflavonoids. Mapping of reads to the aflatoxin biosynthesis (AB) gene cluster, in the two aflatoxin-resistant diploid peanuts exposed to *Aspergillus*, showed no expression of genes within a region of the AB cluster proximal to the sugar metabolism flanking area; the opposite was observed in the cultivated peanut genotype. Additional studies are in progress to identify modules of co-expressed genes associated with the observed transcriptional responses. This research is part of a joint effort to study peanut-*Aspergillus* interactions to advance aflatoxin-resistant germplasms.

Nested Association Mapping (NAM) Population-based Joint Linkage Mapping and GWAS for Identification of Consistent QTLs/QTNs for Disease and Pod Traits in Peanut.

S. YADURU*, H. WANG, J.C. FOUNTAIN, A.K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; S. GANGURDE, P. SONI, M.K. PANDEY, R.K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad, Telangana, India; C. ZHAO, Shandong Academy of Agricultural Sciences (SAAS), Jinan, Shandong, China; B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA, 31793.

Incorporation of greater levels of allele diversity among parental lines in developed populations increases the power of quantitative trait loci (QTLs) and association studies to identify and map key genes and markers for traits of interest. To maximize and demonstrate this for disease and descriptor traits in peanut, we used two nested-association mapping (NAM) populations comprising of 496 and 570 recombinant inbred lines (RILs) derived from common parents Florida-07 (NAM-Florida) and Tifrunner (NAM-Tifrunner), respectively. These NAM populations were genotyped with a 58K SNP array and phenotyped for leaf spots (LS), *Tomato spotted wilt virus* (TSWV), 100 seed weight (100SW), and 100 pod weight (100PW) in 2015, 2016, and 2017. Joint QTL linkage mapping analysis produced maps with 2,668 loci (NAM-Florida) and 3,341 loci (NAM-Tifrunner). QTL analyses identified 162 QTLs with phenotypic variance explained (PVE) ranging from 18.8 – 46.6% for NAM-Florida, and 80 QTLs with 5 –44% PVE for NAM-Tifrunner. In addition, GWAS based on 7,672 SNPs identified 145 significant quantitative trait nucleotides (QTNs) of which 92 (p-values 10^{-5} – 10^{-59}) were detected for leaf spot, 11 (p-values 10^{-5} – 10^{-8}) for 100PW, 17 for (p-values 10^{-5} – 10^{-13}) for 100SW in NAM-Florida. For NAM-Tifrunner, GWAS based on 11,520 SNPs identified 47 (p-values 10^{-3} – 10^{-19}) significant QTNs for LS, 12 (p-value 10^{-3}) for TSWV, 24 (p-values 10^{-3} – 10^{-15}) for 100SW and 26 (p-values 10^{-3} – 10^{-8}) for 100PW. Chromosomes A05 and B05 for in particular were strongly associated with significant QTLs and QTNs for 100SW while A02 and A03 were significantly associated with LS QTLs and QTNs. These significant QTLs and QTNs were also found to be associated with genes likely to function in disease resistance or physiological development in peanut. Markers developed from these studies may be useful for selection in peanut breeding programs.

A Major Seed Size QTL on Chromosome A05 of a Peanut Cultivar is Conserved in the U.S. Mini Core Germplasm Collection

Y. CHU*, P. OZIAS-AKINS, Horticulture Department, University of Georgia Tifton Campus, Tifton, GA 31793; P. CHEE Department of Crop and Soil Sciences, University of Georgia Tifton Campus, Tifton, GA 31793; T.G. ISLEIB, Department of Crop Science, North Carolina State University, P.O. Box 7629, Raleigh, NC 27695; C.C. HOLBROOK, USDA-Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.

Pod and seed size are important characteristics for the peanut industry and have been under strong selection pressure since peanut domestication. In order to dissect the genetic control of peanut pod and seed size, a recombinant inbred mapping population from a cross of Florida-07 by GP-NC WS 16 was used to determine the genomic regions associated with traits including 100 pod weight, 100 seed weight, pod weight of double-seeded pods, seed weight of double-seeded pods, and area of double-seeded pods. Nine QTLs on linkage groups (LGs) A05, A06, A09, B10, B04, A03, B05 and B08 were associated with pod and seed size. A majority of the QTLs have small effects except the locus on LG A05 (93 Mbp to 102 Mbp) which explained up to 66% phenotypic variation for all measured pod and seed traits. A comparison of QTLs previously reported for yield component traits showed a common QTL on LG A05 was detected in two genetic populations whose parentage are distinct from those used in this study. The markers tightly linked to this major QTL were informative in distinguishing large versus small seeded germplasm lines in the mini core collection originating from thirty-one countries, suggesting selection for this seed size QTL in large-seeded ecotypes. However, the large seed size allele appeared to co-segregate with a late leaf spot disease susceptibility allele inherited from the Florida-07 parent. Therefore, peanut breeders need to weigh the pros and cons before integrating the large seed size QTL from Florida-07 in their breeding program

PEANUT BREEDING, BIOTECHNOLOGY & GENOMICS II

	Thursday, July 11, 2019	
8:30-10:00 AM *Terrace Room*	**Peanut Breeding, Biotechnology and Genomics II** *Moderator: Josh Clevenger, Mars Wrigley*	**Page Number**
8:30 AM	**Genome-Wide Association Study of Pod and Seed Quality Traits in Peanut** **J. PATEL*,** T. JIANG, C.Y. CHEN, Auburn University, Auburn, AL 36849; M.L. WANG, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA 30223; L.L. DEAN, USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC 27695; P.M. DANG, M. LAMB, USDA-ARS National Peanut Research Lab, Dawson, GA 39842; Y. CHU, J.P. CLEVENGER, P. OZIAS-AKINS, The University of Georgia, Tifton, GA 31793; C.C.HOLBROOK, USDA-ARS Plant Breeding and Genetics Unit, Tifton, GA 31793.	**81**
8:45 AM	**Evaluation of Peanut Breeding Lines to Identify Differential Expressed Genes Involved in Leaf Spot Resistance** **P.M. DANG***, USDA-ARS National Peanut Research Lab, Dawson, GA 39842; C. Y. CHEN, Auburn University, Auburn, AL 36849.	**82**
9:00 AM	**Marker Development for Blanchability in Peanuts.** J. CLEVENGER, Mars Wrigley Confectionery, Center for Applied Genetic Technologies, Athens, GA 30602; **G.C. WRIGHT*** and D. O'CONNOR, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; and D.B. FLEISCHFRESSER, AgriSciences Queensland, Department of Agriculture, Fisheries and Forestry, Kingaroy, Queensland, Australia, 4610.	**83**
9:15 AM	**Inheritance and Mapping of Albino-Virescent Leaf and Lutescent-Leaf Traits in Peanut.** **N. BROWN*** and W. D. BRANCH, Dept. of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.	**84**
9:30 AM	**Genome-Wide Association Study of Sweet, Bitter and Roasted Sensory Attributes in Cultivated Peanut** **T. JIANG*,** and C.Y. CHEN, Crop Soil & Environmental Sciences, Auburn University, Auburn, AL, 36849; LL DEAN, USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC 27695; ML. WANG USDA-ARS, Plant Germplasm Resource Conservation Unit, Griffin, GA 30223. P.M. DANG USDA-ARS National Peanut Research Lab, Dawson, GA 39842; CC HOLBROOK, USDA-ARS Plant Breeding and Genetics Unit, Tifton, GA 31793. Y. CHU, J.P. CLEVENGER, P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793.	**85**
9:45 AM	**Fine Mapping and Identification of Candidate Genes in Chromosome A01 of Peanut for Resistance to TSWV.** CHUANZHI ZHAO, HUI WANG, G. AGARWAL, YADURU SHASIDHAR, JAKE C. FOUNTAIN, A. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA; J. CLEVENGER, Mars-Wrigley Confectionery, University of Georgia, Athens, GA; YADURU SHASIDHAR, M.K. PANDEY, R.K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad, India; CHUANZHI ZHAO, XINGJUN WANG, Shandong Academy of Agricultural Sciences, Jinan, China; **B. GUO***, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA.	**86**

Genome-Wide Association Study of Pod and Seed Quality Traits in Peanut

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

Traits like seed size, seed weight, small shelled kernels, kernel weight, hull weight determines quality of peanut seed. Numerous genomic region and gene network are regulating such trait. Identifying such genomic regions will help breeders to develop molecular marker for MAS (Marker Assisted Selection) breeding. A total of 120 accessions from U.S. peanut mini core collection were evaluated for seed quality traits. These accessions were also genotyped using 58K SNP array and we were able to identify 17K high quality SNP for this association panel. Base on results, we observed significant variation for seed quality traits in different accessions and different botanical varieties. Through Genome Wide Association Study (GWAS), we were able to identify multiple regions associated to small shelled kernels, seed weight, kernel weight, hull weight. For instance, marker AX-176823847 (Chr 15), AX-176794068 (Chr 12), AX-177638040(Chr 10), AX-176794068 (Chr 11) and AX-147216060 (Chr 03) were strongly associated with seed size, small shelled kernel, seed weight, kernel weight and hull weight. Areas surrounding these markers were scrutinized for candidate genes associated with these traits. Multiple genes were identified in the regions that might have important role during seed development. In summary, our work will provide markers that could be incorporated in breeding program to accelerate selection process for seed quality and explore the possibility of function of candidate gene to understand the complex genetic network that governs seed quality.

Evaluation of Peanut Breeding Lines to Identify Differential Expressed Genes Involved in Leaf Spot Resistance

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

Leaf spots, early (ELS) and late (LLS), are fungal pathogens that can significantly limit peanut production in the United States and around the world. Breeding for high resistance in peanut has been challenging due to strong genotype by environment interaction. These complex traits are controlled by many major and minor quantitative trait loci (QTLs). In our previous research, two genomic regions on chromosome 09 were linked to significant resistance to both ELS and LLS. Several candidate resistance genes were identified on chromosome 09 and maybe associated with leaf spot resistance. The goals of this research were to 1) identify candidate genes for leaf spot resistance, and 2) to associate gene-expression to leaf spot resistance. Candidate genes include TMV resistance protein N-like, PTI1-like tyrosine-protein kinase, pto-interacting protein, cysteine-rich receptor-like protein kinase, and phytosulfokine receptor-like. Gene-expression levels and patterns will be associated with peanut genotypes with leaf spot resistance. This research will facilitate the development of peanut varieties with high leaf spot resistance.

Marker Development for Blanchability in Peanuts.

J. CLEVENGER, Mars Wrigley Confectionery, Center for Applied Genetic Technologies, Athens, GA 30602; **G.C. WRIGHT*** and D. O'CONNOR, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; and D.B. FLEISCHFRESSER, AgriSciences Queensland, Department of Agriculture, Fisheries and Forestry, Kingaroy, Queensland, Australia, 4610.

A large proportion of the global peanut crop is sold as blanched (skin removed from kernel by heating followed by abrasion) product, hence it is essential that new varieties have a high level of skin removal, or blanchability. Also, many peanut products require good skin adherence and hence development of varieties with low levels of blanchability. Recent research in Australia has shown that blanchability is under strong genetic control, with development of phenotyping methods enabling rapid and accurate assessment of blanchability on fixed lines and in single segregating plants. This opens up the possibility of development of recombinant inbred populations for genetic mapping studies aimed at developing new molecular markers for blanchability, along with identification of its gene control. A genomic study was conducted for potential marker identification for blanchability using a QTL-Seq approach. Selected fixed lines having very good and very poor blanching were selected from populations that shared the same parents (i.e. iso-lines from early maturity crosses named 'P23' and 'P13'). The poor blanching parent was 'Sutherland' and a closely related selection (D147-p3-115) while the good blanching lines were derived from parental lines 'Walter' and 'Redvale'. We bulked the DNA of the selected lines and then sequenced them. We also sequenced Walter, Redvale, Sutherland and D147-p3-115 to identify parent-specific alleles. Analysis of the parental data identified about 100,000 polymorphic SNPs where 'Walter' and 'Redvale' shared an allele and Sutherland and D147-p3-115 had a different allele. These SNPs were used to analyse the "good" and "poor" blanching bulks, with the analysis showing very good evidence for the presence of 3 Quantitative Trait Loci (QTLs), with the 2 strongest located on Chromosome B01 and A06. The third QTL was on Chromosome B08, but was not as strong and may only be a minor effect QTL. These results provide good evidence for the presence of a strong QTL, which potentially may cover the exact region where the gene(s) for blanchability reside. Further research is underway to validate these QTL regions for blanchability in a related RIL population (named 'P183'). This research should soon provide peanut breeders with molecular markers for improved selection efficiency for blanchability in global breeding programs.

Inheritance and Mapping of Albino Virescent-Leaf and Lutescent-Leaf Traits in Peanut.

N. BROWN* and W. D. BRANCH, Dept. of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.

Two chlorophyll-deficient leaf mutations have been identified in advanced peanut (*Arachis hypogaea*, L.) breeding lines at the University of Georgia. The Lutescent-Leaf mutant, which causes a yellowing of the leaf, mid-rib and leaf margins was previously shown to be controlled by recessive alleles at 2 genes (lut_1 and lut_2). A newly described, Albino Virescent-Leaf mutant, the seedlings and new leaves of which begin as albino, then gradually accumulate chlorophyll until they become green with age, is controlled by recessive alleles at a single locus. These two mutants were hybridized to evaluate potential allelism at the causal loci. The resulting F_1 was a normal green plant. However, segregation in the F_2 and F_3 populations suggest that the Albino Virescent parent used in crosses was homozygous recessive for one of the two Lutescent loci, resulting in a segregation ratio of 9 (Green): 4 (Albino Virescent): 3 (Lutescent) in the F_2 population. Bulked segregant analysis (BSA) was carried out on pooled leaf tissue to identify the region(s) responsible for these simply inherited mutations. A strong signal was identified on Chr.10 for Albino Virescent-Leaf spanning a ~2Mb region. The Lutescent-Leaf trait mapped to a diffuse region on Chr.02, encompassing essentially the entire chromosome. KASP markers were designed to validate the BSA results from the F_2 individual plant samples.

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

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

As more consumers are paying attention to food quality and nutrients, obtaining desirable roasted sensory attributes becomes an important breeding objective for peanut. In order to find DNA- marker and the trait association for the implementation of marker-assisted selection (MAS) in breeding programs we used 120 accessions of the U.S. mini core collection for sweet, bitter and roasted peanut sensory attributes analysis and genotyped with the Affymetrix version 2.0 SNP array. A total of 90 quantitative trait loci (QTLs) were identified with phenotypic variation explained (PVE) from 9.9% to 16.7%, in which 33 QTLs are for sweet, 23 QTLs for SA, 17 QTLs for bitter, 13 QTLs for RB, 3 QTLs for WHS and 1 QTLs for DR. Of the 90 QTLs, 45 were on the A sub-genome and 45 were on the B sub-genome, which suggested that both sub-genomes played an important role in sensory attributes. In the surrounding of genomic regions of the QTLs, 16 significantly associated and 85 suggestively associated genes were found within 1 Mb windows. Most of them are known to be involved in synthesis and metabolism of carbohydrates, fats and proteins. These findings provided a promising insight into the complicated genetic architecture of quality attributes in peanut, and revealed whole-genome SNP markers of beneficial candidate genes for marker-assisted selection (MAS) in future breeding programs.

Fine Mapping and Identification of Candidate Genes in Chromosome A01 of Peanut for Resistance to TSWV.

CHUANZHI ZHAO, HUI WANG, G. AGARWAL, YADURU SHASIDHAR, JAKE C. FOUNTAIN, A. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA; J. CLEVENGER, Mars-Wrigley Confectionery, University of Georgia, Athens, GA; YADURU SHASIDHAR, M.K. PANDEY, R.K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad, India; CHUANZHI ZHAO, XINGJUN WANG, Shandong Academy of Agricultural Sciences, Jinan, China; **B. GUO*,** USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA.

Completion of peanut reference genomes facilitates development of peanut tools and identification of useful markers and traits/genes for improvement of peanut disease resistance and quality. TSWV (*Tomato spotted wilt virus*) causes severe yield loss in the Southeastern US and management of TSWV disease severity increases the cost of peanut production. We developed a recombinant inbred line (RIL) population from SunOleic 97R and NC94022, and first identified a major QTL for TSWV (PVE 35.8%) in chromosome A01 in 2012, which was improved in 2016, using SSR markers. The QTL was mapped between the markers Ah126 and GNB842, and the nearest marker GNB555 was in the region of 20 Mb to 30 Mb of A01. Recently in 2018, this QTL was further mapped within 89.5 Kb physical interval at about 9.5 Mb using whole genome resequencing. In the current study, the goal is to fine-map this QTL for potential candidate gene identification and cloning. We used the first version of peanut SNP array, *Axiom_Arachis* 58 K SNP Array, and identified a major QTL (PVE 36%) at about 9.2 Mb, the closely linked SNP (A01:9205209). With further fine-mapping, we narrowed the potential candidate gene(s) at about 0.5 Mb, the distal region of chromosome A01, in which nucleotide-binding–leucine-rich repeat (NB-LRR)-encoding genes are of interest. In summary, we focus on the 10 Mb in the upper arm of A01, in which there are twelve NBS-LRR genes.

PEANUT BREEDING, BIOTECHNLOGY & GENOMICS III

	Thursday, July 12, 2018	
10:30 AM - 12 Noon *Auditorium*	**Peanut Breeding, Biotechnology & Genomics III** *Moderator: Juliet Chu, University of Georgia*	**Page Number**
10:30 AM	**Development of New Synthetic Tetraploid Wild Peanuts** **D.Y. GAO*,** C. BALLÉN-TABORDA, H. XIA, S. C. M LEAL-BERTIOLI, D.J. BERTIOLI, S. JACKSON, Center for Applied Genetic Technologies (CAGT), University of Georgia, Athens, GA, USA; E. BELLARD, A. C. G. ARAUJO, EMBRAPA Genetic Resources and Biotechnology, Brasilia, DF, Brazil; Y. CHU, P. OZIAS-AKINS. Department of Horticulture, The University of Georgia, Tifton, GA .	**88**
10:45 AM	**A New Nematode Resistant, High Oleic Virginia-type Peanut for the South East** **J. CLEVENGER***, Mars-Wrigley Confectionery, University of Georgia, Athens; C. C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research, Tifton, GA., GA; P. OZIAS-AKINS, Y. CHU, University of Georgia, Department of Horticulture, Tifton, GA; T. BRENNEMAN, A. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA.	**89**
11:00 AM	**Genetic Transformation to Mitigate Drought and Aflatoxin-Related Losses in Peanut** **J.C. FOUNTAIN*,** R.C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; Y. CHU, 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; B. GUO, USDA-ARS Crop Protection and Management Research Unit, Tifton, GA, 31793.	**90**
11:15 AM	**Prevalent Moisture Stress in Climate Change Situation as a Selection Strategy for Drought Tolerance in Groundnut (*Arachis hypogaea* L.)** **H.L. NADAF*,** G.K. NAIDU, IRAMMA G. and ROOPA U. All India Coordinated Research Project on Groundnut, Main Agriculture Research Station, University of Agricultural Sciences, Dharwad – 580 005, Karnataka, India.	**91**
11:30 AM	**Analysis of Genotype and Environment Interaction Revealed Oleic Acid Plasticity in Peanuts** **B. TONNIS*,** M.L. WANG, S. TALLURY, USDA-ARS, Plant Genetic Resources Conservation Unit, Griffin, GA 30223; X. LI, J. YU, Department of Agronomy, Iowa State University, Ames, IA 50011; N. PUPPALA, Agronomy Department, New Mexico State University, Clovis, NM 88101; and J. WANG, Agronomy Department, University of Florida, Gainesville, FL 32610.	**92**

Development of New Synthetic Tetraploid Wild Peanuts.

D.Y. GAO*, C. BALLÉN-TABORDA, H. XIA, S. C. M LEAL-BERTIOLI, D.J. BERTIOLI, S. JACKSON, Center for Applied Genetic Technologies (CAGT), University of Georgia, Athens, GA, USA; E. BELLARD, A. C. G. ARAUJO, EMBRAPA Genetic Resources and Biotechnology, Brasilia, DF, Brazil; Y. CHU, P. OZIAS-AKINS. Department of Horticulture, The University of Georgia, Tifton, GA

Wild peanut species harbor many beneficial alleles conferring resistance or tolerance to various biotic and abiotic stresses. However, it is not a straightforward task to use these unique genes by conventional hybridization between wild and cultivated peanuts as the vast majority of wild species are diploid, in contrast to tetraploid cultivated peanut, and their F1 hybrids are sterile. To overcome this barrier and introduce the desirable traits into cultivated peanut, we generated four synthetic tetraploid wild peanuts by inducing chromosome doubling of diploid wild hybrids. We identified visible phenotypic variations among the tetraploid individuals and Fluorescence In Situ Hybridization (FISH) was conducted to confirm the polyploidy of the synthetic wilds. These new tetraploid wilds are being used to make crosses and backcrosses with cultivated peanuts and to develop germplasm with good disease resistance by combining phenotype evaluation and marker-assisted selection. Our new tetraploid wild accessions can be used directly to transfer disease/pest resistance genes into cultivated peanut. Furthermore, these new germplasms also offer valuable resource for molecular mapping the disease resistance genes/QTLs in wild peanuts and other related studies including peanut genomics and domestication.

A New Nematode Resistant, High Oleic Virginia-type Peanut for the South East.

J. CLEVENGER*, Mars-Wrigley Confectionery, University of Georgia, Athens; **C.** C. HOLBROOK**,** USDA-ARS, Crop Genetics and Breeding Research, Tifton, GA**.**, GA; P. OZIAS-AKINS, Y. CHU, University of Georgia, Department of Horticulture, Tifton, GA; T. BRENNEMAN, A. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA;

A new nematode resistant, high oleic Virginia-type peanut will be released from the USDA-ARS breeding program in Tifton, GA. Marker-assisted selection was used to incorporate nematode resistance from Tifguard and high oleic acid seed chemistry from N08082olJCT (high oleic breeding line similar to Bailey). Initial testing showed that '13-3532' showed similar yield, fancy pod percentage, pod brightness, and SMK to Bailey. Further testing in nematode infested fields over three years confirmed a significant yield advantage. A further two years of testing in unsprayed tests showed strong leaf spot tolerance especially compared to Georgia-06G, 13M, and 14N. In the 2018 Uniform Peanut Performance Trials (UPPT), '13-3532' had equal or higher yields than Bailey at all locations with similar fancy pods, TSMK, and SMK. In Tifton, GA, '13-3532' had similar yield to University of Georgia new release 'GA132724' and higher fancy pod percentage. Bred for the South Eastern US but exhibiting tried and true genetics for the Carolinas and Virginia, '13-3532' is as hardy as it is versatile, competing in all environments, and shining under the most adverse conditions.

Genetic Transformation to Mitigate Drought and Aflatoxin-Related Losses in Peanut.

J.C. FOUNTAIN*, R.C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; Y. CHU, 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; B. GUO, USDA-ARS Crop Protection and Management Research Unit, Tifton, GA, 31793.

The mitigation of aflatoxin and drought stress related losses and food safety risks are priorities for the peanut research community. The development of novel technologies in combination with recent advances in peanut genomics allow for the deployment of genetic transformation and genome editing to address this issue. Previously, we have found that drought tolerance and aflatoxin resistance are correlated with reduced accumulation of reactive oxygen species (ROS) in peanut and corn. It was hypothesized that modifying the accumulation of antioxidant enzymes in these plants may result in reduced aflatoxin accumulation and increased drought tolerance. To test this hypothesis, we have used biolistic transformation to independently overexpress three antioxidant genes, *AhAPX1*, *AhCAT1*, and *AhSOD1* in the cultivar Georgia Green. Conversely, we have engineered a novel polycistronic guide-RNA (gRNA) into the CRISPR-Cas9 cassette for genome editing to silence the expression of an isoform of *AhCAT1*. These approaches have resulted in the performance of six bombardments per construct/gene. Following regeneration and root induction, 27, 40, and 28 potentially transgenic T_0 plants have been generated representing 9, 11, and 6 independent transgenic events for overexpression of *AhAPX1*, *AhCAT1*, and *AhSOD1*, respectively. Regeneration of CRISPR-Cas9 plants is currently in progress. Genotypic and phenotypic evaluation is currently underway with both PCR and enhanced green fluorescent protein (eGFP) expression. Using eGFP expression as an initial screen in young root and foliar tissues, 37.0%, 47.5%, and 42.9% of regenerated plants (43.2% overall) for *AhAPX1*, *AhCAT1*, and *AhSOD1*, respectively, showed positive eGFP expression. This may indicate that these overexpression constructs are inserted into expressible regions of the peanut genome and warrant further evaluation. Effects of these genome modifications on antioxidant gene expression and ROS accumulation will be discussed along with the potential effects on aflatoxin contamination and drought tolerance.

Prevalent Moisture Stress in Climate Change Situation as a Selection Strategy for Drought Tolerance in Groundnut (*Arachis hypogaea* L.)

H.L. NADAF*, G K NAIDU, G. IRAMMA and U. ROOPA, All India Coordinated Research Project on Groundnut, Main Agriculture Research Station, University of Agricultural Sciences, Dharwad – 580 005, Karnataka, India.

Main Agriculture Research Station (MARS), University of Agricultural Sciences, Dharwad, India (15^o 13' N, 75^o 07' E, 678 m above mean sea level) receives 800 mm of average annual rainfalland thus comes under transitional tract of Karnataka state of India. This location has typical bimodal distribution of rainfall with one peak during July month that coincides with sowing and other during October month of the year that enables harvesting of groundnut. The soil type is medium deep black soil. Under the changing climatic scenario, this location also witnessed irregular rainfall during rainy season of 2015 with June month receiving 160 mm rainfall as against 64 year average of 104 mm which enabled sowing of groundnut breeding material (developed specifically for drought tolerance) during second fortnight of June. Then the location received 43, 34 and 22mm during July, August and September as against 64 years average of 155, 102 and 108 mm during the corresponding months. Hence, moisture stress during the post flowering to pod formation stage lead to wilting in the drought susceptible segregating material while, retention of green leaves in the drought tolerant 37 and 24 plants in the F_2 segregating material of the cross ICGV07211 X ICGV 2381and R 2001-2 x GM 4-3, respectively. Among these high yielding five plants each from both the crosses were studied during summer 2016 with irrigated and limited irrigation conditions to study their response. Among these 10 plant to progenies evaluated, the best progenyR-2001-2 x GM-4-3-1 from R 2001-2 x GM 4-3 and ICGV-07211 x ICGV-2381-17 from ICGV 07211 x ICGV 2381 recorded higher pod yield (4858 and 5013 kg/ha, respectively) compared to 2716 kg/ha of high yielding check cultivar G 2-52 under irrigated condition. These progenies also recorded moderate pod yield of 3996 and 3704 kg/ha, respectivelycompared to 1862 kg/ha of check cultivar G 2-52 under limited irrigation. These genotypes designated as Dh 256 and Dh 257 were analyzed for their tolerance to drought in terms of relative water content during drought situation of rainy season of 2017. These genotypes had higher relative water content (> 70 %) as against 50 % relative water content in case of susceptible checks. These drought tolerant genotypes were entered in All India evaluation been advanced from initial two years of testing that may be released for cultivation under drought prone regions of India. Besides, these genotypes could serve as potential donors for drought tolerance breeding after ascertaining the components of drought tolerance in these genotypes.

Analysis of Genotype and Environment Interaction Revealed Oleic Acid Plasticity in Peanuts

B. TONNIS*, M.L. WANG, S. TALLURY, USDA-ARS, Plant Genetic Resources Conservation Unit, Griffin, GA 30223; X. LI, J. YU, Department of Agronomy, Iowa State University, Ames, IA 50011; N. PUPPALA, Agronomy Department, New Mexico State University, Clovis, NM 88101; and J. WANG, Agronomy Department, University of Florida, Gainesville, FL 32610

Fatty acid composition in peanut seeds is an important trait in determining the seed quality and oil stability. Monounsaturated fatty acids such as oleic acid have known health benefits and can extend the oil shelf life due to its oxidative stability. Oleic acid content is controlled by two pairs of homeologous fatty acid desaturase genes (*FAD2A* and *FAD2B*), but environmental growing conditions can also have a significant effect on the fatty acid composition of peanut seeds. To study genotype and environmental effects on seed oil composition, a selected set of 52 peanut germplasm accessions were grown at three locations (Gainesville, FL; Byron, GA; and Clovis, NM) for two years (2017 and 2018). Data on the growing conditions from the three environments were collected for both years. Individual plants from each accession were genotyped with functional SNP markers from the *FAD2A* (448G/448A) and *FAD2B* (no insertion/442 insertion A) genes. Fatty acid composition of seeds harvested from different environments was determined by gas chromatography. These data revealed: (i) three genotypes (448G/no insertion A; 448A/no insertion A; and 448A/insertion A) designated as G/N, A/N, and A/A, respectively; (ii) A/A genotype averaged the highest oleic acid concentration (79.7%) followed by A/N (56.0%) and then G/N (41.5%); and (iii) oleic/linoleic acid plasticity was detected by G X E interaction analysis. For oleic acid, the A/N genotype exhibited higher phenotypic plasticity than the G/N and A/A genotypes. Oleic acid concentration of seeds with the A/N genotype grown at different locations were significantly different with those grown in Florida (63.9%) being higher than those in Georgia (55.8%) which in turn were higher than those in New Mexico (47.6%). The oleic acid phenotype plasticity revealed in this study would be very useful to peanut breeders, farmers, and processors of peanut products for manipulating this important trait.

PEANUT BREEDING, BIOTECHNOLOGY & GENOMICS IV

	Thursday, July 11, 2019	
3:15 -4:30 PM *Auditorium*	**Peanut Breeding,Biotechnology,& Genomics IV** *Moderator: Alicia Massa, USDA-ARS-NPRL*	**Page Number**
3:15 PM	**Field Evaluation of Peanut Lines with Introgressions Conferring Resistance to Late Leaf Spot** **C.C. HOLBROOK***, United States Department of Agriculture-Agricultural Research Service, Tifton, GA 31793-0748; S. LAMON, Department of Crop & Soil Sciences, The University of Georgia, Tifton GA 31793-0748 and Athens GA 30605; Y. CHU, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748 and Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Tifton, GA 31793; A.K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793, D. BERTIOLI, Department of Crop & Soil Sciences, The University of Georgia, Tifton GA 31793-0748 and Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Tifton, GA 31793; S. C. M. LEAL-BERTIOLI, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793, and Athens, GA 31793 , and I. GODOY, Campinas Agronomical Institute, Campinas, SP, Brazil.	**94**
3:30 PM	**'Walton', a New Virginia-Type Peanut Suitable for Virginia.** **M. BALOTA***, Virginia Polytechnic Institute and State University, Suffolk, VA 23427; B. TILLMAN, University of Florida, Marianna, FL 32446; and D. J. ANCO, Clemson University, Blackville, SC 29817.	**95**
3:45 PM	**Allelism Test between Crosses of High Oleic x High Oleic and Very High Oleic x Very High Oleic Peanut Genotypes.** **W.D. BRANCH***, University of Georgia, Coastal Plain Expt. Station, Tifton, GA 31793.	**96**
4:00 PM	**Selection for Two Seeded Pods in Consecutive Generations of the Wild Species *Arachis Monticola Krapov. & Rigoni*** **C.E. SIMPSON*,** Texas A&M AgriLife Research. Stephenville, TX 76401.	**97**
4:15 PM	**Peanut Cultivar Response to S. rolfsii Inoculation in the Absence of Fungicides in a Medium Risk Situation Based on the 2019 Peanut Rx** **B.L. TILLMAN*[1],** N.D. DUFAULT[2], T.B. BRENNEMAN[3]; M.W. GOMILLION[1], and G. PERSON[1]. University of Florida, [1]Agronomy Department, NFREC, Marianna, FL 32446; [2]Department of Plant Pathology,	**98**

Field Evaluation of Peanut Lines with Introgressions Conferring Resistance to Late Leaf Spot

C.C. HOLBROOK[1]*, S. LAMON[2], Y. CHU[3], P. OZIAS-AKINS[3,4], A.K. CULBREATH[5], D. BERTIOLI[2,4], S. C. M. LEAL-BERTIOLI[5], and I GODOY[6]. [1]United States Department of Agriculture-Agricultural Research Service, Tifton, GA 31793-0748. [2]Department of Crop & Soil Sciences, The University of Georgia, Tifton GA 31793-0748 and Athens GA 30605. [3]Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748. [4]Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Tifton, GA 31793. [5]Department of Plant Pathology, The University of Georgia, Tifton, GA 31793, and Athens, GA 31793. [6]Campinas Agronomical Institute, Campinas, SP, Brazil

Late Leaf Spot (LLS) disease caused by *Cercosporidium personatum* (Berk. & M.A. Curtis) Deighton is one of the most costly diseases of U.S. grown peanut (*Arachis hypogaea* L.). IAC 322 is a breeding line that contains three introgressed chromosome segments from a wild species that provides a very high level of resistance to LLS. Although this line has excellent resistance to leaf spot, it does not have acceptable agronomic performance in Georgia. Genetic markers are available for these genomic regions, so marker assisted selection (MAS) to combine resistance with acceptable agronomic performance is feasible. The goal of this research was to identify the genomic regions or combinations of genomic regions that provide the highest level of resistance. 'TifNV-High O/L' was crossed with IAC 322, and 400 resulting F_2 progeny were genotyped. Individuals with single introgressed regions, individuals with all pairwise combinations, and individual with all three introgressions were identified. This material was then advanced to the F_5 generation. We previously reported results on LLS severity on this material from a detached leaf study. In 2018 we planted this material in replicated field studies at two locations. No fungicide sprays were used for leaf spot control. Results indicated that major genes for resistance are contained on the introgressions from the bottom of chromosome A03 and the top of chromosome A02. The third introgressed region was from the bottom of chromosome A02 and did not add significantly to the levels of resistance to LLS. These results can be used to improve the efficiency and effectiveness of MAS to develop leaf spot resistant cultivars.

‘Walton’, a New Virginia-Type Peanut Suitable for Virginia.

M. BALOTA*, Virginia Polytechnic Institute and State University, Suffolk, VA 23427; B.TILLMAN, University of Florida, Marianna, FL 32446; and D. J. ANCO, Clemson University, Blackville, SC 29817.

Virginia needs high-yielding varieties with improved grading characteristics. Seed size, the Super Extra Large Kernel (SELK) content in particular, is important as numerous peanut growers in the state are also processors of gourmet products. High oleic fatty acid content has become a driver in new cultivars. Early maturity along with a longer duration for optimum harvest, i.e., no yield penalty when harvesting earlier, is important also. Finally, high yields and grading under wet as well as dry and hot growing conditions are paramount when only 10% of the fields can be irrigated. ‘Walton’ was developed to suit all these needs. Named in honor of the retired Walton Mozingo, former leader of the Peanut Variety and Quality Evaluation (PVQE) project with Virginia Tech, ‘Walton’ has been jointly developed and released by the University of Florida and Virginia Tech. Performance of ‘Walton’ across three states in the PVQE project and in other projects in Virginia will be presented and discussed.

Allelism Test between Crosses of High Oleic x High Oleic and Very High Oleic x Very High Oleic Peanut Genotypes.

W.D. BRANCH*, University of Georgia, Coastal Plain Expt. Station, Tifton, GA 31793.

Crosses were made between high-oleic (HO) x HO and between very high-oleic (VHO) x VHO peanut genotypes. The HO parental genotypes were F435-OL-2 and 'Flavor Runner 458' and ranged between 20 and 40 oleic (O) to linoleic (L) fatty acid methyl ester ratio. Whereas, the VHO parental genotypes were 'Georgia Hi-O/L' and 'Georgia-11J' and consistently had O/L ratios ≥40 over three and four years, respectively at the Tifton, Georgia location when grown under maximum-input production practices with irrigation. F_1 plants from the HO x HO cross combination had an average O/L ratio of 32.7 (range 20.6-47.2); whereas the F_1 plants from the VHO x VHO crosses had an average O/L ratio of 49.9 (range 37.0-65.8). These F_1 hybrids showed some allelic mean differences between the HO x HO and VHO x VHO cross combinations, but both crosses had similar large range of differences with the VHO x VHO F_1 range shifted higher than the HO x HO F_1 range. Likewise, F_2 populations had on the average an O/L ratio of 31.0 (range 12.4-53.8) for the HO x HO cross combinations; whereas the F_2 populations had on the average an O/L ratio of 46.8 (range 25.4-63.4) for the VHO x VHO cross combination. Both crosses had a large range in O/L ratios, however the VHO x VHO cross combination had the highest average O/L ratio and the F_2 range shifted higher, as might be expected. Individual plant selections were selected within the two F_2 cross combinations for testing progeny rows in F_3 populations. F_2 plants were selected based upon < 20, 20-30, 30-40, and >40 O/L ratios. $F_{2:3}$ progeny rows varied considerably within each of these categories of O/L ratios, but the VHO xVHO had the highest O/L ratios in the 60-70 range. Thus, pedigree selections will continue to be made within these VHO x VHO cross combinations for development of even higher potential pure-line VHO peanut genotypes in the future.

Selection for Two Seeded Pods in Consecutive Generations of the Wild Species *Arachis Monticola* Krapov. & Rigoni

C.E. SIMPSON*, Texas A&M AgriLife Research. Stephenville, TX 76401.

Many of the *Arachis* section species of the genus *Arachis* will develop approximately 0.1 to 0.5% of pods that have little or no isthmus between the two pod segments. Establishment of the fact that *A. hypogaea* L. most likely developed from the other tetraploid in section *Arachis*, *A. monticola*, a study has been initiated to evaluate the progression of development of two seeded pods in *A. monticola*. This tetraploid wild species has been in the US collection for many years, but Dr. Walton C. Gregory told me in 1973, when I started working with him, that the *A. monticola* in his, and all of the US collection was badly introgressed with *A. hypogaea*, and that we needed to return to the *Type Local* to recollect pure *A. monticola*. This process was completed in 1967 when the collection team of Krapovickas, Gregory, Banks, Pietrarelli, Schinini and Simpson collected KGBPScS-30062 at Yala, Jujuy, ARG and KGBPScS-30063 at Lozano, Jujuy, ARG. Bringing those two collections to the USA was an important event in our collection efforts. As these two accessions were increased for distribution it was noted that 30062 had an occasional two segmented pod with no isthmus, whereas no “doubles” have been observed in the 30063 collection. This latter collection was located 6 Km upstream of the Rio Grande from 30062. As time advanced I became more interested in tracking this phenomenon, and then, in 1982 Schinini et al. collected *A. monticola*, 3 and 5 Km farther down-stream of Rio Grande that flows past Lozano and Yala. In the first seed increase I noted that ScVn-21769 had several pod segments without the isthmus. One can only guess how many generations were passed from the origin of *A.* monticola at Lozano, or elsewhere, to the progression downstream at Yala and then 3 Km farther (ScVn-21769) and 5 Km (ScVn 21768) even farther downstream. If these generations were guided by man selecting for what he/she realized was better, i.e., 2 seeded pods, then, how long did it take to have virtually all pod segments on a plant to be double seeded; *A. hypogaea*? Having now made the actual cross that, in all probability, formed *monticola* and *hypogaea*, I have decided to see how long it would take to derive all two seeded pods from *A. monticola* by putting selection pressure on the process. After 6 generations the process appears to be moving quite rapidly. Selection generation 1= 24% doubles; 2= 22%; 3=32%; 4=35%; 5=40%; and 6=58%. The check was generated by selecting at random from the single seeded pods. Consecutive percent of doubles from the checks was: 1=24%; 2=25%; 3=31%; 4=30%; 5=24% and 6=24%. The study is continuing, with generation 7 growing now.

Peanut Cultivar Response to *S. rolfsii* Inoculation in the Absence of Fungicides in a Medium Risk Situation Based on the 2019 Peanut Rx

B.L. TILLMAN*, University of Florida, Agronomy Department, NFREC, Marianna, FL 32446, N.D. DUFAULT, University of Florida, Department of Plant Pathology, Agronomy Department, NFREC, Marianna, FL 32446; T.B. BRENNEMAN, University of Georgia, Plant Pathology, Tifton, GA 31794; M.W. GOMILLION, and G. PERSON, University of Florida, Agronomy Department, NFREC, Marianna, FL 32446; Gainesville, FL 32611.

Control of white mold in peanut is impacted by several factors including cultivar, crop rotation, irrigation, field history, and timely application of fungicides. This study was conducted to determine if there was genotype by *S. rolfsii* inoculation interaction effect on pod yield and white mold disease ratings in the absence of fungicides to control the disease. Inoculum was prepared using sterilized oats and a mixture of three isolates of *S. rolfsii*. The tests were conducted in Marianna, FL in 2016 and 2017. Inoculum was applied in a broadcast fashion when the canopy had completely covered the row middles. Both cultivar and inoculum regime affected pod yield, but there was no interaction. On average, pod yield was 2158 lbs./A greater in non-inoculated plots versus inoculated plots. Cultivars Georgia-12Y and Flo-Run '331' had higher pod yield than TUFRunner '297', TUFRunner '511', and Georgia-06G. The cultivars Georgia-14N and TifNV High O/L had similar pod yield to Georgia-12Y and FloRun '331'. White mold disease ratings conducted immediately after the plots were inverted were affected by cultivar, inoculation and their interaction. Disease ratings were higher in inoculated plots in all cultivars however, the magnitude of the difference was less in Georgia-12Y, FloRun '331', and Georgia-14N as compared to TUFRunner '297', TUFRunner '511', TifNV High O/L, and Georgia-06G. The highest rating in non-inoculated plots was 2.8 in TUFRunner '297' and 1.2 in Georgia-12Y, but these were not statistically different at the 5% probability level. However, the lowest rating in the inoculated treatment was 2.8 in Georgia-12Y and the highest was 8.3 in Georgia-06G and these were statistically different ($P<0.0001$). It is unclear why these apparently large differences in disease expression among cultivars did not translate into cultivar-by-inoculation interaction for pod yield. However, the cultivars in the top pod yield group have white mold scores of 15 points or less in Peanut Rx, whereas TUFRunner '297' and Georgia-06G have 20 points and TUFRunner '511' has 15 points. This suggests that the white mold points for TUFRunner '511' should probably be greater than 15. It also confirms the intention of the Peanut Rx to show that cultivars with lower point totals have lower risk of losses than those with higher point totals.

PHYSIOLOGY, SEED TECHNOLOGY AND FOOD SCIENCES

	Thursday, July 12, 2018	
10:30 AM - 12 Noon *Oak Room*	**Physiology, Seed Technology and Food Sciences** *Moderator: Alvaro Sanz-Saez, Auburn University*	**Page Number**
10:30 AM	**Peanut Seedling Vigor under Sub-optimal Growing Temperature** **C. PILON***, C. WEAVER, W.S. MONFORT, T.L. GREY, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793, and V. TISHCHENKO, Department of Crop and Soil Sciences, University of Georgia, Griffin, GA 30223.	**100**
10:45 AM	**Above- and Below-Ground Evaluation of Peanut Genotypes for Improving Soil Water Acquisition and Utilization** **B. ZURWELLER***, Department of Plant and Soil Sciences, Mississippi State University, Starkville, MS 39762; D.L. ROWLAND, B. TILLMAN, Agronomy Department, University of Florida, Gainesville, FL 32611; and X. GUO, A. ZARE, Department of Electrical and Computer Engineering, University of Florida, Gainesville, FL 32611.	**101**
11:00 AM	**The Allelopathy of Autotoxic Compounds in Peanut Continuous Cropping Obstacle and Mitigation Mechanism** **J. LIU***, F.S. TANG, J. ZHANG, X. HAO, X. W. ZANG, W. Z. DONG, X.Y. ZHANG, J XU, Z. X. ZHANG, Industrial Crops Research Institute, Henan Academy of Agricultural Sciences, Zhengzhou, Henan, 450002, China and C.Y. CHEN, A. SANZ SAEZ Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 36849, United States.	**102**
11:15 AM	**Amino Acid and Sucrose Reactions: Real Time Analysis using Gerstel TDU-GC/MS** **M. SCHOLTEN***, C. LIEBOLD, The J.M. Smucker Company, 767 Winchester Rd., Lexington, KY 40505 and J.A. MARSHALL, The Department of Chemistry and Biochemistry, Lubbock Christian University, Lubbock TX 79407.	**103**
11:30 AM	**Effects of a Spray Treatment on Secondary Metabolites in Runner Peanuts** **L. DEAN***, K. HENDRIX, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695-7624; and M. LAMB, National Peanut Research Laboratory, USDA, ARS, SEA, Dawson, GA 39842.	**104**

Peanut Seedling Vigor under Sub-optimal Growing Temperature

C. PILON*, C. WEAVER, W.S. MONFORT, T.L. GREY, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793, and V. TISHCHENKO, Department of Crop and Soil Sciences, University of Georgia, Griffin, GA 30223.

Sub-optimal temperatures at planting and early-season can be detrimental for peanut emergence and early development, leading to decreased seedling vigor. However, the underlying processes affecting seedling growth and vigor under adverse temperature conditions has not been fully investigated. Therefore, the objective of this study was to assess seedling vigor of peanut plants grown under sub-optimal temperature during the emergence process. To this end, two runs of a controlled-environment study was conducted. Peanut seeds from the cultivar Georgia-06G were planted in pots in two different growth chambers to control the temperature conditions. Temperatures of 18/24 (±0.5) ^{o}C and 21/29 (±0.6) ^{o}C during the day/night period with 13.5-h photoperiod and average PAR of 600 μmol^{-1} m^{-1} s^{-1} (±15) were maintained in the chambers from planting until sampling. At 18 days after planting, OJIP fluorescence was measured in the uppermost, fully-expanded, mainstem, tetrafoliate leaf. Total leaf area was measured in the plants from the second run. Plants were harvested and separated into leaves and stems and oven dried at 60 ^{o}C for dry matter quantification. Overall quantum efficiencies and performance indices were impaired by lower growing temperature (18/24 ^{o}C). However, OJIP fluorescence-derived structural indicators were unaffected by the temperature regimes. Leaf area and dry matter of leaves and stems were significantly higher for the plants grown under 21/29 ^{o}C compared to those grown under 18/24 ^{o}C. Overall, seedlings grown at 18/24 ^{o}C were less efficient at absorbing light, and trapping and transporting energy during the thylakoid reactions, which likely led to the impaired growth and development of peanut seedlings.

Above- and Below-Ground Evaluation of Peanut Genotypes for Improving Soil Water Acquisition and Utilization

B. ZURWELLER[*], Department of Plant and Soil Sciences, Mississippi State University, Starkville, MS 39762; D.L. ROWLAND, B. TILLMAN, Agronomy Department, University of Florida, Gainesville, FL 32611; and X. GUO, A. ZARE, Department of Electrical and Computer Engineering, University of Florida, Gainesville, FL 32611.

Advancing technologies are enhancing phenotyping efforts which are being used to identify superior crop traits for improving drought tolerance. Some of these phenotyping efforts have focused specifically on quantifying root system architecture (RSA) often making assumptions about root function and crop water use. The aim of this study was to characterize both the structure and function of above- and below-ground phenotypes to assess their ability to acquire and utilize soil water. Two peanut genotypes with contrasting root system architectures were grown *in-situ*. Mini-rhizotrons were installed to evaluate genotypic root architecture and root morphological developmental changes to early season water management. Over the growing season, measurements of leaf level gas exchange and soil water depletion were coupled with root system architecture evaluations across a range of soil water conditions. Soil water depletion around the roots visualized in the minirhizotron was positively correlated with transpiration indicating that this method is likely reflective of actual soil water uptake. Despite contrasting RSA among the genotypes, soil water uptake in the soil was primarily influenced by soil water availability in the soil profile, not simply having a greater amount of root presence in the soil. Evidence of stomatal sensitivity to soil drying also occurred when comparing the two genotypes. Phenotyping both above- and below-ground traits quantifying crop water availability and use can be used to screen germplasm for drought tolerance.

The Allelopathy of Autotoxic Compounds in Peanut Continuous Cropping Obstacle and Mitigation Mechanism

J. LIU*, F.S. TANG, J. ZHANG, X. HAO, X. W. ZANG, W. Z. DONG, X.Y. ZHANG, J XU, Z. X. ZHANG, Industrial Crops Research Institute, Henan Academy of Agricultural Sciences, Zhengzhou, Henan, 450002, China and C.Y. CHEN, A. SANZ SAEZ, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 36849, United States.

In China, some of peanuts are produced in a solo peanut cropping system without rotation with other crops. The autotoxicity of peanut root exudate is one of the obstacles that preventing continuous cropping. In order to alleviate the autotoxicity, we isolated and identified 7 peanut root exudates, including myristic acid, palmitic acid, stearic acid, benzoic acid, nonanoic acid, 3-tert-butylphenol and 4-p-tert-butylphenol. The effects of autotoxic substances on seed germination rate, peanut yield, leaf and root development were carried out in this experiment. 3-tert-butylphenol and 4-p-tert-butylphenol were identified as the two major autotoxic substances that had great influence on the growth and peanut and were associated with the clarification of autotoxic mechanism preliminarily. We also investigated the effects of different treatments on peanut growth and development, yield, quality, leaf enzyme activity and soil microbial diversity through pot experiment with the mitigation substances and pool experiment with rotation. The results indicated that application of mitigation substances such as activated carbon, carbon-based fertilizer or take measures of peanut-wheat-maize rotation systems could dramatically reduce the autotoxicity of peanut root exudate.

Amino Acid and Sucrose Reactions: Real Time Analysis using Gerstel TDU-GC/MS

M. SCHOLTEN*, C. LIEBOLD**,** The J.M. Smucker Company, 767 Winchester Rd., Lexington, KY 40505 and J.A. MARSHALL, The Department of Chemistry and Biochemistry, Lubbock Christian University, Lubbock TX 79407

A Gerstel TDU (Thermal Desorption Unit) was used to react amino acids with sucrose and subsequently analyze the formation of volatile compounds in real time using GC/MS. It was observed that the reaction between sucrose and three amino acids (arginine, lysine, and methionine) yields many of the volatiles observed when roasting peanuts. These three amino acids are prevalent in the region of Arah1 used as a differential flavor marker, which was presented by Julie Marshall of LCU during The APRES 2018 Annual Meeting in a talk titled "Marker Assisted Selection of Peanut Storage Proteins for Flavor Potential." The number of lysine, methionine, and arginine residues in the translated sequences were compared with Florunner sequences hypothesized to be characteristic of desirable roasted peanutty flavor. These results provide further evidence that this marker plays a key role in providing peanuts with its desirable roasted peanut flavor.

Effects of a Spray Treatment on Secondary Metabolites in Runner Peanuts

L. DEAN*, K. HENDRIX, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695-7624; and M. LAMB, National Peanut Research Laboratory, USDA, ARS, SEA, Dawson, GA 39842.

Many of the small molecules produced as secondary metabolites by peanut seeds are responsible for peanut flavor after roasting. These compounds are affected by growing environments, field treatments and maturity. Two peanut varieties, GA 06G (normal oleic) and GA 09B (high oleic) were planted in Dawson, GA at 3 different planting dates considered early, mid and late for the area. Treated plots were sprayed at 100 and 110 days after planting with Diflufenzopyr (D-Na) to terminate flowering on the plants. Control plots were not treated with D-Na. Half of the plots were harvested at the normal time and half of the plots were harvested 2 weeks later than normal.

The peanuts harvested were sorted into the market grades (oil stock, number 1, medium, jumbo and splits). Targeted and Non-targeted chemical analyses were performed. 491 unique compounds were identified in the samples. The statistical analysis for the trends in the metabolite data were most closely correlated with variable of the harvest time rather than the spray treatment. These trends included increasing levels of several compounds typically associated with anabolic processes and decreasing levels of several amino acid and lipid products. The actual size classification which relates to maturity did produce significant effects in metabolism, which suggests that peanut flavor will be more impacted by seed maturation rather than the specific spray treatment applied in this study.

PLANT PATHOLOGY I

	Thursday, July 12, 2018	
10:30 AM - 12 Noon *Terrace Room*	**Plant Pathology I** *Moderator: Abraham Fulmer, BASF*	**Page Number**
10:30 AM	**Efficacy of Chlorothalonil Alternatives Compared for Disease Control and Yield Response on Peanut** **A. K. HAGAN***, H. L. CAMPBELL, Department of Entomology and Plant Pathology, Auburn University, AL 36849; L. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345.	**106**
10:45 AM	**In-Furrow Application of Phorate and Development of Late and Early Leaf Spot** **D.J. ANCO*,** J.S. THOMAS, Clemson University, Blackville, SC, 29817, I.M. SMALL, D.L. WRIGHT, University of Florida, Quincy, FL 32351.	**107**
11:00 AM	**Relative Importance of Variability Sources in Smut Resistance Assessment in Field Tests** **J. BALDESSARI***, F. MARRARO ACUÑA, A. RODRIGUEZ, Manfredi Exp. Stn. Instituto Nacional de Tecnología Agropecuaria (INTA); M.B. CONDE, Marcos Juarez Exp. Stn. (INTA). Argentina.	**108**
11:15 AM	**Management of Peanut Root Knot Nematode with Nematicides Applied In Furrow or as Foliar Sprays.** **T. B. BRENNEMAN*,** A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31794, and K. RUCKER, Bayer Cropscience, Tifton, GA 31794.	**109**
11:30 AM	**Addition of Thrips Category to Peanut Rx for Prediction of Risk to Spotted Wilt** C.B. CODOD, **R. C. KEMERAIT***, A.K. CULBREATH, Department of Plant Pathology and M. ABNEY, Department of Entomology, The University of Georgia, Tifton, GA 31793. G.G. KENNEDY, Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC, and T. CHAPPELL, Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX.	**110**
11:45 AM	**Residual Control of Leaf Spot from Single Applications of Pydiflumetofen** **A.K. CULBREATH*,** T.B. BRENNEMAN, R.C. KEMERAIT and K.L. STEVENSON, Department of Plant Pathology, Univ. of Georgia, Tifton, GA 31793-5766.	**111**

Efficacy of Chlorothalonil Alternatives Compared for Disease Control and Yield Response on Peanut

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

In 2016 and 2017, chlorothalonil alternatives Elast, Muscle ADV, Mancozeb 80W, Topin 4.5F, and CuproFix Ultra alone or tank-mixed were compared with Echo 720 6F (chlorothalonil) or Echo 720/Fontelis standards for the leaf spot and stem rot control as well as yield response on irrigated Georgia-09B peanut at the Wiregrass Research and Extension Center in Headland, AL. For each study, a randomized complete block with four replications was used. Fertility and weed control were according to ACES recommendations. For 2016, significantly better leaf spot control was noted with Mancozeb+Topsin than Elast/Muscle ADV, CuproFix Ultra+Topsin, and Mancozeb alone season-long with the remaining fungicide programs, including Echo 720 and Echo 720/Fontelis, proving equally effective. While stem rot pressure was low, Echo/Fontelis gave better control than Absolute/Muscle ADV/Echo 720, CuproFix Ultra+Topsin, and Mancozeb+Topsin. Higher yields recorded for Elast/Elast+Custodia were matched by five other fungicide programs but not Elast alone, Mancozeb+Topsin, or CuproFix Ultra+Topsin season-long, along with the Echo/Fontelis standard. In 2017, lower defoliation levels were recorded for CuproFix Ultra+Topsin compared with Elast or Mancozeb alone season-long but not the Echo 720 and Echo 720/Fontelis standards, with the latter program giving better stem rot control than all but four of the alternative fungicide programs. Mancozeb+Topsin/Mancozeb+Muscle and Mancozeb+Topsin, which produced greater yield than Absolute/Muscle ADV/Echo 720 and Elast season-long, yielded similarly to the Echo 720 and Echo 720/Fontelis standards. With some exceptions, chlorothalonil alternatives often gave similar leaf spot control and yield response as the Echo 720 and Echo 720/Fontelis standards.

In-Furrow Application of Phorate and Development of Late and Early Leaf Spot

D.J. ANCO*, J.S. THOMAS, Clemson University, Blackville, SC, 29817, I.M. SMALL, D.L. WRIGHT, University of Florida, Quincy, FL 32351

Late and early leaf spot are caused by *Nothopassalora personata* and *Passalora arachidicola*, respectively, and are damaging diseases of peanut (*Arachis hypogaea*) capable of defoliation and yield loss. Management of these diseases is most effective through the integration of tactics that reduce starting inoculum and prevent infection. The insecticide phorate was first registered in 1959 and has been used in peanut production for decades as an in-furrow insecticide to help manage thrips. Many studies have additionally shown significant suppression of *Tomato spotted wilt virus* infections following phorate treatment beyond thrips suppression alone, for which phorate has since been reported to activate defense-related responses in the peanut plant. From 2017 to 2018 in Blackville, SC and in 2018 in Quincy, FL, significantly less leaf spot defoliation was exhibited on peanuts treated with 1.05 kg/ha phorate in-furrow at planting (20.4%) compared to nontreated checks (44.3%). Significant suppression of leaf spot infection was observed for more than 90 days after planting. To our knowledge, these are the first trials in the 60 years since its registration demonstrating significant suppression of late and early leaf spot on peanut following application of phorate in-furrow at planting.

Relative Importance of Variability Sources in Smut Resistance Assessment in Field Tests

J. BALDESSARI[1]*****, F. MARRARO ACUÑA[1], A. RODRIGUEZ[1], M.B. CONDE[2]
Manfredi Exp. Stn. Instituto Nacional de Tecnología Agropecuaria (INTA); Marcos Juarez Exp. Stn. (INTA). Argentina.

Genetic resistance seems the most promising tool for peanut smut management. Resistance sources for breeding use are sought without a clear idea of how important is each source of variation (season, genotype, blocks) in a smut resistance assessment test in each location. Data from tests looking for resistance among different genotypes were analyzed in order to quantify the relative importance of each variation source in the test.

Seven seasons of a smut resistance test carried out at a farm were analyzed. The test included 13 commercial cultivars with little degree of common ancestry, 4 breeding lines and 2 necrotrophe-resistant PIs. Two checks were planted all the 7 seasons while other 17 genotypes were tested in variable number of them.
An RCB design with four reps was mostly used except in one season, where that number was reduced to three. Two row plots (12 ft long) were always used with a plant density of 3.3 seeds/ft. Tests were planted in fields of the same farm, downwind from a processing peanut plant which assured high smut inoculum in the soil (5500 spores/g). Smut incidence (SI) in a plot was calculated as SI=(number of infected pods/total number of pods)*100. A factorial structure ANOVA (season & genotype) was performed on SI assuming both factors (season & genotype) as random. The relative size of the covariance parameters was estimated.

Season was the most important variability source with 298±176 (variance component±standard error), while the genotype was much smaller but still reasonably important (67±27) as compared with a residual of 74±8. The main factors' interaction was relatively small (19±9) while block had very small estimate (5±3). These results highlight the importance of multiple years for a correct characterization of resistance as disease can go from mild to severe depending on the season and that in years of low incidence can cause difficulties in separating levels of resistance. GxE I seems to pose a small danger of mischaracterizing genotypes' resistance.

Management of Peanut Root Knot Nematode with Nematicides Applied In Furrow or as Foliar Sprays.

T. B. BRENNEMAN*, A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31794 and K. RUCKER, Bayer Cropscience, Tifton, GA 31794.

Peanut root knot nematode (RKN = *Meloidogyne arenaria*) is a devastating pest of peanut in Georgia, particularly in fields with sandy soils and short crop rotations. Fluopyram is an SDHI fungicide/nematicide marketed for use either in furrow as Velum Total (18.0 fl oz/A) or sprayed and washed in as Propulse (13.7 fl oz/A). It has activity on RKN as well as leaf spot (*Cercospora arachidicola* and *Cercosporidium personatum*) and stem rot (*Sclerotium rolfsii*). The efficacy of both products was evaluated in a heavily infested field on GA-06 peanuts sprayed with a conventional fungicide program. In two years of field trials, Velum Total had no effect on stem rot incidence, but reduced leaf spot at harvest in 2017 and 2018. It also reduced nematode galling on roots both years, and on pods in 2018 only. Propulse applied in addition to the Velum Total usually reduced damage from leaf spot, stem rot and nematodes. The maximum benefit of Propulse for control of both diseases and root knot came from applications at 45-75 days after planting (DAP) versus 30 DAP. Pod yields generally reflected the level of disease control, and pod yields were about 1000 lb/A higher in the best treatments versus the fungicide-only control. The nematode-resistant cultivar GA-14N was included with no Velum Total or Propulse applied. It had much lower levels of stem rot and nematode injury, but yields were lower both years than in the best treatments on GA-06G. In an additional study, the timing of irrigation after application to wash off Propulse was evaluated and compared to a chemigation application in 0.10 inch of water. The sprayed applications were at least as good or better than the chemigated treatment for nematode control and pod yield. Timing of irrigation after spraying ranged from immediately after application up to 66 hours later. All treatments with Propulse had significantly less pod galling than the control, and there were no differences in pod galling among the times of washoff.

Addition of Thrips Category to Peanut Rx for Prediction of Risk to Spotted Wilt

C. B. CODOD, **R. C. KEMERAIT***, A.K. CULBREATH, Department of Plant Pathology and M. ABNEY, Department of Entomology, The University of Georgia, Tifton, GA 31793. G.G. KENNEDY, Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC, and T. CHAPPELL, Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX.

Management of Tomato spotted wilt disease, caused by the *Tomato spotted wilt virus*, is important for peanut growers in the southeastern United States. Peanut Rx, whose origins date to 1996, continues to be an important management tool that estimates risk to the disease. Peanut Rx is used to calculate a total pre-season risk by summing risk from individual production practices to include variety, planting date, plant-stand, use of in-furrow insecticide, tillage and row pattern. Risk in a field is considered "low", "moderate", or "high" based upon the summed points. The objective of this study was to determine if addition of a new "thrips vector" category, based upon timing of predicted peak population of the tobacco thrips, *Frankliniella fusca*, will improve the predictive ability of the index.

Field trials were established at six research farms located near Midville, Reidsville, Camilla, Tifton, Attapulgus and Plains in 2017 and 2018. The experimental design was a split-split-plot design where whole plots were planting date (early, mid and late), sub-plots were variety (Georgia-06G and Florun™'157' in 2017 and Georgia-06G and Tufrunner™'511' in 2018) and sub-sub-plots were treatment with or without phorate (Thimet 20G, 5 lb/A) at planting. These combinations created 12 different risk-point totals based upon Peanut Rx. Plots were rated for spotted wilt on a biweekly schedule throughout the season. Peak thrips periods were estimated for each location using the "Thrips Infestation Predictor for Cotton" from North Carolina State University. From the predicted thrips peak periods (before 15 April, 16-30 April, 1-20 May, after 20 May) and the frequency of spotted wilt severity categories observed in the field trials (<5%, 5%-14%, ≥ 15%) a mosaic frequency table was created and "thrips" risk points were assigned based abundance of severity category observed in each peak period (5, 20, 30, 15, respectively). Logit-tranformed values for spotted wilt observations were regressed against standard Peanut Rx point totals and against point total for Peanut Rx + Thrips Factor and compared.

Severity of spotted wilt in low risk categories from Peanut Rx across two years and six locations varied by 12.4%. Severity of spotted wilt in high risk categories from Peanut Rx varied by 40.6%.. The highest level of spotted wilt severity was observed when the thrips peak was predicted to occur between 1 May and 20 May. The lowest severity was observed when the peak period was predicted to occur prior to 15 April. When spotted logit transformed spotted wilt data were regressed against risk points, R2-values were improved, MSE-values were reduced and regression slopes increased when for the thrips-modified Peanut Rx versus the standard Peanut Rx tool.

Residual Control of Leaf Spot from Single Applications of Pydiflumetofen.

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

Control of early leaf spot (*Passalora arachidicola*) and late leaf spot (*Nothopassalora personata*) of peanut (*Arachis hypogaea*) in the southeastern U.S. is heavily dependent on the use of fungicides. The newly registered succinate dehydrogenase inhibiting (SDHI) fungicide pydiflumetofen (Adepidyn, Miravis 1.67 SC) has shown outstanding field efficacy against early and late leaf diseases with potential for providing excellent control when applied at longer than the standard 14-day intervals. The objective of this study was to determine the effect of one application of pydiflumetofen on leaf spot epidemics. Field experiments were conducted in 2017 and 2018 in Tifton, GA in which treatments included pydiflumetofen at 50 g a.i./ha applied once, 58 days after planting (DAP) in 2017, and 63 DAP in 2018; chlorothalonil (Bravo WeatherStik) at 1.26 kg a.i./ha applied six or seven times on an approximate 14-day schedule; and a nontreated control. Late leaf spot was the predominant foliar disease, and epidemics were intense. In 2017, Florida 1-10 scale leaf spot severity ratings 118 DAP were 7.9, 7.4, and 4.0 (LSD = 0.7) for the nontreated, chlorothalonil, and pydiflumetofen treatments, respectively. In 2018, severity ratings 140 DAP were 9.2, 8.1, and 4.0 (LSD = 0.7) for those respective treatments. These trials demonstrated remarkable residual control of late leaf spot with one application of pydiflumetofen. However, pydiflumetofen should be used in integrated application regimes that include fungicides with different modes of action.

PLANT PATHOLOGY II, ENTOMOLOGY

	Thursday, July 11, 2019	
1:00 - 3:00 PM *Oak Room*	**Plant Pathology II, Entomology** *Moderator: Kira Bowen, Auburn University*	**Page Number**
1:00 PM	**A Multiyear Study Examining Varying Fungicide Input Programs on Georgia-06G, TUFRunner 511 and FloRun 331 Disease Management** **N. DUFAULT*,** University of Florida Associate Professor and Extension Specialist, Gainesville, FL 32611; W. ELWAKIL, University of Florida, Dept. of Plant Pathology, Gainesville, FL 32611; R. BARRACO, University of Florida, North Florida Research and Education Center, Quincy, FL 32060.	**113**
1:15 PM	**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-Agricultural Research Services-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 (c/o ILRI), Member, Addis Ababa, Ethiopia; D.HOISINGTON, College of Agriculture and Environmental Sciences, Peanut and Mycotoxin Innovation Lab, University of Georgia, Athens Georgia, 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.	**114**
1:30 PM	**On-Farm Evaluation of Nematicides in Peanut in the Florida Panhandle** **M.D. MAULDIN*,** UF/IFAS Washington County Extension, Chipley, FL 32428; E.T. CARTER, UF/IFAS Regional Crop IPM Agent, Marianna, FL 32446; Z.J. GRABAU, Entomology and Nematology Department, The University of Florida, Gainesville, FL 32611.	**115**
1:45 PM	**Inpyrfluxam: A New Active Ingredient for Control of Southern Stem Rot of Peanut** K.W. SEEBOLD, **F.H. SANDERS*,** C. MEADOR, M. RIFFLE, B. CORBIN, and J. CRANMER, Valent USA LLC, Walnut Creek CA, 94956.	**116**
2:00 PM	**Acephate and Alternative Foliar-applied Insecticides for Thrips Control** **S.TAYLOR***, Virginia Tech, Suffolk, VA.	**117**
2:15 PM	**Pests Associated with Peanut and Current Baseline Susceptibility to Insecticides in the Florida Panhandle.** **S.V. PAULA-MORAES*,** J. BALDWIN, M.M. RABELO, L. LEDBETTER-KISH, P. BANN. E.T. CARTER. Entomology & Nematology Department, West Florida Research and Education Center, University of Florida, Jay, FL 32565.	**118**
2:30 PM	**Mefentrifluconazole – A New Broad-Spectrum Demethylation Inhibitor for Use on Row and Specialty Crops** P. HALABICKI, J. MILLER, **A. FULMER***, K. LIBERATOR, L. NEWSOM, BASF Corporation, Research Triangle Park, NC 27709.	**119**

A Multiyear Study Examining Varying Fungicide Input Programs on Georgia-06G, TUFRunner 511 and FloRun 331 Disease Management.

N. DUFAULT*, University of Florida Associate Professor and Extension Specialist, Gainesville, FL 32611; W. ELWAKIL, University of Florida, Dept. of Plant Pathology, Gainesville, FL 32611; R. BARRACO, University of Florida, North Florida Research and Education Center, Quincy, FL 32060.

Understanding varietal responses to various fungicide inputs is critical to peanut disease management strategies. A 4-year study was conducted looking at the efficacy of various fungicide programs on the peanut cultivars Georgia-06G, TUFRunner 511 and FloRun 331. Spray programs consisted of the three fungicide products chlorothalonil, tebuconazole and azoxystrobin applied 4, 5 or 7 times throughout the season in various combinations. The results from these studies showed that adequate disease control could be attained with 4 or 5 spray programs compared to 7 sprays. However, disease presence and host susceptibility were crucial to determining the amount of disease reduction and yield savings. In general, Georgia-06G benefited the most (had higher yields and lower disease) from 7 fungicide applications whereas the other two varieties generally saw maximum returns after 5 fungicide applications. These results indicate the importance of testing varietal responses across years and well as locations. It also shows that acceptable yields can be attained from a reduced program especially in years where disease is low (<40% severity).

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-Agricultural Research Services-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 (c/o ILRI), Member, Addis Ababa, Ethiopia; D.HOISINGTON, College of Agriculture and Environmental Sciences, Peanut and Mycotoxin Innovation Lab, University of Georgia, Athens Georgia, 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.

Several *Aspergillus* species have the potential to cause aflatoxin contamination, posing a health threat to consumers of susceptible agricultural products such as groundnut, as well as an economic risk through commodity rejection of domestic and international markets. Novel technologies for aflatoxin control target specific DNA sequences of *Aspergillus*; thus, identifying the predominant fungal genotypes that colonize groundnut seed is essential. In this study, 184 *Aspergillu*s isolates were obtained from groundnut seed in eastern Ethiopia. They were analyzed for aflatoxin production by Ultra-Performance Liquid Chromatography, and fingerprinted using 23 Insertion/Deletion markers within the aflatoxin-biosynthesis gene cluster. The species observed included *A. flavus, A. tamarii* and *A. parasiticus*. Of the *A. flavus* sampled, L-, S-morphotypes were represented, as well as those deemed sclerotium non-producers (SNP).

All *Aspergillus* isolates tested produced measureable aflatoxins. Analysis of genetic distances by Neighbor Joining, Principal Coordinate Analysis and Structure clustered the isolates into four main groups. **Group I**, the largest, had 88% of the *A. flavus*, including all *A. flavus* L-strains, and *A. tamarii*, and the highest aflatoxin B_1 producer was *A. flavus* (N1436) (77.9 µg/mL). **Group II** contained 52.4% of *A. flavus* S-strains and 47.6% of *A. flavus* (SNP). **Group III** primarily included *A. parasiticus* (87.9%); among which, twenty produced aflatoxins B and G, with up to 50.3 µg/mL of G_1, whilst nine produced only B aflatoxins. **Group IV** was represented by four *A. flavus* S-strains produced aflatoxin B and G types, and two *A. flavus* (SNP). All *Aspergillus* isolates tested produced aflatoxins. This is the first report on aflatoxin contamination and *Aspergillus* genotypes present in groundnut from eastern Ethiopia. Predominant genotypes were identified as candidates for genome sequencing, and to generate a database of Ethiopian *Aspergillus* genomes for the development of effective aflatoxin control strategies in groundnut.

On-Farm Evaluation of Nematicides in Peanut in the Florida Panhandle

M.D. MAULDIN*, UF/IFAS Washington County Extension, Chipley, FL 32428; E.T. CARTER, UF/IFAS Regional Crop IPM Agent, Marianna, FL 32446; Z.J. GRABAU, Entomology and Nematology Department, The University of Florida, Gainesville, FL 32611.

The performance of three nematicide products in comparison to each other and an untreated check were assessed on-farm over a two-year period. The trial took place in 2017 and 2018, in the central Panhandle of Florida, hosted by a Jackson County producer. Sampling for and confirmation of root-knot nematode presence was completed each year prior to the trial. Both years, the products were applied in field length test strips with four replicates and the same treatments and rates were maintained each year. We evaluated Telone II (3.5 gal/a), Velum Total (18 oz/a), AgLogic 15GG (7 lb/a at planting), and an untreated check. Nematode populations, damage, and crop yield were tracked. The objectives of the trial were 1) assess product efficacy for root-knot nematode management; 2) assess product impacts on beneficial nematode populations; and 3) quantify treatment yields to determine the cost efficiency of products. Nematode populations were assessed in 50' plots marked within each treatment replication. This occurred prior to planting and nematicide application, midseason (65 days after planting), and late season (120 days after planting). Peanut yields were assessed from the whole field-length strip. Beneficial nematodes populations (fungal feeders) were found to be impacted by some of the treatments both years. In 2017, all treatments significantly increased peanut yield when compared to the untreated control. However, the 2018 trial found varying results as the untreated control performed statistically similar to all other treatments. This inconsistency is likely attributed to the difference in severity of root-knot nematode infestation in fields year to year.

Inpyrfluxam: A New Active Ingredient for Control of Southern Stem Rot of Peanut

K.W. SEEBOLD, **F.H. SANDERS***, C. MEADOR, M. RIFFLE, B. CORBIN, and J. CRANMER, Valent USA LLC, Walnut Creek CA, 94956.

Inpyrfluxam is a new fungicide under development by Sumitomo Chemical Company, Ltd. and Valent U.S.A. LLC for control of major diseases of apple, corn, peanut, rice, soybean, and sugar beet. The inpyrfluxam active ingredient will be known as INDIFLIN™, and brands based on INDIFLIN™ technology will be marketed. Inpyrfluxam is a succinate-dehydrogenase inhibitor (SDHI) and is in the pyrazole-4-carboxamide group. Seed treatment, soil, and foliar uses will be registered. Inpyrfluxam is highly active against *Rhizoctonia solani* (including the anastomosis groups that cause rice sheath blight, potato black scurf, sugar beet crown rot, and peanut limb rot), *Sclerotium rolfsii* (southern stem rot of peanut) and rusts (including *Phakopsora pachyrhizi* and *Gymnosporangium juniperi-virginianae*) at use rates between 0.044 and 0.089 lb ai/A. In peanut, inpyrfluxam provides excellent control of southern blight when used in 2-, 3-, or 4-spray programs and offers strong protection of yield. Inpyrfluxam also effectively controls *Rhizoctonia* diseases of peanut. INDIFLIN™ is anticipated to be EPA-registered in August, 2020

Acephate and Alternative Foliar-applied Insecticides for Thrips Control

S.V. TAYLOR*, Virginia Tech, Suffolk, VA

Thrips are tiny spindle-shaped insects that feed on peanut plants by sucking juice out of leaves. In Virginia's shorter peanut growing season, severe thrips feeding causes maturity delays that reduce yield. Most, if not all, of Virginia peanut producers use an in-furrow insecticide to control thrips (e.g., imidacloprid, phorate, aldicarb). In cool and dry years, or in fields with poor plant growth (e.g., chemical burn), supplemental control with foliar sprays is needed. The most-used foliar thrips insecticide is acephate. Based on visual ratings of plant injury, acephate is not providing adequate control of thrips populations in Virginia and North Carolina. We evaluated the benefit of applying foliar acephate to various in-furrow products and evaluated alternative foliar insecticides for thrips control.

Pests Associated with Peanut and Current Baseline Susceptibility to Insecticides in the Florida Panhandle.

S.V. PAULA-MORAES*, J. BALDWIN, M.M. RABELO, L. LEDBETTER-KISH, P. BANN. E.T. CARTER. Entomology & Nematology Department, West Florida Research and Education Center, University of Florida, Jay, FL 32565.

The Florida Panhandle has a distinctive regional landscape and is in an ecological transition zone between temperate and subtropical climates. These unique conditions result in variable arthropod phenology, and peanut is one of the prevalent crops. There are several species of arthropod pests that occur throughout the crop season, which defoliate and injure the pegs and pods. While some technical publications report peanut pest in Florida Panhandle, additional research and information are needed to provide a region-specific inventory of the pest species associated with the peanut. Different insecticides are adopted by growers to management these species in peanut, such as the pyrethroids and diamides. The continuous adoption of these active ingredients poses a risk of resistant in pest populations. The early detection of the resistance prior to chemical control failures in the fields is recommended.

A high population of lepidopteran-pests, such as soybean looper have been detected in the region, during the pest sampling performed in the last two years. The phenology of flight of soybean looper, corn earworm, and fall armyworm have been also document by year-round trapping and pest sampling in sentinel plots at WFREC, and in commercial fields in the Florida Panhandle. An insecticide resistance monitoring also has been conducted in a proactive approach. The results will be discussed to support the development of IPM and Insect Resistance Management (IRM) recommendations for growers in the region.

Mefentrifluconazole – A New Broad-Spectrum Demethylation Inhibitor for Use on Row and Specialty Crops.

P. HALABICKI, J. MILLER, **A. FULMER***, K. LIBERATOR, L. NEWSOM, BASF Corporation, Research Triangle Park, NC 27709

Mefentrifluconazole (Revysol®) is a new fungicide active ingredient by BASF Corporation pending registration in the United States for control of key fungal diseases of pome fruits, stone fruits, tree nuts, grapes, potato, corn, soybean and other crops. Revysol fungicide, as classified by FRAC (Fungicide Resistance Action Committee), is a Group 3 demethylation inhibitor. The five-member ring of Revysol fungicide is attached to a flexible isopropanol link, forming an isopropanol azole structure. This unique chemical structure allows the molecule to easily assume different conformations, which has been shown to improve efficacy of this molecule on a variety of fungal classes including the Deuteromycetes, Ascomycetes and the Basidiomycetes, as well as some shifted strains. Results of studies measuring uptake, translocation, and intrinsic activity will be presented.

PRODUCTION TECHNOLOGY

	Wednesday, July 10, 2019	
1:30 - 3:15 PM **Oak Room**	**Production Technology** *Moderator: Brendan Zurwelller, Mississippi State University*	**Page Number**
1:30 PM	**Satellite-based Real-time Monitoring of Peanut Fields Using Multispectral and Synthetic-aperture Radar Imagery** J. BRINKHOFF, University of New England, Armidale 2351 NSW Australia, **G.C. WRIGHT***, D. J. O'CONNOR, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; and A.J. ROBSON, University of New England, Armidale 2351 NSW Australia.	**121**
1:45 PM	**Boron and Calcium Effects on Runner Peanut Production** A.S. VAN CLEAVE, J.A. HOWE, K.B. BALKCOM and **A.V. GAMBLE***. Crop Soil & Environmental Sciences, Auburn University, Auburn, AL, 36849.	**122**
2:00 PM	**Potential for Agronomic Crops in a Double Cropping System with Wheat *(Triticum aestivum L.*) in North Carolina** **A.T. HARE***, D.L. JORDAN, K.L. EDMISTEN, R. LEON, and A. POST, Department of Crop and Soil Science, North Carolina State University, Raleigh, NC 26795.	**123**
2:15 PM	**New Metering Technology for Peanut Planting** **K.B. BALKCOM***, Crop, Soils and Environmental Sciences, Auburn University, Headland, AL 36345 and J.A. KELTON, Alabama Cooperative Extension, Auburn University, Headland, AL 36345.	**124**
2:30 PM	**Peanut Yield and Quality Responses to Planting Date, Harvest Date, Cultivar, and Late-Season Flower Termination** **M. LAMB***, R. SORENSEN, and C.BUTTS. National Peanut Research Laboratory, USDA, ARS, Dawson, GA 39842 and L. DEAN, K. HENDRIX, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695.	**125**
2:45 PM	**Evaluation of Reduced Rates of Prohexadione Calcium (Plant Growth Regulator) on Peanut in Arkansas, Georgia, Mississippi, South Carolina and North Carolina.** **W.S. MONFORT***, R. S. TUBBS, University of Georgia, Tifton, GA 31793, D. L. JORDAN, North Carolina State University, Raleigh, NC 27695, T. R. FASKE, University of Arkansas, Lonoke, AR 72086, D. J. ANCO, Clemson University, Blackville, SC 29817 J. SARVER, Indigo AG, Bowling Green, KY 42101 , C. FERGUSON Mississippi State University, Starkville, MS 39762.	**126**
3:00 PM	**Timing of Termination for Supplemental Replanted Peanut to Maximize Yield and Grade** **R.S. TUBBS***, and W.S. MONFORT, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.	**127**

Satellite-based Real-time Monitoring of Peanut Fields Using Multispectral and Synthetic-aperture Radar Imagery

J. BRINKHOFF, University of New England, Armidale 2351 NSW Australia, **G.C. WRIGHT***, D. J. O'CONNOR, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; and A.J. ROBSON, University of New England, Armidale 2351 NSW Australia.

Previous studies have shown the utility of remotely-sensed multispectral imagery and vegetation indices derived from the imagery (such as Normalised Differential Vegetation Index - NDVI) for monitoring of peanut growth status. Applications include assessing within- and between-paddock biomass variability and predicting yield. This data is useful for growers managing in-field variability, and for processors managing operational logistics and financial forecasting. However, peanuts grown in Australia, and globally, are grown in areas where there is frequent cloud cover. This limits the applicability of satellite-based multispectral imagery for operational monitoring as the chance of a cloud-free capture on a required date are low. In contrast to multispectral imagery, synthetic-aperture radar (SAR) imagery is not limited by cloud cover. This paper assesses multiple uses of SAR imagery for peanut operations. A time-series of freely-available Sentinel-1 SAR images for the 2018-2019 season was obtained for this purpose, covering more than 50 peanut fields in the Bundaberg coastal cropping region located in south-eastern Queensland. The radar imagery was highly correlated with the limited cloud-free multispectral imagery from the Sentinel-2 platform over the same time period, with a significant correlation between multispectral NDVI and combinations of radar bands on multiple dates (r= 0.87) observed. Time-series growth profiles from the SAR data were also derived and assessment was made of their ability to estimate the crop emergence characteristics, actual harvest dates, and prediction of pod yield. Our results highlight the possibility for SAR data being used to replace multispectral data when the latter has limited availability due to presence of cloud cover on target peanut fields.

Boron and Calcium Effects on Runner Peanut Production

A.S. VAN CLEAVE, J.A. HOWE, K.B. BALKCOM and **A.V. GAMBLE***. Crop Soil & Environmental Sciences, Auburn University, Auburn, AL, 36849.

Calcium (Ca) and boron (B) deficiencies in peanut (*Arachis hypogaea* L.) can reduce seed quality, yield, and crop value. Southeastern U.S. Coastal Plain soils are inherently low in Ca and B, requiring supplementation to reach soil and plant tissue levels sufficient for peanut growth and development. In addition, coarse-textured surface horizons and high rainfall promote nutrient leaching. Two studies investigating Ca and B application rate, source, and timing effects on runner peanut production were conducted. To evaluate foliar-applied B effects on larger-seeded runner peanut (cv. Georgia-06G) yield and seed quality, B application rate (0.02, 0.28, 0.56, 1.12, and 2.24 kg B ha^{-1}), source (boric acid and sodium borate), and timing (single and split applications at early bloom) were tested at the Wiregrass Research and Extension Center (WREC; Headland, AL) in 2015, 2016, and 2017. No yield or grade responses to B treatments were observed, and minor B deficiency was observed in 2017 only. Seed B concentration was not affected by B rate, timing, or source. Applied B described at least 83% of leaf B concentration variability. A high rate of applied B (2.24 kg B ha^{-1} as sodium borate) was the most effective treatment for increasing leaf tissue B. Source did not affect leaf B when similar rates were compared. Application timing did not affect leaf B when similar sources were compared. Though foliar B applications did not improve grade or yield, applied B increased leaf tissue B concentrations without harming productivity. To evaluate Ca source effects on yield and seed quality, a study was conducted at WREC in 2015, 2016, and 2017 comparing lime ($CaCO_3$), gypsum ($CaSO_4$), and products containing humic acid or micronutrients. Lime and gypsum applications resulted in significantly higher ($P < 0.05$) seed and soil Ca levels compared to the untreated control. Alternative Ca sources did not result in different seed Ca levels compared to the control.

Potential for Agronomic Crops in a Double Cropping System with Wheat (*Triticum aestivum* L.) in North Carolina.

A.T. HARE*, D.L. JORDAN, K.L. EDMISTEN, R. LEON, and A. POST, Department of Crop and Soil Science, North Carolina State University, Raleigh, NC 26795.

Wheat (*Triticum aestivum* L.) and soybean [*Glycine max* (L.) Merr.] are generally double-cropped in North Carolina. However, if other commodity prices and projected net returns are higher than soybean, growers might consider a non-traditional double-crop system. Research was conducted in North Carolina from 2013-2017 at Lewiston-Woodville to determine yield potential of corn (*Zea mays* L.), cotton (*Gossypium hirsutum* L.), grain sorghum [*Sorghum bicolor* (L.) Moench], peanut (*Arachis hypogaea* L.), and soybean planted in reduced tillage systems within the recommended planting window for full-season production versus planting these crops following wheat harvest. Yield of corn, cotton, grain sorghum, peanut, and soybean in full-season production exceeded that of double-cropping with wheat in 5, 5, 2, 4, and 5 years out of 5 years of the study, respectively. Corn, cotton, and peanut yields varied across years and planting dates. Yield of mid-April and Mid-May planted corn exceeded yield of mid-June planted corn in most instances. Yield of cotton and peanut planted in early May or late May exceeded yield of mid-June plantings of these crops in most years. Estimated economic returns were generated for five different pricing structures using crop and planting date combinations. The analyses used included combinations of the ten-year average (2008-2017) summer crop prices with the ten-year average wheat price, the ten-year average summer crop prices with the ten-year high wheat price, the ten-year high summer crop prices with the ten-year average wheat price, the ten-year high summer crop prices with the ten-year high wheat price, and the ten-year high wheat and average price of soybean verses the ten-year high summer crop and high wheat price. Regardless the pricing structure, grain sorghum consistently produced the lowest estimated economic returns when not influenced by a high wheat price. Double cropped wheat and peanut generated economic return similar to or greater than double-cropped wheat and soybean in most years and pricing structures. In most cases, double-cropping wheat with corn, cotton, or peanut was economically feasible when prices were set at \$0.32/kg, \$2.33/kg, and \$1.02/kg, respectively, compared to double-cropping wheat and soybean.

New Metering Technology for Peanut Planting

K.B. BALKCOM*, Crop, Soils and Environmental Sciences, Auburn University, Headland, AL 36345 and J.A. KELTON, Alabama Cooperative Extension, Auburn University, Headland, AL 36345.

New planting technology allows for improved precision for seed singulation, uniform population, and row by row shutoff. However, with some new meter designs that are substantially smaller than conventional planter meters from the early 1990's, there is concern as to how successfully larger seeded peanut varieties flow through the new meter systems in single rows at higher seeding rates. To evaluate any differences, a field trial was conducted in 2018 to compare seeding rate and planter speed with large and small-seeded peanut varieties using the vDrive with 20/20 Seedsense Technology from Precision Planting®.

Results indicate that the large-seeded (1320 seed/kg) runner variety, Tuf-511, at higher seeding rates and maximum planting speeds, consistency yielded less than slower planting speeds at the same seeding rate. Higher seeding rates (20 seed/m) and planting speeds also resulted in lack of uniformity in plant spacing and emergence for this variety. Yields were increased for the higher seeding rate when planter speed was reduced from 9.6 km/h to 6.4 km/h. Planter technology has been greatly improved over older designs, however, planter speed must be carefully considered based on seeding rate and peanut variety.

Peanut Yield and Quality Responses to Planting Date, Harvest Date, Cultivar, and Late-Season Flower Termination

M. LAMB*, R. SORENSEN, and C.BUTTS. National Peanut Research Laboratory, USDA, ARS, Dawson, GA 39842 and L. DEAN, K. HENDRIX, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695.

As a botanically indeterminate plant, flowering and fruit initiation occurs in peanut over a long extended time period during the growing season. Thus a wide range of maturity, size, and maturity within size in peanut fruit exists at harvest. Immature kernels that meet commercial edible size specifications negatively affect quality during processing. Peanut yield, quality factors, and maturity can be affected by numerous factors during the entire production season. Research was conducted during the 2016 and 2017 crop years on a Red Bay sandy loam (Fine-loamy, kaolinitic, thermic Rhodic Kandiudults) near Dawson, GA (31.7904118º, -84.5122288º) in irrigated and non-irrigated production environments. Three planting dates (30 day intervals), two cultivars (GA 09B: high oleic and GA 06G: normal oleic), two harvest dates (on-time and 12 days later), and a late-season flower termination treatment were utilized to impose differing environmental conditions and determine the impact on peanut yield and quality as well as to provide samples for metabolomics analysis. Significant main effects for yield were irrigation, year, planting date, and harvest date. Numeric, but not statistically different yield increases resulted for the GA 06G cultivar and late-season flower termination.

Evaluation of Reduced Rates of Prohexadione Calcium (Plant Growth Regulator) on peanut in Arkansas, Georgia, Mississippi, South Carolina and North Carolina.

W.S. MONFORT*, R. S. TUBBS, University of Georgia, Tifton, GA 31793, D. L. JORDAN, North Carolina State University, Raleigh, NC 27695, T. R. FASKE, University of Arkansas, Lonoke, AR 72086, D. J. ANCO, Clemson University, Blackville, SC 29817 J. SARVER, Indigo AG, Bowling Green, KY 42101 , C. FERGUSON Mississippi State University, Starkville, MS 39762 ,

Prohexadione Calcium is commonly used on virginia type peanuts to manage their excessive vine growth and promote improved digging efficiency. However, minimal acres of runner type peanuts have Prohexadione Calcium applied due to their more compact growth habit. Vine growth of some new runner type cultivars in the last five years have a more vigorous growth habit causing a renewed interest in growth regulators. Evaluations of runner and virginia cultivar (growth and yield) response to reduced rates of Prohexadione Calcium were conducted in small plot trials in Arkansas, Georgia, South Carolina, and North Carolina. Large on-farm trials evaluating the same growth regulator treatments were conducted in Georgia and Mississippi on runner cultivars. Application rates of Prohexadione Calcium at 529.8 ml/ha (1X, Labeled), 397.5 ml/ha (0.75X), 265.3 ml/ha (0.5X), and a non-treated check were evaluated. Applications were initiated when 50% of lateral vines from adjacent rows were touching. A second application was applied 14 days after the first. Cultivar and treatment responses were evaluated based on canopy height, yield, and grade. All rates of Prohexadione Calcium reduced canopy growth for most trials compared to the non-treated check. In the small plot trial virginia trials, Apogee at the ¾ X and 1X rate significantly reduced height from 26.2 cm to 22.7 cm. Yield response varied by location and rate of Prohexadione Calcium with no significant increase in yield being observed in small plot trials. However, reduced rates of Prohexadione Calcium increased yield in all of the on-farm trials compared to the untreated check. Yield increases ranged from 453 to 731 kg/ha for all apogee treatments compared to the non-treated check across all of the on-farm trials in Mississiippi and Georgia. Based on the data from these trials, Apogee effectively reduced vine growth which supports previous work. However, the differences observed in small plot compared to large on-farm trials in regard to yield response needs to be examined more. Since there were a significant increase in yields in all of the on-farm trials and not in small plot trials, it can be assumed that there is not enough data points in small plot trials to accurately examine the yield effects of Apogee.

Timing of Termination for Supplemental Replanted Peanut to Maximize Yield and Grade.

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

A common method of replanting a poor plant stand of peanut (*Arachis hypogaea* L.) is to plant a supplemental row parallel to the original row. When this occurs, there are plants at different stages of maturity growing in unison. This makes determination of optimum maturity difficult. The objectives of this study were to determine the plant population where peanut will benefit from replanting, the optimum timing for terminating growth to maximize yield and grade (total sound mature kernels or TSMK), and the effect of intra-row plant competition on fruit-set between the plants planted initially (larger and more mature) and the replanted plants (delayed and smaller in size). The experiments took place at the University of Georgia Lang-Rigdon Farm in 2014, 2016, and 2017. Peanut was initially planted in late April-early May each year and thinned by hand to plant populations of 13.1, 9.8, 6.6, and 3.3 plants/m of row. The 9.8, 6.6, and 3.3 plants/m populations were replicated three additional times and replanted with a supplemental seeding rate of 9.8, 13.1, or 16.4 seed/m for the respective populations to make final plant stands similar for all replant treatments. For each replant scenario, plant termination was made at three different timings that coincided with optimum maturity of the initial planted peanuts, the replanted peanuts, or averaged between those two dates. Averaged over all three years of data, with respect to plant population there was a positive linear correlation between plant stand and yield. Yield was greater at 13.1 (6506 kg/ha) and 9.8 (6297 kg/ha) plants/m than at 3.3 (5651 kg/ha) plants/m. Below the 6.6 plant/m point would be where a replant decision should be initiated. Stand was also inversely correlated with pod production per plant. Pod weight (g/plant) was not different for 13.1 and 9.8 plants/m populations, but increased by over 60% when stand was reduced to 6.6 plants/m and increased another 80% from 6.6 down to 3.3 plants/m. Even when replanting occurred, competition was evident. There were 22 to 42% more pods (g/plant) on the replanted plants adjacent to the original plant population of 3.3 plants/m when compared to the replanted plants that were next to the initial populations of 6.6 or 9.8 plants/m, respectively. When data was grouped over similar plant populations, overall yields were improved by replanting (6609 to 6627 kg/ha) compared to not replanting (5980 kg/ha). Yet there were no differences in yield among the three termination timings. However, there were increases in TSMK as termination timing progressed, with earliest termination having the lowest (73.2%), average termination in the middle (76.3%), and the latest termination having the greatest TSMK (77.5%). If supplemental replanting occurs, this data suggests the best recommendation is to delay termination by digging beyond the optimum maturity of the initially planted plants until closer to the maturity of the replanted plants to allow the late developing pods to gain maturity.

WEED SCIENCE

	Thursday, July 11, 2019	
1:30 - 2:30 PM *Oak Room*	**Weed Science** *Moderator: Cristiane Pilon, University of Georgia*	**Page Number**
1:30 PM	**Findings from the 2019 Survey of Mississippi Peanut Grower Application and Weed Management Practices** **J.C. FERGUSON***, K.L. BROSTER, Z.R. TREADWAY, J.S. CALHOUN, L.M. MERRITT, M.T. WESLEY. Department of Plant and Soil Sciences, Mississippi State University, Mississippi State, MS 39762-9555.	**129**
1:45 PM	**Germination, and Vigor of Peanut Cultivars.** **T.L. GREY***, N.L. HURDLE, C. PILON, W.S. MONFORT, R.S. TUBBS; Department of Crop and Soil Science,	**130**
2:00 PM	**Peanut Response to Dual Magnum and Valor Under High Moisture Conditions.** **E.P. PROSTKO*,** Dept. of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31794.	**131**

Findings from the 2019 Survey of Mississippi Peanut Grower Application and Weed Management Practices

J.C. FERGUSON*, K.L. BROSTER, Z.R. TREADWAY, J.S. CALHOUN, L.M. MERRITT, M.T. WESLEY. Department of Plant and Soil Sciences, Mississippi State University, Mississippi State, MS 39762-9555.

A statewide survey was distributed across Mississippi to better understand spray application practices for pest management in peanut. The survey was designed to elicit peanut grower feedback to better understand what kind of sprayers and nozzle types are used as well as the settings they use to make their applications like application pressure, application volume, ground speed, and whether they utilize aerial application. The survey was distributed using the Mississippi Peanut Growers Association email list and the survey could be completed using any device that can connect to the internet through Qualtrics. The total number of respondents is not yet known but will be available by the time of the APRES 2019 meeting. The survey contained three sections: demographics, application practices, and weed and pest management concerns. The demographics section provided information on average farm size and what other crops peanut growers produce in a given season as well as what counties the respondents were from. The application practices section elicited information about nozzle type, application pressure used, application volume used, and other specific questions with respect to spraying practices. The last section was designed to elicit thoughts about what concerns growers had, to better address those concerns through future research projects. All the data will be tabulated and summarized to help make useful research programs to address areas of concern with respect to weed management and improve application practices across the state.

Effects of POST Herbicide Application and Digging Date on Seed Development, Germination, and Vigor of Peanut Cultivars

T.L. GREY*, N.L. HURDLE, C. PILON, W.S. MONFORT, R.S. TUBBS; Department of Crop and Soil Science, The University of Georgia, Tifton, GA 31793-0748

As an indeterminate crop, peanut cultivar maturity can be influenced by multiple factors including herbicides that may cause delays. With various maturity among cultivars, timing of harvest can be a critical factor on influencing subsequent seed development, germination, and vigor. Experiments conducted in 2018 evaluated the genotype by herbicide treatment by digging date on seed germination and vigor of four peanut runner-type cultivars grown under similar production practices, for three digging dates over the course of time (120, 130, 140 days after planting). All cultivars exhibited yield increases for each harvest timing. After cleaning and processing, the medium seed were tested for germination and vigor by plot replication evaluated in Petri-dishes incubated over a thermal gradient ranging from 12 to 36 ºC at approximately 1.0 ºC increments, counted daily up to 7 consecutive days. Growing degree day (GDD) accumulation for each temperature increment was calculated based on daily mean temperature measured by thermocouples. Lorentzian distribution models were used to establish the temperature and time (hours) to maximum germination for each variable. Data indicated differences among the cultivars for each variable. These data will assist in determining phenotypic and genotypic variation between cultivars when grown under known environmental conditions with different planting dates. This information will assist growers with making cultivar seed selections based on vigor testing methods not previously used.

Peanut Response to Dual Magnum and Valor Under High Moisture Conditions

E.P. PROSTKO*, Dept. of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31794.

Peanut injury from preemergence applications of Dual Magnum (s-metolachlor) and/or Valor (flumioxazin) is often a concern for growers when moisture conditions are high during the first 21 to 30 days after planting (DAP). Limited research has addressed the effects of these herbicides under extreme moisture conditions. Therefore, small-plot, replicated field trials were conducted in 2017 and 2018 to evaluate the effects of Dual Magnum and Valor combinations on peanut growth and yield under high moisture conditions. Dual Magnum 7.62EC (0, 16, 21, and 42 ozs/A) and Valor SX 51WG (0, 3, and 6 ozs/A) were applied alone or in combination immediately after peanut planting (GA-06G). The 1X labeled rates for Dual Magnum and Valor are 16 oz/A and 3 oz/A, respectively. Within the first 7 DAP, irrigation/rainfall events totaled 4.29” to 5.35”. By 30 DAP, rainfall/irrigation events totaled 7.92” to 11.32”. The plot area was maintained weed-free throughout the growing season. Data collected via destructive harvests at 19 to 21 days after treatment included peanut plant density, whole-plant biomass, and J-rooting. Due to a later planting date in 2017, peanut yield data were not obtained. However, peanut yield data were collected in 2018 using commercial harvesting equipment. No interactions between Dual Magnum and Valor were observed. Neither Dual Magnum nor Valor had an effect on peanut plant density or J-rooting. Valor caused 2% to 11% (3 oz/A) and 16% to 28% (6 oz/A) reductions in whole-plant biomass. Dual Magnum caused 6% (16 oz/A), 13% to 20% (21 oz/A) and 22% to 28% (42 oz/A) reductions in whole-plant biomass. Valor had no effect on peanut yield. Dual Magnum reduced peanut yields by 4% (16 oz/A), 5% (21 oz/A), and 11% (42 oz/A).

POSTER SESSION

Table of Contents Continues on Next Page

Table of Contents Continues on Next Page

Table of Contents Continues on Next Page

Table of Contents Continues on Next Page

	Wednesday, July 10, 2019	
3:30 - 4:30 PM	**Poster Viewing and Discussions,** *(Continued)* ***(Authors Present)***	**Page Number**
Poster Number-38	**Developing a Peanut Maturity Profile Board for Malawi** **D.L. JORDAN*** and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695; N. PUPPALA, New Mexico State University, Las Cruces, NM 88003; G. MACDONALD, University of Florida, Gainesville, FL 32611; J. RHOADS and D. HOISINGTON, University of Georgia, Athens, GA 30602; A. EMMOTT, London, UK; J. CHINTU, DARS-Chitedze Research Station, Chitedze, Malawi; and W. MHANGO, LUANAR, Lilongwe, Malawi.	**173**

Effectiveness of Different Proteases in Reducing Raw Peanut Allergenicity

J YU, and N. MIKIASHVILI. Department of Family and Consumer Sciences, North Carolina A&T State University, Greensboro, NC 27411

The purpose of this study was to evaluate the effectiveness of some proteases in reducing allergenic proteins in raw peanuts. Raw Virginia peanut kernels purchased from a North Carolina peanut producer were treated by four single proteases (Alcalase, bromelain, Neutrase and papain) at the optimal pH and temperature of each enzyme, respectively. The effectiveness of treatment was evaluated by quantifying the residues of three major peanut allergens, Ara h 1, Ara h 2 and Ara h 6, using a sandwich ELISA, and the percent reduction of each allergen was calculated in comparison to the untreated raw peanut sample. The allergens in the insoluble portion of peanuts were extracted using sample buffer containing reducing agent and visualized by SDS-PAGE. The allergenicity of both soluble and insoluble portions of peanuts were tested by Western Blot.

We found that all enzymes tested were effective in decomposing Ara h 1 but the effectiveness of these enzymes in reducing Ara h 2, and Ara h 6 varied greatly. The effectiveness of reducing Ara h 2 was in the order of Alcalase > Papain > Neutrase > Bromelain, while the effectiveness of reducing Ara h 6 was in the order of Alcalase > Papain > Bromelain > Neutrase. Alcalase treatment significantly reduced the allergenicity of peanuts, but other proteases were not. Ara h 6 was the most resistant allergens to the proteases tested in this study. More studies are needed to enhance the reduction of Ara h 6 and evaluate the allergenicity of raw peanuts treated by different proteases by both in vitro and in vivo methods.

Genome-wide Identification and Expression Analysis of bZIP Gene Family under Drought Stress in Peanut

B. GAO, J-J CHEN, S-L CUI, M-Y HOU, G-J MU, H-Y CHEN, **X-L YANG***, **L-F LIU***,
North China Key Laboratory for Crop Germplasm Resources of Education Ministry, Laboratory for Crop Germplasm Resources of Hebei, College of Agronomy, Hebei Agricultural University, Baoding, Hebei 071001, China

In this study, the bZIP transcription factors of 112 from the genome of peanut diploid ancestors were identified through bioinformatics, including 55 family members in A genome and 57 in B genome. They were named *AradubZIP1-AradubZIP55* and *AraipbZIP1-AraipbZIP57*, respectively. Their gene structure, conservative motif, phylogenetic, physiochemical properties and subcellular localization were also analyzed. Besides, the gene expression pattern of 32 homologous sequences of tetraploid peanut of L422 response to drought stress in late growth stage in the inverted three leaves were also studied. The results showed that 55 members in the A genome and 57 members in B were divided into four subgroups spreading in 20 chromosomes according to phylogenetic tree. However, the 32 members in L422 were located on 18 chromosomes except A04 and B04, all of which were unstable proteins, and most of them were located in nuclear. It was found that *AhybZIP15* and *AhybZIP31* in L422 peanut had a high homology with AT5G06950 and AT5G06960 in *Arabidopsis thaliana*, respectively. According to the role of AT5G06950 and AT5G06960 in *Arabidopsis thaliana*, we speculated that they played an important role in improving the drought tolerance of peanut leaves in later growth stage. These results provide a reference for studying the regulation of bZIP gene family in drought-tolerant growth process of peanut in later growth stage.

Assessing the Composition of a High-Oleic Peanut Cultivar Grown in North Carolina Using Various Pesticide Inputs

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 Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695; M.K. BOOTH, Department of Chemistry, University of Florida, Gainesville, FL 32611.

Organic foods continue to capture the interest of consumers. Organic foods are now responsible for over 5% of total food sales and in 2016, U.S. organic sales were approximately $47 billion. Despite this growth, there is an opportunity for organic legume production, specifically peanut. To date, little information has been gathered regarding the impact various pesticide inputs have on peanut crops and their composition. The purpose of this research is to investigate the impact of various pesticide treatments on the total oil, fatty acid, tocopherol, and sugar composition of the Virginia market-type cultivar, Sullivan. In 2017, Sullivan variety peanuts were planted at two locations in North Carolina in late May. The experimental design was a randomized complete block with treatments replicated four times. Treatments consisted of two levels of seeding rate/fungicide seed treatment, two levels of insecticide, and three levels of fungicide. Weeds were controlled using herbicides. These treatments include the best management practices for a low pesticide input system simulating insect and disease management in organic production and the best management practice for conventional production.

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 sound mature kernel fraction of the harvested peanuts was retained and used for evaluation of peanut composition including total oil content, fatty acids, tocopherols, and sugars. Results determined that simulated organic production methods have minimal impact on peanut composition when compared to peanuts grown in a conventional system.

Organophosphate Alternatives for Rootworm Management in Peanut

M.R. ABNEY*, D.B. SUTHERLAND, and K.R. HILL, Department of Entomology, The University of Georgia, Tifton, GA 31793-0748.

Field studies were conducted in 2017 and 2018 to evaluate the efficacy of select insecticide active ingredients and application methods against rootworm species (*Diabrotica undecimpunctata* and *D. balteata*) in peanut. The experiments were conducted at the Southwest Georgia Research and Education Center in Plains, GA in both years and at a commercial peanut field in Early Co., GA in 2017. 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 (imidacloprid) applied in simulated chemigation treatment resulted in significantly less rootworm injury than all other treatments on both evaluation dates at Plains in 2017 but not in 2018. External pod injury was lower in chlorpyrifos treated plots than all other treatments at 26 days after application 2018. Granular chlorpyrifos applied in a band over the row and Bifenture (bifenthrin) applied as an irrigation simulation resulted in significantly less pod injury at harvest than all other treatments. 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 in either year in spite of very heavy mid-season rootworm injury. These data suggest that peanut in Georgia can compensate for early season pod injury caused by rootworm and indicate that insecticides applied as chemigation treatments may significantly reduce pod injury. Additional study is needed to determine the mechanism(s) responsible for the variation in efficacy observed for imidacloprid and Bifenthrin over locations and years.

Nutritional Properties of Peanut Based Beverages: A Promising Solution for Undernutrition in Malawi and Possibly Beyond

A.P. GAMA, **K. ADHIKARI***, Department of Food Science and Technology, The University of Georgia, 1109 Experiment St, Griffin, GA 30223; A.M. MWANGWELA, Department of Food Science and Technology, Lilongwe University of Agriculture and Natural Resources, P.O Box 219, Lilongwe, Malawi; W. GICHOHI, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), P.O. Box 1096, Lilongwe, Malawi.

Undernutrition remains a challenge in most developing countries like Malawi. To address this challenge, the search for effective nutrition interventions and nutritious foods especially from sustainable and resilient food sources, like peanuts, is ongoing. In this study, nutrient profiles of two highly acceptable peanut-based beverage prototypes were determined using official standard analytical methods. Apart from water, peanut paste, sugar, salt, stabilizer, and flavorings, one of the beverages had barley malted milk powder (S3-2) while the other one had sorghum malted milk powder (S3-5) in its formulation. Nutritional value of the peanut-based beverages was assessed through comparison with the Food and Drug Administration (FDA) Daily Reference Values (DRVs) or Reference Daily Intakes (RDIs), herein referred to as Daily Values (DVs). Furthermore, the nutrient composition of the peanut-based beverages was compared with that of F100. The F100 is energy and protein-dense milk-based product fortified with vitamins and minerals and is recognized by the World Health Organization (WHO) as a reference diet for managing severe malnutrition.

The S3-5 had a better nutrient profile than S3-2 and F100 (WHO-recognized reference diet), respectively, in terms of protein, potassium, calcium, phosphorous, and magnesium. A 237-mL (8 oz.) serving of the S3-5 was an excellent source (% DV ≥ 20) of protein, total dietary fiber, phosphorus, calcium, molybdenum, and manganese and also, a good source (10 ≤ % DV < 20) of potassium, magnesium, and fat. As expected of peanut oil, the fat was mainly composed of unsaturated fatty acids (oleic acid and linoleic acid). Based on the essential amino acid reference pattern from the Food and Agriculture Organization, S3-5 was a source of high-quality (complete) protein. Therefore, the S3-5 may help in the management of undernutrition in Malawi given its nutritional quality. Beside Malawi, the peanut-based beverage may also be valuable in other countries where undernutrition is also a challenge.

Consumer Acceptability of Peanut Based Beverages: Promoting Peanut Consumption in Malawi

A.P. GAMA, **K. ADHIKARI*,** Department of Food Science and Technology, The University of Georgia, 1109 Experiment St, Griffin, GA 30223; A.M. MWANGWELA, Department of Food Science and Technology, Lilongwe University of Agriculture and Natural Resources, P.O Box 219, Lilongwe, Malawi; W. GICHOHI, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), P.O. Box 1096, Lilongwe, Malawi.

Undernutrition remains a challenge in most developing countries like Malawi. To address this challenge, the search for effective nutrition interventions and nutritious foods especially from sustainable and resilient food sources, like peanuts, is ongoing. As one way of promoting peanut consumption, two formulations of a peanut-based beverage were developed, and each formulation had three flavor options (natural, vanilla, and caramel). One formulation contained barley malted milk powder while the other one had sorghum malted milk powder apart from water, peanut paste, sugar, salt, stabilizer, and the flavorings. Considering that the sensory appeal of food is one of the dominant food choice motives, sensory profiles of the prototypes were determined in this study. Malawian consumers (n = 177) scored appearance, aroma, flavor, texture, and overall liking of the prototypes using a 9-point hedonic scale. The consumers also characterized the prototypes using a Check–All-That-Apply (CATA) question.

Significant differences ($p < 0.05$) among the samples were found in all the evaluated parameters except texture. The mean overall liking scores of the samples ranged from 7.0 to 7.6. Irrespective of the formulation type, the two most liked samples had a caramel flavor with mean overall liking scores of 7.5 and 7.6, respectively. Based on impact analysis using the CATA responses, the term tasty had the highest positive mean impact (0.60) on the overall liking scores followed by creamy (0.58), thick (0.47), sweet (0.41), caramel flavor (0.38), and lastly brown color (0.18). On the other hand, when the term watery was cited, the mean overall liking score dropped by 0.42. Therefore, samples perceived to be watery were not liked by the consumers.

Three significant consumer clusters were identified. The mean overall liking scores for the samples in clusters 1(28.8%), 2 (49.7%), and 3 (21.5%) ranged from 6.6 to 7.5, 7.8 to 8.2, and 5.5 to 6.5, respectively. Irrespective of the cluster, caramel-flavored samples had relatively higher mean overall liking scores just like before clustering. Therefore, regardless of the formulation type, the caramel-flavored samples have the potential of promoting peanut consumption in Malawi and even in other countries if they could be equally acceptable.

Incorporating Winter Cover Crops within a Cotton-Peanut Rotation in Georgia

W.F. ANDERSON*, USDA/ARS, Tifton, GA, 31793-0748; M. LAMB, USDA/ARS, Dawson, Ga 31742; A.J. AZEVEDO; S. TUBBS, Crops and Soil Department, University of Georgia, Tifton, Ga 31793-0748.

The use of winter cover crops has been studied for many decades in the Southeast. However, the economic benefits of harvesting covers for use as biofuel feedstocks or silage for animals has not been closely examined. A four-year study has begun at three locations in Georgia (Tifton, Shellman and Fort Valley) in which winter cover crop treatments have been incorporated into a cotton-peanut rotation. Cotton and peanut are planted as main blocks within the experiment in alternating years. Within each main block, six cover crop treatments have been randomized (narrow-leaf lupin, white lupin, narrow-leaf lupin with rye, white lupin with rye, rye alone and fallow). After the initial peanut and cotton plots were harvested in the summer of 2017, the winter covers were planted in November. The cover treatments were either harvested with a Carter harvester to take biomass weights or rolled and incorporated into the soil in late April of 2018. Peanut and cotton were subsequently planted in rotation in the spring of 2018. The resulting yields of summer crops were measured in the fall of 2018 and cover crops replanted on the same plots. Economic analysis was performed for each cover crop scenario for the first rotation using WholeFarm. Narrow-leaf lupin produced 19 and 17 $Mgha^{-1}$ dry biomass alone or with rye, respectively, compared to 9 $Mgha^{-1}$ for rye in the of spring 2018. Peanut yields did not vary significantly among cover crop treatments (4080 lbs/acre and 4100 lbs/acre at Tifton and Shellman, respectively). However, rolled subplots of all covers gave more consistent yields at Shellman. Cotton yields also did not vary across treatments except for numerical increases for rolled plots after one year of winter covers. Cover crops improved net income to farms under most cover crop scenarios, especially if covers can be harvested and sold as baleage.

Summary of Interventions to Minimize Aflatoxin Contamination in Ghana at Pre-Harvest and Post-Harvest Steps in the Supply Chain.

B. MOCHIAH*, Council for Agricultural and Industrial Sciences, Crops Research Institute, Kumasi, Ghana; M. ABUDULAI, Council for Agricultural and Industrial Sciences, Savannah Agricultural Research Institute, Tamale, Ghana; G. MAHAMA, Council for Agricultural and Industrial Sciences, Savannah Agricultural Research Institute, Wa, Ghana; W. APPAW, W.O. ELLIS, and R. AKROMA, Nkrumah University of Science and Technology, Kumasi, Ghana; and N. OPOKU, University of Development Studies, Tamale, Ghana; D.L. JORDAN* and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695; G. MACDONALD and K. BOOTE, University of Florida, Gainesville, FL 32611; M. BALOTA and K. MALLIKARJUNAN, Virginia Polytechnic Institute and State University, Suffolk, VA 23427; J. CHEN and D. DIXON, University of Georgia, Griffin, GA ; and B. BRAVO-URETA, University of Connecticut, Storres, CT.

Research was conducted in Ghana during 2015-2017 to determine the value of interventions during field production, during drying, and in storage. Using improved practices in the field (calcium applied at pegging, one additional weeding, applying local soaps to suppress aphids and rosette), during drying (drying on tarps), and storing (placing seed in hermetically-sealed bags) resulted in less aflatoxin after storage and greater estimated economic return compared with the standard farmer practice in the field, during drying, and in storage. Results from this research can be used to make recommendations to farmers on how to increase yield and minimize aflatoxin contamination. A major challenge continues to be determining how to incentivize farmers to adopt one or more of these interventions, especially for small-holder farmers with little to no access to credit.

Wild-derived Resistance to Early and Late Leaf Spot caused by *Passalora arachidicola* and *Nothopassalora personata* in Peanut

M. GONZALES Department of Plant Pathology, The University of Georgia, Athens, GA 30621; R. KEMERAIT JR.; A. CULBREATH Department of Plant Pathology , The University of Georgia, Tifton. D.J. BERTIOLI, Department of Crop and Soils Science, The University of Georgia, Athens, GA 30621. **S.C.M. LEAL-BERTIOLI***, Department of Plant Pathology, The University of Georgia, Athens, GA 30621.

Early (ELS) and late leaf spot (LLS) caused by *Passalora arachidicola* and *Nothopassalora personata,* respectively are the major foliar diseases of peanut, which cause tremendous yield loss if not properly managed. Different intensive fungicide spray programs are currently used to control these diseases. However, the most economical and practical way to mitigate these diseases is with resistant varieties. Wild peanut relatives have been utilized as genetic resources for disease resistances and introgression of wild type alleles to cultivated peanut has been achieved. In this study, a detached leaf bioassay was conducted to evaluate 14 wild *Arachis* species, 13 peanut-compatible synthetic allotetraploids and 12 cultivars for possible sources of resistance to ELS and LLS. Different components of resistance were measured: incubation period, lesion number and percent diseased leaf area (DLA). Results showed several wild relatives of peanut and synthetic allotetraploids have resistance to ELS and LLS that can be used as donors in breeding program. This study also aimed to introgress wild type alleles with disease resistance to cultivated peanut. Crosses were performed using an advanced line (IAC 321), and a cultivated peanut variety Bailey, both with different segments of *Arachis cardenasii* in order to pyramidize resistance to the foliar diseases. True hybrids were identified using KASP markers and they will be used for backcrosses. We envisage that the development of advanced lines with disease various disease resistance segments will provide long term protection to these fungal diseases.

Relationship Among Field and Post-Harvest Evaluations of Spotted Wilt in *Arachis* Germplasm

T.M.F. SUASSUNA*, N.D. SUASSUNA*, EMBRAPA, Campina Grande PB 58428-095, CC HOLBROOK, USDA-ARS, Tifton, GA 31793, A.K. CULBREATH, S. BAG, A.S. DERANIYAGALA, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793-0748.

Spotted wilt resistance evaluation in peanut is challenging due to its quantitative/horizontal nature, including a highly variable number of symptomatic plants with different severities in field plots. Under severe epidemic conditions in the 2018 season, we evaluated the wild ancestors of peanut (*A. ipaënsis* and *A. duranensis*), a synthetic polyploid (IpaDur1) and seven breeding lines related to the wild ancestors. TifNV-High O/L and SunOleic 97R were the resistant and the susceptible checks. Resistance evaluations in the field were recorded as disease intensity rating (DIR1), disease index at the beginning (ISEV1) and at the end of the growing season (ISEV4) and area under disease progress curve for the disease index (AUDPC ISEV). Evaluations of the seeds (testa) were recorded as number of symptomatic (NSymp) and normal (NNormal) seeds, and disease intensity rate (DIR seeds). *Tomato spotted wilt orthotospovirus* was detected from both leaf samples (Immunostrip-ELISA) and seed (testa) samples (RT-PCR) against Nucleo capsid protein.

A wide range of variation among the wild species and breeding lines was observed. *A. ipaënsis* and two breeding lines ranked close to TifNV-High O/L. Accuracy was high for all the variables evaluated. Both ISEV4 and AUDPC ISEV were positively correlated to DIR seeds. ISEV4 and AUDPC ISEV were negatively correlated to NNormal.

Screening For Resistance to Peanut Smut in Argentina

K.D. CHAMBERLIN* and R.S. BENNETT, USDA-ARS, Stillwater, OK 74075; C.C. HOLBROOK, USDA ARS, Tifton, GA 31793; J. BALDESSARI, INTA, Manfredi, AR; P. OZIAS-AKINS, University of Georgia, Tifton, GA 31793; S.P. TALLURY, USDA-ARS, Griffin, GA 30223; A. MASSA, USDA-ARS, Dawson, GA 31742; and J.P. CLEVENGER, MARS-Wrigley Confectionery, CAGT 111 Riverbend Rd., Athens GA 30606.

Peanut smut, caused by *Thecaphora frezzii*, is found in 100% of Argentinian peanut growing regions. Disease severity varies with location but yield reductions as high as 51% have been reported. Research on the causal agent and the disease is in its infancy as little is known about *T. frezzii* biology, systematics, host-plant relations or epidemiology. The spread of this disease has caused concern within the peanut research and production communities not only in Argentina, but throughout other peanut producing countries including the U.S. Although peanut smut is not currently found in the U.S., immediate proactive measures must be taken so that the industry will not be threatened should this disease reach the U.S. Research on the disease and preventive breeding efforts to develop resistant cultivars and management strategies are imperative to avoid effects on the U.S. peanut industry should a peanut smut outbreak occur. The first step in preventative breeding for resistance to peanut smut is to identify key sources of resistance. Therefore, the objective of this study was to identify sources of resistance to *T. frezzii* that can be used to incorporate smut resistance into cultivars optimized for key areas of U.S. peanut production. In 2017 and 2018, peanut genotypes, including accessions from the USDA Peanut Germplasm collection and U.S. cultivars, were planted in test plots where peanut smut is prevalent near General Deheza (Córdoba Province), Argentina. Plots were arranged in an augmented grid design with three replicates and maintained throughout the growing season. Upon harvest, pods were dried and manually phenotyped for the presence or absence if *T. frezzii* infection. For screening purposes, entries were retained for future testing if they scored 10% or less disease incidence. Of the entries tested in the 2017-2018 and 2018-2019 seasons, potential new sources of peanut smut resistance were identified. Entries identified as potential sources of peanut smut resistance will be tested again in the 2019-2020 season. Proven sources will be used to incorporate this resistance into peanut cultivars suitable for production in the U.S and for RIL population development to identify molecular markers for peanut smut resistance.

Feed the Future Innovation Lab for Peanut Links U.S. Institutes with Global Partners

D. HOISINGTON*, J. RHOADS, J. MARTER-KENYON, A. FLOYD. Feed the Future Innovation Lab for Peanut, The University of Georgia, Athens, GA 30602.

Through the Feed the Future Innovation Lab for Peanut (Peanut Innovation Lab), leading experts in genetics, plant breeding, nutrition, gender dynamics, economics and other disciplines connect across the globe to address limitations in production, processing and consumption of peanut. The five-year program involves US and international partners connected to dozens of institutes of higher learning, research and business. The Peanut Innovation Lab jointly funds projects with the Peanut Foundation that provide dual benefits to both overseas partners and US agriculture. As part of the US Government's Global Food Security Strategy, the innovation lab addresses global hunger and food security by increasing resilience to shocks and focusing on nutrition and market-led development.

Growth Chamber Assay for Evaluating Resistance to *Sclerotium rolfsii*

R.S. BENNETT*, USDA-ARS, Stillwater, OK 74075-2714.

The most economical method for managing *Sclerotium rolfsii*, one of the most damaging pathogens of peanut worldwide, is planting resistant cultivars. However, breeding for resistance in the field can be slowed by unfavorable disease conditions and uneven distribution of sclerotia in soil. In addition, seed for some *Arachis* germplasm accessions may be limited. For these reasons, a growth-chamber assay was developed to screen for resistance to *S. rolfsii* in the laboratory. Thirteen peanut genotypes were used to evaluate the assay: cultivars Georgia-03L, Georgia-12Y, Florida-07, Georgia-07W, Tamrun OL02, FloRun '107', Georgia-06G, and U.S. mini-core accessions CC038 (PI 493581), CC041 (PI 493631), CC068 (PI 493880), CC384 (PI 155107), CC650 (PI 478819), and CC787 (PI 429420). Lesion length, as well as length of visible mycelium, on the main stem and a side stem were recorded at 4, 7, 10, and 13 days after inoculation. In general, patterns of lesion and mycelium growth were similar. The most resistant genotypes, Georgia-03L and CC650, had the smallest lesions and mycelium growth; other commercial cultivars were intermediate in lesion and mycelium lengths. The most susceptible entries were CC038, CC041, and CC787. Despite limitations in discriminating among most cultivars, these assays may be useful for pre-screening germplasm to identify physiologically highly resistant and highly susceptible entries.

Modification of the Peanut Risk Tool Developed at North Carolina State University.

G. BUOL*, D.L. JORDAN, B.B. SHEW, R.L. BRANDENBURG, and G. WILKERSON, North Carolina State University, Raleigh, NC 27695.

Peanut growers are challenged by numerous biotic and abiotic stresses and the economics required to adequately address the potential negative impact of these stresses on peanut in their production and pest management approaches. In 2005, funding through the USDA-CAR program and the North Carolina Peanut Growers Association (NCPGA) was used to develop a comprehensive risk tool with input from research and extension specialist at North Carolina State University, Clemson University and Virginia Tech and Cooperative Extension agents. More recently, the peanut risk tool has been expanded to include weeds and other pests in Excel Spreadsheet format. This approach is designed to facilitate updates and modifications by Extension Specialists on a more frequent basis without the need for a computer programmer. The updated version of the risk tool was funded in part by USAID Feed the Future Peanut Innovation Lab and the NCPGA. A risk index for each pest was developed and modeled on spotted wilt and southern corn rootworm indices developed previously. Weed management is being added to the new version of the risk tool. The risk tool includes a screen that provides the total risk when all pests are considered along with recommendations on how practices should be adjusted. As practices are altered to modify risk the change in cost of those decisions is provided. The basic premise and format of the risk tool is designed for other institutions and organizations to use both domestically and internationally.

Disease and Yield Response of Selected Peanut Cultivars to Low and High Input Fungicide Programs in Southeast Alabama

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

The reaction of eleven peanut cultivars to early leaf spot (ELS)caused by *Cercospora personatum* and late leaf spot (LLS) caused by *Cercosporidium arachidicola* along with white mold (WM) caused by *Sclerotium rolfsii* as influenced by fungicide program was assessed in southeast Alabama at the Wiregrass Research and Extension Center (WREC). 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.

Leaf spot defoliation, which significantly differed across cultivars and fungicide programs, exceeded 41% with the standard fungicide programs for Georgia-13M and TUFRunner 511. All remaining cultivars had similar defoliation levels in both the intensive and standard input fungicide programs. White mold incidence was lower on FloRun 311 than Georgia-06G, Georgia-09B, Georgia 13M, and AU 16-28 but similar to the remaining cultivars. Yield for both fungicide regimes were higher than that recorded for the non-treated control. Highest yields were recorded for Georgia-16HO, while similarly low yields were noted for Georgia-13M and TUFRunner 511. Despite superior white mold control obtained with the intensive fungicide program, yields were similar for fungicide programs. Noticeable leaf spot incited defoliation was noted on Georgia-06G, the current industry standard, which may have resulted in lower yields for this cultivar. Georgia-16HO along with FloRun 331 produced higher yields than the majority of cultivars. Overall, no yield benefit was recorded for any peanut cultivar with the intensive compared with standard fungicide input programs.

Screening for Resistance to *Sclerotinia minor* (Jaggers).

J.M. CASON*[1/], B.D. BENNETT[1/], M.R. BARING[2/], M.D. BUROW[3/ 4/], C.E. SIMPSON[1/].
[1/]Texas A&M AgriLife Research, Texas A&M University System, Stephenville, TX 76401, [2/]Department of Soil and Crop Science, Texas A&M University, College Station, TX 77843, [3/]Texas A&M AgriLife Research, Texas A&M University System, Lubbock, TX, 79403, [4/]Department of Plant and Soil Science, Texas Tech University, Lubbock, TX, 79409.

The Texas A&M AgriLife Research peanut breeding program has been developing breeding lines and screening for *S. minor* resistance for almost 30 years. Since 1986 a 12-acre area with high levels of the soilborne fungus have been used as a screening nursery at the Texas A&M AgriLife Research and Extension Center at Stephenville, Texas. All breeding lines in the program are screened in one row, 3.1m replicated plots for multiple years. Plots are rated on a 0-10 scale, where 0 is no disease and 10 is all plants dead. Plots are planted late in the planting season to ensure that plants are still actively growing when average soil temperatures reach 28^{O} C (82^{O} F), optimum for *S. minor* growth. *Sclerotinia minor* isolates were obtained by culturing sclerotia collected from soil in diseased peanut fields at the Texas A&M AgriLife Research and Extension Center at Stephenville on potato-dextrose agar (PDA). Cultured plates were incubated at 28^{O} C (82^{O} F) for 14 days. Four petri dishes with colony diameters of 4 cm or greater were used to inoculate approximately 6800 g (15 lbs.) of autoclaved whole oats. The inoculated oats were then incubated at 28^{O} C (82^{O} F) for approximately 14 days. Once sufficient fungal growth was observed the inoculated oats were then spread out and dried for 7 days and ground to allow for application. All plots are inoculated with approximately 35g of *S. minor* inoculant and subsequently irrigated as needed in the evening to increase relative humidity and promote fungal growth.

All trials include at least 2 checks. The Langley variety released in 1987 is highly susceptible to *S. minor* and serves as the susceptible check. The breeding line Tx901639-3 is a sister line of the resistant variety Tamrun 98 and serves as the resistant check. The 2018 season saw an extended late season rainy period resulting in severe Sclerotinia infestation. Ideally, rating would have been conducted at 2-week intervals 14 days after inoculation, but due to the wet conditions this was not possible. Plots were rated on 10/7/2017 and 11/6/2018. Average infection for Langley plots during the early rating were 3.02 per plot and .34 per plot for the Tx901639-3, the resistant check. No statistical differences were found in the early rating. The late rating averaged 8.3 for the susceptible check and 4.8 for Tx901639-3. Statistically significant difference was found in this set of ratings and will be presented.

Speed Breeding with Lumigrow LED Light Accelerates Peanut Growth.

Y. CHU*, P. OZIAS-AKINS. Department of Horticulture, The University of Georgia, Tifton, GA

The growing season of cultivated peanut (*Arachis hypogaea*) ranges from 80 days to 150 days and the high yielding cultivars adapted to the US need 120 to 150 days to mature. At most three generations can be advanced for the US cultivars under greenhouse conditions. Supplementation of light was shown to accelerate generation advancement in various crops, a method called speed breeding. We installed a Lumigrow LED lighting system with full spectrum light intensity (18hr light, 6hr dark) in the greenhouse. In order to test the effectiveness of the light supplementation on peanut growth, twelve peanut genotypes were selected and grown either with or without supplemental light following a randomized block design. Among the selected genotypes, six of them belong to ssp. *fastigiata* and the remaining six are ssp. *hypogaea*. Half of each subspecies demonstrated either early or late flowering patterns in a preliminary study. Overall, earlier flowering and higher flower numbers were documented for plants grown under supplemental light. The plant size and density of foliage were greater for plants under Lumigrow than the natural light condition. The effect of light supplementation on pod maturity, yield, and biomass production will be evaluated upon harvest.

Use of *In Silico* Digestion, Whole-Genome Sequencing and an Internal Reference Genome for Improved Efficiencies in Marker Detection for Virginia-type Peanuts

J.C. DUNNE*, A.T. OAKLEY, J.E. HOLLOWELL, R.J. ANDRES, Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC, 27695; A.M. HULSE-KEMP, USDA-ARS, Raleigh, NC, 27695

The development of the *Arachis hypogaea* reference genome cv. 'Tifrunner' provides the opportunity for peanut breeding programs to improve the efficiency of novel marker discovery using reduced representation (genotype-by-sequencing; GBS) protocols. These efficiencies can improve the identification of polymorphic markers within a subspecies or a specific breeding program. The method for identifying these markers involves optimizing the selection of enzyme pairs through *in silico* digest of the reference genome; whole-genome sequencing on a subset of diverse lines within a subspecies or breeding program; an internal reference genome for whole-genome sequencing alignment and single nucleotide polymorphism (SNP) calling; and then selection of enzymatic pairs maximizing SNP site quantity and sequencing read depth. To initiate this protocol development, a novel Python script was written to digest the Tifrunner reference genome using a set of 10 enzyme pairs previously characterized in peanut or other crop GBS protocols. Simultaneously, tissue from cv. 'Bailey II' and a subset of diverse lines from the North Carolina State University peanut breeding program have been submitted for internal reference genome development and whole-genome sequencing for novel SNP detection. These lines will be aligned to both reference genomes e.g. Tifrunner and Bailey II. With the discovery of polymorphic markers across the genome, the sites identified from the *in silico* digest will then be aligned to maximize the recovery of SNPs using a reduced representation sequencing approach. Digestion of all enzymes will be conducted to verify optimization of the enzyme pairs.

Enriching the Value of Genetic Resources for Use in Peanut Improvement

V.C.R. AZEVEDO*, S. RAMACHANDRAN, V.G. REDDY, H.D. UPADHYAYA,
International Centre for Research in the Semi-Arid Tropics (ICRISAT)
Patancheru PO, 502324, India

Peanut (*Arachis hypogaea* L.), an important food legume crop, grown in tropical, subtropical and warm temperate regions of the world. It provides high quality edible oil (36-54%) and easily digestible protein (12-36%). Genus *Arachis* comprises of 69 species placed in 9 taxonomical sections and section *Arachis* contains cultivated peanuts. Germplasm provides rich source of diversity for crop improvement and serve as insurance against genetic erosion. The genebank at ICRISAT, India conserves the world collection of 15,622 peanut accessions originating from 94 countries. The collection includes Landrace (7398), Breeding material (5034), Advanced or Improved cultivar (982), Genetic stocks (1729) and Wild relatives (479). Lack of sufficient information on traits of economic importance is the major reason for low use of genetic resources in crop breeding. Peanut germplasm conserved at ICRISAT genebank has being characterized to many different traits and shows a large variability for important traits including for maturity (100-150 days), protein (16-32%), oil (32-54%) and other traits. Further germplasm representative subsets called core and mini core collection have been established and evaluated them extensively for important traits, resulted in identification of germplasm that are sources for multiple traits in agronomically superior background. Utilization of these multiple trait specific sources in breeding program could potentially broaden genetic base of peanut cultivars.

Using a Video Game to Teach Basic Peanut Agronomy to Preschoolers

A. FLOYD*, Feed the Future Innovation Lab for Peanut, the University of Georgia, Athens, GA 30602

A game for mobile devices teaches young children how peanuts grow and the challenges farmers face. The game, developed through the University of Georgia's New Media Institute, uses simple animation and scoring to allow preschool players to act as a farmer to make the most of rain, kill weeds and ward off disease.

Lacking Culture: Obtaining Fungal DNA Directly from Early Leaf Spot of Peanut

S. GREMILLION*, D. RAY, M. SMITH, Department of Biology ,Georgia Southern University Armstrong Campus, Savannah, GA 31419; E. CANTONWINE, B. RING, Department of Biology, Valdosta State University, Valdosta, GA 31698; and A. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793

Passalora arachidicola is a fungal pathogen that causes the ubiquitous disease Early Leaf Spot of peanut (*Arachis hypogeae* L.). Retrieval of important genetic information about this fungus such as fungicide resistance has been hindered by the difficulty involved in its ability to be grown in pure culture. The purpose of this project is to circumvent culturing and attempt to extract quality DNA directly from the fungal-infected leaf spots. We tested three methods of DNA extraction on varying numbers of leaf spots. The data collected suggested that bead-beating and liquid nitrogen grinding was superior to hand grinding in regards to DNA quality and quantity. Additionally, we found that the desired quantity of DNA was not achievable with single lesions; multiple lesions were needed per extraction. Continued refinement of our extraction protocol should lead to valuable insight into the genetic makeup of this detrimental fungus.

Weed Control and Peanut Response to Fluridone.

W. J. GRICHAR*, Texas A&M AgriLife Research, Corpus Christi, TX 78406; P. A. DOTRAY, Texas A&M AgriLife Research, Lubbock, TX 79403.

Weed efficacy studies were conducted during the 2018 growing season in the High Plains of Texas near Lubbock while peanut tolerance studies were conducted near Lubbock and in south Texas near Yoakum under weed-free conditions with fluridone to determine weed efficacy and peanut tolerance. In the weed efficacy study, preemergence (PRE) applications of fluridone at 0.17 kg ha^{-1} was compared with *S*-metolachlor at 1.07 kg ha^{-1} either alone or followed by imazapic applied postemergence (POST). Another treatment included fluridone applied PRE followed by an early POST (EPOST) application of imazapic followed by a late POST (LPOST) application of lactofen plus 2,4-DB. Georgia 09B was planted in this study. In the peanut tolerance studies (under weed-free conditions), fluridone was applied PRE at 0.084 (1/2X), 0.17 (1X), and 0.34 (2X) kg ai ha^{-1}. Georgia 09B was evaluated at the Lubbock location while Georgia M-13 was evaluated at the Yoakum location.

When evaluated 42 days after the PRE application (14 days after EPOST application) Palmer amaranth (*Amaranthus palmeri*) control with fluridone and *S*-metolachlor alone was 55 and 61%, respectively while treatments which included EPOST applications of imazapic provided at least 95% control. At 98 days after PRE application (56 days after LPOST application), fluridone alone provided 11% Palmer amaranth control while *S*-metolachlor alone controlled this weed 45%. The addition of imapic applied EPOST to either fluridone or S-metolachlor improved Palmer amaranth control to 68 and 83%, respectively while the addition of a LPOST application of lactofen plus 2,4-DB to fluridone (PRE) followed by imazic (EPOST) improved control to 95%. Peanut injury varied from 4 to 8% with all PRE herbicide treatments when evaluated prior to the EPOST application. Peanut yields reflect the effect of weeds on peanut growth and development as the untreated check yielded 1432 kg ha^{-1}, fluridone alone yielded 1722 kg ha^{-1} while S-metolachlor alone or any treatment which included a POST herbicide application yielded 2180 to 2551 kg ha^{-1}.

In the peanut tolerance study at Lubbock, when evaluated 28 days after PRE application, injury from fluridone was 6, 11, and 16% with the 1/2X, 1X, and 2X rates, respectively. At the 98 days after PRE application, none of the fluridone rates resulted in any injury. Peanut yields and grades from the fluridone treatments were not different from the untreated check. At the Yoakum location, no peanut injury was noted with any fluridone rates. As at the Lubbock location, no difference in peanut yield or grade was observed.

In summary, fluridone when used in a systems approach, can give a grower another option to control Palmer amaranth with soil-applied herbicides; however, it is not a stand alone herbicide and will need the addition of POST herbicides to provide season-long weed control. Additional work is needed to determine peanut safety when using fluridone.

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; N.M. BOSTICK, University of Georgia Cooperative Extension, Decatur County, Bainbridge Georgia, 39817; R.C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, Georgia 31793

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.

Since 2017 fungicide studies have been conducted at three commercial field sites (Miller and Decatur Counties). Georgia-06G was planted on May 10th (Miller) and June 10th (Decatur) 2017 and May 20th (Decatur) 2018. At each location, five commonly used fungicide programs were initiated approximately 30 DAP with subsequent applications on a 14-day interval until approximately 115 DAP. Fungicides included in this study where Elatus, Miravis, Muscle ADV, Fontelis, Propulse, Provost, and chlorothalonil. Treatments in each trial were replicated three times. Prior to harvest plots where rated for Leaf Spot and ranged from 2.5 to 5 on the Florida leaf spot scale. After inverting the plots white mold hits where counted and ranged from 0 to 40 hits per 200 feet of row. 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.Yields ranged from 5219 pounds per acre to 8143 pounds per acre depending on the location and year. All 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 will focus on replicating these studies. Growers in Southwest Georgia have greater expectations for yield now than they did in 1994; therefore, growers should be willing to invest in programs that protect that yield expectation. In all locations, the Elatus program was priced higher than the 1994 based program, but was not the most expensive program tested. In all locations, this program produced the lowest disease ratings and highest yield amongst the tested fungicide programs, while the cheapest program of Muscle ADV had the highest disease ratings and lowest yields.

Genome Wide Association Study (GWAS) on Root-Knot Nematode Resistance in Cultivated Peanut

F.E. KUMRAL*, C.Y. CHEN, Department of Crop Soil and Environmental Sciences, Auburn University, AL 36849; and B.R. LAWAJU, K. LAWRENCE, Department of Entomology and Plant Pathology, Auburn University, AL 36849.

The peanut root-knot nematode, *Meloidogyne arenaria*, is one of the major soil-borne pests for peanut (*Arachis hypogaea L*.). It causes economic losses in the production of peanut in the southeastern region, especially in Alabama, Georgia, and Florida, and in Texas as well. Losses due to root-knot nematodes can reach up to 50% at dense infested fields without using nematicides. The application of nematode resistant cultivars is the most convenient economical way of the biological control method for producers. The identification of resistant peanut germplasm to nematode diseases is a fundamental task for breeding nematode resistant cultivar. The objectives of this research are to evaluate 161 accessions of peanut germplasm in the greenhouse for resistance and to identify SNP markers associated with root-knot nematode resistance via genome-wide association study (GWAS). Randomized complete block design with three replications for each genotype is performed for phenotyping by using greenhouse inoculation techniques. The genetic diversity panel was genotyped by Affymetrix version 2.0 SNP assay. Forty-six quantitative trait loci (QTLs) located on twelve different chromosomes underlying root-knot nematode resistance were determined with phenotypic variation explained (PVE) between 7.8% and 17% by GWAS. The associated markers could be applied in breeding programs for marker assisted selection.

Peanut Cultivar Response to the Number of Fungicide Sprays in a Medium to High Risk Situation Based on the 2019 Peanut Rx

GOMILLION* M.W., B.L. TILLMAN, and G. PERSON. University of Florida, Agronomy Department, NFREC, Marianna, FL, 32446.

Control of leafspot in peanut is affected by several factors including cultivar, crop rotation, irrigation, field history, and timely application of fungicides. This study was conducted to determine if there was genotype by fungicide interaction effect on pod yield and leaf spot disease ratings. Three different fungicide regimes of zero, four, and eight fungicide sprays were applied to the main plots where there were eight cultivars randomized in the sub-plots. The tests were conducted in Marianna, FL from 2016 through 2018. The four-spray regime began 45 days after planting and sprays were spaced 21 days apart, whereas the eight spray regime began about 30 days after planting with about 14 days between sprays. Both cultivar and fungicide regime, as well as the interaction between them affected pod yield. On average, pod yield was greater with four or eight fungicide sprays compared to none. However, there was no difference in pod yield between the four and eight spray regime. Some commercial cultivars, such as Flo-Run '331', Georgia-12Y, and TifNV High O/L, had similar pod yield in both four and eight spray regimes. In fact, all cultivars with Peanut Rx points of 20 or less for leaf spot had similar pod yield in four and eight-spray regimes. However, some commercial cultivars, such as TUFRunner '297' and TUFRunner '511' had lower yield in the four-spray regime than in the eight-spray regime. Both of these cultivars have leaf spot points of 25 or greater. This study was conducted in a situation that Peanut Rx would score as medium (60 points) to high risk (75 points) for leaf spot. The difference is exclusively related to cultivar, since all other factors were the same and included June planting, irrigation, and reduced tillage. This result suggests that cultivars with Peanut Rx scores of 20 or less have the genetic potential to maintain pod yield with as few as four timely fungicide applications given that other factors such as crop rotation and planting date are favorable to minimize risk of leaf spot. The results should hold up even better in low leaf spot risk situations afforded by planting before May 26 and with rotations greater than 2 years between peanut crops.

Comparative Effectiveness and Profitability Between Fungicide Programs in Eastern Georgia

J.E. MALLARD*, University of Georgia Cooperative Extension, Jenkins County, Millen, GA 30442; K.C. BURCH, University of Georgia Cooperative Extension, Burke County, Waynesboro, GA 30830; R. KEMERAIT, University of Georgia Cooperative Extension, Department of Crop and Soil Sciences, Tifton, GA 31794, A.R. SMITCH, University of Georgia Cooperative Extension, Department of Agricultural and Applied Economics, Tifton, GA 31794

Georgia's peanut crop is affected annually by white mold (*Sclerotium rolfsii*) and early leaf spot (*Cercospora arachidicola*) diseases. There are a number of fungicides labeled to protect peanut crops from these diseases. In an effort to compare the different programs for efficacy and profitability a research trial was established in 2018.

The objective of this study was to evaluate commercial fungicide programs for impact on disease and yield in order to provide research-based information to local producers to allow selection of programs that have the highest yield potential by reducing severity of these diseases. Identifying the most cost-effective program would lead to a greater profitability. The small-plot experiments (2 rows X 30ft.) were planted on May 7. Plots were arranged in a randomized block design with four replications. The treatments included an untreated control and eleven commercial fungicide programs. Fungicides and rates within this trial include: Echo-1.5 pt/A, Echo-1.0 pt/A, Muscle ADV-2.0 pt/A, Propulse-13.6 floz/A, Prosaro-13 fl oz/A, Elatus-9.5 fl oz/A, Elatus-7.3 fl oz/A, Miravis-3.4 fl oz/A, Priaxor-6 fl oz/A, Priaxor-8 fl oz/A, Convoy-32 fl oz/A, Convoy-16 fl oz/A, Fontelis-16 fl oz/A, Umbra-36 fl oz/A, Alto-5.5 fl oz/A, and Acropolis-23 fl oz/A. To prevent cross-contamination, plots were separated by two untreated border rows. Peanut plants were rated for leaf spot prior to inversion and white mold after inversion. Once all yield data was collected, means were compared using Fisher's protected LSD and treatments were compared by adjusted net revenues (revenue adjusted for yield, fungicide costs and application costs) in order to determine profitability of the treatments.

The 2018 growing season was unusually wet during the first half of the season. Early Leaf Spot ratings ranged from 1.375 on the Propulse/Prosaro/Elatus Program, to 4.75 on the Echo Program, while the untreated check rated 8.0. White Mold hits per 60 foot ranged from 1.5 on the Alto/Elatus/Miravis Progam, to 12.3 on the Echo Program, while the untreated check had 25. The Alto/Elatus/Miravis Program had the highest yield of 6,114 pounds per acre and highest adjusted net revenue of $960 per acre, therefore being the overall best value.

Identification and Expression Analysis of *WRKY* Gene Family under Drought Stress in Peanut (*Arachis hypogaea* L.)

N-N. ZHAO*, M-J. HE, L. LI, S-L. CUI, X-L. YANG, M-Y. HOU, G-J. MU, L-F. LIU, College of Agronomy, Hebei Agricultural University/North China Key Laboratory for Crop Germplasm Resources of Education Ministry, Baoding 071001, Hebei, China

WRKY transcription factors play crucial roles in the regulation mechanism adapting to the complex environment in plant. In this study, *AhWRKY* family were comprehensively analyzed using bioinformatics approaches combing with the transcriptome sequencing data of the drought-tolerant peanut variety ‘L422’. A total of 158 *AhWRKY* genes were identified and renamed according to their distribution on the chromosomes. Based on the structural features and phylogenetic analysis of AhWRKY proteins, the peanut *WRKY* family members were classified into three groups, of which group II included five subgroups. Subsequently, the results of the gene structure and conserved motifs of the *AhWRKY* genes further proved the accuracy of the clustering analysis. In addition, 12 tandem and 136 segmental duplication genes were identified. And the analysis result indicated that segmental duplication events were the main driving force in the evolution of *AhWRKY* family. The collinearity analysis found 32 collinear gene pairs between *Arachis hypogaea* and two diploid wild ancestors (*A. duranensis* and *A. ipaënsis*), which provided valuable clues for phylogenetic characteristics of peanut *WRKY* gene family. Furthermore, 19 stress-related *cis*-acting elements were found in the promoter regions. The gene expression level of *WRKY* gene family members in response to drought stress was also studied. And 138 *AhWRKY* genes were induced by drought stress, which showed essential function in response to drought stress. These results could provide fundamental insights for further studying *WRKY* genes in drought-tolerant peanut improvement.

Peanut Response to Diclosulam.

P.A. DOTRAY*, Texas Tech University, Texas A&M AgriLife Research, and Texas A&M AgriLife Extension Service, Lubbock, 79409-2122; W. J. GRICHAR, Texas A&M AgriLife Research, Corpus Christi, TX 78406.

Diclosulam is an effective preplant and preemergence (through cracking) herbicide for use in peanut. When diclosulam was registered for use in peanut over 15 years ago, significant stunting and yield loss occurred in west Texas in the first year of its use. A major factor involved in this injury was believed to have been a sensitive peanut variety (FlavorRunner 458) that was introduced during the launch year. Since that time, diclosulam use in west Texas has been prohibited and the current label states that diclosulam cannot be used in New Mexico, Oklahoma, and Texas. A peanut tolerance study was conducted during the 2018 growing season in the High Plains of Texas near Lubbock and in south Texas near Yoakum under weed-free conditions. Diclosulam at 0.024 (1X) and 0.047 (2X) lb ai/A was applied preemergence (PRE) and at-crack (AC). Georgia 09B was planted in Lubbock while Georgia M-13 was planted at the Yoakum location. The soil type in Lubbock was an Acuff loam (<1% OM, pH 7.8) and the soil at Yoakum was a Tremona loamy fine sand (1% OM, pH 7.6). In the study at Lubbock, when evaluated 18 and 28 days after PRE application [6 and 16 days after crack (DAC), respectively], no difference in peanut stand, canopy height, or canopy width was observed when compared to the non-treated control. At 18, 28, 41, 56, and 70 days after planting, no peanut injury was observed. Peanut yield following diclosulam treatments ranged from 1346 to 1672 lb/A and was not different from the non-treated control. At the Yoakum location, no peanut injury was noted with any diclosulam rate or timing. Yield ranged from 3340 to 3689 lb/A and was not different from the non-treated control. No difference in peanut grade was observed at either location. Additional studies will be conducted in 2019 to determine peanut safety to diclosulam when using current peanut varieties in Texas.

Studying Peanut Pod Development within a Controlled Microbial System

A. PEPER*, L. YANG, Plant Pathology Department, The University of Georgia, Athens, GA 30602-5004.

Microbiome can influence the growth and stress response of a plant. Accumulating evidence indicate that microbes associated with peanut plants can be used for growth promoting and biocontrol. However, little is known about how microbiome affects the growth a peanut pod.

As a geocarpy plant, peanut pods grow in the same soil environment as roots do, which set an obstacle to distinguish pod-specific response to calcium deficiency from secondary responses derived from root physiology.

Here, we describe a "growth-in-tube" system to support the growth of individual pegs on a peanut plant. This system can be used to study pod development with controlled microbial community and nutritional conditions

Our primary goal is to investigate pod-specific response to calcium starvation and isolate bacteria that can improve calcium uptake/availability.

Evaluation of Fluridone in Peanut

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

As PPO and ALS inhibitor resistant weed species continue to expand in the southeast, peanut producers need to utilize a new mode of action to control these weeds and prevent further resistance from developing. Fluridone, a PDS carotenoid biosynthesis inhibitor, has a mode of action new to peanut but not currently labeled in peanut. Further research needs to be conducted on peanut response and tolerance to fluridone to determine if it is a viable option for weed control in peanut. Therefore, the objective of this study was to evaluate Georgia 06G peanut tolerance to fluridone alone and tank mixes with frequently used pre-emergent herbicides. In 2018, field studies were conducted in Henry and Escambia County in Alabama. Herbicide treatments included fluridone at 168 and 336 g ai ha^{-1} on its own as well as tanked mixed with flumioxazin, diclosulam, acetochlor, and pendimethalin at 1X and 2X of the label rates. Experiments were conducted as completely randomized block designs with 4 replications at each location. Henry County was under irrigation while Escambia County was dryland. Peanuts were planted June 6 and June 5, 2018 in Henry and Escambia County, respectively. Treatments were applied the day for planting with Teejet TTI110025 nozzles calibrated at 20 GPA output with a hand held boom. Peanut growth parameters including stand count, plant heights and widths were collected 3 and 7 weeks after planting as well as yield of each plot at harvest. Fluridone did not cause any significant reductions of stands or plant height and width reductions. Fluridone also did not cause any significant yield loss at either location. Overall, our data suggests Georgia 06G is tolerant to fluridone up to 336 g ai ha^{-1} and is a promising option for tank mixing with other pre-emergent herbicides for weed control in peanut.

Inhibition of Aflatoxin Production in *Aspergillus* in the Course of Peanut-Fungus Interaction

V. SOBOLEV*, T. WALK, R. ARIAS, A. MASSA, M. LAMB, National Peanut Research Laboratory, Agricultural Research Service, United States Department of Agriculture, Dawson, Georgia 39842, United States

Common soil fungi, *Aspergillus flavus* and *A. parasiticus*, are opportunistic pathogens that invade preharvest peanut seeds. These fungi often produce carcinogenic aflatoxins that possess threat to human and animal health through food chains and cause significant economic losses worldwide. Quantitative determination of aflatoxins and further processing of crops are mandated to ensure that contaminated agricultural products do not enter food channels. Under favorable conditions, the fungus-challenged peanut seeds produce phytoalexins, structurally related stilbenoids, capable of retarding fungal development.

The purpose of the present study was to evaluate potential influence of peanut phytoalexins on fungal development and aflatoxin formation in the course of peanut-fungus interaction. The present research revealed that during such interaction, aflatoxin formation was completely suppressed in *A. flavus* and *A. parasiticus* strains tested, when low concentrations of spores were introduced to wounded pre-incubated peanuts. In most of the experiments, when fungal spore concentrations were two orders of magnitude higher, the spores germinated and produced aflatoxins. Of all experimental seeds that showed fungal growth, 57.7% were aflatoxin free after 72 h of incubation. The research provided new knowledge on the aflatoxin/phytoalexin formation in the course of peanut-fungus interaction.

Achieving an Optimal Prohexadione Calcium Rate by Developing New Methods for Dosing in Mississippi Peanut (*Arachis hypogaea*)

Z.R. TREADWAY*. J.C. FERGUSON, J.T. IRBY, B. ZURWELLER, Mississippi State University, Mississippi State, MS; J. GORE, Mississippi State University, Stoneville, MS.

The use of prohexadione calcium growth regulators among peanut (*Arachis hypogaea*) producers has become a common practice. The use of this foliar applied growth regulator is responsible for reducing unnecessary vegetative growth, while increasing reproductive growth, therefore, increasing pod yield. Prior research has proven that the use of prohexadione calcium is successful in increasing peanut yields. The problem faced by producers is finding the "perfect rate" of prohexadione calcium to apply. Previous research has found that highest yields resulted when rates below the full label rate were applied at these two growth stages. Current labeled recommendations call for a blanket rate to be applied to peanut when 50% of vines touch in the centers of the row and again at 100% vines touching.

Research was undertaken to better assess improved methods to determine optimal prohexadione calcium rates applied to peanut. To determine the optimal rates applied to Georgia 06-G and TUF Runner 297, methods including growth rate measurements, growing degree days (GDD) and the use of a Crop Circle NDVI sensor were undertaken. The methodology to determine rates will be presented and yields will help to confirm the rates applied during this study. The measurement of vine density will be an accurate representation of the need for an application of prohexadione calcium to combat the excessive growth of unnecessary vegetation. It is expected that these methods can be easily used by a grower to apply optimal rates of prohexadione calcium to result in maximum yield and return on investment. Based on the methods developed in this study, guidelines will be released to be implemented for the 2020 growing season.

Development of an Early Generation Marker-Assisted Selection Strategy for Virginia-type Peanuts

R. ANDRES*, A. OAKLEY, and J. DUNNE, Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695

Previously, an association mapping study utilizing the Axiom Arachis2 48k SNP array identified 21 marker-trait associations for five traits of interest in Virginia-type peanuts. After observing complete linkage between markers associated with the same trait, but placed on different chromosomes, all 5,346 polymorphic markers were re-mapped to the *A. hypogaea* genome. This refined the 21 associations to ten genomic regions: three each for pod yield and leaf spot, two for *Cylindrocladium* black rot, and one each for *Sclerotinia* blight and tomato spotted wilt virus. PCR Allelic Competitive Extension (PACE) assays were designed for all associated SNPs, plus causal polymorphisms of the high oleic genes *FAD2A* and *FAD2B*. Assays were used to genotype all 46 lines used as parents in the North Carolina State University breeding program the last four years, plus the exotic germplasm line N96076L. Polymorphic SNPs will be run on bulked samples from $F_{2:4}$ lines in an attempt to improve early generation selection efficiency via marker-assisted selection.

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, T.B. BRENNEMAN, Dept. of Plant Pathology, University of Georgia, Tifton, GA, 31793; C.M. RINER, C.R. HILL, 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. Over three years peanuts were planted on May 20, May 28, and June 1, and dug on October 16, October 7, and November 2. Plots were rated for leaf spot, Rhizoctonia limb rot, and white mold.

Effects of Calcium Fertilizer on Enzyme Activities and Fertility of Barren Upland Red Soil Planted with Different Grain-type Peanut

D. LIU, Q. MU, **L. LI*,** College of Agronomy, Hunan Agricultural University, Changsha City, Hunan Province 410128, China.

Peanut (*Arachis hypogaea* L.) is an important oil crop and cash crop in China. Red soil is the main zonal soil in southern China. Upland red soil is widely distributed. Due to the long-term influence of high temperature and alternating rainy, dry and wet seasons caused by subtropical monsoon climate, the loss of calcium and other nutrients in red soil upland is particularly serious through leaching and runoff, which results in poor soil and is not conducive to the growth and development of crops. Peanut is an calcium addicted crop, and lack of calcium causes a large number of empty pods.

In order to optimize fertilization of peanut in this area, in this experiment three typical peanut varieties (large-grain variety Xianghua 2008, medium-grain variety Xianghua 55, small-grain variety Lanshan Xiaozi) and barren upland red soil in Changsha (N 28°10’58”, E 113°4’46”) which was deficient in calcium (exchangeable Ca 148mg/kg) were selected, and two treatments (apply CaO 0,750kg/ha) were conducted by soil column method, then the soil enzyme activity and fertility were analyzed at main gwowth and development stages, to explore the differentiation effect of Ca application on enzyme activity and fertility of soil planted with the three varieties, the relationship among physical and chemical properties. The results were as follows: （1）The soil enzyme activity of large-seeded and medium-seeded peanut was opposite to that of small-seeded peanut in response to calcium. For large and medium-sized peanut varieties, calcium application increased soil catalase and phosphatase activities, but decreased soil invertase, phosphatase and protease activities. Secondly, the activity of rhizosphere soil enzymes was higher than that of surface soil (0-20 cm). From the whole growth period of peanut, the highest activity of soil enzymes occurred at flowering or podding stage. （2）Calcium application can effectively improve soil pH, alleviate soil acidity, and increase soil organic matter, alkali-soluble nitrogen and available potassium content, but inhibit the content of available phosphorus. （3）Calcium application, on the one hand, promoted the content of nutrients essential for peanut in soil, such as calcium, potassium, zinc, copper, on the other hand, inhibited content of the toxic elements in the soil, such as cadmium, lead, manganese, especially aluminum. （4）In contrast treatment, the soil invertase was positively correlated with soil organic matter and available potassium, phosphatase was positively correlated with soil available phosphorus, protease and urease were positively correlated with soil alkaline nitrogen, but urease was negatively correlated with soil organic matter,catalase was positively correlated with soil organic matter and alkaline nitrogen, and negatively correlated with pH, available phosphorus and available potassium. After calcium application, negative correlation decreased significantly or transformed to positive correlation.

Effects of Calcium Fertilizer on Physiological and Biochemical Characteristics, and Resistance Gene Expression of Peanut Seedlings Under Waterlogging Stress

D. LIU*, J. YI, B. ZANG, HAO ZHANG, L. LI , College of Agronomy, Hunan Agricultural University, 1 Nongda Road, Changsha 410128,Hunan Province, China; S. WAN, Bio-tech Research Center, Shandong Academy of Agricultural Sciences, 202 Gongyebei Road, Jinan 250100, Shandong Province, China; and H. YANG, College of Bioscience and Biotechnology, Hunan Agriculture University, 1 Nongda Road, Changsha 410128 Hunan, China.

This paper focus on the resistance of calcium to waterlogging injury of peanut seedlings. The physiological and biochemical characteristics of peanut seedlings were negatively affected by waterlogging stress. The application of calcium fertilizer (800 mg/kg and 1600 mg/kg of Ca^{2+}) can significantly improve the plant characters (biomass, root / shoot ratio, root surface area and total root length), leaves photosynthetic performance (chlorophyll content, net photosynthetic rate) of waterlogged peanut seedlings. Moreover, the activities of POD, CAT and SOD, and genes expression of CaM, Ah-GLB of waterlogged peanut seedlings roots were significantly increased, while the content of MDA remarkably decreased. Especially, calcium fertilizer showed a dose-dependent relationship, and the high dose (1600 mg/kg) existed the best effects when resistance to waterlogging stress of peanut seedlings. Here, we explored the regulation mechanism of calcium on physiological indexes and resistance genes of waterlogged peanut seedling, and provide an important theoretical basis for waterlogging disaster mitigation and avoidance in crop production.

Developing a Peanut Maturity Profile Board for Malawi.

D.L. JORDAN* and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695; N. PUPPALA, New Mexico State University, Las Cruces, NM 88003; G. MACDONALD, University of Florida, Gainesville, FL 32611; J. RHOADS and D. HOISINGTON, University of Georgia, Athens, GA 30602; A. EMMOTT, London, UK; J. CHINTU, DARS-Chitedze Research Station, Chitedze, Malawi; and W. MHANGO, LUANAR, Lilongwe, Malawi.

Timely digging (lifting in the Malawi context) of peanut is critical to realize optimum yield, quality attributes and economic return. Pod mesocarp color, determined either through the hull scrape method (using a small knife or pressure washer with a turbo nozzle with rotating output) or the shell out method, can be used as an indicator of pod and kernel maturity. The number of days after planting as well as heat unit accumulation using growing degree calculations (in some cases combined with the relationship of water stress) are also used as predictors of when to dig peanut. Each of these approaches has strengths and limitations in this process. In addition to yield and quality, disease, risk of aflatoxin, weather conditions including possible freeze damage and tropical weather events, and ability to effectively dig peanuts due to soil moisture conditions without excessive pod loss in the process are also considered by growers when making these decisions. In the US where electricity or fuel are readily available, peanut growers and their advisors often use pressure washers fitted with a rotating or turbo nozzle to remove the exocarp of the pod to reveal the color of the mesocarp. Pods are then placed on laminated charts with based on mesocarp color to estimate the distribution of pod and kernel maturity for the sample. When electricity or fuel or a pressure washer with the appropriate nozzle is not available, a small knife can be used to scrape away the exocarp and reveal the mesocarp color. Alternatively, pods can be shelled to reveal the mesocarp color due to friction between the developing kernel and the endocarp which can reveal the mesocarp color. The latter two approaches are time consuming and discriminating among mesocarp colors is more difficult compared with using a pressure washer (most notably between brown and black mesocarp colors.) In countries where resources are limited (electricity, fuel, water) either the hull scrape method with a knife or the shell out method most likely is more appropriate to for a broader audience. These approaches when used in conjunction with days after planting can be used to fine-tune timing of digging (lifting).

A profile board is currently being developed for Malawi using examples of pods shelled by hand to reveal mesocarp color. Potential differences in yield are provided for several samples representing intervals prior to optimum maturity, currently at optimum maturity, and after optimum maturity. The impact of canopy defoliation caused by leaf spot disease and other stresses and potential for aflatoxin contamination will be discussed on the profile board. The initial draft of the profile board was used in Malawi in workshops during March 2019 with agronomists and the farmers they support and leaders in the peanut research community in Malawi. Based in these interactions the draft profile board was modified to reflect the needs of peanut growers and groups that support them in Malawi.

GRADUATE STUDENT POSTER COMPETITION

Table of Contents Continues on Next Page

3:30 - 4:30 p.m. Grand Ballroom	**Graduate Student Poster Competition** *(Continued)* *Sponsored by: National Peanut Board* Moderator: Yucheng Feng, Auburn University	**Page Number**
Poster Number-50	**Characterization of ACC Deaminase Producing Bacteria Isolated from Peanut Root Nodules** **X. WANG***, A. R. Akhgar, C. CHEN and Y. FENG. Dept. of Crop, Soil and Environmental Sciences, Auburn Univ., Auburn, AL 36849.	**187**

Alleviating Peanut Allergy Using the CRISPR/Cas System

C. LEE*, S. TRAORE, C.S. PRAKASH, G. HE. Tuskegee University, Tuskegee, AL 36088 USA; M. YUAN, Shandong Peanut Research Institute, Qingdao, China.

Peanut allergy is the most common cause of severe or fatal food-associated anaphalaxis and results in approximately 200 deaths per year in the US alone. Although much research has been to develop treatments such as vaccines, a cure has yet to be created. To address this issue, we would like to genetically modify immunodominant allergen sequences found in peanut using the CRISPR (clustered regularly interspaced short palindromic repeats) /Cas9 system. In 2012 the CRISPR/Cas9 system was reported to be a powerful genome-editing tool. The precise targeting of the microbial system can be utilized to reveal the function of genes that influence phenotypes often seen in diseases and illnesses such as food allergies. This revolutionary RNA-guided gene-editing tool involves the introduction of double-strand breaks (DSB) at a specified location in target DNA. The formation of DSBs induces either the DNA repair mechanisms known as non-homologous end joining (NHEJ) or homologous recombination (HR) and consequently will lead to mutations in the target genome through an insertion/deletion of nucleotides. Depending on the repair mechanism, these insertions/deletions can be random or very specific. Herein we describe the use of CRISPR/Cas 9 to generate targeted disruption of a major allergen gene found in the peanut genome. Target site selection, as well as the design, construction, verification and use of guide RNAs (gRNAs) for sequence-specific CRISPR/Cas-mediated mutagenesis in *Arachis hypogaea* will be shown.

Orange Peel Powder Increases Growth Promotion of Peanut by *Bacillus velezensis* PGPR Strains and Nodulation by Indigenous Rhizobia

M.K. HASSAN, Department of Entomology and Plant Pathology, Auburn University, Auburn, AL 36849; M.BOERSMA, Mass Spectrometry Center, Auburn University, Auburn, AL 36849; J.BAGWELL, Department of Crop, Soil, and Environmental Sciences, Auburn University, Auburn, AL 36849; M.R. LILES, Department of Biological Sciences, Auburn University, Auburn, AL 36849; and J.W. KLOEPPER, Department of Entomology and Plant Pathology, Auburn University, Auburn, AL 36849.

Greenhouse experiments were performed to determine the effects of orange peel powder (OPP) amendments by *B. velezensis* (Bv) plant growth-promoting rhizobacteria (PGPR) strains on the growth and nodulation of peanut by indigenous *Bradyrhizobium*. We hypothesized that OPP amendments will enhance *B. velezensis*-mediated plant growth promotion of peanut.. The experimental design included untreated peanut seeds (GA 09B) planted in field soil that contained Bv PGPR strains with or without 1.0 or 10.0 mg exogenous OPP, along with a nontreated control. The field soil used was from a history of peanut planting and therefore contained indigenous *Bradyrhizobium*. Bv PGPR spores (1.0 X 10^6 CFU spores/ml) and OPP doses were applied separately on the peanut seeds and incubated for 24 h at room temperature. At 35 days after planting (DAP), the peanut plants were removed from pots, washed, and analyzed for significant treatment effects. An *in vitro* growth assay and LC-MS analysis were performed to assess the PGPR growth and identify the secreted secondary metabolites of Bv strains amended with OP. In the field soil, Bv PGPR strain AP193 with OPP at 10 mg significantly enhanced root length compared to the same PGPR strains without OPP amendments and untreated control. Bv PGPR strain AP203 amended with 1.0 or 10.0 mg OPP significantly increased root length compared to the other strains. The dry root and nodule weights of peanut also significantly increased by Bv PGPR strain AP203 with 10.0 mg OPP amendment compared to Bv strain alone and the untreated control. PGPR strain AP193 increased and expressed two bioactive compounds *in vitro* test in the presence of OP amendment compared to the OP without AP193 strain. This study indicates that co-application of OPP with Bv PGPR strains can enhance peanut growth and nodulation.

Evaluating Fluridone for Crop Tolerance and Weed Control in Peanut Production

J.R. KALINA*, E.P. PROSTKO, T.L. GREY, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31793-0748

In comparison to field corn and soybean, peanut is a minor use crop in the United States. Consequently, herbicide development specifically for peanut production is limited. The rise in herbicide resistant weeds magnifies the need to expand the mechanisms of herbicide action that can be used in peanut production. Fluridone is a WSSA group 12 herbicide, recently registered for preemergence (PRE) weed control in cotton. This herbicide was evaluated over three locations and four years in Georgia to assess it potential to be used in peanut. Fluridone was applied PRE at numerous rates and tank-mixed with other herbicides to evaluate crop safety and weed control. Fluridone caused stunting, chlorosis, and bleaching but this injury was transitory and had no impact on final peanut yield. Fluridone provided excellent control (>90%) of Palmer amaranth (*Amaranthus palmeri*). Based upon this research, the use rate for fluridone in peanut would be 0.15 lb ai/A. Additional efficacy research is needed for other weeds common to peanut production systems. Registration for fluridone in peanut production would help to reduce the spread of resistance by increasing the mechanisms of herbicide action that can be used on peanut.

Nozzle Type and Application Pressure Effects on Weed Management in Peanut (*Arachis hypogea*)

K.L. BROSTER*, J.C. FERGUSON, T.A. BAUGHMAN, and B. ZURWELLER, Plant and Soil Science Department, Mississippi State University, Mississippi State, MS 39732

Peanuts are an important cash crop for the United States, and Mississippi produced 33 million dollars of peanuts in 2017 (USDA-NASS, 2018). Peanuts have a prostrate growth pattern, making it easy for weeds to shade the crop canopy, and interfere for nutrients, water, and light. An important part of weed control is nozzle selection, and proper application methods. The purpose of this study is to determine the most effective nozzle type and operating pressure for a season long weed control program. A field study was conducted at Mississippi State University, RR Foil Plant Science Research Center in Starkville, Mississippi. A runner type peanut, Georgia 06G, was used and herbicide applications were made at three different timings: pre-emergent (PRE), early post-emergent (POST) (cracking), and late POST. Weed control ratings were collected 7, 14, 28, 42, and 56 days after the late POST. Yield data was collected at harvest and used to determine the most effective application method for season long weed control. The data indicates that there is not a significant difference in terms of nozzle, pressure, or adjuvant addition effects on peanut yield. However, there is a difference on weed control when looking at pressure by nozzle, and pressure alone. This infers that different techniques, like pressure, affect weed control, but it is more important to have an effective weed management program, based on the nozzles all having similar droplet size and no effect on yield. In 2019, an additional pressure of 60 PSI was added which should help to answer the question across nozzle type of which setting results in the greatest weed control and yield in peanut.

Genotypic Variability Based on Physiological Traits of Peanuts Under Drought Stress

L. A. MORENO*, C. PILON, B.S. FABRETI, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; A.C.C. LARA-FIOREZ, Universidade Federal de Santa Catarina, Curitibanos, SC, Brazil 89520-000; and C.C. HOLBROOK, USDA-ARS; University of Georgia, Tifton, GA 31793.

In breeding programs, one of the most common methods of selection for improved drought tolerance is based on yield. In addition to yield, physiological and metabolic mechanisms could be identified as components for selection and development of peanut cultivars with enhanced drought tolerance. The objective of this study was to identify physiological mechanisms as relevant components of genetic diversity among peanut genotypes grown under drought conditions, which could potentially be used as selection tools for cultivars with improved drought tolerance. Ten runner-type peanut genotypes were planted under field conditions at the University of Georgia, Tifton Campus in 2018. The genotypes included commercially-available cultivars and lines from USDA-ARS. Irrigation treatments consisted of a well-watered control and drought stress levels imposed at two different developmental stages of the plants, onset of flowering [34 days after planting (DAP)] and peak flowering (76 DAP). Water was withheld for 40 and 21 days for the first and second stress levels, respectively. Drought stressed plots were covered with a rainout shelter to prevent rain/irrigation on stressed plants. Measurements of gas exchange and chlorophyll *a* fluorescence were performed at the last day of stress periods and leaf samples were collected for analysis of pigments and enzymatic antioxidants from the defense system pathway. Among the 19 traits evaluated, chlorophyll *a* content as well as fluxes, quantum yields and efficiencies of the transient rise of chlorophyll *a* fluorescence induction were the traits with higher contribution to the genotypic diversity within the environments studied. The genotypes were ranked according to their responses to 13 and 10 most relevant traits under stressed and irrigated conditions, respectively. Under stressed environment, Florida-07 stood out by its improved photosynthetic efficient, whereas under irrigated environment, A100 indicated higher efficiency. Further investigation is ongoing to validate the contribution of these traits to genotypic diversity of peanuts under drought stress.

Effect of Winter Cover Crops on a Peanut – Cotton Rotation

A.J. AZEVEDO[1]*, R.S. TUBBS, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA and W. ANDERSON, A. COFFIN, United States Department of Agriculture, Tifton, GA.

Winter cover crops can decrease input costs for crop production. They also can improve yield, enhance soil health, reduce soil erosion, conserve moisture and protect water quality. Alternatively, winter crops may be harvested to supply biomass used to feed livestock or for bio-based fuels and chemicals. Legumes are often desirable to fix atmospheric N for subsequent crops. Row crops such as peanut (*Arachis hypogaea* L.) and cotton (*Gossypium hirsutum* L.) are very important summer crops in Georgia. A peanut-cotton rotation is commonly used by farmers in the Southeast U.S. The objectives of this study are to evaluate different winter crops, such as lupin (*Lupinus sp*.); narrow-leaf lupin (*Lupinus angustifolius L*.); cereal rye (*Secale cereale L*) and their combination for biomass production and crop quality and the subsequent effect on production of peanuts. The study was conducted at three sites in South Georgia including Tifton, Fort Valley, and Shellman. The experimental design is a split plot, being the main effect being the summer crops and the sub effect the winter cover crops. The results of the first year of a four-year rotation are presented. Measurements included final yield, imagery of canopy coverage and height of peanut, plus canopy coverage of the winter crops and their relationship to peanut. Results of the first year did not present a clear relationship on yield of peanuts with any of the cover crops. Images of the summer crop (peanut) at mid-season had a relationship with final yield.

Supplemental Replanting of Gaps in Plant Stand Affects Peanut Production and Incidence of Tomato Spotted Wilt Virus.

S.B. DAVIS*, R.S. TUBBS, C. PILON, J.L. SNIDER, Crop and Soil Sciences Department, The University of Georgia, Tifton, GA 31794; and R.C. KEMERAIT, Department of Plant Pathology, The University of Georgia, Tifton, GA 31794.

Peanut (*Arachis hypogaea* L.) producers in Georgia every year are faced with the decision of whether seedling emergence is adequate to produce optimal yields. Producers may replant fields when it is unnecessary. Field experiments were conducted at the University of Georgia's Lang-Rigdon Farm in Tifton, GA during 2017. The objectives of this study were to determine the most optimum method of replanting a non-uniform stand based on varying length of gaps in the row to maximize yield and grade (total sound mature kernels) of peanut. Tomato spotted wilt virus (*Tospovirus*) (TSWV) incidence was also assessed. Plots were thinned to 6.6 plants/m except for one standard 13.1 plants/m check plot. Plants were removed from random sections of row prior to replanting to establish 0.61 m, 1.22 m, or 1.83 m of consecutive row length where no plants would grow. Each length was pulled either once or twice per 10.36 m row as separate treatments. All gap scenarios were factorially replicated with replant treatments as follows: 1) no replant, 2) replant only in the length of gaps, and 3) replant the entire length of row. All replant treatments were made at a rate of 13.1 seed/m at 19 days after original planting, approximately 8 cm to the side of the original row. Treatments for the length or frequency of gap in stand were not significant for yield or TSWV. Pod yield when averaged over gap length and frequency in row (excluding checks) was greatest for full row replant (6012 kg/ha), followed by replanting only in the gap (4911 kg/ha), with no replant (4152 kg/ha) yielding the least. Among replant treatments there was no difference in grade between no replant (73.5%) and replanting only in the gap (72.7%), but full row replant (74.4%) was greater. The increase of yield and grade for the full row replant treatment is partially attributed to a later digging date than the other replant treatments, as triggered by the hull-scrape maturity profile. There was no difference in percentage of TSWV between no replant (5.7%) and replanting only in the gap (7.3%), but there was less virus in the full row replant (2.4%) treatment. Full row supplemental replanting was beneficial in increasing yield and total sound mature kernels, and for decreasing TSWV incidence in the first year of this study. The experiment will be repeated.

Phenotyping And Genotyping For Drought Tolerance In Virginia Type Peanut

N. KUMAR*, D. HAAK, and M. BALOTA Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437.

Peanut (*Arachis hypogea* L.) is a high value crop grown in the Southern United States for oil, peanut butter, gourmet and other confectionary products, and exports. Drought is the most limiting factor for peanut yield and quality and, even though soil moisture could be supplemented with irrigation, the majority of the U. S. peanut production is under rainfed agriculture. For example, the Virginia-Carolina growing region, peanut production is over 90% under rainfed condition. The most reliable solution for peanut producers to mitigate drought is to adopt drought tolerant cultivars. To achieve this broad objective, research that integrates agronomy, physiology, genomics and breeding is further needed.

The objectives of this research are three-fold. First, to assess the current commercial cultivars for yield and quality and identify high yielding cultivars for rainfed production. Secondly, to dissect the physiological components of drought tolerance using targeted approaches. For example, the physiology of effective transpiration and photosynthesis will be used to screen the expression for the efficiency of water conservation traits in selected genotypes in the field under rain exclusion shelters. To screen these traits in large populations (RILs), we used surrogate techniques, such as visual wilting, NDVI, CT, and SPAD. Thirdly, after phenotyping, we will genotype the RILs using Genotyping-by-sequencing approach. This approach will allow generation of reliable markers to enable marker-assisted selection for drought tolerance in peanut breeding.

Our preliminary data shows that among the parent genotypes, Phillips yield was 8007 kg ha^{-1} whereas N04074FCT had 6919 kg ha^{-1}. The parent sequencing data revealed approximately 5000 genetic markers between these parents from which one of our RIL population has been developed. The long-term objective of this work is better understanding drought tolerance in Virginia type peanut and develop drought tolerance cultivars using phenotypic and molecular markers.

PCR-Based Detection of *Nothopassalora personata* on Peanut

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

Late leaf spot (LLS), caused by *Nothopassalora personata*, is the most damaging fungal foliar disease of peanut in S.C. Control of LLS typically relies, in part, on repeated applications of fungicide. Spores that cause LLS infections are disseminated via rain and wind. While some fungicides have limited curative activity, most fungicides are more effective in managing LLS when applied preventatively. While recommended guidelines are in place for when to begin fungicide applications in peanut fields, the exact timing of inoculum production and availability depends on several factors. Thus, an accurate and sensitive detection system that can inform growers when *N. personata* spores can be first detected in fields before the development of visual symptoms can be used to better optimize timing of fungicide applications. In this study, a qPCR assay with crude DNA extract was developed for rapid and sensitive detection of *N. personata* spores from a Rotorod-style air sampling spore trap. Species-specific primers were designed based on the ITS region. Primers specifically amplified *N. personata* DNA, and did not amplify the DNA of healthy peanut leaves or different saprophytes isolated from peanut leaves. This detection system has the potential to more accurately detect availability of early-season inoculum and allow for improved prevention of LLS infections through guided fungicide applications.

Molecular Mechanism of Resistance to ACCase-inhibiting Herbicide in Southern Crabgrass (*Digitaria ciliaris*) Biotypes

S. BASAK*, J. S. MCELROY, C. CHEN, Department of Crop, Soil, and Environmental Sciences, Auburn University, Auburn, AL 36849; and P. E. MCCULLOUGH, Department of Crop and Soil Sciences, The University of Georgia, Griffin, GA 30223.

Southern crabgrass (*Digitaria ciliaris* (Retz.) Koeler) is one of the most common and troublesome weeds infesting all major cropping systems including peanut throughout the southeastern United States. Acetyl-coenzyme A carboxylase (ACCase)-inhibiting herbicides are used for postemergence grass weed control in annual and perennial cropping systems. Recently, these herbicides failed to control southern crabgrass on the sod production field in Georgia. Two resistant R1 and R2 biotypes were collected from Georgia compared to a separate susceptible biotype (S) collected from Alabama. This study was aimed to determine the possible mechanism for resistance in these two resistant biotypes. Five seedlings of R1, R2, and S biotypes were transplanted onto agar media containing the discriminating doses (0-400 µM) of sethoxydim herbicide for rapid screening of injury symptoms caused by the ACCase inhibitors. Both R1 and R2 biotypes showed low phytotoxicity to sethoxydim compared to the S.

The amplification of the carboxyl-transferase domain of the plastidic ACCase by standard PCR revealed a point mutation resulting in an amino acid substitution at position 1781 in the resistant R1 biotype. Cloning of PCR product surrounding the Ile-1781 region yielded two distinct ACCase gene sequences such as Ile-1781 and Leu-1781. Next-generation sequencing (NGS) using the Illumina platform was used for confirmation of the amino acid substitution in the resistant biotypes. Transcriptome profiling by RNA sequencing revealed a single nucleotide variation of adenine to cytosine resulted in an Ile-1781-Leu substitution in both resistant biotypes. Research, therefore, confirms that the amino acid substitution is the possible mechanism of action for resistance to ACCase-inhibiting herbicides in the resistant biotypes.

Planting Conditions Influence Early Season Vigor of Peanut Cultivars.

G. VIRK*, C. PILON, 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. Crop growth can be influenced by several factors such as genotype, management practices, and various environmental conditions. Notably, different temperature conditions can have a dramatic effect on plant growth and development. Selection of a planting date with optimal environmental conditions (temperature) is critical for crop production. 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 in 2018 on three different planting dates (mid-April, mid-May and early-June) in order to generate differences in temperatures at planting and early growth. Field measurements consisted of stand counts from 5 to 14 days after planting (DAP) and destructively harvesting plants from 2-m sections from each plot at 21 and 35 DAP to measure total leaf area per plant (TLA) and plant dry matter. These measurements were also used to calculate crop growth indices between 21 and 35 DAP such as Crop Growth Rate (CGR), Net Assimilation Rate (NAR), and Leaf Area Index (LAI). Result analysis showed the effect of cultivar and planting date on plant growth parameters and derived growth indices. Temperature conditions for the June planting resulted in highest plant density, height, number of mainstem nodes, leaf area and dry weights at both 21 and 35 DAP compared to other two planting dates. For the growth indices, a similar planting date effect for CGR, LAI, and NAR were observed, with higher indices for the June planting. Comparing cultivars, GA-06G plants were significantly more vigorous than TifNV and Georgia-14N. Crop growth indices were significantly higher for Georgia-06G than TifNV and Georgia-14N. However, no significant cultivar effect was observed for NAR. CGR was found to be significantly correlated with both NAR and LAI ($r = 0.81$, and 0.91, respectively). These results suggested that temperature played an important role on plant early growth and development. In addition, differences in early crop growth of peanuts were more closely related to leaf area development than photosynthetic efficiency of the canopy.

Characterization of ACC Deaminase Producing Bacteria Isolated from Peanut Root Nodules

X. WANG*, A. R. AKHGAR, C. CHEN and Y. FENG. Dept. of Crop, Soil and Environmental Sciences, Auburn Univ., Auburn, AL 36849

Sharp increases in aminocyclopropane-1-carboxylic acid (ACC) levels and consequent ethylene synthesis in plants under drought stress have been reported in many plant species; however, little information is available for peanut. The enzyme ACC deaminase catalyzes the degradation of ACC, the immediate precursor of the plant hormone ethylene, and is widespread among rhizobia. In this study, we determined if rhizobia isolated from peanut root nodules contained ACC deaminase activities. A total of 87 bacterial isolates was isolated from root nodules of three peanut genotypes subjected to middle- and late-season drought treatments in the greenhouse. A PCR-based DNA fingerprinting technique was used to determine the similarity among the isolates. All isolates were screened for ACC deaminase activity and 13 of which had positive reactions. The ACC deaminase positive isolates were then identified by 16S rRNA gene sequencing and further characterized phenotypically. Three of the 13 ACC-deaminase positive isolates were able to nodulate peanut plants grown in Leonard Jars. Further study is needed to determine if rhizobia with ACC deaminase activities help alleviate drought stress in peanut.

SUSTAINABILITY:
MEASUREMENT, RESOURCES AND OPORTUNITIES FOR RESEARCH

	Thursday, July 11, 2019	
1:00-3:15 PM Terrace Room	**Sustainability: Measurement, Resources, and Opportunities for Research** *Moderator: Adam Rabinowitz, University of Georgia*	**Page Number**
1:00 PM	**Field to Market: the Alliance for Sustainable Agriculture** Eric Coronel Research Analyst Field to Market	**Not Available**
1:25 PM	**Cotton and Peanut Sustainability Education** Anna Hartley University of Georgia-Tifton campus	**Not Available**
1:50 PM	**Farmer Perspective on Peanut Sustainbillity** Donald Chase Georgia Peanut Farmer	**Not Available**
2:15 PM	**Industry Perspective on Peanut Sustainability** David Prybylowski Sustainability Director American Peanut Council	**Not Available**
2:40 PM	**Opportunities for Peanut Sustainability Research** Adam N. Rabinowitz University of Georgia	
3:00 PM	**Sustainability Group Discussion**	

MINUTES

BOARD OF DIRECTORS MEETING

51st Annual Meeting
The Hotel at Auburn University & Dixon Conference Center
Auburn, Alabama
10 July 2019

Board Members Present:

President Rick Brandenburg	Yes (via Zoom)
President-elect Barry Tillman	Yes
Past President Peter Dotray	Yes
Steve Brown	Yes
Mark Burow	Yes
Darlene Cowart	No
Chris Liebold	Yes
Marshall Lamb	Yes
Peggy Ozias-Akins	Yes
Sara Beth Pelham	Yes
Gary Schwarzlose	Yes
Barbara Shew	Yes (via Zoom)
Dan Ward	No
Executive Officer Kim Cutchins	Yes

President Rick Brandenburg called the meeting to order at 5:10 p.m. Members present are noted above and constitute a quorum. Additional attendees are John Bennett, Mark Abney, Nathan Smith, Bob Kemerait, Keith Rucker, Kim Moore, Tim Brenneman, Charles Chen, Maria Balota, and Lisa Dean.

Minutes of June 2019 E-Vote by Survey Monkey
Minutes of the survey sent by email to the members of the Board of Directors were distributed at the beginning of the meeting. Directors were asked to review the minutes and were asked for any changes and/or additions. There being no changes/additions, President Brandenburg called for approval of the minutes. It was moved by Gary Schwarzlose, seconded by Chris Liebold, and unanimously passed to:

Approve the minutes of the June 2019 E-vote via Survey Monkey survey.

Executive Officer Report

Kim Cutchins stated that APRES day-to-day operations are in good order and running smoothly. Additionally, she reviewed proposals and did site inspections on numerous properties for the 2020 and 2021 Annual Meeting. She has continued her search for a new home for Peanut Science, as negotiations with Allen Press have not well i.e., they want more money to do less on a system that is over 15 years old. She assisted Allison Floyd in the re-launch of the APRES newsletter. She continues to attend industry meetings when time allows (USA Peanut Congress, Georgia Peanut Farm Show, South Carolina Peanut Board, Mississippi Peanut Growers Association, American Peanut Council Winter Meeting, APSA 100 year Celebration….etc…) The remainder of the year is devoted to preparing for the Annual Meeting, sending out over 20 marketing pieces. She thanked Rick Brandenburg, Barry Tillman, Peter Dotray, Charles Chen, Steve Li, Kris Balkcom, John Beasley, Jennifer Tillman, Brian Royals, Brian Royals, Joyce Hollowell, and Gary Schwarzlose, for putting together another amazing meeting. She advised the Board that she will be taking 2 weeks at the end of August for a vacation and looks forward to working with the APRES Board and Committees in 2019-20.

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 11th, 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 11th Business Meeting and Awards Ceremony in the Auditorium at 5:00 p.m.

FINANCE COMMITTEE:

Chairman Tim Brenneman reported the Finance Committee met July 9th to discuss APRES' current financial statements.

Balance Sheet as of June 30, 2019

APRES financial statements are reported using the accrual system. Current assets are $317,819, primarily in cash—checking, CDs. Liabilities are credit card bill, employment taxes and withholdings of $1,907 and total equity of $315,912. Total Liabilities and Equity are $317,819.

Profit & Loss Statement as of June 30, 2019

Income through June 30, 2019 is $86,944 and expense is $34,758. Majority of expenses for APRES occur in July/August when the bills for the Annual Meeting arrive and are paid. Net income plus interest income of $261 for the 6-month period is $51,447.

Vanguard Investments as of June 30, 2019

Balance: $35,161
Growth Since Inception: Rate of Return is 3.8% since inception (February 2015)
Holdings: Vanguard LifeStrategy Income Fund (VASIX)
84% Bonds; 19% Stocks
$15.90 price per share
Contains only 4 index funds
Largest Holdings: Vanguard Total Stock Market Index Fund
Vanguard Total International Stock Index Fund

Potential Growth Ideas Needed

Chairman Brenneman reminded the Board APRES' sources of income are primarily membership dues and annual meeting registrations/sponsorships. For APRES to grow, it needs to grow membership, increase Annual Meeting attendance, increase sponsorships and find other growth opportunities.

APRES Financial Statements as of June 30, 2019 Follow on the Next Page

American Peanut Research and Education Society
Balance Sheet
As of June 30, 2019

	Jun 30, 19
ASSETS	
Current Assets	
Checking/Savings	
Vanguard	34,013.12
Paypal	10,861.62
Cash - Checking - 2629	137,040.30
Cash - MMA - 7397	122,091.25
Cash - CD 4647	13,812.61
Total Checking/Savings	317,818.90
Total Current Assets	317,818.90
TOTAL ASSETS	317,818.90
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Credit Cards	
Security Bank Card	1,270.06
Total Credit Cards	1,270.06
Other Current Liabilities	
State W/H Tax	116.67
FICA/FWH Payable	520.33
Total Other Current Liabilities	637.00
Total Current Liabilities	1,907.06
Total Liabilities	1,907.06
Equity	
31300 · Restricted Fund Balances	250.00
32000 · Unrestricted Fund Balances	264,214.92
Net Income	51,446.92
Total Equity	315,911.84
TOTAL LIABILITIES & EQUITY	317,818.90

American Peanut Research and Education Society
Profit & Loss
January through June 2019

	Jan - Jun 19
Ordinary Income/Expense	
Income	
Book Sales	
Shipping & Handling	94.25
Peanut-Genetics, Processing & U	2,200.00
Book Sales - Other	1,500.00
Total Book Sales	3,794.25
Sponsorship-Annual Meeting	
Contribution - Joe Sugg Award	750.00
Awards	1,000.00
Ice Cream Social	1,000.00
Thursday Reception	4,000.00
Wednesday Dinner	9,000.00
Sponsorship-Annual Meeting - Other	2,750.00
Total Sponsorship-Annual Meeting	18,500.00
Peanut Science	
Page Charges	5,500.00
Total Peanut Science	5,500.00
Annual Dues	
Sustaining-Gold Level	800.00
Sustaining-Silver Level	350.00
Individual-Student	1,025.00
Individual-Post Doc/Tech Supp	300.00
Individual-Retired	125.00
Individual-Regular	12,250.00
Annual Dues - Other	100.00
Total Annual Dues	14,950.00
Meeting Registration	
Meeting Registration-Retired	375.00
Meeting Registration-Platinum	1,500.00
Meeting Registration-Regular	37,400.00
Meeting Registration-Gold	125.00
Meeting registration-Student	2,600.00
Meeting Registration - Other	1,200.00
Total Meeting Registration	43,200.00
Total Income	85,944.25
Expense	
Administrative Expense	
66000 · Wages - Executive Officer	13,999.98
Taxes - Payroll	1,113.00
Postage	124.16
Bank Charges	
Paypal Fees	1,549.46
Bank Charges - Other	35.00
Total Bank Charges	1,584.46
Webpage Maintenance	320.07
Dues and Subscriptions	30.00

American Peanut Research and Education Society
Profit & Loss
January through June 2019

	Jan - Jun 19
Outside Services	295.00
Accounting	1,268.00
Total Administrative Expense	18,734.67
Annual Meeting	
Travel	3,381.00
Awards	2,818.35
Supplies/Equip/AV	736.43
Total Annual Meeting	6,935.78
Peanut Science Publishing	
Peanut Science Editor Stipend	3,000.00
Peanut Science Publishing - Other	6,087.84
Total Peanut Science Publishing	9,087.84
Total Expense	34,758.29
Net Ordinary Income	51,185.96
Other Income/Expense	
Other Income	
Interest Income	260.96
Total Other Income	260.96
Net Other Income	260.96
Net Income	**51,446.92**

Approved
March 4, 2019

APRES

2018 Year-End vs Budget Document and 2019 APRES Proposed Budget

	A	B	C	D	E	F	G	H	I
1	INCOME	Actual 2015	Actual 2016	Actual 2017	Approved Budget 2018	Actual 2018	Approved Budget 2019	Budget vs Actual as of 6-30-2019	
2	**Annual Dues**	$28,000	$21,900	$22,850	$25,000	$17,750	**$25,000**	14,950	
3	**AnMeeting Registrations**	(VC) 39,750	(SE) $38,495	(SW) $43,620+	(VC) $35,000	(VC) $53,405	**(SE) $40,000**	43,200	
4	**Sponsorships –**	$25,800	$51,952	$39,750+	$38,000	$44,628	**$40,000**	18,500	
5	Ice Cream Social	$800	$0	$0	$3,000	$5,400	$5,000	0	
6	Wednesday Dinner	**$9000	$27,000	$19,000	$19,000	$19,000	$19,000	0	
7	Thursday Reception	$3,000	$3,000	$3,250	$3,000	$4,500	$4,500	0	
8	Meeting Breaks	$6,000	$6,000	$6,500	$6,000	$6,000	$6,000	0	
9	Spouse Suite/Program					$4,048	$2,500	**0**	
10	Awards	$2,750	$3,500	$4,000	$3,500	$4,250	$4,250	0	
11	Fun Run	$250	$500	$0	$500	$630	$500	0	
12	Other	$4,000	$8,952	$7,000	$3,000	$800	$500	0	
13	**Peanut Science**	$10,465	$20,059	$13,050-	$25,000	$15,849	**$25,000**	**5,500**	
14	**Book Sales**	$336	$4,975	$3,300-	$3,000	$960	**$1,000**	3,700	
15	**Book Shipping**		$65	$27-	$50	$19	**$50**	94	
16	**Miscellaneous Income**	$658	$685	$783+	$700	$23	**$800**	0	
17	**TOTAL**	$105,009	$138,131	$123,387-	$126,750	$132,634	**$131,850**	0	**85,944**
18	Interest	$961	$453	$387	$250	$484	$450	$261	
19	**Total + Interest**	$105,970	$138,584	$123,774	$127,000	$133,118	**$132,300**	**86,205**	
20									
21									
22									
23	EXPENSES	Actual 2015	Actual 2016	Actual 2017	Proposed Budget 2018	Actual 2018	Approved Budget 2019	Budget vs. Actual as of 6-30-2019	
24	**Annual Meeting**	(VC) $61,554	(SE) $47,544	(SW) $62,451	$78,500	(VC-50th) $71,228	**(SE) $56,250**		
25	Awards	$5,465	$5,252	$4,897	$5,500	$6,284	$6,250	2818	
26	Hotel Charges	$47,010	$36,388	$50,000	$60,000	$45,328	$40,000	0	
27	Speaker Expenses		$0	$0	$3,000	$2,795	$3,000	0	
28	Spouse Suite/Program					$2,750	$3,000	3381	
29	Supplies/Equip/AV	$1,603	$2,305	$0	$7,000	$8,621	$2,500	736	
30	Travel - Ext. Agents	$1,769	$3,598	$7,554	$0	$1,612	$0	0	
31	Other	$5,707	$0	$3,000	$3,000	$2,725	$1,500	0	**6936**
32								0	
33	**Peanut Science**	$13,463	$14,597	$13,729	$25,000	$22,292	**$25,000**	0	
34	Publishing	$4,458	$1,821	$1,530	$22,000	$6,588	$6,900	6088	
35	Editor Stipend	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	3000	
36	Website Hosting	$5,109	$8,991	$8,152		$11,649	$14,000	0	
37	Peer Review	$621	$477	$772		$779	$800	0	
38	Other	$275	$308	$275		$275	$300	0	**9088**
39								0	
40	**Book Purchase - AOCS**	$0	$9,363	$4,681	$0	$0	$0	0	
41	**Book Shipping**		$0		$50	$19	**$50**	0	

Approved
March 4, 2019

APRES

2018 Year-End vs Budget Document and 2019 APRES Proposed Budget

	A	B	C	D	E	F	G	H	I
42	EXPENSES, Continued	Actual 2015	Actual 2016	Actual 2017	Proposed Budget 2018	Actual 2018	Approved Budget 2019	Budget vs. Actual as of 6-30-2019	
43	**Administrative Expenses**	$29,992	$35,375	$27,997	$40,905	$35,335	**$41,130**	0	
44	Dues - CAST	$0	$0	$0	$0	$0	0	0	
45	Corp. Registration Fees	$0	$30	$30	$30	$30	$30	30	
46	Legal Fees	$525	$0	$474	$500	$0	$500	0	
47	Insurance	$100	$100	$100	$100	$100	$100	0	
48	Executive Officer	$23,000	$28,414	$21,083	$28,000	$27,583	$28,000	14000	
49	Taxes: Payroll	$1,802	$1,802	$2,072	$2,800	$2,152	$2,500	1113	
50	Administrative Assistant	$0	$0	$0	$0	$0	$0	0	
51	Web Page Maintenance	$648	$0	$0	$1,500	$0	$1,500	320	
52	Accounting Services – Herring CPA	$1,650	$1,895	$1,915	$2,175	$1,952	$2,175	1268	
53	Outside Services	$0	$200	$455	$1,000	$979	$1,700	295	
54	Postage	$88	$72	$47	$50	$7	$50	124	
55	Office Expenses	$50	$78	$128	$250	$0	$100	0	
56	Travel - Officers	$0	$0	$0	$1,200	$0	$1,200	0	
57	Bank Charges	$159	$11	$38	$50	$0	$25	35	
58	PayPal/Credit Card Fees	$1,967	$2,773	$1,649	$3,000	$2,532	$3,000	1550	
59	Miscellaneous	$3	$0	$0	$250	$0	$250	0	
60	Depreciation	$0	$0	$0	$0	$0	$0	0	
61								0	**18,735**
62	**Total Expenses**	**$105,009**	**$106,879**	**$108,858**	**$144,475**	**$128,855**	$122,430	**34,758**	
63									
64									
65									
66	**Income Over Expense**	**Actual 2015**	**Actual 2016**	**Actual 2017**	**Budget 2018**	**Actual 2018**	**Approved Budget 2019**		
67	Total Income + Interest	$105,970	$138,584	$123,774	$127,000	$133,118	**$132,300**	**86205**	
68	Total Expenses	$105,009	$106,879	$108,858	$144,475	$128,855	**$122,430**	**34758**	
69	**Net Income**	**$960	$31,706	$14,916	($17,475)	$4,263	**$9,870**	**$51,447**	
70									
71									
72	**Accounts Receivables as of 12-31-2015	**$15,134	$9,515						
73	**Net Income with Receivables**	**$16,094							

June 30, 2019, quarter-to-date statement

Page > 1 of 1

Vanguard

Do Not Use For Account Transactions
PO BOX 3009
MONROE, WI 53566-8309

Client Services > 800-662-2739

vanguard.com

THE AMERICAN PEANUT RESEARCH
AND EDUCATION SOCIETY INC
PROF CORPORATION
2360 RAINWATER RD
TIFTON GA 31793-5766

LifeStrategy Income Fund 0723-88104844676

Average price per share	Total Cost
$15.20	$33,612.82

Date	Transaction	Amount	Share Price	Shares Transacted	Total Shares Owned	Value
	Beginning balance on 3/31/2019		$15.52		2,198.278	$34,117.27
06/28	Income dividend .095	$208.84	15.90	13.135	2,211.413	
	Ending balance on 6/30/2019		$15.90		2,211.413	**$35,161.47**

Beginning on January 1, 2012, new tax rules on taxable (nonretirement) mutual fund accounts (excluding money market funds) require Vanguard to track cost basis information for shares acquired and subsequently sold, on or after that date. Unless you select another method, sales of Vanguard mutual funds, but not ETFs, will default to the average cost method. For more information, visit vanguard.com/costbasis.

20190630 012719 RSBJMP16 106A 000000194425516 P

Search the site or get a quote

HomeMy Accounts Investing Advice & Retirement News & Perspectives Benefits & Costs

NASDAQ 8,098.38 -63.41 S&P 500 2,975.95 -14.46 DJIA 26,806.14 -115.98 Data as of 07/08/2019 05:15 PMET Market Summary

$35,249.92

Value as of 07/08/2019, 04:00 pm, ET

Welcome back!

kim.cutchins@apresinc.com edit

Last logon: Sunday, June 30, 2019 06:43 PMET

Customize your account view

0 New secure messages

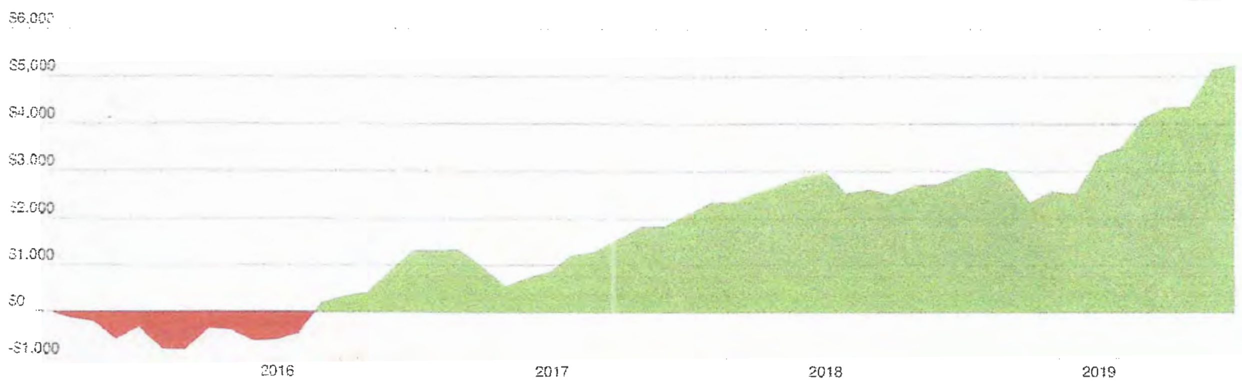
Balances Holdings Activity **Performance** Asset mix

Personal Performance Prices & returns

02/01/2015 - 07/08/2019

Beginning balance	$0.00	Ending balance	Rate of return
Purchases & withdrawals	+$30,000.00	$35,249.92	3.8%
Investment returns	+$5,249.92		As of 06/30/2019

CHART | TABLE



Balances Purchases & withdrawals Investment returns Since inception

Disclosure | See how we calculate performance

Why cost basis is not performance

When evaluating your performance, cost basis only gives part of the picture. It's important to look at total investment returns, not just cost basis.

More about cost basis

Is your portfolio in balance?

A sound investment strategy starts with an asset allocation suitable for the portfolio's objective. The allocation should be built on reasonable expectations for risk and returns, and should use diversified investments to avoid exposure to unnecessary risks.

More about asset allocation

Advice from Vanguard

Want an expert's opinion? A comprehensive financial plan? An ongoing partnership dedicated to your goals? Or investments designed for you to use on your own? Trust Vanguard to give you what you need.

More about advice at Vanguard

***Note on account protection:** Securities in your brokerage account are held in custody by Vanguard Brokerage Services®, a division of Vanguard Marketing Corporation, member FINRA and SIPC. Account protection

CONNECT WITH US®

Facebook

Twitter

Vanguard News

Vanguard Blog

YouTube

LinkedIn

NOMINATING COMMITTEE

Chairman Peter Dotray presented the slate of 2019–20 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.

Proposed 2019-20 APRES Board of Directors

Officer Nominees *(highlighted in yellow)*:

2019-20 President	Dr. Barry Tillman (2021) University of Florida
2019-20 President-Elect	Dr. Gary Schwarzlose (2022) Bayer
2019-20 Past President	Dr. Rick Brandenburg (2020) North Carolina State University
2019-20 Executive Officer	Kim Cutchins (2020)

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

V-C area:	Dr. Nathan Smith (2022) Clemson University
SE area:	Dr. Bob Kemerait (2021) University of Georgia
SW area:	Dr. Mark Burow (2020) Texas A&M University
USDA Representative:	Dr. Lisa Dean (2022) USDA-ARS-MQRU
Production Representative:	Dr. Gary Schwarzlose (2021) Bayer
Grower Association Rep:	Bob Sutter (2022) North Carolina Peanut Growers Association
Manufactured Products:	Chris Liebold (2020) The J.M. Smucker Company
American Peanut Council:	Dr. Steve Brown (2020)
National Peanut Board:	Dan Ward (2020)

Each nominee has been contacted and has agreed to serve, if elected. The list of nominees was approved in June to move forward for a membership vote tomorrow.

Chairman Dotray added the membership will vote on adding another seat to the APRES Board of Directors—the President of the APRES Graduate Student Organization (currently SaraBeth Pelham). The APRES GSO President is currently an ex-officio member of the Board.

Additionally, Chairman Dotray advised, if Gary Schwarzlose is elected to the position of President-elect at tomorrow's Business Meeting, the Board will need to find a his remaining term as an industry rep

Incoming APRES President Barry Tillman stated he has almost completed his Committee roster assignments for 2019-20.

PUBLICATIONS & EDITORIAL COMMITTEE

The Publications and Editorial Committee held a joint meeting with Associated Editor of Peanut Science (Editor: Dr. Tim Grey).

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 five completed chapters out of the 12 proposed. Two other chapters are close to completion 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.

Committee meeting was attended by President-Elect Barry Tillman. During his presidential tenure, he wants to get this book accomplished. Committee meeting was also attended by Craig Kvien at the suggestion of Kim Cutchins, Executive Director of APRES. His attendance was to help with the discussion of having Craig interview the lead authors and other experts to write the chapters for them. Craig agreed he can do this, but shared it is a difficult task because he essentially has to learn the subject. Committee agreed and began discussions towards which chapters were having the most difficulty be accomplished and why?

During that discussion, it was identified that Nick Dufault, associate editor, has not been available to discuss his chapter assignments and is not present at the meeting today. It was suggested a new associate editor is needed who might have the time to devote to the project. Kira Bowen volunteered to step in to help, if Nick is overcommitted. Post meeting, Chris Liebold talked to Nick about his associate editor role and Nick agreed he is overcommitted. Kira Bowen will serve as the new associate editor and will tackle Nick's assigned chapters.

Shyam and Chris will update Kira on where the effort stands next week, so she can begin her duties as associate editor.

Peanut Science
Chris stated Peanut Science Editor, Tim Grey, will give a full report at the business meeting. He noted submission standards will be updated to state abstracts should be 250 words or less; citation changes; and links are not acceptable in a manuscript. Chris confirmed finding a new publisher for Peanut Science has been challenging and Kim is still negotiating with Allen Press.

Peanut Newsletter
Allison Floyd and many APRES Volunteers helped re-launch the APRES newsletter in January 2019. The newsletter will be published quarterly and the first two issues have received excellent feedback. President Brandenburg praised the Committee and Allison for their efforts, encouraging all to send news to Allison or Kim.

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

Necrology Report - The following Individuals will be recognized for their contributions to APRES and/or the peanut industry at tomorrow's business meeting—Jim Kubickek; Johnny Shivers; John Leidner;

Brenda Faircloth; Barney Barnett; Sharon Kay Hart. Additionally, a summary of their contributions will be entered into the official Proceedings of the 51st Annual Meeting.

Recognition of Retirees
A recommendation was made that APRES should somehow recognize members of the organization as well as leaders in the peanut industry who are retiring each year. It was felt that it would e a nice tribute to these individuals who have devoted a significant part of their careers to promote the peanut industry. Other organizations, such as the Southern Weed Science Society, does something similar and could serve as a model to how we do this. The Committee proposes to the Board that this Committee collect information from retiring individuals on an annual basis and that a brief summary of the retirees career be published in the Proceedings of the Annual Meeting each year, similar to the necrology report.

It was moved by Marshall Lamb, seconded by Peter Dotray, and approved to:

recognize retiring individuals annually in the Annual Meeting Proceedings with a brief summary of their career.

Individuals identified to the Committee to date for 2019 are Carroll Johnson, Craig Kvien, Michael Baring, Tom Stalker, and Austin Hagan.

Co-Promotion with the National Peanut Board
A recommendation was made that APRES approach the National Peanut Board to discuss possible co-promotions of peanuts during the APRES Annual Meeting. Each year, the National Peanut Board visits various cities around the country to promote peanuts. With so many people in the peanut industry gathering at the APRES Annual Meeting each year, the Committee felt that it would be a great opportunity to team up with the National Peanut Board to host some kind of peanut promotion event either right before, during or right after the APRES Annual Meeting. The Committee recommends to the board that APRES reach out to the NPB to explore possibilities for some kind of promotion event. The Board unanimously agreed this is a great idea and recommended:

the Committee meet with the National Peanut Board and the Peanut Institute to explore the feasibility of a cross-promotion event.

International Meeting
Each year, the APRES meeting has attendees from across the glob participating in our Annual Meeting. In an attempt to attract more international participation, the Public Relations Committee recommends to the Board that APRES explore the possibility of expanding the scope of our meeting to attract more international participation. Some ideas for this include expanding into the AAGB (Genomics) Conference that is currently held in conjunction with our APRES Annual Meeting to include all of the sessions that papers are presented as well as possibly tying into the American Peanut Council's International Peanut Forum. The Public Relations Committee recommends an ad hoc committee be formed to explore these possibilities. A lively discussion ensued, ending with a unanimous approval to:

Form an ad hoc committee to explore the feasibility of expanding APRES' scope to attract more international members. Steve Brown, Mark Burow and Peggy Ozias-Akins agreed to be the members of this ad hoc committee. The Committee is tasked with examining ideas ranging from (but not limited to) the feasibility of creating a stand alone international meeting to expanding the current Annual Meeting along with their potential impact on APRES.

BAILEY AWARD COMMITTEE

2019 Recipient - Chairman Kim Moore reported 10 nominations were received for best oral presentation at the 2018 Annual Meeting in Williamsburg, VA. Nine nominees indicated their intent to submit a manuscript. The Bailey Award Committee received five manuscripts for final ranking. Announcement of the 2019 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.

Award Guidlelines Review

At last year's meeting, the Board asked the Committee to revisit the new award requirement that the winning paper must be submitted to Peanut Science for publication. Kim reported the Committee's recommendation is to remove the requirement and instead, if the author chooses not to publish the manuscript in Peanut Science, to request the winning author to write an article/synopsis of significance on their research and publish it as a "Spotlight" article in Peanut Science. The Committee recommended they work with the Peanut Science Editorial Board to determine the standards for this new feature. It was moved by Peggy Ozias-Akins, seconded by Marshall Lamb, and unanimously approved to accept the Committee's recommendation to:

remove the mandatory publication requirement from the award guidelines and to accept a "Spotlight" article as meeting the awards goal of publishing the research of the best paper presented at each Annual Meeting.

FELLOWS COMMITTEE

Chairman Eric Prostko announced 3 nominees were selected to become Fellows of the Society—Peter Dotray, Barry Tillman, and Michael Baring. The nominees will be sworn in at the Business meeting tomorrow.

SITE SELECTION COMMITTEE

Chairman Charles Chen reported the Committee and Board have selected Omni Mandalay Hotel at Las Colinas in Dallas, TX as the 2020 site for the 52nd Annual Meeting.

52nd Annual Meeting	53rd Annual Meeting	54th Annual Meeting	55th Annual Meeting
July 14-16, 2020	July 13-15, 2021	July 12-14, 2022	July 13-15, 2023
Dallas, Texas	Virginia-Carolina Region	Southeast Region	Southwest Region

The 2021 meeting received only one proposal within budget from first choice city, Charlotte. The Committee suggested APRES look at Raleigh and Ashville for additional choices.

The Committee recommended Savannah, GA as its first city choice for 2022; and, Galveston, Corpus Christie or Marble Falls for 2023.

COYT T. WILSON DISTINGUISHED SERVICE COMMITTEE

Chairman Mark Abney stated the Coyt T. Wilson Distinguished Service Award Committee reached a unanimous recommendation for the 2019 award: Dr. Timothy Grey. 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—21 competitors from 7 different universities. Due to the large number of participants and the increasing number of papers for breakout sessions, scheduling an all-encompassing competition is not possible. Winners will be announced at tomorrow's Business Meeting and Awards Ceremony.

Bob noted that this wonderful level of participation does make it difficult to find enough judges for a competition that is spread out over 3 days and will work with next year's Program Chairman to try to find a remedy. He recognized Cristiane Pilon for her efforts in organizing the judges.

NATIONAL PEANUT BOARD GRADUATE STUDENT POSTER COMPETITION

Ad Hoc Chairman Charles Chen reported the Graduate Student Poster Competition also attracted a

large number of participants—13 competitors from 6 universities. The winners will be announced at the Business Meeting tomorrow.
Dr. Tom Stalker, who organized the first Poster Competition last year and assisted this year, asked the Board to find a home for this new competition among the APRES Committee structure. It was unanimously approved to:

add the duties of the Poster Competition under the Joe Sugg Graduate Student Competition Award Committee.

CORTEVA™ AGRISCIENCE RESEARCH & EDUCATIONAWARDS COMMITTEE

Chairman Dylan Wann reported the membership was solicited for award nominees in both the areas of Research and Education. Nominations for the Research award was received and the recipient will be announced at the Business Meeting and Awards Ceremony.

PROGRAM COMMITTEE

Program Chairman Barry Tillman recognized his outstanding team—Technical Program Chairman Charles Chen; Local Arrangements Chairmen John Beasley, Steve Li and Kris Balkcom; Fun Run Chair, Peter Dotray; Spouses Program Chair, Jennifer Tillman; Registration Organizers Brian Royals and Joyce Hollowell. Attendance for 2019 is 352 total; 278 registrants; 31 spouses; 43 children. Feedback from the Opening Session speakers has been outstanding. The symposium organized by Dave Hoisington was a huge success. A full report will be given at the Business Meeting

President Brandenburg commended the entire Program Committee for an excellent meeting, extending his regrets he was not able to be there to experience it first hand.

It was suggested that the Board of Directors extend the length of time for its meeting at the Annual Meeting to 1.5 hours, beginning with the 2020 Annual Meeting.

OTHER BUSINESS

Graduate Student Organization

APRES GSO President Sara Beth Pelham reported the GSO organized a pre-meeting tour of the Auburn University campus, a luncheon with two speakers—Graham Wright (Peanut Company of Australia) and Nora Lapitan (USAID), and held its first official meeting to elect new leadership. New Officers for 2019-20: Chandler Levinson (UGA) was elected President; Nick Hurdle (UGA)will serve as President-elect; Kayla Porter volunteered as Social Chairman. Davis Gimode was recognized and thanked for serving as President-elect for 2018-19. (Davis is graduating this year and, therefore, not eligible to serve as President. Congratulations, Davis!)

Past President Dotray reminded all that the membership will be voting tomorrow to add the APRES GSO President as an official member of the APRES Board of Directors.

Recognition of Outgoing Board Members

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

Peter Dotray - Past President
Barbara Shew - V-C University Rep
Peggy Ozias-Akins - SE University Rep
Marshall Lamb - USDA Rep
Darlene Cowart - Sheller Rep
Sara Beth Pelham - APRES GSO President

President-elect Barry Tillman and Past President Peter 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, it was moved by Peggy Ozias-Akins, seconded by Steve Brown, to adjourned the meeting at 6:30 p.m.

BUSINESS MEETING AND AWARDS CEREMONY

AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
51st Annual Meeting
The Hotel at Auburn University and Dixon Conference Center
Auburn, Alabama
JULY 11, 2019

AGENDA

1. **President's Report**……………………………………………………………………..Rick Brandenburg

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

3. **Awards Presentation**
   Coyt T. Wilson Distinguished Service Award……………………………..…….……….Mark Abney
   Corteva Agriscience™ Awards for Research and Education..………….…..………Dylan Wann
   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 ……………………………………..……..…………..Peter Dotray
   (b) Finance Committee………………………………..……………..…..…Tim Brenneman
   (c) Public Relations Committee ……………………………………………..…………Keith Rucker
   (d) Peanut Quality Committee ……………………………………………..……….John Bennett
   (e) Site Selection Committee………………………………………………….……Charles Chen
   (f) Publications and Editorial Committee……………………..……………………Chris Liebold
   (g) Program Committee………………………………………………………………Barry Tillman
   (h) APRES Graduate Student Organization……..……………………..……Sara Beth Pelham

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…………………………………………….……….………Barry Tillman

5. **Adjourn**……………………………………………………………………………..Barry Tillman

MINUTES

BUSINESS MEETING AND AWARDS CEREMONY
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY
51st Annual Meeting
The Hotel at Auburn University and Dixon Conference Center
Auburn, Alabama
JULY 11, 2019

Report of President Rick Brandenburg

Good afternoon everyone. I hope you had a really good week of meetings, networks and renewing old acquaintances with longtime friends. Please accept my most sincere apologies for not being here with you this year. Although circumstances beyond my control prevented it, I look forward to being back with you again for next year's meeting.

(Video presentation link: https://peanut.ces.ncsu.edu/2019/07/presidential-address-by-rick-brandenburg-at-apres-meeting-peanut-notes-no-139-2019/)

The theme for this year's meeting is Peanuts Around The World. It's a theme I very much embrace for a couple of reasons. 1) I've always really enjoyed the international flavor of the American Peanut Research and Education Society--the wide-ranging members that we have from around the world; and, 2) For 30 years now, I've been involved in international research on peanuts around the world, so the topic of peanuts around the world is one that I very much embrace.

First, before we go any further, I want to take just a minute to thank the many, many people who are a part of making this meeting such a success. They work often times behind the scenes and I know it's always dangerous to put up a list of names because you're going to leave some people out.

(Slide: Names on slide are Past President Peter Dotray, President Elect Barry Tillman, Technical Program Chair Charles Chen, Local Arrangements Co-Chairs Steve Li and Kris Balkcom, Spouse Program Chair Jennifer Tillman, John Beasley, Yucheng Feng, Alicia Massa, Kip Balkcom, Alana Jacobson, Phat Dang, Kira Bowen, Tim Grey, Susan Hagan, Dong Chen, Beth Campbell, Kim Cutchins)

Obviously Pete and Barry had to pick up a little extra this load this year in my absence. Charlie and Steve as Chair of the Technical Committee and Local Arrangements did a fantastic job. There's a long list of people underneath them who have played significant roles from running various sections and competitions and that sort of thing And obviously last but not least at the bottom of the list Kim Cutchins who plays such a huge role in making this meeting such a huge success.

(Slide: Graph showing yield growth from 1909 to 2014)

If you were at last year's meeting, you saw a graph that looks similar to this used in many many talks especially in the General Session. when we talked about how far we've come in 50 years. As I've looked at graphs like these, it's still impresses me when we look back a hundred years ago and we see yields between 500 and 1,000 pounds for acre; and, then in more recent times, we see yields that often exceed 4,000 pounds per acre. It is a phenomenal increase in a 100-year period of time. And, what is neat about our Society is that if you look to your right or you look to your left, as you look around the room, many of the people, including yourself, are responsible for this increase in production, this increase in markets, this increase in consumption. It is a rather remarkable Society and a rather remarkable group of people, who I am proud to be a part of.

(Slide: Support and Provide Value to Our International Partners)
Now as I mention I've worked in Africa for many, many years. It is a passion for me. I really enjoy it. I get a lot of satisfaction out of it. And, one of the unique components of that was shown in one of the symposiums earlier this week is that the research we do is a two-way street. Much of the work we do in Africa and other countries is very similar to the work we do in North Carolina and other parts of the US. We learn a lot. We help them and we are able to do (in some cases) more proof-of-concept and look at how various research strategies can be moved forward even when we're working on another continent. I hope the Society continues to embrace this international component and continues to look for ways we can provide more benefits and more services for our international partners, especially for those in countries with limited resources.

(Slide: Open Access to Peanut Science)
David Jordan and I (in our work) have utilized the Peanut Science journal a lot with our international collaborators. The Open access makes it more practical for many of these individuals.

(Slide: Recording or Livestreaming APRES meetings)
I would like to see us if possible if we continue to look down the road we already record some of our General Sessions but we look at opportunities to do even more that perhaps even live streaming to make our conference more available to those in other countries who perhaps will never have an opportunity to attend an APRES meeting.

(Slide: Communications-Newsletter)
I think we really need to look for ways to continue to enhance and embrace the communications that our Society provides and I'll talk a little bit about our newsletter in a minute. I think this is a step in the right in the right direction as a lifeline for people to stay in contact the Society and all the things that are going on.

(Slide: Foster Collaborations)
Finally, I would think that we would look for things to foster more collaboration internationally. The Society can be basically a catalyst to help do that. I see this as a great service to our international Partners.

(Slide: Image of latest APRES Newsletter)
I mentioned earlier our newsletter earlier. This is something that Corley Holbrook got discussion going on and this year with the help of Allison Floyd with the University of Georgia and other, got it up and running. I hope you take the time to read it but even more so I hope you take the time to contribute to it. There are many opportunities to contribute, various types of information is needed, so please contact Allison Floyd and let's make newsletter real valuable tool for the Society as we move forward.

(Slide: Graduate Students-Gain Recognition and Leadership)
One of the things that I really enjoyed last year when I was President-elect and Peter Dotray was President, was his passion, not just for the Society but particularly for the graduate students. Graduate students are the lifeblood for APRES' future. Peter wanted to capture their energy and enthusiasm and

put it to work for the Society. The Graduate Student Organization they created last year will help get them more involved and giving them a seat at the table will involve them in the leadership of APRES. I really applaud the effort that he put forward and continued support for and I hope all members will embrace graduate students playing a more significant role in the Society as we move forward.

(Slide: APRES—Membership, Sponsorship, Member Involvement, Publications, Financially Sound)
As far as our society and its health, under the leadership of Kim Cutchins, the Society is doing very well as well as membership. It's doing well financially. It is doing well with sponsorship and it is well poised to continue to move forward and do really good things and continue to be the focal point many of us in this room today.

Now, I'd like to switch gears and talk about a couple of topics that as President have been on my mind and a couple of things that I just would like to throw out there as I finish up my presentation.

(Slide-Young Brandenburg holding up a dead rabbit)
This is a slide from 1962 and yes this is me as a second grader growing up on a farm in Indiana holding up a rabbit. I grew up probably like a lot of you in this room—if it had fins, feet, fur, or feathers, we probably killed it and we most likely ate it. The reason I show you this picture is it's really, really important because 1962 was a time period that something happened that really changed the perception of pesticides and the whole future of pest management and EPA and everything in my career has been affected by this.

(Slide: News article titled 'Silent Spring' Is Now Noisy Summer)
This is the year Rachel Carson's book Silent Spring came out. This book had such a huge impact and really got the public's attention and it's something that we still see the ramifications of this books today as we look at regulatory issues, as we look at the public perception of pesticides. Obviously DDT was at the center of this and still is brought up all the time and in discussions about all the evils the pesticides in the past and all sorts of things.

(Slide: Ames-Risk of Cancer pie charts)
Twenty years ago a fellow named Bruce Ames, University of California-Berkeley came up with what was called the herp test and this really looked at and tried to weigh and balance and put a qualitative weight on the risk of producing cancer, or of producing death. It really gave us a quantitative way of measuring risk. In his study, pesticides are always found to be very, very low of the scale almost non-existent on the scale of cancer and as far as risk to human health. However if you Google Bruce Ames name today, you'll see he's the constant target of activist groups saying he's been a shill for the industry; he's been bought out by industry; he's just promoting the use of pesticides and he's really been beaten up a lot in recent years as social media has become more prevalent. The one thing that is really true is we can provide facts, we can provide data about risk, but the public really has a difficult time with that.

(Slide: The Public and Risk—We all have our own personal filters for determining risk. Experiences, knowledge base, lifestyles , cultural biases, etc. all figure into our perception of risk. Most people have trouble with quantitative analysis of risk (comparing one risk to another).
The last sentence in this slide is what I want to address-most people have trouble with quantitative analysis of risk. In another words, you can give them all the numbers you want, but if it is something they really fear, it's going to be a challenge. You may have facts and figures to show it's much safer to fly somewhere than it is to drive it, but if someone's afraid of flying, those facts and figures aren't going to change their mind. This mindset creates a real challenge as scientists, as industry folks, and trying to

help people understand—is there really a concern over pesticide use; is there really concern over our food safety.

(Slide: 2018 Statistics chart on Internet and Social Media usage around the world)
One of the things that's changed so much in the last 10 years is the availability of the internet and of social media and when we look at the population of 8 or 9 billion people in this world and we see that over 50% of them have over access to the internet. An incredibly high percentage of them are using social media and a very high percentage of them have mobile phone service. What this means is information, as well as misinformation, can travel very rapidly around the world and there's no checks and balances on it. We certainly are seeing that and it can go from First World countries all the way to developing countries and there's no filter on it. One of the things we know is that a lot of us don't like the truth and we often migrate towards things we want to believe to be true because we have this phenomenon called confirmation bias.

(Slide: Cartoon with a line of people and two tables; one table is labeled Comforting Lies; one table is labeled Unpleasant Truths; everyone is in line at the Comforting Lies table)
We know we have our belief system and we like the things that support our beliefs and that's one of the real tools and one of the reasons why social media has become so successful in that people can always find information that confirms their arguments.

(Slide: Image of Roundup Weed & Grass Killer: Chemical-free is not an option, but how to explain that to a concerned public?)
Look at where it's gotten us today. Look at the issue of Roundup. It doesn't matter what the science says. It doesn't matter what the scientific and medical studies have said about the risk for cancer; what matters is what's circling on social media.

(Slide: Newspaper Headline which reads "EPA Chief's Refusal to Ban Pesticide 'Puts All Children At Risk', Pediatricians Warn")
I want to finish this up with a slide that's actually two years old now. The slide gives a very strong warning stating that the EPA's chief refusal to ban pesticides puts all children at risk pediatricians warn. This article focuses on a product called chlorpyrifos or Lorsban, an insecticide which is used quite a lot in North Carolina as well as other states to control rootworm midseason. This product has generated a lot of information on social media that says this is an unnecessary evil. It poses a risk to children. How do we, as an industry and, more importantly, how do we as a society, deal with the misinformation that can have a real negative impact on the crop that we have worked so long to make sure the farmers can be profitable in his production and there's a healthy source of protein and nutrients available for people and we know is in an inordinate amount of children's candies and snack food and that sort of thing. How do we make sure all this negative publicity, all this misinformation on social media doesn't have a negative impact. Do we have a role in that? I don't have the answer on that but maybe it's something our Society should consider in the future.

(Slide: Photo of Mosquito)
I move on to one final area. Many of you know that a year or two ago, I became very ill. I had been in Africa and I contracted malaria. I was given medications to solve that problem and I had a severe reaction to the medicine that was given to me to remove the malaria from my bloodstream. I went into sepsis and spent two and a half weeks in intensive care. I came very close to dying from that incident. So it's interesting that sometimes we have to have some significant events in our lives to truly appreciate all of the blessings that we have in our life.

(Slide-Image of Rick with his family)
Sometimes when we almost lose certain aspects of our lives or our friends or for family, we learn to embrace those blessings that we have more completely. I just want to revisit completely the role that we have as individuals in our society, the role we have as professionals.

I want to go back to 1962 *(photo of Rick holding rabbit)*. When I was in the second grade, I had a teacher named Mrs. Pearson. She and her husband farmed and they had a really good farm. They had some really sandy river bottoms soil in Indiana and grew a lot of peanuts, as a novelty. One fall day, Mrs. Pearson brought into class this big bag and she asked the class how many of us knew where peanuts came from. The vast majority of the kids since we were in the corn and soybean area said they were grown on a tree. She pulled this plant with all these pods hanging from it out and I was just amazed. I couldn't believe what I was seeing. At that very moment in second grade, I became intrigued with the peanut plant.

(Slide: Group photo)
We move forward about 10 more years to 1972 or 73. This is a picture of my FFA judging team in high school and in the middle of the picture the fella wearing the sports coat in the tie, his name is Bob Marley, not the Bob Marley from the Charles Dickens, A Christmas Carol, but Bob Marley, my high school biology teacher. I am standing next to him. He was really a key player in getting me moving forward in the field of science. On his own time, on his own expense, he would take me (driving hour and a half) to Purdue University when I was in high school. He would introduce me to faculty. He would introduce me to various disciplines and various opportunities and careers in Science. In the area where I grew up not very many people went to college. For the most part, you stayed at home and farmed. He really got me thinking outside the box and to him, I'm very, very indebted to him.

(Slide: Photo of Rick's Dad sitting on a tractor)
Finally, this last picture. This is my dad. He was my hero and best friend. Unfortunately he passed away by 8 years ago. He was not very well educated. He was a World War II veteran. He taught me a lot about work. He taught me a lot about respecting others, especially woman. He was truly a hero to me. When I was getting through undergraduate school and faculty were talking to me about going to graduate school. They really pushed me out of my comfort zone because I just assumed I was going to go back home and farm or do something associated with agriculture. It was a really hard decision and when the deadline came to make the decision, I was I walking around the barn (kicking up dirt) and my dad came up (knowing I was having a tough time making a decision), he gave me a hug and he said, "Son go make something out of yourself". That was such a selfless expression to say to his only son, knowing he was letting his only son, his helper go—telling him to go and follow your dream. I'll never forget that moment.

What I want to talk about in this isn't about my second grade school teacher, this isn't about my high school biology and this isn't about my dad. This is about all of us. All of us as professionals. We've had the opportunity and we continue to have the opportunity to come across a lot of young people, maybe somebody in our church, maybe someone down the street, maybe it's a nephew, maybe it's a niece. What I really want to admonish all of you and encourage all of you is, be that Mrs. Pearson second grade teacher, be the Mr. Marley high school biology teacher, be the message that my dad had, be that person that makes a difference in some young person's life. Be the person that helps encourage someone to step out of their comfort zone and go on to be successful and contribute to this science we call agriculture.

With that, I want to close and again my most sincere apologies for not being able to be here. I would like to ask that you give a round of applause for all the people who have served as officers, Board of Directors, for all the local Arrangements committees, all the program and technical committees and for Kim Cutchins, to all who have done such a wonderful job of putting this meeting on.

Thank you for your attention. I look forward to seeing you all next year.

(Closing Slide: Photo of Rick with Mr. Peanut from last year's Annual Meeting)

READING OF THE PREVIOUS MEETING'S MINUTES

The minutes of the 50th Annual Meeting Business Session were distributed via email to the membership and posted online; therefore, the reading of the minutes was waived. Past President Dotray asked for corrections/additions. There being none, it was moved by Albert Culbreath and seconded by Charles Chen, to:

Approve the minutes of the 50th Annual Meeting Business Session, as presented.

NEW BUSINESS

COMMITTEE REPORTS

NOMINATING COMMITTEE

Chairman Peter Dotray presented the slate of 2019–20 Officer and Board nominees. 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. Each nominee has been contacted and has agreed to serve, if elected.

2019-20 Proposed Board of Directors

Officer Nominees *(highlighted in yellow)*:

2019-20 President	Dr. Barry Tillman (2021) University of Florida
2019-20 President-Elect	Dr. Gary Schwarzlose (2022) Bayer
2019-20 Past President	Dr. Rick Brandenburg (2020) North Carolina State University
2019-20 Executive Officer	Kim Cutchins (2020)

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

V-C area:	Dr. Nathan Smith (2022) Clemson University
SE area:	Dr. Bob Kemerait (2021) University of Georgia
SW area:	Dr. Mark Burow (2020)

	Texas A&M University
USDA Representative:	Dr. Lisa Dean (2022) USDA-ARS-MQRU
Production Representative:	Dr. Gary Schwarzlose (2021) Bayer
Grower Association Rep:	Bob Sutter (2022) North Carolina Peanut Growers Association
Manufactured Products:	Chris Liebold (2020) The J.M. Smucker Company
American Peanut Council:	Dr. Steve Brown (2020)
National Peanut Board:	Dan Ward (2020)

Chairman Dotray called for additional nominations from the floor. There being none, nominations were closed. It was moved by John Beasley, seconded by Barry Tillman to:

Approve the election of the nominees to the APRES 2019-20 Board of Directors, as presented.

Proposed New Seat on the APRES Board of Directors

At last year's Annual Meeting, the APRES Graduate Student Organization (GSO) was created to bring together students actively pursuing advanced degrees in disciplines related to peanut. The primary purpose of the GSO is to exchange ideas, experiences, opinions, and information in all areas of peanut research and education and to seek representation on the American Peanut Research and Education Society (APRES) Board of Directors.

The GSO is officially requesting the membership of the American Peanut Research and Education Society vote on adding a new member to the APRES Board of Directors--the GSO President (ex-officio/ non-voting). Chairman Dotray stated the APRES membership was notified 30-days in advance of the Membership Meeting of a proposed change in the APRES by-laws, as required.

It was moved by Keith Rucker, seconded by Albert Culbreath, and unanimously approved to amend the APRES By-Laws *(Approved 13 July 2017)* to include:

Article VIII, Section 1, Point j:
The APRES GSO President will be an ex-officio (non-voting) member of the APRES Board of Directors. The APRES GSO President shall be a Student Representative to the American Peanut Research and Education Society Board of Directors and participate in all meetings of American Peanut Research and Education Society Board of Directors. The APRES GSO President will give an update to the Board on events and issues relative to the APRES Graduate Student Organization.

Committee Reports Continued after Awards:

The reports of all other APRES Committees can be found following the announcements of the 2019 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 Joe Sugg Graduate Student Oral Presentation Competition attracted another large group of participants—21 competitors from 7 different universities. Bob noted that this wonderful level of participation does make it difficult to schedule the competition on one day as well as find enough judges for a competition that is spread out over 3 days and will work with next year's Program Chairman to try to find a remedy. He recognized Cristiane Pilon for her efforts in organizing the judges.

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 2019 winners are:

Winner : ***Amanda Kaufman (****North Carolina State University)*
"The Influence of Digging Date on Fatty Acid and Tocopherol Expression in Normal and High-Oleic Virginia Peanut Varieties Grown in North Carolina"

2nd Place: ***Caleb Weaver*** *(The University of Georgia)*
"Peanut Seed Germination and Seedling Emergence as Affected by Storage Conditions"

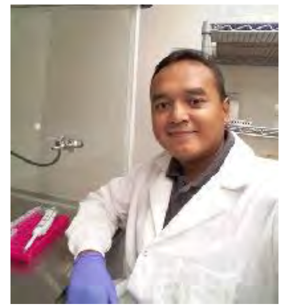
3rd Place: ***Kayla Eason*** *(The University of Georgia)*
"Peanut Response to Sub-Lethal Rates of Dicamba + Glyphosate"

NATIONAL PEANUT BOARD GRADUATE STUDENT POSTER COMPETITION

Chairman Bob Kemerait reported the Graduate Student Poster Competition also attracted a large number of participants for the second year of this award—13 competitors from 6 universities. The National Peanut Board sponsored this year's competition with a cash prize of $350 to the winner and $200 to second place winner. Both winners also receive copies of the APRES book, *Peanuts-Genetics, Processing and Utilization*.

Winner : ***Alan Peper*** *(The University of Georgia)*
"Studying Peanut Pod Development within a Controlled Microbial System"

2nd Place: ***Misbah Munir*** *(Clemson University)*
"A PCR-Based Detection of <u>Nothopassalora personata</u> on Peanut"



Bob thanked Technical Program Chair Charles Chen and Tom Stalker for organizing the setup and judging. He announced that at yesterday's Board meeting, it was voted to the Joe Sugg Graduate Student Competition Award Committee will bring the Poster Competition responsibilities under its umbrella and moving forward will be responsible for the setup and judging of this award.

<u>THE BAILEY AWARD</u>

Chairman Kim reported nominations for best oral presentation were received from ten (10) breakout sessions at the 2018 Annual Meeting in Williamsburg, VA. The Bailey Award Committee received five manuscripts for final ranking. The 2019 Bailey Award for the best paper from the 2018 APRES Annual Meeting was presented to:

Dr. Ye "Juliet" Chu
University of Georgia

Title:
"Major QTLs for Resistance to Early and Late Leafspot Diseases are Identified in Chromosome 3 and 5 in Peanut"

***Co*-Authors:**
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.*

Award Guideline Changes -The committee discussed and finalized an amendment to the requirements for Bailey Award nominees. The amendment requires nominees to submit a manuscript to Peanut

Science or to submit a "Note" or "Spotlight". A Note or Spotlight would be a description/synopsis of the research and would be published in the front of Peanut Science. The details of the format for the Note/Spotlight would be developed through collaboration between the Bailey Award Committee and the Editorial Committee. The APRES Board approved this amendment.

CORTEVA™ AGRISCIENCE AWARDS FOR EXCELLENCE IN RESEARCH & EDUCATION

Chairman Dylan Wann reported the APRES membership was solicited for award nominees in both the areas of Research and Education. No nominations were submitted for either category. However, a previously-submitted nomination packet was reviewed – it was for an APRES member who had not been a member of APRES for 5 years, and was thus previously-ineligible for the award. This packet was now eligible for consideration. The committee reviewed the nomination packet and voted electronically in June of 2019. There are currently no nomination packets to be carried forward for consideration in 2020.

Chairman Wann announced the winner for this year's Corteva Agriscience 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 Award for Excellence in Research

2019 Recipient: Dr. David Bertioli
University of Georgia

DR. DAVID BERTIOLI is a professor and Georgia Research Alliance Distinguished Investigator at the Institute for Plant Breeding, Genetics, and Genomics at the University of Georgia. Dr. Bertioli is a world-renowned and highly-decorated expert in peanut genetics and genomics and has made tremendous strides in elucidating the genetic nature and unique ancestries of the wild and cultivated peanut species. His extensive experience with research on wild relatives of peanut has inspired other efforts on prebreeding to transfer novel alleles for traits of value to cultivated peanut. As part of the International Peanut Genome Initiative, he led the effort to merge the sequences of the two wild ancestors of the cultivated peanut, which was the culmination of work from scientists with various organizations in the U.S., Argentina, Brazil, and India. This seminal work was published in Nature Genetics in May of this year and included 50 authors; the original two ancestors' sequences were published in Nature Genetics in 2016.

Dr. Bertioli joined the team at the University of Georgia in 2013 as a visiting scientist on leave from the University of Brasilia, where he was a highly-decorated and nationally-recognized scientist. He was the recipient of numerous Embrapa awards for excellence in research and was a Fellow of the Brazilian National Council for Scientific and Technological Development. In 2017, Dr. Bertioli permanently joined the University of Georgia's College of Agricultural and Environmental Sciences as the university's first Georgia Research Alliance Distinguished Investigator.

Dr. Bertioli has a unique intuition for characterizing agronomically-desirable alleles from peanut's wild relatives and facilitating their introgression into the cultivated peanut. His work has aided in identifying candidate genes for novel resistance to diseases that currently cost the U.S. peanut industry tens of millions of dollars each year. The information and tools that he is developing will result in the development of improved peanut cultivars that will greatly benefit U.S. peanut growers for decades. Along with his wife, Soraya, and other teams in both Brazil and the U.S., Dr. Bertioli developed inbred lines, mapping populations, and inter-hybrid crosses in peanut that helped pave the way for the successful sequencing and assembly of the genomes of the two wild relatives of cultivated peanut. He and his group have also developed and explored crosses with a wild peanut species, successfully introducing a region of the wild species into cultivated peanut, in order to provide new genetic resistance to peanut rust. Other crosses from Dr. Bertioli's group have led to high-yielding, drought-resistant cultivars now widely-grown worldwide, particularly by smallholder farmers in Africa.

Most recently, Dr. Bertioli and his team made a number of significant additional discoveries resulting from the sequenced peanut genome. They were able to identify the "mother of the peanut" (*Arachis duranensis*), or the original donor of the "A" subgenome to today's tetraploid peanut, and subsequently trace it to a population in Rio Seco, Argentina, where it is believed to have been exposed to *Arachis ipaensis* by ancestral peanut farmers. Dr. Bertioli and his team also unveiled the unique ability of peanut to swap DNA between the two subgenomes of peanut, which has resulted in a surprising amount of diversity seen in today's commercial peanut germplasm.

Dr. Bertioli's contributions to the peanut research community have been and will continue to be pivotal in understanding the history of the peanut and advancing its improvement for years to come. His international influence, reputation, and leadership were essential components to the success the peanut genome sequencing project and will continue to be a driving force for continued collaboration and innovation. However, perhaps his highest praise is from his colleagues, who describe him as "an outstanding collaborator, a strong asset to the peanut community, and more than deserving of this award."

COYT T. WILSON DISTINGUISHED SERVICE AWARD

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

All business for this committee was conducted electronically. After reviewing all nominations, the committee recommended that the 2019 Coyt T. Wilson Distinguished Service Award be presented to Dr. Timothy Grey.

Respectfully submitted,
Mark R. Abney, Chairman

Dr. Timothy Grey
2019 Coyt T. Wilson Distinguished Service 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. Dr. Timothy Grey has been an active member of APRES for over 25 years. He served six years as an Associate Editor of *Peanut Science* and as Editor since 2012. Dr. Grey has a truly distinguished career as a research weed scientist focusing on herbicide use and dissipation in vegetables and row crops, herbicide resistant weeds, agronomic and alternative crop production systems, as well as fruit and tree nut production. He and his students have conducted several cutting-edge studies in these areas of research.

Dr. Timothy Grey has been an active member of APRES since his first work in peanut with his MS degree at Auburn in 1991. He has attended 20 APRES meetings, primarily as a research and teaching faculty member with the University of Georgia, with annual attendance since 2005. He began service to APRES as an Associate Editor to Peanut Science in 2005. He served as a judge for multiple Joe Sugg student presentation competitions and was appointed Editor of Peanut Science in 2013. As the editor of Peanut Science, he has overseen the production of 7 volumes (40 to 46) with 112 articles published on over 900 pages of text. He has assisted Kim Cutchins, the Executive Officer of APRES, with managing the Peanut Science portal website, providing input on multiple topics to maintain its availability and ease of use, and recently moving to an open access journal.

Dr. Grey has always emphasized that his students attend APRES and compete in the Joe Sugg competition. Since 2005, he has been associated with 38 APRES abstracts (23 presentations with fellow scientists, and 15 student presentations and posters). He and his coauthors have been nominated for 3 Bailey Awards for presentation at APRES (2006, 2008, and 2009).

Dr. Grey has also had a truly distinguished career as a Weed Scientist with the University of Georgia. He has been a coauthor on 129 refereed articles and 10 book chapters. He has received several significant awards, including the Dow AgroSciences Award for Excellence in Research and the Dow AgroSciences Award for Excellence in Teaching.

Dr. Grey has actively served APRES in many capacities over the past 25 years. His most significant contribution is his service as Editor of *Peanut Science*. The job of Editor is the most demanding position within APRES. It takes great organizational skill to publish 2 issues a year, averaging 70 pages an issue and managing 25-40 manuscripts a year through every stage of the process. APRES is fortunate to have benefited from Dr. Grey's membership and tireless contributions. His outstanding contributions to the society make him richly deserving of the 2019 Coyt T. Wilson Distinguished Service Award.

FELLOW OF THE SOCIETY

Fellows are active members of APRES who have been nominated to receive the honor of fellowship. Fellows have made outstanding contributions in an area of specialization whether in research, extension, or administration and whether in public, commercial, or private service activities. 2019 Committee members are Eric Prostko (Chairman), Todd Baughman, Bob Kemerait, and David Jordan. All committee business was handled thru e-mail correspondence.

The committee received 3 nominations for consideration (Michael Baring, Peter Dotray, and Barry Tillman). The committee voted unanimously for all 3 to receive the APRES Fellow Award in 2019.

No further business was discussed.

Respectfully submitted,
Eric Prostko, Chairman

Michael R. Baring
Fellow of the Society

Michael R. Baring is an assistant research scientist at Texas A&M University in College Station. Has has been actively involved in the TAMU peanut breeding program since 1990. During his tenure at TAMU, Michael contributed to the development of numerous peanut cultivars including Tamnut OL06, Tamrun OL07, Tamrun OL11, NemaTam, OLin, Tamrun OL01, Tamrun OL02, Tamrun 96 and Tamrun 98. He has been an active member of APRES, serving on numerous committees and the APRES Board of Directors.

Peter A. Dotray
Fellow of the Society

Dr. Peter Dotray is current the Rockwell Chair of Weed Science in the Department of Plant and Soil Sciences at Texas Tech University. He has been a weed scientist in the TAMU system since 1993. During his career, Dr. Dotray has authored/co-authored 82 refereed journal articles, eight book chapters, two websites/research gates, 205 technical/popular press articles and 460 abstracts. Dr. Dotray has been the major advisor for 42 graduate students. He has provided extension educational programs at more than 800 county production meetings. Dr. Dotray is a model for all his dedication to APRES, serving on numerous committees as chairman, and most recently as President 2018.

Dr. Barry Tillman
Fellow of the Society

Dr. Barry Tillman is currently a professor and peanut breeder at the University of Florida. He has been a faculty member at the University of Florida since 2004. During his breeding tenure at the University of Florida, Dr. Tillman has released 14 peanut cultivars. These cultivars occupy approximately 10% of the peanut acres in Alabama, Florida, Georgia, and Mississippi and more than 70% of the peanut acres in Australia. He is the author/co-author of 2 book chapters, 55 refereed journal articles, 118 abstracts, and 28 research reports. Barry has been the major advisor for 13 graduate students. Dr. Tillman has been an active member of APRES, serving on numerous committees, as an Associate Editor of Peanut Science, and is currently President-elect.

Committee Reports, *Continued*

PUBLIC RELATIONS COMMITTEE

The Public Relations Committee met on Tuesday, July 10 at 2:00 pm in the Longleaf Room at the Hotel at Auburn University to discuss ways to promote APRES. All members of the committee were present, including Keith Rucker (Chair), William Pearce, Dylan Wann, and Gary Schwarzlose. Also in attendance was Kim Cutchins, APRES Executive Director.

Recognition of Retirees

A recommendation was made that APRES should somehow recognize members of the organization as well as leaders in the peanut industry who are retiring each year. It was felt that it would be a nice tribute to these individuals who have devoted a significant part of their careers to promote the peanut industry. Other organizations, such as the Southern Weed Science Society does something similar and could serve as a model to how we do this.

The Public Relations Committee proposes to the Board of Directors that this committee collect information from retiring individuals on an annual basis and that a brief summary of the retirees career be published in the Proceedings of the Annual Meeting each year, similar to the necrology that we publish each year.

Individuals that the Public Relations committee is aware of that have retired during the past year include: Carrol Johnson, Craig Kvien, Mike Barring, Tom Stalker and Austin Hagan.

Co-Promotion with the National Peanut Board

A recommendation was made by that APRES approach the National Peanut Board to discuss possible co-promotions of peanuts during the APRES Annual Meeting. Each year, the National Peanut Board visits various cities around the country to promote peanuts. With so many people in the peanut industry gathering for the APRES Annual Meeting each year, we felt that it would be great opportunity to team up with the National Peanut Board to host some kind of peanut promotion event either right before, during, or right after the APRES Annual Meeting.

The Public Relations Committee recommends to the Board of Directors that APRES reach out to the National Peanut Board to explore possibilities to for some kind of co-promotion event.

International Meeting

Each year, the APRES meeting has attendees from across the globe participating in our annual meeting. In an attempt to attract more international participation, the Public Relations Committee recommends to the Board of Directors that we explore the possibility of expanding the scope of our meeting to attract more international participation. Some ideas for this include expanding into the Genomics Conference that is currently held in conjunction with our APRES Annual Meeting to include all of the sessions that papers are presented as well as possibly tying into the American Peanut Council International Peanut Forum.

The Public Relations Committee recommends to the Board of Directors that a committee be formed to explore these possibilities.

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 who have passed since the last annual meeting. This year, we are saddened by the passing of four 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:

Cecil C. “Barney” Barnett, Jr.

Cecil C “Barney” Barnett, Jr, son of Cecil and Mabel Scott Barnett passed from this earth suddenly on April 15th, 2019, in Louisville, KY. He was born August 6th, 1939, in Pampa, Texas, and moved several times in his younger years before settling in Oklahoma City and attending Northwest Classen High School.

A natural athlete, Barney was recruited for the University of Oklahoma Football team by the hallowed coach Bud Wilkinson in 1958. Unfortunately an injury in that summer’s Texas/Oklahoma High School All Star game prevented his participation. He went on to graduate with a BS in Engineering from OU while also serving as an officer of his fraternity, Phi Gamma Delta.
In 1985, Barney founded Algood Food Company, a Peanut Butter Manufacturing facility in Louisville, where he expanded the business and remained Chairman of the Board through his last days.

An exceptional leader throughout his life, he leaves many devoted friends and colleagues from all his many professional and philanthropic endeavors. He was extremely active in the community, serving over the years on the Board of Kentucky Country Day School, Hillerich and Bradsby, and most recently as Chairman of the Board of Trustees at Simmons College. He was also President of the National Peanut Council in 1991-92.

Barney was one of the most generous people anyone could meet or know. He spent much time and effort raising money for many great local charities and schools. He established a series of engineering scholarships at the University of Oklahoma and was a major donor to Simmons College. He also loved the game of golf and was a long time member of Louisville Country Club.

Brenda C. Faircloth

Brenda Culpepper Faircloth, 67, of Pelham, Georgia passed away Monday, February 18, 2019. Born April 12, 1951 in Mitchell County, Georgia, Mrs. Faircloth was the daughter of the late Ruben Culpepper and Jessie Miller Culpepper. She was married to the late Dewey Eugene "PeBo" Faircloth. She was employed as the Procurement Administrative Manager for Golden Peanut Company in Camilla, Georgia. She was a member of East Pelham Baptist Church.

Sharon Kay Hart

Sharon Collier Hart, 62, of Scott City, Missouri died Tuesday, April 9, 2019 at her home. She was born February 23, 1957, in Cairo, Illinois, to Charles David and Virginia Belle Laxton Collier. She and Mike Hart were married October 25, 2014 at Charleston, Missouri.

She worked for ADM/Golden Peanut for 36 years, retiring as the IT Director and was active in many American Peanut Council committees lending her expertise in IT.

Sharon was a master seamstress and quilter and made many “peanut blankets”, the proceeds of which she sold were donated to charities.

Jim Kubicek

Jim Kubicek was born on March 5, 1923, to Czech immigrants Frank, Sr., and Anna Kubiceck, at Econtuchka, Oklahoma. Jim died on March 6, 2019, at the age of 96 and one day. He lived his entire life in the Econtuchka bottom, a farming community along the North Canadian River, NE of Shawnee, Oklahoma. He began farming in 1936 with 40 acres of cotton. He graduated from Centerview High School in 1941 and married Deloris Markham of Shawnee on January 4, 1948. The couple celebrated their 71st wedding anniversary this year.

Jim was a pioneer in Oklahoma agriculture and was four times honored as the Pottawatomie County Farmer of the Year. His farming operation expanded to several hundred acres of alfalfa, peanuts, wheat, soybeans, and cattle.

Jim was the inaugural Chairman of the Oklahoma Peanut Commission, appointed by Governor Henry Bellmon to the first ‘self-help’ commodity check -off program in the state in 1965. He was re-appointed by Governor Dewey Bartlett and served twelve years on the Oklahoma Peanut Commission Board. Jim’s son, Mike Kubicek, later became the Executive Director of the Oklahoma Peanut Commission, following in his father’s footsteps, where he served for two decades. Jim Kubicek lived a life of honesty, integrity, hard work and dedication to family and farming, especially peanuts that will continue through the generations of those he left behind.

John R. Leidner

Mr. John Robert Leidner, 67, of Tifton, Georgia, passed away on Tuesday, June 18, 2019. Mr. Leidner was born December 2, 1951 in McAllen, Texas to the late Robert William Leidner and Inez Tilly Leidner. Mr. Leidner graduated from Mission High, home of the High Flyin' Eagles, 1970 and from Texas A&M University, 1974. In 1974, he married Mary Brown in College Station, Texas.

John served as the Southeast Regional Editor for Progressive Farmer magazine for 30 years, producing countless articles and several cover photos. He also worked closely with the Sunbelt Agricultural Expo, writing in all 41 of their programs and writing press releases for the Farmer of the Year program. In 2007, John wrote a book on the history of the Expo entitled The Sunbelt Agricultural Exposition: A Thirty-Year Perspective. He also contributed prolifically to many other agricultural related magazines, including Southeastern Peanut Farmer and Southeast Farm Press. John was a regular attender of the APRES Annual Meeting where he collected information to use in his many articles that he wrote for the agriculture industry.

John was also an avid listener of AM radio and a longtime fan of the Houston Oilers/Tennessee Titans football team. He happily took care of cats that were adopted by his daughter as well as any others that wandered up to his home. John greatly enjoyed traveling the back roads of the southern United States, both in his role as a journalist and on trips to visit family. He loved to get together with friends, he loved to make jokes, and he loved to help others.

Johnny A. Shivers

Johnny Allen Shiver passed away on April 12, 2019. Born in 1949, in Mitchell County Georgia, Johnny enjoyed being the baby of 7 siblings, playing basketball, baseball, and teasing his numerous nieces and nephews. He enjoyed a long career in the logistics and peanut industries living in Panama City, Oklahoma, Atlanta, Camilla, and finally Albany. He was a long time general manager of the Georgia, Florida, and Alabama (GFA) Peanut Association.

He will be remembered as a loving husband, father, and Granddaddy who was stubborn as a mule, the biggest jokester, and the ultimate problem solver. He loved his family fiercely and was always ready to listen thoughtfully before telling them exactly what they needed to do. Those that loved him most will remember that he would often wave and smile at people who weren't there, in hopes that those around him would turn to look and see who was coming. His children, grandchildren, and numerous nieces and nephews will fondly remember the "bone in his leg" that prevented him from doing most things they asked. He is now rejoicing with his father, who died when he was an infant, his mother, brothers and sister. His legacy will live on through us all (particularly his tenacity).

FINANCE COMMITTEE

Chairman Tim Brenneman reported the Finance Committee met July 9th to discuss APRES' current financial statements.

Balance Sheet as of June 30, 2019

APRES financial statements are reported using the accrual system. Current assets are $317,819, primarily in cash—checking, CDs. Liabilities are credit card bill, employment taxes and withholdings of $1,907 and total equity of $315,912. Total Liabilities and Equity are $317,819.

Profit & Loss Statement as of June 30, 2019

Income through June 30, 2019 is $86,944 and expense is $34,758. Majority of expenses for APRES occur in July/August when the bills for the Annual Meeting arrive and are paid. Net income plus interest income of $261 for the 6-month period is $51,447.

Vanguard Investments as of June 30, 2019

Balance: $35,161

Growth Since Inception: Rate of Return is 3.8% since inception (February 2015)

Holdings: Vanguard LifeStrategy Income Fund (VASIX)
84% Bonds; 19% Stocks
$15.90 price per share
Contains only 4 index funds
Largest Holdings: Vanguard Total Stock Market Index Fund
Vanguard Total International Stock Index Fund

Potential Growth Ideas Needed

Chairman Brenneman reminded the Board APRES' sources of income are primarily membership dues and annual meeting registrations/sponsorships. For APRES to grow, it needs to grow membership, increase Annual Meeting attendance, increase sponsorships and find other growth opportunities.

APRES Financial Statements as of June 30, 2019 Follow on the Next Page

American Peanut Research and Education Society
Balance Sheet
As of June 30, 2019

	Jun 30, 19
ASSETS	
Current Assets	
Checking/Savings	
Vanguard	34,013.12
Paypal	10,861.62
Cash - Checking - 2629	137,040.30
Cash - MMA - 7397	122,091.25
Cash - CD 4647	13,812.61
Total Checking/Savings	317,818.90
Total Current Assets	317,818.90
TOTAL ASSETS	**317,818.90**
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Credit Cards	
Security Bank Card	1,270.06
Total Credit Cards	1,270.06
Other Current Liabilities	
State W/H Tax	116.67
FICA/FWH Payable	520.33
Total Other Current Liabilities	637.00
Total Current Liabilities	1,907.06
Total Liabilities	1,907.06
Equity	
31300 · Restricted Fund Balances	250.00
32000 · Unrestricted Fund Balances	264,214.92
Net Income	51,446.92
Total Equity	315,911.84
TOTAL LIABILITIES & EQUITY	**317,818.90**

American Peanut Research and Education Society
Profit & Loss
January through June 2019

	Jan - Jun 19
Ordinary Income/Expense	
Income	
Book Sales	
Shipping & Handling	94.25
Peanut-Genetics, Processing & U	2,200.00
Book Sales - Other	1,500.00
Total Book Sales	3,794.25
Sponsorship-Annual Meeting	
Contribution - Joe Sugg Award	750.00
Awards	1,000.00
Ice Cream Social	1,000.00
Thursday Reception	4,000.00
Wednesday Dinner	9,000.00
Sponsorship-Annual Meeting - Other	2,750.00
Total Sponsorship-Annual Meeting	18,500.00
Peanut Science	
Page Charges	5,500.00
Total Peanut Science	5,500.00
Annual Dues	
Sustaining-Gold Level	800.00
Sustaining-Silver Level	350.00
Individual-Student	1,025.00
Individual-Post Doc/Tech Supp	300.00
Individual-Retired	125.00
Individual-Regular	12,250.00
Annual Dues - Other	100.00
Total Annual Dues	14,950.00
Meeting Registration	
Meeting Registration-Retired	375.00
Meeting Registration-Platinum	1,500.00
Meeting Registration-Regular	37,400.00
Meeting Registration-Gold	125.00
Meeting registration-Student	2,600.00
Meeting Registration - Other	1,200.00
Total Meeting Registration	43,200.00
Total Income	85,944.25
Expense	
Administrative Expense	
66000 · Wages - Executive Officer	13,999.98
Taxes - Payroll	1,113.00
Postage	124.16
Bank Charges	
Paypal Fees	1,549.46
Bank Charges - Other	35.00
Total Bank Charges	1,584.46
Webpage Maintenance	320.07
Dues and Subscriptions	30.00

American Peanut Research and Education Society
Profit & Loss
January through June 2019

	Jan - Jun 19
Outside Services	295.00
Accounting	1,268.00
Total Administrative Expense	18,734.67
Annual Meeting	
Travel	3,381.00
Awards	2,818.35
Supplies/Equip/AV	736.43
Total Annual Meeting	6,935.78
Peanut Science Publishing	
Peanut Science Editor Stipend	3,000.00
Peanut Science Publishing - Other	6,087.84
Total Peanut Science Publishing	9,087.84
Total Expense	34,758.29
Net Ordinary Income	51,185.96
Other Income/Expense	
Other Income	
Interest Income	260.96
Total Other Income	260.96
Net Other Income	260.96
Net Income	**51,446.92**

Approved
March 4, 2019

APRES
2018 Year-End vs Budget Document and 2019 APRES Proposed Budget

	A	B	C	D	E	F	G	H	I
1	**INCOME**	**Actual 2015**	**Actual 2016**	**Actual 2017**	**Approved Budget 2018**	**Actual 2018**	**Approved Budget 2019**	**Budget vs Actual as of 6-30-2019**	
2	**Annual Dues**	$28,000	$21,900	$22,850	$25,000	$17,750	**$25,000**	14,950	
3	**AnMeeting Registrations**	(VC) 39,750	(SE) $38,495	(SW) $43,620+	(VC) $35,000	(VC) $53,405	**(SE) $40,000**	43,200	
4	**Sponsorships –**	**$25,800**	**$51,952**	**$39,750+**	**$38,000**	**$44,628**	**$40,000**	18,500	
5	Ice Cream Social	$800	$0	$0	$3,000	$5,400	$5,000	0	
6	Wednesday Dinner	**$9000	$27,000	$19,000	$19,000	$19,000	$19,000	0	
7	Thursday Reception	$3,000	$3,000	$3,250	$3,000	$4,500	$4,500	0	
8	Meeting Breaks	$6,000	$6,000	$6,500	$6,000	$6,000	$6,000	0	
9	Spouse Suite/Program					$4,048	$2,500	**0**	
10	Awards	$2,750	$3,500	$4,000	$3,500	$4,250	$4,250	0	
11	Fun Run	$250	$500	$0	$500	$630	$500	0	
12	Other	$4,000	$8,952	$7,000	$3,000	$800	$500	0	
13	**Peanut Science**	**$10,465**	**$20,059**	**$13,050-**	**$25,000**	**$15,849**	**$25,000**	**5,500**	
14	**Book Sales**	**$336**	**$4,975**	**$3,300-**	**$3,000**	**$960**	**$1,000**	3,700	
15	**Book Shipping**		**$65**	**$27-**	**$50**	**$19**	**$50**	94	
16	**Miscellaneous Income**	**$658**	**$685**	**$783+**	**$700**	**$23**	**$800**	0	
17	**TOTAL**	**$105,009**	**$138,131**	**$123,387-**	**$126,750**	**$132,634**	**$131,850**	0	**85,944**
18	Interest	$961	$453	$387	$250	$484	$450	$261	
19	**Total + Interest**	**$105,970**	**$138,584**	**$123,774**	**$127,000**	**$133,118**	**$132,300**	**86,205**	
20									
21									
22									
23	**EXPENSES**	**Actual 2015**	**Actual 2016**	**Actual 2017**	**Proposed Budget 2018**	**Actual 2018**	**Approved Budget 2019**	**Budget vs. Actual as of 6-30-2019**	
24	**Annual Meeting**	(VC) $61,554	(SE) $47,544	(SW) $62,451	$78,500	(VC-50th) $71,228	**(SE) $56,250**		
25	Awards	$5,465	$5,252	$4,897	$5,500	$6,284	$6,250	2818	
26	Hotel Charges	$47,010	$36,388	$50,000	$60,000	$45,328	$40,000	0	
27	Speaker Expenses		$0	$0	$3,000	$2,795	$3,000	0	
28	Spouse Suite/Program					$2,750	$3,000	3381	
29	Supplies/Equip/AV	$1,603	$2,305	$0	$7,000	$8,621	$2,500	736	
30	Travel - Ext. Agents	$1,769	$3,598	$7,554	$0	$1,612	$0	0	
31	Other	$5,707	$0	$3,000	$3,000	$2,725	$1,500	0	**6936**
32								0	
33	**Peanut Science**	**$13,463**	**$14,597**	**$13,729**	**$25,000**	**$22,292**	**$25,000**	0	
34	Publishing	$4,458	$1,821	$1,530	$22,000	$6,588	$6,900	6088	
35	Editor Stipend	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	3000	
36	Website Hosting	$5,109	$8,991	$8,152		$11,649	$14,000	0	
37	Peer Review	$621	$477	$772		$779	$800	0	
38	Other	$275	$308	$275		$275	$300	0	**9088**
39								0	
40	**Book Purchase - AOCS**	**$0**	**$9,363**	**$4,681**	**$0**	**$0**	$0	0	
41	**Book Shipping**		**$0**		**$50**	**$19**	**$50**	0	

Approved
March 4, 2019

APRES
2018 Year-End vs Budget Document and 2019 APRES Proposed Budget

	A	B	C	D	E	F	G	H	I
42	EXPENSES, Continued	Actual 2015	Actual 2016	Actual 2017	Proposed Budget 2018	Actual 2018	Approved Budget 2019	Budget vs. Actual as of 6-30-2019	
43	**Administrative Expenses**	$29,992	$35,375	$27,997	$40,905	$35,335	**$41,130**	0	
44	Dues - CAST	$0	$0	$0	$0	$0	0	0	
45	Corp. Registration Fees	$0	$30	$30	$30	$30	$30	30	
46	Legal Fees	$525	$0	$474	$500	$0	$500	0	
47	Insurance	$100	$100	$100	$100	$100	$100	0	
48	Executive Officer	$23,000	$28,414	$21,083	$28,000	$27,583	$28,000	14000	
49	Taxes: Payroll	$1,802	$1,802	$2,072	$2,800	$2,152	$2,500	1113	
50	Administrative Assistant	$0	$0	$0	$0	$0	$0	0	
51	Web Page Maintenance	$648	$0	$0	$1,500	$0	$1,500	320	
52	Accounting Services – Herring CPA	$1,650	$1,895	$1,915	$2,175	$1,952	$2,175	1268	
53	Outside Services	$0	$200	$455	$1,000	$979	$1,700	295	
54	Postage	$88	$72	$47	$50	$7	$50	124	
55	Office Expenses	$50	$78	$128	$250	$0	$100	0	
56	Travel - Officers	$0	$0	$0	$1,200	$0	$1,200	0	
57	Bank Charges	$159	$11	$38	$50	$0	$25	35	
58	PayPal/Credit Card Fees	$1,967	$2,773	$1,649	$3,000	$2,532	$3,000	1550	
59	Miscellaneous	$3	$0	$0	$250	$0	$250	0	
60	Depreciation	$0	$0	$0	$0	$0	$0	0	
61								0	**18,735**
62	**Total Expenses**	**$105,009**	**$106,879**	**$108,858**	**$144,475**	**$128,855**	**$122,430**	**34,758**	
63									
64									
65									
66	**Income Over Expense**	**Actual 2015**	**Actual 2016**	**Actual 2017**	**Budget 2018**	**Actual 2018**	**Approved Budget 2019**		
67	Total Income + Interest	$105,970	**$138,584**	**$123,774**	**$127,000**	**$133,118**	**$132,300**	**86205**	
68	Total Expenses	$105,009	**$106,879**	**$108,858**	**$144,475**	**$128,855**	**$122,430**	**34758**	
69	**Net Income**	****$960**	**$31,706**	**$14,916**	**($17,475)**	**$4,263**	**$9,870**	**$51,447**	
70									
71									
72	**Accounts Receivables as of 12-31-2015	**$15,134	$9,515						
73	**Net Income with Receivables**	****$16,094**							

June 30, 2019, quarter-to-date statement

Vanguard®

Do Not Use For Account Transactions
PO BOX 3009
MONROE, WI 53566-8309

Client Services > 800-662-2739

vanguard.com

THE AMERICAN PEANUT RESEARCH
AND EDUCATION SOCIETY INC
PROF CORPORATION
2360 RAINWATER RD
TIFTON GA 31793-5766

LifeStrategy Income Fund 0723-88104844676

Average price per share	Total Cost
$15.20	$33,612.82

Date	Transaction	Amount	Share Price	Shares Transacted	Total Shares Owned	Value
	Beginning balance on 3/31/2019		$15.52		2,198.278	$34,117.27
06/28	Income dividend .095	$208.84	15.90	13.135	2,211.413	
	Ending balance on 6/30/2019		$15.90		2,211.413	**$35,161.47**

Beginning on January 1, 2012, new tax rules on taxable (nonretirement) mutual fund accounts (excluding money market funds) require Vanguard to track cost basis information for shares acquired and subsequently sold, on or after that date. Unless you select another method, sales of Vanguard mutual funds, but not ETFs, will default to the average cost method. For more information, visit vanguard.com/costbasis.

20190630 012719 RSBJMP16 106A 000000194425516 P

Search the site or get a quote

HomeMy Accounts Investing Advice & Retirement News & Perspectives Benefits & Costs

NASDAQ 8,098.38 -63.41 S&P 500 2,975.95 -14.46 DJIA 26,806.14 -115.98 Data as of 07/08/2019 05:15 PMET Market Summary

$35,249.92

Value as of 07/08/2019, 04:00 pm, ET

Welcome back!
kim.cutchins@apresinc.com edit
Last logon: Sunday, June 30, 2019 06:43 PMET

Customize your account view

0 New secure messages

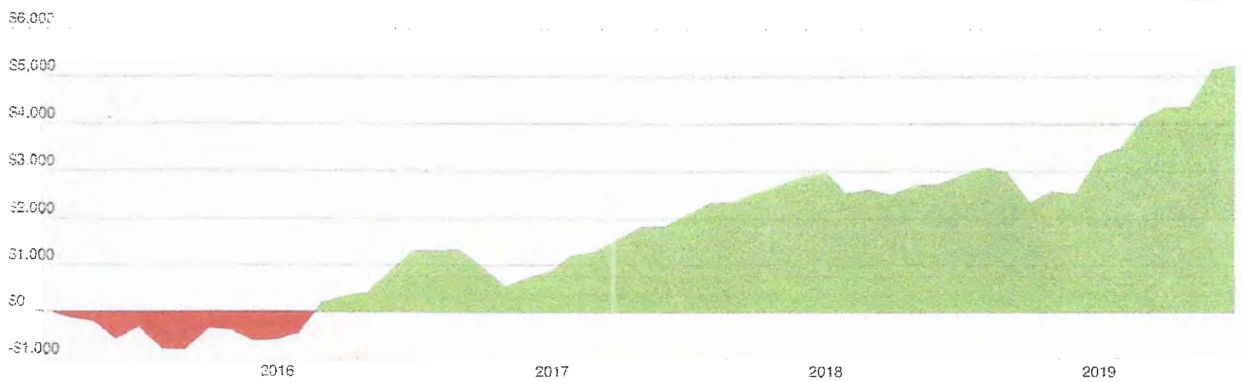
Balances Holdings Activity Performance Asset mix

Personal Performance Prices & returns

02/01/2015 - 07/08/2019

Beginning balance	$0.00	Ending balance	Rate of return
Purchases & withdrawals	+$30,000.00	$35,249.92	3.8%
Investment returns	+$5,249.92		As of 06/30/2019

CHART | TABLE



Balances Purchases & withdrawals Investment returns Since inception

Disclosure | See how we calculate performance

Why cost basis is not performance

When evaluating your performance, cost basis only gives part of the picture. It's important to look at total investment returns, not just cost basis.

More about cost basis

Is your portfolio in balance?

A sound investment strategy starts with an asset allocation suitable for the portfolio's objective. The allocation should be built on reasonable expectations for risk and returns, and should use diversified investments to avoid exposure to unnecessary risks.

More about asset allocation

Advice from Vanguard

Want an expert's opinion? A comprehensive financial plan? An ongoing partnership dedicated to your goals? Or investments designed for you to use on your own? Trust Vanguard to give you what you need.

More about advice at Vanguard

CONNECT WITH US®

Facebook Twitter

Vanguard News Vanguard Blog

YouTube LinkedIn

PUBLICATIONS AND EDITORIAL COMMITTEE REPORT

The Publications and Editorial Committee held a joint meeting with Associated Editor of Peanut Science (Editor: Dr. Tim Grey).

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 five completed chapters out of the 12 proposed. Two other chapters are close to completion 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.

Committee meeting was attended by President-Elect Barry Tillman. During his presidential tenure, he wants to get this book accomplished. Committee meeting was also attended by Craig Kvien at the suggestion of Kim Cutchins, Executive Director of APRES. His attendance was to help with the discussion of having Craig interview the lead authors and other experts to write the chapters for them. Craig agreed he can do this, but shared it is a difficult task because he essentially has to learn the subject. Committee agreed and began discussions towards which chapters were having the most difficulty be accomplished and why?

During that discussion, it was identified that Nick Dufault, associate editor, has not been available to discuss his chapter assignments and is not present at the meeting today. It was suggested a new associate editor is needed who might have time to devote to the project. Kira Bowen volunteered to step in to help, if Nick is overcommitted. Post meeting, Chris Liebold spoke with Nick and he agree he is overcommitted. Kira Bowen will serve as the new associate editor and will tackle Nick's assigned chapters.

Shyam and Chris will update Kira on where the effort stands next week, so she can begin her duties as associate editor.

Peanut Newsletter

Allison Floyd and many APRES volunteers helped re-launch the APRES newsletter in January 2019. The newsletter will be published quarterly and the first two issues have received excellent feedback.

Peanut Science Report

In addition to the editor's report, which follows, Chairman Liebold stated the submission standards will be updated to state abstracts should be 250 words or less; citation changes; and links are not acceptable in a manuscript.

The Associate Editors of *Peanut Science* meeting is met Tuesday, July 9th, 2019 at the 51st Annual APRES meeting at the The Hotel at Auburn University and Dixon Conference Center in Auburn AL. *Peanut Science* Volume 45-1 with 7 articles was released online in May 2018, with Volume 45-2 released November 2018 with 5 articles online via the website with AllenPress. *Peanut Science* Volume 46-1 was released in April 2019 with 8 articles, and Volume 46-2 may be released by December 2019. The speakers for the APRES 50th Anniversary Symposium from the *Opening General Session* and *Industry Challenges of the Next 50 Years* at Williamsburg VA were requested to submit manuscripts corresponding to their presentations. Eight speakers submitted manuscripts and those will be released as Volume 46-1a in July 2019 on the website.

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
Kira Bowen	Plant Pathology	Auburn University, Auburn AL

Jason Woodward (2010 to 2019), Nick Dufault (2015 to 2019), and Mike Marshall (2012 to 2019) will be rolling off as Associate Editors in 2019.

Kira Bowen will be added as a new Associate Editor in 2019.

Peanut Science is on ResearchGate at www.researchgate.net. Under their current system, RG Journal impact average was 0.35 in 2018, 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 0.28 with 18 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 635,000 hits, with many journal articles, and Dr. Holbrook *et al.* 'Registration of Tifguard peanut' from 2008 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. *Peanut Science* became an open access journal 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, 2018 to Dec 31, 2018 for manuscripts assigned to Dr. Grey as editor, there were 21 total submissions with 17 accept, and 4 reject. From initial author submission to first decision by the reviewers and associate editors was 102 days, from the first decision to final decision by the associate editors and the authors required 94 days, and from editor's final decision to final disposition (release for publication) was 22 days. From January 1, 2019 to July 2nd, 2019 there have been 7 submissions, with an additional 8 for the 50th Anniversary special issue.

Table 1.
Submissions by year

Month	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Jan	0	2	2	2	0	1	0	3	4	1
Feb	2	2	2	2	0	1	1	1	2	1
Mar	1	1	1	3	3	2	1	3	3	1

Apr	1	2	0	0	0	3	3	2	0	8
May	4	0	3	1	1	1	1	0	3	1
Jun	0	2	0	1	1	1	4	0	0	2
Jul	8	0	1	0	0	1	1	0	1	1
Aug	1	2	3	5	1	2	2	5	1	-
Sep	3	3	1	2	5	2	4	1	2	-
Oct	2	3	2	1	1	2	1	2	3	-
Nov	0	4	3	3	3	2	2	3	1	-
Dec	1	1	2	1	5	1	2	3	1	-
Totals	**23**	**22**	**20**	**21**	**20**	**19**	**22**	**23**	**21**	**15**

PEANUT QUALITY COMMITTEE

The meeting was called to order by Chairman John Bennett at 3:00pm

Meeting Minutes from 2018 were reviewed by Chris Liebold

- Updates provided on Old Business
  - ATOX HO – Dr. Lamb provided an update on HO vs. NO on atox contamination. There was difference between on HO vs. NO on the subject.
  - UPPT – Dr. Dean provided on UPPT samples being entered. There were 35 samples from six locations submitted. Dr. Dunn to cover the UPPT report in New Business
  - Alternate Storage – No updates on the project, but Jon Bennett of Mars urges the industry to embrace the storage condition change and ask manufacturers to be "okay" with the change and begin its implementation in standards.
  - HO Peanuts – No new changes to the stance amongst manufacturers. Mars still requesting industry conversion to HO, while Smucker's (Jif brand) request the availability of NO to remain the same.

New Business

- ***Transport Container Challenges***
  - Jon Bennett of Mars brought up the challenge they are facing on increased mold growth in totes being shipped across the sea. Asked if anyone is experiencing a similar issue and would like to partner with them on a transportation study that they are beginning with a university.
  - There is an impact of moisture and water activity on the peanuts and other ingredients.
  - The results of the study will be published for the industry to use the information

- ***Comments from attendees***
  - Dr. Lamb – request the Jon speak to Dr. Butts of USDA about instrumentation to measure peanut lots going overseas

- Mark Kline of Hersey – not seeing much of issue because of not shipping that much overseas. However, suggested the use of thermal blankets on top because of success in some their ingredients.
- Chris Liebold of Smucker – shared similar experience in coffee. Shared that temperature tempering steps are required before moving ingredients into a room temp storage.

- ***UPPT Update***
  - Dr. Dunn shared the 2016-2017 report
  - Still working through all the data for 2018 and 2019.
  - Report contains sensory data, fatty acid composition data, sugar content and tocopherol content.
  - Jon Bennett asked if there is any interesting findings?
- ***Dr. Dunn.. I terms of flavor, lots of work still be to be done. Hard to separate lines by flavor.***
- ***Big Data, Blockchain***
  - Chris Liebold of Smucker asked the industries opinion of adopting Blockchain to transparency to the consumers and customers of peanuts
  - Shellers were curious on how far back does the industry want to go in terms of visibility. Mixed lots and comingle peanuts make it difficult to trace back to an exact farmer
  - Dr. Lamb of USDA shared how there is pilot program with peanut farmers who are growing cotton. This pilot program is being led by Wrangler.
  - Comments on how cattle farmers in Central Florida are implementing Blockchain because consumers want it.
  - Victor of Mars – Blockchain would be nice to have… if it can be done effectively and efficiently.
  - Several comments about learning from other crops and their experience in implementation of Blockchain
  - APC was requested to follow up with another industry and agreed to do so.
  - Victor of Mars – lets follow any commodity that trades like peanuts. Also, ask at what point do we want to invest in the technology? Peanut is a fragmented commodity… is it doable and when is it doable?
- ***ATOX Risk Do To Hurricane Damage***
  - Chris Liebold asked if there is any update or concerns amongst the industry on atox because of hurricane damage.
  - Other manufactures have seen increased risk, but believes it is manageable.
  - Birdsong shared that blanching has shown be successful in reducing atox some.
  - Peanut Fat Levels Increasing
  - Chris Liebold asked if the industry has any concerns that peanut fat levels have increased over the past several years by 3.5%
  - Jim Elder of Smucker provided more detail on the challenges of increased fat due to standard of identity concerns and difficulty in making reduced fat.
  - There were discussions on whether is all varieties or a certain one?
  - Jim Elder shared the data provided is only for Georgia-06G.
- ***Standard of Identity for Peanut Butter***
  - George Birdsong asked why was the standard of identity for peanut butter set at 55%?
  - Mike Jackson of JLA shared the history of that. In the 50s and 60s, it was created to help prevent manufacturers from adding too much oil and stabilizer.
- ***Seed Size***
  - Mark Kline of Hersey shared the request of needing more mediums available. This will help them with their products. Asked for the industry to keep that mind.

Additional Business

- Ken Barton – Florida Grower – drafted to be part of the Peanut Quality Committee.

Chairman John Bennett closed the meeting at 4:00pm.

PROGRAM COMMITTEE REPORT

Program Chairman Barry Tillman reported the 51st Annual Meeting of the American Peanut Research and Education Society (APRES) was held July 9-11, 2019 at The Hotel at Auburn University and Dixon Conference Center in the heart of Auburn, AL. APRES President Rick Brandenburg (NCSU) was unable to preside over the meeting due to health issues, but sent a stirring and emotional video presentation on the importance of lifting up those around us. Past President Peter Dotray (Texas Tech University/ Texas A&M AgriLife Research) and President-elect/Program Chairman Barry Tillman (University of Florida) presided over the very well attended meeting of 352 participants from every peanut producing state and 8 countries, grouped as 278 registrants, 31 spouses and 43 children.

General Session Speakers included:

Rick Pate, Alabama Commissioner of Agriculture and Industries, welcomed the attendees to the state of Alabama**,** providing attendees with an overview of agriculture in Alabama. *Dr. Amy Wright, Associate Dean for Instruction, College of Agriculture, Auburn University* welcomed all to the campus of Auburn University, the first time APRES has met on a university campus, adding it was a pleasure to be the host university and best wishes for a great meeting. A panel session on the topic *"The Next 50 Years….What Changes/Opportunities/Challenges Do you Foresee in Your Global Peanut Business"* continued the discussion from last year's 50th Anniversary meeting and built on the 2019 theme, *Peanuts Around the World.* Panel Members from the manufacturing, shelling and grower segments spoke--*Dr. Chris Liebold***,** a Senior Scientist in the Consumer Foods Business with The J.M. Smucker Company spoke about how trends in consumer preferences and demands might drive the future of peanut butter and peanut butter products; *Donald Chase*, Farmer and Georgia Peanut Commission representative spoke on "Probable, Possible, and Unlikely-What Will Farms Look Like in 2069", a very interesting look at technologies that could impact peanut production in the future.; *Karl Zimmer,* President and CEO of Premium Peanut spoke about mis-alignment along the US peanut value chain and presented compelling actions that could help align objectives and incentives to create value in all phases of the peanut value chain.; and *John Bennett,* with Mars spoke about the challenges in logistics and procurement across global supply chains and how the industry utilizes only a fraction of the worldwide peanut production due to aflatoxin and other quality challenges. Many attendees said it was the best industry discussion they've heard in years.

The 2019 Symposium:

Synergies from U.S. Global Research Partnerships, moderated by Dave Hoisington (University of Georgia and the USAID Peanut Innovation Laboratory, brought leaders from the international research community to talk about what they are doing. Dr. David Bertioli (University of Georgia) spoke on the *International Collaboration Leverages Peanut Research and Crop Improvement* from the peanut genome project; Dr. Daniel Fonceka (CIRAD/CERAAS) spoke on *Mobilizing Genetic Diversity for Strengthening Peanut Breeding Program in Africa and the U.S*.; Dr. Janila Pasupuleti (ICRISAT) shared her perspectives on how *Partnership Holds the Key to Deploy New Tools in Peanut Breeding Programs*; Dr. David Jordan (NCSU) spoke on the *Value of International Projects to Faculty in the United States*; Dr. Nora Lapitan (USAID) discussed the importance of *U.S. Investments in Research for Development and Global Impacts*; and Jeff Johnson, President Emeritus, Birdsong Peanuts, shared stories from his personal involvement in the use of *Peanuts in the Fight Against Hunger.*

Technical Committee

Charles Chen, Chair

Technical Program Chairman Charles Chen (Auburn University) arranged a total of 155 presentations (50 posters) from peanut scientists around the world. Breakout Sessions topics included: Peanut Breeding, Biotechnology & Genomics I, II, III, IV; Production Technology; Excellence in Extension; Plant Pathology I & II; Physiology, Seed Technology and Food Sciences; Entomology; Weed Science; Sustainability-Measurement, Resources, and Opportunities for Research; Economics & Marketing; Peanut Innovation Lab Technology Demonstrations and, of course, the Poster Session. Fifty(50) scientific posters were displayed, of which thirteen (13) were entered in the 2nd Annual graduate student poster competition, sponsored by the National Peanut Board.

In addition to the technical presentations, there was a meeting of the members on the Peanut Genomics Initiative on Monday, the industry held a Seed Summit and the Crop Germplasm Committee met. The Peanut Innovation Lab organized a Technology demonstration and the APC organized a seminar on Sustainability: Measurement, Resources and Opportunities for Research.

Spouses Program

Jennifer Tillman, Chair, Susan Hagan, Dong Shang, Kathy Beasley, Amy Balkcom, Helene Stalker

A hospitality suite was available on Tuesday, Wednesday, and Thursday sponsored by Valent. Spouses and guests toured the Southeast Raptor Center and Jordan-Hare Stadium thanks to the American Peanut Council's sponsorship and organized by Chair Jennifer Tillman. Children's art activities were organized by Susan Hagan and Dong Shang. Baskets for raffles were made by Jennifer Tillman.

Local Arrangements

Steve Li and Kris Balkcom, Co-Chairs, with additional help from their graduate students and John Beasley, Brian Royals, Joyce Hollowell.

The meeting kicked off with an "early bird" tour of Auburn's E.V. Smith Research Center led by the Auburn University peanut team and a BBQ dinner at Lazenby Farms hosted by the Alabama Peanut Producers Association. The Committee set up and broke down the meeting in record time and provided technical expertise for a Zoom session and recording the APRES general session.

Social functions organized by Local Arrangements throughout the meeting included a Wednesday night dinner sponsored by Bayer and BASF; an awards reception sponsored by Corteva™ Agriscience; networking breaks sponsored by Birdsong Peanuts, Fine Americas, and Syngenta; networking breaks snacks donated APRES' grower association and manufacturer members; and, an ice cream social sponsored by APRES' sustaining members. John Beasley arranged special appearance by Aubie, the Auburn tiger mascot, which was a big hit with everyone young and old

Fun Run

Peter Dotray, Chair

Peter Dotray and Kim Cutchins worked together to organize. Over 75 people registered for the Thursday morning FunRun, snagging a memorable T-shirt sponsored by Texas Tech University. The run/walk took place Thursday morning with participants meeting in the lobby and then running/walking around the Auburn campus.

SITE SELECTION COMMITTEE REPORT

Chairman Charles Chen reported the Committee and Board have selected Omni Mandalay Hotel at Las Colinas in Dallas, TX as the 2020 site for the 52nd Annual Meeting.

52nd Annual Meeting	53rd Annual Meeting	54th Annual Meeting	55th Annual Meeting
July 14-16, 2020	July 13-15, 2021	July 12-14, 2022	July 13-15, 2023
Dallas, Texas	Virginia-Carolina Region	Southeast Region	Southwest Region33

The 2021 meeting received only one proposal within budget from first choice city, Charlotte. The Committee suggested APRES look at Raleigh and Asheville for additional choices.

The Committee recommended Savannah, GA as its first city choice for 2022; and, Galveston, Corpus Christie or Marble Falls for 2023.

APRES GRADUATE STUDENT ORGANIZATION

APRES GSO President Sara Beth Pelham reported the GSO organized a pre-meeting tour of the Auburn University campus, a luncheon with two speakers—Graham Wright (Peanut Company of Australia) and Nora Lapitan (USAID), and held its first official meeting to elect new leadership. New Officers for 2019-20: Chandler Levinson (UGA) was elected President; Nick Hurdle (UGA)will serve as President-elect; Kayla Porter volunteered as Social Chairman. Davis Gimode was recognized and thanked for serving as President-elect for 2018-19. (Davis is graduating this year and, therefore, not eligible to serve as President. Congratulations, Davis!) Sara Beth thanked the APRES membership for its unanimous positive vote to add a seat on the APRES Board of Directors for graduate students.

RECOGNITION OF RETIRING APRES BOARD MEMBERS

In the absence of President Brandenburg, Past President Peter Dotray and President-elect Barry Tillman recognized the outgoing members of the APRES Board of Directors—Peter Dotray, Barbara Shew, Peggy Ozias-Akins, Marshall Lamb, and Darlene Cowart—thanking them for their service to the organization.

ADJOURNMENT

Past President Peter Dotray asked David Jordan to come forward to accept the President's award on behalf of Rick Brandenburg. Next, Past President Pete Dotray passed the gavel to newly-elected President Barry Tillman.

President Barry Tillman 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.

j. The APRES Graduate Student Organization (GSO) President – The APRES GSO President is a non-voting member of the APRES Board of Directors. The GSO President will give an update to the Board on events and issues relative to the APRES GSO.

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
11 July 2019, Auburn, AL

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. The nomination package of each nominees should be sent to the Board to assist in their review. 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 (<u>both in name and order</u>) 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 or a “Spotlight” Research article 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.

<u>Chairman Responsibilities:</u>

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 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(s) of Bailey Award nominees.
- Bailey Award chair’s responsibilities are completed when the Executive Officer receives Bailey Award nominees 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 7-8-2019

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.

Amended July 2015

AMERICAN PEANUT RESEARCH & EDUCATION SOCIETY, INC.

Guidelines

CORTEVA™ AGRISCIENCE AWARDS FOR EXCELLENCE IN RESEARCH AND EDUCATION

I. Corteva™ Agriscience 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 Corteva™ Agriscience Awards Committee are ineligible for the award while serving on the committee.

II. Corteva™ Agriscience 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 Corteva™ Agriscience Awards Committee are not eligible for the award while serving on the committee. Eligibility of nominators, nomination procedures, and the Corteva™ Agriscience 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 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 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 Awards Committee

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

Administrative Note:

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

Amended 7-10-2019

NOMINATION FORM FOR CORTEVA™ AGRISCIENCE AWARDS

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

☐ **Award for Excellence in Education**

☐ **Award for Excellence in Research**

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

DATE:

I. Nominee(s): ____

Address ____

Title____Tel No. ____________________

For a team nomination, list the requested information on all team members on a separate sheet.

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

Nominee Photograph Included with Nomination? _____ **Yes** _____ **No**

I. Nominator:

Name____Signature __________________

Address ____

Title____Tel No. ____________________

II. Education: (include schools, college, universities, date, attended and degrees granted).

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

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

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

VI. 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.

Score Sheet for Joe Sugg Graduate Student Competition APRES 2019

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.

As of July 2018

American Peanut Research and Education Society

Graduate Student Organization

Manual of Operating Procedures

June 2018

Constitution - as revised through June 2018

Preamble

The Graduate Student Organization (GSO) is established to bring together students actively pursuing advanced degrees in disciplines related to peanut. The primary purpose of the GSO is to exchange ideas, experiences, opinions, and information in all areas of peanut research and education and to have a representative on the American Peanut Research and Education Society (APRES) Board of Directors.

Article 1-Name

The name of this organization shall be the
American Peanut Research and Education Society Graduate Student Organization

Article II - Officers of the GSO Executive Board

Section 1. The officers of the GSO shall be President and President-Elect.

Section 2. The GSO President-Elect shall be elected by a closed ballot at the annual GSO meeting and shall hold office for 1 year beginning with the close of the regular annual business meeting after his/her election and ending with the close of the next annual business meeting at which time he/she assumes the duties of the President.

Section 3. All graduate students who are members of the American Peanut Research and Education (APRES) Society are eligible to hold office.

Section 4. Except for President, unexpired terms of members of the GSO Executive Board shall be filled by a majority vote of the APRES Executive Board. Those individuals elected to a vacant office shall serve the remainder of the unexpired term or until the next annual business meeting, at which time a new member will be elected. If a vacancy occurs in the office of President, the President-Elect shall ascend to the office of President. The Executive Board at this time will elect a new President-Elect.

Section 5. At the beginning of the annual business meeting, each participating university will select one individual to serve as the university representative. The university representative will be responsible for voting and will serve as communications liaison between the GSO Executive Board and the students of that university.

Section 6. Each university present at the annual business meeting will be allowed only one vote for each GSO Executive Board position. This vote will be cast by each university representative at the annual business meeting under a closed balloting procedure. In the event that a university representative is also nominated for an Executive Board position, another student from the university will be selected to place the university vote for that position. In the event of a tie vote for any Executive Board position in the GSO, the tie will be voted on again by each university representative. In the case that a tie vote results after the revote, the GSO positions of President and President-Elect will vote on the nominees to break the tie under a closed balloting procedure. This vote will take place at the current annual business meeting with the results disclosed at this meeting.

Article III - Nominations for Office

Section 1. Each university may nominate only one representative to each of the elected positions set forth in Article II.

Section 2. Any graduate student attending the APRES GSO annual business meeting is eligible to be nominated. Students can nominate themselves or be nominated by another graduate student.

Section 3. Students nominated for a position should provide a brief introduction of themselves after nominations have closed and prior to voting. Then all nominees will be required to exit the room during the voting procedure.

Article IV - Meetings

Section 1. The Graduate Student Organization shall meet annually to carry out its objectives.

Section 2. The business matters of the GSO shall be handled during one of the following meetings: 1) a meeting of the GSO Executive Board prior to the beginning of the GSO annual business meeting; 2) a meeting of the members during the GSO annual business meeting; 3) a meeting of the Executive Board at the close of the annual meeting; or 4) a meeting during the calendar year through electronic means as deemed necessary by the GSO or APRES President.

Section 3. At the first meeting of the GSO Executive Board prior to the annual GSO business meeting, the GSO Executive Board will consider all committee reports and accept, modify, or reject such reports.

Section 4. At the GSO annual business meeting, the members will act on all committee reports submitted by the GSO Executive Board. No matter shall be voted on at this meeting that has not first been considered by the GSO Executive Board.

Section 5. After the close of the annual GSO business meeting both outgoing and newly-elected members and University representatives will meet. These constituents will act on any old business not completed at the previous GSO meetings.

Section 6. An GSO Executive Board meeting may be called by the GSO or APRES President throughout the business year if needed to conduct business that is relevant to the Graduate Student Organization. This meeting will be held via electronic mail, conference calling, and or by video conferencing at a designated time proposed by the GSO or APRES President. All subject matter will be presented to each GSO Executive Board member and University Representative 5 days prior to such meeting time.

BY-LAWS

DUTIES

Section 1. The APRES Graduate Student Organization Executive Board President Shall:

1) Serve as Chairperson of the GSO Executive Board.

2) Attend regular American Peanut Research and Education Society Executive Board meetings as a student representative and report to the Graduate Student Organization Executive Board.

3) Actively solicit input from students at the American Peanut Research and Education Society meetings on issues affecting students in the American Peanut Research and Education Society so this information can be passed on to committees or the American Peanut Research and Education Society Board of Directors.

4) Organize a graduate student luncheon/symposium and make arrangements for guest speakers.

Section 2. The Graduate Student Organization President-Elect Shall:

1) Perform the duties of the GSO President if he/she cannot serve

2) Attend all Graduate Student Organization Executive Board meetings and general student meetings to record the minutes of each meeting...

3) Assist the GSO President in organizing the GSO Executive Board meeting, student meeting, or Graduate Student Luncheon whenever necessary.

4) Distribute pertinent information to the student representatives from each university for distribution within the institution.

5) Serve as GSO President the following year.

Section 3. The Student Representative from each University shall:

1) Report to the GSO President any questions or concerns that other graduate students from their university may have so that the GSO President can disclose these concerns to the American Peanut Research and Education Society Executive Board.

OPERATING PROCEDURES
OF THE
AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY GRADUATE STUDENT ORGANIZATION

CHANGES IN OPERATING PROCEDURE

The constitution and by-laws may be amended only by a majority vote of the graduate student representatives of each university comprising the Graduate Student Organization. Changes or improvements proposed by a member should be brought forth to their University Representative who will suggest such recommendations to the Graduate Student Organization Executive Board at the GSO Executive Board meeting held prior to the GSO annual business meeting

EXECUTIVE BOARD

The Graduate Student Executive Board Shall:

1) Conduct an GSO Executive Board meeting prior to the student organization meeting.

2) Conduct a GSO meeting for all graduate students attending the annual American Peanut Research and Education Society. At this meeting, each university in attendance will have the opportunity to appoint student board representative to serve a one-year term on the student executive board as their university representative. A GSO President-Elect will be elected by the set forth voting procedures outlined in the By-Laws. Also, pertinent issues will be presented for discussion to the members by the Graduate Student Executive Board.

3) Conduct a GSOExecutive Board meeting immediately following the student organization meeting.

4) Actively solicit input from students at the American Peanut Research and Education Society meetings on issues affecting students in the American Peanut Research and Education Society so this information can be passed on to committees or the American Peanut Research and Education Society Executive Board of Directors.

5) Organize a graduate student luncheon with the local arrangements committee chairperson and arrange for entertainment such as a guest speaker.

6) Be responsible for changes in the Manual of Operating Procedures (other than the Constitution and By-Laws) after study and recommendations by the Graduate Student Executive Board.

PRESIDENT

The President Shall:

1) Serve as chairperson of the Graduate Student Organization Executive Board and prepare an agenda for meetings of the GSO Executive Board. The GSO President shall submit the proposed agenda to the members of the GSO Executive Board in advance of GSO meetings so that issues can be properly considered.

2) The GSO President shall be a Student Representative to the American Peanut Research and

Education Society Executive Board and participate in American Peanut Research and Education Society Board meetings held prior to the American Peanut Research and Education Society annual meeting. The GSO President will give an update to the Executive Board on events and issues relative to the Graduate Student Organization. The GSO President will be an ex-officio (non-voting) member of the APRES Board of Directors

3) Be responsible for determining that the decisions of the Graduate Student Organization Executive Board are correctly enforced within the framework of the Constitution and By-Laws.

4) Maintain the Graduate Student webpage on the APRES website.

5) Work with the various APRES committee representatives to aid them in developing programs or rules beneficial to the Graduate Student Organization.

6) Write letters of thanks to all GSO event speakers and appropriate personnel.

PRESIDENT-ELECT

President-Elect shall:

1) Perform the duties of the GSO President if he/she cannot serve.

2) Take all minutes at all business meetings of the Graduate Student Organization, including the GSO Executive Board meeting, the GSO annual business meeting, and the GSO closing meeting after the APRES annual meeting, along with any other GSO meeting called to order by the GSO or APRES President. All minutes shall be supplied to the members of the GSO Executive Board and to members of the Graduate Student Organization upon request as deemed necessary by the GSO Executive Board.

3) Receive nominations for GSO office at the GSO annual business meeting. Collect and count votes and notify the Graduate Student Organization of the result at the GSO annual business meeting.

4) Present the GSO President-Elect’s report at the GSO annual business meeting.

5) Aid the GSO President in arrangements necessary for the Graduate Student Luncheon

6) Assist the GSO President in maintaining the Graduate Student webpage on the APRES website.

7) Furnish an electronic copy of the GSO meeting minutes to the APRES Executive Officer for archiving and inclusion in the proceedings of the APRES annual meeting

8) Perform other duties delegated by the GSO President or the GSO Executive Board

9) Advance to the Office of President of the Graduate Student Organization at the end of his/her term as GSO President-Elect.

STUDENT REPRESENTATIVES FROM EACH UNIVERSITY

The GSO Student Representative Shall:

1) Report to the GSO President any questions/concerns that other graduate students at his/her University, so as the GSO President can disclose such concerns to the Executive Board of the Graduate Student Organization and or the Executive Board of the American Peanut Research and Education Society.

2) Actively communicate with the GSO Executive Board so as to keep his/her University aware of the activities of the Graduate Student Organization.

3) Perform other duties delegated by the GSO President or the GSO Executive Board.

Overview

2019 APRES Annual Meeting
51st Celebration
July 9-11 * Auburn, AL

The 51st Annual Meeting of the American Peanut Research and Education Society (APRES) was held July 9-11, 2019 at The Hotel at Auburn University and Dixon Conference Center in the heart of Auburn, AL. APRES President Rick Brandenburg (NCSU) was unable to preside over the meeting due to health issues, but sent a stirring and emotional video presentation on the importance of lifting up those around us. Past President Peter Dotray (Texas Tech University/Texas A&M AgriLife Research) and Program Chairman Barry Tillman (University of Florida) presided over the very well attended meeting of 352 participants from every peanut producing state and 8 countries, grouped as 278 registrants, 31 spouses and 43 children.

The meeting kicked off with an "early bird" tour of Auburn's E.V. Smith Research Center led by the Auburn University peanut team and a BBQ dinner at Lazenby Farms hosted by the Alabama Peanut Producers Association.

Technical Program Chairman Charles Chen (Auburn University) arranged a total of 155 presentations (50 posters) from peanut scientists around the world. Highlights of the program included opening General Session addresses by:
Rick Pate, Alabama Commissioner of Agriculture and Industries, welcomed the attendees to the state of Alabama**,** providing attendees with an overview of agriculture in Alabama.

Dr. Amy Wright, Associate Dean for Instruction, College of Agriculture, Auburn University welcomed all to the campus of Auburn University, the first time APRES has met on a university campus, adding it was a pleasure to be the host university and best wishes for a great meeting.

A panel session on the topic **"The Next 50 Years….What Changes/Opportunities/Challenges Do you Foresee in Your Global Peanut Business"** continued the discussion from last year's 50th Anniversary meeting and built on the 2019 theme, **Peanuts Around the World**. Panel Members from the manufacturing, shelling and grower segments spoke--**Dr. Chris Liebold,** a Senior Scientist in the Consumer Foods Business with The J.M. Smucker Company spoke about how trends in consumer preferences and demands might drive the future of peanut butter and peanut butter products.; **Donald Chase**, Farmer and Georgia Peanut Commission representative spoke on "Probable, Possible, and Unlikely-What Will Farms Look Like in 2069", a very interesting look at technologies that could impact peanut production in the future.; **Karl Zimmer**, President and CEO of Premium Peanut spoke about mis-alignment along the US peanut value chain and presented compelling actions that could help align objectives and incentives to create value in all phases of the peanut value chain.; and **John Bennett**, with Mars spoke about the challenges in logistics and procurement across global supply chains and how the industry utilizes only a fraction of the worldwide peanut production due to aflatoxin and other quality challenges. Many attendees said it was the best industry discussion they've heard in years.

The 2019 Symposiums on *Synergies from U.S. Global Research Partnerships*, moderated by Dave Hoisington (University of Georgia and the USAID Peanut Innovation Laboratory, brought leaders from the international research community to talk about what they are doing. Dr. David Bertioli (University of Georgia) spoke on the *International Collaboration Leverages Peanut Research and Crop Improvement* from the peanut genome project; Dr. Daniel Fonceka (CIRAD/CERAAS) spoke on *Mobilizing Genetic Diversity for Strengthening Peanut Breeding Program in Africa and the U.S.*; Dr. Janila Pasupuleti (ICRISAT) shared her perspectives on how *Partnership Holds the Key to Deploy New Tools in Peanut Breeding Programs*; Dr. David Jordan (NCSU) spoke on the *Value of International Projects to Faculty in the United States*; Dr. Nora Lapitan (USAID) discussed the importance of *U.S. Investments in Research for Development and Global Impacts*; and Jeff Johnson, President Emeritus, Birdsong Peanuts, shared stories from his personal involvement in the use of *Peanuts in the Fight Against Hunger.*

Breakout Sessions topics included: Peanut Breeding, Biotechnology & Genomics I, II, III, IV; Production Technology; Excellence in Extension; Plant Pathology I & II; Physiology, Seed Technology and Food Sciences; Entomology; Weed Science; Sustainability-Measurement, Resources, and Opportunities for Research; Economics & Marketing; Peanut Innovation Lab Technology Demonstrations and, of course, the Poster Session.

Fifty(50) scientific posters were displayed, of which thirteen (13) were entered in the 2nd Annual graduate student poster competition, sponsored by the National Peanut Board. The winner of the 2019 graduate student poster competition was **Alan Peper** (The University of Georgia) for his research, *Studying Peanut Pod Development within a Controlled Microbial System.* Second place was awarded to **Misbah Munir** (Clemson University) for his research, *"PCR-Based Detection of Nothopassalora personata on Peanut".*

The 31st Annual **Joe Sugg Graduate Student Competition,** sponsored by the North Carolina Peanut Growers Association drew 21 competitors from 7 universities. The **winner** ($500) of this year's competition was **Amanda Kaufman (**North Carolina State University) who presented her research, "*The Influence of Digging Date on Fatty Acid and Tocopherol Expression in Normal and High-Oleic Virginia Peanut Varieties Grown in North Carolina".* Second Place ($250) went to **Caleb Weaver** (The University of Georgia) and his research, "*Peanut Seed Germination and Seedling Emergence as Affected by Storage Conditions*". 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 **Kayla Eason** (The University of Georgia) for her research**, "***Peanut Response to Sub-Lethal Rates of Dicamba + Glyphosate".*

Social functions organized by Local Arrangements Chairs Steve Li and Kris Balkcom (Auburn University) throughout the meeting included a Wednesday night dinner sponsored by Bayer and BASF; an awards reception sponsored by Corteva™ Agriscience; networking breaks sponsored by Birdsong Peanuts, Fine Americas, and Syngenta; a spouses hospitality suite sponsored by Valent; and, an ice cream social sponsored by APRES' sustaining members. Spouses and guests toured the Southeast Raptor Center and Jordan-Hare Stadium thanks to the American Peanut Council's sponsorship and organized by Chair Jennifer Tillman. The sponsored networking breaks included snacks from APRES' grower association and manufacturer members. Corteva™ Agriscience sponsored the second graduate student luncheon attended by 34 graduate students with guest speakers Nora Lapitan, USAID and Graeme Wright, Peanut Company of Australia discussing international job opportunities. Chandler Levinson (University of Georgia) was elected President of the APRES Graduate Student Organization (GSO). A special appearance by Aubie, the Auburn tiger mascot, was a big hit with everyone young and old. And, over 75 people registered for the Thursday morning FunRun and snagging a memorable T-shirt sponsored by Texas Tech University.

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

Three members of the Society were inducted as **Fellows of the Society** this year: Mr. Michael Baring (Texas A&M AgriLife Research); Dr. Peter Dotray (Texas Tech University/Texas A&M AgriLife Research); and Dr. Barry Tillman (University of Florida).

The **Coyt T. Wilson Award for Distinguished Service** to APRES went to **Dr. Timothy Grey,** University of Georgia, for his over 25 years of service to APRES, including his current role as editor of Peanut Science for over 7 years.

Dr. David Bertioli, University of Georgia was selected as this year's recipient of the **Corteva™ Agriscience Award for Excellence in Research**.

No recipient was selected for this year's **Corteva™ Agriscience Award for Excellence in Education.**

The **Bailey Award** for the **best paper** from the **2018 Annual Meeting** went to **Dr. Ye "Juliet" Chu,** University of Georgia (Presenting Author) and co-authors 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 for their paper ***"Major QTLs for Resistance to Early and Late Leaf Spot Diseases are Identified on Chromosomes 3 and 5 in Peanut (Arachis hypogaea)"***.

At the conclusion of the meeting, **new officers and directors** for the Society were inducted. Outgoing Past President, Peter Dotray (Texas A&M AgriLife Research and Texas Tech University) presented the gavel to incoming President, Dr. Barry Tillman (University of Florida). President-Elect for 2019-20 is Gary Schwarzlose of Bayer. Past President for 2019-20 is Rick Brandenburg (North Carolina State University). Newly elected to the APRES Board of Directors is Lisa Dean (USDA-ARS); Bob Kemerait (University of Georgia); Nathan Smith (Clemson

University); Bob Sutter (North Carolina Peanut Growers Association). Outgoing Board members Darlene Cowart (Birdsong Peanuts); Barbara Shew (North Carolina State University); Peggy Ozias-Akins (University of Georgia); Marshall Lamb (USDA-ARS) and Peter Dotray, Past President (Texas Tech University and Texas A&M AgriLife Research), were recognized for their support and service with a gift of a canvas print, entitled “Erdnuss”. The first action of President Tillman’s term was to present Dr. Rick Brandenburg (North Carolina State University) with the Past President’s Award (*accepted by David Jordan on Rick’s behalf*).

The 2020 APRES Annual Meeting (52nd Meeting) will be held July 14-16 at the Omni Mandalay Hotel at Las Colinas in Dallas, TX.

51st Annual Meeting

American Peanut Research and Education Society

2019

APRES

AMERICAN PEANUT RESEARCH & EDUCATION SOCIETY, INC.

Peanuts Around the World

Program and Schedule of Events

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

President……………………………………………………………………. Rick Brandenburg (2020)

Past President…………………………………………………………………….. Peter Dotray (2019)

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.

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™ Agriscience 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 Award Committee
Robert Kemerait, Chair (2020)
Steve Li (2020)
James Grichar (2020)
Abraham Fulmer (2021)
Mark Burow (2021)

Nominating Committee
Peter Dotray, Chair (2019)
Jack Davis (2019)
Greg McDonald (2019)
Robert Moore (2019)

Peanut Quality Committee
John Bennett, Chair (2019)
Sheller - Robert Moore (2019)
Manufacturer-Chris Liebod (2020)
University-Jason Woodward (2020)
Farmer – Ken Barton (2021)
Services – William Pearce (2021)
Var Develop – 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)

51st APRES Annual Meeting
July 9-11, 2019
Hotel at Auburn University,
Auburn, AL

Schedule at a Glance

Monday, July 8, 2019	
12 Noon - 1:00 PM Camelia Room	**Program Committee Meeting Lunch**
2:30-3:30 PM Camelia Room	**Peanut Foundation - Peanut Genomics Meeting**
3:45 - 6:30 PM Departing from Hotel Entrance	**Tour of Auburn University Peanut Field Trials** *Sponsored by: Auburn University Peanut Team*
6:30 - 8:00 PM	**Barbeque Dinner @ Lazenby Farms** *Sponsored by: Alabama Peanut Producers Association*
8:30 PM	**Arrive Back at Hotel**
Tuesday, July 9, 2019	
8:00 AM - 5:00 PM Ballroom Foyer	**Registration**
8:00 AM - 5:00 PM Monarch Room	**Presentation Uploading**
8:00 am - 5:00 PM Grand Ballroom	**Poster Set up**
8:00 - 10:00 AM Terrace Room	**Seed Summit**
10:00 AM - 12 Noon Oak Room	**Crop Germplasm Committee**
12 Noon - 1:00 PM	**Lunch on Your Own**
1:00 - 4:00 PM Camellia Room	**Spouses Hospitality Suite Open** *Supported by: Valent*
1:00 - 4:00 PM	**Committee Meetings**
1:00 - 2:00 PM Longleaf Room	Finance Committee - *Chairman: Tim Brenneman*
1:00 - 2:00 PM Azelia Room	Joe Sugg Graduate Student Competitions Awards Committee - Chairman: Bob Kemerait
1:00 - 2:00 PM Oak Room	Bailey Award Committee - *Chairman: Kim Moore*
2:00 - 3:00 PM Oak Room	Publications and Editorial Committee - *Chairman: Chris Liebold*
2:00 - 3:00 PM Oak Room	Associate Editors Peanut Science - *Peanut Science Editor: Tim Grey*
2:00 - 3:00 p.m. Longleaf Room	Public Relations Committee - *Chairman: Keith Rucker*
3:00 - 4:00 PM Terrace Rroom	Peanut Quality Committee - *Chairman: John Bennett*
3:00 - 4:00 PM Oak Room	Site Selection Committee - *Chairman: Charles Chen*
3:00 - 5:00 PM Auditorium	**Joe Sugg Graduate Student Competition - Session I** *Sponsored by North Carolina Peanut Growers Association*
4:00 - 5:30 p.m. Terrace Room	**Peanut Innovation Lab Technology Demonstrations**
6:00 - 8:00 p.m. Grand Ballroom	**Ice Cream Social** *Sponsored by: APRES Supporting Members*

Wednesday, July 10, 2019	
8:00 AM - 5:00 PM Ballroom Lobby	**Registration**
All Day Monarch Room	**Presentation Uploading**
8:00 AM - 4:00 PM Camellia Room	**Spouses Hospitality Suite Open** *Supported by: Valent*
8:00 AM - 5:00 PM Grand Ballroom	**Posters on Display**
8:00 - 10:00 AM Auditorium	**Opening General Session**
10:00 - 10:30 AM Grand Ballroom	**Networking Break** - *Sponsored by: Birdsong Peanuts*
9:30 AM - Noon Meet at 9:15 AM in Hotel Lobby	**Spouse Program: Southeast Raptor Center**
10:30 AM-12:30 PM Auditorium	**Symposium: Synergies from U.S. Global Research Partnerships**
12:30 - 1:30 PM	**Lunch on Your Own**
1:30 - 3:30 PM	**Concurrent Breakout Sessions**
Auditorium	**Joe Sugg Graduate Student Competition II**
Terrace Room	**Peanut Breeding, Biotechnology, and**
Oak Room	**Production Technology**
3:00 - 4:30 PM Meet in Hotel Lobby @ 2:30 PM	**Tour of Jordan-Hare Stadium & Locker Room Tour**
3:30 - 4:00 PM Grand Ballroom	**Networking Break** - *Sponsored by: Fine Americas*
3:30 - 4:30 PM Grand Ballroom	**Poster Viewing and Discussions *(Authors Present)***
	Scientific Poster Presentations
	Graduate Student Poster Competition
5:00 - 6:00 PM Azelia Room	**APRES Board of Directors Meeting**
6:30 - 9:00 PM Grand Ballroom	**APRES 51st Annual Meeting Celebration Dinner** *Sponsored by: Bayer and BASF*
Thursday, July 11, 2019	
6:15 AM Hotel Entrance	**APRES Fun Run/Walk** *Sponsored by: Texas Tech University*
8:00 AM - 4:00 PM Ballroom Lobby	**Registration Open**
8:00 AM - 4:00 PM Camellia Room	**Spouses Hospitality Suite Open** *Supported by: Valent*
8:00 AM - 5:00 PM Grand Ballroom	**Posters on Display**
8:00 - 10:00 AM	**Concurrent Breakout Sessions**
Auditorium	**Joe Sugg Graduate Student Competition -**
Terrace Room	**Peanut Breeding, Biotechnology, and**
Oak Room	**Excellence in Extension I**
10:00 - 10:30 a.m.	**Networking Break** - *Sponsored by: Syngenta*
10:30 AM - 12 Noon	**Concurrent Breakout Sessions**
Auditorium	**Peanut Breeding, Biotechnology, and**
Terrace Room	**Plant Pathology II**
Oak Room	**Physiology, Seed Technology and Food**
12 Noon - 1:00 PM	**Lunch on Your Own**
12 Noon - 1:00 PM Longleaf Room	**Graduate Student Luncheon** - *Students Only*
1:00 - 3:15 p.m.	**Concurrent Breakout Sessions**
Auditorium	**Plant Pathology, Entomology**
Oak Room	**Weed Science**
Terrace Room	**Sustainability: Measurement, Resources, and Opportunities for Research**
3:00-3:30 p.m.	**Networking Break** - *Sponsored by: APRES Supporting Members*
3:15 - 4:45 p.m.	**Concurrent Breakout Sessions**
Auditorium	**Peanut Breeding, Biotechnology, and**
Oak Room	**Economics & Marketing**
5:00 - 6:00 p.m. Grand Ballroom	**APRES Business Meeting and Awards Ceremony**
6:00 - 7:30 p.m. Grand Ballroom	**Awards Reception** *Sponsored by:* *Corteva™ Agriscience, Agriculture Division of DowDuPont™*

Monday, July 8, 2019	
12 Noon - 1:00 PM Camelia Room	**Program Committee Meeting Lunch**
2:30 - 3:30 PM Camelia Room	**Peanut Foundation - Peanut Genomics Meeting**
3:45 - 6:30 PM Departing from Hotel Entrance	**Tour of Auburn University Peanut Field Trials** *Sponsored by: Auburn University Peanut Team*
6:30 - 8:00 PM	**Barbeque Dinner @ Lazenby Farms** *Sponsored by: Alabama Peanut Producers Association*
8:30 PM	**Arrive Back at Hotel**

Tuesday, July 9, 2019	
Morning	Golf on Your Own
8:00 a.m. - 5:00 PM Ballroom Foyer	**Registration**
8:00 am - 5:00 PM Monarch Room	**Presentation Uploading**
8:00 am - 5:00 PM Grand Ballroom	**Poster Set up**
8:00 - 10:00 AM Terrace Room	**Seed Summit**
10:00 AM - 12 Noon Oak Room	**Crop Germplasm Committee**
12 Noon - 1:00 PM	**Lunch on Your Own**
1:00 - 4:00 PM Camellia Room	**Spouses Hospitality Suite Open** *Supported by: Valent*
1:00 - 4:00 PM	**Committee Meetings**
1:00 - 2:00 PM Longleaf Room	Finance Committee - *Chairman: Tim Brenneman*
1:00 - 2:00 PM Azelia Room	Joe Sugg Graduate Student Competitions Awards Committee - *Chairman: Bob Kemerait*
1:00 - 2:00 PM Oak Room	Bailey Award Committee - *Chairman: Kim Moore*
2:00 - 3:00 PM Oak Room	Publications and Editorial Committee - *Chairman: Chris Liebold*
2:00 - 3:00 p.m. Oak Room	Associate Editors Peanut Science - *Peanut Science Editor: Tim Grey*
2:00 - 3:00 p.m. Longleaf Room	Public Relations Committee - *Chairman: Keith Rucker*
3:00 - 4:00 PM Terrace Room	Peanut Quality Committee - *Chairman: John Bennett*
3:00 - 4:00 PM Oak Room	Site Selection Committee - *Chairman: Charles Chen*

3:00 - 5:00 PM Auditorium	**Joe Sugg Graduate Student Competition - Session I** *Sponsored by: North Carolina Peanut Growers Association* Moderator: R.C. Kemerait
3:00 PM	**Evaluation of QoI Sensitivity in *Aspergillus* spp. Section Nigri from Peanut Fields in Georgia.** **B.S. JORDAN***, A.K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793-5766; R.S. ARIAS, USDA-ARS-National Peanut Research Lab (NPRL), Dawson, GA 39842.
3:15 PM	**Refinement of an Aflatoxin Prediction Model Using Field and Greenhouse Data to Elucidate Physiological Mechanisms of Aflatoxin Contamination in Peanut** **S. K. McAMIS***, D. L. ROWLAND, B. L. TILLMAN, Agronomy Department, The University of Florida, Gainesville, FL 32611; K. MIGLIACCIO, K. BOOTE, G. HOOGENBOOM, Department of Agricultural and Biological Engineering, The University of Florida, Gainesville, FL 32611; C. BUTTS, M. LAMB, National Peanut Research Lab, Dawson, GA 39842.
3:30 PM	**"High-Throughput Techniques to Estimate Leaf Area Index in Peanut.** **S. SARKAR***, A.B. CAZENAVE, and M. BALOTA Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437."
3:45 PM	**Comparison of Season Long Herbicide Programs in Peanut (*Arachis hypogea*)** **K. L. BROSTER*,** J.C. FERGUSON, T. A. BAUGHMAN, and B. ZURWELLER, Plant and Soil Science Department, Mississippi State University, Mississippi State, MS 39732
4:00 PM	**Laboratory Evaluation of Peanut Burrower Bug, *Pangaeus bilineatus* Say (*Hemiptera: Cydnidae*), Life Cycle and Fecundity** **B. L. AIGNER***, M. R. ABNEY, Entomology Dept., The University of Georgia, Tifton, 31793
4:15 PM	**Peanut Response to Metribuzin** **L.C. HAND*,** E.P. PROSTKO, Dept. of Crop and Soil Science, University of Georgia, Tifton, GA 31793-0748.
4:30 PM	**Peanut Injury Evaluation of PPO Inhibitor Herbicides as Affected by Application Timings and Surfactants** **K. PRICE***, S. LI, Crop, Soils and Environmental Sciences, Auburn University, Auburn, AL 36849.

4:00 - 5:30 PM Terrace Room	**Peanut Innovation Lab Technology Demonstrations** *Moderator: Dave Hoisington, University of Georgia*
6:00 - 8:00 PM Grand Ballroom	**Ice Cream Social** *Sponsored by: APRES Supporting Members*

Wednesday, July 10, 2019	
8:00 AM - 5:00 PM Ballroom Lobby	**Registration**
All Day Monarch Room	**Presentation Uploading**
8:00 AM - 4:00 PM Camellia Room	**Spouses Hospitality Suite Open** *Supported by: Valent*
8:00 AM - 5:00 PM Grand Ballroom	**Posters on Display**
8:00 - 10:00 AM Auditorium	**Opening General Session -** *Call to Order: APRES Past President Peter Dotray*
8:05 AM	**Welcome to Alabama** Rick Pate Commissioner Alabama Department of Agriculture and Industries
8:10 AM	**Welcome to Auburn** Dr. Amy Wright Associate Dean for Instruction College of Agriculture Auburn University
8:15 AM	**The Next 50 Years…."What Changes/Opportunities/Challenges Do You Foresee in Your Global Peanut Business** Moderator: APRES Program Chair Barry Tillman Peanut Butter Manufacturers: Dr. Chris Liebold The J.M. Smucker Company
8:35 AM	Agriculture Perspective: Donald Chase Georgia Peanut Commission
8:55 AM	Peanut Shellers: Karl Zimmer Premium Peanut
9:15 AM	Peanut Confectioners John Bennett Mars
9:35 AM	Panel Discussion – Q&A
10:00 - 10:30 am *Grand Ballroom*	**Networking Break** *Sponsored by: Birdsong Peanuts*
9:30 AM Depart from Hotel Lobby	**Spouse Program: Southeast Raptor Center**

10:30 AM-12:30 PM *Auditorium*	**Symposium: Synergies from U.S. Global Research Partnership** *Moderator: Dave Hoisington, University of Geogia*
10:30 AM	International Collaboration Leverages Peanut Research and Crop Improvement David Bertioli Professor and GRA Distinguished Investigator University of Georgia
10:50 AM	Mobilizing Genetic Diversity for Strengthening Peanut Breeding Program in Africa and the U.S. Daniel Fonceka Researcher & Scientific Coordinator CIRAD/CERAAS
11:10 AM	Partnership Holds the Key to Deploy New Tools in Peanut Breeding Programs Janila Pasupuleti Principal Groundnut Breeder, ICRISAT
11:30 AM	Value of International Projects to Faculty in the United States: Examples of Participation by Individuals at North Carolina State University with the Peanut Innovation Lab David Jordan William Neal Reynolds Professor North Carolina State University
11:50 AM	U.S. Investments in Research for Development and Global Impacts Nora Lapitan Research Division Chief, Bureau for Food Security USAID
12:10 PM	Peanuts and the Fight Against Hunger Jeff Johnson President Emeritus Birdsong Peanuts

12:30 - 1:30 PM	**Lunch on Your Own**

1:30 - 3:30 PM	**Concurrent Breakout Sessions**
	Joe Sugg Graduate Student Competition II - *Auditorium*
	Peanut Breeding, Biotechnology, and Genomics I - *Terrace Room*
	Production Technology - *Oak Room*

See Next Page

Concurrent Breakout Sessions
Wednesday, July 10, 2019
1:30 - 3:30 PM

	Joe Sugg Graduate Competition II Auditorium *Moderator: R.C. Kemerait, University of Georgia*	Peanut Breeding, Biotechnology & Genomics I Terrace Room *Moderator: Phat Dang, USDA-ARS-NPRL*	Production Technology Oak Room *Moderator: Brendan Zurwelller, Mississippi State University*
1:30 PM	**Harnessing the Wild Side of Peanuts: Morphological and Reproductive Characterization of Wild Peanut Relative-derived Synthetic Tetraploids** **C.M. LEVINSON***, Y. CHU, P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748; and C. C. Holbrook Crop Genetics and Breeding Research Unit, USDA-ARS, Tifton, GA, USA.	**Resolving Genes for White Mold Resistance in Peanut Using Large-population QTL-seq Coupled with Iterative Genotyping (iQTL-seq)** **J. N. VAUGHN***, USDA-ARS, Athens, GA 30601; W. KORANI,University of Georgia, Athens, GA 30601; and J. C. CLEVENGER, Mars-Wrigley Confectionary, Athens, GA 30601.	**Satellite-based Real-time Monitoring of Peanut Fields Using Multispectral and Synthetic-aperture Radar Imagery** J. BRINKHOFF, University of New England, Armidale 2351 NSW Australia, **G.C. WRIGHT***, D. J. O'CONNOR, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; and A.J. ROBSON, University of New England, Armidale 2351 NSW Australia.
1:45 PM	**Construction of High Density Genetic Map and Mapping Quantitative Trait Loci for Growth Habit Related Traits of Peanut (Arachis hypogaea L.)** **L.LI***, X.YANG, S.CUI, X.MENG, G.MU, M.HOU, M.HE, L.LIU, College of Agronomy, Hebei Agricultural University, Baoding 071001, Hebei, China and H. ZHANG, C.Y. CHEN, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 36849, United States	**QTLs for Leaf Spot Resistance, Yield, and Maturity in an Interspecific Peanut Introgression Population in West Africa and Texas Using KASP Markers.** T. K. TENGEY, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409 USA, and CSIR-Savanna Agricultural Research Institute, Nyankpala, Ghana; C. E SIMPSON, Texas A&M AgriLife Research, Stephenville, TX 76401 USA; N. DENWAR, CSIR-Savanna Agricultural Research Institute, Nyankpala, Ghana; P. SANKARA, Département de Biologie Végétale et Physiologie Végétale, Université Ouaga I Prof Joseph Ki-Zerbo, Ouagadougou, Burkina Faso; A. HILLHOUSE, Department of Veterinary Pathobiology, Texas A&M University, College Station, TX 77843 USA; V. MENDU, Fiber and Biopolymer Research Institute, 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 USA.	**Boron and Calcium Effects on Runner Peanut Production** A.S. VAN CLEAVE, J.A. HOWE, K.B. BALKCOM and **A.V. GAMBLE***. Crop Soil & Environmental Sciences, Auburn University, Auburn, AL, 36849
2:00 PM	**Characterizing a Peanut Chromosome Segment Substitution Line Population Using High Throughput Phenotyping** **D.M. GIMODE***, Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, USA, Y. CHU, Department of Horticulture, University of Georgia, Tifton, GA, USA, S. BERTIOLIi, D. BERTIOLI, Center for Applied Genetic Technologies, University of Georgia, Athens, GA, USA, C.C. HOLBROOK, United States Department of Agriculture - Agricultural Research Service, Tifton GA, USA, J. CLEVENGER, Mars Wrigley Confectionery, Athens, GA, USA , L. LACERDA, D. DAUGHTRY, W. PORTER, Crop and Soil Sciences, University of Georgia, Tifton, GA, USA, D. FONCEKA, CERAAS, Thies, Senegal and P. OZIAS-AKINS, Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, USA and Department of Horticulture, University of Georgia, Tifton, GA, USA.	**Natural Mutations in Peanut Genomes Involved in Nodulation.** Z. PENG, H. ZHOU, L. TAN, **J. WANG***, Agronomy Department, University of Florida, Gainesville, FL 32611	**Potential for Agronomic Crops in a Double Cropping System with Wheat *(Triticum aestivum L.)* in North Carolina** **A.T. HARE***, D.L. JORDAN, K.L. EDMISTEN, R. LEON, and A. POST, Department of Crop and Soil Science, North Carolina State University, Raleigh, NC 26795.

Joe Sugg Graduate Competition II
Peanut Breeding, Biotechnology & Genomics I
Production Technology

Wednesday, July 10, 2019, *Continued*

	Joe Sugg Graduate Competition II Auditorium *Moderator: R.C. Kemerait, University of Georgia*	**Peanut Breeding, Biotechnology & Genomics I** Terrace Room *Moderator: Phat Dang, USDA-ARS-NPRL*	**Production Technology** Oak Room *Moderator: Brendan Zurwelller, Mississippi State University*
2:15 PM	**A New Source of Root-Knot Nematode Resistance from *Arachis stenosperma* Incorporated into Allotetraploid Peanut *(Arachis hypogaea)*** **C. BALLÉN-TABORDA,** Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Athens, GA, USA; Y. CHU, P. OZIAS-AKINS, Department of Horticulture and Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, USA; P. TIMPER, C.C. HOLBROOK, USDA-ARS, Tifton, GA, USA; S.A. JACKSON, D.J. BERTIOLI, Institute of Plant Breeding, Genetics and Genomics and Department of Crop and Soil Science, University of Georgia, Athens, GA, USA; S.C.M. LEAL-BERTIOLI, Institute of Plant Breeding, Genetics and Genomics and Department of Plant Pathology, University of Georgia, Athens, GA, USA.	**Development of a Suitable Gene Editing System in Peanut** **Sy TRAORE*,** X. MA, C. LEE, Guohao He, Tuskegee University, Tuskegee, AL 36088; D. WRIGHT, Anjanasree Neelakandan, M. SPALDING, Iowa State University, Ames, IA 50011.	**New Metering Technology for Peanut Planting** **K.B. BALKCOM*,** Crop, Soils and Environmental Sciences, Auburn University, Headland, AL 36345 and J.A. KELTON, Alabama Cooperative Extension, Auburn University, Headland, AL 36345.
2:30 PM	**Early Detection of Southern Stem Rot of Peanut Utilizing Spectral Reflectance and Thermal Imaging Technologies** **X. WEI*,** H.L. MEHL, D.B. LANGSTON, JR., Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.	**GWAS and Co-expression Network Reveal Ionomic Variation in Peanut** **H. ZHANG*,** T. JIANG, and CY. CHEN, Crop Soil & Environmental Sciences, Auburn University, Auburn, AL, 36849; ML. Wang, USDA-ARS, Plant Germplasm Resource Conservation Unit, Griffin, GA 30223; PM. Dang, USDA-ARS National Peanut Research Lab, Dawson, GA 39842.	**Peanut Yield and Quality Responses to Planting Date, Harvest Date, Cultivar, and Late-Season Flower Termination** **M. LAMB*,** R. SORENSEN, and C.BUTTS. National Peanut Research Laboratory, USDA, ARS, Dawson, GA 39842 and L. DEAN, K. HENDRIX, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695.
2:45 PM	**Peanut Response to Sub-Lethal Rates of Dicamba + Glyphosate** **K. EASON*,** E. Prostko, T. Grey, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA 31793-0748.	**Gene Expression in the Interaction between Aspergillus and an Aflatoxin-Resistant Peanut Germplasm** **A.N. MASSA*,** R.S. ARIAS, V.S. SOBOLEV, M.C. LAMB, National Peanut Research Laboratory, Agricultural Research Service, United States Department of Agriculture, Dawson, GA 39842, United States.	**Evaluation of Reduced Rates of Prohexadione Calcium (Plant Growth Regulator) on Peanut in Arkansas, Georgia, Mississippi, South Carolina and North Carolina.** **W.S. MONFORT*,** R. S. TUBBS, University of Georgia, Tifton, GA 31793, D. L. JORDAN, North Carolina State University, Raleigh, NC 27695, T. R. FASKE, University of Arkansas, Lonoke, AR 72086, D. J. ANCO, Clemson University, Blackville, SC 29817 J. SARVER, Indigo AG, Bowling Green, KY 42101 , C. FERGUSON Mississippi State University, Starkville, MS 39762.
3:00 PM	**Seedling Peanut *(Arachis hypogaea)* Physiological Response to Flumioxazin** **N.L. HURDLE*,** T. GREY, C. PILON, E.P. PROSTKO, W.S. MONFORT; Department of Crop and Soil Science, The University of Georgia, Tifton, GA 31793-0748	**Nested Association Mapping (NAM) Population-based Joint Linkage Mapping and GWAS for Identification of Consistent QTLs/QTNs for Disease and Pod Traits in Peanut.** **S. YADURU*,** H. WANG, J.C. FOUNTAIN, A.K. CULBREATH Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; S. GANGURDE, P. SONI, M.K. PANDEY, R.K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad, Telangana, India; C. ZHAO, Shandong Academy of Agricultural Sciences (SAAS), Jinan, Shandong, China; B. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA, 31793.	**Timing of Termination for Supplemental Replanted Peanut to Maximize Yield and Grade** **R.S. TUBBS*,** and W.S. MONFORT, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.
3:15 PM	Additional Q&A Time	**A Major Seed Size QTL on Chromosome A05 of a Peanut Cultivar is Conserved in the U.S. Mini Core Germplasm Collection** **Y. CHU*,** P. OZIAS-AKINS Horticulture Department, University of Georgia Tifton Campus, Tifton, GA 31793; P. CHEE Department of Crop and Soil Sciences, University of Georgia Tifton Campus, Tifton, GA 31793; T. G. ISLEIB Department of Crop Science, North Carolina State University, P.O. Box 7629, Raleigh, NC 27695; C. C. HOLBROOK USDA- Agricultural Research Service, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.	Additional Q&A Time

(Continued)
Joe Sugg Graduate Competition II
Peanut Breeding, Biotechnology & Genomics I
Production Technology

3:00 - 4:30 PM Meet in Hotel Lobby @ 2:30PM	**Tour of Jordan-Hare Stadium & Locker Room Tour**
3:30 - 4:00 PM Grand Ballroom	**Networking Break** *Sponsored by: Fine Americas*
3:30 - 4:30 p.m. Grand Ballroom	**Poster Viewing and Discussions *(Authors Present)***
Poster Number-01	**Effectiveness of Different Proteases in Reducing Raw Peanut Allergenicity** **J. YU***, and N. MIKIASHVILI. Department of Family and Consumer Sciences, North Carolina A&T State University, Greensboro, NC 27411
Poster Number-02	**Genome-wide Identification and Expression Analysis of bZIP Gene Family under Drought Stress in Peanut** B.GAO, J-J CHEN, S-L CUI, M-Y HOU, G-J MU, H-Y CHEN, **X-L YANG***, L-F LIU, North China Key Laboratory for Crop Germplasm Resources of Education Ministry, Laboratory for Crop Germplasm Resources of Hebei, College of Agronomy, Hebei Agricultural University, Baoding, Hebei 071001, China
Poster Number-03	**Assessing the Composition of a High-Oleic Peanut Cultivar Grown in North Carolina Using Various Pesticide Inputs** **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 Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695; M.K. BOOTH, Department of Chemistry, University of Florida, Gainesville, FL 32611.
Poster Number-04	**Organophosphate Alternatives for Rootworm 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 5 Withdrawn	Poster 5 Withdrawn
Poster Number-06	**Consumer Acceptability of Peanut Based Beverages: Promoting Peanut Consumption in Malawi** A.P. GAMA, **K. ADHIKARI***, Department of Food Science and Technology, The University of Georgia, 1109 Experiment St, Griffin, GA 30223; A.M. MWANGWELA, Department of Food Science and Technology, Lilongwe University of Agriculture and Natural Resources, P.O Box 219, Lilongwe, Malawi; W. GICHOHI, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), P.O. Box 1096, Lilongwe, Malawi.

Spouse Tour
Posters 1-6

Poster Number-07	**Nutritional Properties of Peanut Based Beverages: A Promising Solution for Undernutrition in Malawi and Possibly Beyond** A.P. GAMA, **K. ADHIKARI***, Department of Food Science and Technology, The University of Georgia, 1109 Experiment St, Griffin, GA 30223; A.M. MWANGWELA, Department of Food Science and Technology, Lilongwe University of Agriculture and Natural Resources, P.O Box 219, Lilongwe, Malawi; W. GICHOHI, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), P.O. Box 1096, Lilongwe, Malawi.
Poster Number-08	**Incorporating Winter Cover Crops within a Cotton-Peanut Rotation in Georgia** **W.F. ANDERSON***, USDA/ARS, Tifton, GA, 31793-0748; M. LAMB, USDA/ARS, Dawson, Ga 31742; A.J. AZEVEDO; S. TUBBS, Crops and Soil Department, University of Georgia, Tifton, Ga 31793-0748.
Poster Number-9	**Summary of Interventions to Minimize Aflatoxin Contamination in Ghana at Pre-harvest and Post-Harvest Steps in the Supply Chain.** **B. MOCHIAH***, Council for Agricultural and Industrial Sciences, Crops Research Institute, Kumasi, Ghana; M. ABUDULAI, Council for Agricultural and Industrial Sciences, Savannah Agricultural Research Institute, Tamale, Ghana; G. MAHAMA, Council for Agricultural and Industrial Sciences, Savannah Agricultural Research Institute, Wa, Ghana; W. APPAW, W.O. ELLIS, and R. AKROMA, Nkrumah University of Science and Technology, Kumasi, Ghana; and N. OPOKU, University of Development Studies, Tamale, Ghana; D.L. JORDAN* and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695; G. MACDONALD and K. BOOTE, University of Florida, Gainesville, FL 32611; M. BALOTA and Kumar Mallikarjunan, Virginia Polytechnic Institute and State University, Suffolk, VA 23427; J. CHEN and D. DIXON, University of Georgia, Griffin, GA ; and B. BRAVO-URETA, University of Connecticut, Storres, CT.
Poster Number-10	**Wild-derived Resistance to Early and Late Leaf Spot Caused by *Passalora arachidicola* and *Nothopassalora personata* in Peanut** M. GONZALES Department of Plant Pathology, The University of Georgia, Athens, GA 30621; R. KEMERAIT JR.; A. CULBREATH Department of Plant Pathology , The University of Georgia, Tifton. D.J. BERTIOLI, Department of Crop and Soils Science, The University of Georgia, Athens, GA 30621. **S.C.M. LEAL-BERTIOLI***, Department of Plant Pathology, The University of Georgia, Athens, GA 30621.
Poster Number-11	**Relationship Among Field and Post-harvest Evaluations of Spotted Wilt in *Arachis* Germplasm** **TMF SUASSUNA***, ND SUASSUNA *Embrapa, Campina Grande PB 58428-095, CC HOLBROOK, USDA-ARS, Tifton, GA 31793, AK CULBREATH, S BAG, A.S. DERANIYAGALA Department of Plant Pathology, The University of Georgia, Tifton, GA 31793-0748.
Poster Number-12	**SCREENING FOR RESISTANCE TO PEANUT SMUT IN ARGENTINA** **K.D. CHAMBERLIN*** and R.S. BENNETT, USDA-ARS, Stillwater, OK 74075; C.C. HOLBROOK, USDA ARS, Tifton, GA 31793; J. BALDESSARI, INTA, Manfredi, AR; P. OZIAS-AKINS, University of Georgia, Tifton, GA 31793; S.P. TALLURY, USDA-ARS, Griffin, GA 30223; A. MASSA, USDA-ARS, Dawson, GA 31742; and J.P. CLEVENGER, MARS-Wrigley Confectionery, CAGT 111 Riverbend Rd., Athens GA 30606.

Poster Number-13	**Feed the Future Innovation Lab for Peanut Links U.S. Institutes with Global Partners** **D. HOISINGTON***, J. RHOADS, J. MARTER-KENYON, A. FLOYD. Feed the Future Innovation Lab for Peanut, The University of Georgia, Athens, GA 30602.
Poster Number-14	**Growth Chamber Assay for Evaluating Resistance to *Sclerotium rolfsii*** **R.S. BENNETT***, USDA-ARS, Stillwater, OK 74075-2714.
Poster Number-15	**Modification of the Peanut Risk Tool Developed at North Carolina State University** **G. BUOL***, D.L. JORDAN, B.B. SHEW, R.L. BRANDENBURG, and G. WILKERSON, North Carolina State University, Raleigh, NC 27695.
Poster Number-16	**Disease and Yield Response of Selected Peanut Cultivars to Low and High Input Fungicide Programs in Southeast Alabama** **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. 36835.
Poster Number-17	**Screening for Resistance to *Sclerotinia minor* (Jaggers).** **J.M. CASON***, B.D. BENNETT, C.E. SIMPSON, Texas A&M AgriLife Research, Texas A&M University System, Stephenville, TX 76401; M.R. BARING, Department of Soil and Crop Science, Texas A&M University, College Station, TX 77843; M.D. BUROW, TexaA&M AgriLife Resarch, Texas A&M University System, Lubbock, TX 79403 and Department of Plant and Soil Sciences, Texas Tech University, Lubbock, TX 79409.
Poster Number-18	**Speed Breeding with Lumigrow LED Light Accelerates Peanut Growth** **Y. CHU*,** P.OZIAS-AKINS. Department of Horticulture, The University of Georgia, Tifton, GA.
Poster Number-19	**Use of In Silico Digestion, Whole-Genome Sequencing and an Internal Reference Genome for Improved Efficiencies in Marker Detection for Virginia-type Peanuts** **J.C. DUNNE***, A.T. OAKLEY, J.E. HOLLOWELL, R.J. ANDRES, Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC, 27695; A.M. HULSE-KEMP, USDA-ARS, Raleigh, NC, 27695.
Poster Number-20	**Enriching the Value of Genetic Resources for Use in Peanut Improvement** **V.C.R. AZEVEDO***, S. RAMACHANDRAN, V.G. REDDY, H.D. UPADHYAYA, International Centre for Research in the Semi-Arid Tropics (ICRISAT) Patancheru PO, 502324, India.
Poster Number-21	**Using a Video Game to Teach Basic Peanut Agronomy to Preschoolers** **A. FLOYD***, Feed the Future Innovation Lab for Peanut, the University of Georgia, Athens, GA 30602.
Poster Number-22	**Lacking Culture: Obtaining Fungal DNA Directly from Early Leaf Spot of Peanut** **S. GREMILLION***, D. RAY, M. SMITH, Department of Biology ,Georgia Southern University Armstrong Campus, Savannah, GA 31419; E. CANTONWINE, B. RING, Department of Biology, Valdosta State University, Valdosta, GA 31698; and A. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793.

Poster Number-23	**Weed Control and Peanut Response to Fluridone.** **W. J. GRICHAR***, Texas A&M AgriLife Research, Corpus Christi, TX 78406; P. A. DOTRAY, Texas A&M AgriLife Research, Lubbock, TX 79403.
Poster Number-24	**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; N.M. BOSTICK, University of Georgia Cooperative Extension, Decatur County, Bainbridge Georgia, 39817; R.C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, Georgia 31793.
Poster Number-25	**Genome Wide Association Study (GWAS) on Root-Knot Nematode Resistance in Cultivated Peanut** **F.E. KUMRAL***, C.Y. CHEN, Department of Crop Soil and Environmental Sciences, Auburn University, AL 36849; and B.R. LAWAJU, K. LAWRENCE, Department of Entomology and Plant Pathology, Auburn University, AL 36849.
Poster Number-26	**Peanut Cultivar Response to the Number of Fungicide Sprays in a Medium to High Risk Situation Based on the 2019 Peanut Rx** **GOMILLION* M.W.**, B.L. TILLMAN, and G. PERSON. University of Florida, Agronomy Department, NFREC, Marianna, FL, 32446.
Poster Number-27	**Comparative Effectiveness and Profitability Between Fungicide Programs in Eastern Georgia** **J.E. MALLARD** University of Georgia Cooperative Extension, Jenkins County, Millen, GA 30442; K.C. BURCH, University of Georgia Cooperative Extension, Burke County, Waynesboro, GA 30830; R. KEMERAIT, University of Georgia Cooperative Extension, Department of Crop and Soil Sciences, Tifton, GA 317943, A.R. SMITH, University of Georgia Cooperative Extension, Department of Agricultural and Applied Economics, Tifton, GA 31794.
Poster Number-28	**Identification and Expression Analysis of WRKY Gene Family under Drought Stress in Peanut (*Arachis hypogaea* L.)** **N-N. ZHAO*,** M-J. HE, L. LI, S-L. CUI, X-L. YANG, M-Y. OUu, G-J. MU, L-F. LIU, College of Agronomy, Hebei Agricultural University/North China Key Laboratory for Crop Germplasm Resources of Education Ministry, Baoding 071001, Hebei, China.
Poster Number-29	**Peanut Response to Diclosulam** **P.A. DOTRAY***, Texas Tech University, Texas A&M AgriLife Research, and Texas A&M AgriLife Extension Service, Lubbock, 79409-2122; W. J. GRICHAR, Texas A&M AgriLife Research, Corpus Christi, TX 78406.
Poster Number-30	**Studying Peanut Pod Development within a Controlled Microbial System** **A. PEPER*,** L. YANG, Plant Pathology Department, The University of Georgia, Athens, GA 30602-5004.
Poster Number-31	**Evaluation of Fluridone in Peanut** **K. Price***, S. LI, Crop, Soils and Environmental Sciences, Auburn University, Auburn, AL 36849.

Poster Number-32	**Inhibition of Aflatoxin Production in *Aspergillus* in the Course of Peanut-Fungus Interaction** **V. SOBOLEV***, T. WALK, R. ARIAS, A. MASSA, M. LAMB, National Peanut Research Laboratory, Agricultural Research Service, United States Department of Agriculture, Dawson, Georgia 39842, United States.
Poster Number-33	**Achieving an Optimal Prohexadione Calcium Rate by Developing New Methods for Dosing in Mississippi Peanut (*Arachis hypogaea*)** **Z.R. TREADWAY***, J.C. FERGUSON, J.T. IRBY, B. ZURWELLER, Mississippi State University, Mississippi State, MS; J. GORE, Mississippi State University, Stoneville, MS.
Poster Number-34	**Development of an Early Generation Marker-Assisted Selection Strategy for Virginia-type Peanuts** **R. ANDRES*,** A. OAKLEY, and J. DUNNE, Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695.
Poster Number-35	**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, T.B. BRENNEMAN, Dept. of Plant Pathology, University of Georgia, Tifton, GA, 31793; C.M. RINER, C.R. HILL, D.R. THIGPEN, University of Georgia Extension, Vidalia Onion & Vegetable Research Center, Lyons, GA 30436.
Poster Number-36	**Effects of Calcium Fertilizer on Enzyme Activities and Fertility of Barren Upland Red Soil planted with Different Grain-type Peanut** D. LIU, Q. MU, **L. Li*** , College of Agronomy,Hunan Agricultural University,Changsha City,Hunan Province 410128, China.
Poster Number-37	**Effects of Calcium Fertilizer on Physiological and Biochemical Characteristics, and Resistance Gene Expression of Peanut Seedlings Under Waterlogging Stress** **D. LIU***, J. YI, B. ZANG, HAO ZHANG**,** L. LI , College of Agronomy, Hunan Agricultural University, 1 Nongda Road, Changsha 410128,Hunan Province, China; S. WAN, Bio-tech Research Center, Shandong Academy of Agricultural Sciences, 202 Gongyebei Road, Jinan 250100, Shandong Province, China; and H. YANG, College of Bioscience and Biotechnology, Hunan Agriculture University, 1 Nongda Road, Changsha 410128 Hunan, China.
Poster Number-38	**Developing a Peanut Maturity Profile Board for Malawi** **D.L. JORDAN*** and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695; N. PUPPALA, New Mexico State University, Las Cruces, NM 88003; G. MACDONALD, University of Florida, Gainesville, FL 32611; J. RHOADS and D. HOISINGTON, University of Georgia, Athens, GA 30602; A. EMMOTT, London, UK; J. CHINTU, DARS-Chitedze Research Station, Chitedze, Malawi; and W. MHANGO, LUANAR, Lilongwe, Malawi.

3:30 - 4:30 p.m. Grand Ballroom	**Graduate Student Poster Competition** *(Authors Present)* *Sponsored by: National Peanut Board* Moderator: Yucheng Feng, Auburn University
Poster Number-39	**Alleviating Peanut Allergy Using the CRISPR/Cas System.** **C. LEE***, S. TRAORE, C.S. PRAKASH, G. HE. Tuskegee University, Tuskegee, AL 36088 USA; M. YUAN, Shandong Peanut Research Institute, Qingdao, China.
Poster Number-40	**Orange Peel Powder Increases Growth Promotion of Peanut by *Bacillus velezensis* PGPR Strains and Nodulation by Indigenous Rhizobia** **M.K. HASSAN[1]**, M. BOERSMA[3], J. BAGWELL[4], M.R. LILES[2], and J.W. LOEPPER[1]; (1) Department of Entomology and Plant Pathology, Auburn University, Auburn, AL 36849, (2) Department of Biological Sciences, Auburn University, Auburn, AL 36849, (3) Mass Spectrometry Center, Auburn University, Auburn, AL 36849, (4) Department of Crop, Soil, and Environmental Sciences, Auburn University, Auburn, AL 36849.
Poster Number-41	**Evaluating Fluridone for Crop Tolerance and Weed Control in Peanut Production** E.P. PROSTKO, **J.R. KALINA***, T.L. GREY, Department of Crop and soil Sciences, The University of Georgia, Tifton, GA 31793-0748.
Poster Number-42	**Nozzle Type and Application Pressure Effects on Weed Management in Peanut (*Arachis hypogea*)** **K. L. BROSTER***, J.C. FERGUSON, T. A. BAUGHMAN, and B. ZURWELLER Plant and Soil Science Department, Mississippi State University, Mississippi State, MS 39732.
Poster Number-43	**Genotypic Variability Based on Physiological Traits of Peanuts Under Drought Stress** **L. A. MORENO***, C. PILON, B.S. FABRETI, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; A.C.C. LARA-FIOREZ, Universidade Federal de Santa Catarina, Curitibanos, SC, Brazil 89520-000; and C.C. Holbrook, USDA-ARS; University of Georgia, Tifton, GA 31793.
Poster Number-44	**Effect of Different Cover Crops on Peanut – Cotton Rotation** **A.J. AZEVEDO***, R.S. TUBBS, Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA and W. ANDERSON, A. COFFIN, United States Department of Agriculture, Tifton, GA.
Poster Number-45	**Supplemental Replanting of Gaps in Plant Stand Affects Peanut Production and Incidence of Tomato Spotted Wilt Virus.** **S.B. DAVIS***, R.S. TUBBS, C. PILON, J.L. SNIDER, Crop and Soil Sciences Department, The University of Georgia, Tifton, GA 31794; and R.C. KEMERAIT, Department of Plant Pathology, The University of Georgia, Tifton, GA 31794.
Poster Number-46	**Phenotyping And Genotyping For Drought Tolerance In Virginia Type Peanut** **N. KUMAR***, D. HAAK, and M. BALOTA Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437.
Poster Number-47	**PCR-Based Detection of *Nothopassalora personata* on Peanut** **M. MUNIR***, H. Wang, and D. J. ANCO, Department of Plant and Environmental Sciences, Clemson University, Edisto Research and Education Center, Blackville, SC 29817.

Poster Number-48	**Molecular mechanism of resistance to ACCase-inhibiting herbicide in southern crabgrass (*Digitaria ciliaris*) biotypes** **S. BASAK***, J. S. MCELROY, C. CHEN, Department of Crop, Soil, and Environmental Sciences, Auburn University, Auburn, AL 36849; and P. E. MCCULLOUGH, Department of Crop and Soil Sciences, The University of Georgia, Griffin, GA 30223.
Poster Number-49	**Planting Conditions Influence Early Season Vigor of Peanut Cultivars.** **G. VIRK***, C. PILON, J.L. SNIDER, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793-0748.
Poster Number-50	**Characterization of ACC Deaminase Producing Bacteria Isolated from Peanut Root Nodules** **X. WANG***, A. R. AKHGAR, C. CHEN and Y. FENG. Dept. of Crop, Soil and Environmental Sciences, Auburn Univ., Auburn, AL 36849.

5:00 - 6:00 PM Azelia Room	**APRES Board of Directors Meeting** *Presiding: Rick Brandenburg, President*
6:30 - 9:00 PM Grand Ballroom	**APRES 51st Annual Meeting Celebration Dinner** *Sponsored by: Bayer and BASF*

Thursday, July 11, 2019	
6:15 AM Meet in Hotel Lobby	**APRES Fun Run/Walk** *Sponsored by: Texas Tech University*
8:00 a.m. - 4:00 PM Ballroom Foyer	**Registration Open**
8:00 a.m. - 4:00 PM Monarch Room	**Presentation Uploading**
8:00 a.m. - 4:00 PM Camellia Room	**Spouses Hospitality Suite Open** *Supported by: Valent*
8:00 a.m. - 5:00 PM Grand Ballroom	**Posters on Display**

8:00 - 10:00 AM	**Concurrent Breakout Sessions**
	Joe Sugg Graduate Student Competition - Session III - *Auditorium*
	Peanut Breeding, Biotechnology and Genomics - II - *Terrace Room*
	Excellence in Extension - *Oak Room*

See Next Page

Concurrent Breakout Sessions
Thursday, July 11, 2019
8:00 - 10:00 AM

	Joe Sugg Graduate Student Competition III Auditorium *Moderator: R.C. Kemerait, University of Georgia*	**Peanut Breeding, Biotechnology and Genomics II** Terrace Room *Moderator: Josh Clevenger, Mars Wrigley*	**Excellence in Extension** Oak Room *Moderator: Marshall Lamb, USDA-ARS*
8:00 a.m.	**The Influence of Digging Date on Fatty Acid and Tocopherol Expression in Normal and High-Oleic Virginia Peanut Varieties 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 Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695.	**Session Begins at 8:30 AM**	**Evaluation of Current Alabama Peanut Production Practices through Producer Surveys** **B.A. DILLARD*,** Alabama Cooperative Extension, Auburn University, Hartford, AL 36344 and K.B. BALKCOM, Crop, Soils and Environmental Sciences, Auburn University, Headland, AL 36345.
8:15 a.m.	**Development of a Web-Based Platform to Monitor Crop Stress in Peanuts Throughout the Growing Season.** **S. E. PELHAM*,** W. S. MONFORT, and V. LIAKOS, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.	**Session Begins at 8:30 AM**	**Survey of Tillage Practices in Peanut across the Virginia-Carolina Region** **B. BARROW*,** J. HURREY; B. MCLEAN, Jr., M. LEARY, M. CARROLL, P. SMITH, A. WHITEHEAD, B. PARISH, T. BRITTON, J. MORGAN, C. ELLISON, M. HUFFMAN, M. SEITZ, D. LILLEY, L. GRIMES, M. MALLOY, D. KING, R. WOOD, A. WILLIAMS, and M. BENNETT, L. MILES, G. WELLS, A. GROWE, R. GURGANUS, S. KILLETTE, C. ORTEL, D. ANDERSON, J. ANDERSON, D.L. JORDAN, B.B. SHEW, R.L. BRANDENBURG, and G. ROBERSON, North Carolina State Extension, 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; 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 a.m.	**Determining the Impact of Planting Pattern on Water-use Efficiency of Peanut** **N. SINGH*,** M.Y. LECLERC, G. ZHANG, Crop and Soil Sciences Department, University of Georgia, Griffin, GA 30223; R.S. TUBBS and W.S. MONFORT, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.	**Genome-Wide Association Study of Pod and Seed Quality Traits in Peanut** **J. PATEL*,** T. JIANG, C.Y. CHEN, Auburn University, Auburn, AL 36849; M.L. WANG, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA 30223; L.L. DEAN, USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC 27695; P.M. DANG, M. LAMB, USDA-ARS National Peanut Research Lab, Dawson, GA 39842; Y. CHU, J.P. CLEVENGER, P. OZIAS-AKINS, The University of Georgia, Tifton, GA 31793; C.C.HOLBROOK, USDA-ARS Plant Breeding and Genetics Unit, Tifton, GA 31793.	**Examples of In-Service Educational Opportunities for Extension Agents in North** **C. J. HURRY*,** B. BARROW, B. MCLEAN, Jr., M. LEARY, M. CARROLL, P. SMITH, A. WHITEHEAD, B. PARISH, T. BRITTON, J. MORGAN, C. ELLISON, M. HUFFMAN, M. SEITZ, D. LILLEY, L. GRIMES, M. MALLOY, D. KING, R. WOOD, A. WILLIAMS, and M. BENNETT, L. MILES, G. WELLS, A. GROWE, R. GURGANUS, S. KILLETTE, C. ORTEL, D. ANDERSON, J. ANDERSON, D.L. JORDAN, B.B. SHEW, R.L. BRANDENBURG, and G. ROBERSON, North Carolina State Extension, Raleigh, NC 27695.
8:45 a.m.	**Peanut Immaturity Could be a Stress Event Affecting Seedling Vigor Across Generations** **Y. SONG*,** D. L. ROWLAND, J. E. ERICKSON, Agronomy Department, The University of Florida, Gainesville, FL 32611; and B. L. TILLMAN, North Florida Research and Education Center, Agronomy Department, University of Florida, Marianna, FL 32446.	**Evaluation of Peanut Breeding Lines to Identify Differential Expressed Genes Involved in Leaf Spot Resistance** **P.M. DANG*,** USDA-ARS National Peanut Research Lab, Dawson, GA 39842; C. Y. CHEN, Auburn University, Auburn, AL 36849.	**Nitrogen Credits after Peanut** **M.J. MULVANEY*,** West Florida Research and Education Center, University of Florida, Jay, FL, 32565; K.S. BALKCOM, National Soil Dynamics Laboratory, Auburn, AL 36832; D. JORDAN, Crop and Soil Sciences Dept., North Carolina State University, Raleigh, NC 27695; and A.D. JANI, West Florida Research and Education Center, University of Florida, Jay, FL, 32565.
9:00 a.m.	**Effect of Fungicide Programs on Plant Health, Maturity, Yield, and Quality on Peanut in Georgia** **M. STUART*,** W.S. MONFORT, C. PILON, Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793	**Marker Development for Blanchability in Peanuts.** J. CLEVENGER, Mars Wrigley Confectionery, Center for Applied Genetic Technologies, Athens, GA 30602; **G.C. WRIGHT*** and D. O'CONNOR, Peanut Company of Australia, Kingaroy, Queensland, Australia, 4610; and D.B. FLEISCHFRESSER, AgriSciences Queensland, Department of Agriculture, Fisheries and Forestry, Kingaroy, Queensland, Australia, 4610.	**Evaluating Fungicides for Reducing White Mold in Peanuts in Cook County, Georgia** **T. PRICE*,** University of Georgia Extension, Cook County, Adel, Georgia 31620; and R.C. KEMERAIT, Extension Plant Pathologist, Department of Plant Pathology, University of Georgia, Tifton, Georgia 31793.

Concurrent Breakout Sessions

Thursday, July 11, 2019, *Continued*

8:00 - 10:00 AM

	Joe Sugg Graduate Student Competition III Auditorium *Moderator: R.C. Kemerait, University of Georgia*	**Peanut Breeding, Biotechnology and Genomics II** Terrace Room *Moderator: Josh Clevenger, Mars Wrigley*	**Excellence in Extension** Oak Room *Moderator: Marshall Lamb, USDA-ARS*
9:15 a.m.	**Determining the Effect of Prohexadione Calcium Growth Regulator on the Growth and Yield of Peanuts (*Arachis hypogaea*) in Mississippi** **Z.R. TREADWAY***, J. C. FERGUSON, J. T. IRBY, B. ZURWELLER, Mississippi State University, Mississippi State, MS; J. GORE, Mississippi State University, Stoneville, MS.	**Inheritance and Mapping of Albino-Virescent Leaf and Lutescent-Leaf Traits in Peanut.** **N. BROWN*** and W. D. BRANCH, Dept. of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.	**Evaluating Peanut White Mold Fungicide Programs in Bulloch County, Georgia** R. C. KEMERAIT, A. R. SMITH, W. **G. TYSON***, Department of Plant Pathology, The University of Georgia, Tifton, GA 31794; Agricultural and Applied Economics, The University of Georgia, Tifton, GA 31793; and Bulloch County Cooperative Extension, The University of Georgia, Statesboro, GA 30458.
9:30 a.m.	**Peanut Seed Germination and Seedling Emergence as Affected by Storage Conditions** **C.C. WEAVER*,** W.S. MONFORT, C. PILON, T.L. GREY, R.S. TUBBS. Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793.	**Genome-Wide Association Study of Sweet, Bitter and Roasted Sensory Attributes in Cultivated Peanut** **T. JIANG*,** and C.Y. CHEN, Crop Soil & Environmental Sciences, Auburn University, Auburn, AL, 36849; LL DEAN, USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC 27695; ML. WANG USDA-ARS, Plant Germplasm Resource Conservation Unit, Griffin, GA 30223. P.M. DANG USDA-ARS National Peanut Research Lab, Dawson, GA 39842; CC HOLBROOK, USDA-ARS Plant Breeding and Genetics Unit, Tifton, GA 31793. Y. CHU, J.P. CLEVENGER, P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793.	**The Value of On-Farm Demonstrations** E.T. CARTER, UF/IFAS Regional Crop IPM Agent, Marianna, FL 32446; **K.M. WATERS***, UF/IFAS Holmes County Extension, Bonifay, FL, 32425; M.D. MAULDIN, UF/IFAS Washington County Extension, Chipley, FL 32428; K.W. WYNN, UF/IFAS Hamilton County Extension, Jasper, FL, 32052; J.M. CAPASSO, UF/IFAS Columbia County Extension, Lake City, FL, 32055; B.L. TILLMAN, M.W. GOMILLION, North Florida Research and Education Center, Marianna, FL 32446.
9:45 a.m.	Additional Time for Q&A	**Fine Mapping and Identification of Candidate Genes in Chromosome A01 of Peanut for Resistance to TSWV.** CHUANZHI ZHAO, HUI WANG, G. AGARWAL, YADURU SHASIDHAR, JAKE C. FOUNTAIN, A. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA; J. CLEVENGER, Mars-Wrigley Confectionery, University of Georgia, Athens, GA; YADURU SHASIDHAR, M.K. PANDEY, R.K. VARSHNEY, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad, India; CHUANZHI ZHAO, XINGJUN WANG, Shandong Academy of Agricultural Sciences, Jinan, China; **B. GUO***, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA.	**Fungicide Efficacy Trial Promotes Agent Training Through Experiential Learning** **K. WYNN*,** University of Florida/Institute of Food and Agricultural Sciences, Jasper, FL 32052; N. DUFAULT, University of Florida Associate Professor and Extension Specialist, Gainesville, FL 32611; C. VANN, University of Florida/Institute of Food and Agricultural Sciences, Mayo, FL 32066; D. FENNEMAN, University of Florida/Institute of Food and Agricultural Sciences, Madison, FL. 32340; D. BROUGHTON, University of Florida/Institute of Food and Agricultural Sciences, Regional Specialized Agent, Agronomic Crops, Live Oak Room, FL 32064; K. KORUS, University of Florida/Institute of Food and Agricultural Sciences, Gainesville, FL 32609.

10:00 -10:30 AM Grand Ballroom	**Networking Break** *Sponsored by: Syngenta*

10:30 AM - NOON	**Concurrent Breakout Sessions**
	Peanut Breeding, Biotechnology and Genomics - III - *Auditorium*
	Plant Pathology II - *Terrace Room*
	Physiology, Seed Technology and Food Sciences - *Oak Room*

See Next Page

Concurrent Breakouts
Thursday, July 12, 2018
10:30 AM - 12 Noon

	Peanut Breeding, Biotechnology & Genomics III Auditorium *Moderator: Juliet Chu, University of Georgia*	**Plant Pathology I** Terrace Room *Moderator: Abraham Fulmer, BASF*	**Physiology, Seed Technology and Food Sciences** Oak Room *Moderator: Alvaro Sanz-Saez, Auburn University*
10:30 a.m.	**Development of New Synthetic Tetraploid Wild Peanuts** **D.Y. GAO*,** C. BALLÉN-TABORDA, H. XIA, S. C. M LEAL-BERTIOLI, D.J. BERTIOLI, S. JACKSON, Center for Applied Genetic Technologies (CAGT), University of Georgia, Athens, GA, USA; E. BELLARD, A. C. G. ARAUJO, EMBRAPA Genetic Resources and Biotechnology, Brasilia, DF, Brazil; Y. CHU, P. OZIAS-AKINS. Department of Horticulture, The University of Georgia, Tifton, GA	**Efficacy of Chlorothalonil Alternatives Compared for Disease Control and Yield Response on Peanut** **A. K. HAGAN***, H. L. CAMPBELL, Department of Entomology and Plant Pathology, Auburn University, AL 36849; L. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345.	**Peanut Seedling Vigor under Sub-optimal Growing Temperature** **C. PILON*,** C. WEAVER, W.S. MONFORT, T.L. GREY, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793, and V. TISHCHENKO, Department of Crop and Soil Sciences, University of Georgia, Griffin, GA 30223.
10:45 a.m.	**A New Nematode Resistant, High Oleic Virginia type peanut for the South East** **J. CLEVENGER*,** Mars-Wrigley Confectionery, University of Georgia, Athens; C. C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research, Tifton, GA., GA; P. OZIAS-AKINS, Y. CHU, University of Georgia, Department of Horticulture, Tifton, GA; T. BRENNEMAN, A. CULBREATH, University of Georgia, Department of Plant Pathology, Tifton, GA.	**In-Furrow Application of Phorate and Development of Late and Early Leaf Spot** **D.J. ANCO*,** J.S. THOMAS, Clemson University, Blackville, SC, 29817, I.M. SMALL, D.L. WRIGHT, University of Florida, Quincy, FL 32351	**Above- and Below-Ground Evaluation of Peanut Genotypes for Improving Soil Water Acquisition and Utilization** **B. ZURWELLER*,** Department of Plant and Soil Sciences, Mississippi State University, Starkville, MS 39762; D.L. ROWLAND, B. TILLMAN, Agronomy Department, University of Florida, Gainesville, FL 32611; and X. GUO, A. ZARE, Department of Electrical and Computer Engineering, University of Florida, Gainesville, FL 32611.
11:00 a.m.	**Genetic Transformation to Mitigate Drought and Aflatoxin-Related Losses in Peanut** **J.C. FOUNTAIN*,** R.C. KEMERAIT, Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; Y. CHU, 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; B. GUO, USDA-ARS Crop Protection and Management Research Unit, Tifton, GA, 31793.	**Relative Importance of Variability Sources in Smut Resistance Assessment in Field Tests** **J. BALDESSARI***, F. MARRARO ACUÑA, A. RODRIGUEZ, Manfredi Exp. Stn. Instituto Nacional de Tecnología Agropecuaria (INTA); M.B. CONDE, Marcos Juarez Exp. Stn. (INTA). Argentina.	**The Allelopathy of Autotoxic Compounds in Peanut Continuous Cropping Obstacle and Mitigation Mechanism** **J. LIU***, F.S. TANG, J. ZHANG, X. HAO, X. W. ZANG, W. Z. DONG, X.Y. ZHANG, J XU, Z. X. ZHANG, Industrial Crops Research Institute, Henan Academy of Agricultural Sciences, Zhengzhou, Henan, 450002, China and C.Y. CHEN, A. SANZ-SAEZ Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 36849, United States.
11:15 a.m.	**Prevalent Moisture Stress in Climate Change Situation as a Selection Strategy for Drought Tolerance in Groundnut (*Arachis hypogaea* L.)** **H.L. NADAF*,** G.K. NAIDU, IRAMMA G. and ROOPA U. All India Coordinated Research Project on Groundnut, Main Agriculture Research Station, University of Agricultural Sciences, Dharwad – 580 005, Karnataka, India.	**Management of Peanut Root Knot Nematode with Nematicides Applied In Furrow or as Foliar Sprays.** **T. B. BRENNEMAN*,** A. K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31794, and K. RUCKER, Bayer Cropscience, Tifton, GA 31794.	**Amino Acid and Sucrose Reactions: Real Time Analysis using Gerstel TDU-GC/MS** **M. SCHOLTEN*,** C. LIEBOLD, The J.M. Smucker Company, 767 Winchester Rd., Lexington, KY 40505 and J.A. MARSHALL, The Department of Chemistry and Biochemistry, Lubbock Christian University, Lubbock TX 79407.
11:30 a.m.	**Analysis of Genotype and Environment Interaction Revealed Oleic Acid Plasticity in Peanuts** **B. TONNIS*,** M.L. WANG, S. TALLURY, USDA-ARS, Plant Genetic Resources Conservation Unit, Griffin, GA 30223; X. LI, J. YU, Department of Agronomy, Iowa State University, Ames, IA 50011; N. PUPPALA, Agronomy Department, New Mexico State University, Clovis, NM 88101; and J. WANG, Agronomy Department, University of Florida, Gainesville, FL 32610.	**Addition of Thrips Category to Peanut Rx for Prediction of Risk to Spotted Wilt** C.B. CODOD, **R. C. KEMERAIT***, A.K. CULBREATH, Department of Plant Pathology and M. ABNEY, Department of Entomology, The University of Georgia, Tifton, GA 31793. G.G. KENNEDY, Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC, and T. CHAPPELL, Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX.	**Effects of a Spray Treatment on Secondary Metabolites in Runner Peanuts** **L. DEAN*,** K. HENDRIX, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695-7624; and M. LAMB, National Peanut Research Laboratory, USDA, ARS, SEA, Dawson, GA 39842.

Peanut Breeding, Biotechnology & Genomics III
Plant Pathology I
Physiology, Seed Technology, & Food Science

Thursday, July 12, 2018, *Continued*
10:30 AM - 12 Noon

	Peanut Breeding, Biotechnology & Genomics III Auditorium *Moderator: Juliet Chu, University of Georgia*	**Plant Pathology I** Terrace Room *Moderator: Abraham Fulmer, BASF*	**Physiology, Seed Technology and Food Sciences** Oak Room *Moderator: Alvaro Sanz-Saez, Auburn University*
11:45 a.m.	**The Worldwide Influence of the Wild Species, *A. cardenasii*, on the Peanut Crop** **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; C.C. HOLBROOK USDA, ARS, Tifton, GA 31793; P. OZIAS-AKINS, Y. CHU, Department of Horticulture, The University of Georgia, Tifton, GA 31793; G. WRIGHT, Peanut Company of Australia, Australia; J. CLEVENGER, Mars Wrigley Confectionery, Center for Applied Genetic Technologies, Athens, GA 30602; D.J. BERTIOLI, Department of Crop and Soils Science, The University of Georgia, Athens, GA 30621.	**Residual Control of Leaf Spot from Single Applications of Pydiflumetofen** **A.K. CULBREATH*,** T.B. BRENNEMAN, R.C. KEMERAIT and K.L. STEVENSON, Department of Plant Pathology, Univ. of Georgia, Tifton, GA 31793-5766.	Additional Time for Q&A

12 Noon - 1:00 PM	**Lunch on Your Own**

12 Noon - 1:00 PM Longleaf Room	**Graduate Student Luncheon -** *Students Only* *Guest Speakers:* *Nora Lapitan, USAID* *and* *Graeme Wright, Peanut Company of Australia*

1:00 - 3:15 PM	**Concurrent Breakout Sessions**
	Plant Pathology II, Entomology - *Auditorium*
	Weed Science - *Oak Room*
	Sustainability: Measurement, Resources, and Opportunities for Research *Terrace Room*

See Next Page

Concurrent Breakout Sessions
Thursday, July 11, 2019
1:00 - 3:15 PM

	Plant Pathology II, Entomology Auditorium *Moderator: Kira Bowen, Auburn University*	**Seminar** **Sustainability: Measurement, Resources, and Opportunities for Research** Terrace Room *Moderator: Adam Rabinowitz, University of Georgia*	**Weed Science** Oak Room *Moderator: Cristiane Pilon, University of Georgia*
1:00 PM	**A Multiyear Study Examining Varying Fungicide Input Programs on Georgia-06G, TUFRunner 511 and FloRun 331 Disease Management** **N. DUFAULT*,** University of Florida Associate Professor and Extension Specialist, Gainesville, FL 32611; W. ELWAKIL, University of Florida, Dept. of Plant Pathology, Gainesville, FL 32611; R. BARRACO, University of Florida, North Florida Research and Education Center, Quincy, FL 32060.	**Field to Market: the Alliance for Sustainable Agriculture** Eric Coronel Researc Analyst Field to Market	**Session Begins at 1:30 PM**
1:15 PM	**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-Agricultural Research Services-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 (c/o ILRI), Member, Addis Ababa, Ethiopia; D.HOISINGTON, College of Agriculture and Environmental Sciences, Peanut and Mycotoxin Innovation Lab, University of Georgia, Athens Georgia, 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.	**1:25 PM** **Cotton and Peanut Sustainability Educatio** Anna Hartley University of Georgia-Tifton	**Session Begins at 1:30 PM**
1:30 PM	**On-Farm Evaluation of Nematicides in Peanut in the Florida Panhandle** **M.D. MAULDIN*,** UF/IFAS Washington County Extension, Chipley, FL 32428; E.T. CARTER, UF/IFAS Regional Crop IPM Agent, Marianna, FL 32446; Z.J. GRABAU, Entomology and Nematology Department, The University of Florida, Gainesville, FL 32611.		**Findings from the 2019 Survey of Mississippi Peanut Grower Application and Weed Management Practices** **J.C. FERGUSON*,** K.L. BROSTER, Z.R. TREADWAY, J.S. CALHOUN, L.M. MERRITT, M.T. WESLEY. Department of Plant and Soil Sciences, Mississippi State University, Mississippi State, MS 39762-9555.
1:45 PM	**Inpyrfluxam: A New Active Ingredient for Control** of Southern Stem Rot of Peanut K.W. SEEBOLD, **F.H. SANDERS*,** C. MEADOR, M. RIFFLE, B. CORBIN, and J. CRANMER, Valent USA LLC, Walnut Creek CA, 94956.	**1:50 PM** **Farmer Perspective on Peanut Sustainability** Donald Chase Georgia Peanut Farmer	**Effects of POST Herbicide Application and Digging Date on Seed Development,Germination, and Vigor of Peanut Cultivars.** **T.L. GREY***, N.L. HURDLE, C. PILON, W.S. MONFORT, R.S. TUBBS; Department of Crop and Soil Science, The University of Georgia, Tifton, GA 31793-0748.
2:00 PM	**Acephate and Alternative Foliar-applied Insecticides for Thrips Control** **S.TAYLOR*,** Virginia Tech, Suffolk, VA.		**Peanut Response to Dual Magnum and Valor Under High Moisture Conditions.** **E.P. PROSTKO*,** Dept. of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31794.

Plant Pathology II / Entomology
Sustainability: Measurement, Resources, & Opportunities for Research
Weed Science

Thursday, July 11, 2019, *Continued*
1:00 - 3:15 PM

	Plant Pathology II, Entomology Auditorium *Moderator: Kira Bowen, Auburn University*	**Seminar** **Sustainability: Measurement, Resources, and Opportunities for Research** Terrace Room *Moderator: Adam Rabinowitz, University of Georgia*	**Weed Science** Oak Room *Moderator: Cristiane Pilon, University of Georgia*
2:15 PM	**Pests Associated with Peanut and Current Baseline Susceptibility to Insecticides in the Florida Panhandle.** **S.V. PAULA-MORAES*,** J. BALDWIN, M.M. RABELO, L. LEDBETTER-KISH, P. BANN. E.T. CARTER. Entomology & Nematology Department, West Florida Research and Education Center, University of Florida, Jay, FL 32565.	**2:15 PM** **Industry Perspective on Peanut Sustainability** David Prybylowski Sustainability Director American Peanut Council	Additional Time for Q&A
2:30 PM	**Mefentrifluconazole – A New Broad-Spectrum Demethylation Inhibitor for Use on Row and Specialty Crops** P. HALABICKI, J. MILLER, **A. FULMER***, K. LIBERATOR, L. NEWSOM, BASF Corporation, Research Triangle Park, NC 27709.	**2:40 PM** **Opportunities for Peanut Sustainability Research** Adam N. Rabinowitz University of Georgia	Additional TIme for Q&A
3:00 PM	Additional Time for Q&A	**3:00 PM** **Sustainability Group Discussion**	Additional Time for Q&A

3:00-3:30 PM Grand Ballroom	**Networking Break** *Sponsored by: APRES Supporting Members*

3:15 - 4:45 PM	**Concurrent Breakout Sessions**
	Peanut Breeding, Biotechnology, and Genomics IV - *Auditorium*
	Economics & Marketing - *Oak Room*

See Next Page

Concurrent Breakout Sessions
Thursday, July 11, 2019
3:15-4:45 PM

	Peanut Breeding,Biotechnology,& Genomics IV Auditorium *Moderator: Alicia Massa, USDA-ARS-NPRL*	Terrace Room	**Economics & Marketing** Oak Room *Moderator: Audrey Luke-Morgan, Abraham Baldwin Agricultural College*
3:15 PM	**Field Evaluation of Peanut Lines with Introgressions Conferring Resistance to Late Leaf Spot** **C.C. HOLBROOK**[1*], S. LAMON[2], Y. CHU[3], P. OZIAS-AKINS[3,4,] A.K. CULBREATH[5], D. BERTIOLI[2,4], S. C. M. LEAL-BERTIOLI[5], and I GODOY[6]. [1]United States Department of Agriculture-Agricultural Research Service, Tifton, GA 31793-0748. [2]Department of Crop & Soil Sciences, The University of Georgia, Tifton GA 31793-0748 and Athens GA 30605. [3]Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748. [4]Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Tifton, GA 31793. [5]Department of Plant Pathology, The University of Georgia, Tifton, GA 31793, and Athens, GA 31793. [6]Campinas Agronomical Institute, Campinas, SP,	Additional Time for Sustainability Seminar	**Session Begins at 3:30 PM**
3:30 PM	**'Walton', a New Virginia-Type Peanut Suitable for Virginia.** **M. BALOTA***, Virginia Polytechnic Institute and State University, Suffolk, VA 23427; B. TILLMAN, University of Florida, Marianna, FL 32446; and D. J. ANCO, Clemson University, Blackville, SC 29817.	Open	**The Effect of Training and Seed Credit Programs on Peanut Productivity: Evidence from Haiti** **G. KOSTANDINI*,** Department of Agricultural and Applied Economics, The University of Georgia, Athens, GA, 30602; J. RHOADS, Peanut Innovation Lab, The University of Georgia, Athens, GA, 30602; and G. MACDONALD, Department of Agronomy, The University of Florida, Gainesville, FL 32611-0300.
3:45 PM	**Allelism Test between Crosses of High Oleic x High Oleic and Very High Oleic x Very High Oleic Peanut Genotypes.** **W.D. BRANCH*,** University of Georgia, Coastal Plain Expt. Station, Tifton, GA 31793.	Open	**Agriculture Improvement Act of 2018 – Implications to U.S. Peanut Farmers** **S.M. FLETCHER*,** Z. SHI, A. LUKE-MORGAN, Abraham Baldwin Agriculture College, Tifton, GA 31793**.**
4:00 PM	**Selection for Two Seeded Pods in Consecutive Generations of the Wild Species *Arachis Monticola Krapov. & Rigoni*** **C.E. SIMPSON*,** Texas A&M AgriLife Research. Stephenville, TX 76401.	Open	**Changes to the Peanut Grading Standards – Implications to Georgia Peanut Farmers** Z. SHI, **S.M. FLETCHER*,** A. LUKE-MORGAN, Abraham Baldwin Agriculture College, Tifton, GA 31793.
4:15 PM	**Peanut Cultivar Response to S. rolfsii Inoculation in the Absence of Fungicides in a Medium Risk Situation Based on the 2019 Peanut Rx** **B.L. TILLMAN**[*1]**,** N.D. DUFAULT[2], T.B. BRENNEMAN[3]; M.W. GOMILLION[1], and G. PERSON[1]. University of Florida, [1]Agronomy Department, NFREC, Marianna, FL 32446; [2]Department of Plant Pathology, Gainesville, FL 32611; [3]University of Georgia, Plant	Open	**An Analysis of Crop Insurance as a Risk Management Strategy for U.S. Peanut Producers from a Whole Farm Perspective** **A.S. LUKE-MORGAN*,** School of Agriculture and Natural Resources, Abraham Baldwin Agricultural College, Tifton, GA 31793-2601; S.M. FLETCHER, Center for Rural Prosperity and Innovation, Abraham Baldwin Agricultural College, Tifton, GA 31793-2601.
4:30 PM	Time for Additional Q&A	Open	**Determining the Relationship Between Peanut Prices and Stocks-to-Use Ratio** F.S.K. ATTAH and **A.N. RABINOWITZ***, Agricultural and Applied Economics, University of Georgia, Tifton, GA, 3.1793

5:00 - 6:00 PM Auditorium	**APRES Business Meeting and Awards Ceremony** Presiding: Peter Dotray, Past President, APRES
6:00 - 7:30 PM Grand Ballroom	**Awards Reception** *Sponsored by: Corteva™ Agriscience, Agriculture Division of DowDuPont™*

2019 Printed Program Author Index

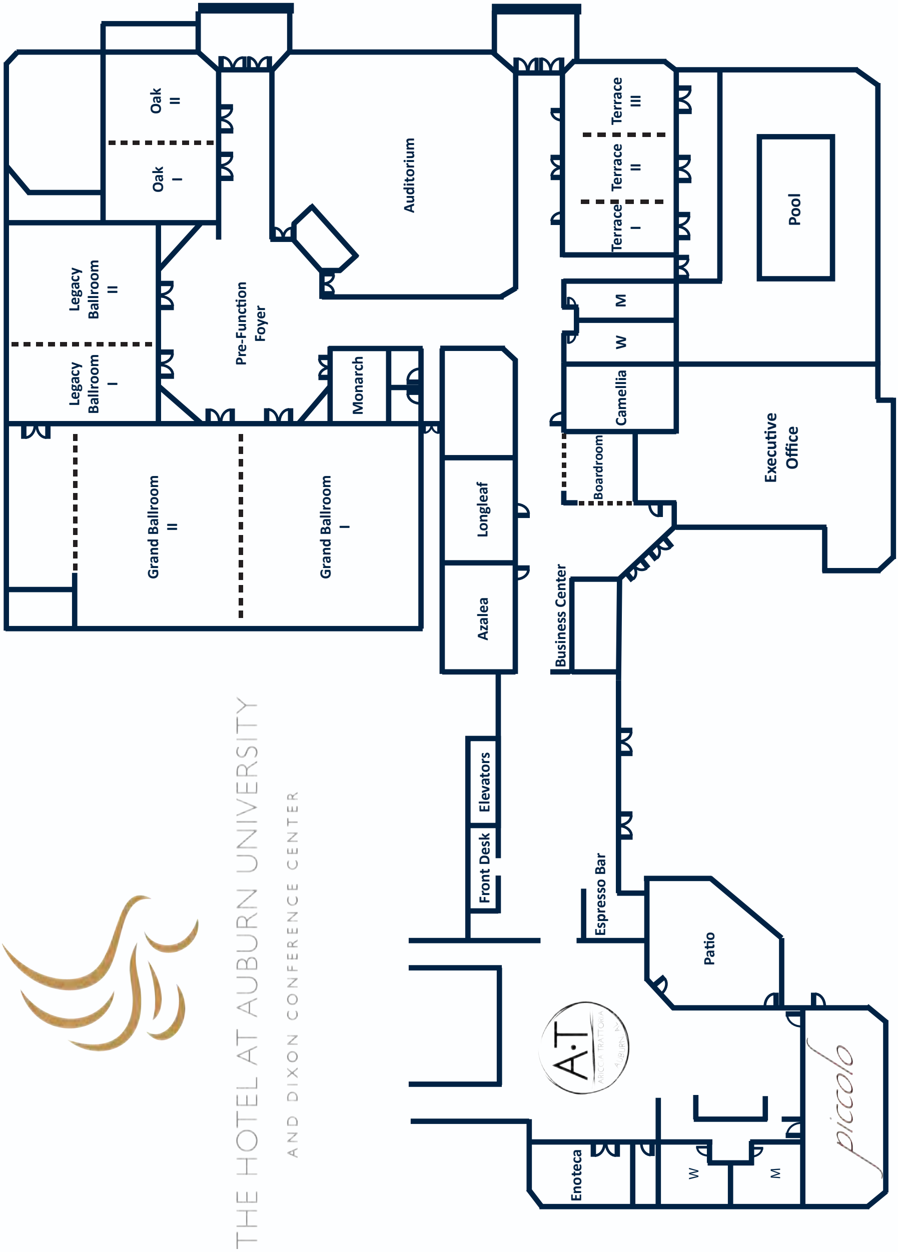
2019 Printed Program Author Index

2019 Printed Program Author Index

2019 Printed Program Author Index

2019 Printed Program Author Index

- NOTES -


Oak
II
Oak
I
Auditorium
Terrace
III
Terrace
II
Terrace
I
Pool
Legacy
Ballroom
II
Legacy
Ballroom
I
Pre-Function
Foyer
Monarch
M
W
Camellia
Boardroom
Executive
Office
Grand Ballroom
II
Grand Ballroom
I
Longleaf
Azalea
Business Center
Elevators
Front Desk
Espresso Bar
Patio
A·T
ARICCIA TRATTORIA
AUBURN, AL
piccolo
Enoteca
W
M
THE HOTEL AT AUBURN UNIVERSITY
AND DIXON CONFERENCE CENTER

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**	

2019 PROCEEDINGS INDEX

2019 PROCEEDINGS INDEX

2019 PROCEEDINGS INDEX

2019 PROCEEDINGS INDEX

2019 PROCEEDINGS INDEX

2019 PROCEEDINGS INDEX

2019 PROCEEDINGS INDEX

2019 PROCEEDINGS INDEX

2019 PROCEEDINGS INDEX