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## BOARD OF DIRECTORS

2006-07

|                                           |                          |
|-------------------------------------------|--------------------------|
| President .....                           | Albert Culbreath (2007)  |
| Past President .....                      | Patrick M. Phipps (2007) |
| President-elect .....                     | Austin Hagan (2007)      |
| Executive Officer .....                   | J. Ronald Sholar (2007)  |
| State Employee Representatives:           |                          |
| (VC Area) .....                           | Barbara Shew (2007)      |
| (SE Area) .....                           | Eric Prostko (2009)      |
| (SW Area) .....                           | Todd Baughman (2008)     |
| USDA Representative .....                 | Ron Sorensen (2007)      |
| Industry Representatives:                 |                          |
| Production .....                          | Randy Myers (2009)       |
| Shelling, Marketing, Storage .....        | Fred Garner (2007)       |
| Manufactured Products .....               | Jim Elder (2008)         |
| Director of Science and Technology of the |                          |
| American Peanut Council .....             | Howard Valentine (2007)  |

## ANNUAL MEETING SITES

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

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

## APRES COMMITTEES

2006-07

### **Program Committee**

Austin Hagan, chair (2007)

### **Finance Committee**

Carroll Johnson, chair (2007)  
Hassan Melouk (2007)  
Maria Gallo (2008)  
Jay Chapin (2008)  
Steve Harrison (2008)  
David Jordan (2009)  
Jeff Barnes (2009)  
Ron Sholar, ex-officio

### **Nominating Committee**

Patrick Phipps, chair (2007)  
Joe Dörner (2007)  
John Damicone (2007)  
Sandy Newell (2007)

### **Publications and Editorial Committee**

Chris Butts, chair (2009)  
Steve Brown (2007)  
Calvin Trostle (2007)  
Michael Baring (2008)  
Tim Brenneman (2008)  
Jason Woodward (2009)

### **Peanut Quality Committee**

Howard Valentine, chair (2007)  
Fred Garner (2008)  
Dell Cotton (2008)  
Dennis Coker (2008)  
Darlene Cowart (2009)  
Wilson Faircloth (2009)  
Marie Fenn (2009)

### **Public Relations Committee**

John Beasley, chair (2008)  
Mike Kubicek (2008)  
Joyce Hollowell (2009)  
Cal Chancy (2009)  
Amanda Huber (2009)  
Lee Campbell (2009)

### **Bailey Award Committee**

Nathan Smith, chair (2009)  
Ames Herbert (2007)  
Mark Black (2007)  
Joel Faircloth (2007)  
Elizabeth Grabau (2008)  
Diane Rowland (2009)

### **Fellows Committee**

Mark Burow, chair (2007)  
Albert Culbreath (2007)  
Tom Stalker (2008)  
W. Carroll Johnson (2008)  
Sandy Newell (2008)  
Michael Franke (2009)

### **Site Selection Committee**

Kira Bowen, chair (2007)  
Austin Hagan (2007)  
Peter Dotray (2007)  
John Damicone (2008)  
Kelly Chenault (2008)  
Barbara Shew (2008)  
Rick Brandenburg (2009)  
Barry Tillman (2009)

### **Coyt T. Wilson Distinguished**

### **Service Award Committee**

Eric Prostko, chair (2007)  
Howard Valentine (2007)  
Thomas B. Whitaker (2008)  
C. Corley Holbrook (2008)  
Tom Isleib (2009)  
Mark Black (2009)

### **Dow AgroSciences Awards**

### **Committee**

Jim Starr, chair (2007)  
Randy Huckaba (2008)  
William D. Branch (2008)  
Fred Shokes (2008)  
Jan Spears (2008)  
Hassan Melouk (2008)  
Chad Godsey (2009)  
Shelly Nutt (2009)

### **Joe Sugg Graduate Student**

### **Award Committee**

Bob Kemeraite, chair (2007)  
Yolanda Lopez (2007)  
Jason Woodward (2009)  
Roy Pittman (2009)  
Susana Milla (2009)

## PAST PRESIDENTS

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

## FELLOWS

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

## BAILEY AWARD

2006 J.W. Chapin and J.S. Thomas  
 2005 J.W. Wilcut, A.J. Price, S.B. Clewis, and J.R. Cranmer  
 2004 R.W. Mozingo, S.F. O'Keefe, T.H. Sanders and K.W. Hendrix  
 2003 T.H. Sanders, K.W. Hendrix, T.D. Rausch, T.A. Katz and J.M. Drozd  
 2002 M. Gallo-Meagher, K. Chengalrayan, J.M. Davis and G.G. MacDonald  
 2001 J.W. Dorner and R.J. Cole  
 2000 G.T. Church, C.E. Simpson and J.L. Starr  
 1998 J.L. Starr, C.E. Simpson and T.A. Lee, Jr.  
 1997 J.W. Dorner, R.J. Cole and P.D. Blankenship  
 1996 H.T. Stalker, B.B. Shew, G.M. Garcia, M.K. Beute, K.R. Barker, C.C. Holbrook, J.P. Noe and G.A. Kochert  
 1995 J.S. Richburg and J.W. Wilcut  
 1994 T.B. Brenneman and A.K. Culbreath  
 1993 A.K. Culbreath, J.W. Todd and J.W. Demski  
 1992 T.B. Whitaker, F.E. Dowell, W.M. Hagler, F.G. Giesbrecht and J. Wu  
 1991 P.M. Phipps, D.A. Herbert, J.W. Wilcut, C.W. Swann, G.G. Gallimore and T.B. Taylor  
 1990 J.M. Bennett, P.J. Sexton and K.J. Boote  
 1989 D.L. Ketring and T.G. Wheless  
 1988 A.K. Culbreath and M.K. Beute  
 1987 J.H. Young and L.J. Rainey  
 1986 T.B. Brenneman, P.M. Phipps and R.J. Stipes  
 1985 K.V. Pixley, K.J. Boote, F.M. Shokes and D.W. Gorbet  
 1984 C.S. Kvien, R.J. Henning, J.E. Pallas and W.D. Branch  
 1983 C.S. Kvien, J.E. Pallas, D.W. Maxey and J. Evans  
 1982 E.J. Williams and J.S. Drexler  
 1981 N.A. deRivero and S.L. Poe  
 1980 J.S. Drexler and E.J. Williams  
 1979 D.A. Nickle and D.W. Hagstrum  
 1978 J.M. Troeger and J.L. Butler  
 1977 J.C. Wynne  
 1976 J.W. Dickens and T.B. Whitaker  
 1975 R.E. Pettit, F.M. Shokes and R.A. Taber

## JOE SUGG GRADUATE STUDENT AWARD

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

## **COYT T. WILSON DISTINGUISHED SERVICE AWARD**

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

## **DOW AGROSCIENCES AWARD FOR EXCELLENCE IN RESEARCH**

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

1998      Changed to Dow AgroSciences Award for Excellence in Research

## **DOW AGROSCIENCES AWARD FOR EXCELLENCE IN EDUCATION**

|      |                     |      |                      |
|------|---------------------|------|----------------------|
| 2006 | Stanley M. Fletcher | 1999 | Patrick M. Phipps    |
| 2005 | Eric Prostko        | 1998 | John P. Beasley, Jr. |
| 2004 | Steve L. Brown      | 1996 | John A. Baldwin      |
| 2003 | Harold E. Pattee    | 1995 | Gene A. Sullivan     |
| 2002 | Kenneth E. Jackson  | 1993 | A. Edwin Colburn     |
| 2001 | Thomas A. Lee       | 1992 | J. Ronald Sholar     |
| 2000 | H. Thomas Stalker   |      |                      |

1998      Changed to Dow AgroSciences Award for Excellence in Education

1997      Changed to DowElanco Award for Excellence in Education

1992-1996      DowElanco Award for Excellence in Extension

## PEANUT RESEARCH AND EDUCATION AWARD

|      |                                                                                          |      |                                                    |
|------|------------------------------------------------------------------------------------------|------|----------------------------------------------------|
| 2006 | D.W. Gorbet                                                                              | 1984 | Leland Tripp                                       |
| 2005 | J.A. Baldwin                                                                             | 1983 | R. Cole, T. Sanders,<br>R. Hill and P. Blankenship |
| 2004 | S.M. Fletcher                                                                            |      |                                                    |
| 2003 | W.D. Branch and<br>J. Davidson                                                           | 1982 | J. Frank McGill                                    |
| 2002 | T.E. Whitaker and J. Adams                                                               | 1981 | G.A. Buchanan and<br>E.W. Hauser                   |
| 2001 | C.E. Simpson and<br>J.L. Starr                                                           | 1980 | T.B. Whitaker                                      |
| 2000 | P.M. Phipps                                                                              | 1979 | J.L. Butler                                        |
| 1999 | H. Thomas Stalker                                                                        | 1978 | R.S. Hutchinson                                    |
| 1998 | J.W. Todd, S.L. Brown,<br>A.K. Culbreath and<br>H.R. Pappu                               | 1977 | H.E. Pattee                                        |
| 1997 | O.D. Smith                                                                               | 1976 | D.A. Emery                                         |
| 1996 | P.D. Blankenship                                                                         | 1975 | R.O. Hammons                                       |
| 1995 | T.H. Sanders                                                                             | 1974 | K.H. Garren                                        |
| 1994 | W. Lord                                                                                  | 1973 | A.J. Norden                                        |
| 1993 | D.H. Carley and S.M.<br>Fletcher                                                         | 1972 | U.L. Diener and N.D. Davis                         |
| 1992 | J.C. Wynne                                                                               | 1971 | W.E. Waltking                                      |
| 1991 | D.J. Banks and J.S. Kirby                                                                | 1970 | A.L. Harrison                                      |
| 1990 | G. Sullivan                                                                              | 1969 | H.C. Harris                                        |
| 1989 | R.W. Mozingo                                                                             | 1968 | C.R. Jackson                                       |
| 1988 | R.J. Henning                                                                             | 1967 | R.S. Matlock and<br>M.E. Mason                     |
| 1987 | L.M. Redlinger                                                                           | 1966 | L.I. Miller                                        |
| 1986 | A.H. Allison                                                                             | 1965 | B.C. Langleya                                      |
| 1985 | E.J. Williams and J.S.<br>Drexler                                                        | 1964 | A.M. Altschul                                      |
|      |                                                                                          | 1963 | W.A. Carver                                        |
|      |                                                                                          | 1962 | J.W. Kickens                                       |
|      |                                                                                          | 1961 | W.C. Gregory                                       |
| 2005 | Now presented by: Peanut Foundation and renamed –<br>Peanut Research and Education Award |      |                                                    |
| 1997 | Changed to American Peanut Council Research<br>and Education Award                       |      |                                                    |
| 1989 | Changed to National Peanut Council Research<br>and Education Award                       |      |                                                    |

## **ANNUAL MEETING PRESENTATIONS**

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**SYMPOSIUM**  
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## PLANT PATHOLOGY and NEMATOLOGY I

Greenhouse Assays of Virginia-Type Breeding Lines for Resistance to Cylindrocladium Black Rot and Sclerotinia Blight. J.E. HOLLOWELL\* and B.B. SHEW, Dept. of Plant Pathology, Box 7903, N.C. State Univ., Raleigh, NC 27695-7903; T.G. ISLEIB, S.C. COPELAND, and J.B. GRAEBER, Dept. of Crop Science, Box 7629, N.C. State Univ., Raleigh, NC 27695-7629

Cylindrocladium black rot (CBR) caused by *C. parasiticum* Crous, Wingfield & Alfenas and Sclerotinia blight (SB) caused by *S. minor* Jagger are two economically important diseases in the Virginia-Carolina production area, and new peanut (*Arachis hypogaea* L.) breeding lines must be evaluated for resistance to them. However, field evaluations of these diseases often fail to produce usable results because both are to a large extent weather-dependent. Greenhouse protocols were used to screen new breeding lines for resistance each winter from 2003-2006. For CBR, two seeds were planted in a plastic "cone-tainer" filled with a planting medium artificially infested with 25 microsclerotia of *C. parasiticum* per gram of medium. Plants were grown approximately 8 weeks with the root system of any plant dying before harvest plated to determine whether CBR was present in the decaying roots. Surviving plants were removed from the cone-tainers, and the roots washed and rated for degree of decay on a 0-5 proportional scale (0=no decay to 5=completely decayed). For SB, plants were inoculated at 6 weeks after planting by pushing a plug of PDA colonized by *S. minor* and protected from desiccation in a BEEM embedding capsule onto a freshly cut petiole on the mainstem of the plant. Inoculated plants were placed in a mist chamber to maintain the high humidity necessary for good *S. minor* growth. Lesion length was measured 4, 5, 6, and 7 days after inoculation, and area under the disease progress curve (AUDPC) was calculated. All tests were conducted as incomplete block designs with 6 reps for CBR tests and 4 reps for SB tests. Entry means were computed from each year's tests and used in summary analyses. One hundred twenty-five lines and checks were tested in at least one out of the four years from 2003 through 2006, 51 in at least two, 34 in at least three, and 15 in all four. Of the 15 lines tested in all four years, registered germplasm line N96076L had the lowest AUDPC for SB (58 mm days) but was the worst line for CBR root decay score (4.1 decay rating units). Several closely related breeding lines descended from N96076L and NC 12C were not significantly different from the most resistant line for either disease with scores ranging from 2.2-3.0 decay rating units for CBR and 63-99 mm days for SB. A comparison of multiple-year means from the greenhouse assays with disease incidence means computed from field data revealed a correlation of 0.66 for CBR and 0.78 for SB, suggesting that the greenhouse assays are reasonably good predictors of field performance.

Headline 2.09EC Calendar Schedules Compared for the Control of Early Leaf Spot and Southern Stem Rot on Selected Runner Peanut Lines. A.K. HAGAN\*, H.L. CAMPBELL, K.L. BOWEN, Dept. of Entomology and Plant Pathology, Auburn University, AL 36849; and L. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345

In 2003, 2004, and 2005, efficacy of Headline 2.09EC at 9 and 15 fl oz/A was evaluated on 2-, 3-, and 4-wk calendar schedules for the control of early leaf spot and southern stem rot on the Andru II, Carver, and Florida C-99R peanuts. Two

applications of Headline 2.09EC, included in each calendar treatment schedule, were made about 60 and 90 DAP and the number of applications of Bravo Ultrex at 1.5 pt/A varied. Tillage, fertility, and weed control recommendations of ACES were followed. Temik 15G at 6.7 lb/A was applied in-furrow AP for thrips control. Plots were irrigated as needed. A split plot design with peanut lines as whole plots and fungicide schedules as subplots was used. Whole plots were randomized in four complete blocks. Individual subplots consisted of four 30-ft rows spaced 3-ft apart. Early leaf spot was rated using the Florida leaf spot rating scoring system. Southern stem rot (SSR) loci counts were made immediately after plot inversion. Since the cultivar x treatment interaction for early leaf spot severity, SSR incidence, and yield was not significant in each year, data were pooled across cultivars. Application interval had a significant impact on the control of early leaf spot with both rates of Headline 2.09EC. When applied on a 2-wk schedule, both rates of Headline 2.09EC gave better leaf spot control in 2003 and 2004 than the 3-wk schedule for both rates of this fungicide. Headline at 9- and 15 fl oz/A controlled leaf spot better at the 3- than 4-wk schedules in all three years and two of three years, respectively. Superior leaf spot control with the 15 fl oz/A rate compared with the 9 fl oz/A rate of Headline 2.09EC was seen in only one of three years. In all three years, incidence of SSR was not influenced by Headline 2.09EC application rate or treatment interval. Loci counts for SSR in the Headline 2.09EC treated plots were often similar to those recorded for the season-long 2-wk calendar Bravo Ultrex program. Yield response for the 9 fl oz/A Headline program was higher with the 2-wk than the 3- and 4-wk schedules in two and three years, respectively. At the 15 fl oz/A rate of Headline 2.09EC, higher yields were obtained with the 2-wk schedule treatment compared with the 3- and 4-wk schedule treatments in only one year. Yield for the 2-wk schedule treatments for both rates of Headline 2.09E were similar in two of three years. Overall leaf spot control and yield declined when application intervals increased beyond the recommended 2-wk interval with 9- and 15-fl oz/A rates of Headline 2.09E.

Botrytis Blight of Peanut – Pathogen Fungicide Tolerances and Peanut Cultivar Susceptibility. J.L. STARR\*, T. RAGHVAN, M.A. HENRY, C.M. KENERLEY, Department Plant Pathology and Microbiology, Texas A&M University, College Station, TX 77843, and T.A. WHEELER, Texas Agricultural Experiment Station, Lubbock, TX 79403.

Botrytis blight of peanut, caused by *Botrytis cinerea*, was found in west Texas during the 2004 and 2005 growing seasons. Few data on the pathogen's sensitivity to fungicides commonly used on peanut are available, and there are no data on susceptibility of commonly grown peanut cultivars to this pathogen. Our first objective was to characterize the sensitivity of 37 isolates of the pathogen collected from west Texas to the fungicides dicloran, fluazinam, iprodione, and thiophante-methyl. Hyphal growth on potato dextrose agar (PDA) amended with the different fungicides was used to characterize sensitivity. Significant variation in growth was observed on PDA amended with dicloran, fluazinam, and thiophante-methyl, but no variation in growth was observed on PDA amended with iprodione. Our second objective was to characterize the susceptibility of several peanut genotypes to the pathogen. Of the 53 isolates of *B. cinerea* collected from symptomatic plants in 2004, 34 were characterized as pathogenic, 3 were weakly pathogenic, and 16 were non-pathogenic based on lesion diameter 6 days after inoculation of detached leaflets of cultivar Tamrun 96. The susceptibility of eight cultivars and two breeding lines to two isolates of

the pathogen (GilE-6 and DM1-R) was determined using a similar detached leaflet assay. The cultivars Florunner 458 and Valencia C had smaller lesions at 6 days after inoculation than did the other peanut genotypes when inoculated with either pathogen isolate. The breeding line TX 033607 had smaller lesions than other genotypes when inoculated with pathogen isolate GilE-6, but not when inoculated with pathogen isolate DM1-R. The variation in pathogen sensitivity to different fungicides and pathogenicity, and variation in peanut cultivar susceptibility will affect the development of effective management systems for Botrytis blight.

Evaluation of Peanut Cultivars for Resistance to Rhizoctonia Limb Rot. T.B. BRENNEMAN\*, A.K. CULBREATH, Dept. of Plant Pathology, The University of Georgia, Tifton, GA 31794; and C.C. HOLBROOK, USDA-ARS, Tifton, GA 31793.

Rhizoctonia limb rot, caused by *Rhizoctonia solani* AG-4, is a disease of major importance to peanut growers in the southeastern United States. Since the disease is difficult to reproduce in the greenhouse, and in the field it is often confounded by the presence of other diseases, the amount of yield loss and susceptibility of many currently grown cultivars is not well documented. Paired field plots either inoculated with *R. solani* (infested oat seed inoculum) or noninoculated were established in 2000-2002 with the noninoculated plots also sprayed with thifluzamide to control soilborne diseases. Severe limb rot developed in 2000, and the average yield reduction across cultivars was 943 lb/A. In 2001 and 2002 disease levels were lower and yield losses were 659 and 714 lb/A, respectively. Georgia Green averaged 5397 and 4546 lb/A for the noninoculated and inoculated plots, respectively. In 2004 and 2005, similar plots evaluating only late season cultivars were established in a field fumigated each spring with methyl bromide. Yields were generally lower but good disease epidemics developed. GA-01R had the least yield loss and highest yield in inoculated plots (4258 lb/A). Inoculated plots of Tifrunner, DP-1, C-99, Hull, and GA-02C all yielded less than 3900 lb/A, and except GA-02C were more than 600 lb/A less than noninoculated plots. There are differences in susceptibility to limb rot among peanut cultivars, and field inoculations in the absence of other diseases is an effective way to evaluate it. Such studies also illustrate that losses in excess of 1000 lb/A are possible from this disease.

Susceptibility of Virginia-and Runner-Type Cultivars of Peanut to Common Diseases of Peanut in Virginia. P.M. PHIPPS\* and D.E. PARTRIDGE, Tidewater Agricultural Research & Extension Center, Virginia Tech, Suffolk, VA 23437.

Field trials in 2004 and 2005 evaluated four replications of cultivars in a randomized complete block design. Plots were two, 25- to 35-ft rows spaced 36-in. apart. Field trials with 35-ft plots in 2004 and 2005 compared the susceptibility of 11 to 13 virginia- and runner-type cultivars to tomato spotted wilt virus (TSWV). Counts of TSWV incidence on 28 Jul 2004 averaged 24.6 plants/plot in runner types and 41.5 plants/plot in virginia types. DP-1, GA-02C, GA-03L and AP-3 were the most resistant runner types whereas GA Hi/OL and N01013T were the only virginia-types to show disease resistance. Disease incidence on 24 Aug 2005 averaged 10 plants/plot in runner-types and 17.3 plants/plot in virginia-types. All runner types, except Carver, had disease incidence below the mean of the virginia types. Among the virginia-type cultivars, AgraTech VC2, Georgia Hi

O/L, N01013T, and GA002506 showed disease incidence near the mean of runner types. Wilson and NC 12C were the most susceptible virginia types in 2004, whereas Perry and NC 12C were the most susceptible in 2005. Carver was the most susceptible runner type in 2004 and 2005. In a comparison of six virginia- and six runner-type cultivars in 35-ft plots, susceptibility to CBR and nematodes was determined. Virginia types with Temik 15G 7 lb/A in furrow had significantly higher CBR incidence (40.3 plants/plot) than the runner-types (27.2 hits/plot) at harvest in 2005. Treatment with Sectagon 42% 7.5 gal/A plus Temik 15G 7 lb/A in furrow significantly reduced CBR incidence in virginia types (11.5 plants/plot) and runner types (6.5 plants/plot). Root galling by northern root-knot nematode was significantly greater in virginia types compared to runner types with only Temik 15G in furrow, but not in plots treated with Sectagon plus Temik. Yields with only Temik 15G in furrow were significantly higher in runner types (2041 lb/A) compared to virginia types (1544 lb/A), and treatment with Sectagon plus Temik improved yield significantly in runner types (3253 lb/A) and virginia types (2263 lb/A). The susceptibility of four virginia- and six runner-type cultivars to early and late leaf spot was evaluated in 20-ft plots with no fungicide sprays in 2005. Among the virginia types, levels of early leaf spot in VA 98R were significantly higher than in Perry, Gregory and GA Hi/OL on 10 Oct, whereas late leaf spot was significantly higher in Gregory and GA Hi/OL. Defoliation in Gregory (83%) and VA 98R (78%) was significantly greater than in Perry (58%) or GA Hi/OL (55%). In the runner-types, GA-03L was the only cultivar to have significantly less early leaf spot than VA 98R. Late leaf spot in the runner types was similar to low levels in VA 98R and moderate levels in Perry. Defoliation in the runner types was moderate in GA Green (52%), GA-02C (41%) and GA-03L (44%) and low in Hull (25%), C99R (21%) and DP-1 (16%) on 10 Oct. Yields exceeded 4000 lb/A in GA-03L and C99R, and value was significantly higher than other virginia- or runner-type cultivars. The susceptibility of cultivars to Sclerotinia blight was assessed in 20-ft plots sprayed five times with chlorothalonil (Bravo 720 1.5 pt/A) according to the Virginia leaf spot advisory program. Disease incidence on 21 Oct in GA Hi/OL was significantly lower than levels in other cultivars. Gregory and GA 02C had moderate levels of disease that were significantly higher than Perry but not VA 98R or GA-03L. The incidence of Sclerotinia blight was greatest in C99R, GA Green, Hull and DP-1. Yields were variable in the trial and not significantly different, but values based on grade factors and the government loan rate were significantly lower for Gregory (\$575/A) and DP-1 (\$578/A) compared to other cultivars. C99R (\$958/A), GA-02C (\$885/A), GA Green (\$844/A) and Hull (\$837/A) were runner types having high economic value, whereas the most valuable virginia types were GA Hi/OL (\$876/A), Perry (\$865/A), and VA 98R (\$795/A).

Reaction of Peanut Genotypes to Southern Blight in Small Field Plots. H.A. MELOUK\*, USDA-ARS, Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078, W.J. GRICHAR, Texas Agricultural Experiment Station, Beeville, TX 78102 and R. PITTMAN, USDA-ARS, Regional Plant Introduction Station, Griffin, GA 30223.

Southern blight of peanut (*Arachis hypogaea* L.) is a serious disease caused by the fungus *Sclerotium rolfsii*. The disease negatively impacts peanut production in all growing areas of the United States. Eleven peanut genotypes (PI 501983, 501996, 502046, 502071, 502093, 502154, Grif 13826, Okrun, Southwest Runner, Valencia A, and Valencia B) were planted at Yoakum, TX, in 2004 and

2005. Sclerotial density of *S. rolfii* was 2-3 viable sclerotia per 225 g of soil (Tremona loamy fine sand) for both years. The study in both years had four replications in a randomized complete block design, with each plot consisting of two 5-m rows, with row spacing of 0.91 m. Disease incidence (%) of southern blight was recorded in both years at harvest (about 150 days post planting). In 2004 and 2005, PI 502093 (a runner type peanut of Peruvian origin) had 2 and 3% disease incidence which was significantly ( $P=0.05$ ) different from Southwest Runner which had disease incidence of 15 and 11%, respectively. Furthermore, the average pod yield and grade (% sound mature kernels plus sound splits) of the PI 502093 in both years was not significantly ( $P=0.05$ ) different from Southwest Runner. The data confirm that the peanut PI 502093 has useful resistance to Southern blight which makes attractive as a parental line for breeding programs because of its comparable agronomic quality to Southwest Runner.

Peanut Disease and Vigor Evaluations on Four Peanut Varieties Grown in Louisiana. G.B. PADGETT and M.A. PURVIS. Northeast Research Station, Macon Ridge Branch, Louisiana State University Agricultural Center, Winnsboro, LA 71295.

The impact of peanut diseases in Louisiana peanut is not well documented. Therefore in 2005, the performance of four peanut varieties (Georgia Green, Georgia 01R, Georgia 03L, and Tifrunner) was evaluated for resistance to naturally-occurring peanut diseases. Tests were conducted on the Macon Ridge Research Station near Winnsboro, Louisiana and in a producer field located near Bonita, Louisiana. Disease incidence and plant vigor (inches from row closure) were assessed periodically during the growing season. Spotted wilt was the predominant disease at both locations and stem rot was present at the Macon Ridge location. Spotted wilt incidence was assessed during late-July to mid-August and expressed as number of symptomatic plants present in a predetermined length of row. At the Macon Ridge location, Georgia 03L was the most vigorous variety relative to the other three; however, no differences were observed among the other varieties. Even though Georgia Green confers resistance to Tomato spotted wilt virus, a higher degree of resistance was noticed in Georgia 01R, Georgia 03L, and Tifrunner. A similar trend was noticed with stem rot; however, overall incidence was low. Spotted wilt incidence was highest in Georgia Green and lowest in Tifrunner in the test near Bonita, Louisiana. The resistance to spotted wilt in Georgia 01R and 03L was higher than resistance observed in Georgia Green. Even though stem rot incidence was low, incidence was highest in Georgia 03L and substantially lower in the other varieties. Yields were highest in Georgia 01R (4419) followed by Georgia Green (3472) and lowest in Tifrunner (2999). These preliminary results suggest that in addition to Georgia Green, Tifrunner, Georgia 01R and 03L may be suited for production in Louisiana; however, further evaluation is needed. Primary concerns are the low yields observed with Tifrunner and the possible stem rot susceptibility in Georgia 03L.

### **Breeding, Biotechnology, and Genetics I**

High Shade Avoidance Response as a Tool for Selection to High Yield. I.S.

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Differences in shade avoidance response (SAR) found within commercial cultivars were expressed in plant's yield at low planting density. At this planting density higher SAR was associated with higher yield. Typical characteristics of the shade avoidance syndrome expressed in etiolated seedlings and field grown plants as well as the level of phytochrome B DNA in the peanut genome were used to select for high shade avoidance response followed by higher yield at low planting density. Interestingly, differences in the level of phytochrome B DNA were found among etiolated seedlings according to their hypocotyl length. These differences were further expressed in the seedlings response to controlled red and far-red light spectrum and in the phenotype of field grown plants. Higher level of phytochrome B DNA and longer hypocotyls in etiolated seedlings were expressed in earlier response to neighbor plants in the field, higher flowering rate, longer basal-branches and higher degree of secondary branching. Plants with longer branches and higher branching degree had lower harvest index (canopy to pod ratio) and therefore less canopy per pod which means less water consumption per pod.

Relationship among Seed Size Fractions from the Grading Process in the University of Florida Peanut Breeding Program. B.L. TILLMAN\* and D.W. GORBET. The University of Florida, Agronomy Department, NFREC, Marianna, FL, 32446.

Seed size of peanut varieties is an important characteristic and the runner peanut industry relies heavily on medium sized seeds. The recently developed "Seed Index" specified 50% medium seeds for runner varieties. Medium seed are those that do not fall through a screen with 3/4 inch by 18/64 inch slots. All of the commercial cultivars tested in 2002, 2003, and 2004 in Marianna, Florida had less than 50% medium kernels. In 2003-05, only 8% of 2309 genotypes (experimental lines and commercial cultivars) tested had 50.1-55% medium kernels. In contrast, 69% of the 2309 genotypes had 35.1-55% medium kernels. These results suggest that the 50% medium kernel criterion may be too restrictive resulting in a significant bottleneck in developing new cultivars. We suggest that the criterion be adjusted to a minimum of 35%. We will also discuss seed size variability in space and time and the implications of such variability on the target of 50% medium seed.

Development of High Yielding, TSWV Resistant Isolines With and Without Resistance to the Peanut Root-knot Nematode. C.C. HOLBROOK\*, P. TIMPER, USDA-ARS, Tifton, GA 31793; W.B. DONG, C.K. KVIEN, and A.K. CULBREATH, Univ. of Georgia, Tifton, GA 31793.

Peanut cultivars are available that have high resistance to the peanut root-knot nematode or TSWV, however, no cultivars exist that have resistance to both pathogens. The objective of this research was to combine resistance to both pathogens in a single genotype. During the course of this research we also had the opportunity to develop isolines with and without nematode resistance. Breeding populations were developed by hybridizing the TSWV resistant cultivar, C99R with the nematode resistant cultivar, COAN. Selection for nematode

resistance was conducted using standard greenhouse screening techniques. Selection for TSWV resistance was conducted in the field with natural virus infection. Breeding lines were selected that had high resistance to both pathogens. Isolines for resistance to the peanut root-knot nematode were also developed. Subsequent studies have identified one breeding line that is being considered for release as a cultivar with resistance to both pathogens. The isolines are available to the research community, and should be valuable experimental tools to answer important questions in peanut research.

Effect of Testing Region, Region of Origin, and their Interaction on Composition and Sensory Traits in the Uniform Peanut Performance Test. T.G. ISLEIB\*, S.R. MILLA, S.C. COPELAND and J.B. GRAEBER, Dept. of Crop Science, Box 7629, N.C. State Univ., Raleigh, NC 27695-7629; T.H. SANDERS, K.W. HENDRIX and L.O. DEAN. USDA-ARS Market Quality and Handling Research Unit, Box 7624, N.C. State Univ., Raleigh, NC 27695-7624.

Sensory quality of peanut (*Arachis hypogaea* L.) products is the main reason that consumers buy them. There has been considerable interest expressed by the peanut processing industry in recent years regarding the relative magnitudes of genotypic, environmental, and genotype-by-environment interaction in sensory quality and also in composition traits that might influence sensory or processing quality. The Uniform Peanut Performance Test (UPPT), a trial of experimental breeding lines conducted at 9-10 locations in 7-8 states annually, provides an opportunity to examine the relative effects of these factors. A pod sample of each UPPT entry was composited across field replications at each test site from 2001-2004, and sensory and composition traits were measured on the prevalent kernel sizes (jumbo or medium runner, virginia ELK). Because few UPPT entries were carried over from year to year, an analysis akin to provenance testing used in forestry was applied to the data. Lines were identified by their respective regions of origin: Southeast (SE) from breeding programs in Georgia, Florida or Alabama; Southwest (SW) from programs in Texas or Oklahoma; or Virginia-Carolina (VC) from programs in Virginia or North Carolina. Test locations were similarly classified as to region. In the analysis of variance, testing region effects were significant for oil content, oleic-to-linoleic (O/L) ratio, sucrose and total sugar content. Region-of-origin effects were significant only for oil content and O/L ratio. Testing region-by-origin interaction was detected only for oil content. Lines of SE origin exhibited the most interaction, with approximately 0.25% less oil content than expected in the SE and VC testing regions and 0.5% more in the SW region. SW lines had approximately 0.5% less oil in tests in the SW region and 0.5% more oil in tests in the SE. Among sensory traits, testing region effects were detected for roast color and intensities of the roasted peanut, dark roast, fruity, sweet, and bitter sensory attributes. Origin effects were detected for roast color and intensity of the sweet and cardboard sensory attributes. Testing region-by-origin interaction was detected for roast color as well as intensities of the dark roast, raw/beany, cardboard, fruity, and bitter sensory attributes.

Yield and Market Quality of Virginia-Type Peanut Cultivars with the Oxalate Oxidase Gene for Resistance to Sclerotinia Blight. D.E. PARTRIDGE\*, P.M. PHIPPS, D.L. COKER, Tidewater Agricultural Research & Extension Center, Virginia Tech, Suffolk, Virginia 23437; and E.A.

GRABAU, Department of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, Virginia 24061.

Three virginia-type cultivars (Perry, Wilson, NC-7) were transformed with the barley oxalate oxidase gene. Transgenic plants with oxalate oxidase gene expression and acceptable growth habits were selected through the T<sub>1</sub> generation in the greenhouse and a field trial in the T<sub>2</sub> generation. Three trials of the T<sub>3</sub> generation were planted on 31 May 2005 in a field naturally infested with *Sclerotinia minor*. The trials were replicated in four randomized complete blocks in plots composed of two 25-ft rows spaced 3-ft apart. The field site was Kenansville loamy sand that was planted to corn, cotton and peanut in 2004, 2003 and 2002, respectively. Assays of leaf disks (5-mm dia.) from each transformed line and non-transformed parents on 16 Aug and 9 Sep confirmed gene expression in 12 of 15 transgenic lines. The incidence of *Sclerotinia* blight and other diseases was recorded at 2-wk intervals until harvest by counting disease foci in each plot for a total of 50 ft of row. Disease appeared first in non-transformed parent cultivars and reached high levels at harvest. According to area under the disease progress curve (AUDPC), the 12 transgenic lines expressing the oxalate oxidase gene had an average of 81% less disease than their non-transformed parents. Peanuts were dug on 1 Nov and harvested on 9 Nov. Yield was determined after drying and adjusting the weight of whole pods to 7% moisture. All 12 transformed lines produced yields that were equal to or better than their non-transformed parent, while six lines yielded significantly more than their non-transformed parent (435 to 1124 lb/A greater). Grade, blanching, and nutrient characteristics were determined in sub-samples of pods and kernels harvested from each plot. Nine of the transgenic lines had increased percentages of fancy pods and six transgenic lines had an increased value of \$135 to 254/A based on grade characteristics and the government loan rate. There were no differences in blanching of extra large kernels for transgenic lines and their parent, but medium-size kernels of five transgenic lines showed increased percentages of whole kernels blanched compared to their non-transformed parent. Levels of Ca, K, Mg, P, and S were analyzed in medium and extra large kernels. Statistically significant differences were found in transgenic lines compared to non-transformed parents. One transgenic line showed a 10% increase in concentration of Ca, five lines had 5 to 11% increase in levels of K, two lines had 9 to 11% increase in levels of Mg, three lines had a 12 to 14% increase in levels of P, and three lines had 24 to 37% increase in levels of S. None of the transgenic lines had reduced levels of K, Mg, P and S elements in seed compared to their non-transformed parent, but two transgenic lines had a 10 to 13% reduction in levels of Ca.

Molecular Characterization of the Core Subset of the U. S. Peanut Germplasm Core Collection using SSR Markers. K.R. KOTTAPALLI, New Mexico State University, Agricultural Science Center, Clovis, NM 88101; G.B. BUROW and J.J. BURKE, USDA-ARS Cropping Systems Research Laboratory, Lubbock, TX 79415; N. PUPPALA, New Mexico State University, Agricultural Science Center, Clovis, NM 88101; and M.D. BUROW, Texas Tech University, Department of Plant and Soil Science, Lubbock, TX 79409, and Texas Agricultural Experiment Station, Lubbock, TX 79403.

Genetic improvement of peanut is hampered by limited genetic variability in the germplasm used commonly by breeding programs. Greater variability is present in the peanut core and core subset collections, but utilization of these collections

could be enhanced by genetic characterization of these collections. We report characterization of the genetic characterization of the core subset of the peanut core collection using simple sequence repeat (SSR) markers. Seventy two peanut accessions appearing uniform by visual measurement in the field were genotyped using 73 primer pairs (twelve of these markers were mapped SSR loci) and scored for the presence or absence of amplified bands. Based on phylogenetic and phenetic studies employing a combination of clustering and parsimony methodologies, the four market types grown in the U. S. were grouped. Substantial genetic variation was found to exist in the core subset, contrary to previous reports of little or no variation in the cultivated species. A group of twelve unlinked markers with known map positions identified lower variation among the accessions but was found sufficient to identify both botanical and market types and gave results similar to those obtained using the larger number of primer pairs. The genetic variation observed indicate that SSR markers are highly suitable for development of genetic maps of cultivated tetraploid peanut.

Breeding for Foliar Disease Resistance in Australia. A. CRUICKSHANK\*, DPI&F, PO Box 23, Kingaroy, QLD 4610, Australia; P. TREVORROW, DPI&F, PO Box 1054, Mareeba, QLD 4880, Australia; and J. TATNELL, DPI&F, PO Box 23, Kingaroy, QLD 4610, Australia.

Improvement in foliar disease resistance (FDR) has been an objective of the Australian breeding program since inception in 1977. Peanuts in Queensland are affected by 4 fungal leaf diseases – late leafspot, rust, net blotch and early leafspot. These diseases are of varying importance in different peanut growing regions throughout the world. In Queensland they are most important on the Atherton Tablelands and in coastal areas. On the Tablelands the cost of foliar fungicides is over 30% of growing costs. So resistance is attractive but to be of any substantial value to the Queensland industry a cultivar must have resistance to at least late leafspot and rust. Leafspot resistant introductions from Florida still require up to 10 fungicide sprays to control rust.

D147-p3-6 is the first Australian peanut cultivar with good FDR, commercially viable yield potential and good quality. It has high oleic kernel. It has potential for coastal systems and warmer areas of the Atherton Tableland where CBR is less important than foliar disease.

D147-p3-6 was bred by crossing two FDR lines with diverse pedigrees and selecting for yield as well as FDR in early generations. F2:3 families were compared and selected in an unsprayed foliar disease experiment with unequal replication in the 2001-02 summer. In the following summer F4 plants were selected in a foliar disease nursery. The F4:5 rows were grown for seed increase in the 2003 winter nursery. In 2003-04 F4:6 lines were entered in a replicated foliar disease test at Kairi and in one or more yield tests throughout Queensland. D147-p3-6 demonstrated the best combination of FDR and yield.

Genetic and Environmental Effects on Breeding for Early Maturity. M.D. BUROW, Texas Agricultural Experiment Station, Lubbock, TX 79403, and Texas Tech University, Department of Plant and Soil Science, Lubbock, TX 79409; Y. LÓPEZ, Texas Agricultural Experiment Station, Lubbock, TX 79403; C.E. SIMPSON, Texas Agricultural Experiment

Station, Lubbock, TX 76401; and M.R. BARING, Texas Agricultural Experiment Station, Lubbock, College Station, TX 77843.

Maturity is an important consideration for breeding programs, especially ones with shorter growing seasons. Although considerable genetic diversity exists for maturity, the genetic basis for the trait is not well understood. However, we have gathered considerable data for correlations with yield and seed size, and the tendency towards smaller seed size in particular is problematic. Maturity is influenced also by environment, and varieties grown in warmer climates are not necessarily more mature, due to farm practices. There is also some evidence that different varieties do not behave identically under different environments, that is, some mature well at warmer locations, but mature poorly at cooler ones. Development of molecular markers for maturity would give a better understanding of the genetics of maturity.

## **PRODUCTION TECHNOLOGY**

Profit Potential of Double-Cropping a Fall Vegetable Crop with Peanut: A Georgia Example. A. FLANDERS, N.B. SMITH<sup>\*</sup> and E.G. FONSAH  
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The 2002 Farm Bill restricts vegetable production on peanut base acres unless base payments are forfeited on those base acres that vegetables are grown. In some instances vegetables are allowed to be grown on base acres without penalty if a farmer has a history of vegetable production prior to 2002 Farm Bill. This regulation is subject to change in the next farm bill and producers who have historically grown peanut may be interested in growing vegetables in rotation with peanut. This paper presents an analysis of the economic feasibility for double-cropping cabbage with peanut in South Georgia. Average weekly cabbage prices are analyzed in a market window format to determine when prices are high enough to be profitable for double-cropping with peanuts. The most recent eleven years of terminal market data are used to determine the average prices. Summary statistics (standard deviation and coefficient of variation) are used to illustrate the price risk present during the market window as well. The addition of cabbage as a double cropping practice following peanuts increases the net returns potential for a typical South Georgia peanut, cotton, corn farm. Based on estimated cost of \$5.34 per box of cabbage, a positive margin exists based on Atlanta wholesale market for Georgia origin cabbage. A spring harvest of cabbage followed by late spring planting of peanuts is feasible and whole farm model results show a potential for significant increase in net returns to risk. Stochastic returns to cabbage show a 95% chance of positive net return to cabbage production. The stochastic return includes the fixed costs unique to cabbage.

Does Conservation Tillage Pay? N.B. SMITH<sup>\*</sup>, C. LACY, and W. SHURLEY.  
Department of Agricultural and Applied Economics, The University of Georgia, Tifton, GA 31793; T.D. HEWITT, Food and Resource Economics Department, North Florida Research and Education Center, The University of Florida, Marianna, FL 32446; J.P. BEASLEY, Jr., J.A. BALDWIN and E.J. WILLIAMS. Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.

Producer interest in conservation tillage in peanuts is growing as energy prices have risen. Using University of Georgia crop budgets, it is estimated that variable costs of peanut production have risen a minimum of ten to fifteen percent for peanuts since 2004 due to higher fuel and fertilizer prices. In producer meetings the question has been asked if producers should switch to conservation tillage in response to higher energy prices. Savings in fuel, labor and equipment costs are often cited as factors for switching to conservation tillage in addition to environmental benefits of soil and water conservation. Deep tillage using a plow and harrowed once or twice is the predominant tillage method for peanuts. A county agent survey estimated 47% of Georgia farmers uses a bottom plow for land preparation in 2002. Reduced tillage, in particular strip-till, was estimated to be used by 23% of Georgia farmers. Strip-tillage budgets are developed in conjunction with conventional tillage budgets to analyze whether it will pay to switch to conservation tillage under a higher fuel price scenario. Data from six years of research in Georgia and Florida are incorporated into the budgets to examine the profitability of strip-tillage compared with conventional tillage.

The Role of Insecticides in Reduction of Thrips Injury and Tomato Spotted Wilt Virus in Virginia/North Carolina Peanut. D.A. HERBERT, JR.\*, and S. MALONE, Tidewater Agricultural Research and Extension Center, Virginia Tech, Suffolk, VA 23437; R.L. BRANDENBURG, and B.M. ROYALS, Department of Entomology, North Carolina State University, Box 7613, Raleigh, NC 27695.

A field experiment was conducted in 2003, 2004 and 2005 at the Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, Virginia to evaluate the role of insecticides in reducing seedling injury caused by tobacco thrips (*Franliniella fusca*) feeding and incidence of tomato spotted wilt virus (TSWV). Either aldicarb or phorate, each at 1.0 lb ai/acre, was applied into the seed furrow at planting. Each was followed by foliar broadcast applications of acephate at 0.36 lb ai/acre. Broadcast treatments were applied either zero times, one time at late-ground cracking stage (LGC) when seedlings were ca. 6 inches in diameter, 2 times (at LGC and again in 2 wks), 3 times (at LGC, and again at 2 wks and 4 wks), or 4 times (at LGC and again at 2 wks, 4 wks, and 6 wks). Plots were 40 ft long and 4 rows wide, replicated 4 times in a randomized complete block design. Only the center 2 rows of each plot were treated with insecticides. Three or 4 visual thrips plant injury ratings were taken at 2-wk intervals beginning at LGC. Injury was rated based on a 0-10 scale where 0=no injury and 10=dead plants. TSWV incidence was estimated 3 times at about 3-wk intervals beginning when the first symptoms appeared by counting the number of plants exhibiting disease symptoms in the treated rows of each plot. Pod yields were determined based on digging and harvesting the treated rows of each plot. To satisfy assumptions for ANOVA, thrips plant injury ratings were log transformed and TSWV ratings were squareroot transformed. SAS proc mixed was used to analyze thrips plant injury, TSWV incidence and yield data. Year and replication were random effects in all models. The models for thrips plant injury ratings and TSWV ratings had the repeated assessments modeled using an autoregressive covariance structure. Results showed that for the thrips plant injury rating there was a significant difference between the in-furrow treatments ( $P=0.0016$ ) with aldicarb resulting in the least injury, 5.4% less than phorate. There was a significant difference between numbers of broadcast acephate applications ( $P=0.0007$ ). Tukey adjusted pairwise comparisons showed that

there was a significant difference between zero broadcast applications and one application ( $P=0.0003$ ). However, there were no significant differences between one and 2 applications ( $P=0.5873$ ), one and 3 applications ( $P=0.9669$ ), one and 4 applications ( $P=0.9230$ ), 2 and 3 applications ( $P=0.9243$ ), 2 and 4 applications ( $P=0.9677$ ), or 3 and 4 applications ( $P=0.9998$ ). With TSWV incidence rating, there was a significant difference between in-furrow treatments ( $P=0.0001$ ) with phorate resulting in fewer symptomatic plants than aldicarb. There was a significant difference between numbers of broadcast acephate applications ( $P=0.0222$ ). However, Tukey adjusted pairwise comparisons showed that the response was weak and only 4 applications resulted in significantly fewer symptomatic plants compared to zero applications ( $P=0.0342$ ). With pod yield, there was no significant difference between in-furrow treatments ( $P=0.0854$ ). However, there was a significant difference between number of broadcast acephate applications ( $P=0.0001$ ). Pairwise comparisons showed that there was a significant difference between zero broadcast applications and one application ( $P=0.0058$ ), zero and 2 applications ( $P=0.0045$ ), zero and 3 applications ( $P=0.0003$ ), and zero and 4 applications ( $P=0.0001$ ). However, there were no significant differences between one application and any of the multiple applications.

Seasonal Occurrence of Threecornered Alfalfa Hopper and Girdling Injury on Peanut; Effects of Insecticide Treatment Timing. K. RAHMAN, J.W. CHAPIN, and J.S. THOMAS\*, Department of Entomology, Soils, and Plant Sciences, Clemson University, Edisto REC, 64 Research Road, Blackville, SC 29817.

Based on weekly sampling of seven peanut fields during 2004 and 2005, the threecornered alfalfa hopper, *Spissistilus festinus* (Say), produced two generations per season in peanut. Adult hoppers colonized peanut fields (planted 11 to 23 May) during June and produced a generation of nymphs from late June to early August, with a subsequent population of adults from late July to early September. A second generation of nymphs was produced in peanut from late August through September. These nymphs produced a second generation of adults in September. Only low levels of stem girdling ( $< 0.5$ /plant) were detected in June, but girdling increased gradually until the last week of July when injury suddenly increased contemporary with peak populations of late instar nymphs and adults of the first field generation. A second increase in girdling occurred in September corresponding to the second field generation. In a separate experiment (planted 24 May), nine insecticide treatments were evaluated for effects on threecornered alfalfa hopper stem girdling: an untreated check; an in-furrow Temik check (1.2 kg ai/ha aldicarb); in-furrow Temik 15G plus foliar insecticide (Karate Z 0.03 kg ai/ha lambda-cyhalothrin) applied at either 15, 30, 45, 60, 75, or 90 DAP; and in-furrow Temik plus Lorsban 15G (2.24 kg ai/ha chlorpyrifos) band-applied at 50 DAP. The experimental design was a RCB with 5 replicates. The experimental unit was a 16-row plot (96 cm row spacing) 12 m in length. The in-furrow Temik treatment had more girdling than the untreated check, presumably because severe thrips stunting made untreated plants less attractive to hoppers and hopper colonization occurred after any potential residual benefit of in-furrow treatment. Likewise the 15 and 30 DAP foliar treatments were relatively ineffective in suppressing girdling because these treatments lacked sufficient residual efficacy to control the first generation of hoppers in July. Foliar treatments at 75 and 90 DAP were also ineffective because some injury had already occurred. Foliar treatments at 45 and 60 DAP

were most effective because they coincided with increases in first generation nymphs and adults. Granular chlorpyrifos treatment at pegging (50 DAP) also suppressed hopper girdling. There was no yield response to treatment at the injury levels present in these tests (6 girdles/plant). Although the economic injury level for this pest has not been defined, our data indicate that a critical interval for monitoring hopper activity is the first three weeks of July, prior to the occurrence of significant girdling injury. Where growers have a high risk of threecornered alfalfa hopper injury, applying foliar treatment in mid-July would be effective in suppressing damage.

Candidate Cultivars for Organic Peanut Production. W.D. BRANCH\*, Dept. of Crop and Soil Sciences, and A.K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793-0748.

Organic peanut (*Arachis hypogaea* L.) production appears to be increasing in overall interest in the southeast U.S. However to meet this challenge, disease and insect resistant cultivars will be needed. No fungicide or insecticide yield tests were conducted for the past three consecutive years (2003-05) at the Coastal Plain Experiment Station under irrigation to evaluate for such pest resistance. The most endemic diseases particularly now in the southeast are spotted wilt caused by Tomato spotted wilt virus (TSWV) and both early and late leafspots caused by *Cercospora arachidicola* Hori and *Cercosporidium personatum* (Berk & Curt.) Deighton, respectively. Two of the most endemic insects now are tobacco thrips (*Frankliniella fusca* Hinds) and potato leafhopper (*Empoasca fabae* Harris). Unfortunately, little if any thrips resistance is currently available, and thrips damage is noticeably uniform and severe early in the growing season each year. However, plants typically recovered by mid-season. Shortly after thrips recovery, leafhopper burn starts appearing as the classic "v-shape" chlorosis on the leaflet tips and progresses toward necrotic areas later in the season. Results from these replicated field tests showed significant differences ( $P \leq 0.05$ ) among advanced Georgia breeding lines and cultivars. Two current Georgia cultivars 'Georgia-01R' and 'Georgia-05E' consistently produced the best yields with high levels of resistance to TSWV, leafhoppers, and leafspot each year. Georgia-01R is a multiple-pest-resistant, runner-type cultivar with late maturity; whereas, Georgia-05E is a multiple-pest-resistant, virginia-type cultivar with medium-late maturity. Both of these cultivars should be considered as candidates for the organic peanut production in the southeastern U.S.

Influence of Application Variables on Efficacy of Boron-Containing Fertilizers Applied to Peanut. D.L. JORDAN\*, S.H. LANCASTER, J.E. LANIER, P.D. JOHNSON, J.B. BEAM, A.C. YORK, and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695 and F.R. WALLS, S. CASTEEL, and C. HUDAK, Department of Agriculture and Consumer Services, Raleigh, NC 27607.

Several formulations of the essential element boron (B) are commercially available for application to peanut (*Arachis hypogaea* L.) and other crops. Research was conducted in North Carolina to compare accumulation of B in peanut leaves, stems, and pods following application of water soluble disodium octaborate with 17.5% B (Solubor) and boric acid with 17.5% B (Boric Acid) as well as liquid B formulations including 3.3% B and 4.5% nitrogen (N) (N-Boron), 5.0% B (Boron Xtra), and 9% B (Nutrisol 9% Boron). Research was also

conducted to determine if efficacy of clethodim, imazapic, imazethapyr, sethoxydim, and 2,4-DB was affected by these B formulations when applied in mixture. The influence of these herbicides on B accumulation was also compared with disodium octaborate. Accumulation of B in leaves and stems was primarily a reflection of the amount of actual elemental B applied per acre rather than differences in formulation. The highest concentration of B in leaves and stems was noted after application of disodium octaborate (17.5% B) compared with the liquid formulations containing 3.3% B or 5.0% B. However, accumulation of B in peanut seed did not differ from non-treated peanut regardless of B formulation. Accumulation of B was similar when B was applied as disodium octaborate and boric acid, and accumulation exceeded B concentration in non-treated peanut. Accumulation of B was similar for the liquid 9% B formulation and boric acid. Accumulation of B for the liquid 9% B formulation did not differ from non-treated peanut. Boron formulation did not affect sicklepod [*Senna obtusifolia* (L.) Irwin and Barneby] control by 2,4-DB and imazapic or large crabgrass [*Digitaria sanguinalis* (L.) Scop.] control by clethodim or sethoxydim. However, Palmer amaranth [*Amaranthus palmeri* (S.) Wats.] was controlled less by imazethapyr when applied with disodium octaborate compared with no B or the other B formulations. Boron accumulation in leaf tissue increased when disodium octaborate was applied with crop oil concentrate or nonionic surfactant compared with applications without adjuvant. Although differences in B accumulation were noted among herbicide treatments, presence of adjuvant was the most important variable in defining response. Boron accumulation was similar when disodium octaborate was applied with azoxystrobin, chlorothalonil, pyraclostrobin, and tebuconazole. With the exception of pyraclostrobin, B accumulation was similar when comparing B alone or with fungicides plus lambda cyhalothrin. Boron accumulation was higher when B was applied with pyraclostrobin compared with B plus lambda cyhalothrin either alone or with the fungicides chlorothalonil, pyraclostrobin, or tebuconazole. Boron did not affect peanut defoliation caused by late leaf spot [*Cercosporidium personatum* (Berk et Curt.) Deighton] when comparing efficacy of azoxystrobin, chlorothalonil, pyraclostrobin, and tebuconazole.

Virginia-Type Peanut (*Arachis hypogaea* L.) Response to Chaperone®. J.C. FAIRCLOTH\*, Tidewater Agricultural Research and Extension Center, Virginia Tech, Virginia Tech, Suffolk, VA 23437; D.L. JORDAN, Dept of Crop Science, North Carolina State University, Box 7620, Raleigh, NC 27695; D.L. COKER, Agricultural Research and Extension Center, Virginia Tech, Virginia Tech, Suffolk, VA 23437; P.D. JOHNSON Dept of Crop Science, North Carolina State University, Box 7620, Raleigh, NC 27695; G.U. WHITE, and D.N. HORTON Agricultural Research and Extension Center, Virginia Tech, Virginia Tech, Suffolk, VA 23437.

In 2004 and 2005, experiments were conducted in Virginia and North Carolina to evaluate peanut response to a nitro phenolic compound applied in the formulated product Chaperone®. Chaperone® was applied at several rates to peanut in the mid-bloom stage of development. Pod yield, extra large kernel percentage (ELK%), total sound mature kernel percentage (TSMK%), and crude protein levels were measured at some or all of the sites. There were significant differences in pod yield, ELK%, and TSMK% by site while crude protein levels measured at the Virginia site in 2004 and 2005 were not different. The differences observed at sites were likely due to variability in environmental conditions and the characteristics associated with the varieties utilized at each

site. The treatments imposed in this experiment resulted in no difference in parameters measured.

Simulating Peanut Yield Response in Georgia under Different Climate Scenarios.

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Department of Biological and Agricultural Engineering, The University of Georgia, Griffin, GA, 30223-1797; C.W. FRAISSE, and J.W. JONES,  
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Weather and climate play a key role in peanut production in Georgia. Climate forecasts may provide valuable information to peanut growers that could help them optimize their management strategies under different climate scenarios. The goal of this study was to examine the impact of different El Niño-Southern Oscillation (ENSO) phases on peanut production under both irrigated and rainfed conditions. Yield of Georgia Green, a very common peanut variety in Georgia and other southeastern states, was simulated for several counties in Georgia using the CSM-CROPGRO-Peanut model. These simulations were based on long-term historical weather data, different planting dates and local soil types. Dryland peanuts had higher yields under La Niña versus El Niño if planted before May 15. Delayed planting in an El Niño year was more favorable as opposed to a La Niña year. Yields of irrigated peanuts were higher under La Niña compared to El Niño regardless of planting date.

Furrow Diking for Improved Water Use Efficiency. R.C. NUTI\*, R.B. SORENSEN, W.H. FAIRCLOTH, and M.C. LAMB. USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842-0509.

Water is the single most limiting resource in crop production. Irrigation improves production stability, but its efficiency can always be improved upon. In traditional rainfed regions, water capture is essential for maintaining soil moisture levels to support crop growth. Furrow diking is a tillage operation that creates a series of basins and dams in the furrow to catch and absorb water delivered by either rainfall or irrigation. A series of field experiments was initiated in 2005 near Dawson, Georgia using furrow dikes in irrigated and non-irrigated peanut, cotton, and corn. The objectives included monitoring soil moisture levels to determine if water can be saved in irrigated systems with furrow dikes compared to those in conventionally tilled systems. In non-irrigated experiments, yield and quality parameters were monitored to determine any benefit to furrow dikes. The growing season of 2005 had abundant moisture. Peanut and cotton crops required only one irrigation. Furrow diked corn received 3 irrigations and non-diked corn required 5 irrigations. Despite abundant rainfall, higher levels of soil moisture were maintained in plots with furrow dikes compared to conventional plots. Similar yields were attained regardless of furrow diking. No detrimental effects such as water-logging or digging losses in peanut were observed with furrow dikes.

Response of Runner Peanut Cultivars to Irrigation Strategies. J.P. BEASLEY, JR.\*, J.E. PAULK, III, and J.E. HOOK, Crop and Soil Sciences Department, The University of Georgia, Tifton, GA 31793-1209.

Irrigation timing and the amount of water applied can greatly enhance yield, grade factors, and quality potential of peanut, *Arachis hypogaea* L. In the southeastern U.S. peanut producing region, irrigation is needed to supplement

rainfall in order to meet a peanut plant's water requirement for optimum yield potential. Irrigation costs add to an already high cost of production for producers. Over the past several years there have been approximately 10 new runner peanut cultivars released for planting in the southeast U.S. Current irrigation strategies for peanut were developed on older cultivars, more specifically, Florunner. The objective of this research was to determine the response in yield and grade factors of recently released runner peanut cultivars to irrigation strategies. The irrigation application strategies included in this trial were Irrigator Pro, UGA EASY Pan, and an experimental strategy based on a modification of the UGA Extension recommendation in combination with the Stansell and Pallas water curve for peanut. Trials were conducted in crop years 2004-2005 at the University of Georgia's Stripling Irrigation Research Park in Mitchell County. The trial was a split plot design with irrigation strategy as the main plot and cultivar as the sub plot. Plots were two rows by 55 feet in length and there were four replications in 2004 and three replications in 2005. There was no interaction ( $p < 0.05$ ) between cultivars and irrigation strategies in both years. The experimental strategy, when averaged over cultivars, provided the highest yield in both years (non-significant in 2004 and significantly different than Irrigator Pro in 2005).

Temperature and pH Effects on *Bradyrhizobium* Survival for Peanut. M. RADTKE, Texas Tech Univ., Lubbock, TX 79410, C.L. TROSTLE\*, Texas Cooperative Extension, Texas A&M Univ., Lubbock, TX 79403, and M. SAN FRANCISCO, Texas Tech Univ., Lubbock, TX 79410.

High soil pH (7.4-8.3) is believed to restrict *Bradyrhizobium* nodulation in many West Texas peanut fields. The objective is to evaluate the response of three *Bradyrhizobium* inoculants to both temperature and pH for laboratory in vitro tests as well as in three diverse field soils. Inoculants (Frozen Prep, Urbana; Lift, Nitragin; HiStick L, Becker Underwood) were incubated in vitro using arabinose-gluconate media at pH 6.0, 7.0, and 8.0, and temperatures of 30, 37, and 40 °C. Also, inoculants were soil-applied then nodulation evaluated on Flavor Runner 458 in pots for three typical peanut soils (Brownfield loamy sand, Texas, pH 7.7; Amarillo fine sandy loam, Texas, pH 7.3; Tifton sandy loam, Georgia, pH 6.1) using day/night temperatures of 25/10 or 40/25 °C. In vitro *Bradyrhizobium* survival was high for all inoculants at 30 °C. At  $\geq 37$  °C Frozen Prep also had high survival but HiStick L was dead within 3 days. Plant nodulation counts at 35 days found nodulation was not greatly affected by soil pH but was greatly reduced at higher temperatures. Results suggest producer practices to minimize high temperatures where inoculant is applied will enhance nodulation.

## Poster Session I

Determination of Mega-Environments for Peanut Breeding Using the Modeling Approach. W. PUTTO\*, A. PATANOTHAI, S. JOGLOY, K. PANNANGPETCH, Department of Agronomy, Faculty of Agriculture, Khon Kaen University, Khon Kaen, Thailand and G. HOOGENBOOM, Department of Biological and Agricultural Engineering, The University of Georgia, Griffin, GA, 30223, USA.

Plant breeders normally seek to develop broadly adapted varieties for a wide target region. There is now an increasing interest to breed for locally adapted cultivars to take advantage of specific adaptation to local environments. For this

purpose, a sub-division of the production regions into mega-environments is needed. For Thailand it is not known whether all peanut production areas are sufficiently diverse to justify a sub-division into mega-environments for breeding for specific adaptation. The goal of this study was to evaluate mega-environments in Thailand for peanut breeding using a dynamic crop simulation model. The Cropping System Model (CSM)-CROPGRO-Peanut model was used to simulate pod yield for 17 peanut lines in 78 environments during the early-rainy season, 40 environments during the mid-rainy season and 47 environments during the dry seasons, totaling 165 environments in each year, for 30 years. Data of all environments in each year were used to independently sub-divide those environments into groups based on the genotype x environment (G x E) interactions, using a cluster analysis and a genotype and genotype x environment (GGE) biplot. The determination of the mega-environments was done based on the consistency of environmental grouping for different years. The combined analyses of variance for the simulated yearly multi-environment trials showed that the environmental main effects (locations and seasons) were the major source for variation in yield, while the G x E interaction effects accounted for only a very small portion of the total yield variations for all years. Grouping of peanut growing environments both by cluster analysis and by GGE biplot showed inconsistent results of environmental grouping and non-repeatable relative performances of peanut lines across years. These results indicated that the peanut production areas in Thailand should be classified as one mega-environment for peanut breeding.

First Report of *Peanut Mottle Virus* (PMV) in Rhizoma Peanut. A.L. MAAS\*, USDA-ARS, Coastal Plain Exp. Sta., Tifton GA 31794; C. NISCHWITZ, and A.K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793-0748.

Plant material of rhizoma peanut (*Arachis glabrata*) of an unknown accession, obtained from the *Arachis* species collection nursery planted and maintained at the Coastal Plain Research Station, Tifton, GA was recently brought into the greenhouse where ring spots were identified on immature leaves. Tissue samples were tested for virus using ELISA and PCR methods. Results indicated the presence of Peanut mottle virus (PMV). An additional 42 genotypes from the same location planted in 1960 and 1979 were tested from greenhouse material to verify the presence or absence of PMV. An additional five genotypes were ELISA positive for potyvirus. These were further tested by PCR for PMV and two genotypes tested positive for PMV, the original unknown accession and PI 243334. This is the first report of PMV in rhizoma peanut.

Reduction in Data Collection for Determination of Cultivar Coefficients for Breeding Applications. J. ANOTHAI, A. PATANOTHAI, K. PANNANGPETCH, S. JOYLOY, Department of Agronomy, Faculty of Agriculture, Khon Kaen University, Khon Kaen 40002, Thailand; G. HOOGENBOOM, Department of Biological and Agricultural Engineering, The University of Georgia Griffin, GA 30223-1797; and K.J. BOOTE, Agronomy Department, University of Florida, Gainesville, FL 32611-0500.

The cultivar coefficients of new breeding lines are normally derived from detailed field experiments conducted under optimum conditions over several environments with extensive data collection for phenological and growth traits. It

is difficult to apply this procedure to breeding lines at the early testing stages as the number of lines is large and the available seed for each line is limited. The objective of this study was to determine the minimum amount of phenological development and growth data that are essential for the estimation of genetic coefficients (GCs) of peanut breeding lines for breeding applications. Data of nine peanut lines which were collected following the recommended procedures were used to represent the full data set for model calibration. Several reduced data sets were generated by omitting data of one or more plant samplings in different combinations from the full data. These reduced data sets were used to independently derive the GCs of the nine peanut lines through model calibration. The individual sets of GCs were evaluated using an independent set of observed data from a field experiment. Comparisons were made for goodness of fit for both model calibration and evaluation. The results showed that: i) different types of reduced phenological data gave the same values for the GCs, ii) GCs derived from different types of reduced growth data were about the same as those derived from the full data set, iii) model calibration of GCs using different types of reduced data showed good agreement between observed and simulated values for all growth characteristics except for a few where the values for the index of agreement (d) were very low, and iv) model evaluation of all sets of GCs showed good agreement between observed and simulated values for all development and growth traits. These results indicate that it is possible to reduce the amount of data to be collected for cultivar genetic coefficient determination. The suggested minimum data collection procedure is to observe the first flowering (R1) and maturity dates (R8) and to conduct three times of plant sampling after first seed (R5) for growth analysis.

Fewer Sprays Result In Greater Profit: The Economic Benefits Of Using The University Of Georgia's Fungal Risk Index. F.J. CONNELLY\*, Georgia Cooperative Extension Service, University of Georgia, Nashville, GA 31639, R.C. KEMERAIT, J.E. WOODWARD, and T.B. BRENNEMAN, Department of Plant Pathology, University of Georgia, Tifton, GA 31793

Due to changes in peanut economics, growers must be able to reduce production costs without jeopardizing yield. The University of Georgia Fungal Disease Risk Index allows producers to quantify disease risk and tailor fungicide programs accordingly, thus reducing input costs. In 2005, a standard 6-spray program and a reduced 4-spray program were evaluated in two experiments in Berrien County, Georgia. Treatments were arranged in alternating rows with four replications. Plots were 12 rows by the length of the field. Disease assessments were taken prior to or at harvest. Yield data was used for treatment comparisons and economic analysis. There were no significant differences in disease control or yield between the two programs. Returns for the reduced program were significantly higher than the standard program at both locations by \$34 and \$91 per acre, respectively. Thus by using the risk index, reduced fungicide programs can maintain disease control while increasing profits for the growers.

Identification of Peanut Pods with Three or More Kernels by Machine Vision and Neural Network. Y. WANG, W. YANG\* and L.T. WALKER, Department of Food and Animal Sciences, Alabama A&M University, Normal, Alabama 35762.

Separation of unshelled peanuts containing three or more kernels for niche markets can potentially increase the value of unshelled peanuts and thus the

profit of peanut producers or processors. Effective identification of peanut pods with three or more kernels is a critical step prior to separation. In this study, a machine vision system was used in conjunction with neural network technique to discriminate unshelled peanuts into two groups: one with three or more kernels and the other with two or less kernels. The system composed of an EDC 3000B video camera (Electrim Corporation, Princeton, NJ), a sample box, two florescent lighting sources, and a Gateway E series Pentium IV computer. A total of 762 peanut pods were imaged along the radial direction. Then the peanut was rotated 90° along its longitudinal axis and imaged again. After the images were taken, the pod was split open and the number of kernels was counted and recorded. The images of the pod were divided into two batches. The first batch was used for training the neural network and the second batch for pattern recognition and identification. A set of physical features including the number of bumps, area, length and perimeter were extracted from the image taken and used to train the artificial neural network for discriminating the peanuts. It was found that the discrimination accuracy of this system for peanut pods with three or more kernels was 90.3% for the conditions used in this study. Improvement of the discrimination accuracy will be possible if more features are to be used and the algorithm be improved.

Improving Storage Oxidative Stability of Roasted Peanuts using Edible Coatings in Combination with Power Ultrasound. P. WAMBURA\* and W. YANG, Department of Food and Animal Sciences, Alabama A&M University, Normal, AL 35762

The effect of edible coatings in conjunction with power ultrasound on oxidative stability of roasted peanuts was investigated by measuring the oxidative stability index (OSI) (AOAC Method Cd 12 B-92) using an OSI instrument (Omion, Rockland, MA). Runner type peanut was roasted in an oven at 177°C for 20 min. Roasted samples, 50 g each, were subjected to power ultrasound treatment in 100 ml hexane at room temperature for 1, 5, 10 and 30 min in a sonicator (Zenith Ultrasonics, Inc., Norwood, NJ) of combined frequencies of 25, 40 and 80 kHz. Whey protein isolate (WPI) solutions at 11%, Zein at 15% and Carboxymethylcellulose (CMC) at 0.5% were used to coat peanuts by immersing 200 g kernels in the coating formulations (400 ml) for 30 s. Both the uncoated and coated samples were stored in an accelerated shelf life testing chamber at 35±2°C. The OSI values were determined at 110°C. Results after 16 weeks of storage showed that there was a steady OSI improvement for both the coated and sonicated-and-coated samples as compared to uncoated, while the sonicated-and-coated samples had more pronounced improvement than the merely coated samples. As compared to the uncoated, the coated samples without sonication improved the oxidative stability for 66%, 35% and 4% with CMC, WPI and Zein coatings, respectively, while the sonicated-and-coated samples improved the oxidative stability for 76%, 48% and 22% with CMC, WPI and Zein coatings, respectively. This showed that sonication prior to coating created an additional 10%, 13% and 18% improvement beyond the CMC, WPI and Zein coatings, respectively. Edible coatings in combination with power ultrasound provided a promising alternative for inhibiting rancidity and extending shelf life of roasted peanuts.

Rodent Damage on Surface Drip Irrigation Tubing in Peanut. R.B. SORENSEN, R.C. NUTI, and M.C. LAMB. USDA-ARS-National Peanut Research Laboratory, P.O. Box 509, 1011 Forrester Dr. SE, Dawson, GA 39842

Surface drip (SD) irrigation of field crops has been gaining interest in the farming community. However, rodent damage is one of the major drawbacks for SD acceptance. This research documents the cost of repairing drip tubing and effectiveness of several rodent control methods. Four sites were used to identify cost of repairing tubing. Treatments included drip tubing on the soil surface with no treatment, tubing that was lightly buried, sprayed with an insecticide or animal repellent, and edible rodenticide placed next to the tubing. Once a leak was found, it took an average 4 minutes to repair the hole. Each repair had an average cost of \$0.67 for labor and repair materials. This does not include time or transportation cost to find the leak. Rodent damage was the same in the control versus any chemical management technique. At Site 4, the animal repellent, Ropel<sup>®</sup>, did have less rodent damage (2392 holes/ha) compared with the control (6049 holes/ha) however, the damage was extensive enough that it would be more cost effective to replace the tubing than to repair. The drip tubing that was slightly buried had the best rodent control (5 holes/ha) compared with all other treatments (1771 holes/ha). One disadvantage of burying the drip tubing is removal. Strip tillage along with burying the drip tubing showed excellent resistance to rodent damage and appears to be a cost effective management tool for SD.

Influence of Digging Date and Fungicide Program on Canopy Defoliation and Pod Yield of Peanut. D.S. CARLEY, D.L. JORDAN\*, B.B. SHEW, T.B. SUTTON, R.L. BRANDENBURG, and M.G. BURTON, North Carolina State University, Raleigh, NC 27695; and C.L. DHARMASRI, Syngenta Crop Protection, Inc., Greensboro, NC 27419.

Research was conducted in North Carolina to determine if Virginia market type peanut should be dug prior to excessive canopy defoliation even though peanut has not reached the optimum digging date based on pod mesocarp color estimates of pod maturation. Eight experiments were conducted during 2004 and 2005 that consisted of a combination of three fungicide programs (no fungicide, two fungicide sprays in July, and bi-weekly fungicide sprays beginning in early July and continuing through September) and two or three digging dates. The final digging date in each experiment was based on optimum pod maturation of peanut receiving bi-weekly fungicide sprays and exhibited only minor canopy defoliation. A combination of early leaf spot, late leaf spot, and web blotch contributed to canopy defoliation. Applying fungicides bi-weekly beginning in early July through mid September resulted in less canopy defoliation than not applying fungicide, and in most instances pod yield increased with these applications. Applying two fungicide sprays in July was generally not as effective in preventing canopy defoliation compared with bi-weekly sprays. However, peanut yield was not always higher when bi-weekly sprays were compared with the two early sprays only. When peanut canopy defoliation exceeded approximately 50%, digging 6 to 12 days prior to the optimum digging date resulted in higher yields than digging at optimum maturity when comparing yields within fungicide programs. However, response to digging prior to the optimum digging date was variable when defoliation was less than approximately 50%. Results from these experiments support current Cooperative Extension recommendations stating that growers should consider digging Virginia market type peanut prior to optimum pod maturity only when peanut canopy defoliation exceeds 50%.

Responses to Water Deficit during Early Plant Growth of Peanut Cultivars with Different Plant Types. D. PUANGBUT, S. JOGLOY\*, N. VORASOOT, C. AKKASAENG and A. PATANOTHAI. Department of Agronomy, Faculty of Agriculture, Khon Kaen University, Khon Kaen, Thailand, 40002.

Peanut is widely grown under rain-fed conditions and the crop normally encounters drought stress of some stages of crop development. Previous studies indicated that water deficit at reproductive phase, particularly at pod setting, could reduce yield substantially. On the contrary, water deficit at the pre-flowering stage was found to give a yield increase. This raises the question on the mechanism of peanut response to pre-flowering stress. Such mechanism has been investigated, but only in a Spanish cultivar. The aim of this study was to investigate the response to water deficit during early plant growth of peanut cultivars with difference in plant types. An experiment was conducted under greenhouse conditions using a 2 x 11 Factorial in RCBD with 4 replications. Two water regimes [field capacity (FC)] and 1/3 available water (1/3 AW) and two peanut plant types (Virginia and Spanish) were used. The Spanish type (ICGV 98348, ICGV 98353, ICGV 98308, ICGV98305, ICGV 98300, ICGV 98303, ICGV 98324, ICGV 98330 and Tainan 9), while the Virginia type cultivars KK 60-3 and Tifton-8. Data were recorded for relative water content (RWC) at 25, 32, 40, 43 and 55 days after emergence (DAE). Number of leaves, leaf area and root/shoot ratio were recorded at 40 DAE and at harvest. Number of flowers was recorded daily from appearance of first flower until harvest. Yield and its components were recorded at final harvest. The results showed that drought stress at early growth phases reduced biomass of both Virginia and Spanish cultivars, however, their biomass increased after re-watering, but still reduced for genotypes ICGV 98324 and Tainan 9, which were Spanish type. The response to yield increase was evident in Virginia type most lines in Spanish type with exception to Tainan 9. The highest yield increase were observed for ICGV 98348 and ICGV 98305 of the Spanish type; whereas, KK 60-3 gave the highest yield for Virginia type. Harvest index (HI) and yield components were always associated with yield increase. Virginia type had higher HI than Spanish type. But Spanish type performed better for yield components; especially number of mature pod except Tainan 9. Early drought stress reduced RWC, number of leaves and leaf area, however, increased root/shoot ratio. Re-watering of the stress treatments, in general, resulted in the increases over the well-watered treatment in RWC, root/shoot ratio and leaf area, but a decrease in number of flower. Percentages of increase or decrease were relatively similar among lines for RWC, but quite different for root/shoot ratio, leaf area and number of leaf. Significant increase of these traits were noted after re-watering. Spanish type peanut performed better for root/shoot ratio, number of leaves and leaf area than Virginia type peanut, but RWC remained the same.

Effect of Growth Regulators on Regeneration of Peanut 'Florman INTA'. P.C. FAUSTINELLI\*, R.W. RACCA, D.J. COLLINO, A. DE L. AVILA, Institute of Phytopathology and Plant Physiology (IFFIVE)-INTA. Córdoba, Argentina; and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748.

Peanut (*Arachis hypogaea* L.) is one of the most important leguminous crops. It is a rich source of proteins and oil. Tissue culture has been used for genetic modification of peanut to improve the agronomic and nutritional attributes of this

crop. Since genotype can affect tissue culture responses, the main objective of this research was to determine the optimum concentration of auxins and cytokinins in the basal media needed for organogenesis from the peanut cv. Florman INTA. The first two leaves (2-5 mm in length) were dissected from aseptically germinated seeds and cultivated on Murashige and Skoog (MS) medium supplemented with 16 combinations of naphthaleneacetic acid (NAA) (0.01 and 1 mg/l) and benzyladenine (BA) or kinetin (KIN) (1 to 10 mg/l) during the initiation stage. Bud regeneration occurred in all growth regulator combinations, but the maximum number of buds per explant (1.2) was regenerated at a concentration of 1 mg/l NAA with 3 mg/l BA. Development of buds into shoots was readily achieved by transferring regenerated buds onto fresh medium containing 0.01 mg/l NAA (without BA). Roots were induced to grow when shoots were transferred to medium containing 3 mg/l of NAA. The vigorous root system allowed for a high survival rate of the plantlets after transplanting. The overall efficiency of the system was 15 regenerated plants per 100 explants. Plants transplanted into soil were completely normal and capable of producing seeds.

Response of Valencia Peanut to In-Furrow Application of Capsicum Oleoresin and Seed Treatment with Biofungicides. S. SANOGO, Department of Entomology, Plant Pathology, and Weed Science, New Mexico State University, Las Cruces, NM 88003; and N. PUPPALA, Clovis Agricultural Science Center, Clovis, NM 88101.

Chemical fungicides are routinely applied in peanut in order to maintain profitability of production. The heavy reliance on chemical fungicides is not ecologically sustainable. In order to provide peanut growers with new sustainable options, we have initiated research on the effectiveness of botanical extracts and biofungicides in soilborne disease management in peanut. We report here on the effect of seed treatment with a streptomyces-based biofungicide (Micro108) and in-furrow application of a botanical extract (capsicum oleoresin) on yield and quality of Valencia peanut. When peanut seeds were treated with Micro108, yield was increased by approximately 15% compared to control (untreated seeds). Similarly, peanut grade was slightly greater with Micro108 than with no seed treatment. Pod discoloration was reduced by approximately 12% with Micro108 treatment compared to control. Capsicum oleoresin (30% preparation) delayed vegetative and reproductive growth of peanut and severely reduced yield. But peanut grade under application of capsicum oleoresin was similar to that recorded in Micro108 and control treatments. Peanut discoloration was reduced by approximately 71% when compared to control and Micron108 treatments. Further studies are focusing on the response of peanut to reduced concentrations of capsicum oleoresin.

Simulating Water Requirements for Peanut in Georgia Using a Decision Support System. A. GARCIA y GARCIA, L.C. GUERRA, J.O. PAZ\*, and G. HOOGENBOOM, Department of Biological and Agricultural Engineering, The University of Georgia, Griffin, GA 30223-1797.

Water is one of the most important factors that affect crop production. Water use by crops varies as a function of weather conditions, available water in the soil, crop species and growth stage. However, soil and weather conditions are not always favorable for optimal growth and development. Therefore, supplemental water must be supplied in order to ensure high yields. Crop models and Decision

Support Systems (DSS) have demonstrated to be useful tools as a complement to research, such as their ability to simulate a crop's response to different management scenarios under various environmental conditions. The objectives of this study were to determine the water requirements for peanut using a DSS and to study the impact of climate variability on water requirements for peanut in Georgia. Georgia Green, a common peanut variety, was used to simulate peanut yield and associated parameters for selected locations in southwest Georgia for nine sowing dates, from April 16 to June 12, on a weekly basis. The irrigation threshold and irrigation management were set to avoid water stress. For each location, the period studied was divided into El Niño Southern Oscillation (ENSO) phases, including El Niño, La Niña, and Neutral years. Weekly water requirements were obtained from the simulations. Our analysis revealed that peanut requires around 21 inches of water from sowing to harvest. The higher amounts of water requirements were observed from week 6 to week 17 after sowing. No significant differences were found between water requirements during the ENSO phases. However, during La Niña years water requirements were slightly higher than during El Niño and Neutral years. The potential of crop models and DSS in providing information for irrigation scheduling strategies was demonstrated. Plans are under development to include more locations in the Georgia peanut belt and other peanut varieties of different maturity.

Impact of Winter Cover Crops and Tillage on Insect, Disease and Nematode Pest Populations and Yield of Peanuts. J.R. WEEKS\*, Entomology/Plant Pathology Department, Auburn University, Wiregrass Research and Extension Center, Headland, Alabama 36345, H.L. CAMPBELL, Entomology/Plant Pathology Department, Auburn University, Auburn University, Alabama 36849, B.E. GAMBLE, Alabama Agricultural Experiment Station, Auburn University, Wiregrass Research and Extension Center, Headland, Alabama 36345.

In 2002-2005 at the Wiregrass Research and Extension Center in Headland, AL, major insect, disease and nematode populations were evaluated on Georgia Green cultivar peanut planted strip-till into a winter cover crop of wheat, oats, rye, or left fallow. Winter fallow plots were mold board plowed and conventionally cultivated prior to planting peanuts. Peanuts planted into cover crops were direct seeded into the killed winter cover. A RCB with four replications was used. Recommended weed and disease control of ACES were followed during the growing season. Peanuts were monitored weekly from plant emergence until digging for insect pests and disease incidence. Peanut yields were taken and reported at 10% moisture.

No significant differences in foliage feeding insects were observed in either year among the treatments. In 2002 and 2005 significant increases in thrips damage were observed in the conventionally planted peanuts compared to the strip-tilled peanuts. In 2005 the conventionally planted peanuts had significantly higher incidence of TSWV. There was no significant difference among treatments when SSR hit counts were made at digging. In 2004 and 2005 the wheat cover/ strip-tilled peanuts had significantly lower early leaf spot ratings than did the conventionally planted peanuts. In 2003 and 2005 soil assays for peanut root knot nematodes indicated significantly lower PRKN populations in conventionally tilled peanuts compared to the strip-tilled plots. Peanut yields in 2002 were significantly higher in wheat and rye cover crop/strip-tilled peanuts and in 2005 rye winter cover/strip-tilled peanuts and conventionally planted peanuts produced

significantly higher yields than the other treatments.

#### Management of Peanut Diseases in Fields with Low-to-Moderate Disease Risk:

A Three Year Evaluation of Reduced Fungicide Programs in Lanier County Georgia. E.L. ANDREWS\*, University of Georgia, Cooperative Extension Service, Lakeland, GA, 31635; M.O. FOURAKERS, University of Georgia, Cooperative Extension Service, Valdosta, GA, 31603; J.E. WOODWARD, R.C. KEMERAIT, Jr., and T.B. BRENNEMAN, University of Georgia, Department of Plant Pathology, Tifton, GA, 31793.

The University of Georgia Fungal Disease Risk Index is an educational tool that can be used to quantify disease risk based on management practices. By using the index, fungicide programs can be adapted to reduce expenditures without sacrificing disease control or yield. Field studies were conducted in 2003, 2004, and 2005 to evaluate the performance of reduced fungicide programs to their respective standard programs in fields with low to moderate risk. Foliar and soilborne diseases were monitored throughout each season, and yields were used for program comparisons. Additional analyses were conducted to determine the economic return of each program. Leaf spot intensity was significantly higher for one reduced program in 2004; however, no differences in stem rot, yield, or returns were observed. Over the three seasons, returns for reduced programs resulted in a \$16 per acre increase over standard programs, indicating that reduced programs can be implemented without compromising disease control or income.

#### Diagnosing Peanut Diseases: An Overview of the UGA Plant Disease Clinic.

J.H. BROCK\*, R.C. KEMERAIT, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793.

The University of Georgia Plant Disease Clinic in Tifton has diagnostic responsibilities for corn, cotton, peanut, pecan, soybean, tobacco, and vegetables. For the number of samples received, peanut is second to vegetables and accounts for 37 % of row crop samples. Peanut samples have been received from March through November, with the highest percentage received during August (32.1%), followed by September (22.8%) and July (16.5%). Rhizoctonia diseases such as limb rot and pod rot constitute the majority of samples (18.2%), followed by tomato spotted wilt (13.7%), early leaf spot (12.0%), *Cylindrocladium* black rot (10.3%), southern stem rot (7.0%), *Aspergillus* crown rot (3.6%), and late leaf spot (2.4%). The diseases and other plant health problems diagnosed at the clinic is not truly representative of the occurrence within the state because most diagnoses are provided at the county level. The Plant Disease Clinic serves to support county faculty with confirmation of suspected problems or handling unknowns.

### **JOE SUGG GRADUATE STUDENT COMPETITION**

#### Influence of Bahiagrass Rotations on TSW, Leaf Spot, and Southern Stem Rot of

Peanut. F.K. TSIGBEY\*, J.J. MAROIS, D.L. WRIGHT, T.W. KATSVAIRO and P. WIATRAK. University of Florida, North Florida Research and Education Center, Quincy, FL 32351.

The impact of plant diseases on peanut production cannot be overemphasized since its management is very costly and difficult. Experiments to test the use of

cotton-bahiagrass-bahiagrass-peanut (CBBP) and peanut-cotton-cotton-peanut (PCCP) rotations in the management of TSWV and other peanut diseases were investigated in Quincy, Florida in 2003, 2004, and 2005. Disease ratings were done for TSW, peanut leaf spots (early, late leaf spots, and rust,) and southern stem rot in 2003 -2005. The average TSW incidence was higher for the PCCP rotations (21.7%, 71%, 51.4%) compared to the CBBP rotation (10.2%, 32%, and 28.93%) in 2003, 2004, and 2005 respectively. Number of thrips per peanut plant was lower for the CBBP rotation (8) and higher for the PCCP rotation (22) in 2005 and this corresponded with a higher percentage of peanut plants damaged by thrips feeding, 37.5% and 92.5% respectively. Bahiagrass rotation reduced *Cercospora* leaf spot progression and severity in all years with significant differences in the severity of peanut leaf spots between the two rotations. On the Florida scale of 1-10, leaf spot severity at harvest was 5.2 for CBBP rotation peanuts compared to 5.8 in the PCCP rotation in 2003; 6.1 and 7.5, 6.1 and 6.6 respectively in 2004, and 2005. Disease increases between consecutive scoring times were higher for the PCCP rotations than for the CBBP rotation throughout the seasons and years. Southern stem rot (*Sclerotium rolfsii*) incidence was higher at all scoring times for the peanut/cotton rotation compared to the bahiagrass rotated peanuts in 2003 and was not of any significance in 2004 and 2005. Peanut rust incidence between the rotations was erratic in all years with its onset at the latter stages of crop growth. The CBBP rotation increased pod yield of peanut over the traditional PCCP rotation, 2,783lb/A and 1,959lb/A in 2003; 3,282lb/A, and 2,424lb/A in 2004 respectively.

Variation among Peanut Genotypes in Susceptibility to Thrips Vected Tomato Spotted Wilt Virus. S.D. RINIKER\*, R. BRANDENBURG and G. KENNEDY, Department of Entomology, North Carolina State University, Raleigh, NC 27695-7613.

Tobacco thrips, *Frankliniella fusca* (Hinds), populations and, Tomato spotted wilt virus (TSWV) incidence and severity were monitored in field plots of Virginia-type peanut (*Arachis hypogaea* L.) cultivars Gregory and Perry and twenty-two advanced lines. The tests were conducted at the Peanut Belt Research Station in Lewiston, NC during the 2004 and 2005 field seasons. Across both years, final incidence of TSWV and the number of adult thrips varied significantly among lines. Differences among lines, in the number of infected, but non-symptomatic plants and in the occurrence of late season "yellowing" also varied significantly. TSWV infection was confirmed by ImmunoStrip® assay (Agdia ISK 39300) in 86% and 100% of visually symptomatic plants, 10% and 40% of non-symptomatic, and 92% and 98% of late-season yellows during 2004 and 2005, respectively. No differences were detected among lines in the number of tobacco thrips larvae or in the severity of disease and thrips-damage ratings. No significant correlation was detected between TSWV incidence and the average number of thrips collected over lines.

Evaluation of Suspect ALS Resistance of Palmer Amaranth. A.M. WISE\*, E.P. PROSTKO, W.K. VENCILL and T.L. GREY, Crop and Soil Science Department, The University of Georgia, Tifton, GA 31794.

Since the initial discovery of Acetolactate synthase (ALS) inhibiting herbicide resistant Palmer Amaranth (*Amaranthus palmeri* S. Wats) in 2002, there have been numerous reports from growers of the decreasing efficacy of imazapic. In 2005, a study was initiated to establish the extent and potential for ALS resistance

in Palmer Amaranth. Seed samples were collected from 61 field locations in 21 counties ranging from extreme southwest Georgia to east central Georgia. Samples were randomly sampled from suspect populations and the whole female head was clipped from the plant and stored at 4 C for 45 days until they were cleaned and planted. Seed were then planted in a growth chamber set at 30 C for 16 hours and 20 C for 8 hours, until germination and then moved to a greenhouse kept at 32 C and 25 C and placed under growth lights which were set on 16 hour cycles. The plants were screened for resistance between the 4 and 5 leaf stage using the normal rate of 0.071 Kg ai/ha and a 0.71 Kg ai/ha. Plants were visually rated at 7 and 14 days after treatment. All of the samples showed some resistance. To corroborate these results a lab assay was conducted to determine resistance. Leaf tissue from the treated plants was evaluated using an acetoin assay and spectrometer and compared to the acetoin levels of a known susceptible plant. This assay confirms the results of the screening trial.

Weed Control Efficacy and Crop Tolerance to Valor applied to Peanut at Fumigation. N. O'BERRY\*, J. FAIRCLOTH, Crop, Soil, and Environmental Sciences Department, Tidewater Agricultural Research and Extension Center, Virginia Tech, Virginia Tech, Suffolk, VA 23437; and D. JORDAN, Dept of Crop Science, North Carolina State University, Box 7620, Raleigh, NC 27695.

A trial was conducted in 2005 at the Tidewater Agricultural Research and Extension Center in Suffolk, Virginia to compare the use of Valor herbicide applied to a peanut field preemergence versus at fumigation. All treatments were put out with various timings of Dual and applications of Dual and Strongarm were included for comparison purposes. Treatments were replicated three times and plots were 30 feet long and 12 feet wide. All plots were fumigated on April 20, planted on May 18 and the cultivar utilized was VA 98R. Plots were rated for weed control efficacy and crop injury on June 6, 16, and 30 and July 20 to determine the potential for crop injury of all treatments and the adequacy of the residual activity for weed control in a conventionally tilled system where Valor application occurs approximately two weeks prior to planting. This trial is scheduled to be conducted again in 2006 in Virginia and North Carolina. The results of the 2005 and 2006 trials will be reported at the 2006 meeting of the American Peanut Research and Education Society.

Peanut Tolerance to Post-Emergence Herbicides that have Potential for Controlling Eastern Black Nightshade. J.M. WEEKS, JR.\*, J.C. FAIRCLOTH, D.N. HORTON and G.U. WHITE. Virginia Polytechnic Institute and State University, Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.

Eastern black nightshade (*Solanum ptycanthum*) is a weed native to Virginia that has become troublesome to producers in the past several seasons. One eastern black nightshade plant can produce several berries, each with up to 100 small seeds. Upon ripening, berries are released from the plant, and if the berry is smashed seeds are released and dispersed. Through these means, populations of eastern black nightshade can explode in fields quickly, particularly through traffic which can smash berries on the ground and move seeds throughout the field and to other fields. In the Midwest eastern black nightshade has developed resistance to ALS herbicides and control has become an issue. In the 2004

growing season producers in the Virginia peanut belt began frequently reporting eastern black nightshade in their fields. Following these reports, a preliminary trial in a peanut field overrun with eastern black nightshade was conducted twice using two post-emergence herbicides at different rates and mixes replicated four times. The treatments were a and untreated control, Cobra at 12.5 oz/ac, Cobra at 12.5oz/ac tank mixed with Basagran at 16 oz/ac, and Blazer at 1 pt/ac. All spray treatments included Agridex at 1 pt/ac. These preliminary trials showed that the Blazer treatment had the greatest control at 85% at 7 days after application and 78.3% at 14 days. Crop injury was statistically the same for all three spray treatments with an average rating of 23.1% at 7 days after application and 25.7% at 14 days. During the 2006 season, peanuts will be planted and maintained weed free at the Virginia Tidewater AREC. There will be twelve treatments with varied mixtures of Cobra, Blazer, 2,4-DB, and Cadre to assess peanut injury following application. Further, eastern black nightshade will be planted into pots on the station to observe growth habit and potential seed production depending on time of germination during the growing season. In a separate study, several postemergence herbicide treatments will be examined to assess weed control efficacy at various growth stages.

Resistance in Peanut (*Arachis hypogaea* L.) Cultivars and Breeding Lines to Three Root-Knot Nematode Species. W. DONG\*, T. BRENNEMAN, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793; C.C. HOLBROOK, P. TIMPER, USDA-ARS, Coastal Plain Exp. Stn. Tifton, GA 31793; and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793.

Three major species of root-knot nematode infect peanut (*Arachis hypogaea*): *Meloidogyne arenaria* race 1 (Ma), *M. hapla* (Mh), and *M. javanica* (Mj). Sources of resistance to all three are needed to develop novel peanut cultivars with broad resistance to *Meloidogyne* spp. Fifty-seven cultivars and breeding lines of peanut were collected from China and the US and evaluated in the greenhouse for resistance to Ma, Mh, and Mj. On lines 990304-1, D029-2, D031, D108, and C724-25-8, all three root-knot species produced  $\leq 25\%$  of the eggs produced on susceptible controls, Georgia Green (for Ma and Mj) or D098 (for Mh). Based on egg numbers per gram of root, COAN, NemaTAM, and D009 showed high or moderate resistance to Ma and Mj; D099 had moderate resistance to both Ma and Mh; D999 and 950530 had moderate resistance to Mj and Mh, while three and five accessions had moderate resistance to Ma and Mh alone, respectively. C724-19-11 and AT0817 also showed some resistance to Ma, Mj, or Mh, however, the variability of egg numbers was high, indicating that these two accessions were still segregating. All Mj-resistant genotypes were also resistant either to Ma, Mh, or both. For all three species, the correlation coefficients between gall number and eggs/g root were significantly positive ( $P \leq 0.01$ ). All the genotypes which showed resistance based on egg production were also resistant on gall number, with two exceptions in Ma. Conversely, some genotypes were moderately or highly susceptible based on eggs/g root, although they were resistant based on gall number. In conclusion, sources of resistance to all three *Meloidogyne* spp. exist within cultivated peanut (*Arachis hypogaea* L.) either with or without introgressed genes from peanut wild species.

Critical Period of Grass Versus Broadleaf Weed Interference in Peanut. W.J. EVERMAN, S.B. CLEWIS, W.E. THOMAS, and J.W. WILCUT. Crop Science Department, North Carolina State University, Raleigh, NC 27695.

Researchers have focused on evaluating density-dependent interactions of a single weed species on peanut growth and yield. However, most fields have more than one weed species. Therefore, our objectives were to evaluate peanut yield response to various weed-free timings, weed removal timings, and determine the critical periods of weed control for peanut in the presence of broadleaf weeds as well as the critical period of weed interference for peanut in the presence of grass weeds. Separate trials were conducted at the Peanut Belt Research Station near Lewiston-Woodville and the Upper Coastal Plain Research Station near Rocky Mount, NC in 2005. In the two studies grass or broadleaf weeds were removed using chemical control and hand weeding methods throughout the season for the respective broadleaf and grass competition studies. Treatments included weed competition periods of 0 (Weed-free), 3, 5, 7, 9, and 16 weeks after planting (WAP) where weeds were allowed to compete with the peanut crop then removed and plots were maintained weed-free for the remainder of the season, weed-free periods of 0 (Full season weedy), 3, 5, 7, 9, and 16 WAP where plots were maintained weed-free until weeds were allowed to compete with the crop for the rest of the season, and weedy intervals of 3 to 7, 3 to 9, 3 to 11, 5 to 9, 5 to 11, and 7 to 11 WAP where plots were maintained weed-free for a period of 3, 5, or 7 WAP and weeds were then allowed to grow for a period of up to 8 weeks before being removed until harvest. Peanut varieties NC-V11 and VA 98R were planted in 12 ft x 20 ft plots with 36 in row spacing on May 3 and 4 at Rocky Mount and Lewiston, respectively. ANOVA was used to indicate differences in studies, replication, and treatments. Peanut yields were modeled using Gompertz model:  $Yield = aebekT$ . North Carolina experienced dry weather in 2005 which was evident in Rocky Mount, but not at Lewiston where lateral move irrigation was available. Peanut yield responses based on percent of weed-free yield were determined for both locations. Using these yield responses we developed a critical period of weed interference in peanut for both broadleaf and grass weeds.

Physiological Behavior of Foliar Applied Diclosulam in Peanuts, Pitted Morningglory, and Sicklepod. S.B. CLEWIS\*, W.J. EVERMAN, and J.W. WILCUT; Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620.

Laboratory experiments using 14 C-diclosulam were conducted to investigate differential tolerance exhibited by peanuts, pitted morningglory, and sicklepod to foliar applied diclosulam. Treatments were arranged in a randomized complete block design with three replications to evaluate absorption, translocation, and metabolism of diclosulam. Treated plants were harvested 4, 24, 48, and 72 h after treatment (HAT). Pitted morningglory were sectioned into treated leaf, above treated leaf, below treated leaf, and roots. Peanuts and sicklepod were sectioned into treated leaf, leaflet, above treated leaf, below treated leaf, and roots. Data were subjected to ANOVA with sums of squares partitioned to reflect a split-plot treatment structure and trial effects. The four harvest timings were considered main plots, the three species were considered subplots, and the plant portions and washes were considered subsubplots.

Early Season Disease Progress of Early Leaf Spot in the Bolivian Cultivar Bayo Grande and Related Progeny in the Southeastern United States. S.K. GREMILLION\*, A.K. CULBREATH, J.W. TODD, the University of Georgia, Coastal Plain Expt. Stn., Tifton, GA 31793; and R. PITTMAN, USDA-ARS, Georgia Expt. Stn., Griffin, GA.

Leaf spot of peanut (*Arachis hypogaea*) is caused by the fungal pathogens *Cercospora arachidicola* (early leaf spot) and *Cercosporidium personatum* (late leaf spot). The objective of this study was to document early season leaf spot progress for Bayo Grande (BG), a Bolivian land-race cultivar, and for a series of new breeding lines, CRSP-01, CRSP-08, CRSP-14, and CRSP-20, progeny of Bayo Grande and Florida MDR-98. Florida MDR-98 and Georgia Green (GG), a cultivar with high susceptibility to leaf spot, were also included. In 2002 and 2003, field trials were conducted in a split plot design including conventional tillage and strip till as the whole plots and genotype as the split plots. Disease was measured by randomly sampling 10 lateral branches from nonsprayed plots and determining % incidence ((# leaves with one or more lesion or defoliated leaflets/total number of leaves)\*100) and disease intensity (total # of spots per leaf/total # of leaves) weekly. Area Under the Disease Progress Curves (AUDPC) was then calculated for each genotype using incidence and intensity data. Disease measurements were pooled across tillage treatments for genotype evaluation. The 2002 season was dry with a mild leaf spot epidemic, however, epidemics strengthened in 2003 with wetter conditions. Early leaf spot was the predominant foliar disease in both years. Effect of genotype on AUDPC of leaf spot epidemics was significant ( $P<0.0001$ ) in both years. In 2002, BG and CRSP-01, CRSP-08, CRSP-14 had the lowest incidence and intensity AUDPC values, CRSP-20 and MDR-98 were intermediate, and GG ranked the highest. In 2003, incidence AUDPC values for BG and CRSP-08 were the lowest with CRSP-01, CRSP-14, CRSP-20, and MDR-98 ranking intermediate and GG resulting in the highest. Bayo Grande, CRSP-14 and CRSP-20 had the lowest intensity AUDPC values, GG had the highest, and the remaining genotypes were intermediate. Incidence and intensity AUDPC variables were significantly correlated in both years ( $R^2=0.5504$ ,  $P<0.0001$ ;  $1R^2=0.7885$ ,  $P<0.0001$ , respectively). Knowledge about early season disease development in BG and breeding lines will contribute to disease management in the United States as well as Bolivia, South America.

Fruity Fermented Off-flavor Distribution in Samples from Large Peanut Lots. J.L. GREENE\*, T.H. SANDERS and M.A. DRAKE. USDA-ARS-MQHRU, Department of Food Science, North Carolina State University, Raleigh, NC 27695.

One of the most common off-flavors in peanuts is described as fruity fermented (FF). This off-flavor develops when peanuts are cured at excessive temperatures ( $>35^{\circ}\text{C}$ ). The determination of FF intensity in large peanut lots is important to manufacturers who purchase peanuts. The distribution of FF intensity among samples from a peanut lot is critical to development of sampling plans that can be used to accurately identify this off-flavor. The objective of this study was to determine the distribution of fruity fermented off-flavor among samples from large peanut lots. Twenty medium grade-size, runner-type peanut lots identified by a single sample as having FF flavor were sampled. Peanut samples from each lot were randomized and divided into twenty, 680 g sub-samples. The peanuts were roasted for 12 minutes at  $177^{\circ}\text{C}$  using a lab-scale roaster and processed into paste for evaluation by a trained descriptive panel. There were significant ( $P<0.05$ ) differences noted among the 20 peanut lots and within a single lot. The

distribution of FF intensity for the 20 sub-samples in a peanut lot varied. The FF means identified using the descriptive panel did not correlate to the original single sample FF intensity. Variation among the twenty lots, sub-samples from a single lot, and the low correlation with the original single sample FF intensity demonstrate the need to develop a sampling plan to reduce good lots being rejected and bad lots being accepted.

Poor Field Emergence of Late-maturing Peanut Cultivars. B.R. MORTON\*, B.L. TILLMAN, D.W. GORBET, and K.J. BOOTE, Department of Agronomy, University of Florida, Gainesville, FL 32605.

Recently released late-maturing cultivars of peanuts (DP-1, C-99R, Hull, and MDR-98) when multiplied by commercial seed producers, often exhibit poor field emergence resulting in unacceptable field stands. These late-maturing cultivars have genetics related to PI-203396, a primary source of their superior resistance to leafspot, tomato spotted wilt virus, and white mold. They are high yielding. Planting these cultivars could allow the grower to reduce the number of fungicide applications during the growing season, save trips through the field, and reduce the costs of growing peanuts without reducing yields. Because of unpredictable field emergence, commercial seed companies have stopped producing MDR-98 and DP-1. Commercial germination tests usually show acceptable seed quality. Research shows that reduced rate of field emergence does not occur when the seed peanuts have been grown, harvested, and stored in small batches from research plots. The poor field emergence occurs when seed production is through commercial channels with large volumes being harvested, stored in bulk, and treated with fungicides. The problem may be related to the commercial practice of storing seed peanuts in large piles with no humidity or temperature control. Four cultivars from two seed sources stored in five locations were tested both for germination using a standard moist towel test in a germinator, and for field emergence planted in sandy soil. Peanuts stored in bulk in a traditional peanut warehouse had reduced field emergence. Peanuts stored in a controlled environment did not have reduced field emergence. Seed source did not have a significant effect upon field emergence. Cultivars varied in their response to the storage locations. Standard germination tests were not reliable indicators of field emergence.

## **PLANT PATHOLOGY AND NEMATOLOGY II**

Pearl Millet as a Rotation Crop for Reducing Nematodes and Soil-Borne Diseases in Peanut. P. TIMPER\*, USDA ARS, Tifton, GA 31793, and T.B. BRENNEMAN, Department of Plant, University of Georgia, Tifton, GA 31793, and W.W. HANNA, Department of Crop and Soil Science, University of Georgia, Tifton, GA 31793.

Our objective was to determine the effects of pearl millet on root-knot nematodes (*Meloidogyne arenaria*), stem rot, and *Rhizoctonia* limb rot when planted in rotation with peanut. The experiment was conducted in a field naturally infested with the nematode. Peanut was rotated with either two years of TifGrain 102 (nematode-resistant pearl millet), two years of HGM-100 (susceptible pearl millet), or two years of corn (Pioneer 3223). Two staggered sequences of each rotation were included so that a sequence would be completed in 2004 and in 2005. Both peanut cultivars (Georgia Green in 2004 and Georgia-02C in 2005) used in the study were susceptible to *M. arenaria*. The experimental design was

a randomized, complete block with six replications per sequence. A root-gall index (0 to 10 scale) was used to determine nematode damage to peanut at the end of the season. Yield and disease ratings (TSWV, stem rot, and Rhizoctonia limb rot) were also determined for the peanut crop. Root galling caused by root-knot nematodes was greater in peanut following two years of HGM-100 (7.5) than following TifGrain 102 (4.6) and corn (4.8). The severity of TSWV, stem rot, and Rhizoctonia limb rot were unaffected by rotation. In 2004, peanut yields were extremely low because of heavy TSWV pressure and did not differ among rotations. However, in 2005, peanut yields were greater following two years of corn (2504 kg/ha) and TifGrain 102 (2320 kg/ha) than following HGM-100 (1821 kg/ha). We conclude that pearl millet hybrids which are resistant to *M. arenaria* will be a beneficial rotation crop for peanut; whereas, hybrids that are susceptible to the nematode may increase populations of the nematode and subsequent damage to the peanut crop.

Effects of Formulation and Surfactant on Control of Early Leaf Spot of Peanut with Tebuconazole. J.P. DAMICONE\*, Dept. of Entomology and Plant Pathology, Oklahoma State University; and H.A. MELOUK, USDA/ARS Stillwater, OK 74078-3033.

Prior to 1997, control of early leaf spot with the DMI fungicide tebuconazole, applied in a block of 4 mid-season applications scheduled between 2 applications of chlorothalonil, was similar to a full-season program with chlorothalonil. Periodically since 1997, control of early leaf spot with tebuconazole has not been equivalent to chlorothalonil. Modifications in the commercial formulations during this time period may have contributed to the reduced disease control with tebuconazole. In 2005, tebuconazole (0.20 lb/A) was applied in the block program described above using 2004 and 2005 commercial formulations, and using an old (early 1990s) experimental formulation Bay HWG 1608. The 2004 formulation and Bay HWG 1608 observed were applied with and without 0.125% surfactant. Tebuconazole treatments were compared to a full-season chlorothalonil (1.12 lb/A), and a block program with another DMI fungicide prothioconazole (0.18 lb/A). Pressure from early leaf spot on cv. Tamsan 90 was severe as untreated control plots were 95% defoliated and yielded only 2,134 lb/A. All of the fungicide programs reduced defoliation and increased yields compared to the untreated control. The lowest level of defoliation (23% defoliation) was achieved with prothioconazole. Defoliation levels were similar among full-season chlorothalonil (65%) and the tebuconazole formulations (72-75%). However, the addition of surfactant resulted in reduced defoliation for the 2004 formulation (52%) and Bay HWG 1608 (53%) compared to the respective formulations without surfactant. Yields were similar for all fungicide programs and ranged from 2956 to 3477 lb/A. In greenhouse plants inoculated with  $4 \times 10^4$  conidia/ml of an isolate of *Cercospora arachidicola* never exposed to DMI fungicides, disease control with tebuconazole did not differ among the 2004 formulation of Bay HWG 1608, either with or without surfactant. In the greenhouse trial, disease control with tebuconazole was similar to chlorothalonil when the fungicides were applied up to 2 days after inoculation, but was better than chlorothalonil when applied at 3 and 4 days after inoculation. The addition of surfactant was more important than formulation in the control of early leaf spot with tebuconazole. Infectivity studies are needed with isolates of *C. arachidicola* from fields with a long history of DMI usage.

Spatial Patterns of Disease Incidence with *Sclerotinia minor* in the Initial Year of Infestation. T.A. WHEELER\*, Texas Agricultural Station, Lubbock, TX 79403; M.A. HENRY, and C.M. KENERLEY, Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX 77843-2132.

In 2004, we examined patterns of damage caused by *Sclerotinia minor* in two fields where the disease had not been previously detected. One field was located close to fields previously infested with *S. minor*. In 2004, disease appeared to be widespread over the entire field by the end of the growing season. The pattern of spread was atypical in that the entire 120-acre field appeared to be infested rather than the typical pattern with one or several patches appearing in part of a field. In the second field, which was isolated by at least 20 miles from any other infested fields, disease was detected in approximately 30 acres of the 120-acre field, and was heavily concentrated over about 10 acres. All the symptomatic plants were mapped with a global positioning system in 9 of the 10 acres. An exponential model was used to fit the spatial pattern. In 2005, seven fields from which *S. minor* had not been reported were monitored. The subsequent spread of *S. minor* was limited to small patches, typically found near the perimeter of the circle. Disease patches primarily developed in areas where the soil was poorly drained. Fungicide response to new fields infested with *Sclerotinia* blight in 2004 was delayed in some cases because of confusion generated by the unusual patterns of spread. Under environmental conditions that are not currently well defined, *S. minor* does have the ability to spread rapidly across large areas of fields.

Destruction of Sclerotia of *Sclerotinia minor* using Sodium Hypochlorite. J.N. WILSON\*, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409; and T.A. WHEELER, Texas Agricultural Experiment Station, Lubbock, TX 79403.

*Sclerotinia minor* is a serious disease of peanuts (*Arachis hypogaea*) in the southeastern U.S. and since 1996 has become an important problem in the West Texas peanut production area. The primary infection agents of *S. minor* are sclerotia, which are long term survival structures that are capable of remaining viable in soil for years. We have evaluated the effect of sodium hypochlorite and subsequent water emersion on myceliogenic germination of sclerotia harvested from isolates maintained in culture. Sclerotia mixed with autoclaved field soil from Gaines County, TX and Lubbock County, TX were also tested. Three bleach dilution rates (10%, 50%, and 100% solution) and three time intervals (2, 5, and 10 minutes) were evaluated in the two experiments to determine the optimum procedure for killing sclerotia. At the 50% dilution rate, 10 minutes was needed to prevent germination. At the 100% rate, 5 minutes was sufficient to prevent germination. Water emersion did not affect the time interval needed to prevent germination at any dilution rate. A logistical model was used to describe the effect of the treatments on the rate of mycelial growth. Results from autoclaved field soil tests indicate that 60 to 80 minutes at a 100% dilution rate is needed to prevent sclerotia germination in both soils. The rate of mycelial growth for sclerotia in the Lubbock County soil was higher than sclerotia placed in the sandier Gains County soil.

Evidence of Reduced Sensitivity to Tebuconazole in the Peanut Leaf Spot Pathogens. K.L. STEVENSON\* and A.K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793-0748.

Control of early leaf spot (*Cercospora arachidicola*) and late leaf spot (*Cercosporidium personatum*) of peanut (*Arachis hypogaea* L.) is essential for peanut production in the southeastern U.S., and relies heavily on use of the protectant fungicide chlorothalonil and the demethylation-inhibiting (DMI) fungicide, tebuconazole. Results of annual fungicide trials conducted in Georgia from 1997 to 2005 have shown a significant decline in performance of the 4-spray tebuconazole program relative to a full-season chlorothalonil program for leaf spot control. Although other explanations for reduced efficacy were investigated, the possibility of reduced sensitivity to tebuconazole in populations of the leaf spot pathogens prompted an extensive survey of tebuconazole sensitivity in populations of these pathogens in 2005. More than 100 monoconidial isolates of *C. arachidicola* and more than 90 isolates of *C. personatum* were obtained from infected peanut leaves collected from research sites and commercial farms in Georgia, Alabama, and South Carolina with histories of DMI use. Sensitivity (relative growth) of each isolate to tebuconazole was determined using an in vitro mycelial growth assay in potato dextrose broth amended with a discriminatory tebuconazole concentration of 0.3 or 3.0 µg/ml and expressed as a percentage of growth of the same isolate in non-amended medium. Relative growth values were compared to those obtained from a similar assay in 1996 of 368 isolates of *C. arachidicola* and 95 isolates of *C. personatum* with no history of exposure to DMI fungicides (baseline). Results revealed a significant shift in sensitivity of both leaf spot pathogens to discriminatory concentrations of tebuconazole between 1996 and 2005. Mean relative growth of *C. arachidicola* isolates in medium containing 0.3 µg/ml tebuconazole was significantly higher in 2005 than in 1996 (87.1% vs. 37.8%). A similar shift in sensitivity to 0.3 µg/ml tebuconazole was observed in *C. personatum* isolates (45.9% in 1996 vs. 74.4% in 2005). Sensitivity of isolates collected from research sites in 2005 was similar to that of isolates from commercial peanut fields. To date, there have not been widespread reports of leaf spot control failures with DMI fungicides, despite a significant shift in sensitivity to tebuconazole. However, fungicide programs and resistance management guidelines for leaf spot control are currently being reevaluated based on results of the sensitivity survey.

CRSP UFL52: A Model to Improve Peanut Disease Management Among Amerindians in Guyana. R.C. KEMERAIT\*, J.L. SHERWOOD and D. WILSON, Dept. of Plant Pathology, The University of Georgia, G. MACDONALD, Agronomy Department, The University of Florida, S.L. BROWN, Entomology Dept., The University of Georgia, G. HARRIS, Dept. of Crop and Soil Sciences, The University of Georgia, E.J. WILLIAMS, Dept. of Biological and Agricultural Engineering, The University of Georgia, J. WILLIAMS, Director, Peanut CRSP Program, The University of Georgia, J. DAMICONE, Dept. of Plant Pathology, Oklahoma State University, J. LA GRA, C. LYE, R. GILBERT, W. TONEY, and J. ABRAHAM, The Beacon Foundation, Guyana.

Amerindians of remote savannas in Guyana, S. A. grow peanuts as a single cash crop. Many farmers practice slash-and-burn agriculture, though some use limited tillage and mechanization. Objectives of this project were 1) to survey diseases of peanut on the Rupununi savanna, 2) to assess disease issues related to

production practices, 3) to develop new strategies for disease management, and 4) to provide education to the Amerindian farmers on improved disease management. Peanut diseases observed in the Rupununi Savanna included early and late leaf spot, peanut rust, leaf scorch, *Aspergillus* crown rot, and stem rot. Foliar diseases limited yield potential; however their importance was generally not recognized. Growers who used slash-and-burn practices had excellent crop rotation; however growers planting “old” fields typically did not consider the importance of rotation. Growers generally did not understand the importance of field sanitation, destruction of “volunteer” peanuts, and placement of soil on peanut vines when hoeing weeds. The local variety, ‘Guyana Jumbo’, had better resistance to foliar diseases than cultivars common in the United States, but was not resistant. Fungicide trials conducted in 2003, 2004, and 2005 demonstrated that disease control and yields were improved when fungicide programs were used on both ‘Guyana Jumbo’ and ‘C99-R’. Averaged over 3 trials, 2 and 5 applications of chlorothalonil improved yields by 464 lb/A and 616 lb/A over the untreated control, respectively. Since 2003, 13 education meetings have been conducted in small villages, reaching approximately 300 farmers per year. Impact of field trials and meetings has been increased interest in use of fungicides, improvements in field sanitation, and greater attention to crop rotation, and greater awareness of aflatoxin resulting in improved productivity measured as yield/acre.

#### PROVOST 433 SC for the Control of Foliar and Soil-borne Diseases in Peanuts.

G.H. MUSSON\*, J.R. BLOOMBERG, R.A. MYERS, and R. RUDOLPH.  
Bayer CropScience, Research Triangle Park, NC. 27709.

PROVOST 433 SC is a novel broad-spectrum fungicide developed in the U.S. specifically for peanut. It contains two systemic sterol biosynthesis inhibitors tebuconazole and prothioconazole. Prothioconazole is the first representative from a new chemical class, the triazolinthiones, discovered and developed globally by Bayer CropScience. PROVOST 433 SC has consistently provided yield protection equal or superior to current commercial foliar and soil borne disease treatments in several years of trials. It has strong activity against most major foliar and soil-borne diseases including; early and late leaf spot (*Cercospora arachidicola* and *Cercosporidium personatum*), white mold (*Sclerotium rolfsii*), web blotch (*Phoma arachidicola*), limb rot (*Rhizoctonia solani*), and rust (*Puccinia arachidis*). Product details, registration updates, and yield / efficacy data will be presented.

#### New Developments in North Carolina Peanut Disease Advisories.

B.B. SHEW\*, J.E. HOLLOWELL, Department of Plant Pathology, North Carolina State University, Raleigh, NC 27695; M. BROOKS, R. BOYLES, State Climate Office of North Carolina, North Carolina State University, Raleigh, NC 27695; and D.L. JORDAN, Department of Crop Science, North Carolina State University, Raleigh, NC 27695.

Compared to calendar-based schedules, spraying according to weather-based disease advisories can reduce the number of fungicide applications and improve efficacy. The State Climate Office (SCO) of North Carolina maintains weather stations throughout the state, including several locations in peanut production areas. Advisories can be produced by applying published models to data recorded at these weather stations. In the summer of 2005, data downloads, calculations of disease indices, and postings of disease advisories were

automated in cooperation with the SCO. Leaf spot and Sclerotinia advisories were produced from 8 ECONet weather stations and 5 airport weather stations located in peanut production areas. Advisories were delivered to County Agents, research station superintendents, and university cooperators each day from July to harvest. Minor adjustments to data ingestion protocols and model application were made throughout the summer. Advisories from ECONet weather stations were judged reliable based on field testing, input from County Agents, and experience of the investigator. Only one airport weather station (Maxton) produced data sufficiently reliable for disease advisories. At 7 of 8 locations, the leaf spot advisory resulted in fewer sprays than a calendar spray schedule. Field comparisons of advisory and calendar sprays at two locations resulted in similar levels of disease and yield. An advisory web page is under development for the 2006 season.

Late Leaf Spot Resistance to Tebuconazole (Folicur): Responding to Control Failures; and Implications for Peanut Disease Management Programs in South Carolina. J.W. CHAPIN\* and J.S. THOMAS, Department of Entomology, Soils, and Plant Sciences, Clemson University, Edisto REC, 64 Research Road, Blackville, SC 29817.

In annual comparisons of Folicur (tebuconazole 0.23 kg ai/ha) and Bravo (chlorothalonil 1.26 kg ai/ha) from 1991 to 2005, tebuconazole demonstrated equal or superior efficacy against late leaf spot, *Cercosporidium personatum* (Berk. and Curt.), in all years prior to 2003. In all subsequent tests from 2003 through 2005, tebuconazole efficacy against late leaf spot was markedly inferior to chlorothalonil. In 2005 tests, defoliation of tebuconazole plots was similar to an untreated check (69 vs. 62 % and 89 vs. 81 % for check and tebuconazole treatments respectively). Addition of 0.63 kg ai/ha chlorothalonil (3/4 pt Bravo Weather Stik) to tebuconazole improved leaf spot control, but was still less effective than the 1.26 kg/ha chlorothalonil standard (1.5 pt Bravo Weather Stik). When three formulations of tebuconazole (2004 Folicur, 2005 Folicur, and Orius) were compared, all failed equally relative to the chlorothalonil standard. Hourly data from a weather station near the test fields each year demonstrated that rain-off had no role in any of the fungicide failures. In 2004 and 2005 experiments were also conducted to simulate "rescue" treatment of failed leaf spot programs (~ 50 % of leaflets with lesions). Eight treatments were compared: Bravo 1.5 pt (chlorothalonil 1.26 kg ai/ha), Tilt-Bravo 1.5 pt (propiconazole 0.06 kg/ha + chlorothalonil 1.26 kg ai/ha), Folicur 7.2 oz + Bravo 1.5 pt (tebuconazole 0.23 kg ai/ha + chlorothalonil 1.26 kg ai/ha), Headline 6 oz + Bravo 1.5 pt (pyraclostrobin 0.11 kg ai/ha + chlorothalonil 1.26 kg ai/ha), Headline 6 oz (pyraclostrobin 0.11 kg ai/ha), Topsin 4.5FL 5.0 oz + Bravo 1.5 pt (thiophanate-methyl 0.2 kg/ha + chlorothalonil 1.26 kg ai/ha), Stratego 10 oz (0.09 kg/ha propiconazole + 0.09 kg/ha trifloxystrobin), and an untreated check. In both years the Topsin + Bravo treatments had at least the numerically lowest defoliation levels and were considered the most cost-effective for arresting a late leaf spot epidemic. In 2003 and 2004, late leaf spot control failures with tebuconazole were also documented on-farm, in some cases in fields and counties with no previous peanut history. Based on evidence from controlled experiments and grower fields, addition of 1 pt Bravo (0.84 kg/ha chlorothalonil) was recommended for all Folicur applications in S. C. during the 2005 growing season. We are not aware of any control failures with this treatment combination. The development of late leaf spot resistance to tebuconazole has significant implications for responsible use of alternative treatments in S. C. peanut disease management programs.

## BREEDING, BIOTECHNOLOGY, AND GENETICS II

Storage Protein Profiles of Spanish-bunch and Runner Market Type Peanuts and Identification of a New Potential Allergen Protein. B.Z. GUO\*, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793; X.Q. LIANG, Guangdong Academy of Agricultural Sciences, Crops Research Institute, Guangzhou, Guangdong 510640, China; S.J. MALEKI, USDA-ARS, Southern Regional Research Center, New Orleans, LA 17079; C.C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.

Total proteins extracted from seeds of 12 different genotypes of cultivated peanut (*Arachis hypogaea* L.), comprised of Runner market type and Spanish-bunch market type, were separated by electrophoresis on both one-dimensional and two-dimensional SDS-PAGE gels. The protein profiles were similar on one-dimensional gels for all tested peanut genotypes. However, peanut genotype A13 missed one major band with a molecular weight of about 35 kDa. There was one minor band with a molecular weight of 26 kDa protein that presents in all Runner-type peanut genotypes and the derivatives (GT-YY7, GT-YY20, and GT-YY79), which have a Runner-type peanut in their pedigree. The 35 kDa protein in A13 and the 26 kDa protein in Runner-type peanut genotypes were confirmed on the two-dimensional SDS-PAGE gels. Among more than 150 main protein spots on the 2-D gels, four protein spots that were individually marked as spot 1- 4 were showing polymorphic patterns between Runner-type and Spanish-bunch peanuts. Spot 1 (ca. 22.5 kDa, pI 3.9) and spot 2 (ca. 23.5 kDa, pI 5.7) were observed in all Spanish-bunch genotypes, which were not found in those of Runner types. In contrast, spot 3 (ca. 23 kDa, pI 6.6) and spot 4 (ca. 22 kDa, pI 6.8) presented in all Runner type peanut genotypes but not in Spanish-bunch type genotypes. These four protein spots were sequenced. Based on the internal amino acid sequences and N-terminal sequences, these proteins are isoforms of each other. The results revealed that these isoforms of a storage protein exhibit polymorphism of the subunit composition between subspecies of cultivated peanut. Using Western blotting analysis with Ara h3 antibody, we confirmed these protein spots reacting with Ara h3 antibody in a decreased reactivity, resulting in weaker spots in comparison with strong Ara h3 protein spots. These data may conclude that these proteins are subunits or new isoallergens of a new allergen protein of peanut, isoAra h3.

Comparison of Yield, Grade and Disease Resistance of Interspecific Hybrid Derivatives and Commercial Peanut Cultivars in the Virginia-Carolina Area. S.P. TALLURY\*, T.G. ISLEIB, S.R. MILLA-LEWIS, and H.T. STALKER, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629. J.E. HOLLOWELL, Dept. of Plant Pathology, NCSU, Raleigh, NC 27695.

Adverse effects of diseases on peanut (*Arachis hypogaea* L.) include reduced yield and quality of harvested seeds. Additionally, chemical control of diseases elevates production costs. In genus *Arachis*, diploid wild species of section *Arachis* that are cross compatible with *A. hypogaea* have been promoted as sources of disease resistant genes. The peanut genetics program at NCSU maintains several diploid wild species and interspecific hybrid derivatives. The objective of our study was to compare the agronomic performance of interspecific

hybrid derived breeding lines with commercially grown peanut cultivars in the Virginia-Carolina production area. In 2005, 34 tetraploid interspecific hybrid-derived breeding lines selected from crosses of *A. hypogaea* cultivars with four different *Arachis* species and 11 susceptible *A. hypogaea* cultivars were evaluated in field tests for resistance to leaf spots and TSWV. Yield and grade data was collected from the field tests. Eight of the 34 lines were also evaluated in the greenhouse for CBR and Sclerotinia resistance. For leaf spots, the unsprayed mean defoliation score of the cultivars was  $6.86 \pm 0.06$  as compared to  $5.21 \pm 0.10$  for the interspecific hybrid breeding lines. The combined mean yield of the commercial cultivars was  $2672 \pm 59$  kg/ha whereas that of the interspecific hybrid derivatives was  $2995 \pm 99$  kg/ha. The mean SMK and 100 seed weight of the breeding lines was 65.3% and 83.0 g compared to 69.2% and 89.5 g for the cultivars, respectively. The average pod brightness of the breeding lines ranged from 40.0 to 47.7 Hunter L score compared with a range of 44.5 to 46.2 for the cultivars. The greenhouse test for Sclerotinia and CBR resistance identified one line (SPT-06-07) with very high levels of Sclerotinia resistance and four with moderate levels of CBR resistance. TSWV inoculations on lines selected from the field are being conducted in the greenhouse. Progress from field and greenhouse tests will be discussed.

#### Tracking the Inheritance of a Molecular Marker Associated with Resistance to

Sclerotinia Blight in Peanut. K.D. CHENAULT\*, Wheat, Peanut and other Field Crops Research Unit, 1301 N. Western, Stillwater, OK, 74074; B.L. TILLMAN, The University of Florida, Agronomy Department, NFREC, Marianna, FL, 32446; and H.A. MELOUK, USDA-ARS, Wheat, Peanut and other Field Crops Research Unit, 1301 N. Western, Stillwater, OK, 74074.

The production of cultivated peanut, an important agronomic crop throughout the United States and the world, is consistently threatened by various diseases and pests. Although information on the variability of morphological traits associated with disease resistance is available in the literature, few molecular markers associated with such resistance have been reported. The identification of such markers would greatly assist peanut geneticists in selecting genotypes to be used in breeding programs. Using simple sequence repeat (SSR) primers reported for peanut, we previously identified a molecular marker associated with resistance to the fungus *Sclerotinia minor*, the causal agent of Sclerotinia blight. The objectives of this study were to examine F1 populations for the inheritance of the molecular marker and to determine if the presence of the marker correlates with resistance to *S. minor* via greenhouse testing. Preliminary results obtained from testing the F1 populations indicate that the inheritance of the molecular marker is linked to Sclerotinia blight resistance. Future use of this marker to screen segregating populations and/or germplasm collections will greatly enhance the efficiency of breeding peanut with resistance to Sclerotinia blight.

#### Environmental Effects on the Genetic Expression of Resistance to Sclerotinia Blight, Leafspot, Tomato Spotted Wilt Virus and Rootknot Nematodes in Peanut, *Arachis hypogaea* L. C.E. SIMPSON\*, M.D. BUROW, M.R. BARING, and J.L. STARR. Texas Agricultural Experiment Station, Stephenville, TX 76401 & Lubbock, TX 79403; Soil & Crop Sci. Dept., Texas A&M Univ., College Station, TX 77834; and Plant Path. & Microbiol. Dept. Texas A&M Univ., College Sta., TX 77834.

The environmental effects on the genetic expression of various resistances we have worked with during the past four decades have proven to be very

problematic in the selection of resistant types using field and/or greenhouse screening techniques. Our first effort was with leafspot. We tried various screening techniques in the laboratory and greenhouse with controlled environments and controlled inoculations, but mostly to no avail. Our most success has been using field screening under natural conditions of high disease pressure. However, a hot, dry year will often delay any selection for disease resistance by one year. Screening for TSWV and Sclerotinia blight has come exclusively under field conditions, but low disease pressure in some years limit our ability to make meaningful selections. Root-knot nematode (RK) screening has been more uniform in an irrigated situation and presence of the nematodes. A good point on RK nematode screening has been that we have had a very reliable greenhouse/laboratory screening technique that correlates to the field almost 100%.

The best part about screening for RK nematode resistance is that we have also identified flanking molecular markers that are co-dominant for the gene and we can use this technique to identify homozygous resistant plants in a segregating population before harvesting. We are working on developing molecular markers for Sclerotinia blight. It will be of great benefit to peanut breeding programs when there are molecular markers for all four traits.

AFLP Markers associated with Reduced Aflatoxin Accumulation in Interspecific Peanut Lines. S.R. MILLA-LEWIS\*, J.E. SWIFT, T.G. ISLEIB, S.P. TALLURY and H.T. STALKER. Dept. of Crop Science, Box 7629, N.C. State Univ., Raleigh, NC 27695.

Aflatoxin is a toxic and carcinogenic metabolite produced by the soil-borne fungi *Aspergillus flavus* Link ex. Fries and *A. parasiticus* Speare. Aflatoxin contamination can occur pre-harvest under conditions of drought and high heat or post-harvest under conditions of high humidity in storage. Elimination of aflatoxin contamination is a high priority of the peanut industry because of human health concerns. Cultivars with resistance to the fungus per se or that limit the fungus' ability to produce aflatoxin once infected should be an effective and low-cost part of an integrated aflatoxin management program. Programs to develop such cultivars are underway in several countries. However, aflatoxin contamination is expensive to measure and exhibits high environmental variation. Marker-assisted selection can improve the efficiency and cost effectiveness of selection for traits of this sort. The wild diploid ( $2n=2x=20$ ) peanut *Arachis cardenasii* has been previously shown to have an increased genetic potential to resist aflatoxin accumulation. A set of tetraploid ( $2n=4x=40$ ) germplasm lines derived from an interspecific hybrid between *A. cardenasii* and *A. hypogaea* that had already been screened for variation in their ability to support production of aflatoxin, were screened for AFLP marker polymorphism. The goal of this study was to identify AFLP markers associated with reduced aflatoxin accumulation. These markers could ultimately be used to improve the efficiency of selection when transferring the low aflatoxin production characteristic from *A. cardenasii*-derived germplasm lines into elite peanut breeding materials. A total of 36, 46 and 36 markers have been found to be significantly ( $P < 0.01$ ) associated with reduced accumulation of aflatoxin B1, aflatoxin B2, and total aflatoxin (B1 + B2), respectively, in the *A. cardenasii*-derived germplasm lines evaluated in this study.

Isolation and Diversity Analysis of NBS-LRR Resistance Gene Homologs (RGHs) from Peanut. Y. WANG, School of Life Sciences, Anui University, Anhui, China, G.H. HE\*, Department of Agricultural Sciences, Tuskegee University, AL 36088; B. ROSEN, D. COOK, Department of Plant Pathology, University of California, Davis, CA 95616; and S. STEINER, Department of Chemistry, Bluffton University, Bluffton, OH 45817.

The majority of plant disease resistance genes encode members of the large family of NBS-LRR proteins. Conserved domains within NBS-LRR proteins provide opportunities to isolate similar DNA sequences from other plant species based on a degenerate oligonucleotide primer strategy. In the current study, we used phylogenetic analysis to circumscribe the major clades of NBS-LRR proteins of *Medicago truncatula*. Within each major clade, degenerate primer pairs were designed against conserved regions (P-loop and GLPL motifs) of the Nucleotide Binding Site (NBS) domain and used in a polymerase chain reaction assay to isolate Resistance Gene Homologs (RGHs) from tetraploid peanut. In excess of 200 unique NBS-LRR RGHs were cloned and sequenced. Phylogenetic analyses of peanut RGHs suggest that we have effectively sampled both of the major sub-classes of peanut NBS-LRR genes: namely those with an N-terminal Toll/Interleukin-1 Receptor domain (TIR-NBS-LRR) and those with an N-terminal coiled-coil motif (CC-NBS-LRR). Gene specific primers designed from these sequences were used to explore diversity of individual RGH loci across 24 peanut genotypes, while comparison with RGHs previously isolated from cultivated tetraploid (Yuskel et al., 2005) and wild diploid (Bertioli et al., 2003) species provided a genus-wide view *Arachis* RGH diversity. The results contribute to a better understanding of the genomic distribution and evolution of peanut RGHs.

Use of 2n Pollen in Generating Interspecific Derivatives of Groundnut. N. MALLIKARJUNA\* and D. HOISINGTON, International Crops Research Institute for Semi arid Tropics (ICRISAT), Patancheru, 502 324, Andhra Pradesh, India.

Numerically unreduced gametes, called the 2n pollen, is a product of meiosis that bears the sporophytic rather than the gametophytic chromosome number. During meiosis, abnormalities in the division or during spore wall formation, results in 2n pollen. In many cases, such pollen are fertile. During the development of interspecific hybrids in groundnut, cytological-tetrad analysis of F<sub>1</sub> hybrids revealed the presence of dyads, triads and tetrads. Detailed cytological analysis revealed the restitution of second division. This meant that the first meiotic division followed normally, but the cytokinesis in the second division was impaired. The resultant was the formation of dyads and triads. The formation of 2n restitution nucleus or the 2n pollen was observed in the following crosses - *A. hypogaea* x *A. cardenasii*, *A. hypogaea* x *A. diogoi*, *A. hypogaea* x *A. hoehnei*, which are crosses with wild species from section *Arachis*. 2n pollen formation was observed in interspecific derivatives from crosses with *A. chiquitana* and *A. kretschmeri*, both from section *Procumbentes* and in the hybrid *A. hypogaea* x *A. glabrata*. *Arachis glabrata* is a wild species from section *Rhizomatosa*. 2n pollen from the cross *A. hypogaea* x *A. chiquitana* and *A. hypogaea* x *A. kretschmeri* were used to cross with *A. hypogaea* and develop tetraploid hybrids without undergoing through the laborious hexaploidy route of backcross.

Potential Utilization of Peanut for Molecular Genetic Studies of Plant Regeneration. K. MATAND\*, Center for Biotechnology Research and Education, Department of Agricultural Research and Extension, Langston University, Langston, OK 73050; and C.S. PRAKASH, Center for Plant Biotechnology Research, Department of Plant and Soil Sciences, Tuskegee University, Tuskegee, AL 36088.

We are reporting for the first time the potential for using peanut plant emergence for molecular genetic studies of plant regeneration. Seeds from all the four cultivated peanut groups were germinated on Murashige and Skoog medium containing 30 g/l sucrose, 5 g/l agar, 500 mg/l  $MgCl_2$  and different levels of thidiazuron (0, 0.5, 5, 30 mg/l) for evaluating the potential for plant emergence morphogenic responses. All cultures were incubated at 28°C at 16 hrs photoperiod. Emergences were identified as natural structures that are localized on four sites (1, 2, 3 and 4) of plants of all cultivated peanut groups. Variable emergence morphogenic responses that were observed included mere swelling, and callus and shoot formation. There was a strong morphogenic response gradient; the more distally located emergences from the cotyledonary nod responded the least for shoot formation. The results also showed that individual emergences are endowed with necessary genetic information to develop into adventitious shoots. Unlike individually cultured emergences that resulted in abnormal shoots, emergences that were cultured in clusters developed into plants that were grown normally in the greenhouse.

### **EXCELLENCE IN EXTENSION EDUCATION** ***Sponsored by Bayer***

Response of Virginia Market Type Peanut to Gypsum. L.W. SMITH\*, North Carolina Cooperative Extension Service, Hertford, NC 27944; D.L. JORDAN, J.F. SPEARS, P.D. JOHNSON, B.T. PENNY, North Carolina State University, Raleigh, NC 27695; and S. WINSLOW, Tidewater Agronomics, Inc. Belvedere, NC 27919.

Peanut growers routinely apply gypsum to peanut to ensure optimum pod yield and market grades. The Virginia market type cultivar Gregory has the largest pods and kernels when comparing among Virginia market types that are grown commercially in North Carolina. Because this cultivar has a high requirement for gypsum due to its pod and kernel size, growers have expressed concern as to whether or not this cultivar needs gypsum at rates exceeding those typically recommended for Virginia market types. Research was conducted over five years at two locations to determine benefits of increasing the rate of gypsum from a 1.0X rate to a 1.5X rate (X refers to the standard rate recommended for commercially available products.) Additional treatment factors included the cultivars Gregory and NC-V 11 and two rates of potash (0-0-60 of N,  $P_2O_5$ , and  $K_2O$ ) applied immediately to the soil surface after planting (0 and 280 kg/ha.) Although a trend for increased yield was noted when gypsum was applied, statistical increases in yield were noticed in only 2 of 10 experiments. However, increases in percentages of extra large kernels (% ELK) and total sound mature kernels (% TSMK) were noted in over half of the experiments. Increasing the rate of gypsum from 1.0X to 1.5X did not increase pod yield or improve market grade factors for either cultivar regardless of potash rate. Gregory was generally more responsive to gypsum than NC-V 11. In other experiments, applying a rate of gypsum that was half the recommended rate (0.5X) performed as well as the

1.0X rate in several experiments on research stations and in grower's fields. Collectively, these data suggest that higher rates of gypsum than those currently recommended for Virginia market types are not necessary even for the large-seeded cultivar Gregory. Additionally, results suggest that in many instances a rate lower than that currently recommended will perform as well as the recommended rate.

Response of Peanut to In-Furrow Inoculants Applied Alone and with Commercially Available Agrichemicals. P. SMITH\*, North Carolina Cooperative Extension Service, Gatesville, NC 27938; D.L. JORDAN and P.D. JOHNSON, North Carolina State University, Raleigh, NC 27695.

Peanut growers often apply Brady rhizobia in-furrow to increase root inoculation and nitrogen (N) fixation. This approach is extremely important when peanut grower's plant in fields that have not been planted previously to peanut. A variety of fungicides, insecticides, and "enhancer products" are registered for co-application with in-furrow spray inoculants. Research has been conducted in North Carolina on research stations and in farmer's fields to compare efficacy of inoculants and to determine if various commercial products affect peanut stand, nitrogen fixation, pod yield, and market grade factors. Research indicates that efficacy of inoculants Lift (Nitragin Corp.) or Optimize Lift (Nitragin Corp.) was not affected by the insecticide Admire (imidachloprid), the fungicides Abound (azoxystrobin) and Folicur (tebuconazole), and the fertilizer Asset RTU (micronutrient blend). However, applying these inoculants with the fungicide Headline (pyraclostrobin) resulted in nitrogen deficient peanuts compared with inoculants alone.

Farming Alternatives in the Face of Reduced Peanut Acreage in Traditional Peanut-Producing Counties in North Carolina. M. WILLIAMS\*, North Carolina Cooperative Extension Service, Edenton, NC 27932 and D. JORDAN, North Carolina State University, Raleigh, NC 27695.

Peanut growers in northeastern North Carolina are faced with increasing challenges to make a profit growing peanuts. The end of the quota system and a shortage of contracts with acceptable prices have motivated peanut growers to look for numerous alternatives. Growers need to replace income and are making decisions that range from getting out of production completely to finding their own markets for a value added product.

Evaluation of Certain Fungicides & Fungicide Combinations on the Incidence of Peanut Disease. P.D. WIGLEY\*, Calhoun County Extension, The University of Georgia, Morgan, GA 39866 and R.C. KEMERAIT, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793-0748.

Field experiments were conducted to evaluate six fungicide systems for control of peanut disease during the 2005 growing season. The systems that were evaluated included a four block Folicur program (sprays 3-6) with Bravo (sprays 1,2,7 & 8); Tilt-Bravo (sprays 1 & 2) + Abound (sprays 3 & 5), with Bravo (sprays 4, 6, 7 & 8); Tilt-Bravo (sprays 1 & 2) + Abound (sprays 3 & 5) + Headline (spray 7) with Bravo (sprays 4, 6 & 8); Tilt-Bravo (sprays 1 & 2) + Abound (sprays 3 & 5), + Folicur (sprays 4 & 6) with Bravo (sprays 7 & 8); Bravo (sprays 1,2,7 & 8) + Folicur tank-mixed with Bravo (sprays 3,4,5,6); Headline (spray 1A)

+ Folicur tank-mixed with Absolute (sprays 3 & 5) + Folicur (sprays 4 & 6 ) + Bravo (sprays 7 & 8 ). Treatments were applied according to manufacturer's recommendations and were compared to Bravo alone. All treatments provided better control of limb rot (*Rhizoctonia solani*) and white mold (*Sclerotium rolfsii*) than the Bravo only treatment.

#### Comparison of Peanut Cultivars When Planted in Twin or Single Row Patterns.

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Research was conducted in Coffee/Atkinson Counties in 2005 to compare the performance of new peanut cultivars in single and twin rows patterns. Seven peanut cultivars were planted in twin and single rows at the Troy Aldridge Farm in Willacoochee, Georgia. Results indicated that twin rows had an average yield increase of 713 pounds per acre when compared to single rows. Additionally, there was a \$126/A increase in net return with twin rows.

#### Developing Extension Recommendations for Runner Market Type Peanut Production in Virginia.

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Following the loss of the quota program in 2001, acreage of virginia market type peanut has declined in Virginia due to the cost of production exceeding contract prices. Therefore, producers are considering alternative runner market type contracts offered by local shellers. We estimate 2,000-3,000 acres of runner market type peanuts will be planted in Virginia for the 2006 growing season. Earlier attempts to produce runner market type peanuts in Virginia have been unsuccessful due to an inadequate length of growing season required to mature the varieties available at that time. More recently, several Virginia producers have been able to successfully produce earlier maturing runner market type peanuts on a small scale basis. The addition of runner market type acreage has challenged Extension to develop recommendations for producing this type of peanut in Virginia. While there have been disease screenings performed on runner market types in the last two years, the overall availability of research is limited relative to states with a longer history of producing runners. Information needed includes but is not limited to growth habit, maturity, calcium requirement, insect tolerance, economic comparisons, and seeding rate. This information is most important in the northernmost peanut producing areas in Virginia where the growing season is the shortest. Extension recommendations have benefited from other states' research. Although if runner market type production continues in Virginia, producers will benefit from local research aimed at refining runner market type production practices.

#### Peanut Nematode Survey in Columbia County, Florida 2004 – Results and Follow-Up.

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Nematode incidence and subsequent damage in peanuts steadily increased over the past 10-12 years in Columbia County, Florida. Nematode population increases in North Central Florida peanut crops are primarily due to: 1) concentration of peanut acreage into larger production units, resulting in shorter rotation intervals; 2) less economic value of crops traditionally utilized in rotation with peanuts; and 3) lack of any nematode resistant peanut variety(s) adapted to our production areas.

In 2004 a survey was conducted to document the extent of the problem in Columbia County. The survey included 100% of peanut growers and 25% of the total acreage in the county for 2004. Over 60% of the acreage surveyed was found to have populations of *Meloidogyne arenaria* race 1 (Rootknot) and *Pratylenchus brachyurus* (Lesion) sufficient to cause 20% or greater damage to the crop. Each grower received follow-up reports on the peanut field(s) sampled on their respective farm with a Crop Damage Potential Rating and recommendations for future nematode management of the field. As a result of the survey, screening peanut varieties and breeding lines to identify resistance to nematodes are to be conducted in high incidence fields.

## **WEED SCIENCE**

Influence of Herbicides on Peanut Yield, Grade, and Seed Quality. W.H. FAIRCLOTH\*, USDA/ARS, National Peanut Research Laboratory, Dawson, GA 39842; and E.P. PROSTKO, University of Georgia, Tifton, GA 31793.

Small-plot, irrigated field trials were conducted at 2 locations in 2005 (Tifton, Dawson) to evaluate the influence of imazapic and 2,4-DB on tomato spotted wilt virus (TSWV) infection, yield, grade, and seed quality of three peanut varieties (Georgia Green, C-99R, GA-01R). A split-plot design (variety X herbicide) with four replications was used at both locations. Each peanut variety was treated with imazapic (0.07 kg ai ha<sup>-1</sup>) at either 30 or 45 days after planting (DAP) or 2,4-DB (0.28 kg ai ha<sup>-1</sup>) at either 75 or 90 DAP. Plot areas were maintained weed-free throughout the growing season with a preemergence application of pendimethalin plus diclosulam followed by plowing and/or hoeing as needed. Yield and pod samples were collected using a stationary plot harvester in mid to late-September, depending on variety. Pod samples were segregated and one portion used to determine an official farmer stock grade (total sound mature kernels, TSMK). The remaining pods were shelled and medium seed collected for germination and vigor evaluation. Standard percent germination at 25 C and cold germination (15 C) tests were conducted by the Georgia Department of Agriculture in early-December. All data were subjected to analysis of variance and means separated using Fisher's Protected LSD Test (P = 0.05). No variety by herbicide interaction was detected. The main effect of variety strongly influenced TSWV infection, yield, grade, germination, and vigor. There were no differences in TSWV infection between Georgia Green and C-99R at Tifton. However, both of these varieties had 45% more TSWV than GA-01R. Variety had no effect on TSWV at Dawson as TSWV infection was extremely low (mean < 1%). GA-01R yielded 5380 kg ha<sup>-1</sup> which was greater than C-99R (4800 kg ha<sup>-1</sup>), both of which yielded greater than Georgia Green (3780 kg ha<sup>-1</sup>) at Tifton. Yield at this location closely followed TSWV infection rates. At Dawson, Georgia Green produced the highest yields (5210 kg ha<sup>-1</sup>) and C-99R produced the

lowest yields (4230 kg ha<sup>-1</sup>). GA-01R graded highest at Tifton (TSMK 77%) followed by C-99R (75%) and Georgia Green (73%). At Dawson, variety had no effect on grade with mean TSMK 76%. Seed germination at Tifton was greatest with Georgia Green (93%) and lowest with GA-01R (67%). Both Georgia Green and C-99R had greater germination than GA-01R at Dawson. Cold test results mirrored standard germination results with Georgia Green having highest percent germination at both locations (88%). When compared to the non-treated, the herbicides evaluated in these studies had no effect on TSWV, grade, seed germination, and cold germination. However, the main effect of herbicide was significant for yield at the Dawson location only. A late application of 2,4-DB (95 DAP) produced higher yields than any of the imazapic treatments or 2,4-DB at 75 DAP. First-year results from this series of field studies suggest that the intrinsic differences between varieties influence TSWV infection, yield, grade, and seed germination/vigor greater than the herbicides imazapic and 2,4-DB.

Influence of Application Variables on Peanut and Weed Response to Diclosulam (Strongarm) Applied Postemergence. S.H. LANCASTER, D.L. JORDAN\*, J.B. BEAM, J.E. LANIER, and P.D. JOHNSON, North Carolina State University, Raleigh, NC 27695.

Diclosulam (Strongarm) is generally applied either preplant incorporated or preemergence to peanut to control certain broadleaf weeds and suppress annual sedges. Research was conducted to define the spectrum of activity of diclosulam applied postemergence and to determine compatibility of diclosulam with selected herbicides and fungicides. Efficacy of diclosulam was greatly affected by environment. Common ragweed control ranged from 60 to 100%, entireleaf morningglory control 56 to 100%, and marestalk control 78-85%. Diclosulam controlled yellow nutsedge and eclipta less than 70 and 80%, respectively. Smooth pigweed and common lambsquarters were both controlled less than 35%. The addition of diclosulam reduced control of large crabgrass by sethoxydim but did not affect control by clethodim. Diclosulam did not affect control of broadleaf signalgrass. When added to paraquat, diclosulam increased control of marestalk 28 days after treatment (DAT). However, the addition of diclosulam did not improve weed control by glyphosate or sulfosate 28 DAT. The addition of chlorothalonil and pyraclostrobin to diclosulam decreased common ragweed control, while azoxystrobin and tebuconazole did not affect common ragweed control. Foliar injury and peanut yield were influenced by diclosulam rate, although no clear relationship was defined.

Herbicides for Horse Purslane (*Trianthema portulacastrum* L.) Control in Peanut. W.J. GRICHAR, Texas Agricultural Experiment Station, Beeville, TX 78102-9410.

Field studies were conducted from 2003 through 2005 to evaluate soil-applied and postemergence (POST) herbicides for control of horse purslane in peanut. Growers early in the season often mistake this weed for common purslane (*Portulaca oleracea* L.) which is fairly common in south Texas peanut fields. Common purslane is a low-growing weed which never is competitive with peanut while horse purslane is more upright and can be fairly competitive with the peanut plant. Horse purslane is becoming more of a problem in the south Texas peanut production area and growers have expressed concern about control efforts on this weed. When soil-applied herbicides were evaluated, dimethenamid at 1.12 kg ai/ha, flumioxazin at 0.07 and 0.11 kg ai/ ha,

imazethapyr at 0.07 kg ai/ha, or S-metolachlor at 1.4 kg ai/ha alone provided inconsistent control (23 to 97%). When pendimethalin at 1.11 kg ai/ha was added to flumioxazin, control was 77 to 95%; when added to imazethapyr, control was 90 to 100%; when added to diclosulam at 0.026 kg ai/ha, control was 86 to 100%; and when added to S-metolachlor, control as 85 to 91%. Postemergence herbicides were evaluated alone applied early postemergence (EPOST) when horse purslane was less than 15 cm tall or late postemergence (LPOST) when horse purslane was greater than 15 but less than 30 cm tall. Lactofen at 0.22 kg ai/ha provided the most consistent control (> 95%) when applied either EPOST or LPOST. Acifluorfen at 0.84 kg ai/ha controlled 40 to 88% horse purslane when applied EPOST but less than 50% when applied LPOST. Diclosulam applied EPOST controlled 20 to 90% horse purslane when applied EPOST but < 20% when applied LPOST. Imazapic at 0.07 kg ai/ha controlled < 70% when applied EPOST and less than 25% when applied LPOST. Bentazon, imazethapyr, and 2,4-DB controlled less than 50% when applied either EPOST or LPOST.

When POST herbicides were applied following pendimethalin applied preplant incorporated (PPI), lactofen provided at least 89% control while diclosulam, imazapic, and 2,4-DB controlled 63 to 100%. Imazethapyr, bentazon, or acifluorfen applied POST following pendimethalin applied PPI controlled 47 to 97%.

Peanut Response and Weed Control with Cobra. P.A. DOTRAY\*, Texas Tech University, Texas Agricultural Experiment Station, and Texas Cooperative Extension, Lubbock; W.J. GRICHAR, Texas Agricultural Experiment Station, Beeville, TX; T.A. BAUGHMAN, Texas A&M University Agricultural Research and Extension Center, Vernon; E.P. PROSTKO, The University of Georgia, Tifton; and L.V. GILBERT, Texas Agricultural Experiment Station, Lubbock.

Cobra (lactofen) is a new postemergence peanut herbicide that was available for use in the 2005 growing season. It can be applied at 12.5 oz/A and sequential applications 14 days apart may be applied for a total use rate of 25 oz/A/season. Cobra cannot be applied until peanut has reached the 6-leaf stage. It has activity on several annual broadleaf weeds, but weed size at application is important to achieve effective control. Peanut tolerance to Cobra is based on metabolism; however, leaf speckling, bronzing, and cupping, and leaf margin crinkling will occur after application. Field studies were conducted under weed-free conditions in 2005 at several locations in Texas and Georgia to examine peanut tolerance to Cobra applied at 6-leaf followed by (fb) sequential applications made approximately 15, 30, 45, or 60 days after the initial 6-leaf treatment. Single applications were also evaluated at each application timing. In Dawson County, TX, Tamrun OL02 injury following Cobra at 12.5 oz/A applied at 6-leaf was as high as 18% at 17 days after treatment (DAT) and 28% at 45 DAT, and injury was observed late-season (6%). The 6-leaf fb 30 DAT treatment caused the greatest peanut injury (33%), and injury was still apparent at harvest (7%). No yield or grade loss was observed following any Cobra treatment relative to the non-treated control. In Yoakum County, TX, Tamrun 96 was injured less than 10% following the 6-leaf application and no more than 20% following sequential applications. No yield or grade loss was observed following any Cobra treatment. In Wilbarger County, TX, no injury exceeded 10% following single or sequential Cobra applications in a Virginia market type (Jupiter). No yield or

grade reduction was observed following any Cobra treatment. In Tift County, GA, Georgia Green yield was reduced ( $P=0.06$ ) following Cobra at 6-leaf fb 43 DAT (26%) and following the 43 DAT application (22%). Cobra had no effect on tomato spotted wilt virus (TSWV) at this location. Additional studies conducted to examine weed response to Cobra indicate that Cobra has good activity on several small (<4 inches) annual broadleaf weeds including ivyleaf morningglory [*Ipomoea hederacea* (L.) Jacq.] and Palmer amaranth (*Amaranthus palmeri* S. Wats.). These results suggest that Cobra will stunt and bronze peanut after single and sequential treatments, and yield loss was observed at one of four locations.

Soil and Residual Herbicide Affect on Peanut (*Arachis hypogaea*) Seedling Development. T.L. GREY\*, Crop and Soil Science Department, University of Georgia, P.O. Box 748, 115 Coastal Way, Tifton, GA 31793, P.A. DOTRAY <sup>2</sup>Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409-2122, and W.J. GRICHAR, Texas Agricultural Experiment Station, 3507 Hwy 59E, Beeville, TX 78102-9410.

Greenhouse experiments were conducted to determine the effect of soil-residual herbicide on peanut seedling development. Diclosulam, flumioxazin, and sulfentrazone at three rates were evaluated in soils with different pHs and mineral fractions from Georgia and Texas. Total peanut biomass (mg root plus shoot per seedling) in nontreated soil types were Faceville sandy clay loam > Duval sand > Pelham sandy loam > Brownfield loamy sand > Tremona sand > Tifton loamy sand. Averaged across all soils, total nontreated dry weight biomass was 722 mg plant<sup>-1</sup>, with a minimum and maximum of 574 and 841 mg plant<sup>-1</sup>, respectively. For the nontreated soil types, there were no observable trends for root and shoot mass or length with respect to sand, loamy sand, sandy loam, or sandy clay loam. Herbicide rate did not affect peanut development. Averaged across soils by herbicide, shoot and root dry weight orders were nontreated > diclosulam > flumioxazin > sulfentrazone while shoot length order was nontreated = flumioxazin = sulfentrazone > diclosulam. High pH soils (pH 7.8 for Tremona and Brownfield) significantly reduced peanut root dry weight to less than 74% of the nontreated checks for sulfentrazone, diclosulam, and flumioxazin. For sulfentrazone and diclosulam, this reduced root dry weight was attributed to an increase in solubility with increasing soil pH that increased the specific herbicides availability for uptake.

Occurrence of Weeds and Their Management Effects on Groundnuts (*Arachis hypogaea* L.) in the Savannah Ecology of Ghana. I.K. DZOMEKU, Department of Agronomy, University for Development Studies, P.O. Box TL 1882, Tamale; M. ABUDULAI, CSIR-Savanna Agricultural Research Institute, P.O. Box 52, Tamale; R.L. BRANDENBURG and D.L. JORDAN, North Carolina State University, Raleigh NC 27695, USA.

Groundnut (*Arachis hypogaea* L.) is the most widely legume cultivated for food and cash in the three Northern regions of Ghana, in the Savannah Ecology. Though about 70 – 80% of groundnuts of the country is produced in this region, weeds constitute an increasing menace and their management have been the primary husbandry of farmers. A three-year survey was carried out in farmer's farms between 2003 and 2005 to: (1) document the prevalent weeds species and their dominance, (2) determine the current cropping system and weed

management practices and (3) assess the response of Groundnut to management practices. The survey showed that groundnut cropping systems were dominated by broadleaves followed by grasses and then sedges. Grasses and sedges were most competitive and difficult to manage by farmers. The most troublesome weeds in the groundnut cropping systems were *Commelina spp.*, *Vernonia galamensis*, *Mimosa pigra*, *Axonopus compressus*, *Digitaria horizontalis*, *Paspalum spp.*, *Pennisetum spp.*, *Rottboellia cochinchinensis*, *Andropogon spp.*, *Imperata cylindrica*, *Cyperus rotundus*, and *Striga hermonthica*. *Striga hermonthica* was prevalent in the system due to intercropping of groundnuts with millet, sorghum and sometimes maize. Farms were hand-weeded twice at 2 – 3 and 5 – 6 weeks after sowing (WAS), but sometimes once at 3 – 5 WAS. Weed management was poor, resulting in high weed biomass production at harvest in the range 50 – 750 g/m<sup>2</sup> and (2) groundnut haulm production varied (55 – 250 g/m<sup>2</sup>) with improved varieties performing better than local cultivars. Pod yield production was low in the range of 20 – 170 g/m<sup>2</sup>. The implications of the study for research and increased groundnut production in the region were discussed.

## POSTHARVEST HANDLING, PROCESSING, AND UTILIZATION

Effects of Weed, Disease, and Insect Control Measures on Sensory Quality of Peanuts. H.E. PATTEE\*, Dep. of Agric. and Bio. Engineering, N.C. State Univ., Raleigh, NC 27695-7625; T.G. ISLEIB, D.L. JORDAN, Dep. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7620; T.H. SANDERS, USDA-ARS Market Quality and Handling Research Unit, N.C. State Univ., Raleigh, NC 27695-7624; A.K. CULBREATH, Dep. of Plant Pathology, Univ. of Georgia Coastal Plain Experiment Station, Tifton, GA 31793-0748; M.C. LAMB, USDA-ARS Nat. Peanut Res. Lab., Dawson, GA 39842-0509; and B.B. SHEW Dep. of Plant Pathology, N.C. State Univ., Raleigh, NC 27695-7903.

Sensory quality of peanut (*Arachis hypogaea* L.) products is the main reason that consumers buy them. We previously documented a decline in the intensity of roasted peanut sensory attribute in Florunner and NC 7 peanuts over a 15-year period. Because the same two genotypes were evaluated throughout this period, the decline must have been due to changes in environmental factors across years. The objective of this study was to determine if any of a set of common cultural practices used in peanut production exerted an influence on flavor of roasted peanuts. SMK samples were obtained from studies of cultural practices conducted in 2003 and 2004 including combinations of in-furrow aldicarb with secondary growth regulator treatments, an array of leaf spot control programs, combinations of leaf spot programs with conventional or strip tillage, and combinations of rotational crops with irrigation. Samples were roasted to a color within a standard range, ground to paste, and evaluated by an eight-member trained descriptive sensory panel. Sensory attribute intensity scores were analyzed according to the statistical design of the individual field experiment. None of the treatments investigated had a significant main effect on roasted peanut intensity, but there were several treatments that affected bitterness or astringency. When aldicarb was placed in-furrow, the growth regulator/herbicide 2,4-DB reduced astringency. In trials of leaf spot control programs, application of azoxystrobin increased bitterness while application of tebuconazole or propiconazole/trifloxystrobin trended toward reduction of

bitterness. Leaf spot control program had a differential effect on bitterness depending on the level of tillage, conventional or strip-till. An interaction was observed for roasted peanut intensity in comparing irrigated versus non-irrigated peanuts following corn versus following cotton or peanut. Compared with peanuts that followed a corn crop, bitterness was increased in peanuts following cotton or peanut. Overhead irrigation reduced bitterness while subterranean irrigation increased it. The mechanisms whereby these treatments influenced flavor have not been determined. None of the detected effects was larger than half a flavor intensity unit, i.e., considered to be at the threshold of perception by the consumer. None of the cultural practices evaluated to date had a sufficiently large effect to explain the substantial decline in roasted peanut attribute intensity observed earlier.

Uncertainty Associated with Sampling Peanuts to Determine Fruity-Fermented Off Flavor. T.B. WHITAKER\*, T.H. SANDERS, A.B. SLATE, J.L. GREENE, and K. HENDRIX, U.S. Department of Agriculture, Agricultural Research Service, Box 7625, N.C. State University, Raleigh, NC, 27695-7625.

During curing, individual peanut kernels may develop fruity fermented (FF) off-flavor if exposed to certain environmental conditions. Typically, high moisture immature peanuts cured at temperatures above 35°C will produce a FF off-flavor. Because of the uncertainty associated with sampling and measurement, it is difficult to get an accurate and precise estimate of the true FF intensity among peanuts in a bulk lot. The objective of this study was to determine the variability associated with sampling and measurement steps of the test procedure used to score the FF attribute. Twenty, medium grade lots of runner-type peanuts, suspected of having FF off-flavor, were riffle divided into 20 samples of 680 g each. Each peanut sample was roasted, cooled with forced ambient air, seed coats manually removed, and processed into a paste. A highly trained descriptive sensory panel, composed of 8 members, evaluated the flavor of each sample. The sampling and measurement variances, determined for each lot, were a function of the FF intensity in the lot. Regression equations were developed to predict the sampling and measurement variances as a function of the FF intensity. The measurement, sampling, and total variances associated with the standard industry test procedure (300g sample and average FF score among 5 panel members) used to score a bulk lot with a true FF score of 2.0 is predicted to be 0.141, 0.548, and 0.689, respectively. Measurement and sampling variances accounted for 20.5 % and 79.5 % of the total error, respectively. From the total variance of 0.689, the range of FF scores among sample test results about the true FF score of 2.0 is predicted  $[2.0 \pm 1.63]$  or ranges from 0.37 to 3.63. The best use of resources would be to increase sample size to reduce the sampling variability. For example, increasing sample size 300 g to 600 g would reduce the sampling variance by half from 0.548 to 0.274.

Identification of Antioxidant Compounds in Peanut Skins and Roots. K.A. REED, S.F. O'KEEFE\*, Food Science & Technology Department, Virginia Polytechnic Institute & State University, Blacksburg, VA 24061; R. O'MALLEY, Department of Chemistry, University of South Florida, Tampa, FL 33620; R.W. MOZINGO, Tidewater AREC, Suffolk, VA 23437 and D.W. GORBET, IFAS, Marriana, FL 32446.

We have investigated the antioxidant profile of methanolic extracts from the skins of NC7 and Gregory peanuts, and the roots of GA Green and a High Oleic variety peanuts. Toyopearl Size-Exclusion Chromatography (SEC) of the four raw methanol extracts produced 9 separate fractions for each of the two skin samples, and 6 fractions for each of the two root samples. Electrospray HPLC-MS/MS analysis of each fraction revealed the presence of flavonoid antioxidant monomers including catechin, epicatechin, quercetin, resveratrol, luteolin, kaempferol, isorhamnetin, hesperitin, myricetin, and many others. Abundant concentrations of short, medium, and long-chain polymers of these compounds were also found. Other identified phenolic compounds included structures similar to the aforementioned monomeric antioxidants, with the addition of sugar, methyl, or methoxy side-groups. Comparisons between the fractions of the two skin and root samples revealed many of the same structures, but with significant differences in the degree of concentration for a large percentage of the compounds.

Phenolic Compounds in Peanut Plant Parts. L.L. DEAN\*, J.P. DAVIS, and T.H. SANDERS, USDA-ARS, Market Quality and Handling Research Unit, 220 Schaub Hall, North Carolina State University, Raleigh, NC 27695-7624.

More than 60% of peanut plant biomass remains after peanut pods are harvested. This biomass includes leaves, roots and testa. Freeze dried peanut plant leaves and roots, as well as oven blanched skins were analyzed for total phenolic compound concentration by the Folin Ciocalteu method and reported as feulic acid and gallic acid equivalents. The samples were also analyzed by ORAC and DPPH standard methods for antioxidant activity. Individual phenolic compounds separated by HPLC and identified by MS included catechin, epicatechin, ellagic acid, p-hydroxybenzoic acid and other hydroxylated compounds. These results indicate that the currently underutilized parts of the peanut plant may have nutraceutical properties.

Development of Hypoallergenic Peanut Products. M. AHMEDNA\*, J. YU, I. GOKTEPE, Food Science and Nutrition, Department of Family and Consumer Sciences, North Carolina A&T State University, Greensboro, NC 27411 and S. MALEKI, USDA-ARS Southern Regional Research Center, New Orleans, LA 70124.

Peanut proteins are among the most common food allergens and can cause severe, and even fatal, allergic reactions to susceptible individuals. Health effects of allergies such as peanut allergies have prompted regulatory agencies to enact measures designed to reduce the risks to consumers through labeling and monitoring requirements. However, these measures may be costly to the industry given the prevalent use of peanuts in a wide range of food products such as cookies, snacks, and even soups. Therefore, there is a need for new approaches to inactivate peanut allergens before peanut ingredients are mixed with other food matrices as to protect consumers from potential allergic reactions. The objective of this study was to investigate the effects of a special processing method developed in our lab on the concentration of two major allergenic proteins, Ara h1 and Ara h2, in peanut kernels and peanut products, namely defatted peanut flour (DPF) and peanut protein concentrate (PPC). Raw and roasted peanuts and DPF were treated by a proprietary fermentation method and the changes of allergen concentrations were monitored by a direct ELISA using

chicken anti-Ara h1 and anti-Ara h2 antibodies as primary antibodies and peroxidase labeled anti-chicken antibodies as detection antibodies. Peanut allergen concentrations were determined using standard curves developed using purified Ara h1 and Ara h2. Extraction conditions for peanut allergens were studied using different media (water, PBS, and PBS containing 1N NaCl) at different pH (2, 7.4, and 10). Results indicate that water at pH 10 had the highest extraction power among all conditions studied. Fermentation increased peanut protein solubility and reduced allergenicity, especially in roasted peanuts and their products (DPF and PPC). Defatting of peanuts seems to enhance the efficiency of the fermentation process to inactivate allergens. For Runner and Virginia peanuts, the highest reduction of Ara h1 and Ara h2 were 93 and 84%, respectively. Roasted peanut flour and PPC contained less extractable Ara h1 and higher Ara h2 than raw peanut flour and PPC. The processing method used in this study lowered the concentration of Ara h1 and Ara h2 by 70% and 64%, respectively, in roasted peanut flour and by 84% and 64%, respectively, in PPC. Data obtained so far suggest that treatment of peanuts and peanut products with this proprietary processing method could reduce and potentially eliminate allergenicity of peanut proteins. The resulting hypoallergenic products have the potential to reduce the health risks to allergic individuals and enhance the utilization and profitability of peanuts.

Tented Versus Inverted Digging Methods for Two Peanut Cultivars. J.A. BALDWIN\*, Agronomy Department, The University of Florida, Gainesville FL 32611-0220; and E.J. WILLIAMS, Biological and Agricultural Engineering Department, The University of Georgia, Tifton, Ga. 31793-1209.

Two peanut cultivars, C-99R and Georgia-02C were planted during 2004 and 2005 in a split-split plot design with four replications. Cultivars were whole plots and split plots being row pattern and digging method (inverted versus tented). The row patterns were either 7.5 inch twin rows or 36 inch single rows planted on a 72 inch bed. The seed were planted at 6 seed per foot of row on single row patterns or 3 seed per foot of row on each twin row to accomplish the same seeding rate in each row pattern. All plots were planted by strip-tillage methods into killed rye cover. During 2004, there was a significant response in yield ( $p < 0.05$ ) for inverted over tented methods of digging (4160 vs. 3670 lb/a). Yield was also significantly lower ( $p < 0.01$ ) for single row-tented peanuts. Over 3 inches of rainfall occurred immediately after digging during 2004 and a re-shaker was utilized to lift the peanuts for windrow curing prior to combining the peanuts for final harvest. During 2005, twin row patterns were higher yielding and grading (TSMK%) ( $p < 0.05$ ) than single row patterns. Tented-twin row patterns were higher yielding ( $p < 0.05$ ) than any of the other row pattern and digging methods. The highest TSMK was obtained for single-inverted and twin-tented peanuts ( $p < 0.05$ ). There was no difference in yield during 2005 between tented (3650 lb/a) and inverted (3330 lb/a) when averaged across cultivars and row patterns.

Rheological and Density Characterization of Peanut Oils for Biodiesel and Other Applications. J.P. DAVIS\*, L.L. DEAN, USDA-ARS, Raleigh, NC; C.C. HOLBROOK, USDA-ARS, Tifton, GA; W.H. FAIRCLOTH, USDA-ARS, Dawson, GA and T.H. SANDERS, USDA-ARS, Raleigh, NC.

Peanut oil may be used directly, or converted into methyl esters, i.e. biodiesel, for use as an alternative fuel source in conventional diesel engines. For biodiesel

applications, oils with low viscosities are desirable to deliver superior cold flow performance. Accordingly, peanut oils were expressed from various commercial lines and from the core of the core germplasm collection, and subsequently screened for natural variation in both viscosity and density. Viscosity was measured via a stress-controlled rheometer across a range of temperatures. Oil density was measured across a range of temperatures using a high precision density meter equipped with a viscosity correction card. Fatty acid profiles of the oils were determined by GC analyses to help explain viscosity differences among oil samples. All viscosity measurements were highly temperature dependent with measurements at cool temperatures (<10°C) best differentiating samples. Differences in density between samples were minor. The data generated from this work will aid the decisions necessary for breeding a peanut line with oil that has desirable biodiesel properties, or aid the selection of a peanut line that could be genetically engineered to produce high quality biodiesel oil.

## **EXTENSION TECHNIQUES**

Peanut Production in Mississippi. M.S. HOWELL\*, Mississippi State University Extension Service, Collins, MS 39428.

After the 2002 Farm Bill, peanut production has increased across the state of Mississippi from approximately 4,000 acres to nearly 20,000 acres. With this increase in production came the need for local production information. Mississippi State University Extension Service has been working with growers to help provide this much needed information.

In 2002, George County began a pod blasting program in the county. Growers were taught how to sample fields, and samples were brought to a central location to determine maturity. This program was very successful in at the county level with nearly 100% participation from producers, that it was extended statewide in 2005 with good success, and will be continued in 2006.

In 2005, growers were able to benefit from research trials conducted across the state. These trials included variety trials, inoculation trials, fertility trials, and row spacing trials. Plans for 2006 are to continue this work, as well as adding weed control studies and fungicide application timing studies.

In January 2006, Mississippi peanut producers organized the Mississippi Peanut Grower's Association. This association's goals are to improve the peanut industry in the state through research, education, promotions, and marketing.

Making the Research/Extension Interface Work in the Virginia-Carolina Region of the U.S. Peanut Belt. F.M. SHOKES\*, J.C. FAIRCLOTH, D.A. HERBERT, P.M. PHIPPS, and D.L. COKER. Virginia Tech, Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.

Applied research is only meaningful if it reaches producers in a usable form and a timely manner. Using the Tidewater Agricultural Research and Extension Center (AREC) and Virginia's Southeastern Extension District as a case study, observations were made on the interface between research and extension in an effort to evaluate methods and identify what works well to accomplish this goal. The Tidewater AREC is Virginia Tech's only center that has faculty working on peanut. Applied research is conducted on entomology (IPM), plant pathology,

agronomic practices, as well as cultivar testing and development. Several programs have been developed at the Tidewater AREC that facilitate development of timely research information and rapid dissemination to extension agents and producers. The Tidewater AREC is the center where the bi-state supported Peanut Variety Quality Evaluation Program was developed. Other achievements include the Peanut/Cotton Infonet, Peanut Hotline, and the Virginia Ag Advisory that goes out on the internet and via email each growing season with timely pest information. A Peanut Production Guide is published annually in book form and made available on the internet. The latest research information is made available through copies of published research reports, and postings on websites. Extension agents in the eight peanut-growing counties in Virginia are on the front line for successful dissemination and demonstration of new technology. To keep extension agents continually in the loop and to help specialists to benefit from their frontline knowledge, monthly update meetings are held at the Tidewater AREC during the growing season. Agents from the Southeastern Extension District meet face-to-face with specialists to discuss current crop conditions, the latest research information, and applied research needs. Specialists conduct guided tours of applied research at the center and participate in county-wide tours organized by the agents as other important means to strengthen the interface between research and extension. Continual communication is essential to keep information flowing in both directions and to prevent the interface from becoming a barrier. Using the above case study as a model, there is ample evidence that the interface can be maintained open and made to work as long as specialists make the commitment to keep information timely and readily accessible. It is equally important that extension agents continuously feed information to specialists about problems in the field and the major concerns of growers. Keeping the channels open and information flowing in both directions is the key to success in the research/extension interface.

#### On-farm Evaluations of the University of Georgia Fungal Disease Risk Index.

J.E. WOODWARD\*, T.B. BRENNEMAN, R.C. KEMERAIT, A.K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793; N.B. SMITH, Department of Agricultural and Applied Economics, University of Georgia, Tifton, GA, 31793.

In Georgia, fungal diseases such as early leaf spot (*Cercospora arachidicola*), late leaf spot (*Cercosporidium personatum*), southern stem rot (*Sclerotium rolfsii*), and *Rhizoctonia* limb rot (*Rhizoctonia solani*) are responsible for annual crop reductions in excess of \$30 million, and an additional \$50 million is spent on their control. With the current restructuring of federal peanut support programs and increased energy costs, the future of production is uncertain. In order to remain economically competitive, producers must implement more cost-effective production strategies. One effective way to lower production costs is to use integrated disease management strategies that utilize reduced fungicide inputs. Production practices such as crop rotation, cultivar selection, planting date, row pattern, tillage and irrigation have been shown to influence the development of fungal diseases. Various combinations of these practices are already being used to minimize losses associated with spotted wilt (Tomato spotted wilt tospovirus). A risk index that includes the aforementioned practices has been developed which allows producers to quantify disease risk prior to planting the crop. As a result producers can tailor fungicide programs for specific fields. Experiments comparing full-input and reduced fungicide programs were conducted in 2003, 2004 and 2005 in commercial production fields classified as having low or

moderate disease risk levels. Overall, a total of 30 comparisons were made between various full and reduced fungicide programs. Disease pressure varied by year; however, leaf spot was the predominant disease at all locations. Leaf spot control for reduced programs was equivalent to the respective standard programs in all but three trials. No differences were observed in regard to stem rot, except where disease incidence was significantly higher for the full program. Yields between full and reduced programs were similar for all but one of the comparisons. In this case, the significantly higher level of leaf spot in the reduced program resulted in a reduction in yield. Despite this relationship, the net economic return for that comparison was not significantly different. Overall, net economic returns were higher for reduced programs by an average of \$81 ha<sup>-1</sup>. These results indicate that even in wet years, like 2003 - 2005, reduce-input fungicide programs can be used as part of an integrated disease management system to control diseases while increasing profits for producers.

Efficacy of Optimize LIFT<sup>TM</sup> and its Growth Promotion Characteristics on Peanut (*Arachis hypogaea* L.). J. HANSON\*, R. OSBURN, S. SMITH and R. HENNING, Nitragin, Inc. Milwaukee, WI 53209.

Plants possess very complex and dynamic perception systems. The symbiotic relationship between legumes and rhizobia is initiated through an exchange of signal molecules, when the root exudes isoflavonoids and rhizobia respond with their own signal molecule, lipo-chitooligosaccharide (LCO) or "Nod factor" back to the plant. The patented LCO molecule was isolated, purified, and formulated into a liquid inoculant carrier and commercialized as Optimize LIFT for use on peanuts. When applied in furrow at planting, the concentration of LCO (minimum of  $1 \times 10^{-7}$  % w/v) contained in Optimize LIFT initiates a cascade of biochemical and physiological responses that promote growth and influence plant development. Optimize LIFT was evaluated for effect on growth and yield of peanut in eight field trials conducted over the period of 2003-2005 at the Auburn University Wiregrass Research Station in Headland, AL. Treatment performance was evaluated on the basis of a number of different plant growth parameters including yield. Optimize LIFT enhanced seedling development, resulting in a greater and more uniform plant stand compared to the untreated control. Plant growth was also enhanced with significantly greater shoot and root weight, chlorophyll content and nodule formation throughout the season. The characteristic season-long plant growth promotion was realized at harvest with a markedly greater pod count (2-fold) with Optimize LIFT and a 27.3% greater grain yield (2345 lbs/A) averaged over the three years compared to the untreated control (1842 lbs/A). The growth promotion effect of the LCO in combination with the liquid inoculant carrier can positively benefit a number of physiological and plant development responses that can benefit growers not only in newly planted soils but also in fields with prior peanut production.

Weed Science in the Rupununi, Guyana: Challenges and Pitfalls. G.E. MACDONALD\*, Agronomy Department, The University of Florida, Gainesville, FL 32611-0300; R.C. KEMERAIT, G.H. HARRIS, S.L. BROWN and E.J. WILLIAMS, Depts. of Plant Pathology, Crop and Soil Science, Entomology and Agricultural and Biological Engineering, The University of Georgia, Tifton, GA 31793-0748.

Peanut weed control in Guyana, South America has been limited to hand implements for field preparation and in-season weeding. Many growers in the

south Rupununi region recognize the importance of controlling weeds but do not associate other methods of weed control such as mechanical or chemical to be useful or necessary in their peanut programs. In the north Rupununi, growers have been exposed to herbicides and often use herbicides to excess, without concern for crop safety or economic benefit. Given this divergence in viewpoints, developing a comprehensive weed management system is challenging and difficult. A simple weed photo chart was shown to the growers during training sessions in March 2006. Many growers recognized differences between broadleaf plants and were able to name certain specimens in their own language, but did not readily differentiate between grasses and sedges. We have surveyed the region and developed a rudimentary listing of weed specimens, but a major challenge is the lack of plant identification information for the region. There are few taxonomic references, and no weed identification guides; therefore identification must be pieced together materials from neighboring countries. This creates gaps in plant ecology and biology, in such areas as annual vs. perennial, seed vs. vegetative mechanisms of spread. We are developing a weed identification manual and have initiated training with growers and in-country personnel to expand information regarding weed biology and control methodology.

## POSTER SESSION II

Peanut Seed Transcriptome: Construction of Six Peanut Seed cDNA Libraries from Two Peanut Cultivars. H.P. CHEN\*, University of Georgia, Tifton, GA 31793; P. DANG, USDA-ARS, U.S. Horticultural Research Laboratory, Ft. Pierce, FL 34945; C.C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; C. KVIEN, University of Georgia, Tifton, GA 31793; B.Z. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793.

Genomic research can provide new tools and resources to revolutionarily enhance crop genetic improvement and production. However, genome research in peanut is far behind those in other crops, such as maize, soybean, wheat, and sorghum due to the shortage of essential genome infrastructure, tools, and resources. The peanut genome (2,800 Mb/1C) is large in comparison to the plant models, *Arabidopsis* (128 Mb), rice (420 Mb), *Medicago* (500 Mb), corn (2,500 Mb) and even soybean (1,100 Mb). Cultivated peanut is an allotetraploid ( $2n=4x=40$ ). Because of the large genome and polyploidy, one of many challenges peanut crop faces is the improvement using genetic and genomic approaches. The objectives are to develop tools and resources and provide putative genes and sequence-based markers for peanut researchers. Six cDNA libraries from 3 seed stages (R5, R6 and R7) of two cultivars, Tifrunner (resistant to leaf spots and tomato spotted wilt virus) and GT-C20 (resistant to *Aspergillus* infection, bacterial wilt, and leaf rust) were constructed. We sequenced the 5' ends of 22,944 clones, 12,864 from Tifrunner and 10,080 from the GT-C20, including 5,812 non-redundant sequences (contigs + singletons) (4,186 and 2,701, respectively). There are EST-derived simple sequence repeat (SSR) and single nucleotide polymorphism (SNP) motifs identified and will be tested for polymorphism in cultivated peanuts. Sequence data analysis is still in progress, which will facilitate gene discovery, marker development and gene functional characterization. Our goal is to use these EST sequence data to identify genes encoding allergen proteins in these two genotypes and functional candidate genes for direct association with important traits such as resistant genes, and to develop DNA markers for genetic linkage map and marker-assisted breeding.

Yield Response and Disease Susceptibility of Commercial Runner Peanut Cultivars in Southwest Alabama. H.L. CAMPBELL, A.K. HAGAN\*, J.R. WEEKS, K.L. BOWEN, Dept of Entomology and Plant Pathology, Auburn University, AL 36849; M. PEGUES, Gulf Coast Research and Extension Center, Fairhope, AL 36532.

In 2003, 2004, and 2005, commercial runner peanut cultivars were evaluated for yield potential and reaction to late leaf spot, rust, southern stem rot (SSR), and Tomato spotted wilt virus (TSWV) at the Gulf Coast Research and Extension Center in Fairhope, AL. Production, weed, and insect control recommendations of ACES were followed. Bravo Ultrex at 1.4 pt/A was applied on a 2-wk calendar schedule for the control of late leaf spot and rust. A RCB with four replications was used. Plots consisted of four 30-ft rows spaced 3.2 ft apart. Incidence of TSWV was assessed the week before anticipated digging date. Late leaf spot was rated using the Florida leaf spot scoring system. The ICRISAT 1-9 rating scale was used to evaluate rust severity. Hit counts for SSR were taken immediately after plot inversion. Yields are reported at 10% moisture. Between 2003 and 2005, incidence of TSWV increased on most peanut cultivars, particularly on Georgia Green and ANorden. Over three years, fewest TSWV loci were found in AP-3. Incidence of this disease was low for two years in Tifrunner and in 2005 in GA03L. Highest TSWV ratings were recorded for Georgia Green. Late leaf spot was the primary leaf spot disease observed. Lowest leaf spot ratings were recorded for Tifrunner. Late leaf spot ratings for Georgia Green and AP-3 were similar. Rust ratings for most cultivars varied considerably over the test period. Tifrunner, GA02C and GA01R appear less susceptible to rust than ANorden, AP-3, and Georgia Green. Due to the 2-year out rotation pattern, incidence of SSR remained relatively low on all cultivars in all three years. Over three years, SSR incidence was highest on ANorden and lowest on GA02C. Among the five peanut cultivars evaluated in all three years, Florida C-99R and GA02C had the highest average yield. When averaged for 2004 and 2005, yield for GA01R and GA02C was greater than that of other cultivars by 700 to 1000 lb/A. Despite lower ratings for several diseases, Tifrunner had a 2-year yield average that was similar to that of Georgia Green, ANorden, and AP-3.

Effect of Water Stress on Nitrogen Fixation in Peanut Cultivars with Different Drought Resistant Levels. S. PIMRATCH\*, A. PATANOTHAI, N. VORASOOT, B. TOOMSAN, S. JOGLOY, Department of Agronomy, Faculty of Agriculture, Khon Kaen University, Khon Kaen, Thailand, 40002; and C.C. HOLBROOK, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793-0748.

Drought stress is a major constraint of peanut production affecting both quantity and quality of peanut. Under drought stress conditions, nitrogen fixation in peanut is reduced. Varieties that can maintain acceptable yield and high nitrogen fixing ability are required. Peanut genotypes with difference in degrees of drought resistance may be different in nitrogen fixing ability. The objective of this study was to investigate the effects of drought stress on nitrogen fixation in peanut cultivars with different drought resistance levels. Two experiments were conducted under field conditions in the dry season of 2003 and 2004. A split plot design with 4 replications was used. Three water regimes (field capacity; F.C., 2/3 available water; 2/3 A.W. and 1/3 A.W.) were assigned to main-plots and 12 peanut cultivars were arranged in sub-plots. After planting, soils were inoculated with rhizobium but application of chemical N was not used. After full irrigation from sowing date to 14 days after emergence, the three soil moisture levels were

maintained until harvest. Leaf water potential (LWP), relative water content (RWC), nitrogenase activity (acetylene reduction), number of nodules, nodule dry weight, total nitrogen content, fixed nitrogen (N difference method), shoot dry weight and pod dry weight were recorded. The results revealed that peanut lines used in this study have difference in degrees of drought resistance. Using total biomass production at 2/3 A.W. as the criterion, the lines were categorized into three drought resistance groups, high (Tifton-8 and KK 60-3), moderate (ICGV 98300, ICGV 98324, ICGV 98330, ICGV 98348 and ICGV 98353) and low (ICGV 98303, ICGV 98305, ICGV 98308 and Tainan 9). High drought resistance lines under drought stress had higher fixed nitrogen under water stress than low resistance lines largely due to their high nitrogen fixation potential and partially due to their ability to maintain high nitrogen fixation under water stress.

Examining Genetic Diversity in the Peanut Mini Core and its Wild Relatives. N.A. BARKLEY\*, R.E. DEAN, R.N. PITTMAN, M.L. WANG, USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA. 30223. C.C. HOLBROOK, USDA-ARS Georgia Coastal Plain Experiment Station, Tifton, GA. 31793.

Thirty-five peanut genomic Simple Sequence Repeat (SSR) markers, each with a M13 tail, were used to assess the genetic diversity of 141 peanut accessions which included the entire peanut mini core collection, a few additional botanical varieties and some wild relatives. The M13 tail method was helpful in discriminating individuals and was cost efficient. Several of the genomic SSR markers did not effectively transfer to cultivated peanut's wild relatives. A total of 579 alleles were detected in our data set with an average of 16.5 alleles per locus. The cultivated peanut (*Arachis hypogaea* L) mini core was not as diverse as the entire data set producing a total of 389 alleles with an average of 11.1 alleles per locus. A phylogenetic tree was constructed to discover the interspecific and intraspecific relationships in this data set. Most all of the peanut accessions classified as *A. hypogaea fastigiata fastigiata* and accessions classified as *A. hypogaea fastigiata vulgaris* clustered with one another in a clade. This study allowed the examination of the diversity present and taxonomic relationships in the peanut mini core which has not been previously reported.

Selecting for Nematode Resistance and High Oleic Acid Content in Florida Peanut Breeding Lines. T.S.N. VARMA, M. GALLO, J.C. SEIB, Agronomy Department, The University of Florida, Gainesville, FL 32611-0300; D.W. DICKSON, Entomology and Nematology Department, The University of Florida, Gainesville, FL 32611-0620; B. TILLMAN and D.W. GORBET, Agronomy Department, The University of Florida, North Florida Research and Education Center, Marianna, FL 32446-7906.

Root-knot nematodes (*Meloidogyne* spp.) are the most important nematode pathogens of cultivated peanut (*Arachis hypogaea* L.), and the predominant pathogenic species in the southern U.S. is *M. arenaria*. High oleic acid content in peanut greatly improves oil chemistry providing longer shelf-life and health benefits for consumers. Florida peanut breeders are developing varieties with both nematode resistance and high oleic oil. Crosses involving nematode resistant cultivar 'COAN' and susceptible cultivars 'HULL', 'ANorden' and 'F89/OL14-1-4-1-1-2' were made and subsequent generations were screened for high oleic acid content, and for nematode resistance with a SCAR marker

(Z3/265) and a RFLP marker (R2430E). Thirty of the 50 lines were high oleic (>70%), nine had medium oleic acid content (65-70%), and 11 (<65%) were placed in the low oleic acid category. Forty-five of these 50 lines (90%) were positive for both the SCAR and RFLP markers, and 88% of these lines were phenotypically resistant to *M. arenaria*. This useful selection scheme is allowing for more rapid development of peanut varieties containing two valuable traits.

Reproductive Responses to Water Stress of Peanut Lines with Differences in Plant Types and Degrees of Drought Resistance. P. SONGSRI\*, S. JOGLOY, N. VORASOOT, C. AKKASAENG, A. PATANOTHAI, Department of Agronomy, Faculty of Agriculture, Khon Kaen University, Muang, Khon Kaen, 40002, Thailand; and C.C. HOLBROOK, USDA-ARS, Tifton, GA 31793-0748.

In peanut production systems, drought-induced stress has been shown to reduce yield and affect reproductive parts by limiting growth and development of peanut worldwide. Information on responses to water stress of peanut cultivars with different plant types and degrees of drought resistance on reproductive characters would provide a better understanding of their differential yield reductions under drought stress. The aim of this study was to investigate the effects of available soil water on flowering, fruit-setting and yield of peanut lines with different plant types and degrees of drought resistance. Eleven peanut lines with different plant types and degrees of drought resistance (ICGV 98300, ICGV 98303, ICGV 98305, ICGV 98308, ICGV 98324, ICGV 98330, ICGV 98348, ICGV 98353, Tainan 9, KK 60-3, and Tifton-8) were tested under three soil moisture levels (field capacity, 2/3 available soil water (A.W.) and 1/3 A.W.) in field experiments. Data were recorded on number of daily blooming flowers, and on number of pegs, immature pods per plant, mature pods per plant, percent conversion of fruit-set to pegs, immature pods and mature pods, number of seed per pod, 100 - seed weight, harvest index(HI), biomass and pod yield at harvest. The results indicated that, number of mature pods per plant, 100-seed weight, biomass and HI reduced significantly, and pod yield substantially declined. Flowering characteristics among peanut cultivars were classified into two patterns, early and late peak flowering. Drought stress did not affect the distribution patterns of flowering. Differential reductions in number of mature pods and 100-seed weight were evident among cultivars. The results suggested that differential reductions in yield of peanut lines by drought stress were largely due to their differences in flowering pattern. The sequential and irregular branching lines, accumulating a great number of flowers at early flowering appeared to yield better than the alternate branching, late flower accumulators possibly due to earlier fruit setting leading to a higher percentage of well-filled mature pods. Drought resistance lines had the highest yield under drought stress possible due to its ability to maintain high fruit set and high HI and well-filled mature pods. Also, Tifton 8 showed lowest pod yield but had higher biomass production due mainly to low HI and poor seed filling.

Comparison of Management Strategies Associated with Runner, Spanish, and Virginia Market Types Grown in North Carolina. B.L. ROBINSON\*, D.L. JORDAN, G.G. WILKERSON, B.B. SHEW, and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695.

Virginia market type peanuts are generally grown in the Virginia-Carolina Region of the United States. However, interest in runner market type production in the region has increased. Additionally, approximately 800 acres of Spanish market

type cultivar Tamspan 90 was planted in North Carolina during 2005. Research was conducted during 2005 to compare response of the Virginia market type cultivar Gregory, the runner market type cultivar Georgia Green, and the Spanish market type cultivar Tamspan 90 to various production and pest management inputs. Experiments were conducted to compare response of these market types to chlorpyrifos (Lorsban) to control southern corn rootworm, aldicarb (Temik) and acephate (Orthene) to control tobacco thrips, herbicide and fungicide programs, gypsum, planting pattern, prohexadione calcium (Apogee), and planting and digging date. In some but not all experiments yield was higher for Georgia Green and Gregory. Although less canopy defoliation was noted for the Spanish market type, most likely because of earlier maturity and ability to dig Tamspan 90 earlier in the season than the other cultivars, Gregory was the higher yielding cultivar. Response to weed and tobacco thrips management was similar among market types. Although some differences in canopy response was noted among market types, prohexadione calcium did not affect yield of Georgia Green, Gregory, or Tamspan 90. Yield of Gregory and Georgia Green was slightly higher than yield of Tamspan 90 when peanut was planted in early May. However, few differences were noted among market types when planting was delayed until late May or early June. Digging peanut in mid September favored Tampsan 90 compared with Georgia Green and Gregory when peanut was planted in early May. Pod yield was not increased by gypsum regardless of market type in these experiments. Pod samples are currently being processed to determine if differences in pod scarring from southern corn rootworm occurred when comparing market types. Additionally, market grades are currently being processed to further determine response of these market types to various production and pest management practices.

Changes in Sucrose and Free Glutamate During Roasting of Seeds Grown in Different Environments. D.A. SMYTH\*, C.I. BENSLEY, Global Technology & Quality, Kraft Foods EHTC-103, 200 DeForest Ave., East Hanover, NJ 07936.

Peanut plants have been shown to accumulate greater amounts of seed metabolites in response to stressful growing conditions. In 2003, some peanut kernels in the West Texas environment developed significant levels of the fruity/fermented sensory attribute and relatively high sucrose content. We roasted different lots of jumbo runner peanuts from West Texas (TX), Georgia and Alabama (GA/AL) to determine how the concentrations of sucrose and free amino acids changed during processing. Raw TX kernels contained approximately 50% more sucrose, and the major free amino acids such as glutamate, phenylalanine, and arginine than the GA/AL kernels. Both surface roast color development and roasted flavor generation were more rapid in the TX kernels during cooking. The rates of sucrose, free glutamine, free phenylalanine, and free arginine consumption were greater in TX kernels than GA/AL kernels. Nonetheless, the rate of sucrose consumption per CIELAB L\* unit of color development was similar for kernels from the TX and GA/AL regions. Furthermore, the lowest sucrose concentrations at the end of roasting were 4.3% and 2.8%, respectively, for TX and GA/AL kernels. The presence of significant amounts of sucrose left in all kernels after roasting raises the question of whether sucrose is a limiting reactant in flavor and color development.

Validation of Agricultural Practices of the Technological Package for Peanut Production in Southern Mexico. S. SANCHEZ-DOMINGUEZ and U. SANCHEZ-NIETO. Depto. de Fitotecnia, Universidad Autonoma Chapingo, Chapingo Mex. 56230.

Southern Mexico is the main rainfed peanut producing area, which includes some regions of the states of Morelos, Guerrero, Puebla and Oaxaca. With relatively low yield (1.3-1.5 ton/ha). Factors like poor soils, low rain (160-240 in), landrace genotypes, no pest and insects control, are responsible for the low yields. The objective of this paper is to giving information about some results of five trials conducted during 2002, 2003 and 2004 summer season in locations of the state of Morelos, Mexico. In the first year only a landrace variety was planted in Cuauchichinola and Chavarría. In second and third year N.C 17 and a landrace were compared in the same locations. In the five trials, Bayfolan (a rate of 10g/ L of water) was sprayed at flowering stage. After, two more applications were made, each 15 days during peg growing. During pod growing stage (between 60 and 90 days after planting) Carbendazyn at a dosage of 300g /ha was sprayed for Cercospora personata control. In all cases money amount spend was recorded. Results indicate that: In all trials the weed control efficiency was very important. In experiment 3 (Cuauchichinola -2003) a pod yield of 3.6 ton/ha was due to a good weed control. It was higher than pod yield (only 1.49 t/ha) in experiment 4 (Chavarría- 2003) due to no efficient weed control. Income –costs ratio was variable. In experiment 2 (Chavarría -2002) with improved technology (foliar sprays and fungicides), the pod yield (2.5 t/ha) was higher than that of the peasant technology (2.28 t/ha). However the income –costs ratio was 1.74 for improved technology and 1.92 for peasant technology. These results indicate that is not easy to transfer peanut technology for poor peanut growing areas. Some inputs for peanut production are very expensive in Mexico. It avoid the acceptance for the Mexican peasants of full peanut technology package.

Four Year Evaluation Study of Certain Peanut Varieties for Economic Disease Management Strategies. T.B. TANKERSLEY, Tift County Extension Coordinator, Cooperative Extension, The University of Georgia, Tifton, Georgia, 31793; T.B. BRENNEMAN, R.C. KEMERAIT, J.E. WOODWARD; The University of Georgia, Department of Plant Pathology, Tifton, Georgia 31793; J.P. BEASLEY, JR. and J.A. BALDWIN; The University of Georgia, Department of Crop & Soil Science, Tifton, Georgia, 31793.

Research tests conducted in Tift County from 2002-2005 evaluated disease resistance variety differences and economic responses to reduce fungicide schedules. In 2002, DP1 was evaluated under three different fungicide spray programs. Results indicated no significant differences in yield or disease ratings among the full spray and 50% reduced spray treatments. Significant differences were documented between the minimum spray treatment plots and full and reduced treatments. In 2003, Georgia 01R and C99R were evaluated for yield and disease incidence in a field with a history of Cylindrocladium Black Rot (CBR). Significant yield differences were documented in non fumigated plots of C99R and GA 01R. In 2004 and 2005, Georgia 01R was evaluated using two fungicide treatment schedules. Treatment 1 included a full fungicide program and Treatment 2 a reduced fungicide program. Yield results indicated an advantage to the Treatment 1; however the net economic returns were similar on both treatments.

Cultivar Response to Standard and Reduced Fungicide Programs in Fields with No History of Peanut Production. J.R. CLARK\*, University of Georgia, Cooperative Extension Service, Baxley, GA, 31515; J.E. WOODWARD, T.B. BRENNEMAN, R.C. KEMERAIT, A.K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793; N.B. SMITH, Dept. of Agricultural and Applied Economics, University of Georgia, Tifton, GA, 31793.

Peanut producers in Georgia typically make seven or more fungicide applications per season to control fungal diseases such as early leaf spot (*Cercospora arachidicola*), late leaf spot (*Cercosporidium personatum*) and stem rot (*Sclerotium rolfsii*). Fungicide costs in addition to suppressed crop prices and escalating fuel and labor costs have drastically impacted peanut economics. An inexpensive way to maximize profits is the use of disease resistant cultivars. Several cultivars with increased resistance to multiple pathogens are currently available and afford producers the opportunity to reduce fungicide dependency. Field studies were conducted in 2004 and 2005 to evaluate the response of the mid-maturing cultivars Georgia Green, Georgia-02C, Georgia-03L, AP-3 and the late-maturing cultivars Georgia-01R, C-99R, Hull and Tifrunner to a standard seven-spray, reduced three-spray, or a non-treated zero-spray fungicide program. The test area had no history of peanut production and disease risk was determined to be low according to the University of Georgia Fungal Disease Risk Index. Leaf spot and stem rot were monitored throughout the season and final assessments were taken at harvest. Because of field and equipment limitations there was an inability to randomize fungicide programs; therefore, only differences in cultivar response within a fungicide program were statistically analyzed. Significant differences in leaf spot and stem rot were observed across cultivars. Georgia-03L and Georgia-01R consistently had the lowest levels of leaf spot and stem rot under each fungicide program. Yields were similar for both years of the study and ranged from 4872 to 5901 kg/ha for Hull and Georgia-03L, respectively. Georgia Green had an intermediate yield of 5278 kg/ha. Disease levels were considerably lower for plots receiving fungicides. For leaf spot, the mean level of defoliation in non-treated plots was approximately 75%; whereas plots receiving seven and three applications had defoliation levels of 0 to 5%, respectively. Mean stem rot incidence was 1.8, 3.1 and 6.3% for the seven, three and zero-spray program, respectively. Despite having increased levels of leaf spot and stem rot, yields from non-treated plots were 4863 kg/ha; however, increases of 926 and 720 kg/ha were obtained for the seven and three-spray programs, respectively. When considering the economic inputs associated with each fungicide program, returns were \$1677, \$1798 and \$1672 per ha for the seven, three and zero-spray programs, respectively. These data indicate that disease resistant cultivars can be used in conjunction with reduced fungicide programs to maximize yields and profits in fields with reduced disease risk.

Water Stress Induced Differential Gene Expression in Peanut. H.K.N. VASANTHAIAH, R. KATAM and S.M. BASHA, Center for Viticulture and Small Fruit Research, Florida A&M University, Tallahassee, FL 32317-7900.

Aflatoxin contamination is one of the main factors affecting peanut seed quality. Drought is known to persuade aflatoxin contamination causing *A. flavus* infestation and aflatoxin production. One of the strategies to decrease the risk of aflatoxin contamination is to develop drought-tolerant peanut genotypes. In this study, we initiated quantitative analysis to identify the differentially expressed

cDNA transcripts associated with drought stress in peanut genotypes, and to understand the molecular mechanism of water stress. Peanut plants (50 d old), growing in pot culture under greenhouse conditions were subjected to water stress. Following the stress, leaves were collected and total RNA was isolated and analyzed to determine progressive changes in transcript profiles. We generated differential expression profiles of cDNA transcripts in drought-tolerant and drought-susceptible genotypes employing Differential Display RT-PCR. Out of 24 primer pairs tested, 11 primers resolved a total of 52 transcripts- (>1 Kb: 2 up-regulated and 30 down-regulated). Three primer pairs showed up-regulated transcripts, five primers showed down-regulated transcripts, while three other primer combinations showed both up- and down-regulated transcripts. Short stress period (<3 d) did not show any changes in the transcript profile. In drought-tolerant genotypes, fewer transcripts were affected compared to drought-susceptible genotypes due to water stress. Drought-tolerant genotypes showed up-regulation of transcripts continually up to 14 d stress, period indicating their association with the tolerance. Whereas, in drought-susceptible genotypes, these transcripts were up-regulated only during the initial periods of stress but prolonged stress appears to suppress these transcripts. These data suggests that drought-tolerant genotypes were able to continue their normal metabolic process by maintaining gene expression while drought-susceptible genotypes failed to withstand the drought stress due to loss or reduction of gene expression. The water stress responsive transcripts are being sequenced and characterized to determine their function. Supported by USAID/PCRSP # FAM 51.

Differences in Leaf Protein Expression Among Peanut Genotypes in Response to Water Stress. R. KATAM, H.K.N. VASANTHAIAH, and S.M. BASHA, Center for Viticulture and Small Fruit Research, Florida A&M University, Tallahassee, FL 32317.

Peanut is an important food legume in the arid regions of the tropics. Drought stress is known to predispose peanuts to pre-harvest aflatoxin contamination. Identification and development of drought-tolerant peanut genotype/s is one of the potential means to reduce aflatoxin contamination in peanut. A study was conducted to determine the impact of water-deficit on peanut genotypes with varying degree of drought tolerance. Peanut plants (50 d old) growing in pot culture under green house condition were subjected to water stress. Following exposure to different durations of water stress (3 to 15 days), leaf samples were collected from stressed and irrigated control plants, and analyzed for proteins. Changes in protein profile were monitored by electrophoresis. The results showed significant changes in leaf protein expression due to water stress. In addition, water stress also showed major differences in protein expression among the peanut genotypes. In the drought-susceptible genotypes, increasing stress periods (3 d to 15 d) caused increase in the expression of eight polypeptides ranging in molecular weight between 10 kDa to 50 kDa. However, in drought-tolerant genotype (cv. Vemana), no major changes in leaf polypeptide composition were observed. In the drought- susceptible genotype cv. M-13 low-molecular weight polypeptides increased upon progressive water stress. Based on these studies we have identified proteins that respond significantly to water stress, and this profile is being utilized to screen peanut genotypes for drought tolerance. The drought-responsive proteins will be isolated and characterized to determine their identity and function. Supported by USAID/PCRSP # FAM 51.

Biochemical and Physiological Mechanisms of TSWV-Elicited Desistance of Peanut Plants. X. NI, and C. HOLBROOK\*, Crop Genetics and Breeding Research Unit, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793-0748; and K. DA, Crop and Soil Sciences, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793-0748.

Understanding of pathogen and insect-elicited plant desistance (i.e., the slowing or ceasing of plant growth) could benefit our breeding programs for developing new peanut germplasm for disease and insect resistance. Biochemical (i.e., peroxidase, esterase, and lipoxygenase activities) and physiological (i.e., photosynthetic rate, and light and CO<sub>2</sub> response curves) mechanisms of TSWV-elicited desistance of peanut plants were examined. The desist mechanisms were examined using leaves from the five selected peanut genotypes either with TSWV infection-elicited chlorotic symptoms or without chlorosis (as the control). Enzyme assays showed that the virus-infected chlorotic leaves had a significantly higher peroxidase, esterase, and lipoxygenase activities when compared with the control leaves. In addition, the photosynthetic rate at 70 and 90 days after planting was significantly lower on chlorotic leaves when compared with the control leaves. Furthermore, light and CO<sub>2</sub> response curves of photosynthetic rate between the virus-infected and control leaves also showed an intriguing varietal difference. This study indicated that the information of desistance mechanism might be valuable to our understanding of insect and disease resistance mechanisms in peanut.

The Effect of Conventional versus Sandwich Digging on Yield and Quality in Texas Peanut. T.A. BAUGHMAN\*, Texas A&M Research & Extension Center, Vernon, TX 76384; M.D. FRANKE and K. FRANKE, J. Leek Associates, Brownfield, TX 79316.

Field studies were established near Seminole, Texas during the 2004 and 2005 growing seasons to evaluate the effects of conventional versus sandwich digging on yield and quality of peanut. Flavorrunner 458 was planted in 2004 and Tamrun OL 02 was planted in 2005. The study was a randomized complete block with 4 replications and the plot size was 6, 36-inch rows by 2640 feet long. Yield, grade, peanut value and field loss were calculated from harvest plots. In addition samples were secured from the harvested plots and aflatoxin level, peanut flavor, skin slippage, and blanchability were determined from these samples. There was no difference in peanut yield, total sound mature kernel, and peanut value. Peanut moisture was higher with the sandwich digging compared to the convention. Sound mature kernels were higher with the sandwich digging while sound splits were higher with the conventional digging. However, this did not translate into differences in grade or value. Harvest loss was similar with both digging methods when compared in 2004 and 2005. There was no difference in peanut quality between either digging methods with the exception of blanched wholes which was higher with the sandwich digging. It should be noted that extreme heat did not occur in either 2004 or 2005 after peanut were dug. This could affect the results of these studies.

**SYMPOSIUM**  
**TROPICAL SPIDERWORT: A NEW TROUBLESOME EXOTIC-  
INVASIVE WEED IN PEANUT**

Tropical Spiderwort – An Introduction. T.M. WEBSTER\*; USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793.

Tropical spiderwort (also known as Benghal dayflower) has gone from relative obscurity as a roadside curiosity to a troublesome weed with widespread economic impact in Georgia in less than 10 years. South Georgia and Florida are currently plagued by tropical spiderwort, but isolated populations have been discovered in Alabama, South Carolina, and North Carolina. A weed in warm temperate regions throughout the world, tropical spiderwort has recently invaded US cropping systems in response to significant recent changes in cropping systems. These changes include, but are not limited to, elimination of the use of preemergence herbicides with soil residual activity in cotton, adoption of reduced tillage (coupled with elimination of cultivation as a weed control tactic), reliance on glyphosate-based systems in cotton, and a large increase in cotton acreage in Georgia. Peanut is one of the crops in which tropical spiderwort can be effectively managed with many herbicides, including S-metolachlor, paraquat, diclosulam, imazapic, and imazethapyr. The purpose of this symposium is to share the latest research on this troublesome weed within the southeast region. Tropical spiderwort research is truly a regional effort, as evidenced by the affiliations of the various presenters, to rapidly increase our knowledge of this weed.

Mr. Tim Flanders (Extension Coordinator, Grady County, GA) discussed his first-hand experience with this weed in a county that was among the first to report tropical spiderwort as a troublesome weed.

Dr. Wilson Faircloth (USDA-ARS, Dawson) presented research results on the critical periods of tropical spiderwort control in peanut.

Dr. Barry Brecke (University of Florida) discussed his research which evaluated the influence of tillage and herbicides on tropical spiderwort population densities. Dr. Eric Prostko (University of Georgia) presented a summary of five years of on-farm research throughout southern Georgia.

Dr. Tim Grey (University of Georgia) provided information concerning the ability of vegetative propagation of tropical spiderwort following simulated tillage and the ability of those segmented stems to survive drought stress.

Dr. Mike Burton (North Carolina State University) discussed preliminary results of a long-term seed burial study initiated in North Carolina and Georgia.

Dr. Richard Carter (Valdosta State University) presented: "Do mourning doves disperse seeds of tropical spiderwort?" The means by which tropical spiderwort has rapidly spread in Georgia is not clear; wildlife is believed to be one potential mechanism of dispersal.

Dr. Richard Davis (USDA-ARS, Tifton) discussed research on the ability of tropical spiderwort to serve as alternate hosts for nematodes and plant

pathogens, including the significance of these findings in the context of crop rotations as a cultural practice for minimizing nematode severity.

Dr. Andrew Price (USDA-ARS, Auburn) presented research on the effect of elevated atmospheric CO<sub>2</sub> levels on the growth of tropical spiderwort.

An Overview of Tropical Spiderwort Infestation and Spread in Grady County, Georgia. J.T. FLANDERS\*, Grady County Extension, The University of Georgia, Cairo, GA 39828; E.P. PROSTKO, A.S. CULPEPPER, The University of Georgia, Tifton, GA 31793; and T.M. WEBSTER, USDA-ARS, Tifton, GA 31793.

In a 1994 weed survey of Grady County, several weed species were noted that were not major weeds in Georgia, including wild poinsettia, groundcherry, redweed, and tropical spiderwort. Although present in several locations in 1994, tropical spiderwort was not considered a troublesome weed. However in 1998, this weed suddenly became a problem for growers of Roundup Ready cotton. In 1999, the first cotton research trials were conducted, and by 2000 tropical spiderwort had become the most troublesome weed in Grady County cotton. In 2001, the first peanut research trials were conducted and tropical spiderwort became the most troublesome weed in Grady County peanuts that same year. Currently tropical spiderwort is present in 60-70% of the county's cropland. In 80% of those fields, it is the dominate weed species. In 1999, tropical spiderwort was known to exist in 5 Georgia counties. By 2004, the Georgia Department of Agriculture had confirmed the existence of tropical spiderwort in 33 Georgia counties. The rapid spread of tropical spiderwort can be attributed to several factors including the introduction of glyphosate resistant cotton and the increase in conservation tillage acreage. This weed became a problem weed in glyphosate-resistant cotton due its tolerance to glyphosate once growth exceeds 4 inches. With the introduction of this technology, many older cotton herbicides that have activity on tropical spiderwort were replaced with a glyphosate-based herbicide program. Glyphosate-resistant cotton also allowed for a rapid increase in conservation tillage acreage. Recent research from Florida showed an increased incidence of tropical spiderwort in conservation tillage systems. The growth and reproductive characteristics of tropical spiderwort has also promoted its rapid spread. Tropical spiderwort has tremendous reproductive characteristics with the ability to produce seed under field conditions in 40-45 days and the ability to produce multiple generations a year. Tropical spiderwort also has the ability to germinate throughout the growing season putting extraordinary pressure on any weed management program. In the past 3-4 years, the largest contributor to the spread of tropical spiderwort in Grady County is the county's corn acreage. Grady County farmers' grow corn on 11,000-12,000 acres a year (20% of county's row crop land). This acreage is generally beginning to dry down by mid- to late-July with most of the harvest taking place in August. Once corn begins to dry down and allows sunlight to penetrate the canopy, tropical spiderwort can emerge and grow uncontrolled until frost. The lack of any widespread control strategies following corn harvest allows fields to become a monoculture of tropical spiderwort and allows a large seed bank to build for future crops.

Critical Period of Tropical Spiderwort (*Commelina benghalensis*) Control in Peanut. W.H. FAIRCLOTH\*, T.M. WEBSTER, USDA/ARS, Dawson and Tifton; T.L. GREY and E.P. PROSTKO, University of Georgia, Tifton, GA and J.T. FLANDERS, University of Georgia, Cairo, GA.

Tropical spiderwort (also known as Benghal dayflower) is one of the most troublesome weeds in Georgia peanut. There are several effective tropical spiderwort control options in peanut, but there is no information concerning the critical time of tropical spiderwort interference with peanut. Field studies were conducted in 2004 and 2005 to evaluate the relationship between the duration of tropical spiderwort interference and peanut yield in an effort to optimize the timing of weed control efforts. Critical period of weed control (CPWC) studies are composed of two similar sets of treatments. The first set of treatments allowed tropical spiderwort to interfere with peanut for intervals of 2 to 10 and 2 to 7 weeks after crop emergence in 2004 and 2005, respectively. Weeds were removed following these intervals. In the second set of treatments, plots were kept free of tropical spiderwort for the same intervals, after which tropical spiderwort emerged and competed with peanut. These two companion studies were used to estimate CPWC. Standard, small plot research procedures were followed using the peanut cultivar 'Georgia Green'. In 2004, the tropical spiderwort CPWC necessary to avoid greater than 10% peanut yield loss was between 326 and 559 growing degree days (GDD), which corresponded to an interval between June 8 and June 28. The base temperature for the calculation of GDD was 15.5C. In 2005, the CPWC ranged from 250 to 480 GDD, an interval between June 5 and June 27. Maximum yield loss in 2005 from season-long interference of tropical spiderwort was 51%. In 2004, production of peanut pods was completely eliminated by interference with tropical spiderwort for the initial six weeks (495 GDD) of the growing season. Robust tropical spiderwort growth in 2004 shaded the peanut crop, likely intercepting fungicide applications and causing a reduction in peanut yield. Therefore, the competitive effects of tropical spiderwort are likely confounded with the activity of plant pathogens. However, this is a realistic scenario that a producer would encounter and the season-long presence of tropical spiderwort was associated with complete crop failure. In spite of higher tropical spiderwort population densities, greater tropical spiderwort growth, and greater peanut yield losses in 2004 than in 2005, the CPWC was a relatively similar three-week period beginning in early June.

Impact of Tillage and Herbicides on Tropical Spiderwort. B.J. BRECKE\*, K.C. HUTTO and D.O. STEPHENSON, IV; University of Florida, West Florida Research and Education Center, Jay, FL 32565.

Studies were conducted at the University of Florida, West Florida Research and Education Center, Jay, FL in an area naturally infested with tropical spiderwort to determine the effect of tillage and herbicides on management of tropical spiderwort. In the first study, peanut and cotton were grown under two tillage regimes: 1) conventional tillage which included use of a moldboard plow, disk and field cultivator prior to planting and 2) and reduced tillage which included use of a strip-till implement fitted with an in-row subsoil shank, closing discs, and rolling baskets. The strip-tillage operation left at least 50% of the soil surface undisturbed. Cotton and peanut were planted following the tillage operations. Weed counts indicated a lower tropical spiderwort density (3 plants/m<sup>2</sup>) in the conventional tillage area compared with the strip-tillage area (60 plants/m<sup>2</sup>) in

both cotton and peanut. In a second study (with only cotton), three levels of tillage were evaluated for effect on tropical spiderwort. Conventional tillage and strip-tillage were employed as in the first study. The third tillage system involved the use of a para-till implement which resulted in a level of soil disturbance greater than strip-tillage but less than conventional tillage. Weed counts indicated that tropical spiderwort density was highest in strip-tillage (8 plants/m<sup>2</sup>), next highest in para-till (4 plants/m<sup>2</sup>) and lowest in conventional tillage (2 plants/m<sup>2</sup>). Herbicide treatments were more effective in the conventional tillage area probably due to the reduced tropical spiderwort density. Two applications of glyphosate in glyphosate tolerant cotton failed to provide adequate control of tropical spiderwort. Adding metolachlor to the first glyphosate application improved control to 96% in conventional tillage, 80% in para-till and 75% in strip-till cotton.

Tropical Spiderwort: A Weed Scientist's Dream but a Farmer's Nightmare. E.P. PROSTKO\*, A.S. CULPEPPER, Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31793 and J.T. FLANDERS, The University of Georgia Cooperative Extension, Cairo, GA 39828.

Tropical spiderwort (*Commelina benghalensis*) has presented a unique challenge to both growers and weed scientists. From the grower's viewpoint, this weed was unusually troublesome because little biology and management information was known. From a scientific viewpoint, tropical spiderwort provided an excellent opportunity for a group of young researchers, extension weed scientists, and county agents to develop new data that had the potential to have an immediate impact at the farm level. Since 2000, more than 100 field, laboratory, and greenhouse trials have been conducted on the biology and control of tropical spiderwort in Georgia. Numerous studies have confirmed that one of the most effective herbicides for the residual control of tropical spiderwort is S-metolachlor (Dual Magnum). Consequently, this herbicide has become the foundation for management in peanut and many other crops. Generic formulations of metolachlor (Me-To-Lachlor, Parallel, Stalwart) have also been evaluated. Early season (< 40 DAT) control of tropical spiderwort with these formulations has not been different from S-metolachlor. However, late-season control ratings (> 40 DAT) suggest that metolachlor formulations provide 5 to 15% less control of tropical spiderwort than the S-metolachlor formulations when applied at the same rate. An indicator that growers in Georgia have rapidly adopted the newly developed control strategies has been the substantial increase in the sales of both S-metolachlor and metolachlor. The current emphases of extension educational programs are to encourage growers to manage tropical spiderwort in all crops, delay spread, and implement control strategies as soon as the weed is identified in a field.

Tropical Spiderwort Stem Desiccation and Recovery. T.L. GREY\*, Department of Crop & Soil Sciences, University of Georgia, Tifton and T.M. WEBSTER, USDA-ARS, Tifton GA 31794.

Tropical spiderwort has the curious ability to survive periods of drought stress, even as segmented pieces of stem. The purpose of this study was to establish the moisture level to which stems of tropical spiderwort (TRSW) must desiccate in order to effectively kill the plant and halt the regenerative process. Stems of live TRSW were harvested from greenhouse-grown plants and divided into sections that included two nodes. Individual stems were then labeled and fresh

stem weight for each recorded prior to initiation of desiccation treatment on a laboratory bench. Stems were randomly selected and stored in an individual paper bag during the desiccation treatment. Each experimental unit consisted of 20 stems, with average weight of 611 mg/stem, and was replicated three times. Treatments were time of desiccation, and included 0, 1, 2, 4, 8, 16, 23, 30, 37, and 44 days after cutting. Following the duration of desiccation period, each stem was weighed to evaluate the level of water removal. The ability of the stems to re-hydrate and grow was measured by planting the stems erectly, placing one node into a pot with soil media and leaving the other node exposed. Pots were then fertilized as needed and irrigated daily. Water loss was 24, 35, 58, and 48% for days 1, 2, 4, and 8 respectively. Desiccation for 16 days and beyond, water loss was stable ranging from 46 to 54%. Planted TRSW stems were evaluated for viability 30 days after planting. Regeneration of TRSW from the dried stems was greater than 93% from stems planted 0, 1, and 2 days after cutting. Regeneration was 50% when TRSW was desiccated for 4 days, 25% for 8 days, 7% for 16 days, and 5% for 23 days. Regeneration was 0% when TRSW was desiccated for 30 days and longer. This data indicate that TRSW plants should be dried to at least 50% moisture content and kept in a moisture free environment in order to prevent regeneration. Size of the stem segments needs to be investigated to establish further regenerative abilities.

Tropical Spiderwort Seedbank Dynamics and Longevity. M.G. BURTON\*, A.C. YORK, Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620 and T.M. WEBSTER, USDA-ARS, Tifton, GA 31793-0748.

Tropical species are often expected to have short seedbank longevity and fairly predictable seedbank dynamics. This is not the case for tropical spiderwort (also known as Benghal dayflower, *Commelina benghalensis* L.). Although seedbanks near the surface appear to germinate rapidly – successively depleting the residual seedbank by 60 to 75% each year – populations buried at 20 cm demonstrate greater seedbank longevity. Differences in fatal germination and death between large and small aerial seeds (the only ones examined in the experiments) are apparent.

Do Mourning Doves Disperse Seed of Tropical Spiderwort? J.R. CARTER\* and R.H. GODDARD, Valdosta State University, Valdosta, GA; T.M. WEBSTER, USDA-ARS, Tifton, GA; J.T. FLANDERS, A.S. CULPEPPER, and T.L. GREY, University of Georgia, Tifton.

The Federal Noxious Weed tropical spiderwort (*Commelina benghalensis* L.) (TSW) was virtually unknown as an agricultural pest in the southeastern United States five years ago. Recently, TSW has rapidly dispersed throughout much of southern Georgia where it now adversely affects peanuts, cotton and other crops. Despite the enormous implications for agriculture in Georgia and other areas of the southeastern United States, little is known about the dispersal of TSW. Birds are known agents of seed dispersal of many species and are suspected to spread seeds of TSW in the southeastern United States. Gut contents from mourning doves (*Zenaidura macroura*) taken in Grady County, Georgia, from 2003-2005 were examined for the presence of TSW seeds. Gut contents from six birds from 2003 showed a total of 30 TSW seeds. Contents from 3 of 11 birds taken during 2004 were positive for TSW and included a total of 116 TSW seeds (M=10.5 seeds/bird), and contents from 9 of 14 birds taken

during 2005 were positive for TSW and included a total of 90 TSW seeds (M=6.4 seeds/bird). TSW seeds from gut contents were tested for viability with 2,3,5-tetrazolium chloride, and ~2% (N=99) were viable. While these results implicate mourning doves as likely dispersers of TSW seeds, additional research testing regurgitated and defecated seeds from captive birds is needed to gain a better understanding of the actual potential for mourning doves to disperse TSW seeds and the distances, rates, and levels of such dispersal.

Tropical Spiderwort as a Host for Nematodes and Diseases. R.F. DAVIS\*, T.M. WEBSTER, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793 and T.B. BRENNEMAN, The University of Georgia, Department of Plant Pathology, Tifton, GA 31793.

Nematodes are the most damaging pathogens of cotton, and one of the most important pathogens of peanut. Crop rotations utilizing cotton, peanut, and corn can be used to manage the southern root-knot (*Meloidogyne incognita*), peanut root-knot (*M. arenaria*), and reniform (*Rotylenchulus reniformis*) nematodes, though weeds can support reproduction and reduce the effectiveness of rotation as a management tool. This study documents 1) the relative host status of tropical spiderwort for *M. incognita*, *M. arenaria*, and *R. reniformis*, and 2) the host status of tropical spiderwort for the fungal pathogens *Sclerotium rolfsii* and *Cylindrocladium parasiticum*. A reproductive factor (RF) was calculated for each nematode as the final population level divided by the initial population level ( $P_f/P_i$ ). Gallings was estimated on a 0 to 10 scale for the *Meloidogyne* species. Data from two trials with *M. incognita* were statistically similar, so the data was combined into a single analysis. Data from trials with *M. arenaria* also were combined, but data from trials with *R. reniformis* could not be combined. *Meloidogyne incognita* reproduced well on *C. benghalensis*, leading to a mean gall rating of 3.1 and a mean RF of 15.5 on *C. benghalensis*. *Meloidogyne arenaria* also reproduced well on *C. benghalensis*, with a mean gall rating of 2.1 and a mean RF of 7.2. In the first trial with *R. reniformis*, the RF was 2.4 on *C. benghalensis* and 1.4 on cotton. In the second trial, the RF was 3.6 on *C. benghalensis* and 13.5 on cotton. The severity of symptoms caused by *Sclerotium rolfsii* was estimated on a 0 to 10 scale. In the first trial, peanut had a mean disease severity rating of 4.0 and *C. benghalensis* had a mean rating of 1.4, and the fungus could be seen growing on 40% of the *C. benghalensis* plants. In the second trial, peanut had a mean disease severity rating of 10.0 and *C. benghalensis* had a mean rating of 5.0, but the fungus could be seen growing on all of the *C. benghalensis* plants. The trials with *Cylindrocladium parasiticum* were inconclusive due to low infection rates, but the fungus appears to be weakly pathogenic to *C. benghalensis*. In conclusion, it appears that *C. benghalensis* is a sufficiently good host for some of the primary nematode and fungal pathogens of major crops in the southeastern US that its presence at high plant population densities can greatly reduce the pathogen-suppressive effects of crop rotation.

The Invasive Weed Tropical Spiderwort Increases Growth Under Elevated Atmospheric CO<sub>2</sub>. A.J. PRICE\*, G.B. RUNION, S.A. PRIOR, H.H. ROGERS, H.A. TORBERT, USDA-ARS National Soil Dynamics Laboratory, 411 South Donahue Drive, Auburn, AL 36832 and D.H. GJERSTAD, School of Forestry and Wildlife Sciences, 602 Duncan Drive, Auburn University, AL 36849.

Invasive plants are considered to be a major threat to the earth's biodiversity and

cost U.S. agricultural and forest producers billions dollars each year from decreased productivity and increased weed control costs. While considerable effort is being spent studying exotic plant pests, little consideration has been given as to how invasive plants might react to the increasing concentration of CO<sub>2</sub> in the atmosphere. Tropical spiderwort is considered one the world's worst weeds and is becoming more of a problem in agricultural settings of the southeastern US. Thus, tropical spiderwort was grown under ambient and elevated levels of CO<sub>2</sub> to evaluate growth response. Under elevated CO<sub>2</sub> conditions, aboveground plant organ parts exhibited significant increases in dry weight. Dry weight increased 36%, 30%, and 48% for leaf, flower, and stem respectively. While total root dry weight was unaffected, total plant weight increased by 41%. Additionally, total plant height, and root length was unaffected by CO<sub>2</sub> level while total leaf number increased 23% and total flower number showed trends for increase (24%) when exposed to additional CO<sub>2</sub>. Tropical spiderwort allocated more resources to flower and stem development compared to leaf and root development. Tropical spiderwort's root to shoot ratio decreased 74% illustrating the plants reproductive ability and increased photosynthetic efficiency when exposed to additional CO<sub>2</sub>. The strong growth response of the invasive weed tropical spiderwort suggests that its competitive ability with native plants will be enhanced in a future high CO<sub>2</sub> environment.

## PHYSIOLOGY AND SEED TECHNOLOGY

Measurements of Peanut Rooting Pattern Dynamics in Conservation Tillage Systems Through the Use of Minirhizotrons. D.L. ROWLAND\*, K.K. GRAY, and W.H. FAIRCLOTH, USDA-ARS, National Peanut Research Laboratory, 1011 Forrester Dr. SE, Dawson, GA 39842.

In peanut production, the root system and its associated properties are oftentimes the controlling force behind patterns of yield and plant performance. Given the relative importance of the root system however, very little foundational information is available, and rooting traits are generally overlooked in most studies. One system where an understanding of the root system response is critical is in conservation tillage systems where increased soil moisture and rooting patterns of the cover crop are hypothesized to significantly affect the subsequent crop's rooting pattern. We made detailed measurements of peanut rooting depth, length, surface area, size, and general architecture during the 2004 growing season through the installation of minirhizotrons in conventional (CT) and strip tillage (ST) systems. Digital images of the peanut root system and image analysis were performed at pre-plant, 30, 60, 90, and 120 days after planting. In general, root length, surface area, and root diameter were greater in the ST than in the CT system. Maximum rooting depth in the CT treatments averaged 80 cm while in the ST treatments, roots grew below the maximum tube depth of 88 cm. An accumulation of large size roots in the ST system between the 30 and 55 cm depths corresponded with the previous cover crop rooting pattern, indicating the cover crop may be influencing subsequent rooting patterns in the peanut crop. There was no corresponding root accumulation in the CT treatments at these depths. High root production was seen in the CT system at the 20 and 70 cm depths and in the ST treatments at 20, 45, and 70 cm depths. Root production appears to be greater in the ST system than in the CT system and is possibly correlated with increased plant available water and infiltration in a conservation tillage system.

Influence of Fungicide and Sowing Density on Growth and Yield of Two Peanut Cultivars. J.B. NAAB, Savanna Agric. Res. Inst., Wa, Ghana; K.J. BOOTE\*, J.W. JONES, Univ. of Florida, Gainesville, FL 32611 and P.V.V. PRASAD, Kansas State Univ., Manhattan, KS 66506.

Peanut yields in West Africa are limited by poor management, lack of disease control, and low fertility. The objective of this research was to determine the influence of fungicide application at different sowing densities on growth, biomass and yield of peanut. Two cultivars [Chinese, 90 days duration and Manipinter, 120 days duration) were grown at three sowing densities (8, 12, and 20 plants m<sup>-2</sup>) with and without fungicide application (Folicur® at 0.22 kg a.i. ha<sup>-1</sup> at 15-day intervals beginning 21 days after sowing) in two growing seasons (2004 and 2005). Leaf area index (LAI), light interception and total biomass were measured over time. Haulm and pod yields were measured at harvest maturity. Fungicide reduced defoliation/necrosis and increased LAI, light interception and total biomass beginning at 65 days after sowing. Pod yield was increased 48% by fungicide. The long duration cultivar Manipinter had greater LAI, greater final biomass and 20% higher yield than Chinese. The growth and yield of both cultivars was significantly less at the lowest population density. With high sowing density and fungicide, the pod yields of these cultivars under rainfed conditions were between 1700 to 2800 kg ha<sup>-1</sup>.

Evaluating the Susceptibility of Virginia-Type Peanut Cultivars to Tomato Spotted Wilt Virus and Tobacco Thrips. D.L. COKER\*, D.A. HERBERT, S. MALONE and H.G. PITTMAN, Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA, 23437.

The relationship of thrips management and incidence of tomato spotted wilt virus (TSWV) in virginia-type peanut cultivars grown in the Virginia-Carolina region needed further investigation. Study objectives were 1) to assess whether some virginia-type cultivars are less susceptible to TSWV because they host fewer thrips and 2) to determine if certain virginia-type cultivars have greater physiological resistance to TSWV. A first-year study was planted on 1 May 2005 at the Virginia Tech Tidewater Agricultural Research and Extension Center. The study design was a split-plot arrangement with main-plots of insecticide treatment (with and without in furrow Temik 15G at 7 lb/A plus Orthene 97 broadcast at 4 oz/A) and sub-plots of cultivars which included CHAMPS, VA 98R, NC-V 11, Wilson, NC 7 and Perry. Treatments were replicated in five blocks using two-row plots, each 36 inches wide by 40 ft long. Measurements included weekly thrips counts, weekly thrips injury ratings, TSWV symptom ratings, growth analysis, grade, and yield. At six weeks after planting, no significant differences in numbers of immature thrips were observed between cultivars. By 19 July, CHAMPS showed lower counts of TSWV compared to NC 7, NC-V 11 or Wilson. At the 19 July and 30 August samplings, the response to insecticide treatment in terms of TSWV disease ratings was significant. Averaged across cultivars, leaf area index, plant biomass, and lateral branch length were reduced at 65 days after planting in control vs. insecticide-treated plots. Across cultivars, the percentage of sound mature kernels, percentage total kernels, pod yield, and value per acre responded to insecticide treatment at harvest. The percentage of fancy pods was greater for CHAMPS and NC 7 compared to NC-V 11 with insecticide, whereas no differences were observed without insecticide. So far, our results confirm the importance of thrips management for several virginia-type peanut cultivars grown in Virginia and suggest that CHAMPS may have some physiological advantage over other cultivars with respect to TSWV susceptibility.

This study will be continued a second year to account for the influence of varying environmental conditions between seasons.

## **SYMPOSIUM ORGANIC PEANUT PRODUCTION: LESSONS LEARNED**

Progress Report: Weed Management in Organic Peanut Production. W.C. JOHNSON, III\*, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793.

Studies have been conducted in Tifton, GA since 2003 to develop weed management systems for organic peanut production. Trials in conventional tillage production systems evaluated row patterns, cultivation, and remedial weed management using propane flaming, clove oil, and citric acid. Weed control and peanut yields did not differ between row patterns, despite quicker canopy closure from peanut seeded in narrow rows compared to wide rows. This was attributed to extreme difficulty in cultivating peanut seeded in narrow rows. Annual grasses were not controlled by any of the remedial treatments. Dicot weeds were initially controlled by propane flaming and clove oil, but the lack of residual weed control allowed subsequent weed emergence. Peanut yields were very low in all plots, due to poor control of annual grasses. Additional trials were conducted in reduced-tillage systems. Systems evaluated were strip-tillage and no-tillage, remedial weed control (pelargonic acid, propane flaming), and handweeding. Overall, weed control was better in no-tillage plots than in strip-tillage plots due to less soil disturbance that stimulated weed emergence. Senesced crimson clover was mowed prior to planting peanut which released crimson clover seed. The resulting crimson clover seedlings appeared to suppress weed emergence. Pelargonic acid killed clover seedlings, resulting in subsequent weed emergence. Furthermore, pelargonic acid did not control annual grasses. Handweeding once or twice was not sufficient to control weeds and peanut yields were poor. Preliminary results from these trials clearly show that weed control in organic peanut production will be difficult and costly, with the inability to manage annual grasses a limiting factor. In conventional tillage systems, successful weed control depends on stale seedbed tillage, frequent cultivation, and handweeding. In reduced tillage systems, peanut planted no-till in crimson clover appears to offer the best early-season weed suppression of the treatments evaluated. Remedial weed control using propane flaming, pelargonic acid, and clove oil extract are cost-prohibitive and too narrowly focused to be useful in organic peanut production. Current research is evaluating blind cultivation with a flex-tine cultivator, corn gluten, and mulching materials to suppress weeds.

Disease Control for Organic Peanuts. B.B. SHEW\*, North Carolina State University, Raleigh, NC 27695, E.G. CANTONWINE, A.K. CULBREATH, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793, and M.A. BOUDREAU, Herbert Green Agroecology, Asheville, NC 28804.

Several approaches for disease control were tested in 2005 in North Carolina and Georgia for possible incorporation into organic production systems. In North Carolina, organically acceptable disease control methods were studied in a conventional field and management practices other than disease control were as in conventional production. For foliar disease control, plots were sprayed five times with cupric hydroxide (Kocide) alone or in combination with a commercial

formulation of *Bacillus* spp. (Serenade), were untreated, or were sprayed with a conventional fungicide (Tilt/Bravo). Foliar treatments were tested with or without wheat straw mulch. Plots were planted with the virginia-type cultivar Perry, which has partial resistance to early leaf spot, CBR, and Sclerotinia blight. However, Perry is highly susceptible to late leaf spot, which predominated in 2005. Leaf spot incidence, defoliation, and yield differed significantly among treatments. Plots sprayed with cupric hydroxide had higher leaf spot incidence and defoliation than those sprayed with the conventional fungicide, but yields for the two treatments were very similar and not significantly different. When Serenade was added to cupric hydroxide, leaf spot control and yield were reduced and similar to unsprayed plots. Incidence of stem rot, CBR, and TSWV generally was low and not affected by foliar treatments. Mulch treatments did not affect any of the diseases observed and did not interact with foliar treatments. In Georgia, organically acceptable disease control methods were studied in a previously conventional field managed organically for this experiment. For foliar disease control, plots were sprayed seven times with copper sulfate, sulfur, neem oil, or Serenade, or were untreated. Plots were planted with the runner-type genotype C-11-2-39, which has partial resistance to early and late leaf spot, and a high level of resistance to TSWV. Plots sprayed with neem oil or Serenade had final leaf spot ratings that did not differ from that of the nontreated control. Copper sulfate or sulfur provided significant suppression of leaf spot epidemics, but no fungicide treatment increased yield compared to the control. Average yield across fungicide treatments was 2792 kg/ha.

Efficacy of Organic (OMRI-Approved) Foliar Insecticides and Mulching for Thrips and Spotted Wilt Suppression on Peanut. J.W. CHAPIN\* and J.S. THOMAS, Department of Entomology, Soils, and Plant Sciences, Clemson University, Edisto REC, 64 Research Road, Blackville, SC 29817.

Foliar treatments of organic insecticides, a non-organic standard (acephate), and straw mulch were evaluated for suppression of thrips, *Frankliniella fusca* (Hinds) populations, thrips injury, and spotted wilt disease, as well as grade and yield response on NC-V11 peanut. The insecticidal treatments evaluated were: Entrust 2 oz/ac (spinosad 0.1 lb/ac); Trilogy 70 EC 1.1 qt/ac (1.5 lb/ac Neem oil extract); Neemix 4.5, 7 oz/ac (0.02 lb azadirachtin/ac); That 2 qt/ac (3.0 lb sulphur/ac); M-Pede insecticidal soap 2 qt/ac; Surround WP (10.4 lb kaolin/ac); PyGanic EC 1.4, 1 qt/ac (0.05 % pyrethrins dilution); Orthene 97, 6 oz/ac (acephate 0.36 lb/ac); and an untreated check. The foliar thrips treatments were applied on 26 May (15 DAP), 1 June (21 DAP), and 8 June (28 DAP) using a CO<sub>2</sub> charged backpack sprayer delivering 28 gpa through a TX-18 hollow cone nozzle. Treatments were applied directly over the row in about an 8-in band. The spray volume used on this band width resulted in thorough wetting of the small peanut plants. The wheat straw mulch treatment was applied by hand (9 DAP) at a rate equivalent to 80 small bales per acre. The experimental design was a RCB with five replicates. The experimental unit was an 8-row (38-in spacing) by 40-ft plot length. Entrust, Neemix, and the conventional Orthene treatment caused significant reductions in populations of thrips nymphs. Only Entrust and Orthene measurably reduced early-season thrips stunting. Late-season spotted wilt stunting was reduced relative to the untreated check (40%) in plots treated with Orthene (9%), Entrust (20%), Neemix (26%), That (24%), and straw mulch 19%). However, only the conventional Orthene treatment had a significantly greater yield than the untreated check (3104 vs. 2029 lb/ac). There were no measurable

differences in grade, although the Orthene and Entrust treatments had the numerically greatest ELK and TSMK scores. In summary, Entrust was the most effective organic treatment tested, but was not comparable to the conventional insecticide standard. Although combinations of the more promising foliar organic treatments merit further study, it appears that suppression of direct thrips injury and spotted wilt disease in organic peanut production will depend on varietal resistance and cultural practices rather than on use of organic insecticides.

Organic Peanut Production in the US: A Grower's Perspective. R. WALKER\*,  
Organic Producer and South Georgia Program Coordinator for Georgia  
Organics, Sylvania, GA.

NO ABSTRACT AVAILABLE. ORAL PRESENTATION ONLY.

Organic Peanut Production in the US: The Sheller's Perspective. B. PARKER\*,  
Vice President for Procurement, Golden Peanut Company, 100 North  
Point Center East, Suite 400, Alpharetta, GA 30022.

The demand for organically produced peanuts represents the fastest growing sector in the peanut industry and producers and processors are becoming increasingly interested in developing production and processing systems that can efficiently supply the growing demand. This is especially challenging because of the "identity preservation" and other factors that are required to be certified organic commodities. Organic peanuts must meet the requirements at the farm gate, stored utilizing only approved pesticides, shelled in a manner that ensures no co-mingling with conventional peanuts, and stored separately after shelling. Each of these post-harvest requirements adds costs and achieving an economy of size to cost effectively manage these requirements will be addressed.

The Economics of Organics versus Conventional Peanuts. M.C. LAMB. USDA,  
ARS, National Peanut Research Laboratory, Dawson, GA 39842.

The demand for organically produced peanuts and cotton represent the fastest growing sector for each of these commodities. Significant price premiums at the producer level are associated certified organic commodities. However, such incentives to convert a field or farm from conventional production to an organic production system are not easily or quickly observed due to the transition period required for products to be marketed as "Organic". Two years (2004 and 2005) of an irrigated and non-irrigated peanut/cotton transitional organic rotation system have been completed at the USDA/ARS National Peanut Research Laboratory's Multi-crop Irrigation Research Farm. Organic peanut and cotton plots will be continued in 2006 in conjunction with on-going irrigated and non-irrigated research in conventionally produced peanut/cotton rotations to provide direct comparisons in terms of production cost(s), yield, grade, and quality. The FarmSuite In-Season Cost Monitoring System (developed at the National Peanut Research Laboratory) was used to monitor all crop production inputs from initial tillage to final harvest operations. Final yield and farmer stock grade are recorded to calculate gross revenue per acre. These data, taken comparatively between the organic and conventional production systems, are entered into the WholeFarm Cross Commodity Breakeven Price matrix that will calculate how much the price of one commodity must change such that the economic net returns are exactly the same between commodities. More simply put, this will calculate the exact price premium (and associated yield) that a farmer must

receive for organic peanut before he/she should consider converting a field or farm from conventional production to organic production (including the transition period). This will provide producers that are interested in organic production information on production cost(s), expected revenue, and required price premiums to improve their decision making and minimize production and marketing risk.

**MINUTES OF THE BOARD OF DIRECTORS MEETING**  
**38th Annual Meeting, Hyatt Regency Hotel**  
**Savannah, Georgia**  
**July 11, 2006**

President Pat Phipps called the meeting to order at 7:05 pm and welcomed everyone.

President Phipps called upon Ron Sholar, Executive Officer, to present the minutes of the last Board of Director's Meeting conducted at the 2005 Annual Meeting held in Portsmouth, VA. The minutes were approved as reported in the 2005 Proceedings, Volume 37. Dr. Sholar reported that the society remains in sound financial condition.

The following reports were made and approved by the Board.

**New Business:**

**Ad hoc Committee Reports:**

**1. Ad Hoc Committee on Changes to the By Laws – Austin Hagan**

Austin Hagan presented the ad hoc committee report on recommending changes to the APRES By Laws. Dr. Hagan indicated that the committee proposed five changes to the By Laws. The purpose was to clarify some vague areas in the By Laws, to consider how certain peanut groups would fit into having a representative on the BOD, and specific duties for the Site Selection Committee.

*a. Discussion: The following change is recommended to remove confusing language about "state employees" and to clarify university representation.*

Art. VIII. Board of Directors, Sec. 1-d.

Three ~~University employees'~~ representatives - these directors are ~~those whose employment is state sponsored and whose relation to peanuts principally concerns to be chosen based on their involvement in APRES activities, and knowledge in peanut~~ research, and/or education, and/or regulatory ~~pursuits programs~~. One director will be elected from each of the three main U.S. peanut producing areas (*Virginia-Carolinas, Southeast, Southwest*).

*b. Discussion: The following change is recommended to make it possible for members from additional industry peanut groups to serve on the BOD.*

Art. VIII. Board of Directors, Sec. 1-f.

Three ~~Private Peanut Industry~~ representatives - these directors are ~~those whose employment is privately sponsored and whose principal activity with peanuts concerns: (1) the production of farmers' stock peanuts; to be chosen from three of the following five segments in the peanut industry: (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.

*c. Discussion: The following change is recommended since currently there is no mechanism for replacing a BOD member who leaves the BOD for any reason.*

#### Art. VIII. Board of Directors, Sec. 8.

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

*d. Discussion: The following change is proposed to require that the Nominating Committee to submit their list of nominees by a specified date prior to the annual meeting.*

#### Art. IX. Committees, Sec. 2-b. Nominating Committee

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

*e. Discussion: The following change is proposed to clarify the duties of the Site Selection Committee and specifies the time for the Site Selection Committee work to be completed.*

#### Art. IX. Committees, Sec. 2-h. Site Selection Committee

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

The report of the ad hoc committee was approved as presented.

## **2. Proposed Changes of APRES Membership Categories – Richard Rudolph, Chair, Ad Hoc Committee on Membership**

The members exchanged ideas by email and reached agreement on the following recommendations to the Board of Directors.

The ad hoc committee recommended moving from three individual membership categories to four membership categories.

### **a. Individual Membership**

**(1) Regular membership** with dues of \$100.00 per year which is an increase of \$20 per year. The committee acknowledged that this is as high as the society can/should go at this time. This membership will be the same as currently defined in the Society By-Laws Article III, Section 1, paragraph a.

**(2) Retired membership** with dues of \$25.00. This status would require a letter from the Department Chairman the first year of eligibility to document retired status. Because of their past status as individual members and service to the society, Retired members would retain all the rights and privileges of regular individual membership.

**(3) Post-Doc membership** with a fee of \$50.00. These members would also have full membership privileges to encourage participation. Membership approval will require appropriate documentation from the Department in which the member is working.

**(4) Student membership** as defined in by-laws Article III, Section 1, para e. should be maintained as defined with dues of \$25.00. In addition, it is recommended that Student members have clearly defined rights and privileges and those be the same as for regular individual members except service on the Board of Directors be restricted to a non-voting capacity. Since these members are the primary candidates for the future membership and leadership of the Society, experience in Society service and decision making will be helpful to them and the Society.

**b. Institutional membership as defined in by-laws Article III, Section 1, paragraph b should be dropped.** This is really just a subscription service, not a membership category. All responsibility for subscriptions, including fees, should be transferred to the Publications and Editorial Committee. Changes in Peanut Science distribution will be necessary anyway since we are moving to an electronic format.

**c. Organizational membership as defined in by-laws Article III, Section 1, paragraph c should be dropped.** The dues are the same as the new proposed dues for individual membership. We

recommend that current and future members of this category be recruited as sustaining members. Those opposed to this can be converted to regular individual memberships in the name of an organizations employee.

**d. Sustaining membership as defined in by-laws Article III, Section 1, paragraph d should be modified to add membership levels with different benefits.** All levels would retain the benefits as currently defined in the by-laws. Proposed membership levels and additional benefits are as follows:

- (1) Silver Level with dues of \$300.00. 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 with dues of \$500.00. 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 with dues of \$1000.00. 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.

Additionally, since all sustaining members are paying between \$300 and \$1000, they should be recognized in some cost efficient manner. Possibilities include ribbons or stickers on name badges at the annual meeting, certificates of appreciation, listing in the meeting program the proceedings, and/or Peanut Science, and a poster at the annual meeting. Aggressive recruitment of sustaining members is recommended.

**e. An International membership was considered, but the committee elected not to recommend implementation.** Instead, such individuals should be regular individual members, with the current postage differential being dropped. The postage differential is not a significant issue with the conversion to electronic communications, Peanut Science availability, and meeting proceedings.

Richard explained that the goal of the committee was that at worst, the changes would be revenue neutral. The committee encouraged that the society do an aggressive recruiting effort for the new categories of membership.

All proposed changes to membership categories were approved by the Board of Directors.

President Phipps called on Ron Sorenson to report on the work of the committee studying whether annual dues and membership fees should be combined. Dr. Sorenson reported that the committee had done some preliminary work and is in the process of gathering additional input. An assessment will be made as to how significant this issue is for society members. The committee will also look at how

other societies are handling this issue.

### **3. Executive Officer Applicant Screening and Nominating Committee – Chris Butts**

Chris Butts reported on the preliminary work by this committee. He reported that the job description has been released and applicants solicited. A question was asked as to whether the committee should look only at individuals or whether professional groups should be solicited. Should other peanut groups be considered?

### **4. Grower Advisory Committee Report – Emory Murphy**

An initial meeting of the GAC was conducted on Tuesday afternoon with representatives present from the SE, SW, and VC growing areas. The GAC agreed on three proposals to the APRES BOD.

The first dealt with administrative charges that USDA is applying to grants received by USDA researchers.

Encouraged the BOD to consider other peanut organizations to provide executive officer services as the executive officer position is being filled.

Requested that the GAC have some type of formal participation in the selection of the Production Representative on the BOD.

No actions were taken on these recommendations.

### **5. Finance Committee Report – Carroll Johnson**

Carroll Johnson presented a budget summary for FY 05-06 that compared budgeted versus actual expenditures and receipts. Major points of discussion were:

There was an anticipated budgeted receipt of \$10,000 from the National Peanut Board to defer expenses when their annual grower meeting is combined with APRES annual meeting. The National Peanut Board did not have an annual grower meeting in 2006 so there was no contribution to APRES.

There were budgeted receipts of \$38,000 from page charges for PEANUT SCIENCE publications but received \$17,980 in actual receipts. This reflects the slow process of correcting the backlog in PEANUT SCIENCE publication and printing.

Actual meeting expenses were approximately \$4,761.71 less than the budgeted amount for the Virginia meeting.

In FY 05-06, the former Editor for PEANUT SCIENCE received \$8,932 and the editorial assistant received \$4,056 for services rendered. Neither expenditure was budgeted. It should be noted that these expenditures were for services rendered in FY 04-05, but were not approved to be paid until after the beginning of FY 05-06.

There was a budgeted expenditure of \$6,500 for start-up expenses to convert PEANUT SCIENCE to an electronic publication. This expenditure will be moved to FY 06-07.

There was a budgeted expenditure of \$29,000 in FY 05-06 to publish PEANUT SCIENCE, compared to the actual expenditure of \$23,885.28. This is due to the continual process of working through the backlog of PEANUT SCIENCE publication and printing assignments.

In summary, APRES finished the last fiscal year in the black by \$540.26.

A comparison between 2005 and 2006 was presented for each of the APRES assets. All account balances were similar between the two years, indicating stability in the fiscal state of the society.

A proposed budget was presented by Ron Sholar for FY 06-07 and FY 07-08. The proposed FY 06-07 budget has the following changes of significance:

Receipts for membership for FY 07-08 reflect the proposed increase in individual membership dues from \$80 to \$100. It does not reflect the proposed increases in sustaining membership dues.

Receipts from page charges for PEANUT SCIENCE in FY 06-07 reflect four issues being published (which also alleviates the PEANUT SCIENCE journal backlog), thus receipts totaling \$32,000. In FY 07-08 the receipts in page charges reflect two issues being published.

The expenses for publishing PEANUT SCIENCE reflect the same relationship between the two fiscal years.

The one-time \$6,500 start-up fee for electronic publication is listed in FY 06-07.

The proposed budget for FY 06-07 is \$500 in the black.

The proposed budget for FY 07-08 is \$8,848 in the black.

The Finance Committee unanimously endorsed the recommendations of the Ad Hoc Committee to revise the membership dues structure.

The Finance Committee unanimously recommended the financial reports presented and the proposed budgets for FY 06-07 and FY 07-08.

The BOD approved the budget for FY 06-07 but took no action on the proposed budget for 07-08.

Howard Valentine discussed the benefits of having the society's finances on an accrual accounting basis and moved that the BOD consider changing to an accrual accounting method. The motion was passed by the BOD. The incoming president will appoint an ad hoc committee to complete this task and report to the BOD at the annual meeting in 2007.

## **6. Nominating Committee Report – James Grichar**

James gave the following report. The Nominating Committee for the 2006 Annual Meeting of APRES consisted of Tim Sanders (USDA-ARS), Dallas Hartzog (Auburn University), Richard Rudolph (Bayer CropScience), and James Grichar (Texas Agric. Expt. Station, Past President).

The Nominating Committee was charged with nominating candidates to serve as President-elect and representatives (state employee and industry representatives) to the Board of Directors.

The Nominating Committee corresponded by phone and e-mail and submitted their nominations to the President, Pat Phipps, on May 15, 2006.

The Committee nominated the following individuals:

President-elect – Austin Hagan

Board of Directors – State Employee Representative (SE area) - Eric Prostko

Board of Directors – Industry Representative (Production) - Randy Myers

The Nominating Committee report was approved.

## **7. Publications and Editorial Committee Report – Chris Butts**

John Wilcut, Editor, Peanut Science, submitted a report. All 2004 issues have been printed and delivered to the membership. Anticipating publishing the first issue of 2005 in mid August. Wanted to have it on the website by meeting time but that had not been possible. Second issue of 2005 and first issue of 2006 should follow soon after. John wants to have about 13 articles per issue. He is committed to a rapid turn around of articles.

The following APRES members have accepted the responsibility of serving as Associate Editors: Tim Brenneman, Mark Burow, Chris Butts, Manjeet Chinnan, Kelly Chenault, Wilson Faircloth, Maria Gallo, Tim Grey, Tom Isleib, Diane Rowland, Barry Tillman, and Tom Whitaker. Looking for a couple of entomologists to serve as reviewers.

These associate editors have committed to obtaining timely and impartial reviews of manuscripts submitted for publication.

Tim Brenneman reported that a survey of indices/databases showed that Peanut Science had been dropped from 8 of 12 databases because of an inconsistent publication record. Peanut Science is listed in BioSis Reviews and Biological Abstract; however, it is not covered in Current Contents. Tim will follow up with procedures for getting the journal accepted back into these databases and relay that information to John Wilcut.

There was discussion about skipping the 2005 publication date and go straight to a 2006 publication date. More review is required before this is done.

A letter of resignation as editor of Peanut Research, the APRES newsletter, was received from Carroll Johnson. He expressed his regrets at being unable to fulfill the obligation as originally promised. The committee will solicit and secure a new editor for the newsletter and regional representatives to provide news items for the newsletter. Marie Fenn stated that she would investigate the possibility of the National Peanut Board providing some assistance in publishing and distributing the newsletter via the web and email.

The committee discussed the need to rewrite the Instructions to Authors for

submitting articles to Peanut Science. The committee will develop Word and WordPerfect templates for the authors to use that will include font and paragraph styles, page formats, and guidelines for literature citations, tables, and figures.

There was discussion about skipping the 2005 issues of Peanut Science. The Publications and Editorial Committee will work with the Editor of Peanut Science to determine the best way to proceed with this.

## **8. Peanut Quality Committee Report – Tim Sanders, presented by Howard Valentine**

Aflatoxin continues to cost the industry \$25 million per year and too little effort is going into this problem.

Flavor – some loss in the roasted peanutty flavor. Doesn't seem to be linked to genotype.

Organic Peanuts – some shift to organic peanuts and that shift is going to Chinese organic peanuts but there are no tests being done to determine if the Chinese peanuts are really organic.

Nutritional Values – Values being reported in some publications are now over 20 years old. More work is needed in updating the nutritional value of peanuts.

Funding for Breeding Programs – Need better funding research on molecular markers and getting desirable wild peanut characteristics into cultivated peanut varieties. We are falling behind other commodities in these areas.

Request that APRES offer support for the continuation of USDA research programs in Raleigh, NC and Dawson, GA.

Effort by ARS develop analytical chemistry for desirable sensory qualities of peanuts (sweet aromatic and roasted peanutty).

Biodiesel is increasing in importance and peanut interests need to be represented in any strategic planning that is done in this area. Need additional effort in the area of strategic planning and less done on an ad hoc basis.

The report was accepted.

## **9. Public Relations Committee Report – Joe Dorner**

The Public Relations Committee of the American Peanut Research and Education Society met from 2:00 - 3:00 p. m. on Tuesday, July 11, 2006, in Savannah, GA. Members present included Joe Dorner, Joyce Hollowell, and John Beasley.

It was noted that committee members promoted both the annual meeting as well

as membership in the society through contacts with colleagues throughout the year. The committee attempted to generate local interest in the annual meeting through contacts with the Savannah Morning News and two local television stations. The committee would welcome any ideas or suggestions from any member of the society concerning ways to better promote the society in general and membership in particular. The committee has no specific recommendations to make in this regard at this time.

Since the 2005 meeting, an extremely valuable friend to the society and the peanut industry as a whole passed away. A resolution to honor the life and contributions of Joe Sugg has been prepared.

The report was accepted.

#### **10. Bailey Award Committee Report – Nathan Smith**

The committee met Tuesday, July 11, at 2:00 p.m. in the Vernon Room. The committee's business was tended to prior to the annual meeting. Information and paper work was sent out to nominees regarding the award. Papers were requested from qualified nominations chosen from 14 paper sections at the 2005 annual meeting. Eight papers were received and accepted for final evaluation by the committee. The winning paper is presented the Bailey Award at the 2006 meeting. The winning paper was #55 titled "Effect of Fungicide Treatment and Pod Maturity on Peanut Peg Strength", submitted by J. W. Chapin and J. S. Thomas from the Plant Pathology & Nematology II section. J. W. Chapin was the presenter.

There will be 11 sessions at the 2006 annual meeting. This does not include symposia.

The report was accepted.

#### **11. Fellows Committee Report – Tim Brenneman**

The APRES Fellows committee received three nominations and the committee evaluated them according to the APRES guidelines. Committee members participating in the evaluation were Sandy Newell, W.C. Johnson, III, Tom Stalker, Mark Burow, Albert Culbreath and Tim Brenneman. All three candidates received a positive vote by the committee, two of which were unanimous. The committee passed these recommendations on to the Board of Directors.

Nominations were reviewed, and a change to the guidelines for nomination procedures was also discussed. The following change was approved unanimously for consideration by the Board of Directors. Old – "A maximum of 30 points is allotted to the nominee's service to the profession." New – "A maximum of 30 points is allotted to the nominee's service to APRES and to the profession." The committee believed that there was too little emphasis on a nominee's contributions to APRES.

Fellow Awards will be presented during the APRES Awards Ceremony on Friday, July 14, 2006 to C. Corley Holbrook, Richard Rudolph and Dallas Hartzog.

The committee report was accepted.

## **12. Site Selection Committee – Bob Kemerait**

The 2007 APRES meeting will be held in Birmingham, Alabama. Ron Sholar reported that the 2008 APRES meeting will likely be held in the Bricktown area of Oklahoma City. A contract is under negotiation at the Renaissance Hotel there, but is not yet finalized. This hotel would like to have the meeting on 6-12, July, which is not likely acceptable to our membership.

Barbara Shew reported that the 2009 APRES meeting will be held in North Carolina. Plans for the venue are just beginning. Possibilities discussed included Asheville (concern over transportation) and Charlotte.

The 2010 Meeting will be held in Florida and the 2011 meeting will be in Texas.

The report was approved.

## **13. Coyt T. Wilson Distinguished Service Award Committee Report – David Jordan**

David Jordan reported that the committee selected Dr. Charles E. Simpson as the 2006 recipient of the award. The BOD approved this selection prior to the annual meeting.

A second issue is the low number of nominees for the award. Members should actively solicit nominees for this prestigious award.

The report was approved by the BOD.

## **14. Joe Sugg Graduate Student Award Committee Report – Bob Kemerait**

Bob reported that there are 11 student papers in competition this year.

The committee will work in 2006-2007 to revise the scoring system. It has served us well, however, we will improve the current scoring criteria by developing a system that gives equal weight to presentation skill, quality and effectiveness of slides, and also quality and complexity of research. Bob Kemerait and Susanna Milla-Lewis will work on this and present to the entire committee for approval.

The committee noted the passing of Mr. Joe Sugg this past year.

The report was accepted.

## **15. DowAgrosciences Awards Committee Report**

Five nominations were received and only four found to meet all the guidelines for acceptance for the Dow AgroSciences Award for Excellence in Education. Nominations were received by email by the Chair. No nominations were received for the Dow AgroSciences Award for Research this year.

The recipient for the 2006 Dow AgroSciences Award for Excellence in Education is Dr. Stanley Fletcher, Department Agricultural and Applied Economics the University of Georgia. A biographical summary of the winner will be published in the 2006 APRES Proceedings and available as press releases.

The committee would like to encourage nomination of qualified APRES members. All members of APRES from all segments of the peanut industry should be considered for nomination for these prestigious awards.

The report was accepted.

## **16. Program Committee Report – Albert Culbreath**

The local arrangements committee and technical program committee met in various combinations and conducted extensive phone and internet networking in conjunction with the staff of the Hyatt Regency Hotel to prepare for the APRES Meeting in Savannah, Georgia. The two committees last met for final program preparation on July 11, 2006 in Savannah.

The local arrangements committee consisted of Alex Csinos (Chair), Bob Kemerait, Eric Prostko, Nathan Smith, Richard Rudolph, Sara Gremillion, Sandy Newell, Herb Young, Diane Rowland, John Beasley and Steve L. Brown. In addition to making physical arrangements and preparations for the technical program, the committee arranged for significant social activities and entertainment for the whole society and assisted the Spouses' Hospitality Committee.

The technical program committee consisted of Chris Butts (Chair), Tim Brennehan, Emily Cantonwine, Marshall Lamb, Jay Chapin, Wilson Faircloth and Eric Prostko. The committee solicited papers and put together a program that resulted in 127 papers being presented (100 oral presentations and 27 posters). The program also includes symposia on tropical spiderwort and organic peanut production. The committee produced a pdf file with abstracts of submitted papers and compact disks containing that file that will be distributed to meeting attendees.

The general session will include former APRES Presidents Jim Butler as welcoming speaker and Frank McGill as key note Speaker. General session speakers will also include Marie Fenn and Jack Brinkley from the National Peanut Board, Scott Angle, Dean of the University of Georgia, College of Agricultural and Environmental Sciences, and Pat Phipps, current president of APRES.

187 members are registered for the meeting.

The report was accepted.

**Other business:** There was discussion that the peanut seed summit and the crop germplasm meetings should be combined and that this needs to be explored for the 2007 meeting in Alabama.

Howard Valentine moved that input from the Grower Advisory Committee be

sought in the selection of the Production Representative on the BOD. The motion was passed by the BOD.

Howard Valentine moved that APRES write a letter encouraging USDA to eliminate administrative charges that USDA is applying to grants received by USDA researchers. After discussion, Howard withdrew the motion.

Todd Baughman offered the opinion that we should review the meeting schedule to move the business meeting to a position earlier in the annual meeting.

The BOD meeting was adjourned at 10:40pm.

**BUSINESS MEETING AND AWARDS CEREMONY**  
**AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY**  
**Hyatt Regency Hotel**  
**Savannah, Georgia**  
**July 14, 2006**

1. **President's Report** .....Patrick Phipps
2. **Awards Committee Reports and Presentations**
  - a. Coyt T. Wilson Distinguished Service Award ..... David Jordan
  - b. Fellows Award..... Tim Brenneman
  - c. Bailey Award ..... Todd Baughman
  - d. Joe Sugg Graduate Student Competition ..... Bob Kemerait
  - e. Dow AgroSciences Awards for Research and Education ..... Roy Pittman
  - f. Past President's Award .....Patrick Phipps
3. **Reading of Minutes of Previous Meeting**
4. **New Business**

Ad hoc Committee Reports and Discussion

  - a. Proposed Changes to the By Laws
  - b. Proposed Changes to Membership Categories
  - c. National Peanut Board Representation on APRES BOD
  - d. Executive Officer Applicant Screening and Nominating Committee

Committee Reports

  - e. Publications and Editorial Committee .....Chris Butts
  - f. Nominating Committee ..... James Grichar
  - g. Finance Committee .....Carroll Johnson
  - h. Public Relations Committee ..... Joe Dorner
  - i. Peanut Quality Committee ..... Tim Sanders
  - j. Site Selection Committee ..... Bob Kemerait
  - k. Program Committee .....Albert Culbreath
  - l. Other Business
5. **Adjourn**

**OPENING REMARKS BY THE PRESIDENT AT THE 2006 BUSINESS  
MEETING of APRES – President Patrick Phipps  
July 14, 2006**

Welcome to the 38<sup>th</sup> Annual Meeting of the American Peanut Research & Education Society and the city of Savannah, Georgia. Many important issues in the future of APRES will be discussed and several voted upon by the membership at this meeting. The theme of our business meeting is "PREPARING FOR THE FUTURE". Critical steps undertaken to sustain the strength of this society since our last annual meeting have included 1) contracting and initiating the on-line publication of Peanut Science by Allen Press, 2) conducting a review of the By-Laws of APRES and recommending several revisions, 3) updating membership categories and dues, 4) adding a National Peanut Board representative to the Board of Directors, 5) appointing a Grower Advisory Committee to facilitate grower input at annual meetings of APRES, and 5) initiating the search for a new Executive Officer of APRES. Through the dedicated work of APRES committees and the steadfast resolve of the Board of Directors, all of the above steps were prepared for presentation to the membership at this meeting. Items to be voted upon by the membership include revisions to the By-Laws, changes in membership categories and dues, and the addition of an NPB representative to the Board of Directors. APRES is a great professional society that has managed to sustain a family-like atmosphere at annual meetings. This approach has served the society well and should be continued. As I look across the audience, I see a number of long-time members such as Bill Birdsong, Jim Butler, Frank McGill and Vince Morton. I also see many who are rising through the ranks of professional development in their jobs along with a number of graduate students that have recently joined this family. These individuals and many others attend APRES meetings year after year because of the professional and family atmosphere that it provides for them and their families. Like all of you, I am proud to be a member of this society because of its inclusion of family members in this meeting and its professional mission which continues to focus on Research and Education to improve the competitive position of peanuts in the industry of agriculture. As we embark on our mission at this year's meeting, I encourage all of you to thank members of the local arrangements committee for preparing the program, arranging activities, and selecting this fine location for the meeting. In conclusion, I want to extend my sincere thanks to Dr. Ron Sholar for his continued dedication and excellence in serving as the APRES Executive Officer during my term as president. In addition, I want to recognize and extend my deepest gratitude to the APRES Board of Directors, President-Elect Dr. Albert Culbreath and the program committee, the chairs and members of APRES standing and ad-hoc committees, and Irene Nickels for their enthusiasm and hard work in developing the framework for a highly successful annual meeting.

**38<sup>th</sup> ANNUAL BUSINESS MEETING and AWARDS CEREMONY**  
**July 14, 2006**  
**Savannah, Georgia**

President Pat Phipps called the meeting to order at 8:10 am and welcomed everyone.

President Phipps recognized and thanked Randy Huckaba, DowAgrosciences, for sponsoring the Awards Breakfast.

**1. President's Report – Pat Phipps**

President Phipps indicated that the society had been involved with several initiatives in the last year. These are:

- Getting electronic publication of Peanut Science off the ground
- Updating of the By Laws
- Revision of the membership categories
- Grower Advisory Committee
- National Peanut Board member on the APRES Board of Directors
- Search for a new Executive Officer

President Phipps spoke of the necessity of maintaining APRES as a strong research and education society. Need to recruit new members and particularly in the areas of entomology, food science, economics, and industry. We need to engage more economists in assessing the impact of production practices on returns. The society needs to create a new website. We need to publish articles on cutting edge discoveries on the web. President Phipps thanked the Georgia group for doing an excellent job in hosting the 2006 meeting. He thanked the BOD for their cooperative spirit in dealing with many tough issues this past year. He thanked Irene Nickels and Ron Sholar for their help of the past year.

President Phipps called upon Ron Sholar, Executive Officer, to present the minutes of the last Board of Director's Meeting conducted at the 2005 Annual Meeting held in Portsmouth, VA. The minutes were approved as reported in the 2005 Proceedings, Volume 37. Dr. Sholar reported that the society remains in sound financial condition.

The following reports were made to the membership.

**2. Awards Committee Reports and Presentations**

**a. Coyt T. Wilson Distinguished Service Award Committee Report – David Jordan**

Dr. Charles Simpson Professor Emeritus, Texas A&M University, received the Coyt T. Wilson award. (See biographical summary).

**b. Fellows Committee Report – Carroll Johnson**

Fellow Awards were presented during the APRES Awards Ceremony C. Corley Holbrook, Richard Rudolph and Dallas Hartzog.

**c. Bailey Award Committee Report – Nathan Smith**

The Bailey Award winning paper for the 2005 annual meeting is titled “Effect of Fungicide Treatment and Pod Maturity on Peanut Peg Strength”, submitted by J. W. Chapin and J. S. Thomas from the Plant Pathology & Nematology II section. J. W. Chapin was the presenter.

**d. Joe Sugg Graduate Student Award Committee Report – Bob Kemerait**

Bob reported that there are 11 student papers in competition this year.

Winners are: W.J. Everman, North Carolina State University – First Place  
Sara Gremillion, University of Georgia – Second Place

“Critical Period of Grass Versus Broadleaf Weed Interference in Peanut.” W.J. Everman\*, S.B. Clewis, W.E. Thomas and J.W. Wilcut

“Early Season Disease Progress of Early Leaf Spot in the Bolivian Cultivar Bayo Grande and Related Progeny in the Southeastern United States.” S.K. Gremillion \*, A.K. Culbreath, J.W. Todd and R. Pittman

The committee noted the passing of Mr. Joe Sugg this past year.

**e. DowAgrosciences Awards Committee Report – Roy Pittman**

The recipient for the 2006 Dow AgroSciences Award for Excellence in Education is Dr. Stanley Fletcher, Department Agricultural and Applied Economics, the University of Georgia.

There was no nominee for the Excellence in Research Award.

**f. Past President’s Award – Pat Phipps**

The Award was made to Past President James Grichar.

**3. Reading of the Minutes of the Previous Meeting**

**4. New Business:**

**a. Ad Hoc Committee on Changes to the By Laws – Austin Hagan**

Five changes to the By Laws proposed by the ad hoc committee were presented during the business meeting as follows:

*(1.) Discussion: The following change is recommended to remove confusing language about “state employees” and to clarify university representation.*

Art. VIII. Board of Directors, Sec. 1-d.

Three ~~University employees'~~ representatives - these directors are ~~those whose employment is state sponsored and whose relation to peanuts principally concerns are to be chosen based on their involvement in APRES activities, and knowledge in peanut~~ research, and/or education, and/or regulatory ~~pursuits programs~~. One director will be elected from each of the three main U.S. peanut producing areas (*Virginia-Carolinas, Southeast, Southwest*).

*(2.) Discussion: The following change is recommended to make it possible for members from additional industry peanut groups to serve on the BOD.*

Art. VIII. Board of Directors, Sec. 1-f.

Three ~~Private Peanut~~ Industry representatives - these directors are ~~those whose employment is privately sponsored and whose principal activity with peanuts concerns: (1) the production of farmers' stock peanuts; to be chosen from three of the following five segments in the peanut industry: (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.

*(3.) Discussion: The following change is recommended since currently there is no mechanism for replacing a BOD member who leaves the BOD for any reason.*

Art. VIII. Board of Directors, Sec. 8.

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

*(4.) Discussion: The following change is proposed to require that the Nominating Committee to submit their list of nominees by a specified date prior to the annual meeting.*

Art. IX. Committees, Sec. 2-b. Nominating Committee

This committee shall consist of four members appointed to one-year terms, one each representing State, USDA, and Private Business segments of the peanut industry with the most recent available past-president serving as chair. This committee shall nominate individual members to fill the positions as described and in the manner set forth in Articles VII and VIII of these By-Laws and shall convey their nominations to the president of this Society ~~on or before the date of the annual meeting by June 15 prior to the year's annual meeting. The president will then distribute those nominations to the BOD for their review.~~ The committee shall, insofar as possible, make nominations for the president-elect that will provide a balance among the various segments of the industry and a rotation among federal, state, and industry members. The willingness of any nominee to

accept the responsibility of the position shall be ascertained by the committee (or members making nominations at the annual business meeting) prior to the election. No person may succeed him/herself as a member of this committee.

*(5.) Discussion: The following change is proposed to clarify the duties of the Site Selection Committee and specifies the time for the Site Selection Committee work to be completed.*

#### Art. IX. Committees, Sec. 2-h. Site Selection Committee

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

All proposed changes to the By Laws were approved as prepared by the ad hoc committee and approved by the BOD.

#### **(b.) Proposed Changes of APRES Membership Categories – Richard Rudolph, Chair, Ad Hoc Committee on Membership**

The members exchanged ideas by email and reached agreement on the following recommendations to the Board of Directors.

The ad hoc committee recommended moving from three individual membership categories to four membership categories.

##### **1. Individual Membership**

(a) **Regular membership** with dues of \$100.00 per year which is an increase of \$20 per year. The committee acknowledged that this is as high as the society can/should go at this time. This membership will be the same as currently defined in the Society By-Laws Article III, Section 1, paragraph a.

(b) **Retired membership** with dues of \$25.00. This status would require a letter from the Department Chairman the first year of eligibility to document retired status. Because of their past status as individual members and service to the society, Retired members would retain all the rights and privileges of regular individual membership.

(c) **Post-Doc membership** with a fee of \$50.00. These members would also have full membership privileges to encourage participation. Membership approval will require appropriate documentation from the Department in which the member is working.

(d) **Student membership** as defined in by-laws Article III, Section 1, para

e. should be maintained as defined with dues of \$25.00. In addition, it is recommended that Student members have clearly defined rights and privileges and those be the same as for regular individual members except service on the Board of Directors be restricted to a non-voting capacity. Since these members are the primary candidates for the future membership and leadership of the Society, experience in Society service and decision making will be helpful to them and the Society.

**(2) Institutional membership as defined in by-laws Article III, Section 1, paragraph b should be dropped.** This is really just a subscription service, not a membership category. All responsibility for subscriptions, including fees, should be transferred to the Publications and Editorial Committee. Changes in Peanut Science distribution will be necessary anyway since we are moving to an electronic format.

**(3) Organizational membership as defined in by-laws Article III, Section 1, paragraph c should be dropped.** The dues are the same as the new proposed dues for individual membership. We recommend that current and future members of this category be recruited as sustaining members. Those opposed to this can be converted to regular individual memberships in the name of an organizations employee.

**(4) Sustaining membership as defined in by-laws Article III, Section 1, paragraph d should be modified to add membership levels with different benefits.** All levels would retain the benefits as currently defined in the by-laws. Proposed membership levels and additional benefits are as follows:

- Silver Level with dues of \$300.00. 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.
- Gold Level with dues of \$500.00. 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.
- Platinum Level with dues of \$1000.00. 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.

Additionally, since all sustaining members are paying between \$300 and \$1000, they should be recognized in some cost efficient manner. Possibilities include ribbons or stickers on name badges at the annual meeting, certificates of appreciation, listing in the meeting program the proceedings, and/or Peanut Science, and a poster at the annual meeting. Aggressive recruitment of sustaining members is recommended.

**(5) An International membership was considered, but the committee**

**elected not to recommend implementation.** Instead, such individuals should be regular individual members, with the current postage differential being dropped. The postage differential is not a significant issue with the conversion to electronic communications, Peanut Science availability, and meeting proceedings.

#### **c. National Peanut Board Membership on APRES BOD**

The National Peanut Board proposed that the NPB have a position on the APRES BOD. APRES members approved the proposal that the National Peanut Board have a member on the APRES BOD. Mr. Jack Brinkley of North Carolina was elected as the first NPB representative on the APRES Board Of Directors and he will serve a 3 year term.

#### **d. Executive Officer Applicant Screening and Nominating Committee – Chris Butts**

Chris Butts reported on the preliminary work by this committee. He reported that the job description has been released and applicants solicited. A question was asked as to whether the committee should look only at individuals or whether professional groups should be solicited. Should other peanut groups be considered?

#### **e. Publications and Editorial Committee Report – Chris Butts**

John Wilcut, Editor, Peanut Science, submitted a report. All 2004 issues have been printed and delivered to the membership. John is anticipating that the first issue of 2005 will be published in mid August. John wanted to have it on the website by meeting time but that had not been possible. Second issue of 2005 and first issue of 2006 should follow soon after.

A question was asked about raising author publishing rates but Chris indicated that the committee thought this was not a good time to do that since the society is still behind in publishing some issues.

The members voted that they strongly encouraged that a 2005 issue be published rather than skipping those issues.

Chris Butts was presented with a certificate as an expression of appreciation for his leadership to the Publications and Editorial Committee.

See the complete report.

#### **f. Nominating Committee Report – James Grichar**

The Nominating Committee for the 2006 Annual Meeting of APRES consisted of Tim Sanders (USDA-ARS), Dallas Hartzog (Auburn University), Richard Rudolph (Bayer CropScience), and James Grichar (Texas Agric. Expt. Station, Past President).

The Nominating Committee was charged with nominating candidates to serve as President-elect and representatives (state employee and industry

representatives) to the Board of Directors.

The Nominating Committee corresponded by phone and e-mail and submitted their nominations to the President, Pat Phipps, on May 15, 2006.

The Committee nominated the following individuals:

President-elect – Austin Hagan

Board of Directors – State Employee Representative (SE area) - Eric Prostko

Board of Directors – Industry Representative (Production) - Randy Myers

The Nominating Committee report was approved.

#### **g. Finance Committee Report – Carroll Johnson**

Dr. Johnson presented a budget summary for FY 05-06 was presented that compared budgeted versus actual expenditures and receipts. Major points of discussion were:

There was an anticipated budgeted receipt of \$10,000 from the National Peanut Board to defer expenses when their annual grower meeting is combined with APRES annual meeting. The National Peanut Board did not have an annual grower meeting in 2006 so there was no contribution to APRES.

There were budgeted receipts of \$38,000 from page charges for PEANUT SCIENCE publications but received \$17,980 in actual receipts. This reflects the slow process of correcting the backlog in PEANUT SCIENCE publication and printing.

Actual meeting expenses were approximately \$4,761.71 less than the budgeted amount for the Virginia meeting.

In FY 05-06, the former Editor for PEANUT SCIENCE received \$8,932 and the editorial assistant received \$4,056 for services rendered. Neither expenditure was budgeted. It should be noted that these expenditures were for services rendered in FY 04-05, but were not approved to be paid until after the beginning of FY 05-06.

There was a budgeted expenditure of \$6,500 for start-up expenses to convert PEANUT SCIENCE to an electronic publication. This expenditure will be moved to FY 06-07.

There was a budgeted expenditure of \$29,000 in FY 05-06 to publish PEANUT SCIENCE, compared to the actual expenditure of \$23,885.28. This is due to the continual process of working through the backlog of PEANUT SCIENCE publication and printing assignments.

In summary, APRES finished the last fiscal year in the black by \$540.26.

A comparison between 2005 and 2006 was presented for each of the APRES assets. All account balances were similar between the two years, indicating stability in the fiscal state of the society.

A proposed budget was presented by Ron Sholar for FY 06-07 and FY 07-08.

The proposed FY 06-07 budget has the following changes of significance:

Receipts for membership for FY 07-08 reflect the proposed increase in individual membership dues from \$80 to \$100. It does not reflect the proposed increases in sustaining membership dues.

Receipts from page charges for PEANUT SCIENCE in FY 06-07 reflect four issues being published (which also alleviates the PEANUT SCIENCE journal backlog), thus receipts totaling \$32,000. In FY 07-08 the receipts in page charges reflect two issues being published.

The expenses for publishing PEANUT SCIENCE reflect the same relationship between the two fiscal years.

The one-time \$6,500 start-up fee for electronic publication is listed in FY 06-07.

The proposed budget for FY 06-07 is \$500 in the black.

The proposed budget for FY 07-08 is \$8,848 in the black.

The Finance Committee unanimously endorsed the recommendations of the Ad Hoc Committee to revise the membership dues structure.

The Finance Committee unanimously recommended the financial reports presented and the proposed budgets for FY 06-07 and FY 07-08.

The Board Of Directors approved the budget for FY 06-07 but took no action on the proposed budget for 07-08.

#### **h. Public Relations Committee Report – Joe Dorner**

The Public Relations Committee of the American Peanut Research and Education Society met from 2:00 - 3:00 p.m. on Tuesday, July 11, 2006, in Savannah, GA. Members present included Joe Dorner, Joyce Hollowell, and John Beasley.

It was noted that committee members promoted both the annual meeting as well as membership in the society through contacts with colleagues throughout the year. The committee attempted to generate local interest in the annual meeting through contacts with the Savannah Morning News and two local television stations. The committee would welcome any ideas or suggestions from any member of the society concerning ways to better promote the society in general and membership in particular. The committee has no specific recommendations to make in this regard at this time.

Since the 2005 meeting, an extremely valuable friend to the society and the peanut industry as a whole passed away. A resolution to honor the life and contributions of Joe Sugg was read.

Whereas, Joe Speight Sugg attended N.C. State University (then State College), majoring in dairy manufacturing, was employed as assistant county agent in Wake County upon graduation and later Nash County agricultural extension agent, and

Whereas, he was livestock agent for the Atlantic Coast Line Railroad, established and had originally hoped to make his mark with the Animal Rendering Service in Rocky Mount after returning from World War II, and

Whereas, he abandoned that plan and became a Goliath in North Carolina's peanut growing and researching circles, earning him a place in the National Peanut Hall of Fame as its first Hall of Famer, and

Whereas, Joe founded the North Carolina Peanut Growers Association in 1953, spent the next 27 years handing out roasted peanuts, lobbying for peanut farming subsidies and obtaining peanut research grants as the association's executive secretary, served as chairman of the National Peanut Council, and

Whereas, the Joe Speight Sugg Agriculture Institute Endowed Scholarship was established in his honor upon his retirement, and

Whereas, the Joe Sugg Graduate Student Award was established and presented yearly for the best graduate student paper at APRES in his honor, and

Whereas, when Joe wasn't traveling the country promoting peanuts and lobbying for peanut growers, he liked to put on his quail-hunting cap or grab his fishing gear and explore the Albemarle Sound, and

Whereas, he was a blunt man who found a niche in the white-collar world that allowed him to remain close to his agricultural roots, being Rocky Mount's own "Mr. Peanut," providing loyal and faithful service to the community and the peanut industry, and

Whereas, he passed away Dec. 15, 2005,

Be it resolved that The American Peanut and Research Society remembers and honors the life and contributions of Joe Speight Sugg.

The report was accepted.

#### **i. Peanut Quality Committee Report – Tim Sanders**

The Peanut Quality Committee met on July 11, 2006 with approximately 15 APRES members present. Discussion on peanut quality and other related topics included:

Aflatoxin. Although advances have been made in control and management of aflatoxin through grading procedures, competitive fungi and GMO potentials, aflatoxin should remain as an industry and scientific focus.

Flavor. Roasted peanut flavor intensity has decreased over the last decade and the decrease does not appear to be genetic. The possible causes were discussed and centered on cultural practices such as shifting planting dates and use of various herbicides or pesticides. Flavor chemistry research to define roasted peanut flavor is greatly needed.

Organic. The definition of "organic" peanuts should be clarified by USDA since

“organic” peanuts are being supplied by China without verification.

Nutrition. Peanut protein is lacking in some essential amino acids and current research on the core of the core may identify plant introduction germplasm with more complete protein for use in breeding programs. The same research efforts include evaluation of folic acid and improvements from the current 6-8% of recommended daily intake to 10% would aid in a health claim for peanuts.

New Peanut Lines. Funding of tools such as introduction of wild species, molecular markers and winter nurseries was supported by the committee. Given the recently proposed cuts in ARS programs the committee discussed the ongoing need to support ARS funding of research to maintain seed evaluations of the UPPT material at USDA, ARS in Raleigh and Dawson.

Biodiesel. Given the current emphasis on biodiesel from many agricultural sources, the committee discussed and supports the organization and coordination of research efforts on peanuts as biodiesel materials.

The report was accepted.

#### **j. Site Selection Committee – Bob Kemerait**

The 2007 APRES meeting will be held in Birmingham, Alabama. Ron Sholar reported that the 2008 APRES will likely be held in the Bricktown area of Oklahoma City. A contract is under negotiation at the Renaissance Hotel there, but is not yet finalized. This hotel would like to have the meeting on 6-12, July, which is not likely acceptable to our membership.

Barbara Shew reported that the 2009 APRES will be held in North Carolina. Plans for the venue are just beginning. Possibilities discussed included Asheville (concern over transportation) and Charlotte.

The 2010 meeting is in Florida and the 2011 meeting will be in Texas.

The report was approved.

#### **k. Program Committee Report – Albert Culbreath**

The local arrangements committee and technical program committee met in various combinations and conducted extensive phone and internet networking in conjunction with the staff of the Hyatt Regency Hotel to prepare for the APRES Meeting in Savannah, Georgia. The two committees last met for final program preparation on July 11, 2006 in Savannah.

The local arrangements committee consisted of Alex Csinos (Chair), Bob Kemerait, Eric Prostko, Nathan Smith, Richard Rudolph, Sara Gremillion, Sandy Newell, Herb Young, Diane Rowland, John Beasley and Steve L. Brown. In addition to making physical arrangements and preparations for the technical program, the committee arranged for significant social activities and entertainment for the whole society and assisted the Spouses' Hospitality Committee.

The technical program committee consisted of Chris Butts (Chair), Tim Brenneman, Emily Cantonwine, Marshall Lamb, Jay Chapin, Wilson Faircloth and Eric Prostko. The committee solicited papers and put together a program

that resulted in 127 papers being presented (100 oral presentations and 27 posters). The program also includes symposia on tropical spiderwort and organic peanut production. The committee produced a pdf file with abstracts of submitted papers and compact disks containing that file that will be distributed to meeting attendees.

The general session included former APRES Presidents Jim Butler as welcoming speaker and Frank McGill as key note Speaker. General session speakers will also include Marie Fenn and Jack Brinkley from the National Peanut Board, Scott Angle, Dean of the University of Georgia, College of Agricultural and Environmental Sciences, and Pat Phipps, current president of APRES.

The report was accepted.

**Other business:** Carroll Johnson mentioned the success of the organic peanut symposium.

The Business Meeting adjourned at 10:15 am.

## **FINANCE COMMITTEE REPORT**

The annual meeting of the APRES Finance Committee was held on 11 July 2006 in Savannah, GA. The following members of the Finance Committee were present; Carroll Johnson (Chairman), Steve Harrison, Jay Chapin, Maria Gallo, Richard Rudolph, Hassan Melouk, and Ron Sholar (Ex-Officio).

A budget summary for FY 05-06 was presented that compared budgeted versus actual expenditures and receipts. Major points of discussion were:

There was an anticipated budgeted receipt of \$10,000 from the National Peanut Board to defer expenses when their annual grower meeting is combined with APRES annual meeting. The National Peanut Board did not have an annual grower meeting in 2006, thus there was no contribution to APRES.

There were budgeted receipts of \$38,000 from page charges for PEANUT SCIENCE publication, compared to \$17,980 in actual receipts. This reflects the slow process of correcting the backlog in PEANUT SCIENCE publication and printing.

Actual meeting expenses were approximately \$4,761.71 less than the budgeted amount for the Virginia meeting.

In FY 05-06, the former Editor for PEANUT SCIENCE received \$8,932 and the editorial assistant received \$4,056 for services rendered. Neither expenditure was budgeted. It should be noted that these expenditures were for services rendered in FY 04-05, but were not approved to be paid until after the beginning of FY 05-06.

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In summary, APRES finished the last fiscal year in the black by \$540.26.

A comparison between 2005 and 2006 was presented for each of the APRES assets. All account balances were similar between the two years, indicating stability in the fiscal state of the society.

A proposed budget was presented by Ron Sholar for FY 06-07 and FY 07-08. The proposed FY 06-07 budget has the following changes of significance:

Receipts for membership for FY 07-08 reflect the proposed increase in individual membership dues from \$80 to \$100. It does not reflect the proposed increases in sustaining membership dues.

Receipts from page charges for PEANUT SCIENCE in FY 06-07 reflect four issues being published (which also alleviates the PEANUT SCIENCE journal backlog), thus receipts totaling \$32,000. In FY 07-08 the receipts in page charges reflect two issues being published.

The expenses for publishing PEANUT SCIENCE reflect the same

relationship between the two fiscal years.

The one-time \$6,500 start-up fee for electronic publication is listed in FY 06-07.

The proposed budget for FY 06-07 is \$500 in the black.

The proposed budget for FY 07-08 is \$8,848 in the black.

The Finance Committee unanimously endorsed the recommendations of the Ad Hoc Committee to revise the membership dues structure.

The Finance Committee unanimously recommends the financial reports presented and the proposed budgets for FY 06-07 and FY 07-08.

Respectively Submitted;  
W.C. Johnson, III, Chair

## 2006-07 BUDGET

### RECEIPTS

|                                         |                  |
|-----------------------------------------|------------------|
| Registration                            | \$ 40,000        |
| Membership Dues                         | 27,000           |
| Contributions – Ice Cream Social        | 11,000           |
| Contribution – Dow AgroScience          | 5,000            |
| Contribution – Bayer Fund Replenishment | 4,000            |
| Contribution – Syngenta                 | 5,000            |
| Contribution – National Peanut Board    | 1,000            |
| Contribution – General                  | 0                |
| Differential Postage                    | 0                |
| Interest                                | 3,000            |
| Peanut Science & Page Charges           | 32,000           |
| Advances in Peanut Science              | 200              |
| Peanut Science & Technology             | 200              |
| Quality Methods                         | 0                |
| Proceedings                             | 0                |
| Peanut Research                         | 0                |
| Spouse Program                          | 0                |
| Misc Income                             | 0                |
| <b>Total Receipts</b>                   | <b>\$128,400</b> |

### EXPENDITURES

|                                                   |                  |
|---------------------------------------------------|------------------|
| Annual Meeting                                    | \$ 16,000        |
| Awards (Coyt Wilson, Dow AgroScience, Joe Sugg)   | 4,500            |
| Bank Charges                                      | 0                |
| CAST Membership                                   | 600              |
| CAST Travel                                       | 0                |
| Corporation Registration                          | 300              |
| Legal Fees (tax preparation)                      | 800              |
| Professional Services – Executive Officer         | 19,400           |
| Professional Services – Secretarial Services      | 20,300           |
| Professional Services – Peanut Science Editor     | 19,400           |
| Peanut Science EPublishing                        | 28,000           |
| Peanut Science – set up fee-electronic submission | 6,500            |
| Proceedings                                       | 600              |
| Peanut Research                                   | 1,000            |
| Travel – Officers                                 | 2,500            |
| Office Expenses                                   | 3000             |
| Postage                                           | 1,000            |
| Travel – Bayer – Prog for Ext Agents              | 4,000            |
| Spouse Program                                    | 0                |
| Misc                                              | 0                |
| <b>Total Expenditures</b>                         | <b>\$127,900</b> |

## 2005-06 BALANCE SHEET

| <b><u>ASSETS</u></b>                               | <b><u>June 30, 2005</u></b> | <b><u>June 30, 2006</u></b> |
|----------------------------------------------------|-----------------------------|-----------------------------|
| Petty Cash Fund                                    | \$ 473.90                   | 562.61                      |
| Checking Account                                   | 75,691.03                   | 74,683.91                   |
| Certificate of Deposit #1                          | 0.00                        | 0.00                        |
| Certificate of Deposit #2                          | 0.00                        | 0.00                        |
| Certificate of Deposit #3                          | 10,864.81                   | 10,864.81                   |
| Certificate of Deposit #4                          | 14,196.09                   | 14,337.60                   |
| Certificate of Deposit #5                          | 0.00                        | 0.00                        |
| Certificate of Deposit #6                          | 15,497.96                   | 15,761.83                   |
| Certificate of Deposit #7                          | 13,324.15                   | 13,537.39                   |
| Certificate of Deposit #8                          | 5,941.32                    | 6,020.47                    |
| Money Market Account                               | 1,865.93                    | 1,870.60                    |
| Savings Account (Wallace Bailey)                   | 246.52                      | 40.92                       |
| Bayer Account                                      | 11,058.39                   | 12,020.22                   |
| Computer and Printer                               | 1,146.16                    | 847.16                      |
| Peanut Science Account<br>(Wachovia Bank)          | 3,784.05                    | 3,784.05                    |
| Inventory of PEANUT SCIENCE<br>& TECHNOLOGY Books  | 2,120.00                    | 1,810.00                    |
| Inventory of ADVANCES IN PEANUT<br>SCIENCE Books   | <u>6,770.00</u>             | <u>6,690.00</u>             |
| <b>TOTAL ASSETS</b>                                | <b>\$162,980.31</b>         | <b>\$162,831.57</b>         |
| <b><u>Liabilities</u></b>                          |                             |                             |
| No Liabilities                                     | 0.00                        | 0.00                        |
| <b><u>Fund Balance</u></b>                         | <b>\$162,980.31</b>         | <b>\$162,831.57</b>         |
| <b><u>TOTAL LIABILITIES &amp; FUND BALANCE</u></b> | <b>\$162,980.31</b>         | <b>\$162,831.57</b>         |

## STATEMENT OF ACTIVITIY FOR YEAR ENDING 06/30/05

### RECEIPTS

**June 30, 2005**

|                                                      |                     |
|------------------------------------------------------|---------------------|
| Advances Book                                        | \$ 720.00           |
| Ann Mtg Reg                                          | 43,950.00           |
| Award Income                                         | 0.00                |
| Contributions – General                              | 17,800.00           |
| Contribution – Dow AgroSciences                      | 5,500.00            |
| Contribution – Bayer CropScience                     | 7,144.05            |
| Contribution – NPF                                   | 5,000.00            |
| Contribution – NPB                                   | 10,000.00           |
| Differential Postage                                 | 1,325.50            |
| Dues                                                 | 26,165.00           |
| Interest                                             | 821.06              |
| Misc Income (Florida state refund from 1996 ann mtg) | 185.00              |
| Peanut Research                                      | 0.00                |
| Peanut Science Page Charges                          | 4,168.00            |
| Peanut Science & Technology                          | 557.50              |
| Proceedings                                          | 13.00               |
| Quality Methods                                      | 46.00               |
| Spouse Reg                                           | 230.00              |
| Transfer                                             | 0.00                |
| <b>TOTAL RECEIPTS</b>                                | <b>\$123,625.11</b> |

### EXPENDITURES

|                                                                                          |                    |
|------------------------------------------------------------------------------------------|--------------------|
| Advances in Peanut Science                                                               | \$ 0.00            |
| Annual Meeting                                                                           | 18,933.77          |
| (Entertainment–400.00/Program–834.78/<br>Supplies/Equip–3,242.82/Breaks/Meals–14,456.17) |                    |
| Awards (Dow, Coyt Wilson, Joe Sugg)                                                      | 3,734.10           |
| Bank Charges                                                                             | 72.75              |
| CAST Membership                                                                          | 588.00             |
| Corporation Registration                                                                 | 130.00             |
| Exec Off                                                                                 | 16,640.04          |
| APRES portion of FICA/Medicare                                                           | 1,272.96           |
| Prof Services – Admin Assist                                                             | 16,345.92          |
| APRES portion of FICA/Medicare                                                           | 1,250.40           |
| Legal Fees                                                                               | 658.00             |
| Miscellaneous (retirement gift for Dr. Stalker)                                          | 150.00             |
| Oklahoma Withholding                                                                     | 1,590.00           |
| Oklahoma Withholding – Exec Off                                                          | -1,200.00          |
| Oklahoma Withholding – Admn Asst                                                         | -390.00            |
| Office Expenses                                                                          | 3,020.00           |
| Peanut Research                                                                          | 0.00               |
| Peanut Science                                                                           | 19,880.66          |
| Peanut Science & Technology                                                              | 0.00               |
| Postage                                                                                  | 1,032.30           |
| Proceedings                                                                              | 400.00             |
| Sales Tax                                                                                | .84                |
| Spouse Program Expenses                                                                  | 40.00              |
| Travel, Exec Off, Sec                                                                    | 2,812.49           |
| Travel, Bayer                                                                            | 8,128.64           |
| Transfer                                                                                 | 0.00               |
| <b>TOTAL EXPENDITURES</b>                                                                | <b>\$95,090.87</b> |
| <b>2005 EXCESS RECEIPTS OVER EXPENDITURES</b>                                            | <b>\$28,534.24</b> |

## STATEMENT OF ACTIVITY FOR YEAR ENDING 06/30/06

### Receipts

|                                  |                     |
|----------------------------------|---------------------|
| Advances Book                    | \$ 92.00            |
| Ann Mtg Reg                      | 42,250.00           |
| Award Income                     | 0.00                |
| Contributions – General          | 13,200.00           |
| Contribution – Dow AgroSciences  | 5,500.00            |
| Contribution – Bayer CropScience | 4,931.63            |
| Contribution – Valent            | 2,000.00            |
| Contribution – Sipcam            | 4,000.00            |
| Contribution – Syngenta          | 4,000.00            |
| Contribution – NPF               | 0.00                |
| Contribution – NPB               | 0.00                |
| Differential Postage             | 1,037.50            |
| Dues                             | 28,615.00           |
| Interest                         | 872.53              |
| Misc. Income                     | 20.00               |
| Peanut Research                  | 8.00                |
| Peanut Science                   | 1,049.00            |
| Peanut Science Page Charges      | 16,931.00           |
| Peanut Science & Technology      | 384.00              |
| Proceedings                      | 16.00               |
| Quality Methods                  | 30.00               |
| Spouse Reg                       | 30.00               |
| Transfer                         | 0.00                |
| <b>TOTAL RECEIPTS</b>            | <b>\$124,966.66</b> |

### Expenditures

|                                                                                 |                     |
|---------------------------------------------------------------------------------|---------------------|
| Advances in Peanut Science                                                      | \$ 0.00             |
| Annual Meeting                                                                  | 15,238.29           |
| (Program-1,624.79/AV-1,206.50/<br>Supplies/Equip-470.56/Breaks/Meals-11,936.44) |                     |
| Awards (Dow, Coyt Wilson, Sugg)                                                 | 4,317.45            |
| Peanut Science                                                                  | 54,727.03           |
| Proceedings                                                                     | 0.00                |
| Peanut Research                                                                 | 0.00                |
| CAST Membership                                                                 | 603.00              |
| Corporation Registration                                                        | 130.00              |
| Legal Fees                                                                      | 596.00              |
| Misc (frame for Dr. Stalker's gift)                                             | 209.39              |
| Prof Services - Exec Off                                                        | 17,305.57           |
| APRES portion of FICA/Medicare                                                  | 1,323.85            |
| Prof Services – Admin Assist                                                    | 18,214.24           |
| APRES portion of FICA/Medicare                                                  | 1,393.41            |
| Oklahoma Withholding                                                            | 1,644.00            |
| Oklahoma Withholding (Exec Off)                                                 | -1,200.00           |
| Oklahoma Withholding (Admin Asst)                                               | -444.00             |
| Travel (Exec Off, Admin Asst)                                                   | 1,641.83            |
| Office Expenses                                                                 | 2,884.33            |
| Postage                                                                         | 1,533.92            |
| Bank Charges                                                                    | 61.50               |
| Travel, Bayer                                                                   | 3,994.86            |
| Spouse Program Expenses                                                         | 250.00              |
| Sales Tax                                                                       | 1.73                |
| <b>TOTAL EXPENDITURES</b>                                                       | <b>\$124,426.40</b> |
| <b>2006 EXCESS RECEIPTS OVER EXPENDITURES</b>                                   | <b>\$ 540.26</b>    |

# **ADVANCES IN PEANUT SCIENCE SALES REPORT 2005-06**

|                     |          |     |
|---------------------|----------|-----|
| Beginning Inventory |          | 677 |
| 1st Quarter         | 6        | 671 |
| 2nd Quarter         | 0        | 671 |
| 3rd Quarter         | 0        | 671 |
| 4th Quarter         | 2        | 669 |
| <b>TOTAL</b>        | <b>8</b> |     |

669 REMAINING BOOKS X \$10.00 (BOOK VALUE) = \$6,690.00 total value of remaining book inventory.

| Fiscal Year | Books Sold |
|-------------|------------|
| 1995-96     | 140        |
| 1996-97     | 99         |
| 1997-98     | 66         |
| 1998-99     | 34         |
| 1999-00     | 45         |
| 2000-01     | 33         |
| 2001-02     | 27         |
| 2002-03     | 35         |
| 2003-04     | 37         |
| 2004-05     | 69         |
| 2005-06     | 8          |

# **PEANUT SCIENCE AND TECHNOLOGY SALES REPORT 2005-06**

|                     |           |     |
|---------------------|-----------|-----|
| Beginning Inventory |           | 212 |
| 1st Quarter         | 27        | 185 |
| 2nd Quarter         | 1         | 184 |
| 3rd Quarter         | 0         | 184 |
| 4th Quarter         | 3         | 181 |
| <b>TOTAL</b>        | <b>31</b> |     |

181 remaining books x \$10.00 (book value) = \$1,810.00 total value of remaining book inventory.

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

## **PUBLIC RELATIONS COMMITTEE REPORT**

The Public Relations Committee of the American Peanut Research and Education Society met from 2:00 - 3:00 p. m. on Tuesday, July 11, 2006, in Savannah, GA. Members present included Joe Dorner, Joyce Hollowell, and John Beasley.

It was noted that committee members promoted both the annual meeting as well as membership in the society through contacts with colleagues throughout the year. The committee attempted to generate local interest in the annual meeting through contacts with the Savannah Morning News and two local television stations. The committee would welcome any ideas or suggestions from any member of the society concerning ways to better promote the society in general and membership in particular. The committee has no specific recommendations to make in this regard at this time.

Since the 2005 meeting, an extremely valuable friend to the society and the peanut industry as a whole passed away. A resolution to honor the life and contributions of Joe Sugg is attached.

Whereas, Joe Speight Sugg attended N.C. State University (then State College), majoring in dairy manufacturing, was employed as assistant county agent in Wake County upon graduation and later Nash County agricultural extension agent, and

Whereas, he was livestock agent for the Atlantic Coast Line Railroad, established and had originally hoped to make his mark with the Animal Rendering Service in Rocky Mount after returning from World War II, and

Whereas, he abandoned that plan and became a Goliath in North Carolina's peanut growing and researching circles, earning him a place in the National Peanut Hall of Fame as its first Hall of Famer, and

Whereas, Joe founded the North Carolina Peanut Growers Association in 1953, spent the next 27 years handing out roasted peanuts, lobbying for peanut farming subsidies and obtaining peanut research grants as the association's executive secretary, served as chairman of the National Peanut Council, and

Whereas, the Joe Speight Sugg Agriculture Institute Endowed Scholarship was established in his honor upon his retirement, and

Whereas, the Joe Sugg Graduate Student Award was established and presented yearly for the best graduate student paper at APRES in his honor, and

Whereas, when Joe wasn't traveling the country promoting peanuts and lobbying for peanut growers, he liked to put on his quail-hunting cap or grab his fishing gear and explore the Albemarle Sound, and

Whereas, he was a blunt man who found a niche in the white-collar world that allowed him to remain close to his agricultural roots, being Rocky Mount's own "Mr. Peanut," providing loyal and faithful service to the community and the peanut industry, and

Whereas, he passed away Dec. 15, 2005,

Be it resolved that The American Peanut and Research Society remembers and honors the life and contributions of Joe Speight Sugg.

Respectfully submitted,  
Joe Dorner, Chair

## **PUBLICATIONS AND EDITORIAL COMMITTEE REPORT**

Attendance: Chair, Chris Butts, Tim Brenneman, Marie Fenn, Michael Franke, Michael Baring, Calvin Trostle, President, Pat Phipps

The Chairman called the meeting to order at 2:00 pm on July 11, 2006. John Wilcut, Editor, **Peanut Science**, submitted a report. All 2004 issues have been printed and delivered to the membership. Publication costs during 2005 were \$23,885. A contract with Allen Press has been signed to publish **Peanut Science** electronic through the web. Total costs for the first year of e-publishing including one-time development fees, annual fixed fees and publishing 300 pages are expected to be approximately \$19,000. Dr. Wilcut reported that 46 manuscripts had been accepted for publication in the journal and had been submitted to Allen Press. Allen Press had returned 13 electronic proofs as pdf files for review by the authors. Currently accepted manuscripts will be published as one of three or four issues of the 2006 volume of **Peanut Science**. The first electronic issue of **Peanut Science** will contain 13 manuscripts and is anticipated by mid August provided that authors review and return the proofs in a timely fashion. The second and third 2006 issues will be published as soon as possible. The fourth issue may be published in early 2007 depending on the number of manuscripts available depending on the submission and acceptance of manuscripts. Members are encouraged to submit new manuscripts to John Wilcut via email.

The following APRES members have accepted the responsibility of serving as Associate Editors:

Tim Brenneman, Mark Burow, Chris Butts, Manjeet Chinnan, Kelly Chenault, Wilson Faircloth, Maria Gallo, Tim Grey, Tom Isleib, Diane Rowland, Barry Tillman, Tom Whitaker

These associate editors have committed to obtaining timely and impartial reviews of manuscripts submitted for publication.

Tim Brenneman reported that a survey of indices/databases showed that **Peanut Science** had been dropped from 8 of 12 databases because of an inconsistent publication record. **Peanut Science** is listed in BioSis Reviews and Biological Abstract; however, it is not covered by Current Contents. Tim will follow up with procedures for getting the journal accepted back into these databases and relay that information to John Wilcut.

A letter of resignation as editor of Peanut Research, the APRES newsletter, was received from Carroll Johnson. He expressed his regrets at being unable to fulfill the obligation as originally promised. The committee will solicit and secure a new editor for the newsletter and regional representatives to provide news items for the newsletter. Marie Fenn stated that she would investigate the possibility of the National Peanut Board providing some assistance in publishing and distributing the newsletter via the web and email.

The committee discussed the need to rewrite the Instructions to Authors for submitting articles to **Peanut Science**. The committee will develop Word and WordPerfect templates for the authors to use that will include font and paragraph styles, page formats, and guidelines for literature citations, tables, and figures.

The committee is committed to supporting the editor of Peanut Science to whatever extent necessary to continue the recovery of its former stature and prominence. To that end, the committee will maintain regular communication with the editor. The committee strongly urges APRES members to submit manuscripts for publication in Peanut Science. We can only maintain the progress if members support the journal by submitting manuscripts for publication.

The meeting was adjourned at 3:00 pm.

Respectfully submitted,  
Christopher L. Butts, Chair

## **PEANUT SCIENCE EDITOR'S REPORT**

1. A contract was negotiated and signed with Allen Press for electronic publication of Peanut Science. This process took up a great deal of time and effort with the Board signing the contract shortly after the first of the year. Most of the delay was on the Allen Press side of the negotiations.
2. Forty-three manuscripts have been sent forward to Allen Press for electronic publication. To put this in perspective, we typically publish between 12-13 manuscripts per issue, 24-26 per year. Thus, we have enough manuscripts sent forward to Allen Press to publish both issues of 2005 and the first issue of 2006 and now we are starting to fill the second issue of 2006. The first manuscript galley has been sent back from Allen Press and has been forwarded to the author. We anticipate having the first issue of 2005 published by the middle of August with the other issues (2<sup>nd</sup> issue of 2005 and 1<sup>st</sup> issue of 2006) published shortly thereafter. Authors will be able to review their manuscript galley(s) but this will require a timely turnaround to help expedite the publication process. Of the 43 manuscripts sent to Allen Press for publishing, they include papers from TX, OK, AL, GA, SC, NC, and VA with 2 from India, 1 that was basically from Bulgaria/UGA, and one from Brazil. A pretty good mixture of papers for all peanut states except Florida and four international submissions. The income from 2005 and 2006 for page costs and reprints should be a significant amount of money for the society.

3. We have reduced the backlog of manuscripts in Peanut Science and are requesting for more manuscripts to be submitted as the journal is now back on track. We hope in 2007 to have the first issue out (assuming we get more manuscripts to review) by the 2007 annual meeting and the 2<sup>nd</sup> issue out before the end of the year (2007) and to stay on this schedule from here on.
4. The following people have agreed to serve as associate editors for Peanut Science:
  - Chris Butts - USDA, GA
  - David Jordan - NCSU
  - Tom Whitaker - NCSU
  - Tom Isleib - NCSU
  - James Grichar - Texas A&M
  - Wilson Faircloth - USDA, GA
  - Tim Grey - UGA
  - Tim Brenneman - UGA
  - Maria Gallo - UFL

I have also asked the following people if they would be interested in serving as associate editors: Mark Burow, Peggy Ozias-Akins, Kelly Chenault, Barry Tillman, Dr. Chinnan, and Diane Rowland. I do need to find several entomologists who would be willing to serve as associate editors.

5. Again we need more quality manuscripts in the review process, timely and quality reviews from reviewers and associate editors, and timely turnarounds by authors to have a journal that publishes on time and meets the needs of the membership.
6. I will send under a separate cover what Irene had put together on the budget. I am not sure how to go about doing this as her information is the only reference data that I have. I would point out that our expenses for publishing will be for both 2005 and 2006, but our income from publishing will also be for both years. Make sure that the budget for publishing also includes compositional editing (which we requested and got overlooked in the original Allen Press contract). According to my figures I first sent to the Board in early 2006, our cost for 2006 should be approximately \$13,152.53, not counting the editor stipend. There is no editorial assistant anymore. The fees for compositional editing can vary as it depends on the number of figures, etc. in each manuscript. Based on 2003, we anticipate the costs running between \$2,700 and \$2,800/year. Again this is required for electronic publication.

John Wilcut  
Editor, Peanut Science  
Respectfully submitted by  
Chris Butts

## **NOMINATING COMMITTEE REPORT**

Report to the Board of Directors, Thirty-Eighth Annual Meeting of the American Peanut Research and Education Society (APRES).

The Nominating Committee for the 2006 Annual Meeting of APRES consisted of Tim Sanders (USDA-ARS), Dallas Hartzog (Auburn University), Richard Rudolph (Bayer CropScience), and James Grichar (Texas Agric. Expt. Station, Past President).

The Nominating Committee was charged with nominating candidates to serve as President-elect and representatives (state employee and industry representatives) to the Board of Directors.

The Nominating Committee corresponded by phone and e-mail and submitted their nominations to the President, Pat Phipps, on May 15, 2006.

The Committee nominated the following individuals:

President-elect – Austin Hagan

Board of Directors – State Employee Representative (SE area)

Eric Prostko

Board of Directors – Industry Representative (Production)

Randy Myers

Respectively submitted,  
James Grichar, Chair

## **FELLOWS COMMITTEE REPORT**

The APRES Fellows committee received three nominations and the committee evaluated them according to the APRES guidelines. Committee members participating in the evaluation were Sandy Newell, W.C. Johnson, III, Tom Stalker, Mark Burow, Albert Culbreath and Tim Brenneman. All three candidates received a positive vote by the committee, two of which were unanimous. The committee passed these recommendations on to the Board of Directors.

The Fellows Committee met at 1:00 p.m., July 11, 2006 during the APRES annual meeting to review their work. Members present were Albert Culbreath, Carroll Johnson and Tim Brenneman. Nominations were reviewed, and a change to the guidelines for nomination procedures was also discussed. The following change was approved unanimously for consideration by the Board of Directors. Old – “A maximum of 30 points is allotted to the nominees service to the profession.” New – “A maximum of 30 points is allotted to the nominees service to APRES and to the profession.” Fellow Awards were presented during the APRES Awards Ceremony on Friday, July 14, 2006 to C. Corley Holbrook, Richard Rudolph and Dallas Hartzog.

Respectfully submitted,  
Tim Brenneman, Chair

## BIOGRAPHICAL SUMMARIES OF FELLOWS RECIPIENTS

**Mr. Dallas Hartzog**, was born and raised on a peanut farm in Barbour County AL, has had an exceptional 38-year career in support of peanut farmers not only in Alabama but also across the remainder of the United States. He started his career as an assistant county agent, and has held the rank of Professor at Auburn University since 1988. During his long and distinguished career, he has freely shared his expertise with farmers in Alabama, Georgia, and Florida, as well as with seed producers, shellers, and other industry representatives at group and individual meetings. In recognition of his contributions to the peanut industry, Dallas was honored in 2001 as the “Man of the Year in Agriculture for the State of Alabama” by Progressive Farmer, “Distinguished Career Award” by the Alabama Cooperative Extension System in 2001, and “Valor Award” at the 2004 Southeastern Peanut Growers Conference. His numerous contacts in the U.S. Congress have been instrumental, particularly in the last decade, in developing policies that have helped maintain the profitability of this nation’s peanut industry.

The most notable contributions that Dallas has made toward improving peanut production have been in the areas of soil fertility, reduced tillage practices for peanuts, and sod-based rotations. Results of his 466 on-farm research/demonstration projects are the basis for peanut soil fertility recommendations for Alabama, Florida, and Georgia. He defined the phosphorus, potassium, calcium and minor element requirements for maximizing peanut yield. These findings resulted in a sharp decline in fertilizer use and a saving of an estimated \$180 million in fertilizer costs. More recently, Dallas has championed the adoption of reduced tillage, disease resistant peanut cultivars, and alternative row spacing as a means for either reducing input costs or increasing pod yields. Over his career, Dallas has authored or co-authored 14 extension publications, as well as contributed numerous articles to the Southeast Farm Press, The Peanut Grower, and The Peanut Farmer magazines. The objective of his productive extension and research career has always been to put more money in the pockets of peanut farmers.

Dallas has provided yeoman service to the American Peanut Research and Education Society. He has attended, as well as authored or co-authored numerous papers at all but a handful of annual meetings since APRES was formed in the early 1970’s. In addition to serving as APRES President in 1994 and member of the APRES Board of Directors in 1995, Dallas has also served on or chaired the Nominating, Fellows, Peanut Quality Control, and Public Relations Committee.

Dallas has always been known for his people skills, and his skills as a communicator in front of an audience at a grower meeting are second to none. He is equally adept at communicating with the smallest tenant farmer as with members of Congress. His broad knowledge of peanut production, his willingness to share that information with others, and his superlative service to APRES are hereby recognized by his election as a Fellow of APRES.

**Dr. Corley Holbrook** has been a Research Geneticist with the USDA/ARS in Tifton, GA since 1985, and currently serves as the Research Leader for his unit at that location. He has been a major contributor to the improvement of the quality and safety of peanuts. He began the effort on behalf of the peanut industry to find germplasm within the peanut collection that had resistance to aflatoxin contamination. These initial



efforts involved development of a core collection representing the diversity of the germplasm collection. This alone has assisted many other researchers in their efforts to use the collection to find valuable traits for agronomic issues, flavor, disease resistance, etc. Dr. Holbrook has also embraced new technologies such as peanut transformation and marker-assisted selection when they have potential to contribute to peanut germplasm enhancement. He has accomplished broad screening for major problems of peanut such as root-knot nematode, TSWV, leaf spot, and southern stem rot. In fact, he is the only peanut geneticist to have screened the entire US peanut germplasm collection for any trait. He readily shares information, and his results have always been published in a timely manner for others to benefit from.

Dr. Holbrook is an untiring cooperator and has developed linkages with numerous other researchers. He has shown leadership among other scientists locally and nationally. He is currently the Research Leader of the USDA-ARS Crop Genetics and Breeding Research Unit in Tifton, and has been named a Fellow of the American Society of Agronomy. Corley has also contributed greatly to APRES, having served on the Board of Directors as well as numerous committees, Associate Editor of Peanut Science, and co-editor of Peanut Research. His efforts there were recognized by his receipt of the Coyt T. Wilson Distinguished Service Award in 1998. There is no question that the contributions of Dr. Holbrook to the peanut industry and to APRES are worthy of his election as Fellow of the society.

**Dr. Richard Rudolph** has conducted and directed peanut disease control research since 1982. As Regional Development Manager for Bayer CropScience, he has designed research protocols, conducted field trials, and provided research projects and considerable funding to all universities conducting peanut disease control research. Folicur and Stratego are the direct result of those efforts. Folicur has had a huge impact on peanut production in the United States, particularly where stem rot is a problem. Prior to the registration for use of Folicur on peanut in 1994 the only available products were very expensive and only marginally effective. The introduction of a reasonably priced product that would control both soilborne and foliar diseases revolutionized peanut disease control programs. Another fungicide, prothioconazole, is currently in review and will offer hope to growers fighting the devastating yield losses caused by *Cylindrocladium* black rot (CBR). Richard's research efforts have contributed to the development of 27 new products for use on peanut and other southern crops.



Dr. Rudolph also served as Technical Service Manager for Bayer in the southeast for 16 years, performing a similar function as the Extension Service in assisting growers. In this capacity Richard was involved in numerous educational and training programs, both in the United States and in several foreign countries. He was also instrumental in supporting Extension Agent travel to the APRES meeting, as well as an annual conference of university peanut pathologists that has been of tremendous benefit as a forum to discuss peanut disease control issues.

Richard has been a member of APRES and attended every meeting since 1983, and has served the society in numerous capacities including Local arrangements, Coyt T. Wilson Distinguished Service Committee, Finance Committee, and the board of directors. He has also presented research papers, but his greatest contribution may be in the area of financial support. Through his leadership, Bayer has consistently been a major sponsor of APRES activities including dinner events and the Peanut Education for Excellence Program. Since 2002, he has spent many additional hours contacting numerous industry associates to solicit their support for APRES as well. His service to the peanut industry extends beyond APRES, and also includes being an Associate Member of the American Peanut Shellers Association Board of Directors, where he was very active in promoting and supporting efforts to increase consumption of peanuts. It is for these numerous contributions that Dr. Richard Rudolph is being recognized as a Fellow of APRES.

## **GUIDELINES for AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY FELLOW ELECTIONS**

### **Fellows**

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

### **Eligibility of Nominators**

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

### **Eligibility of Nominees**

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

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

### **Nomination Procedures**

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

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

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

Deadline. Six (6) copies of the nomination are to be received by the chairman of the Fellows Committee by March 1 each year.

### **Basis of Evaluation**

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

### **Processing of Nominations**

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

### **Recognition**

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

### **Distribution of Guidelines**

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

**FORMAT for AMERICAN PEANUT RESEARCH AND  
EDUCATION SOCIETY FELLOW NOMINATIONS**

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

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

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

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

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

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

**I. Personal Achievements And Recognition (10 points)**

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

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

- A. Research  
Significance and originality of basic and applied research contributions;  
scientific contribution to the peanut industry; evidence of excellence and  
creative reasoning and skill; number and quality of publications; quality  
and magnitude of editorial contributions. Attach a chronological list of  
publications.
- B. Extension  
Ability to (a) communicate ideas clearly, (b) influence client attitudes,  
and (c) motivate change in client action. Evaluate the quality, number  
and effectiveness of publications for the audience intended. Attach a  
chronological list of publications.
- C. Service to Industry  
Development or improvement of programs, practices, and products.  
Evaluate the significance, originality and acceptance by the public.
- D. Administration or Business  
Evidence of creativeness, relevance, and effectiveness of administration

of activities or business within or outside the USA.

III. Service to The Profession (30 Points)

- A. Service to APRES including length, quality, and significance of service.
  - 1. List appointed positions.
  - 2. List elected positions.
  - 3. Briefly describe other service to the Society.
- B. Service to the profession outside the Society including various administrative skills and public relations actions reflecting favorably upon the profession.
  - 1. Describe advancement in the science, practice and status of peanut research, education or extension, resulting from administrative skill and effort.
  - 2. Describe initiation and execution of public relations activities promoting understanding and use of peanuts, peanut science and technology by various individuals and organized groups within and outside the USA.

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

## **BAILEY AWARD COMMITTEE REPORT**

The committee met Tuesday, July 11, at 2:00 p.m. in the Vernon Room. The committee's business was tended to prior to the annual meeting. Information and paper work was sent out to nominees regarding the award. Papers were requested from qualified nominations chosen from 14 paper sections at the 2005 annual meeting. Eight papers were received and accepted for final evaluation by the committee. The winning paper is presented the Bailey Award at the 2006 meeting. The winning paper was #55 titled "Effect of Fungicide Treatment and Pod Maturity on Peanut Peg Strength", submitted by J. W. Chapin and J. S. Thomas from the Plant Pathology & Nematology II section. J. W. Chapin was the presenter.

2005-06 Bailey Award Committee:

Todd Baughman, Chair (2005)

Nathan Smith (2006)

Jay Williams (2006)

Ames Herbert (2007)

Mark Black (2007)

Joel Faircloth (2007)

Nathan Smith assumes the duties of chair at the 2006 annual meeting and Elizabeth Grabau (2008) joins the committee.

Respectfully submitted by:

Nathan Smith, Chair

## **GUIDELINES for AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY BAILEY AWARD**

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

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

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

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

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

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

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

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

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

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

- a) notify session moderators for the upcoming meeting of their

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

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

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

## **JOE SUGG GRADUATE STUDENT AWARD REPORT**

Minutes from July 11, 2006. Members present:

Bob Kemerait, Chair

Tom Isleib

Kelly Chenault

Austin Hagan

Susana Milla-Lewis (alternate for Yolanda Lopez)

Report:

#1. There are 11 student papers in competition this year.

#2. Abstracts are sample score sheets made to judge prior to meeting.

#3. Students contacted before meeting, welcomed to session, and given copy of score sheet.

#4. Our committee will work in 2006-2007 to revise the current score card. It has served us well, however, we will improve the current scoring criteria by developing a system that gives equal weight to presentation skill, quality and effectiveness of slides, and also quality and complexity of research. Bob Kemerait and Susanna Milla-Lewis will work on this and present to entire committee for approval.

#5 We noted the passing of Mr. Joe Sugg this past year.

1<sup>st</sup> Place – paper #48; W.J. Everman – “Critical Period of Grass Versus Broadleaf Weed Interference in Peanut”.

2<sup>nd</sup> Place – paper #50; S.K. Gremillion – “Early Season Disease Progress of Early Leaf Spot in the Bolivian Cultivar Bayo Grande and Related Progeny in the Southeastern United States”.

Respectfully submitted by,  
Bob Kemerait, Chair

## **COYT T. WILSON DISTINGUISHED SERVICE AWARD REPORT**

The Coyt T. Wilson Distinguished Service Award Committee met via e-mail during the spring of 2006. The committee confirmed the selection of Dr. Charles E. Simpson as the 2006 recipient of the award.

Coyt T. Wilson Distinguished Service Award Committee:

David Jordan, Chair (2006)

John Damicone

Eric Prostko

Howard Valentine

Thomas Whitaker

C. Corley Holbrook

Respectfully submitted by,  
David Jordan, Chair

## BIOGRAPHICAL SUMMARY OF COYT T. WILSON DISTINGUISHED SERVICE AWARD RECIPIENT

**Dr. Charles E. Simpson**, Professor Emeritus of Soil and Crop Science of Texas A&M University and stationed at the Agricultural Research and Extension Center at Stephenville, is a native of Winters, TX. He obtained his BS, MS, and PhD degrees from Texas A&M and joined the faculty in 1967 in the area of peanut breeding and germplasm utilization.

Dr. Simpson is the foremost individual in the USA with respect to collection, evaluation, and preservation of genetic resources of genus *Arachis*. Since 1977 he has made 25 *Arachis* germplasm collection expeditions to South America including collections in Argentina, Brazil, Bolivia, Ecuador, Paraguay, Peru, and Uruguay. His teams have collected more than 4,500 cultivated lines and landraces and more than 1,800 accessions of wild species representing 59 new species of the 80 which have been collected. He and colleagues have described several new species of *Arachis*. In addition to his work in germplasm collection and preservation, Dr. Simpson has been in the vanguard of the team of US and international scientists attempting to utilize diploid wild *Arachis* species for improvement of the cultivated *A. hypogaea*. Dr. Simpson's development of tetraploid interspecific hybrids allowed molecular geneticists to produce genetic maps of the diploid and tetraploid species and to identify genetic markers useful in the transfer of high-level resistance to the root-knot nematode from the wild species to the cultigen. Dr. Simpson has been a co-developer of 14 cultivars released for use by Southwestern peanut growers and 10 germplasm lines released for use by other peanut breeders and geneticists.

Dr. Simpson is a charter member of the American Peanut Research and Education Society. He has attended all of the Society's meetings save that of 1973 when he was incapacitated by illness. At those meetings, Dr. Simpson has presented or co-authored 80 presentations including 19 as first author. He has never left an annual meeting without attending the APRES business session.

Dr. Simpson's record of service to APRES is unmatched by any member who has not already received the Coyt T. Wilson Distinguished Service Award. His service on APRES committees (47 instances), as an associate editor of *Peanut Science* (2 three-year terms), as an officer of the APRES (1990-93), and on the Board of Directors (1988-90) are documented in Society proceedings. APRES membership has previously recognized his leadership and contributions by his election to the Board of Directors in 1988, his installment as President-Elect in 1990, and as Fellow in 1995. Dr. Simpson has further supported APRES by authoring or co-authoring frequently in the society's publications, the journal *Peanut Science* and the peanut monographs (15 articles and chapters including 3 as first author. Dr. Simpson has been recognized for the excellence of his work presented at APRES annual meetings by receiving the Bailey Award twice. He has also been recognized by receiving the American Peanut Council's Award for Outstanding Research in 2001.

In addition to holding elected and appointed positions of leadership within the Society, Dr. Simpson has performed many services of a more informal nature. He has served as an *ad hoc* member of the Quality Committee, as a substitute member on the Bailey Award and Joe Sugg Graduate Student Award

Committees, and virtually every year as a Bailey Award nominator in Plant Breeding and Genetics technical sessions. He served as a book sales representative for both *Peanut Science and Technology* and *Advances in Peanut Science*. He has promoted membership in the society in Texas and at least 11 foreign countries, individual and library, and has personally purchased membership for one library in Argentina for many years. Dr. Simpson has coordinated discussion groups, served as session moderator numerous times, and attended many “extra” activities before and after meetings, e.g., field trips, special industry sessions, and planning meetings including the many activities associated with the formation of the Peanut CRSP. As a recognized leader in the peanut community in Texas, he has served as a liaison between the APRES Board and the Society’s membership in Texas. He has been a vocal and strong supporter of having APRES annual meetings at locations that were “family friendly.”

APRES is fortunate to have enjoyed Dr. Simpson’s membership and tireless contribution. He is most deserving of the Coyt T. Wilson Distinguished Service Award.

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

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

### **Eligibility of Nominators**

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

### **Eligibility of Nominees**

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

### **Nomination Procedures**

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

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

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

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

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

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

### **Qualifications of Nominee**

- I. Personal Achievements and Recognition:
  - A. Education and degrees received: Give field, date and institution.
  - B. Membership in professional organizations
  - C. Honors and awards
  - D. Employment: Give years, locations and organizations
- II. Service to the Society:
  - A. Number of years membership in APRES
  - B. Number of APRES annual meetings attended
  - C. List all appointed or elected positions held
  - D. Basis for nomination
  - E. Significance of service including changes which took place in the Society as a result of this work and date it occurred.
- III. Supporting letters:

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

### **Award and Presentation**

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

## **DOW AGROSCIENCES AWARDS COMMITTEE REPORT**

The Dow AgroSciences Awards Committee consisted of eight members in 2006. They were as follows:

|                           |                      |
|---------------------------|----------------------|
| Roy Pittman, Chair (2006) | Hassan Melouk (2008) |
| William D. Branch (2008)  | Fred Shokes (2008)   |
| Bo Braxton (2006)         | Jan Spears (2008)    |
| Randy Huckaba (2008)      | Jim Starr (2007)     |

Five nominations were received for and only four found to meet all the guidelines for acceptance for the Dow AgroSciences Award for Excellence in Education. Nominations were received by email by the Chair. Copies of each qualified candidate were emailed to all the committee members for review and scoring. Each committee member were asked to rank the nominees from 1 to 4. These rankings were returned to the Chair who tabulated the scores. The winning nominee had the lowest score which equaled first place.

No nominations were received for the Dow AgroSciences Award for Research this year.

The recipient for the 2006 Dow AgroSciences Award for Excellence in Education is Dr. Stanley Fletcher, Department Agricultural and Applied Economics the University of Georgia. A biographical summary of the winner will be published in the 2006 APRES Proceedings and available as press releases.

The committee would like to encourage nomination of qualified APRES members. All members of APRES from all segments of the peanut industry should be considered for nomination for these prestigious awards.

Respectfully submitted by,  
Roy Pittman, Chair

### **BIOGRAPHICAL SUMMARY OF DOW AGROSCIENCES AWARD FOR EXCELLENCE IN RESEARCH RECIPIENT**

No nominations were received for the Dow AgroSciences Award for Research this year.

### **BIOGRAPHICAL SUMMARY OF DOW AGROSCIENCES AWARD FOR EXCELLENCE IN EDUCATION RECIPIENT**

University of Georgia Professor, **Stanley Fletcher**, was awarded the Dow AgroSciences Award for Excellence in Education during the American Peanut Research and Education Society's annual meeting held July 11-14 in Savannah, Georgia.

The award recognizes excellence in educational programs, career performance and outstanding educational achievements that significantly benefit the peanut industry. Awarded annually, the recipient receives an engraved plaque and a \$1,000 cash award.

A professor and agricultural economist with the UGA College of Agricultural and Environmental Sciences, Fletcher is director of the University's National Center for Peanut Competitiveness. He has 27 years of experience working in the field of peanut economics education.

He is often called upon to present the impact of peanut policy changes before Congress, the U.S. Department of Agriculture, the U.S. International Trade Commission, the American Farm Bureau Federation and many other policy groups. Fletcher has also made international presentations on policy impact analysis in India, Jamaica and Thailand.

Fletcher has formed an excellent reputation as a communicator based on his ability to present a sound science-based research and education program that addresses many peanut industry issues.

Recipient of the APRES's Dow AgroSciences Award for Excellence in Research in 2004, Fletcher's honors and recognitions also include receiving the Georgia Peanut Distinguished Service Award, the American Peanut Council's Peanut Research and Education Award, the University of Georgia Gamma Sigma Delta Senior Faculty Award, the Georgia Peanut Commission's Georgia Research and Education Award and the National Peanut Council Peanut Research and Education Award.

## **GUIDELINES for DOW AGROSCIENCES AWARDS FOR EXCELLENCE IN RESEARCH AND EDUCATION**

### **I. Dow AgroSciences Award for Excellence in Research**

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

#### **Eligibility of Nominees**

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

### **II. Dow AgroSciences Award for Excellence in Education**

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

#### **Eligibility of Nominees**

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

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

#### **Eligibility of Nominators**

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

### **Nomination Procedures**

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

### **Dow AgroSciences Awards Committee**

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

## NOMINATION FORM FOR DOW AGROSCIENCES AWARDS

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

\*\*\*\*\*

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

\_\_\_ Dow AgroSciences Award for Excellence in Education

\_\_\_ Dow AgroSciences Award for Excellence in Research

\*\*\*\*\*

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

**Nominee(s):** \_\_\_\_\_

Address \_\_\_\_\_

Title \_\_\_\_\_ Tel No. \_\_\_\_\_

### II. Nominator:

Name \_\_\_\_\_ Signature \_\_\_\_\_

Address \_\_\_\_\_

Title \_\_\_\_\_ Tel No. \_\_\_\_\_

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

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

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

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

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

## PEANUT QUALITY COMMITTEE REPORT

The Peanut Quality Committee met on July 11, 2006 with approximately 15 APRES members present. Discussion on peanut quality and other related topics included:

Aflatoxin. Although advances have been made in control and management of aflatoxin through grading procedures, competitive fungi and GMO potentials, aflatoxin should remain as an industry and scientific focus.

Flavor. Roasted peanut flavor intensity has decreased over the last decade and the decrease does not appear to be genetic. The possible causes were discussed and centered on cultural practices such as shifting planting dates and use of various herbicides or pesticides. Flavor chemistry research to define roasted peanut flavor is greatly needed.

Organic. The definition of "organic" peanuts should be clarified by USDA since "organic" peanuts are being supplied by China without verification.

Nutrition. Peanut protein is lacking in some essential amino acids and current research on the core of the core may identify plant introduction germplasm with more complete protein for use in breeding programs. The same research efforts include evaluation of folic acid and improvements from the current 6-8% of recommended daily intake to 10% would aid in a health claim for peanuts.

New Peanut Lines. Funding of tools such as introduction of wild species, molecular markers and winter nurseries was supported by the committee. Given the recently proposed cuts in ARS programs the committee discussed the ongoing need to support ARS funding of research to maintain seed evaluations of the UPPT material at USDA, ARS in Raleigh and Dawson.

Biodiesel. Given the current emphasis on biodiesel from many agricultural sources, the committee discussed and supports the organization and coordination of research efforts on peanuts as biodiesel materials.

Respectfully submitted by:  
Timothy Sanders, Co-chair

## PROGRAM COMMITTEE REPORT

The local arrangements committee and technical program committee met in various combinations and conducted extensive phone and internet networking in conjunction with the staff of the Hyatt Regency Hotel to prepare for the APRES Meeting in Savannah, Georgia. The two committees last met for final program preparation on July 11, 2006 in Savannah.

The local arrangements committee consisted of Alex Csinos (Chair), Bob Kemerait, Eric Prostko, Nathan Smith, Richard Rudolph, Sara Gremillion, Sandy Newell, Herb Young, Diane Rowland, John Beasley and Steve L. Brown. In addition to making physical arrangements and preparations for the technical program, the committee arranged for significant social activities and entertainment for the whole society and assisted the Spouses' Hospitality Committee.

The technical program committee consisted of Chris Butts (Chair), Tim Brenneeman, Emily Cantonwine, Marshall Lamb, Jay Chapin, Wilson Faircloth

and Eric Prostko. The committee solicited papers and put together a program that resulted in 127 papers being presented (100 oral presentations and 27 posters). The program also included symposia on tropical spiderwort and organic peanut production. The committee produced a pdf file with abstracts of submitted papers and compact disks containing that file were distributed to meeting attendees.

The general session included former APRES Presidents Jim Butler as welcoming speaker and Frank McGill as key note Speaker. General session speakers also included Marie Fenn and Jack Brinkley from the National Peanut Board, Scott Angle, Dean of the University of Georgia, College of Agricultural and Environmental Sciences, and Pat Phipps, current president of APRES.

233 members and 159 spouses and children registered for the meeting.

Respectively submitted by:  
Albert Culbreath, Chair

**THIRTY-EIGHTH  
ANNUAL MEETING**

**AMERICAN PEANUT  
RESEARCH AND  
EDUCATION SOCIETY**

**HYATT REGENCY SAVANNAH  
SAVANNAH, GEORGIA  
JULY 11-14, 2006**



**Shoot for the Stars**

## **Contributors to 2006 APRES Meeting**

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

### **Special Activities**

Bayer CropScience – Wednesday Reception/Dinner

BASF – Wednesday Reception/Dinner

Dow AgroSciences – Awards Breakfast

Syngenta – Daily Breaks

National Peanut Board – General Session Break

Georgia Farm Bureau - Spouses' Hospitality

### **Ice Cream Social**

|                                 |                                           |
|---------------------------------|-------------------------------------------|
| Aceto                           | Kelley Manufacturing Co.                  |
| Agrisel                         | Makhteshim-Agan                           |
| Albaugh                         | McCleskey Mills Inc                       |
| AMVAC                           | MicroFlo                                  |
| American Peanut Growers Group   | National Peanut Buying Points Association |
| Becker Underwood                | Nichino Americas                          |
| Birdsong Peanuts                | Nitragin Inc                              |
| Cerexagri-Nisso LLC             | Peanut Farm Quarterly                     |
| DuPont                          | Peanut Grower/Soybean South               |
| Farm Press Publications         | Severn Peanut Company/Hampton Farms       |
| Georgia Organic Solutions       | Sipcam Agro USA                           |
| Golden Peanut Company           | U.S. Borax Inc                            |
| Gowan Company                   | United Phosphorous                        |
| Helena Chemical                 | United States Gypsum                      |
| J. Leek Associates Inc          | Valent U.S.A.                             |
| John B. Sanfillippo & Son, Inc. | Vicam                                     |

## Product Contributors

|                                           |                                          |
|-------------------------------------------|------------------------------------------|
| Alabama Peanut Producers Association      | Oklahoma Peanut Commission               |
| Florida Peanut Producers Association      | Tara Foods                               |
| Georgia Peanut Commission                 | Texas Peanut Producers Board             |
| Hershey Foods Corporation                 | Tom's Foods, Inc.                        |
| Masterfoods                               | Virginia Peanut Growers Association      |
| National Peanut Board                     | Western Peanut Growers Association, Inc. |
| North Carolina Peanut Growers Association |                                          |

# THIRTY-EIGHTH ANNUAL MEETING AMERICAN PEANUT RESEARCH AND EDUCATION SOCIETY SAVANNAH, GEORGIA JULY 11-14, 2006

## BOARD OF DIRECTORS

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## PROGRAM COMMITTEE

**Albert Culbreath, Chair**

### Local Arrangements

Alex Csinos, Chair  
 Bob Kemerait  
 Eric Prostko  
 Nathan Smith  
 Richard Rudolph  
 Sara Gremillion

Sandy Newell  
 Herb Young  
 Diane Rowland  
 John Beasley  
 Steve L. Brown

### Technical Program

Chris Butts, Chair  
 Tim Brenneman  
 Emily Cantonwine  
 Marshall Lamb

Jay Chapin  
 Wilson Faircloth  
 Eric Prostko

### Spouses' Program

Joanne Prostko, Chair  
 Lou Csinos  
 Cathy Beasley

Mary Harris  
 Pam Kemerait  
 Kim Smith

# Monday, July 10

2:00-6:00 Crops Germplasm Committee..... Scarbrough Ballroom 1-2

# Tuesday, July 11

**APRES Golf Outing**

**8:00 am**

**Southbridge Golf Course**

## Committee, Board, and Other Meetings

|                   |                                                              |                              |
|-------------------|--------------------------------------------------------------|------------------------------|
| 8:00a-12:00       | Seed Summit.....                                             | Scarbrough Ballroom 1-3      |
| 12:00-6:00p       | APRES Registration .....                                     | Mezzanine Registration Booth |
| 1:00-5:00         | Spouses' Hospitality Room .....                              | Savannah Room                |
| 1:00-5:00         | Exhibitor Setup .....                                        | Second Floor Mezzanine       |
| 1:00-2:00         | Associate Editors, <i>Peanut Science</i> .....               | Sloane Room                  |
| 1:00-2:00         | Site Selection Committee .....                               | Verelst Room                 |
| 1:00-2:00         | Fellows Committee .....                                      | Vernon Room                  |
| 1:00-2:00         | Coyt T. Wilson Distinguished Service Award .....             | Percival Room                |
| 1:00-3:00         | Peanut Genomics Initiative.....                              | Plimsoll Room                |
| 2:00-3:00         | Publications and Editorials Committee .....                  | Sloane Room                  |
| 2:00-3:00         | Public Relations Committee .....                             | Verelst Room                 |
| 2:00-3:00         | Bailey Award Committee .....                                 | Vernon Room                  |
| 2:00-3:00         | Dow AgroSciences Awards Committee.....                       | Percival Room                |
| 3:00-4:00         | Nominating Committee .....                                   | Sloane Room                  |
| 3:00-4:00         | Joe Sugg Graduate Student Award Committee .....              | Verelst Room                 |
| 3:00-5:30         | Peanut Quality Committee .....                               | Vernon Room                  |
| 3:00-4:00         | Membership <i>Ad hoc</i> Committee .....                     | Percival Room                |
| 3:30-6:00         | Presentation Loading .....                                   | Westbrook Room               |
| 4:00-5:00         | Grower Advisory Committee .....                              | Sloane Room                  |
| 4:00-5:30         | Program Committee<br>(Local Arrangements and Technical)..... | Verelst Room                 |
| 4:00-5:00         | By Laws <i>Ad hoc</i> Committee .....                        | Percival Room                |
| 4:00-5:00         | Finance Committee .....                                      | Scarbrough Ballroom 3        |
| 7:00p-10:00       | Board of Directors .....                                     | Scarbrough Ballroom 1-2      |
| <b>7:00- 9:00</b> | <b>Ice Cream Social</b> .....                                | <b>Harborside Center</b>     |

# Wednesday, July 12

## Morning

|                  |                                           |                              |
|------------------|-------------------------------------------|------------------------------|
| 8:00-4:00        | APRES Registration .....                  | Mezzanine Registration Booth |
| 8:00-5:00        | Spouses' Hospitality Room .....           | Savannah Room                |
| 8:00-9:30        | General Session.....                      | Regency Ballroom BCDEF       |
| <b>9:30-9:45</b> | <b>Break</b>                              |                              |
| 9:45-10:30       | Poster Session I Setup.....               | Second Floor Mezzanine       |
| 10:00-11:45      | Plant Pathology and Nematology I .....    | Regency Ballroom BC          |
| 10:00-12:00      | Breeding, Biotechnology, and Genetics I . | Regency Ballroom DEF         |
| 9:45-12:30       | Production Technology.....                | Trustees Hall                |
| 10:00-3:30       | Poster Session I (displayed).....         | Second Floor Mezzanine       |
| 10:30-12:00      | Poster Session I (with authors) .....     | Second Floor Mezzanine       |

## Wednesday, July 12 Afternoon and Evening

|                  |                                             |                                                                    |
|------------------|---------------------------------------------|--------------------------------------------------------------------|
| 1:30-4:30        | Joe Sugg Graduate Student Competition ..... | Trustees Hall                                                      |
| <b>3:00-3:15</b> | <b>Break</b>                                |                                                                    |
| 3:30-6:00        | Presentation Loading .....                  | Westbrook Room                                                     |
| <b>6:00-9:00</b> | <b>Dinner</b> .....                         | <b>Regency Ballroom BCDEF</b><br><b>Bayer CropScience and BASF</b> |

## Thursday, July 13

**APRES Fun Run (5K or 1 mile)      6:30 am      Hyatt Regency Lobby**

|                    |                                                        |                              |
|--------------------|--------------------------------------------------------|------------------------------|
| 8:00-12:00         | APRES Registration .....                               | Mezzanine Registration Booth |
| 8:00-9:00          | Poster Session II Setup.....                           | Second Floor Mezzanine       |
| 8:00-12:00         | Spouses' Hospitality Room .....                        | Savannah Room                |
| 8:00-10:15         | Plant Pathology and Nematology II .....                | Regency Ballroom BC          |
| 8:00-10:15         | Breeding, Biotechnology, and Genetics II .....         | Regency Ballroom DEF         |
| 8:15-10:00         | Excellence in Extension Education.....                 | Trustees Hall                |
| 9:00- 3:30         | Poster Session II (displayed).....                     | Second Floor Mezzanine       |
| <b>10:15-10:30</b> | <b>Break</b>                                           |                              |
| 10:30-12:00        | Weed Science .....                                     | Regency Ballroom BC          |
| 10:30-12:15        | Postharvest Handling, Processing and Utilization ..... | Regency Ballroom DEF         |
| 10:30-11:45        | Extension Techniques .....                             | Trustees Hall                |
| 10:30-12:00        | Poster Session II (with authors) .....                 | Second Floor Mezzanine       |
| 1:00-3:30          | Tropical Spiderwort Symposium.....                     | Regency Ballroom BC          |
| 1:00-1:45          | Physiology and Seed Technology .....                   | Regency Ballroom DEF         |
| 2:00-3:30          | Organic Peanut Symposium.....                          | Regency Ballroom DEF         |
| <b>3:30- 3:45</b>  | <b>Break</b> .....                                     |                              |

**Dinner on your own**

## Friday, July 14

|                  |                                                  |                                                         |
|------------------|--------------------------------------------------|---------------------------------------------------------|
| <b>7:00-8:00</b> | <b>Awards Breakfast</b> .....                    | <b>Regency Ballroom CDEF</b><br><b>Dow AgroSciences</b> |
| 8:00-10:00       | APRES Awards Ceremony and Business Meeting ..... | Regency Ballroom CDEF                                   |
| 10:00-12:00      | Peanut CRSP Project.....                         | Westbrook Room                                          |

## Wednesday, July 12 - Morning

### Regency Ballroom BCDEF

- 8:00 Call to Order ..... **Albert Culbreath**  
APRES President-Elect
- 8:05 Welcome Back to Savannah!..... **James L. Butler**  
USDA-ARS (Retired)  
APRES President 1982
- 8:15 A University Administrator's Perspective on Peanuts ..... **J. Scott Angle**  
Dean and Director  
College of Agricultural and Environmental Sciences  
The University of Georgia
- 8:30 NPB George Washington Carver Award Presentation ..... **Jack Brinkley**  
Research Chairman  
National Peanut Board
- 8:35 "Embracing Consumer Evolution: How ..... **Raffaela Marie Fenn**  
Research Fuels and Flavors ..... President and Managing Director  
Changing Tastes" ..... National Peanut Board
- 8:50 APRES – Do we wanna become what we can and ..... **J. Frank McGill**  
ought to be? ..... Brooks Distinguished Professor of Agronomy (Emeritus)  
The University of Georgia  
APRES President 1975
- 9:10 APRES - Preparing for the Future ..... **Pat Phipps**  
APRES President
- 9:25 Announcements..... **Chris Butts**  
Chair, Technical Program  
**Alex Csinos**  
Chair, Local Arrangements

## Morning

### PLANT PATHOLOGY and NEMATOTOLOGY I

#### Regency Ballroom BC

**Moderator: Jay Chapin, Clemson University, Blackville, SC**

- 10:00 (1) Greenhouse Assays of Virginia-Type Breeding Lines for Resistance to *Cylindrocladium* Black Rot and *Sclerotinia* Blight. J.E. HOLLOWELL\* and B.B. SHEW, Dept. of Plant Pathology, Box 7903, N.C. State Univ., Raleigh, NC 27695-7903, T.G. ISLEIB, S.C. COPELAND, and J.B. GRAEBER, Dept. of Crop Science, Box 7629, N.C. State Univ., Raleigh, NC 27695-7629.
- 10:15 (2) Headline 2.09EC Calendar Schedules Compared for the Control of Early Leaf Spot and Southern Stem Rot on Selected Runner Peanut Lines. A.K. HAGAN\*, H.L. CAMPBELL, K.L. BOWEN, Dept. of Entomology and Plant Pathology, Auburn University, AL 36849, and L. WELLS, Wiregrass Research and Extension Center, Headland, AL 36345.
- 10:30 (3) Botrytis Blight of Peanut - Pathogen Fungicide Tolerances and Peanut Cultivar Susceptibility. J.L. STARR\*, T. RAGHVAN, M.A. HENRY, C.M. KENERLEY, Department Plant Pathology and Microbiology, Texas A&M University, College Station, TX 77843, and T.A. WHEELER, Texas Agricultural Experiment Station, Lubbock, TX 79403.
- 10:45 (4) Evaluation of Peanut Cultivars for Resistance to *Rhizoctonia* Limb Rot. T.B. BRENNEMAN\*, A.K. CULBREATH, Dept. of Plant Pathology, The University of Georgia, Tifton, GA 31794, and C.C. HOLBROOK, USDA-ARS, Tifton, GA 31793.
- 11:00 (5) Susceptibility of Virginia- and Runner-Type Cultivars of Peanut to Common Diseases of Peanut in Virginia. P.M. PHIPPS\* and D.E. PARTRIDGE, Tidewater Agricultural Research & Extension Center, Virginia Tech, Suffolk, VA 23437.
- 11:15 (6) Reaction of Peanut Genotypes to Southern Blight in Small Field Plots. H.A. MELOUK<sup>1</sup>\*, W.J. GRICHAR<sup>2</sup> and R. PITTMAN<sup>3</sup>, <sup>1</sup>USDA-ARS, Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK 74078, <sup>2</sup>Texas Agricultural Experiment Station, Beeville, TX 78102, and <sup>3</sup>USDA-ARS, Regional Plant Introduction Station, Griffin, GA 30223.
- 11:30 (7) Peanut Disease and Vigor Evaluations on Four Peanut Varieties Grown in Louisiana. G.B. PADGETT\* and M.A. PURVIS, Northeast Research Station, Macon Ridge Branch, Louisiana State University Agricultural Center, Winnsboro, LA 71295.

## BREEDING, BIOTECHNOLOGY, AND GENETICS I

### Regency Ballroom DEF

**Moderator: Diane Rowland, USDA-ARS, National Peanut Research Laboratory, Dawson, GA**

- 10:00 (8) High Shade Avoidance Response as a Tool for Selection to High Yield. I.S. WALLERSTEIN\*, I. WALLERSTEIN, Department of Ornamental Horticulture, ARO, The Volcani Center, Bet Dagan, 50250 Israel, M.D. BUROW, Texas Agricultural Station, Texas A&M University, Route 3, P.O. Box 219, Lubbock, TX, 79409. J. AYER, Texas Agricultural Station, Texas A&M University, Route 3, P.O. Box 219, Lubbock, TX, 79409, S. KAHN, Department of Agronomy and Natural Resources, ARO, The Volcani Center, Bet Dagan, 50250 Israel.
- 10:15 (9) Relationship among Seed Size Fractions from the Grading Process in the University of Florida Peanut Breeding Program. B.L. TILLMAN\* and D.W. GORBET, The University of Florida, Agronomy Department, NFREC, Marianna, FL, 32446.
- 10:30 (10) Development of High Yielding, TSWV Resistant Isolines With and Without Resistance to the Peanut Root-knot Nematode. C.C. HOLBROOK\*, P. TIMPER, USDA-ARS, Tifton, GA 31793, W.B. DONG, C.K. KVIEN, and A.K. CULBREATH, Univ. of Georgia, Tifton, GA 31793.
- 10:45 (11) Effect of Testing Region, Region of Origin, and their Interaction on Composition and Sensory Traits in the Uniform Peanut Performance Test. T.G. ISLEIB\*, S.R. MILLA, S.C. COPELAND, J.B. GRAEBER, T.H. SANDERS, K.W. HENDRIX and L.O. DEAN.
- 11:00 (12) Yield and Market Quality of Virginia-Type Peanut Cultivars with the Oxalate Oxidase Gene for Resistance to Sclerotinia Blight. D.E. PARTRIDGE\*, P.M. PHIPPS, D.L. COKER, Tidewater Agricultural Research & Extension Center, Virginia Tech, Suffolk, Virginia 23437, and E.A. GRABAU, Department of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, Virginia 24061.
- 11:15 (13) Molecular Characterization of the Core Subset of the U. S. Peanut Germplasm Core Collection using SSR Markers. K.R. KOTTAPALLI, New Mexico State University, Agricultural Science Center, Clovis, NM 88101, G.B. BUROW and J.J. BURKE, USDA-ARS Cropping Systems Research Laboratory, Lubbock, TX 79415, N. PUPPALA, New Mexico State University, Agricultural Science Center, Clovis, NM 88101, and M.D. BUROW\*, Texas Tech University, Department of Plant and Soil Science, Lubbock, TX 79409, and Texas Agricultural Experiment Station, Lubbock, TX 79403.

- 11:30 (14) Breeding for Foliar Disease Resistance in Australia. A. CRUICKSHANK\*, DPI&F, PO Box 23, Kingaroy, QLD 4610, Australia, P. TREVORROW, DPI&F, PO Box 1054, Mareeba, QLD 4880, Australia, and J. TATNELL, DPI&F, PO Box 23, Kingaroy, QLD 4610, Australia.
- 11:45 (15) Genetic and Environmental Effects on Breeding for Early Maturity. M.D. BUROW\*, Texas Agricultural Experiment Station, Lubbock, TX 79403, and Texas Tech University, Department of Plant and Soil Science, Lubbock, TX 79409, Y. LÓPEZ, Texas Agricultural Experiment Station, Lubbock, TX 79403, C.E. SIMPSON, Texas Agricultural Experiment Station, Lubbock, TX 76401, and M.R. BARING, Texas Agricultural Experiment Station, Lubbock, College Station, TX 77843.

## PRODUCTION TECHNOLOGY

### Trustees Hall

**Moderator: Wilson Faircloth, USDA-ARS, National Peanut Research Laboratory, Dawson, GA**

- 9:45 (16) Profit Potential of Double-Cropping a Fall Vegetable Crop with Peanut: A Georgia Example. A. FLANDERS\*, N.B. SMITH, and E.G. FONSAH, Department of Agricultural and Applied Economics, The University of Georgia, Tifton, GA 31793, and M. BEST, Department of Agriculture, Tennessee Tech University, Cookeville, TN 38505.
- 10:00 (17) Does Conservation Tillage Pay? N.B. SMITH\*, C. LACY, and W. SHURLEY, Department of Agricultural and Applied Economics, The University of Georgia, Tifton, GA 31793, T.D. HEWITT, Food and Resource Economics Department, North Florida Research and Education Center, The University of Florida, Marianna, FL 32446, J.P. BEASLEY, Jr., J.A. BALDWIN and E.J. WILLIAMS, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793.
- 10:15 (18) The Role of Insecticides in Reduction of Thrips Injury and Tomato Spotted Wilt Virus in Virginia/North Carolina Peanut. D.A. HERBERT, JR.<sup>1\*</sup>, S. MALONE<sup>1</sup>, R.L. BRANDENBURG<sup>2</sup>, and B.M. ROYALS<sup>2, 1</sup>Tidewater Agricultural Research and Extension Center, Virginia Tech, Suffolk, VA 23437, <sup>2</sup>Department of Entomology, North Carolina State University, Box 7613, Raleigh, NC 27695.
- 10:30 (19) Seasonal Occurrence of Threecornered Alfalfa Hopper and Girdling Injury on Peanut: Effects of Insecticide Treatment Timing. K. RAHMAN, J.W. CHAPIN, and J.S. THOMAS\*, Department of Entomology, Soils, and Plant Sciences, Clemson University, Edisto REC, 64 Research Road, Blackville, SC 29817.

- 10:45 (20) Candidate Cultivars for Organic Peanut Production. W.D. BRANCH\*, Dept. of Crop and Soil Sciences, and A.K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793-0748.
- 11:00 (21) Influence of Application Variables on Efficacy of Boron-Containing Fertilizers Applied to Peanut. D.L. JORDAN\*, S.H. LANCASTER, J.E. LANIER, P.D. JOHNSON, J.B. BEAM, A.C. YORK, and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695 and F.R. WALLS, S. CASTEEL, and C. HUDAK, Department of Agriculture and Consumer Services, Raleigh, NC 27607.
- 11:15 (22) Virginia-Type Peanut Response to Chaperone. J.C. FAIRCLOTH\*, Virginia Tech-TAREC, 6321 Holland Rd. Suffolk, VA, D.L. JORDAN, North Carolina State University, Raleigh, NC 27695, D.L. COKER, Tidewater Agricultural Research & Extension Center, Virginia Tech, Suffolk, Virginia 23437, P.D. JOHNSON, North Carolina State University, Raleigh, NC 27695, G.U. WHITE, and D.N. HORTON, Tidewater Agricultural Research & Extension Center, Virginia Tech, Suffolk, Virginia 23437.
- 11:30 (23) Simulating Peanut Yield Response in Georgia under Different Climate Scenarios. J.O. PAZ\*, G. HOOGENBOOM, A. GARCIA y GARCIA, L.C. GUERRA, Department of Biological and Agricultural Engineering, The University of Georgia, Griffin, GA, 30223-1797, C.W. FRAISSE, and J.W. JONES, Department of Agricultural and Biological Engineering, University of Florida, Gainesville, FL 32611-0570.
- 11:45 (24) Furrow Diking for Improved Water Use Efficiency. R.C. NUTI\*, R.B. SORENSEN, W.H. FAIRCLOTH, and M.C. LAMB, USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842-0509.
- 12:00 (25) Response of Runner Peanut Cultivars to Irrigation Strategies. J.P. BEASLEY, JR.\*, J.E. PAULK, III, and J.E. HOOK, Crop and Soil Sciences Department, The University of Georgia, Tifton, GA 31793-1209.
- 12:15 (26) Temperature and pH Effects on *Bradyrhizobium* Survival for Peanut. M. RADTKE, Texas Tech Univ., Lubbock, TX 79410, C.L. TROSTLE\*, Texas Cooperative Extension, Texas A&M Univ., Lubbock, TX 79403, and M. SAN FRANCISCO, Texas Tech Univ., Lubbock, TX 79410.

# POSTER SESSION I

## Second Floor Mezzanine

Coordinator: Chris Butts, USDA-ARS, National Peanut Research Laboratory, Dawson, GA

**Posters will be displayed from 10:00 am – 3:30 pm on Wednesday**

**Authors will be present with papers from 10:30 am to 12:00 noon on Wednesday, July 12.**

- (27) Determination of Mega-Environments for Peanut Breeding Using the Modeling Approach. W. PUTTO\*, A. PATANOTHAI, S. JOGLOY, K. PANNANGPETCH, Department of Agronomy, Faculty of Agriculture, Khon Kaen University, Khon Kaen, Thailand and G. HOOGENBOOM, Department of Biological and Agricultural Engineering, The University of Georgia, Griffin, GA, 30223, USA.
- (28) First Report of Peanut Mottle Virus (PMV) in Rhizoma Peanut. A.L. MAAS\*, USDA-ARS, Coastal Plain Exp. Sta., Tifton, GA 31794, C. NISCHWITZ, and A.K. CULBREATH, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793-0748.
- (29) Reduction in Data Collection for Determination of Cultivar Coefficients for Breeding Applications. J. ANOTHAI\*, A. PATANOTHAI, K. PANNANGPETCH, S. JOGLOY, Department of Agronomy, Faculty of Agriculture, Khon Kaen University, Khon Kaen 40002, Thailand, G. HOOGENBOOM, Department of Biological and Agricultural Engineering, The University of Georgia Griffin, GA 30223-1797, and K.J. BOOTE, Agronomy Department, University of Florida, Gainesville, FL 32611-0500.
- (30) Fewer Sprays Result In Greater Profit: The Economic Benefits Of Using The University Of Georgia's Fungal Risk Index. F.J. CONNELLY\*<sup>1</sup>, R.C. KEMERAIT<sup>2</sup>, J.E. WOODWARD<sup>2</sup>, and T.B. BRENNEMAN<sup>2</sup>, <sup>1</sup>Georgia Cooperative Extension Service, University of Georgia, Nashville, GA 31639 and <sup>2</sup>Department of Plant Pathology, University of Georgia, Tifton, GA 31793.
- (31) Identification of Peanut Pods with Three or More Kernels by Machine Vision and Neural Network. Y. WANG, W. YANG\* and L.T. WALKER, Department of Food and Animal Sciences, Alabama A&M University, Normal, AL 35762.

- (32) Improving Storage Oxidative Stability of Roasted Peanuts using Edible Coatings in Combination with Power Ultrasound. P. WAMBURA\* and W. YANG, Department of Food and Animal Sciences, Alabama A&M University, Normal, AL 35762.
- (33) Rodent Damage on Surface Drip Irrigation Tubing in Peanut. R.B. SORENSEN\*, R.C. NUTI, and M.C. LAMB, USDA-ARS-National Peanut Research Laboratory, P.O. Box 509, 1011 Forrester Dr. SE, Dawson, GA 39842.
- (34) Influence of Digging Date and Fungicide Program on Canopy Defoliation and Pod Yield of Peanut. D.S. CARLEY, D.L. JORDAN\*, B.B. SHEW, T.B. SUTTON, R.L. BRANDENBURG, and M.G. BURTON, North Carolina State University, Raleigh, NC 27695, and C.L. DHARMASRI, Syngenta Crop Protection, Inc., Greensboro, NC 27419.
- (35) Responses to Water Deficit during Early Plant Growth of Peanut Cultivars with Different Plant Types. D. PUANGBUT, S. JOGLOY\*, N. VORASOOT, C. AKKASAENG and A. PATANOTHAI. Department of Agronomy, Faculty of Agriculture, Khon Kaen University, Khon Kaen, Thailand, 40002.
- (36) Effect of Growth Regulators on Regeneration of Peanut 'Florman INTA'. P.C. FAUSTINELLI\*, R.W. RACCA, D.J. COLLINO, A. DE L. AVILA, Institute of Phytopathology and Plant Physiology (IFFIVE)-INTA. Córdoba, Argentina, and P. OZIAS-AKINS, Department of Horticulture, The University of Georgia, Tifton, GA 31793-0748.
- (37) Response of Valencia Peanut to In-Furrow Application of Capsicum Oleoresin and Seed Treatment with Biofungicides. S. SANOGO\*, Department of Entomology, Plant Pathology, and Weed Science, New Mexico State University, Las Cruces, NM 88003, and N. PUPPALA, Clovis Agricultural Science Center, Clovis, NM 88101.
- (38) Simulating Water Requirements for Peanut in Georgia Using a Decision Support System. A. GARCIA y GARCIA, L.C. GUERRA, J.O. PAZ\*, and G. HOOGENBOOM, Department of Biological and Agricultural Engineering, The University of Georgia, Griffin, GA 30223-1797.
- (39) Impact of Winter Cover Crops and Tillage on Insect, Disease and Nematode Pest Populations and Yield of Peanuts. J.R. WEEKS\*, Entomology/Plant Pathology Department, Auburn University, Wiregrass Research and Extension Center, Headland, Alabama 36345, H.L. CAMPBELL, Entomology/Plant Pathology Department, Auburn University, Auburn University, Alabama 36849, B.E. GAMBLE, Alabama Agricultural Experiment Station, Auburn University, Wiregrass Research and Extension Center, Headland, Alabama 36345.

- (40) Management of Peanut Diseases in Fields with Low-to-Moderate Disease Risk: A Three Year Evaluation of Reduced Fungicide Programs in Lanier County Georgia. E.L. ANDREWS\*, University of Georgia, Cooperative Extension Service, Lakeland, GA, 31635, M.O. FOURAKERS, University of Georgia, Cooperative Extension Service, Valdosta, GA, 31603, J.E. WOODWARD, R.C. KEMERAIT, Jr., and T.B. BRENNEMAN, University of Georgia, Department of Plant Pathology, Tifton, GA, 31793.
- (41) Diagnosing Peanut Diseases: An Overview of the UGA Plant Disease Clinic. J.H. BROCK\*, R.C. KEMERAIT, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793.

## JOE SUGG GRADUATE STUDENT COMPETITION

### Trustees Hall

**Moderator: Bob Kemeraït, University of Georgia, Tifton, GA**

- 1:30 (42) Influence of Bahiagrass Rotations on TSW, Leaf Spot, and Southern Stem Rot of Peanut. F.K. TSIGBEY\*, J.J. MAROIS, D.L. WRIGHT, T.W. KATSAIRO, and P. WIATRAK, University of Florida, North Florida Research and Education Center, Quincy, FL 32351.
- 1:45 (43) Variation among Peanut Genotypes in Susceptibility to Thrips Vectored Tomato Spotted Wilt Virus. S.D. RINIKER\*, R. BRANDENBURG, and G. KENNEDY, Department of Entomology, North Carolina State University, Raleigh, NC 27695-7613.
- 2:00 (44) Evaluation of Suspect ALS Resistance of Palmer Amaranth. A.M. WISE\*, E.P. PROSTKO, W.K. VENCILL, and T.L. GREY, Crop and Soil Science Department, The University of Georgia, Tifton, GA 31794.
- 2:15 (45) Weed Control Efficacy and Crop Tolerance to Valor applied to Peanut at Fumigation. N. O'BERRY\*, J. FAIRCLOTH, Crop, Soil, and Environmental Sciences Department, Tidewater Agricultural Research and Extension Center, Virginia Tech, Virginia Tech, Suffolk, VA 23437, and D. JORDAN, Dept of Crop Science, North Carolina State University, Box 7620, Raleigh, NC 27695.
- 2:30 (46) Peanut Tolerance to Post-Emergence Herbicides that have Potential for Controlling Eastern Black Nightshade. J.M. WEEKS, JR.\*, J.C. FAIRCLOTH, D.N. HORTON and G.U. WHITE, Virginia Polytechnic Institute and State University, Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.

- 2:45 (47) Resistance in Peanut (*Arachis hypogaea* L.) Cultivars and Breeding Lines to Three Root-Knot Nematode Species. W. DONG<sup>1\*</sup>, C.C. HOLBROOK<sup>2</sup>, P. TIMPER<sup>2</sup>, T. BRENNEMAN<sup>1</sup>, and P. OZIAS-AKINS<sup>3</sup>, <sup>1</sup>Department of Plant Pathology, The University of Georgia, Tifton, GA 31793, <sup>2</sup>USDA-ARS, Coastal Plain Exp. Stn. Tifton, GA 31793, <sup>3</sup>Department of Horticulture, The University of Georgia, Tifton, GA 31793.
- 3:00 **BREAK**
- 3:15 (48) Critical Period of Grass Versus Broadleaf Weed Interference in Peanut. W.J. EVERMAN\*, S.B. CLEWIS, W.E. THOMAS, and J.W. WILCUT, Crop Science Department, North Carolina State University, Raleigh, NC 27695.
- 3:30 (49) Physiological Behavior of Foliar Applied Diclosulam in Peanuts, Pitted Morningglory, and Sicklepod. S.B. CLEWIS\*, W.J. EVERMAN, and J.W. WILCUT, Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620.
- 3:45 (50) Early Season Disease Progress of Early Leaf Spot in the Bolivian Cultivar Bayo Grande and Related Progeny in the Southeastern United States. S.K. GREMILLION\*, A.K. CULBREATH, J.W. TODD, the University of Georgia, Coastal Plain Expt. Stn., Tifton, GA 31793, and R. PITTMAN, USDA-ARS, Georgia Expt. Stn., Griffin, GA.
- 4:00 (51) Fruity Fermented Off-flavor Distribution in Samples from Large Peanut Lots. J.L. GREENE\*, T.H. SANDERS, and M.A. DRAKE, USDA-ARS-MQHRU, Department of Food Science, North Carolina State University, Raleigh, NC 27695.
- 4:15 (52) Poor Field Emergence of Late-maturing Peanut Cultivars. B.R. MORTON\*, B.L. TILLMAN, D.W. GORBET, and K.J. BOOTE, Department of Agronomy, University of Florida, Gainesville, FL 32605.

## PLANT PATHOLOGY and NEMATOTOLOGY II

### Regency Ballroom BC

Moderator: Tim Brenneman, University of Georgia, Tifton, GA

- 8:00 (53) Pearl Millet as a Rotation Crop for Reducing Nematodes and Soil-Borne Diseases in Peanut. P. TIMPER\*, USDA ARS, Tifton, GA 31793, and T.B. BRENNEMAN, Department of Plant, University of Georgia, Tifton, GA 31793, and W.W. HANNA, Department of Crop and Soil Science, University of Georgia, Tifton, GA 31793.

- 8:15 (54) Effects of Formulation and Surfactant on Control of Early Leaf Spot of Peanut with Tebuconazole. J.P. DAMICONE\*, Dept. of Entomology and Plant Pathology, Oklahoma State University, and H.A. MELOUK, USDA/ARS Stillwater, OK 74078-3033.
- 8:30 (55) Spatial Patterns of Disease Incidence with *Sclerotinia minor* in the Initial Year of Infestation. T.A. WHEELER\*, Texas Agricultural Station, Lubbock, TX 79403, M.A. HENRY, and C.M. KENERLEY, Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX 77843-2132.
- 8:45 (56) Destruction of Sclerotia of *Sclerotinia minor* Using Sodium Hypochlorite. J.N. WILSON\*, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409, and T.A. WHEELER, Texas Agricultural Experiment Station, Lubbock, TX 79403.
- 9:00 (57) Evidence of Reduced Sensitivity to Tebuconazole in the Peanut Leaf Spot Pathogens. K.L. STEVENSON\* and A.K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793-0748.
- 9:15 (58) CRSP UFL52: A Model to Improve Peanut Disease Management Among Amerindians in Guyana. R.C. KEMERAIT\*, J.L. SHERWOOD and D. WILSON, Dept. of Plant Pathology, The University of Georgia, G. MACDONALD, Agronomy Department, The University of Florida, S.L. BROWN, Entomology Dept., The University of Georgia, G. HARRIS, Dept. of Crop and Soil Sciences, The University of Georgia, E.J. WILLIAMS, Dept. of Biological and Agricultural Engineering, The University of Georgia, J. WILLIAMS, Director, Peanut CRSP Program, The University of Georgia, J. DAMICONE, Dept. of Plant Pathology, Oklahoma State University, J. LA GRA, C. LYE, R. GILBERT, W. TONEY, and J. ABRAHAM, The Beacon Foundation, Guyana.
- 9:30 (59) PROVOST 433 SC for the Control of Foliar and Soil-borne Diseases in Peanuts. G.H. MUSSON\*, J.R. BLOOMBERG, R.A. MYERS, and R. RUDOLPH, Bayer CropScience, Research Triangle Park, NC 27709.
- 9:45 (60) New Developments in North Carolina Peanut Disease Advisories. B.B. SHEW\*, J.E. HOLLOWELL, Department of Plant Pathology, North Carolina State University, Raleigh, NC 27695, M. BROOKS, R. BOYLES, State Climate Office of North Carolina, North Carolina State University, Raleigh, NC 27695, and D.L. JORDAN, Department of Crop Science, North Carolina State University, Raleigh, NC 27695.
- 10:00 (61) Late Leaf Spot Resistance to Tebuconazole (Folicur): Responding to Control Failures, and Implications for Peanut Disease Management Programs in South Carolina. J.W. CHAPIN\*, and J.S. THOMAS, Department of Entomology, Soils, and Plant Sciences, Clemson University, Edisto REC, 64 Research Road, Blackville, SC 29817.

## BREEDING BIOTECHNOLOGY and GENETICS II

### Regency Ballroom DEF

**Moderator: Corley Holbrook, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA**

- 8:00 (62) Storage Protein Profiles of Spanish-bunch and Runner Market Type Peanuts and Identification of a New Potential Allergen Protein. B.Z. GUO\*, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793, X.Q. LIANG, Guangdong Academy of Agricultural Sciences, Crops Research Institute, Guangzhou, Guangdong 510640, China, S.J. MALEKI, USDA-ARS, Southern Regional Research Center, New Orleans, LA 70779, C.C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.
- 8:15 (63) Comparison of Yield, Grade and Disease Resistance of Interspecific Hybrid Derivatives and Commercial Peanut Cultivars in the Virginia-Carolina Area. S.P. TALLURY\*, T.G. ISLEIB, S.R. MILLA-LEWIS, J.E. HOLLOWELL<sup>1</sup> and H.T. STALKER, Dept. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7629, <sup>1</sup>Dept. of Plant Pathology, NCSU, Raleigh, NC 27695.
- 8:30 (64) Tracking the Inheritance of a Molecular Marker Associated with Resistance to Sclerotinia Blight in Peanut. K.D. CHENAULT\* and H.A. MELOUK, USDA-ARS, Wheat, Peanut and other Field Crops Research Unit, 1301 N. Western, Stillwater, OK 74074.
- 8:45 (65) Environmental Effects on the Genetic Expression of Resistance to Sclerotinia Blight, Leafspot, Tomato Spotted Wilt Virus and Root-Knot Nematodes in Peanut, *Arachis hypogaea* L. C.E. SIMPSON\*, M.D. BUROW, M.R. BARING, and J.L. STARR, Texas Agricultural Experiment Station, Stephenville, TX 76401 & Lubbock, TX 79403, Soil & Crop Sci. Dept., Texas A&M Univ., College Station, TX 77834, and Plant Path. & Microbiol. Dept., Texas A&M Univ., College Sta., TX 77834.
- 9:00 (66) AFLP Markers associated with Reduced Aflatoxin Accumulation in Interspecific Peanut Lines. S.R. MILLA-LEWIS\*, J.E. SWIFT, T.G. ISLEIB, S.P. TALLURY, H.T. STALKER, Dept. of Crop Science, Box 7629, N.C. State Univ., Raleigh, NC 27695.
- 9:15 (67) Isolation and Diversity Analysis of NBS-LRR Resistance Gene Homologs (RGHs) from Peanut. Y. WANG<sup>1</sup>, G.H. HE<sup>2\*</sup>, B. ROSEN<sup>3</sup>, S. STEINER<sup>4</sup>, D. COOK<sup>3</sup>, <sup>1</sup>School of Life Sciences, Anhui University, Anhui, China, <sup>2</sup>Department of Agricultural Sciences, Tuskegee University, AL 36088, <sup>3</sup>Department of Plant Pathology, University of California, Davis, CA 95616, and <sup>4</sup>Department of Chemistry, Bluffton University, Bluffton, OH 45817.

- 9:30 (68) WITHDRAWN
- 9:45 (69) Use of 2n Pollen in Generating Interspecific Derivatives of Groundnut. N. MALLIKARJUNA\* and D. HOISINGTON, International Crops Research Institute for Semi arid Tropics (ICRISAT), Patancheru, 502 324, Andhra Pradesh, India.
- 10:00 (70) Potential Utilization of Peanut for Molecular Genetic Studies of Plant Regeneration. K. MATAND\*, Center for Biotechnology Research and Education, Department of Agricultural Research and Extension, Langston University, Langston, OK 73050, and C.S. PRAKASH, Center for Plant Biotechnology Research, Department of Plant and Soil Sciences, Tuskegee University, Tuskegee, AL 36088.

## **EXCELLENCE IN EXTENSION EDUCATION: SPONSORED BY BAYER**

### **Trustees Hall**

**Moderators: Herb Young, Bayer CropSciences, Tifton, GA and  
Eric Prostko, University of Georgia, Tifton, GA**

- 8:15 (71) Response of Virginia Market Type Peanut to Gypsum. L.W. SMITH<sup>1\*</sup>, D.L. JORDAN<sup>2</sup>, J.F. SPEARS<sup>2</sup>, P.D. JOHNSON<sup>2</sup>, B.T. PENNY<sup>2</sup>, and S. WINSLOW<sup>3</sup>, <sup>1</sup>North Carolina Cooperative Extension Service, Hertford, NC 27944, <sup>2</sup>North Carolina State University, Raleigh, NC 27695, <sup>3</sup>Tidewater Agronomics, Inc. Belvedere, NC 27919.
- 8:30 (72) Response of Peanut to In-Furrow Inoculants Applied Alone and with Commercially Available Agrichemicals. P. SMITH<sup>1\*</sup>, D.L. JORDAN<sup>2</sup>, and P.D. JOHNSON<sup>2</sup>, <sup>1</sup>North Carolina Cooperative Extension Service, Gatesville, NC 27938, <sup>2</sup>North Carolina State University, Raleigh, NC 27695.
- 8:45 (73) Farming Alternatives in the Face of Reduced Peanut Acreage in Traditional Peanut-Producing Counties in North Carolina. M. WILLIAMS<sup>1\*</sup> and D. JORDAN<sup>2</sup>, <sup>1</sup>North Carolina Cooperative Extension Service, Edenton, NC 27932, <sup>2</sup>North Carolina State University, Raleigh, NC 27695.
- 9:00 (74) Evaluation of Certain Fungicides & Fungicide Combinations on the Incidence of Peanut Disease. P.D. WIGLEY<sup>1\*</sup> and R.C. KEMERAIT<sup>2</sup>, <sup>1</sup>Calhoun County Extension, The University of Georgia, Morgan, GA 39866, <sup>2</sup>Department of Plant Pathology, The University of Georgia, Tifton, GA 31793-0748.

- 9:15 (75) Comparison of Peanut Cultivars When Planted in Twin or Single Row Patterns. D.E. MCGRIF<sup>1</sup>\*, M.D. VON WALDNER<sup>2</sup>, and S.L. BROWN<sup>3</sup>, <sup>1</sup>The University of Georgia Extension, Douglas, GA 31533, <sup>2</sup>The University of Georgia Extension, Pearson, GA 31642, <sup>3</sup>Department of Entomology, The University of Georgia, Tifton, GA 31793.
- 9:30 (76) Developing Extension Recommendations for Runner Market Type Peanut Production in Virginia. W. ALEXANDER\*, Southampton County Extension, Virginia Tech, Courtland, VA 23837, and J. FAIRCLOTH, Tidewater Agricultural Research and Extension Center, Virginia Tech, Suffolk, VA 23437.
- 9:45 (77) Peanut Nematode Survey in Columbia County, Florida 2004 - Results and Follow-Up. W.D. THOMAS\*, University of Florida Columbia County Cooperative Extension Service, Lake City, Florida 32025, J.R. RICH, University of Florida North, Florida Research and Education Center, Quincy, Florida 32351 and M. BARBER, University of Florida, North Florida Research and Education Center, Quincy, Florida 32351.

## WEED SCIENCE

### Regency Ballroom BC

**Moderator: Russell Nuti, USDA-ARS, National Peanut Research Laboratory, Dawson, GA**

- 10:30 (78) Influence of Herbicides on Peanut Yield, Grade, and Seed Quality. W.H. FAIRCLOTH\*, USDA/ARS, National Peanut Research Laboratory, Dawson, GA 39842, and E.P. PROSTKO, University of Georgia, Tifton, GA 31793.
- 10:45 (79) Influence of Application Variables on Peanut and Weed Response to Diclosulam (Strongarm) Applied Postemergence. S.H. LANCASTER, D.L. JORDAN\*, J.B. BEAM, J.E. LANIER, and P.D. JOHNSON, North Carolina State University, Raleigh, NC 27695.
- 11:00 (80) Herbicides for Horse Purslane (*Trianthema portulacastrum* L.) Control in Peanut. W.J. GRICHAR\*, Texas Agricultural Experiment Station, Beeville, TX 78102-9410.
- 11:15 (81) Peanut Response and Weed Control with Cobra. P.A. DOTRAY\*, Texas Tech University, Texas Agricultural Experiment Station, and Texas Cooperative Extension, Lubbock, W.J. GRICHAR, Texas Agricultural Experiment Station, Beeville, TX, T.A. BAUGHMAN, Texas A&M University Agricultural Research and Extension Center, Vernon, E.P. PROSTKO, The University of Georgia, Tifton, and L.V. GILBERT, Texas Agricultural Experiment Station, Lubbock.

- 11:30 (82) Soil and Residual Herbicide Affect on Peanut (*Arachis hypogaea*) Seedling Development. T.L. GREY\*, Crop and Soil Science Department, University of Georgia, P.O. Box 748, 115 Coastal Way, Tifton, GA 31793, P.A. DOTRAY, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409-2122, and W.J. GRICHAR, Texas Agricultural Experiment Station, 3507 Hwy 59E, Beeville, TX78102-9410.
- 11:45 (83) Occurrence of Weeds and Their Management Effects on Groundnuts (*Arachis hypogaea* L.) in the Savannah Ecology of Ghana. I.K. DZOMEKU<sup>\*1</sup>, M. ABUDULAI<sup>2</sup>, R.L. BRANDENBURG, and D.L. JORDAN<sup>3</sup>, <sup>1</sup>Department of Agronomy, University for Development Studies, P. O. Box TL 1882, Tamale, <sup>2</sup>CSIR-Savanna Agricultural Research Institute, P. O. Box 52, Tamale, <sup>3</sup>North Carolina State University, Raleigh NC 27695, USA.

## POST HARVEST HANDLING, PROCESSING AND UTILIZATION

### Regency Ballroom DEF

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

- 10:30 (84) Effects of Weed, Disease, and Insect Control Measures on Sensory Quality of Peanuts. H.E. PATTEE<sup>\*1</sup>, T.G. ISLEIB<sup>2</sup>, T.H. SANDERS<sup>3</sup>, A.K. CULBREATH<sup>4</sup>, D.L. JORDAN<sup>2</sup>, M.C. LAMB<sup>5</sup>, and B.B. SHEW<sup>6</sup>, <sup>1</sup>Dep. of Agric. and Bio. Engineering, N.C. State Univ., Raleigh, NC 27695-7625, <sup>2</sup>Dep. of Crop Science, N.C. State Univ., Raleigh, NC 27695-7620, <sup>3</sup>USDA-ARS Market Quality and Handling Research Unit, N.C. State Univ., Raleigh, NC 27695-7624, <sup>4</sup>Univ. of Georgia, Coastal Plain Expt. Station, Tifton, GA 31793-0748, <sup>5</sup>USDA-ARS Nat. Peanut Res. Lab., Dawson, GA 39842-0509, <sup>6</sup>Dep. of Plant Pathology, N.C. State Univ., Raleigh, NC 27695-7903.
- 10:45 (85) Uncertainty Associated with Sampling Peanuts to Determine Fruity-Fermented Off Flavor. T.B. WHITAKER\*, T.H. SANDERS, A.B. SLATE, J.L. GREENE, and K. HENDRIX, U.S. Department of Agriculture, Agricultural Research Service, Box 7625, N.C. State University, Raleigh, NC, 27695-7625.
- 11:00 (86) WITHDRAWN
- 11:15 (87) Identification of Antioxidant Compounds in Peanut Skins and Roots. K.A. REED<sup>1</sup>, S.F. O'KEEFE<sup>1</sup>, R. O'MALLEY<sup>2</sup>, R.W. MOZINGO<sup>3</sup>, and D.W. GORBET<sup>4</sup>, <sup>1</sup>Food Science & Technology Department, Virginia Polytechnic Institute & State University, Blacksburg, VA 24061, <sup>2</sup>Department of Chemistry, University of South Florida, Tampa, FL 33620, <sup>3</sup>Tidewater AREC, Suffolk, VA 23437, <sup>4</sup>IFAS, Marriana, FL 32446.

- 11:30 (88) Phenolic Compounds in Peanut Plant Parts. L.L. DEAN\*, J.P. DAVIS, and T.H. SANDERS, USDA-ARS, Market Quality and Handling Research Unit, 220 Schaub Hall, North Carolina State University, Raleigh, NC 27695-7624.
- 11:45 (89) Development of Hypoallergenic Peanut Products. M. AHMEDNA<sup>1\*</sup>, J. YU<sup>1</sup>, I. GOKTEPE<sup>1</sup>, and S. MALEKI<sup>2</sup>, <sup>1</sup>Food Science and Nutrition, Department of Family and Consumer Sciences, North Carolina A&T State University, Greensboro, NC 27411, <sup>2</sup>USDA-ARS Southern Regional Research Center, New Orleans, LA 70124.
- 12:00 (90) Tented Versus Inverted Digging Methods for Two Peanut Cultivars. J.A. BALDWIN\*, Agronomy Department, The University of Florida, Gainesville FL 32611-0220, and E.J. WILLIAMS, Biological and Agricultural Engineering Department, The University of Georgia, Tifton, Ga. 31793-1209.
- 12:15 (129) Rheological and density characterization of peanut oils for biodiesel and other applications. J.P. DAVIS, L.L. DEAN, USDA-ARS, Raleigh, NC; C.C. HOLBROOK, USDA-ARS, Tifton, GA; W.H. FAIRCLOTH USDA-ARS, Dawson, GA; and T.H. SANDERS, USDA-ARS, Raleigh, NC.

## EXTENSION TECHNIQUES

### Trustees Hall

**Moderator: David Jordan, North Carolina State University, Raleigh, NC**

- 10:30 (91) Peanut Production in Mississippi. M.S. HOWELL\*, Mississippi State University Extension Service, Collins, MS 39428.
- 10:45 (92) Making the Research/Extension Interface Work in the Virginia-Carolina Region of the U.S. Peanut Belt. F.M. SHOKES\*, J.C. FAIRCLOTH, D.A. HERBERT, P.M. PHIPPS, and D.L. COKER, Virginia Tech, Tidewater Agricultural Research and Extension Center, Suffolk, VA 23437.
- 11:00 (93) On-farm Evaluations of the University of Georgia Fungal Disease Risk Index. J.E. WOODWARD\*, T.B. BRENNEMAN, R.C. KEMERAIT, A.K. CULBREATH, Department of Plant Pathology, University of Georgia, Tifton, GA 31793, N.B. SMITH, Department of Agricultural and Applied Economics, University of Georgia, Tifton, GA, 31793.
- 11:15 (94) Efficacy of Optimize LIFTM and its Growth Promotion Characteristics on Peanut (*Arachis hypogaea* L.). J. HANSON\*, R. OSBURN, S. SMITH, and R. HENNING, Nitragin, Inc. Milwaukee, WI 53209.

- 11:30 (95) Weed Science in the Rupununi, Guyana: Challenges and Pitfalls. G.E. MACDONALD\*, Agronomy Department, The University of Florida, Gainesville, FL 32611-0300, R.C. KEMERAIT, G.H. HARRIS, S.L. BROWN, and E.J. WILLIAMS, Depts. of Plant Pathology, Crop and Soil Science, Entomology and Agricultural and Biological Engineering, The University of Georgia, Tifton, GA 31793-0748.

## POSTER SESSION II

**Posters will be displayed from 9:00 am – 3:30 pm on Thursday.**

**Authors will be present with papers from 10:30 am to 12:00 noon Thursday, July 13.**

- (96) Peanut Seed Transcriptome: Construction of Six Peanut Seed cDNA Libraries from Two Peanut Cultivars. H.P. CHEN\*, University of Georgia, Tifton, GA 31793, P. DANG, USDA ARS, U.S. Horticultural Research Laboratory, Ft. Pierce, FL 34945, C.C. HOLBROOK, USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793, C. KVIEN, University of Georgia, Tifton, GA 31793, B.Z. GUO, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793.
- (97) Yield Response and Disease Susceptibility of Commercial Runner Peanut Cultivars in Southwest Alabama. H.L. CAMPBELL, A.K. HAGAN\*, J.R. WEEKS, K.L. BOWEN, Dept of Entomology and Plant Pathology, Auburn University, AL 36849, M. PEGUES, Gulf Coast Research and Extension Center, Fairhope, AL 36532.
- (98) Effect of Water Stress on Nitrogen Fixation in Peanut Cultivars with Different Drought Resistant Levels. S. PIMRATCH\*, A. PATANOTHAI, N. VORASOOT, B. TOOMSAN, S. JOGLOY, Department of Agronomy, Faculty of Agriculture, Khon Kaen University, Khon Kaen, Thailand, 40002, and C.C. HOLBROOK, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793-0748.
- (99) Examining Genetic Diversity in the Peanut Mini Core and its Wild Relatives. N.A. BARKLEY\*<sup>1</sup>, R.E. DEAN<sup>1</sup>, R.N. PITTMAN<sup>1</sup>, M.L. WANG<sup>1</sup>, C.C. HOLBROOK<sup>2</sup>, <sup>1</sup>USDA-ARS Plant Genetic Resources Conservation Unit, Griffin, GA. 30223 and <sup>2</sup>USDA-ARS Georgia Coastal Plain Experiment Station, Tifton, GA. 31793.

- (100) Selecting for Nematode Resistance and High Oleic Acid Content in Florida Peanut Breeding Lines. T.S.N. VARMA\*, M. GALLO, J.C. SEIB, Agronomy Department, The University of Florida, Gainesville, FL 32611-0300, D.W. DICKSON, Entomology and Nematology Department, The University of Florida, Gainesville, FL 32611-0620, B. TILLMAN and D.W. GORBET, Agronomy Department, The University of Florida, North Florida Research and Education Center, Marianna, FL 32446-7906.
- (101) Reproductive Responses to Water Stress of Peanut Lines with differences in Plant Types and Degrees of Drought Resistance. P. SONGSRI\*, S. JOGLOY, N. VORASOOT, C. AKKASAENG, A. PATANOTHAI, Department of Agronomy, Faculty of Agriculture, Khon Kaen University, Muang, Khon Kaen, 40002, Thailand; and C.C. HOLBROOK, USDA-ARS, Tifton, GA 31793-0748.
- (102) Comparison of Management Strategies Associated with Runner, Spanish, and Virginia Market Types Grown in North Carolina. B.L. ROBINSON\*, D.L. JORDAN, G.G. WILKERSON, B.B. SHEW, and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695.
- (103) Changes in Sucrose and Free Glutamate During Roasting of Seeds Grown in Different Environments. D.A. SMYTH\*, C.I. BENSLEY, Global Technology & Quality, Kraft Foods EHTC-103, 200 DeForest Ave., East Hanover, NJ 07936.
- (104) Validation of Agricultural Practices of the Technological Package for Peanut Production in Southern Mexico. S. SANCHEZ-DOMINGUEZ\* and U. SANCHEZ-NIETO. Depto. de Fitotecnia, Universidad Autonoma Chapingo, Chapingo Mex. 56230.
- (105) Four Year Evaluation Study of Certain Peanut Varieties for Economic Disease Management Strategies. T.B. TANKERSLEY\*, Tift County Extension Coordinator, Cooperative Extension, The University of Georgia, Tifton, Georgia, 31793, T.B. BRENNEMAN, R.C. KEMERAIT, J. E. WOODWARD, The University of Georgia, Department of Plant Pathology, Tifton, Georgia 31793, J.P. BEASLEY, JR. and J.A. BALDWIN, The University of Georgia, Department of Crop & Soil Science, Tifton, Georgia, 31793.
- (106) Cultivar Response to Standard and Reduced Fungicide Programs in Fields with No History of Peanut Production. J.R. CLARK\*, University of Georgia, Cooperative Extension Service, Baxley, GA, 31515, J.E. WOODWARD, T.B. BRENNEMAN, R.C. KEMERAIT, A.K. CULBREATH, Dept. of Plant Pathology, University of Georgia, Tifton, GA 31793, N.B. SMITH, Dept. of Agricultural and Applied Economics, University of Georgia, Tifton, GA, 31793.
- (107) Water Stress Induced Differential Gene Expression in Peanut. H.K.N. VASANTHAIAH\*, R. KATAM and S.M. BASHA, Center for Viticulture and Small Fruit Research, Florida A&M University, Tallahassee, FL 32317-7900.

- (108) Differences in Leaf Protein Expression Among Peanut Genotypes in Response to Water Stress. R. KATAM\*, H.K.N. VASANTHAIAH, and S.M. BASHA, Center for Viticulture and Small Fruit Research, Florida A&M University, Tallahassee, FL 32317.
- (109) Biochemical and Physiological Mechanisms of TSWV-Elicited Desistance of Peanut Plants. X. NI, and C. HOLBROOK\*, Crop Genetics and Breeding Research Unit, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793-0748, and K. DA, Crop and Soil Sciences, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793-0748.
- (130) The Effect of Conventional versus Sandwich Digging on Yield and Quality in Texas Peanut. T.A. BAUGHMAN\*, Texas A&M Research & Extension Center, Vernon, TX 76384; M.D. Franke and K. Franke, J. Leek Associates, Brownfield, TX 79316.

## SYMPOSIUM

### TROPICAL SPIDERWORT: A NEW TROUBLESOME EXOTIC-INVASIVE WEED IN PEANUT

#### Regency Ballroom BC

**Moderator: Ted Webster, USDA-ARS, Coastal Plain Experiment Station,  
Tifton, GA**

- 1:00 (110) Tropical Spiderwort - An Introduction. T.M. WEBSTER\*, USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793.
- 1:15 (111) An Overview of Tropical Spiderwort Infestation and Spread in Grady County, Georgia. J.T. FLANDERS<sup>1</sup>\*, E.P. PROSTKO<sup>2</sup>, A.S. CULPEPPER<sup>2</sup>, and T.M. WEBSTER<sup>3</sup>, <sup>1</sup>Grady County Extension, The University of Georgia, Cairo, GA 39828, <sup>2</sup>The University of Georgia, Tifton, GA 31793, and <sup>3</sup>USDA-ARS, Tifton, GA 31793.
- 1:30 (112) Critical Period of Tropical Spiderwort (*Commelina benghalensis*) Control in Peanut. W.H. FAIRCLOTH<sup>1</sup>\*, T.M. WEBSTER<sup>1</sup>, T.L. GREY<sup>2</sup>, J.T. FLANDERS<sup>3</sup>, and E.P. PROSTKO<sup>2</sup>, <sup>1</sup>USDA/ARS, Dawson and Tifton, <sup>2</sup>University of Georgia, Tifton, GA, <sup>3</sup>University of Georgia, Cairo, GA.
- 1:45 (113) Impact of Tillage and Herbicides on Tropical Spiderwort. B.J. BRECKE\*, K.C. HUTTO, and D.O. STEPHENSON, IV, University of Florida, West Florida Research and Education Center, Jay, FL 32565.
- 2:00 (114) Tropical Spiderwort: A Weed Scientist's Dream but a Farmer's Nightmare. E.P. PROSTKO<sup>1</sup>\*, A.S. CULPEPPER<sup>1</sup>, and J.T. FLANDERS<sup>2</sup>, <sup>1</sup>Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA 31793, and <sup>2</sup>The University of Georgia Cooperative Extension, Cairo, GA 39828.

- 2:15 (115) Tropical Spiderwort Stem Desiccation and Recovery. T.L. GREY<sup>1\*</sup> and T.M. WEBSTER<sup>2</sup>, <sup>1</sup>Department of Crop & Soil Sciences, The University of Georgia, Tifton, GA, and <sup>2</sup>USDA-ARS, Tifton, GA 31794.
- 2:30 (116) Tropical Spiderwort Seedbank Dynamics and Longevity. M.G. BURTON<sup>1\*</sup>, A.C. YORK<sup>1</sup>, and T.M. WEBSTER<sup>2</sup>, <sup>1</sup>Crop Science Department, North Carolina State University, Raleigh, NC 27695-7620, and <sup>2</sup>USDA-ARS, Tifton, GA 31793-0748.
- 2:45 (117) Do Mourning Doves Disperse Seed of Tropical Spiderwort? J.R. CARTER<sup>1\*</sup>, R.H. GODDARD<sup>1</sup>, T.M. WEBSTER<sup>2</sup>, J.T. FLANDERS<sup>3</sup>, A.S. CULPEPPER<sup>4</sup>, and T.L. GREY<sup>4</sup>, <sup>1</sup>Valdosta State University, Valdosta, GA 31698, <sup>2</sup>USDA-ARS, Tifton, GA 31794, <sup>3</sup>The University of Georgia Cooperative Extension, Cairo, GA 39828, and <sup>4</sup>The University of Georgia, Tifton, GA 31794.
- 3:00 (118) Tropical Spiderwort as a Host for Nematodes and Diseases. R.F. DAVIS<sup>1\*</sup>, T.B. BRENNEMAN<sup>2</sup>, and T.M. WEBSTER<sup>1</sup>. <sup>1</sup>USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA 31793, and <sup>2</sup>The University of Georgia, Department of Plant Pathology, Tifton, GA 31793.
- 3:15 (119) The Invasive Weed Tropical Spiderwort Increases Growth Under Elevated Atmospheric CO<sub>2</sub>. A.J. PRICE<sup>1\*</sup>, G.B. RUNION<sup>1</sup>, S.A. PRIOR<sup>1</sup>, H.H. ROGERS<sup>1</sup>, H.A. TORBERT<sup>1</sup>, and D.H. GJERSTAD<sup>2</sup>, <sup>1</sup>USDA ARS National Soil Dynamics Laboratory, 411 South Donahue Drive, Auburn, AL 36832, and, <sup>2</sup>School of Forestry and Wildlife Sciences, 602 Duncan Drive, Auburn University, AL 36849.

## **PHYSIOLOGY AND SEED TECHNOLOGY**

### **Regency Ballroom DEF**

**Moderator: Ron Sorensen, USDA-ARS, National Peanut Research Laboratory, Dawson, GA**

- 1:00 (120) Measurements of Peanut Rooting Pattern Dynamics in Conservation Tillage Systems Through the Use of Minirhizotrons. D.L. ROWLAND\*, K.K. GRAY, and W.H. FAIRCLOTH, USDA-ARS, National Peanut Research Laboratory, 1011 Forrester Dr. SE, Dawson, GA 39842

- 1:15 (121) Influence of Fungicide and Sowing Density on Growth and Yield of Two Peanut Cultivars. J.B. NAAB<sup>1</sup>, K.J. BOOTE<sup>2\*</sup>, P.V.V. PRASAD<sup>3</sup>, and J.W. JONES<sup>2</sup>, <sup>1</sup>Savanna Agric. Res. Inst., Wa, Ghana, <sup>2</sup>Univ. of Florida, Gainesville, FL 32611, <sup>3</sup>Kansas State Univ., Manhattan, KS 66506.
- 1:30 (122) Evaluating the Susceptibility of Virginia-Type Peanut Cultivars to Tomato Spotted Wilt Virus and Tobacco Thrips. D.L. COKER\*, D.A. HERBERT, S. MALONE, and H.G. PITTMAN, Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA, 23437.

## SYMPOSIUM

### ORGANIC PEANUT PRODUCTION: LESSONS LEARNED

**Regency Ballroom DEF**

**Moderator: Emily Cantonwine, University of Georgia, Tifton, GA**

- 2:00 (123) Progress Report: Weed Management in Organic Peanut Production. W.C. JOHNSON, III\*, USDA-ARS, Coastal Plain Experiment Station, Tifton, GA 31793.
- 2:15 (124) Disease Control for Organic Peanuts. B.B. SHEW\*, Department of Pathology, Box 7903, North Carolina State University, Raleigh, NC 27695-6984, E.G. CANTONWINE, A.K. CULBREATH, University of Georgia, Coastal Plain Experiment Station, Tifton, GA 31793, and M.A. BOUDREAU, Herbert Green Agroecology, Asheville, NC 28804.
- 2:30 (125) Efficacy of Organic (OMRI-Approved) Foliar Insecticides and Mulching for Thrips and Spotted Wilt Suppression on Peanut. J.W. CHAPIN\*, and J.S. THOMAS, Department of Entomology, Soils, and Plant Sciences, Clemson University, Edisto REC, 64 Research Road, Blackville, SC 29817.
- 2:45 (126) Organic Peanut Production in the US: A Grower's Perspective. R. WALKER\*, Organic Producer and South Georgia Program Coordinator for Georgia Organics, Sylvania, GA.
- 3:00 (127) Organic Peanut Production in the US: The Sheller's Perspective. B. PARKER\*, Vice President for Procurement, Golden Peanut Company, 100 North Point Center East, Suite 400, Alpharetta, GA 30022.
- 3:15 (128) The Economics of Organics versus Conventional Peanuts. M.C. LAMB\*, USDA/ARS, National Peanut Research Laboratory, Dawson, GA 39842.

## **SITE SELECTION COMMITTEE REPORT**

Minutes from 11, July 2006, Hyatt, Savannah, Georgia.

Members present:

Bob Kemeraït, UGA, Chair

Peter Dotray, Texas A&M

Kelly Chenault, USDA-ARS (Oklahoma)

Diane Rowland, USDA-ARS (Georgia)

Barbara Shew, NC State

Pat Phipps (VPI)

Ron Sholar, Executive Officer

Report: It was reported that the 2007 APRES meeting will be held in Birmingham, Alabama.

Ron Sholar: the 2008 APRES will likely be held in the Bricktown area of Oklahoma City. A contract is under negotiation at the Renaissance Hotel there, but is not yet finalized. This hotel would like to have the meeting on 6-12, July, which is not likely acceptable to our membership.

Barbara Shew: the 2009 APRES will be held in North Carolina. Plans for the venue are just beginning. Possibilities discussed included Asheville (concern over transportation) and Charlotte.

2010 Meeting is in Florida

Peter Dotray: the 2011 APRES will be held in Texas

Respectfully submitted by,  
Bob Kemeraït, Chair

## **CAST REPORT**

The primary purpose of CAST remains the publication of science based information papers. I was assigned to two committees:

- 1) Plant and Soil Sciences, and
- 2) National Concerns.

The National Concerns committee is the last stop for approval of topics for papers before going to the full Board. Two papers that are moving forward are the ninth of ten papers on animal biotechnology, and a new paper on roots of obesity. The Plant and Soil Sciences Committee has a number of papers completed or in the pipeline. In regards to APRES and CAST, here is what I see are the issues:

- 1) Does APRES have an issue that warrants a CAST publication?  
If so, what is a tentative title and author(s). Obviously there is more to the process, but this is a start.
- 2) Is there any interest in the APRES leadership to "push" APRES members to join CAST? Getting more members was a

- recurring theme by John Bonner, the current CAST leader.
- 3) Should APRES, through its industry and other contracts, make financial giving to CAST a priority? CAST, although financially solvent, is making a big push for Board members to seek funding from the organizations they represent beyond the dues paid each year.

Hence, I am seeking guidance on what does APRES want from CAST, and what does APRES want to do for CAST?

CAST provides some reimbursement for meeting travel (about \$600 and covers some meals; the \$600 is essentially the dues paid to CAST by APRES). The remainder of travel cost is being covered by the Plant Path Dept. Total expense about \$1200 (airfare = \$566, hotel = \$439, meals, taxi, parking, etc). The next meeting of CAST is in March 2007 in Washington, DC, so any comment you can provide to me prior to that meeting would be appreciated. It is interesting to interact with a large multidisciplinary group, so I find this of use for my "day" job. Just want to make sure that APRES needs and wants are addressed.

Respectfully submitted,  
John Sherwood

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

**ARTICLE I. NAME**

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

**ARTICLE II. PURPOSE**

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

**ARTICLE III. MEMBERSHIP**

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

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

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

1. Silver Level, this maintains the current level and is revenue neutral. Discounted meeting registration fees would result in revenue loss with no increase in membership fee. Registration discounts can be used as an incentive for higher levels of membership.
  2. Gold Level, the person designated by the sustaining member would be entitled to a 50% discount on annual meeting registration. This benefit cannot be transferred to anyone else.
  3. Platinum Level, the person designated by the sustaining member would be entitled to a 100% discount on annual meeting registration. This benefit cannot be transferred to anyone else.
- c. Student memberships: Full-time students who pay dues at a special rate as fixed by the Board of Directors. Persons presently enrolled as full-time students at any recognized college, university, or technical school are eligible for student membership. Post-doctoral students, employed persons taking refresher courses or special employee training programs are not eligible for student memberships.

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

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

#### **ARTICLE IV. DUES AND FEES**

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

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

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

## **ARTICLE V. MEETINGS**

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

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

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

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

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

## **ARTICLE VI. QUORUM**

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

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

## **ARTICLE VII. OFFICERS**

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

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

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

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

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

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

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

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

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

Editorial responsibilities include:

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

## **ARTICLE VIII. BOARD OF DIRECTORS**

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

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

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

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

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

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

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

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

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

## **ARTICLE IX. COMMITTEES**

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

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

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

- b. Nominating Committee: This committee shall consist of four members appointed to one-year terms, one each representing State, USDA, and Private Business segments of the peanut industry with the most recent available past-president serving as chair. This committee shall nominate individual members to fill the positions as described and in the manner set forth in Articles VII and VIII of these By-Laws and shall convey their nominations to the president of this Society by June 15 prior to the year's annual meeting. The president then distribute those nominations to the BOD for their review. The committee shall, insofar as possible, make nominations for the president-elect that will provide a balance among the various segments of the industry and a rotation among federal, state, and industry members. The willingness of any nominee to accept the responsibility of the position shall be ascertained by the committee (or members making nominations at the annual business meeting) prior to the election. No person may succeed him/herself as a member of this committee.
- c. Publications and Editorial Committee: This committee shall consist of six members appointed to three-year terms, three representing State, one USDA, and two Private Business segments of the peanut industry with membership representing the three U.S. production areas. The members may be appointed to two consecutive three-year terms. This committee shall be responsible for the publication of Society-sponsored publications as authorized by the Board of Directors in consultation with the Finance Committee. This committee shall formulate and enforce the editorial policies for all publications of the Society subject to the directives from the Board of Directors.
- d. Peanut Quality Committee: This committee shall consist of seven members, one each actively involved in research in peanuts--(1) varietal development, (2) production and marketing practices related to quality, and (3) physical and chemical properties related to quality--and one each representing the Grower, Sheller, Manufacturer, and Services (pesticides and harvesting machinery in particular) segments of the peanut industry. This committee shall actively seek improvement in the quality of raw and processed peanuts and peanut products through promotion of mechanisms for the elucidation and solution of major problems and deficiencies.
- e. Public Relations Committee: This committee shall consist of seven members, one each representing the State, USDA, Grower, Sheller, Manufacturer, and Services segments of the peanut industry, and a member from the host state who will serve a one-year term to coincide with the term of the president-elect. The primary purpose of this person will be to publicize the meeting and make photographic records of important events at the meeting. This committee shall provide leadership and direction for the Society in the following areas:
  - (1) Membership: Development and implementation of mechanisms to create interest in the Society and increase its membership. These shall include, but not be limited to, preparing news releases for the

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

- (2) Cooperation: Advise the Board of Directors relative to the extent and type of cooperation and/or affiliation this Society should pursue and/or support with other organizations.
  - (3) Necrology: Proper recognition of deceased members.
  - (4) Resolutions: Proper recognition of special services provided by members and friends of the Society.
- f. Bailey Award Committee: This committee shall consist of six members, with two new appointments each year, serving three-year terms. This committee shall be responsible for judging papers which are selected from each subject matter area. Initial screening for the award will be made by judges, selected in advance and having expertise in that particular area, who will listen to all papers in that subject matter area. This initial selection will be made on the basis of quality of presentation and content. Manuscripts of selected papers will be submitted to the committee by the author(s) and final selection will be made by the committee, based on the technical quality of the paper. The president, president-elect and executive officer shall be notified of the Award recipient at least sixty days prior to the annual meeting following the one at which the paper was presented. The president shall make the award at the annual meeting.
- g. Fellows Committee: This committee shall consist of six members, two representing each of the three major geographic areas of U.S. peanut production with balance among State, USDA, and Private Business. Terms of office shall be for three years. Nominations shall be in accordance with procedures adopted by the Society and published in the previous year's PROCEEDINGS of APRES. From nominations received, the committee shall select qualified nominees for approval by majority vote of the Board of Directors.
- h. Site Selection Committee: This committee shall consist of eight members, each serving four-year terms. New appointments shall come from the state which will host the meeting four years following the meeting at which they are appointed. The chairperson of the committee shall be from the state which will host the meeting the next year and the vice-chairperson shall be from the state which will host the meeting the second year. The vice-chairperson will automatically move up to chairperson.

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

- i. Coyt T. Wilson Distinguished Service Award Committee: This committee shall consist of six members, with two new appointments each year, serving three-year terms. Two committee members will be selected from each of the three main U.S. peanut producing areas. Nominations shall be in accordance with procedures adopted by the Society and published in the previous year's PROCEEDINGS of APRES. This committee shall review and rank nominations and submit these rankings to the committee chairperson. The nominee with the highest ranking shall be the recipient of the award. In the event of a tie, the committee will vote again, considering only the two tied individuals. Guidelines for nomination procedures and nominee qualifications shall be published in the Proceedings of the annual meeting. The president, president-elect, and executive officer shall be notified of the award recipient at least sixty days prior to the annual meeting. The president shall make the award at the annual meeting.
- j. Joe Sugg Graduate Student Award Committee: This committee shall consist of five members. For the first appointment, three members are to serve a three-year term, and two members to serve a two-year term. Thereafter, all members shall serve a three-year term. Annually, the President shall appoint a Chair from among incumbent committee members. The primary function of this committee is to foster increased graduate student participation in presenting papers, to serve as a judging committee in the graduate students' session, and to identify the top two recipients (1st and 2nd place) of the Award. The Chair of the committee shall make the award presentation at the annual meeting.

## **ARTICLE X. DIVISIONS**

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

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

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

## **ARTICLE XI. AMENDMENTS**

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

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

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

## MEMBERSHIP (1975-2006)

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

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