2025
PROCEEDINGS
Volume 57

57th Annual Meeting
American Peanut Research and Education Society

Bridging Heritage and Innovation: Cultivating the Future of Peanut Production

57th APRES
ANNUAL MEETING
RICHMOND, VIRGINIA
JULY 15–17, 2025

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Special Activities

BASF & Bayer – Wednesday Evening Gala Dinner
Corteva Agriscience – Thursday Evening Awards Reception

Meeting Breaks

Premium Peanut
Fine Americas
HudsonAlpha
FMC
QualySense

Joe Sugg Graduate Student Competition

National Peanut Board

Graduate Student Poster Competition

North Carolina Peanut Growers Association

Fun Run

JLA

Spouse Hospitality Suite

Nutrien

APRES Field Tour

Wakefield Peanut Company
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PROGRAM

Monday – July 14, 2025

Optional Field Tour

8:00 am Depart Omni Hotel and travel to Wakefield Peanut Company, Wakefield, VA (Meet in hotel lobby)

9:00 am Arrive at Wakefield Peanut Company

- Welcome from Surry County Extension Office – Elizabeth Cooper
- Tour of Wakefield Peanut Co. facilities – Steven Laine
- Presentation: Successful partnerships of small and large shellers in VA – Mark Simmons, Birdsong

10:15 am Depart for Goodrich Farm

10:30 am Arrive at Goodrich Farm

- Welcome and farm story – Henry Goodrich

10:45 am Presentation: The story of seed production in VA – Tom Hardiman, VCIA

11:00 am Concurrent field presentations/demonstrations:

- David Langston
- Tim Bryant
- Jacob Forehand
- Alejandro Del-Poso
- Abhilash Chandel
- Maria Balota

12:00 pm Catered lunch on the farm (Sponsored by TAREC/Matthew Chappell)

- *Feature: Dining next to the FIRST peanut digger in the country!*

12:30 pm Dessert remarks:

- Welcome to Virginia – VA Ag Secretary
- Welcome from Virginia Tech – Dr. Arash Rashed
- Welcome from VA Peanut Board – Caitlin Joyner
- Welcome from TAREC

1:00 pm Depart for Jamestown Ferry (plan to catch the 1:30 pm ferry)

2:00 pm Guided visit to Jamestown Settlement site

4:00 pm Depart Jamestown and return to Omni Hotel

5:00 pm Rest at hotel

6:00 – 8:00 pm Meet & Greet Happy Hour at the Omni's Westham Tavern

Tuesday – July 15, 2025

7:30 – 5:00 APRES Registration and Poster Setup……James River Foyer

8:00 - 5:00 Presentation Practice Room……Rappahannock

9:00 – 1:00 Spouse Hospitality Room……Hospitality 321

12:00 – 1:15 Lunch……On your own

Committee Meetings

Crop Germplasm Committee (to be held at a later date TBD)……electronically

8:00 – 10:00 Seed Summit……James River Salon C

10:00 – 12:00 The Peanut Research Foundation BOD Meeting……James River Salon C

10:00 – 11:00 Public Relations Committee……James River Salons A & B

11:00 – 12:00 Joe Sugg Committee……Potomac

1:15 – 3:15 Peanut Quality Committee……James River Salon C

1:15 – 2:15 Associate Editors, *Peanut Science*……Roanoke

2:15 – 3:15 Publications and Editorials, *Peanut Science*……Roanoke

3:15 – 4:15 Bailey Award Committee……Roanoke

3:15 – 4:15 Site Selection Committee……James River Salons A & B

4:15 – 5:15 Finance Committee……Roanoke

Sessions

1:15 – 5:15 Joe Sugg MS Competition I *(Sponsored by North Carolina Peanut Producers)*……Potomac

3:15 – 3:30 Break *(Sponsored by QualySense)*……James River Foyer

3:15 – 5:15 Q-Sorter Workshop……James River Salon C

5:00 – 6:00 Board of Directors……James River Salons A & B

6:00 – 7:15 "Welcome to Richmond" Ice Cream Social……Magnolia Room

Wednesday – July 16, 2025

7:30 – 5:00 APRES Registration and Poster Setup....................James River Foyer

8:00 – 10:00 Spouse Hospitality Room....................Hospitality 321

8:00 – 5:00 Presentation Practice Room....................Rappahannock

3:00 – 5:00 Spouse Hospitality Room....................Hospitality 321

Sessions

8:00 – 9:45 General Session:
Bridging Heritage and Innovation:
Cultivating the Future of Peanut Production....................James River Salons A-D

10:00 – 10:15 Break *(Sponsored by Premium Peanut)*....................James River Foyer

10:15 – 12:00 Joe Sugg MS Competition II *(Sponsored by NC Peanut Growers)*....................Potomac

10:15 – 12:00 Breeding/Biotechnology/Genetics I....................James River Salon D

12:00 – 1:30 Lunch....................On your own

1:30 – 1:45 Joe Sugg MS Competition II (*Sponsored by NC Peanut Growers*)....................Potomac

1:45 – 5:15 Joe Sugg PhD Competition I *(Sponsored by National Peanut Board)*....................Potomac

1:30 – 4:45 Breeding/Biotechnology/Genetics II....................James River Salon D

3:15 – 3:30 Break *(Sponsored by Fine Americas)*....................James River Foyer

***6:00 – 8:00 Gala Dinner (Sponsored by BASF & Bayer)*....................James River Salons A-C**

*Poster presentations open all day

<u>Thursday – July 17, 2025</u>

6:00 – 7:15 Fun Run..Meet in hotel lobby

7:30 – 5:00 APRES Registration and Poster Viewing..James River Foyer

8:00 – 10:00 Spouse Hospitality Room..Hospitality 321

8:00 – 5:00 Presentation Practice Room..Rappahannock

3:00 – 5:00 Spouse Hospitality Room..Hospitality 321

Sessions

8:00 – 9:30 Extension Techniques and Technology..James River C

8:00 – 9:00 Charles Simpson Wild Species Session..Potomac

9:00 – 10:45 Joe Sugg – PhD Competition II *(Sponsored by National Peanut Board)*..Potomac

9:30 – 9:45 Break *(Sponsored by Hudson Alpha)*..James River Foyer

9:45 – 12:00 Grower-Focused Session..James River C

10:45 – 12:00 Food Science & Harvesting/Curing/Shelling/Storing/Handling..Potomac

12:00 – 1:30 Graduate Student Luncheon *(Sponsored by Syngenta)*..Shenandoah

12:00 – 1:30 Lunch..On your own

1:30 – 3:15 Plant Pathology and Nematology..James River C

1:30 – 3:15 Physiology and Seed Technology..Potomac

3:15 – 3:30 Break *(Sponsored by FMC)*..James River Foyer

3:30 – 5:00 Poster Session (Authors Present)..James River Foyer

5:00 – 6:00 **APRES 57th Business Meeting and Awards Ceremony..James River Salons A-D**

6:00 – 7:30 Awards Reception (Sponsored by Corteva Agriscience)..Magnolia

*Poster presentations open all day

1:15 – 5:15	**Joe Sugg MS Competition I** Meeting Room: Potomac *Moderator: Bob Kemerait, University of Georgia*
1:15	**Validation and Quantification of a Major Seed Size QTL in an Elite Biparental Peanut Population** **POKHAREL, A.***, BROWN, N., Institute of Plant Breeding Genetics and Genomics, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; MYERS, Z., KORANI, W., CLEVENGER, J., Hudson-Alpha Institute for Biotechnology, Huntsville, Alabama.
1:30	**Can Less Mean More?: Effect of Delayed Fungicide Timing and Reduced Applications for Control of Late Leaf Spot on Peanut** **TISONE, G.*,** HOLLIDAY, S.; BRADBURN, M., Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC 27695; LUX, L., North Carolina State Extension, Raleigh, NC 27695.
1:45	**Components of the Weed Management Risk Index Used in the Peanut Risk Management Tool in North Carolina** **JALALI, S.*,** REISIG, D., LUX, L., and JORDAN, D.L., NC State Extension, Raleigh, NC 27695.
2:00	**Role of Harvest Methodology on Production and Pest Management Recommendations** **GARNER, E.H.*,** JORDAN, D.L., LUX, L.A., REISIG, D., AUSTIN, R., and FOOTE, E., North Carolina State University, Raleigh, NC 27695; STEVENS, B., BRAKE, M., LANIER, I., DEAL, S., and RANSOM, L., North Carolina Department of Agriculture and Consumer Services, Raleigh, NC.
2:15	**Impact of Variable Soil Water Tension Irrigation Thresholds on Georgia Peanut Production** **GRUBBS, H.*,** PORTER, W., Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31794; MONFORT, W., Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31794; PILON, C., Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31794; PORTER, E., Abraham Baldwin Agricultural College, Tifton, GA 31794.
2:30	**Evaluation of Spanish Peanut Population for Dryland Cultivation** **NAAPOAL, C.*,** Department of Plant and Soil Sciences, Texas Tech University, Lubbock, TX 79409; TENGEY, T.K., CSIR-Savanna Agricultural Research Institute, Nyankpala, Ghana; OTENG-FRIMPONG, R., CSIR-Savanna Agricultural Research Institute, Nyankpala, Ghana; FAYE, I., Groundnut Breeding & Genetics Lab ISRA/CNRA, Bambey, Senegal; BUROW, M.D., Department of Plant and Soil Sciences, Texas Tech University, Lubbock, TX 79409 and Texas A&M AgriLife Research and Extension Services, Lubbock, TX 79403.
2:45	**Growth Regulation in Peanut: Investigating Prohexadione Calcium Tank-Mixed with Postemergence Herbicides** **BOWEN, S.J.***, GREY, T., MONFORT, W.S., PILON, C., Department of Crop and Soil Sciences, University of Georgia Tifton Campus, Tifton, GA 31793; EASON, K., Agriculture Research Service, United States Department of Agriculture, Tifton, GA 31793.
3:00	**Assessment of Reactive Oxygen Species and Photosynthetic Efficiency in Peanut in Response to *Nothopassalora personata* Infection** **ASIEDU, E.*,** CANTONWINE, E.G., and LOKDARSHI, A., Department of Biology, Valdosta State University, Valdosta, GA 31698.
3:15	**BREAK**

1:15 – 5:15	**Joe Sugg MS Competition I continued** Meeting Room: Potomac *Moderator: Bob Kemerait, University of Georgia*
3:30	**Exploring Agronomic Management Practices to Improve Peanut Oil Production** **ANSHUL, F.*,** TUBBS, R.S., PILON, C., MONFORT, W.S., BROWN, I.N., Department of Crop and Soil Sciences, University of Georgia Tifton Campus, Tifton, GA 31793; SMITH, A.R., Department of Agricultural and Applied Economics, University of Georgia Tifton Campus, Tifton, GA 31793.
3:45	**Peanut Plant Height, Peg Strength, Digging Efficiency, and Pod Yield as Influenced by Prohexadione Calcium** **SINGH, S.*,** SINGH, K., SHAH, A., DAR, E.A., SINGH, H., West Florida Research and Education Center, Department of Agronomy, University of Florida, Jay, FL, 32565.
4:00	***In-Vitro* Temperature Response and Sensitivity of Three *Rhizopus* spp. to Peanut Seed-Treatment Fungicides** **MCEACHIN, L.*,** AKTARUZZAMAN, MD., and BRENNEMAN, T., Plant Pathology Department, The University of Georgia, Tifton, GA 31794.
4:15	**Determining Best Disease Management Programs for New Peanut Cultivar TifCB-7** **TUBERVILLE, J.*,** ZURWELLER, B., MAY, J., Department of Plant and Soil Sciences, Mississippi State University, 32 Creelman Street, Mississippi State, MS 39762.
4:30	**Effects of Increased Seeding Rates on Late-Planted Peanuts** **MORGAN, K.*,** MONFORT, W.S., Crop and Soil Department, University of Georgia Tifton Campus, Tifton, GA 31794.
4:45	**Estimating Mating-Type Frequencies and Genetic Diversity of *Passalora arachidicola* and *Nothopassalora personata*** **ROBERSON, G.***, CANTONWINE, E., EFFI, G., Department of Biology, Valdosta State University, Valdosta, GA 31698, ARIAS, R., USDA-ARS National Peanut Research Laboratory, Dawson, GA 39842, GREMILLION, S., Department of Biology, Georgia Southern University Armstrong Campus, Savannah, GA 31419, and CULBREATH, A., Department of Plant Pathology, University of Georgia Tifton Campus, Tifton, GA 31793.
5:00	**Differential Harvesting in Peanut: Irrigated Fields with Rainfed Corners** **POLES, B.P.***, PILON, C., PORTER, W., Crop and Soil Sciences Department, University of Georgia Tifton Campus, Tifton, GA 31793; KEMERAIT, R.C.J., Plant Pathology, University of Georgia Tifton Campus, Tifton, GA 31793; SMITH, A.R., Agricultural and Applied Economics, University of Georgia Tifton Campus, Tifton, GA 31793; EDWARDS, P., LYON, D., Cooperative Extension, University of Georgia, Tifton, GA 31793; HALL, D., Cooperative Extension, University of Georgia, Cochran, GA 31014; MALLARD, J., Cooperative Extension, University of Georgia, Statesboro, GA 30460.

8:00 – 10:00	**General Session – *Bridging Heritage and Innovation: Cultivating the Future of Peanut Production*** Meeting Room: James River Salons A-D *Moderator: Rebecca Bennett, USDA ARS, or Bob Kemerait, University of Georgia*
8:00	**Welcoming Remarks** **LOHR, M.***, 5th Secretary of Agriculture and Forestry for the Commonwealth of Virginia.
8:10	**Welcoming Remarks** **BURROWS, M.*,** Associate Dean and Director of Agricultural Experiment Station Research and Graduate Studies, Virginia Tech, Blacksburg, VA 24061.
8:20	**The Peanut Story** **ALPHIN, R.*,** Virginia Peanut Farmer, Sunset View Farm, Zuni, VA 23898.
8:40	**Early Detection, Early Intervention: Innovations in Sequence-Based Pathogen Identification** **LORV, J.S.H.*,** School of Plant and Environmental Sciences, Virginia Tech, Blacksburg, VA 24061.; ABDELRAZEK, S., Department of Biomedical Sciences and Pathobiology, Virginia-Maryland College of Veterinary Medicine, Virginia Tech, Blacksburg, VA 24061.; MAZLOOM, R., SHARMA, R., Department of Computer Science, Virginia Tech, Blacksburg, VA 24061.; BELAY, K., KAUR, S., GERCKEN, M., School of Plant and Environmental Sciences and Graduate Program in Genetics, Bioinformatics, and Computational Biology, Virginia Tech, Blacksburg, VA 24061.; HEATH, L.S., Department of Computer Science, Virginia Tech, Blacksburg, VA 24061.; RODRIGUEZ SALAMANCA, L., School of Plant and Environmental Sciences, Virginia Tech, Blacksburg, VA 24061; LAHMERS, K., Department of Biomedical Sciences and Pathobiology, Virginia-Maryland College of Veterinary Medicine, Virginia Tech, Blacksburg, VA 24061.; VINATZER, B.A., School of Plant and Environmental Sciences, Virginia Tech, Blacksburg, VA 24061.
9:00	**Robotics and AI for Agriculture Production** **KANTOR, G.***, Robotics Institute, Carnegie Mellon University, Pittsburgh, PA 15213.
9:30	**Is AI the Missing Piece for Precision Agriculture?** **REBERG-HORTON, C.***, Crop and Soil Science Department, North Carolina State University, Raleigh, North Carolina 27695.

10:15 – 12:00	**Joe Sugg MS Competition II** Meeting Room: Potomac *Moderator: Bob Kemerait, University of Georgia*
10:15	**Unknotting a Nematode: Exploring Wild *Arachis* Root Knot Nematode Resistance in Peanut** **BOTTON, S.***, Department of Horticulture and Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, 31793; KORANI, W., CLEVENGER, J., Hudson-Alpha Institute for Biotechnology, Huntsville, AL, 35806; SCHUMACHER, L., TIMPER, P., USDA-ARS, Crop Genetics and Breeding Research, Tifton, GA, 31793; CHU, Y., Department of Horticulture and Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, 31793; HOLBROOK, C.C., USDA-ARS, Crop Genetics and Breeding Research, Tifton, GA, 31793; OZIAS-AKINS, P., Department of Horticulture and Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, 31793.
10:30	**Characterizing Rootworm Feeding and Its Impact on Peanut Pod Yield** **ROYSTON, J.***, ABNEY, M., Department of Entomology, University of Georgia Tifton Campus, Tifton, GA 31793.
10:45	**Fitting Peanut Crop Coefficient Curves to Field Conditions Using Satellite Vegetation Indices** **TREVISAN, V.T.*,** Department of Crop and Soil Sciences, University of Georgia Tifton Campus, Tifton, GA 31793; EDWARDS, P.E., LYON, D.L., CAES-Southwest District CES, Extension, University of Georgia Tifton Campus, Tifton, GA 31793; VELLIDIS, G.V., Department of Crop and Soil Sciences, University of Georgia Tifton Campus, Tifton, GA 31793.
11:00	**Developing an Economic Threshold for Lesser Cornstalk Borer in Peanut Based on Moth Capture in Pheromone Traps** **LANE, M.T.*,** and ABNEY, M.R., Department of Entomology, The University of Georgia, Tifton, GA 31793.
11:15	**Quantifying In-Furrow Insecticide Persistence and Its Effects on Tomato Spotted Wilt Virus in Peanut** **CAVASSA, M.*,** STRAYER-SCHERER. A., GRAHAM. S.H., Entomology and Plant Pathology Dept, Auburn University, Auburn, AL 36849.
11:30	**Exploring the Diversity of a Legacy Wild Peanut Collection to Enhance Cultivated Peanut** **NUGRAHA, G.T.*,** CHU, Y., Institute of Plant Breeding, Genetics and Genomics, University of Georgia Tifton Campus, Tifton, GA 31793; KORANI, W., CLEVENGER, J., Hudson-Alpha Institute for Biotechnology, Huntsville, AL 35806; LEAL-BERTIOLI, S., BERTIOLI, D., Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Athens, GA 30602; TIMPER, P., HOLBROOK, C.C., USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; OZIAS-AKINS, P., Institute of Plant Breeding, Genetics and Genomics, University of Georgia Tifton Campus, Tifton, GA 31793.
11:45	**Comparing *In Vitro* Assays for Detecting Fungicide Resistance in Early and Late Leaf Spot Pathogens of Peanuts** **EFFI, G.*,** CANTONWINE, E.-G., LOKDARSHI, A., Department of Biology, Valdosta State University, Valdosta, GA 31698; CULBREATH, A.-K., Department of Plant Pathology, University of Georgia, Tifton, GA 31793.

10:15 – 12:00	**Breeding, Biotechnology, and Genetics I** Meeting Room: James River Salon D *Moderator: Nino Brown, University of Georgia*
10:15	**Yield Stability of Recently Released Runner Peanut Cultivars Tested in Georgia** **BROWN, N.***, BRANCH, W.D., Institute of Plant Breeding, Genetics, and Genomics, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; MAILHOT, D., DUNN, D., Statewide Variety Testing, University of Georgia, Tifton, GA 31793.
10:30	**Markers for the Selection of Diverse Fatty Acid Composition from Samples Within the USDA-ARS Germplasm Collection** **THOMAS, J.*,** MARSHALL-DRAKE, J., GILLIAM, M., Department of Chemistry and Biochemistry, Lubbock Christian University, Lubbock, TX 79407.
10:45	**QTL Validation Study for Aflatoxin Resistance in a Small Peanut Nested Association Mapping Population** **CARDON, C.*,** HOLTON, R.W., OZIAS-AKINS, P., Horticulture Department, Institute of Plant Breeding, Genetics, and Genomics, University of Georgia Tifton Campus, Tifton, GA 31793; CLEVENGER, J., KORANI, W., HudsonAlpha Institute for Biotechnology, Huntsville, AL, 35806; HOLBROOK, C.C., USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793.
11:00	**Identification of QTLs Underlying Physiological Traits Related to Drought Tolerance in Cultivated Peanuts** ZHANG, Q., FENG, Y., SANZ-SAEZ, A., **CHEN, C.***, Department of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 36849; DANG, P., BUCIOR, E., PAGE, J., LAMB, M. the USDA-ARS National Peanut Research Laboratory, Dawson, GA 39842; LOVELL, J., SCHMUTZ, J., GRIMWOOD, J., GRABOWSKI, P., HudsonAlpha Institute for Biotechnology, Huntsville, AL 35806, USA.
11:15	**How the Peanut Genome Helps Improve Peanut Varieties: Year 1** **CLEVENGER, J.*,** KORANI, W.**,** SANMARTIN, P., GOODE, K., DAVIS, C., MYERS, Z., WHITE, A., Hudson-Alpha Institute for Biotechnology, Huntsville, AL 35806.
11:30	**Development and Characterization of Runner Peanut with Tolerance to Water Deficit and Heat Stress** **BUROW**, **M.D.***, Texas A&M AgriLife Research, Lubbock, TX 79403, and Texas Tech University, Dept. of Plant and Soil Science, Lubbock, TX 79409; CASON, J.M., SIMPSON, C.E., Texas A&M AgriLife Research, Stephenville, TX 76401; BARING, M.R., Texas A&M AgriLife Research, College Station, TX 77843; GOMEZ-SELVARAJ, M., CHAGOYA, J., Texas A&M AgriLife Research, Lubbock, TX 79403; SPIVEY, W.W., NARAYANAN, S., Department of Plant and Environmental Sciences, Clemson University, Clemson, SC 29634; BURKE, J., and PAYTON, P., USDA-ARS-CSRL, Lubbock, TX 79415.
11:45	**Liftover Annotation as a Potential Approach to Annotate Non-reference Genomes at PeanutBase** **DASH, S.***, CAMERON, C., CLEARY, A., FARMER, A.D., LAVELLE, E., REDSUN, S., National Center for Genome Resources, Santa Fe, NM; CANNON, S., USDA-ARS, Corn Insects and Crop Genetics Research Unit, Ames, IA; CHU, Y., OZIAS-AKINS, P., Department of Horticulture and Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA; CLEVENGER, J., KORANI, W., WRIGHT, H., HudsonAlpha Institute for Biotechnology, Huntsville, AL.

1:30 – 5:00	**Joe Sugg Ph.D. Competition I** Meeting Room: Potomac *Moderator: Bob Kemerait, University of Georgia*
1:30	**Evaluation of Peanut Herbicide Programs in Oklahoma** **SMITH, M.*,** Department of Entomology and Plant Pathology, Oklahoma State University, Altus, OK 73521; BAUGHMAN, T., Texas A&M AgriLife Research and Extension, Lubbock, TX 79403.
1:45	**Systematic Identification and Drought-Responsive Transcriptional Regulation of MAPK Genes in Cultivated and Diploid Peanut Species** **ZHANG, J.***, CHEN, C., Department of Crop, Soil, and Environmental Sciences, Auburn University, Auburn, AL 36849.
2:00	**Enhancing Crop Model Accuracy: Soil Profile Adjustments in DSSAT CSM-CROPGRO-Peanut for Aflatoxin Contamination Estimation** **MAKTABI, S.*,** Department of Crop and Soil Sciences, University of Georgia, Tifton Campus, Tifton, GA, 31793; BOOTE, K., Department of Agronomy, University of Florida, Gainesville, FL 32611; BUCIOR, E., Department of Crop and Soil Sciences, University of North Carolina, Raleigh; HOOGENBOOM, G., Department of Agricultural and Biological Engineering, University of Florida, Gainesville, FL 32611; FOUNTAIN, J., Department of Plant Pathology, University of Georgia, Griffin Campus, Griffin, GA; PILON, C., Crop and Soil Sciences, University of Georgia, Tifton Campus, Tifton, GA, 31793; VELLIDIS, G., Institute of Integrative Precision Agriculture, University of Georgia Tifton Campus, Tifton, GA, 31793.
2:15	**Precision Peanut Maturity Mapping for Virginia-Type Cultivars Using Aerial Spectral Imagery, Weather Data and Advanced Machine Learning** **RAYMOND, S**.*, CHANDEL, A.K., Department of Biological Systems Engineering, Virginia Polytechnic Institute and State University, Blacksburg, VA, USA, 24061; Tidewater Agricultural Research and Extension Center, Suffolk, VA, USA, 23437; BALOTA, M., Tidewater Agricultural Research and Extension Center, Suffolk, VA, USA, 23437.
2:30	**Diversity Study of Tomato Spotted Wilt Virus in Major Cultivated Hosts in Southeast Georgia, United States** **SHUKLA, B.*,** BAG, S., CULBREATH, A.K., Department of Plant Pathology, University of Georgia, Tifton, GA, 31793, USA; MOORE, J.M., BROWN, N., Department of Crop and Soil Sciences, University of Georgia, Tifton, GA, 31793, USA; MCAVOY, T., Department of Horticulture, University of Georgia, Tifton, GA, 31793, USA.
2:45	**Rooting for Sustainability: Utilization of Plant Growth-Promoting Rhizobacteria as a Biological Control in Peanut Production** **SULLINS, K.N.*,** STRAYER-SCHERER, A.L., and HELD, D.W. Department of Entomology and Plant Pathology, Auburn University, Auburn, AL 36849.
3:00	**Potential New Sources of Stem Rot Resistance From Wild Peanuts** **MATUSINEC, D.*,** Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Athens, GA, 30602; BRENNEMAN, T.B., Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; HOPKINS, M.S., Center for Applied Genetic Technologies, University of Georgia, Athens, GA, 30602; LEAL-BERTIOLI, S.C.M., Institute of Plant Breeding, Genetics & Genomics, Department of Plant Pathology, University of Georgia, Athens, GA, 30602; BERTIOLI, D.J., Institute of Plant Breeding, Genetics & Genomics, Department of Crop & Soil Sciences, University of Georgia, Athens, GA, 30602.
3:15	**Break**

3:30 – 5:00	**Joe Sugg Ph.D. Competition I continued** Meeting Room: Potomac *Moderator: Bob Kemerait, University of Georgia*
3:30	**Assessing and Validating Thermal and Physical Properties of Shelled Peanuts Using CFD for Storage Simulation** **PIRHADI TAVANDASHTI, A.*,** BANU, E., College of Engineering, University of Georgia, Athens, GA 30602; RAINS, G. Department of Entomology, University of Georgia, Athens, GA 30602.
3:45	**Comparison of Weed Control With Fluridone and Flumioxazin Programs in Peanut in North Carolina** **PENDLETON, B.***, FOOTE, E., JORDAN, D.L., EDMISTEN, K., CAHOON, C., and JENNINGS, K., North Carolina State University, Raleigh, NC 27695.
4:00	**Effect of Mid-Season Heat and Drought on Reproductive Physiology in Virginia-Type Peanuts and the Implications for Peanut Production in the Virginia-Carolina Region** **BEARD, K.M.***, VENNAM, R.R., School of Plant and Environmental Sciences, Virginia Polytechnical Institute and State University, Blacksburg, Virginia 24060; BALOTA, M., Tidewater Agricultural Research and Extension Center (TAREC), Suffolk, Virginia 23437; HAAK, D.C., School of Plant and Environmental Sciences, Virginia Polytechnical Institute and State University, Blacksburg, Virginia 24060.
4:15	**MagDio*:* A New Source of Multiple Peanut Resistances for Africa** **ESSANDOH, D.A.*,** Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Athens, GA 30602; HOPKINS, M., Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602; BERTIOLI, D.J., Institute of Plant Breeding, Genetics & Genomics and Department of Crop & Soil Sciences, The University of Georgia, Athens, GA 30602; and LEAL-BERTIOLI, S.L.M., Institute of Plant Breeding, Genetics & Genomics and Department of Plant Pathology, The University of Georgia, Athens, GA 30602.
4:30	**Characterizing and Deploying Novel Disease Resistant Peanut Cultivars in the Southeastern US** **LEONARD, D.J.***, UF/IFAS Calhoun County Extension, Blountstown, FL, 32424; TILLMAN, B.L., GOMILLION, M.W., GOYZUETA, M.D., CASTRO, S.C., ODOUR, J.O., TORUNO, C.E., North Florida Research and Education Center, Marianna, FL 32446.
4:45	**The 1,000 *Aspergillus flavus* Genomes Initiative: Exploring Genetic Diversity and Fungicide Resistance Distribution in Southeast Peanut Production** **JOSON, S.E.A.***, ADAMS, A.K., Department of Plant Pathology, University of Georgia, Griffin, GA 30223; CLEVENGER, J., MYERS, Z., KORANI, W., HudsonAlpha Institute for Biotechnology, Huntsville, AL 35806; HOLTON, R., Premium Peanut, LLC., Douglas, GA 31535; MATHIS, J., American Peanut Growers Group, Donalsonville, GA 39845; FOUNTAIN, J.C., Department of Plant Pathology, University of Georgia, GA 30223.

1:30 – 3:30	**Breeding, Biotechnology, and Genetics II** Meeting Room: James River Salon D *Moderator: Ryan Andres, North Carolina State University*
1:30	**Developing Stem Rot Resistant and Potentially More Synchronous Maturity Peanut Germplasm Through Marker Assisted Selection** **BISWAL, A.K.***, OZIAS-AKINS, P., IPBGG, Department of Horticulture, University of Georgia Tifton Campus, Tifton, GA 31793; BRENNEMAN, T., Department of Plant Pathology, University of Georgia Tifton Campus, Tifton, GA 31793 and CLEVENGER, J., IPBGG, University of Georgia, Tifton, GA 31793, USA; HOVAV, R., Agricultural Research Organization (ARO), Rishon LeZion, Israel; BOTTON, S., IPBGG, University of Georgia, Tifton, GA 31793; HOLBROOK C.C., USDA-ARS Coastal Plain Experiment Station, Tifton, GA USA 31793.
1:45	**Investigating the Influence of Drought on Peanut Soil Microbiomes and Their Associations with *Aspergillus flavus* Populations and Aflatoxin Contamination** **ADAMS, A.*,** Department of Plant Pathology, University of Georgia, Griffin, GA 30223, USA; CLEVENGER, J., MYERS, Z., KORANI, W., HudsonAlpha Institute for Biotechnology, Huntsville, AL 35806, USA; MUNOZ HERRERA, G., JIMENEZ MADRID, A., Department of Plant Pathology, University of Georgia, Tifton, GA 31793, USA; PILON, C., MAKTABI, S., VELLIDIS, G., Department of Crop & Soil Sciences, University of Georgia, Tifton, GA 31793, USA; FOUNTAIN, J.C., Department of Plant Pathology, University of Georgia, Griffin, GA 30223, USA.
2:00	**The Peanut Shell as a Defense Against Aflatoxin Contamination in Runner Type Peanuts** **TILLMAN, B.L.***, GOYZUETA, M., University of Florida, North Florida Research and Education Center, Marianna, FL, and ICHAZO-RIBERA, L.C., Cornell Cooperative Extension Cornell Vegetable Program, Albion, NY.
2:15	**Epi-Mutagenesis to Unleash Peanut Genome and Phenome Plasticity** RAZZAQ, A., GARCIA, K., TILLMAN, B., and **WANG, J. *,** Agronomy Department, University of Florida, Gainesville, FL, 32610, USA.
2:30	**Multiresistant *Arachis* Population as a Genetic Resource for Breeding** **DE BLAS, F.***, BRESSANO, M., Universidad Nacional de Córdoba, Facultad de Ciencias Agropecuarias. Córdoba, Córdoba, Argentina X5000; ROSSO, M., ODDINO, C., SOAVE, S., SOAVE, J., El Carmen SA, General Cabrera, Córdoba, Argentina X5809; VERDINI, A., Universidad Nacional de Córdoba. Facultad de Ciencias Agropecuarias. Córdoba, Córdoba, Argentina X5000; THEUMER, M.G., Universidad Nacional de Córdoba. Facultad de Ciencias Químicas, Departamento de Bioquímica Clínica. Córdoba, Argentina X5000. Centro de Investigaciones en Bioquímica Clínica e Inmunología (CIBICI UNC-CONICET). Universidad Nacional de Córdoba and Consejo Nacional de Investigaciones Científicas y Técnicas. Córdoba, Argentina X5000. SEIJO, G., Instituto de Botánica del Nordeste (IBONE UNNE-CONICET). Universidad Nacional del Nordeste and Consejo Nacional de Investigaciones Científicas y Técnicas. Corrientes, Argentina X3400. Universidad Nacional del Nordeste. Facultad de Ciencias Exactas y Naturales y Agrimensura. Corrientes, Argentina X3400; BUTELER, M.I., El Carmen SA, General Cabrera, Córdoba, Argentina X5809.
2:45	**Enhancing Peanut Yield Estimation in Breeding Fields Using Machine Learning and Pod Attributes** **RODRIGUEZ-SANCHEZ, J.***, BROWN, N., PARKASH, V., SCHWARTZ, B., Institute of Plant Breeding Genetics and Genomics, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; LI, Z., XU, R., LI, C., University of Florida, Gainesville, FL 32611.
3:00	**Unified Efforts Reveal Copy Number Variance Impacts TSWV Resistance** **THOMPSON, E.*,** CULBREATH, A.K., University of Georgia, Department of Plant Pathology, Tifton, GA; KORANI, W., CLEVENGER, J.P., HudsonAlpha Institute for Biotechnology, Huntsville, AL; BISWAL, A.K., WEBB, S., OZIAS-AKINS, P., University of Georgia, Department of Horticulture and Institute of Plant Breeding, Genetics and Genomics, Tifton, GA, US; HOLBROOK, C.C., GUO, B., USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA.
3:15	**Break**

3:30 – 4:15	**Breeding, Biotechnology, and Genetics II continued** Meeting Room: James River Salon D *Moderator: Ryan Andres, North Carolina State University*
3:30	**Break**
3:45	**PeanutMAGIC and Pangenome** **GUO, B.***, HOLBROOK, C.C., USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA; THOMPSON, E., WU, D., CULBREATH, A.K., University of Georgia, Department of Plant Pathology, Tifton, GA; KORANI, W., CLEVENGER, J.P., HudsonAlpha Institute for Biotechnology, Huntsville, AL.
4:00	**Smut Resistant Accessions in the ICRISAT Peanut Mini-Core Germplasm Collection** **CHAMBERLIN, K.D.***, and BENNETT, R.S., USDA-ARS, Stillwater, OK 74075; BALDESSARI, J., INTA, Argentina; CLEVENGER, J.P., WRIGHT, H., MYERS, Z., and KORANI, W., Hudson-Alpha Institute for Biotechnology, 601 Genome Way Northwest, Huntsville, AL 35806; HOLBROOK, C.C., USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA 31793; and TALLURY, S.P., USDA-ARS, Plant Genetic Resources Conservation Unit, Griffin, GA 30212.

8:00 – 9:30	**Extension Techniques and Technology** Meeting Room: James River C *Moderator: Zachary Treadway, University of Arkansas*
8:00	**The SmartIrrigation CropFit App (SI CropFit) Gives Peanut Farmers Another Irrigation Scheduling Tool to Improve Water Use Efficiency** **EDWARDS, P.*,** Cooperative Extension, University of Georgia, Tifton, GA; CARLSON, S. Cooperative Extension, University of Georgia, Sylvester, GA; BUTTS, C., National Peanut Research Laboratory, USDA-ARS, Dawson, GA; GALLIOS, I., Soil Science Artificial Intelligence Lab, University of Florida, Immokalee, FL; KICHLER, J. Cooperative Extension, University of Georgia, Moultrie, GA; HALL, D. Cooperative Extension, University of Georgia, Cochran, GA; MALLARD, J. Cooperative Extension, University of Georgia, Statesboro, GA; TANNER, S. Cooperative Extension, University of Georgia, Swainsboro, GA; TREVISAN, V., Crop and Soil Sciences Department, University of Georgia, Tifton, GA; VELLIDIS, G., Institute of Integrative Precision Agriculture, University of Georgia, Tifton, GA.
8:15	**Peanut Variety Testing (Irrigated/Non-Irrigated) in Cook County, Georgia** **PRICE, T.***[1], REEVES, B.[2], MONFORT, S.[3]; [1]University of Georgia Extension, Cook County, Adel, Georgia 31620; [2]University of Georgia Extension, Berrien County, Nashville, Georgia 31693; [3]Crop and Soil Science Department, University of Georgia, Tifton, Georgia 31793.
8:30	**How On-Farm Trials are Used to Support Extension Programming in North Carolina** **LILLEY, D.*,** BARROW, B., ELLISON, C., GRIMES, L., COLF, A., GURGANUS, R., STRICKLAND, M., MILES, L., CARROLL, M., KING, D., JALAI, S., SMITH, P., PIKE, B., PARRISH, B., PENDLETON, B., BRITTON, T., LILLEY, D., WALLACE, H., CHILDERS, L., MORGAN, J., KENNEDY, J., WATERS, M., HUFFMAN, M., SEITZ, M., HARRELL, J., SMITH, M., GROVE, A., MALLOY, M., WOOD, R., ANDERSON, D., BATTS, T., ANDERSON, J., PARKER, Z., REISIG, D., LUX, L., and JORDAN, D.L., NC State Extension, Raleigh, NC 27695.
8:45	**Results From a Grower Meeting Survey on Key Pests and Their Management in the Virginia-Carolina Region** **HOWE, H.*,** BARROW, B., GODFREY III, E., ELLISON, C., GRIMES, L., COLF, A., GURGANUS, R., STRICKLAND, M., MILES, L., CARROLL, M., KING, D., JALAI, S., SMITH, P., PIKE, B., PARRISH, B., PENDLETON, B., BRITTON, T., LILLEY, D., WALLACE, H., CHILDERS, L., MORGAN, J., KENNEDY, J., WATERS, M., HUFFMAN, M., SEITZ, M., HARRELL, J., SMITH, M., GROVE, A., MALLOY, M., WOOD, R., ANDERSON, D., BATTS, T., ANDERSON, J., PARKER, Z., REISIG, D., LUX, L., and JORDAN, D.L., NC State Extension, Raleigh, NC 27695; PREISSER, L., REITER, S., COOPER, E., RUTHERFORD, S., CLARK, N., MALONE, S., FOREHAND, J., LANGSTON, D., and BRYANT, T., Virginia Cooperative Extension Service, Blacksburg, VA; CROFT, J., VARN, J., GIBSON, R., MIKELL, H., SMITH, K., DEWITT, D., DANTZLER, Z., HARDEE, W., BARNES, M., ANCO, D., and MARSHALL, M., Clemson Cooperative Extension Service, Clemson, SC 29634.
9:00	**Experiences and Perspectives with On-Farm Trials in Martin County, North Carolina** **GRIMES, L.***, JORDAN, D.L., REISIG, D., and LUX, L., NC State Extension, Raleigh, NC 27695.
9:15	**A Two-Year Evaluation of Root-knot Nematode (RKN) Resistant Peanut Varieties and a Plant Growth Regulator (PGR) in Southwest Georgia** **CREWS, B.G.*,** Marion/Webster Agriculture and Natural Resources Agent, UGA Extension Southwest District, Preston, GA 31824; KEMERAIT, R.C., Department of Plant Pathology, University of Georgia Tifton Campus, Tifton, GA 31793; LOPEZ, C.L., Sumter County Agriculture and Natural Resources Agent, UGA Extension Southwest District, Americus, GA 31709; MCALLISTER, S.T., Terrell County Agriculture and Natural Resources Agent, UGA Extension Southwest District, Dawson, GA 39842; MONFORT, W.S., Department of Crop and Soil Sciences, University of Georgia Tifton Campus, Tifton, GA 31793.

8:00 – 8:45	**Charles Simpson Wild Species Session** Meeting Room: Potomac *Moderator: Soraya Leal-Bertioli, University of Georgia*
8:00	**Unlocking the Genetic Diversity of Peanut Wild Relatives: Progress and Prospects for Allotetraploid Production and Utilization** **LEAL-BERTIOLI, S.L.M.***, Institute of Plant Breeding, Genetics & Genomics and Department of Plant Pathology, The University of Georgia, Athens, GA 30602; ALYR, M.H., LEVERETT, J., HOPKINS, M., Institute of Plant Breeding, Genetics & Genomics, The University of Georgia, Athens, GA 30602; BERTIOLI, D.J., Institute of Plant Breeding, Genetics & Genomics and Department of Crop & Soil Sciences, The University of Georgia, Athens, GA 30602.
8:15	**A Second New Source of Nematode Resistance from *A. stenosperma* V10309** **BERTIOLI, D.J.*,** Institute of Plant Breeding, Genetics & Genomics, Department of Crop & Soil Sciences, University of Georgia, Athens, GA, 30602; BARNES, E.C., Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Athens, GA, 30602; BRENNEMAN, T.B., Department of Plant Pathology, University of Georgia, Tifton, GA, 31793; BROWN, N., Department of Crop & Soil Sciences, University of Georgia, Tifton, GA, 31793; LEAL-BERTIOLI, S.C.M., Institute of Plant Breeding, Genetics & Genomics, Department of Plant Pathology, University of Georgia, Athens, GA, 30602.
8:30	**Enhancing Methods for Polyploidy Induction in Wild Peanut Species** **SHIH, R.***, CHEN, H., Department of Horticultural Science, North Carolina State University, Raleigh, NC 27695, USA; ANDRES, R., DUNNE, J.C., Department of Crop and Soil Science, North Carolina State University, Raleigh, NC 27695, USA.

9:00 – 10:45	**Joe Sugg Ph.D. Competition II** Meeting Room: Potomac *Moderator: Bob Kemerait, University of Georgia*
9:00	**A Field Study on Peanut Responses to Midseason Combined Heat and Drought Stress** **VENNAM, R.R.*,** BALOTA, M., Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA, 23437, School of Plant and Environmental Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA, 24061; HAAK, D.C., School of Plant and Environmental Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA, 24061.
9:15	**Defense Against Aflatoxin Contamination in Peanut Breeding Lines with Introgressions from Wild *Arachis cardenasii*** **TOEWS, A.***, LEAL-BERTIOLI, S., Department of Plant Pathology, University of Georgia Athens Campus, Athens, GA 30601; BERTIOLI, D., Department of Crop and Soil Sciences, University of Georgia Athens Campus, Athens, GA 30601; TALLURY, S., USDA-ARS, Germplasm Conservation Unit, Griffin, GA 30224; FOUNTAIN, J., Department of Plant Pathology, University of Georgia Griffin Campus, Griffin, GA 30224.
9:30	**BREAK**
9:45	**The Role of Genetic Instability in Peanut Domestication and Its Lasting Impact on Cultivated Varieties** **LAMON, S.*,** ABERNATHY, B., Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Athens, GA 30602; LEAL-BERTIOLI, S., Department of Plant Pathology, University of Georgia, Athens, GA 30602; BERTIOLI, D., Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Athens, GA 30602.
10:00	**Effects of Climate and Landscape Structure on Thrips Population Dynamics and Tomato Spotted Wilt Virus Incidence Within Fields Across the Florida Panhandle** **YADAV, M.*,** ESQUIVEL, I.L., University of Florida, Department of Entomology & Nematology, North Florida Research and Education Center, Quincy, FL 32351.
10:15	**Characterization of a Major QTL Influencing Shell Strength in Virginia-Type Peanuts: Genetic Basis, Evolutionary Origin, and Implications for Breeding** **BEN-ISRAEL, G.***, KUNTA, S., LEVY, Y., HOVAV, R., Department of Field Crops, Institute of Plant Sciences, Agriculture Research Organization - the Volcani Center, 7505101 Rishon LeZiyyon, Israel.
10:30	**Balancing Weed Control: Evaluating Cover Crops and Herbicide Dissipation in Georgia Peanuts** **LINDELL, H.C.***, SMITH, C., BOCZ, M.C., Crop and Soil Sciences Department, University of Georgia, Athens, GA 30606; BOWEN, S., Crop and Soil Sciences Department, University of Georgia Tifton Campus, Tifton, GA 31793; EASON, K., USDA-ARS, Weed Science Research, Tifton, GA 31793; GREY, T.L., Crop and Soil Sciences Department, University of Georgia Tifton Campus, Tifton, GA 31793; BASINGER, N.T., Crop and Soil Sciences Department, University of Georgia, Athens, GA 30606.

9:45 – 12:00	**Grower-Focused Session** Meeting Room: James River C *Moderator: Scott Monfort, University of Georgia*
9:45	**The Peanut Variety and Quality Evaluation (PVQE) Program** **FOREHAND, J.C.***, CHERRY, W.F., DUNLOW, Z., Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437; JORDAN, D.L., North Carolina State University, Raleigh, NC 27695; ANCO, D., Clemson University, Blackville, SC 29817.
10:00	**Evaluating Options for Rootworm Management in Peanut** **ABNEY, M.R.***, Department of Entomology, University of Georgia, Tifton, GA 31793-5766.
10:15	**Benghal Dayflower in Georgia: A Review** **PROSTKO, E.P.*,** Department of Crop & Soil Sciences, University of Georgia, Tifton, GA 31793.
10:30	**Percentage of In-Season Stand Reduction at Different Crop Growth Stages** **TUBBS, R.S.*,** MONFORT, W.S., and PILON, C., Crop and Soil Sciences Department, University of Georgia, Tifton, GA 31793; HOUX, J., and ZARNSTORFF, M.E., National Crop Insurance Services, Overland Park, KS 66210.
10:45	**Growth and Yield Response of Early Applications of Prohexadione Calcium in Peanut (*Arachis hypogaea* L.)** **MONFORT, W.S.***, and TUBBS, R.S., Crop and Soil Sciences Dept., University of Georgia, Tifton, GA 31793; SCRUGGS, J., Fine-Americas, Inc., Franklin, NC 28734.
11:00	**Influence of Calcium Sources on Soil and Pod Calcium Levels, and Peanut Yield** **SINGH, H.*,** SINGH, S., SINGH, K., DAR, E.A., SHAH, A., NWOSU, N. West Florida Research and Education Center, Department of Agronomy, University of Florida, Jay, FL, 32565.
11:15	**How Approaches to Peanut Production Have Changed in Northampton County and North Carolina During the Past Three Decades and Where We Are Heading** **ELLISON, C.*,** and JORDAN, D.L., North Carolina State University, Raleigh, NC 27695.
11:30	**Comparison of Ten Peanut White Mold Fungicide Programs in Bulloch County, Georgia** **TYSON, W.G.***, Bulloch County Cooperative Extension, University of Georgia, Statesboro, GA 30458; KEMERAIT, R.C., Department of Plant Pathology, University of Georgia, Tifton, GA 31794.
11:45	**Contributions of the Bureau of Food Security's Peanut Innovation Lab Production Packages Project on Ghana and North Carolina** **JORDAN, D.L.*** and BRANDENBURG, R., North Carolina State University, Raleigh, NC 27695; NBOYINE, J.A., SEIDU, A., SUGRI, I., ABUDULAI, M., and MAHAMA, G.Y., Council for Scientific and Industrial Research-Savanna Agricultural Research Institute, Nyankpala, Tamale, Ghana; DZOMEKU, I.K., Department of Crop Science, Faculty of Agriculture, Food and Consumer Sciences, University for Development Studies, Nyankpala, Tamale, Ghana; ARTHUR, S., BOLFREY-ARKU, G., MOCHIAH, M.B., ASIBUO, J.Y., GYIMAH, A.G., KLUTSE, V., YORKE, M., OWUSU-AKYAW, M., and DANKYI, A., Council for Scientific and Industrial Research - Crops Research Institute, Kumasi, Ghana; SARKODIE-ADDO, J., AKROMAH, R., ELLIS, W.O., and APPAW, W., Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

10:45 – 12:00	**Food Science (Processing, Utilization, Nutrition, and Allergy) & Harvesting, Curing, Shelling, and Handling** Meeting Room: Potomac *Moderator: Julie Marshall, Lubbock Christian University*
10:45	**Incorporating High-Oleic Peanuts in Layer Diets: Impact on Production, Nutritional Profile and Economic Viability** POUDEL, I., Prestage Department of Poultry Science, NC State University, Raleigh, NC 27695; VU, T.C., Food Science & Market Quality and Handling Research Unit, ARS, US Dept. of Agriculture, Raleigh, NC 27695; WYSOCKY, R., **MALHEIROS, R.*,** ANDERSON, K.E., Prestage Department of Poultry Science, NC State University, Raleigh, NC 27695; TOOMER, O.T., Food Science & Market Quality and Handling Research Unit, ARS, US Dept. of Agriculture, Raleigh, NC 27695.
11:00	**Phytosterol Analysis of Selected Peanut Genotypes From the USDA-ARS Germplasm Resources Information Network (GRIN)** **MARSHALL, J.*,** MCGILTON, M., GILLIAM, L., Department of Chemistry and Biochemistry, Lubbock Christian University, Lubbock, TX.
11:15	**Enhancing Pod and Seed Phenotyping in Peanut Using Computer Vision and Low-Cost Imaging** **GARRITY, N.***, DUNNE, J., Department of Crop and Soil Science, North Carolina State University, Raleigh, NC; MARTINEZ, E.P., KUDENOV, M., Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, NC.
11:30	**Revisiting a Kernel Moisture Loss Model During Windrow Curing** **ZURWELLER, B.*,** SONG, Y., TUBERVILLE, J., MAY, J., Plant and Soil Sciences, Mississippi State University, Mississippi State, MS 39762; TILLMAN, B., BRYM, Z., HAMMOND, W., Agronomy Department, University of Florida, Gainesville, FL 32611; HOLTON, R., Institute of Plant Breeding, Genetics, Genomics, University of Georgia, Tifton, GA 31794.
11:45	**Fire Detection in Stored Peanuts: Measuring Flow Dynamics of Pre-Combustion Gases** **MCINTYRE, J.S. ***, National Peanut Research Laboratory, ARS, U.S. Department of Agriculture, Dawson, GA 39842; HOLT, G.A., PELLETIER, M.G., USDA-ARS Cotton Production and Processing Research Unit, Lubbock, TX 79403; BUTTS, C.J., LAMB, M.C., TODD, K.D., COOK, H.J., National Peanut Research Laboratory, ARS, U.S. Department of Agriculture, Dawson, GA 39842.

1:30 – 3:15	**Plant Pathology and Nematology** Meeting Room: James River C *Moderator: David Langston, Virginia Tech*
1:30	**Genotypic Response of Peanut to Leaf Spot Under Different Fungicide Regimes** **GOYZUETA, M.D.***, TILLMAN, B.L., GOMILLION, M., ODUOR, J.O., CASTRO, S.C., LEONARD, D.J., University of Florida, North Florida Research and Education Center, Marianna, FL; AREVALO-AYALA, A., Department of Plant Breeding, Universität Hohenheim, Stuttgart, Germany; and ICHAZO-RIBERA, L.C., Cornell Cooperative Extension, Cornell University, Albion, NY.
1:45	**Effect of Contiguous Peanut Genotypes on Incidence of Tomato Spotted Wilt in Georgia-06G** **CULBREATH, A.K.***, BAG, S., KEMERAIT, R.C., Department of Plant Pathology, Univ. of Georgia, Tifton, GA 31793-5766; ABNEY, M.R., Department of Entomology, Univ. of Georgia, Tifton, GA 31793-5766.
2:00	**Efficacy of Fungicides for Managing *Rhizopus* Seed Rot and Improving Peanut Stand and Vigor** **DA SILVA, M.B.***, BYRD-MASTERS, L., and LANGSTON Jr., D.B. Virginia Polytechnic Institute and State University, Suffolk, 23437.
2:15	**Observations From 39 Years of Research on Fungicides for Soilborne Peanut Diseases** **BRENNEMAN, T.B.*** and CULBREATH, A.K., Department of Plant Pathology, University of Georgia, Tifton, GA 31794.
2:30	**A Protocol to Elicit in Vitro Germination of *Thecaphora frezzii* Teliospores, the Causal Agent of Peanut Smut** **MAESTRO, M.***, Foundation for the Study of Invasive Species, Hurlingham, Argentina; SLOCUM, C., USDA-ARS, Foreign Disease-Weed Science Research Unit, Ft. Detrick, MD 21702, USA; RODRÍGUEZ, A.V., Instituto Nacional de Tecnología Agropecuaria, Manfredi, Argentina; KOCH BACH, R.A., USDA-ARS, Foreign Disease-Weed Science Research Unit, Ft. Detrick, MD 21702, USA; CABRERA WALSH, G., Foundation for the Study of Invasive Species, Hurlingham, Argentina; BALDESSARI, J., Instituto Nacional de Tecnología Agropecuaria, Manfredi, Argentina; CHAMBERLIN, K., and BENNETT, R.S., USDA-ARS, Peanut and Small Grains Research Unit, Stillwater, OK 74075, USA.
2:45	**Chromosome-Level Genome Assembly of *Thecaphora frezzii,* Cause of Peanut Smut, Reveals a Highly Repetitive Genome and the Largest of the True Smut Fungi** GREATENS, N., SCINet Program and ARS AI Center of Excellence, Office of National Programs, USDA Agricultural Research Service, Beltsville, MD, U.S.A. and Foreign Disease-Weed Science Research Unit, USDA Agricultural Research Service, Fort Detrick, MD, U.S.A.; **KOCH BACH, R.A.*,** Foreign Disease-Weed Science Research Unit, USDA Agricultural Research Service, Fort Detrick, MD, U.S.A.; COUGER, M.B., Department of Thoracic Surgery, Brigham & Women's Hospital, Boston, MA, U.S.A.; MAESTRO, M., Foundation for the Study of Invasive Species, Hurlingham, Buenos Aires Province, Argentina; CABRERA WALSH, G., Foundation for the Study of Invasive Species, Hurlingham, Buenos Aires Province, Argentina; BENNETT, R.S., Peanut and Small Grains Research Unit, Oklahoma & Central Plains Agricultural Research Center, USDA Agricultural Research Service, Stillwater, OK, U.S.A.; CLEVENGER, J., HudsonAlpha Institute for Biotechnology, Huntsville, AL, U.S.A.; CHAMBERLIN, K., Peanut and Small Grains Research Unit, Oklahoma & Central Plains Agricultural Research Center, USDA Agricultural Research Service, Stillwater, OK, U.S.A.

1:30 – 3:15	**Physiology and Seed Technology** Meeting Room: Potomac *Moderator: Cristiane Pilon, University of Georgia*
1:30	**Photosynthetic Quantum Efficiency of Wild-Derived and Cultivated Peanuts** AWORI, K.J., **PILON, C.***, SNIDER, J.L., BETIOL, O., Crop and Soil Sciences Department, University of Georgia Tifton Campus, Tifton, GA 31793; BERTIOLI, S., Plant Pathology Department, University of Georgia, Athens, GA 30602; BERTIOLI, D., Crop and Soil Sciences Department, University of Georgia, Athens, GA 30602.
1:45	**Influence of Root Characteristics in Water User and Water Spender Drought Tolerant Peanut Cultivars** **SANZ-SAEZ, A.*,** ZHANG, Q., SAJID, W., JASAYASUNDARA. K.W.L., FENG, Y., CHEN C.Y., Dep. of Crop, Soil and Environmental Sciences, Auburn University, Auburn, AL 36849, USA; DANG, P., USDA-ARS, National Peanut Research Laboratory, Dawson, GA 39842, US; REZZOUK, F.Z., ARAUS, J.L., SERRET, M.L. Integrative Crop Ecophysiology Group, Plant Physiology Section, Faculty of Biology, University of Barcelona, 08028 Barcelona, Spain.
2:00	**Impact of Seed Traits on Seedling Vigor in Peanut** **PARKASH, V.*,** BROWN, N., RODRIGUEZ-SANCHEZ, J., ADAMS, J., SCHWARTZ, B. Institute of Plant Breeding, Genetics, and Genomics, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA, 31793.
2:15	**Is Prohexadione Calcium Effect on Peanut Yield Dependent on Plot Size or Weather?** **BALOTA, M.***, Tidewater Agricultural Research and Extension Center (TAREC), Suffolk, Virginia 23437.
2:30	**Break**
2:45	**Plant Physiological Thresholds and Their Links With Aflatoxin Production Under Climate Stress** **TORRES, L.*,** SAPES, G., and HAMMOND, W.M., Agronomy Department University of Florida/IFAS, Gainesville, Florida 32611; DUFAULT, N., BECKHAM, K., Plant Pathology Department University of Florida, Gainesville, Florida 32611; GOMILLION, M., TILLMAN, B., North Florida Research and Education Center, Marianna, Florida 32446.
3:00	**A First Year Look at the Composition Changes Due in a Range of Peanut Lines Grown in Dryland Plots** **DEAN, L.***, HENDRIX, K., USDA-Agricultural Research Service, Food Science and Market Quality and Handling Research Unit, Raleigh, NC, 27695-7624; DANG, P., LAMB, M., USDA-Agricultural Research Service, National Peanut Research Laboratory, Dawson, GA, 29842; DAVIS, B., JLA International, Albany, GA, 31721, IEH Laboratories, Lake Forest Park, WA 98155.

3:30 – 5:00 Poster #	**MS Poster Competition** Meeting Room: James River Foyer
1	**Improving Drought Resilience in Runner Peanuts: Breeding for High Yield, High Oleic Content, and Root Knot Nematode Resistance in West Texas** **YERRA, M.M.*,** Department of Soil and Crop Sciences, Texas A&M University, College Station, TX,77843; RAJAN, N., Department of Soil and Crop Sciences, Texas A&M University, College Station, TX, 77843; CASON, J.M., Texas A&M AgriLife Research, Stephenville, TX,76401; WHEELER, T.A., Texas A&M AgriLife Research; GUO, W., Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409 and Texas A&M AgriLife Research, Lubbock, TX, 79403; YOUNG, A.W., PUGH, N.A., and EMENDACK, Y., Cropping Systems Research Laboratory, USDA-ARS, Lubbock, TX, 79415; MENDEZ, J., and VALDEZ, D., Texas A&M AgriLife Research, Lubbock, TX, 79403; BUROW, M.D., Texas A&M AgriLife Research, Lubbock, TX, 79403, and Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.
2	**Transcriptomic Analysis of *Arachis hypogaea* L. to Identify Genes Conferring Resistance to *Meloidogyne arenaria* (Neal) Chitwood** **TIWARI, M.*,** Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409; WHEELER, T.A., Texas A& M AgriLife Research, Lubbock, TX, 79403; CASON, J.M., Texas A& M AgriLife Research and Extension Centre at Stephenville, Stephenville, TX,76401; SIMPSON, C.E., Texas A& M AgriLife Research and Extension Centre at Stephenville, Stephenville, TX,76401; MENDU, V., Department of Agriculture, Agribusiness, and Environmental Sciences, Texas A&M University, Kingsville, TX 78363; BUROW, M.D., Texas A&M AgriLife Research, Lubbock, TX, 79403, and Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.
3	**Identifying Optimal NIR-Based Sorting Thresholds to Isolate Genotypes with Desired Compositional Traits for Peanut Breeding Programs** **ADAMS, J.*,** BROWN, N., Institute of Plant Breeding, Genetics, and Genomics, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; DAVIS, B., DAVIS, J., JLA Global, Albany, GA 31721.
4	**Evaluation of Late Leaf Spot-Resistant Peanut Breeding Lines With Putative Novel Resistance From TxAG-6** **MARCHETTI, A.*,** BROWN, N., Institute of Plant Breeding, Genetics, and Genomics, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793. CASON, J., SIMPSON, C., TX Texas A&M AgriLife Research, Texas A&M University System, Stephenville, TX, 76401.
5	**Strategies of Iron Management in Alkaline Sandy Soils for Peanut Production in North Florida** **COMITRE, G.A.*,** PIROLI, V.B., VIKASH, V., BOLTON, L., SIDHU, S.S., Agronomy Department, University of Florida – North Florida Research and Education Center, Institute of Food and Agricultural Sciences, Quincy, FL 32351; KUMAR, S., North Florida Research and Education Center-Suwannee Valley, University of Florida – Institute of Food and Agriculture Sciences, Live-Oak, FL 32060.
6	**Screening Advanced Peanut Breeding Lines for Photosynthetic Drought Tolerance** **SYKES, L.*,** PILON, C., BROWN, I.N., AWORI, K., Department of Crop and Soil Sciences, University of Georgia Tifton Campus, Tifton, GA 31793; BERTIOLI, S., Department of Plant Pathology, University of Georgia, Athens, GA 30602; BERTIOLI, D., Department of Crop and Soil Sciences, University of Georgia, Athens, GA 30602.
7	**Effectiveness of Controlled-Released Potassium Fertilization in Peanut Production in Sandy Soils of Northcentral Florida** **VERMA, V.***, PIROLI, V.B., COMITRE, G.A., BOLTON, L., Agronomy Department, University of Florida - North Florida Research and Education Center, Quincy, FL 32 Agronomy Department, University of Florida - North Florida Research and Education Center, Quincy, FL; KUMAR, S., Northeast Extension District, University of Florida -North Florida Research and Education Center, Live Oak, FL; SIDHU, S.S., Agronomy Department, University of Florida - North Florida Research and Education Center, Quincy, FL

3:30 – 5:00 Poster #	**PhD Poster Competition** Meeting Room: James River Foyer
8	**Genotypic Differences in Photosynthetic Heat Tolerance Using Wild-Derived and Cultivated Peanuts** **AWORI, K.J.*,** PILON, C., SNIDER, J.L., Department of Crop and Soil Sciences, The University of Georgia, Tifton, GA 31793-0748; BERTIOLI, S., Department of Plant Pathology, The University of Georgia, Athens, GA 30602-0000; BERTIOLI, D., Department of Crop and Soil Sciences, The University of Georgia, Athens, GA 30602-0000.
9	**Utilizing PACE Marker to Identify Candidate RKN-Resistance Gene Region on Chrom 9A Introgressed from *Arachis cardenasii*** **JONES, E.*,** ANDRES, R., Crop and Soil Science Department, North Carolina State University, Raleigh, NC 27606; OAKLEY, A., Crop and Soil Science Department, North Carolina State University, Raleigh, NC 27606; GORNY, A., Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC 27606; DUNNE, J., Crop and Soil Science Department, North Carolina State University, Raleigh, NC 27606.
10	**Transcriptomic Insights into Heat-Induced Lipid Remodeling for Thermotolerance in Peanut** **SATHASIVAM, M.*, SPIVEY, W.W., RUSTGI, S.,** Department of Plant & Environmental Sciences, Clemson, SC 29634; BUROW, M., Department of Plant and Soil Sciences, Texas Tech University, Lubbock, TX 79409, and Texas A&M AgriLife Research, Lubbock, TX 79403; NARAYANAN, S., Department of Plant & Environmental Sciences, Clemson, SC 29634.
11	**Utilizing Flow Cytometry to Estimate the Genome Sizes of Various *Arachis* Species From Multiple Taxonomic Sections** **COSTELLO, K.*,** STELLY, D., HODNETT, G., Texas A&M, Department of Soil and Sciences, College Station, TX, 77840, CASON, J., SIMPSON, C., Texas A&M Research, Texas A&M University System, Stephenville, TX 76401, VERCHOT, J., Texas A&M, Department of Soil and Crop Sciences, Department of Plant Pathology and Microbiology, College Station, TX, 77840.
12	**Development and Analysis of Crosses Made From Runner Introgression Populations for High Oleic Oil Content and Resistance to Early Leaf Spot in Peanut** **GAUS-BOWLING, T.*,** Biological Sciences, Amarillo College, Amarillo, TX 79178, and Texas Tech University, Dept. of Plant and Soil Science, Lubbock, TX 79409; BENNETT, R., USDA-ARS, Stillwater, OK 74075; CASON, J., and SIMPSON, C., Texas A&M AgriLife Research, Stephenville, TX 76401; TENGEY, T., Savana Agricultural Research Institute, Ghana; and BUROW, M., Texas A&M AgriLife Research, Lubbock, TX 79403, and Texas Tech University, Dept. of Plant and Soil Science, Lubbock, TX 79409.
13	**Harnessing Wild *Arachis* Species for Peanut Improvement Using CSSLs** **AVOSA, M.*,** HOPKINS, M.S., ABERNATHY, B.L., Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Athens, GA, 30602; LEAL-BERTIOLI, S.C.M., Institute of Plant Breeding, Genetics & Genomics, Department of Plant Pathology, University of Georgia, Athens, GA, 30602; BERTIOLI, D.J., Institute of Plant Breeding, Genetics & Genomics, Department of Crop & Soil Sciences, University of Georgia, Athens, GA, 30602.
14	**Virginia Peanut Maturity Indicators Obtained From Aerial Imaging and Analysis for Phenomic Prediction** **PETTIT, N.*,** Department of Crop Science, North Carolina State University, Raleigh, NC 27695; GARRITY, N., Department of Crop Science, North Carolina State University, Raleigh, NC 27695; OAKLEY, A., Department of Crop Science, North Carolina State University, Raleigh, NC 27695; DUNNE, J., Department of Crop Science, North Carolina State University, Raleigh, NC 27695.
15	**Genomic Prediction and QTL-Mapping of TSWV Resistance in Cultivated Peanut Using Conventional and High-Throughput Disease Assessment** **MANGLA, H.*,** BROWN, N., Institute of Plant Breeding, Genetics and Genomics, Department of Crop and Soil Sciences, University of Georgia, Tifton, GA 31793; WALLACE, J., Institute of Plant Breeding, Genetics and Genomics, Department of Crop and Soil Sciences, University of Georgia, Athens, GA 30602.

3:30 – 5:00 Poster #	**PhD Poster Competition** Meeting Room: James River Foyer
16	**Identification of Southern Corn Rootworm Injury in Peanuts Using Deep Convolutional Neural Network Based-YOLO** **NKWOCHA, C.L.*,** CHANDEL, A.K., Department of Biological Systems Engineering, Virginia Tech, Blacksburg, VA 24061, Virginia Tech Tidewater Agricultural Research and Extension Center, Holland Road, Suffolk, VA 23437; BRYANT, T., MALONE, S., Department of Entomology, Virginia Tech, Blacksburg, VA 24061, Virginia Tech Tidewater Agricultural Research and Extension Center, Holland Road, Suffolk, VA 23437; BALOTA, M., School of Plant and Environmental Sciences, Virginia Tech, Blacksburg, VA 24061, Virginia Tech Tidewater Agricultural Research and Extension Center, Holland Road, Suffolk, VA 23437.
17	**Role of *FAD2* Genes in Conferring Heat-Tolerance and Enhancing Seed Oil Quality in Peanut** **KAIYRBEKOV, T.*,** SATHASIVAM, M., RUSTGI, S., Department of Plant and Environmental Sciences, Clemson University, Clemson, SC 29634; BUROW, M., Department of Plant and Soil Sciences, Texas Tech University, Lubbock, TX 79409, and Texas A&M AgriLife Research, Lubbock, TX 79403; NARAYANAN, S., Department of Plant and Environmental Sciences, Clemson University, Clemson, SC 29634.
18	**Withdrawn**
19	**Evaluating Early Season Post-Emergence Herbicide Injury in Peanut** **FOREHAND, J.C.*,** CHERRY, W.F., DUNLOW, Z., Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA 23437; FOOTE, E., JORDAN, D.L., North Carolina State University, Raleigh, NC 27695.
20	**Genetic Improvement of High-Oil Peanut for Dual Stress Tolerance and Renewable Energy Production** **PANKAJ, Y.*,** Texas A&M, Department of Soil and Crop Sciences, College Station, TX 77843, CASON, J., SIMPSON, C., Texas A&M AgriLife Research, Texas A&M University System, Stephenville, TX 76401, KUROUSKI, D., Texas A&M, Department of Biochemistry and Biophysics, College Station, TX 77843, STELLY, D., Texas A&M, Department of Soil and Crop Sciences, College Station, TX 77843, PHAM, H., Texas A&M AgriLife Research, Texas A&M University System, Lubbock, TX 79403, BUROW, M.D., Texas A&M AgriLife Research, Texas A&M University System, Lubbock, TX 79403 & Texas Tech University, Department of Plant and Soil Science, Lubbock, TX 79409.
21	**Withdrawn**
22	**A Weather Driven Statistical Modeling Framework for Predicting Aflatoxin Risk in Peanut Production: Development of a Decision-Support Tool** **KIM, D.Y.*,** BRYM, Z.T., Agronomy Department, University of Florida, Tropical Research and Education Center, Homestead, FL 33031; TILLMAN, B.L., Agronomy Department, University of Florida, North Florida Research and Education Center, Marianna, FL 32446.
23	**Withdrawn**

3:30 – 5:00 Poster #	**General Poster Session** Meeting Room: James River Foyer
24	**An updated KASP Marker-based Genetic Linkage Map of an Interspecific Introgression Population of Peanut (*Arachis hypogaea* L.) and Identification of Leafspot Resistance QTLs** **TENGEY, T.K.*,** CSIR-Savanna Agricultural Research Institute, NL-1032-0471, Nyankpala, Ghana and Texas A&M AgriLife Research, Lubbock, TX 79403; SIMPSON, C.E., Texas A&M AgriLife Research, Stephenville, TX 7640; CASON, J., Texas A&M AgriLife Research, Stephenville, TX 76401; HILLHOUSE, A., Department of Veterinary Pathobiology, College of Veterinary Medicine, Texas A&M University, College Station, TX 77843; MENDU, V. Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409 and Department of Agriculture, Agribusiness and Environmental Sciences, Texas A&M University, Kingsville, TX 78363; BUROW, M.D., Texas A&M AgriLife Research, Lubbock, TX 79403, and Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.
25	**The Evolution of the Spanish Peanut (*Arachis hypogaea*) Through Selective Breeding** **BENNETT, B.D.*,** Tarleton State University, Stephenville, TX 76401, Texas A&M AgriLife Research, Stephenville, TX 76401; CASON, J.M., SIMPSON, C.E., FAITH, A.R., Texas A&M AgriLife Research, Stephenville, TX 76401; BUROW, M.D., Texas A&M AgriLife Research, Lubbock, TX 79403, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409.
26	**Machine Learning Algorithms to Genomic Selection in a Peanut Breeding Program** **ROSSI, E.A.*,** Instituto de Investigaciones Agrobiotecnológicas (INIAB, UNRC-CONICET) MANIAGRO, S.A., MAGALLANES, S., FALCO, A., CAVIGLIASSO, M., MANIAGRO, S.A., BONAMICO, N., Instituto de Investigaciones Agrobiotecnológicas (INIAB, UNRC-CONICET), BALZARINI, M. Unidad de Fitopatología y Modelización Agrícola (UFYMA, CONICET).
27	**Accelerating High Oil Peanut Improvement Through UAV-Enabled High-Throughput Phenotyping** **KAFLE, B.*,** FAITH, A., BENNETT, B., CASON, J., SIMPSON, C., Texas A&M AgriLife Research, Stephenville, TX 76401; BURROW, M., Texas A&M AgriLife Research, Lubbock, TX 79403, and Texas Tech University, Department of Plant and Soil Science, Lubbock, TX 79409.
28	**Registration of Texas A&M AgriLife Research's First High-Oil Peanut Lines Tx137967 and 31-08-05-03** CASON, J.M., SIMPSON, C.E., BENNETT, B.D., SHUMAKER, J., **GREEN, E.N.*,** Texas A&M AgriLife REC, 1229 N. US Hwy 281, Stephenville, TX 76401; BUROW, M.D., Texas Tech University, Dept. of Plant and Soil Science, Lubbock TX, 79409; PHAM, H., Texas A&M AgriLife REC, 1102 East FM 1294, Lubbock, TX 79403; RAVELOMBOLA, W., Texas A&M AgriLife Research REC, 11708 US-70 South Vernon, TX 76384; BARING, M.R., Texas A&M AgriLife Research, College Station, TX 77843-2474.
29	**Withdrawn**
30	**(*A. valida* x *A. duranensis*)^{4x}: a Novel Source of Resistance to Groundnut Rosette and Late Leaf Spot Diseases for African Peanut Cultivars** **ESSANDOH, D.A.*,** Institute of Plant Breeding, Genetics & Genomics, University of Georgia, Athens, GA 30602; FONCEKA, D., CIRAD, INRAE, AGAP, University Montpellier, Institut Agro, Montpellier, France; ALYR, M.H., Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Athens, GA, United States; KALULE, D.O., Oil Crops Research Program, National Semi-Arid Resources Research Institute (NaSARRI), Soroti, Uganda; BERTIOLI, D.J., Institute of Plant Breeding, Genetics & Genomics and Department of Crop & Soil Sciences, The University of Georgia, Athens, GA 30602 and; LEAL-BERTIOLI, S.L.M., Institute of Plant Breeding, Genetics & Genomics and Department of Plant Pathology, The University of Georgia, Athens, GA 30602.

3:30 – 5:00 Poster #	**General Poster Session continued** Meeting Room: James River Foyer
31	**Economic Feasibility Analysis of Peanut Crushing Plant for Use of OilMax Peanut Varieties** RIBERA, L., Department of Agricultural Economics, Texas A&M University, College Station, TX 77843, **CASON, J.M.***, Texas A&M AgriLife Research, Texas A&M University System, Stephenville, TX 76401, PARKER, B., Peanut Solutions LLC, Atlanta, GA, 30339, ABELLO, P., Texas A&M AgriLife Research, Texas A&M University System, Vernon, TX 76384.
32	**Consumer Perception of Peanuts and Peanut Products** BEST, A., Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC, 27695-7624; DEAN, L., USDA-Agricultural Research Service, Food Science and Market Quality and Handling Research Unit, Raleigh, NC, 27695-7624; DRAKE, M., KAUFMAN, A., Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC, 27695-7624; **JORDAN, D.*,** Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695-7620.
33	**Efficacy of Isocycloseram Against Two Soil-Insect Pests of Peanut in a Laboratory Bioassay** **MCDONALD, L.G.*,** and ABNEY, M.R., Department of Entomology, The University of Georgia, Tifton, GA 31793.
34	**Susceptibility of Peanut Cultivars to Peanut Burrower Bug Feeding Injury in Georgia** **SUTTON, K.*,** Department of Entomology, Virginia Tech, Easternshore Agricultural Research and Extension Center, Painter, VA. ABNEY, M., Department of Entomology, University of Georgia Tifton Campus, Tifton, GA. FAIR, C.G., College of Agricultural & Environmental Sciences, University of Georgia Griffin Campus, Griffin, GA.
35	**Evaluating Peanut Fungicide Programs for Cost and Yield in Southwest Georgia** **CREWS, B.G.*,** Marion/Webster County Extension, Preston, GA 31824; COLLINS, D., Lee County Extension, Leesburg, GA 31763; EDWARDS, R.P., Southwest District Ag Water Team, Tifton, GA 31793; KEMERAIT, R.C., Extension Plant Pathologist, Department of Plant Pathology, University of Georgia, Tifton, GA 31793; LOPEZ, C., Sumter County Extension, Americus, GA 31709; LYON, D., Southwest District Ag Water Team, Tifton, GA 31793; MCALLISTER, S.T., Terrell County Extension, Dawson, GA 39842; QUAYLE, J., Crisp County Extension, Cordele, GA 31010; SANDERS, H., Ben Hill County Extension, Fitzgerald, GA 31750; STARR, B., Dooly/Schley County Extension, Vienna, GA 31092; WATSON, W., Stewart County Extension, Lumpkin, GA 31815.
36	**2024 Webster County Peanut Drying Trial** **CREWS, B.G.*,** Marion/Webster County Extension, Preston, GA 31824; COLLINS, D., Lee County Extension, Leesburg, GA 31763; EDWARDS, R.P., Southwest District Ag Water Team, Tifton, GA 31793; LOPEZ, C., Sumter County Extension, Americus, GA 31709; LYON, D., Southwest District Ag Water Team, Tifton, GA 31793; MCALLISTER, S.T., Terrell County Extension, Dawson, GA 39842; QUAYLE, J., Crisp County Extension, Cordele, GA 31010; SANDERS, H., Ben Hill County Extension, Fitzgerald, GA 31750; STARR, B., Dooly/Schley County Extension, Vienna, GA 31092; WATSON, W., Stewart County Extension, Lumpkin, GA 31815.
37	**Evaluation of Two Biological Products on Peanut Yields in Southwest Georgia** **CREWS, B.G.*,** Marion/Webster County Extension, Preston, GA 31824; COLLINS, D., Lee County Extension, Leesburg, GA 31763; EDWARDS, R.P., Southwest District Ag Water Team, Tifton, GA 31793; LOPEZ, C., Sumter County Extension, Americus, GA 31709; LYON, D., Southwest District Ag Water Team, Tifton, GA 31793; MCALLISTER, S.T., Terrell County Extension, Dawson, GA 39842; QUAYLE, J., Crisp County Extension, Cordele, GA 31010; SANDERS, H., Ben Hill County Extension, Fitzgerald, GA 31750; STARR, B., Dooly/Schley County Extension, Vienna, GA 31092; WATSON, W., Stewart County Extension, Lumpkin, GA 31815.
38	**Peanut Variety Evaluation in Colquitt County, Georgia** **KICHLER, J.M.*,** WILSON, T.B., UGA Extension, Moultrie, GA 31788: MONFORT, W.S., University of Georgia, Tifton, GA 31793.

3:30 – 5:00 Poster #	General Poster Session continued Meeting Room: James River Foyer
39	**Two-Year Evaluation of Peanut Variety Response to Kudos Growth Regulator** **PARKER, W.*,** Area Agronomy Agent, University of Georgia, Statesboro, GA 30458; MONFORT, S., Extension Peanut Agronomist, University of Georgia, Tifton, GA 31793; POWELL, S., Treutlen County Extension Agent, University of Georgia, Soperton, GA, 30457; TANNER, S., Emanuel County Extension Agent, University of Georgia, Swainsboro, GA, 30401.
40	**South Carolina Peanut Farmer Production Practices Survey** MEHL, S.N., DAVIS, Jr., C.W., CROFT, J.K., VARN, J., GIBSON, R.S., BARNES, J.M., DEWITT, D.B., MIKELL, H.W., SMITH, G.K., DANTZLER, Z., HARDEE, W.J., Clemson University Cooperative Extension, Clemson, SC, 29634; KIRK, K.R., Clemson University Center for Agricultural Technology, Edisto Research and Education Center, Blackville, SC 29817; SMITH, N.B., Agricultural Sciences Department, Clemson University, Clemson, SC 29634; **ANCO, D.J.*,** Edisto Research and Education Center, Department of Plant and Environmental Sciences, Clemson University, Blackville, SC 29817.
41	**Management Efficacy and Response to Post-Application Precipitation of Fungicides for Southern Stem Rot of Peanut and Evaluation of Co-Application with Micronized Sulfur** **ANCO, D.J.*,** HIERS, J., Edisto Research and Education Center, Department of Plant and Environmental Sciences, Clemson University, Blackville, SC 29817; ZURWELLER, B., Department of Plant and Soil Sciences, Mississippi State University, Mississippi State, MS 39762.
42	**Master Irrigator Program Leads to Increased Adoption Rate of New Technologies for Irrigation Management** **EDWARDS, P.*,** BENNETT, J., BOWEN, D., BROWN, W., CARTER, B., CLOUD, C., COLLINS, C., CREWS, B., DOWDY, M., FRYE, M., GREEN, R., HALL, D., JOYCE, R., LYON, D., MALLARD, J., MCALLISTER, S., MILLER, J., PORTER, W., POWELL, S., ROYAL, C., SAPP, P., SAPP, P., SHIRLEY, A., TANNER, S., TYSON, B., Cooperative Extension, University of Georgia.
43	**Assessing Aflatoxin Levels in Irrigated Peanut Fields with Dryland Corners** **EDWARDS. P.*,** Cooperative Extension, University of Georgia, Tifton, GA; ANDERSON, H., Cooperative Extension, University of Georgia Ocilla, GA; CARLSON, S., Cooperative Extension, University of Georgia, Sylvester, GA; HALL, D., Cooperative Extension, University of Georgia, Cochran, GA; HAYES, B., Cooperative Extension, Camilla, GA; KICHLER, J., Cooperative Extension, University of Georgia, Moultrie, GA; LYON, D., Cooperative Extension, University of Georgia, Tifton, GA; MALLARD, J., Cooperative Extension, University of Georgia, Statesboro, GA; SANDERS, H., Cooperative Extension, University of Georgia, Fitzgerald, GA; SAPP, P., Cooperative Extension, University of Georgia; SMITH, A., Cooperative Extension, Douglas, GA; University of Georgia TANNER, S., Cooperative Extension, University of Georgia, Swainsboro, GA; WILSON, T., Cooperative Extension, University of Georgia, Moultrie, GA; POLES, B.S., Crop and Soil Sciences, University of Georgia Tifton, GA; PILON, C., Crop and Soil Science, University of Georgia Tifton, GA; PORTER, W., Crop and Soil Science, University of Georgia Tifton, GA.
44	**Evaluation of Drought-Tolerant Novel Peanut (*Arachis hypogaea* L) Genotypes to Photosynthetic Rates and Yield** ADIREDDY, R.G.[1,2], ANAPALLI, S.S.[1], OJHA, M.[3], **PUPPALA, N.*[3],** and REDDY, K.N.[1] [1]Crop Production Systems Research Unit, USDA-ARS, Stoneville, MS-38776, USA; [2] ICAR-Indian Institute of Groundnut Research, Regional Research Station, Ananthapur, AP-515001, India; [3]New Mexico State University, Agricultural Science Center at Clovis – New Mexico – 88101, USA.
45	**Impact of Mid-Season Heat and Drought on Peanut Yield and Quality in Virginia** **VENNAM, R.R.*,** BALOTA, M., Tidewater Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Suffolk, VA, 23437, School of Plant and Environmental Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA, 24061.

3:30 – 5:00 Poster #	**General Poster Session continued** Meeting Room: James River Foyer
46	**Redefining Drought Tolerance in Peanut: Hydraulic Traits Emerge as Field-Relevant Predictors** **BUCIOR, E.R.***[1,2]; SORENSEN, R.B.[1], DANG, P.P.[1], CARDOSO, A.A.[2], LAMB, M.C.[1]. [1]USDA-ARS National Peanut Research Laboratory, Dawson, GA, USA. [2]Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC, USA.
47	**Fungicide Program Evaluation in Short Rotation Irrigated Peanuts in Berrien County, Georgia** **REEVES, B.*,** University of Georgia, Berrien County, Nashville, GA 31639; BARNES, T., University of Georgia, Atkinson County, Pearson, GA 31642; KEMERAIT Jr., R.C., University of Georgia Department of Plant Pathology, Tifton, GA 31793.
48	**Collecting Mating Type Data on *Nothopassalora personata* Directly From Late Leaf Spot Tissue of Peanut** **GREMILLION, S.*,** Department of Biology, Georgia Southern University, Savannah, GA 31419; ROBERSON, G., Biology Department, Valdosta State University, Valdosta, GA 31698; ARIAS, R., USDA-ARS, Dawson, GA 39842; CULBREATH, A., Department of Plant Pathology, University of Georgia, Tifton, GA 31794; CANTONWINE, E., Biology Department, Valdosta State University, Valdosta, GA 31698.
49	**Withdrawn**
50	**Peanut Response to Tillage System and Bedding in North Carolina** **GARNER, E.H.*,** JORDAN, D.L., LUX, L.A., REISIG, D., AUSTIN, R., and PIKE, B., North Carolina State University, Raleigh, NC 27695.
51	**Soil Moisture Conservation in Peanut (*Arachis hypogea* L.) Production Systems** **MACK, S.*,** GAMBLE, A.V., KNAPPENBERGER, T., and BALKCOM, K., Department of Crop, Soil and Environmental Sciences, 201 Funchess Hall, Auburn University, Auburn AL.
52	**Plant Growth Regulator Enhances Peg Strength, and Pod Yield in Different Peanut Varieties** **SINGH, S.*,** SHAH, A., SINGH, K., DAR, E.A., NWOSU, N., SINGH, H., West Florida Research and Education Center, Department of Agronomy, University of Florida, Jay, FL, 32565.
53	**Withdrawn**
54	**Peanut Response to Variable Rate and Timing Applications of Aminopyralid (Milestone®)** **SHAY, N.J.*,** and PROSTKO, E.P., Department of Crop & Soil Sciences, University of Georgia, Tifton, GA 31794.

3:30 – 5:00 Poster #	**General Poster Session continued** Meeting Room: James River Foyer
55	**Weed Control and Peanut Tolerance With Norflurazon in Texas and Oklahoma** GRICHAR, W.J.*, Texas A&M AgriLife Research, Corpus Christi, TX 78406; DOTRAY, P.A., Texas A&M AgriLife Research, Lubbock, TX 79403; **BAUGHMAN,T.A.*,** Texas A&M AgriLife Research, Lubbock, TX 79403; FOSTER, D.C., Texas Tech University, Lubbock, TX 79409-2122.
56	**Optimizing Planting Date and Variety Selection for Insect Management in Virginia Peanuts** **BRYANT, T.B.*,** FOREHAND, J., MALONE, S.M., Tidewater Agricultural Research and Extension Center, Virginia Tech, Suffolk, VA 23437.
57	**Genotype-by-Environment Interaction and Genomic Breeding Strategies for Peanut Improvement in South Carolina State** **ABERA, F.*** and ZIA, B. Center of Plant Breeding, Genetics and Genomics (CPBGG), Public Service and Agriculture, South Carolina State University, 300 College Street, Orangeburg, SC 29117.

PRESENTATION ABSTRACTS

Investigating the Influence of Drought on Peanut Soil Microbiomes and their Associations with *Aspergillus flavus* Populations and Aflatoxin Contamination

ADAMS, A.*, Department of Plant Pathology, University of Georgia, Griffin, GA 30223, USA; CLEVENGER, J., MYERS, Z., KORANI, W., HudsonAlpha Institute for Biotechnology, Huntsville, AL 35806, USA; MUNOZ HERRERA, G., JIMENEZ MADRID, A., Department of Plant Pathology, University of Georgia, Tifton, GA 31793, USA; PILON, C., MAKTABI, S., VELLIDIS, G., Department of Crop & Soil Sciences, University of Georgia, Tifton, GA 31793, USA; FOUNTAIN, J.C., Department of Plant Pathology, University of Georgia, Griffin, GA 30223, USA.

In Georgia, 40-50% of peanut production occurs in dryland conditions which is prone to excessive drought and heat stress and increased levels of aflatoxin contamination. Over the past few years, there's been an ongoing study in Tifton, GA utilizing rain-out shelters to simulate drought conditions beginning at 90 days after planting (DAP) and recording physiological data to build predictive models for aflatoxin contamination. During this study, soil samples were collected to investigate the influence of these drought conditions on the overall soil microbiomes and *A. flavus* populations. In 2023, soil samples were collected at 14 and 28 days after drought induction (DAI) only within the sheltered plot areas. In 2024, soil samples were collected at 3 time points (0, 14, and 28 DAI) and from both inside and outside the sheltered plot areas. DNA was extracted from each soil sample and shallow shotgun sequenced for microbiome characterization. An exact-matching taxonomic pipeline called Qmatey and the NCBI core nt and refseq databases were used to profile the soil samples. Preliminary results revealed that peanut soil microbiomes are enriched in nitrogen-fixing species (i.e., *Bradyrhizobium arachidis* and *Streptomyces*) and cluster based on soil type. Drought imposition led to significantly increased relative abundance of certain taxa groups such as *Penicillium* and *Sphingobacterium*. Populations of *A. flavus* were also examined in each sample by plating soil extracts and estimating colony forming units (CFU)/ml. Drought-treated samples had higher *A. flavus* CFUs than control samples. Continuing studies will include completing the alpha and beta diversity analysis at both the species and genus level, performing multivariate correlation analysis between microbiome and plot physiological and aflatoxin data, and testing representative *A. flavus* isolates for aflatoxin production capabilities. The results of this study could lead to the discovery of species that are beneficial to peanuts during drought stress that can be recommended to growers as additional field inoculants or biocontrols.

Developing Stem Rot Resistant and Potentially more Synchronous Maturity Peanut Germplasm through Marker Assisted Selection

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Peanut stem rot (SR) / white mold is a destructive soil-borne disease that causes 5-10% yield loss in the southeastern USA. It is caused by a fungus *Athelia rolfsii* that survives in the soil and crop debris and germinates under favorable conditions leading to rapid mycelial growth and infection of plant tissues in contact with the soil. SR is the most critical peanut disease in Georgia, causing an annual ~$60-70 million loss including the cost to control. Though it can be controlled by fungicide application, developing disease resistant cultivars would bring both economic and environmental benefits across the value chain. Buyer preference and economic factors such as yield, and market value are the deciding factors for selecting peanut cultivars by growers. Therefore, our breeding program has crossed multiple cultivars and accessions to generate varieties with new combinations of alleles for SR resistance, yield, and quality. One such cross with potential for SR resistance was made between two high-yielding runner type cultivars MARC I and Georgia 12Y (GA-12Y). MARC I is early maturing, SR susceptible while GA-12Y is late maturing and resistant to both stem rot and Tomato Spotted Wilt Virus (TSWV). A second cross was made between a highly SR resistant recombinant inbred line RIL703, from resistant parent NC 3033 and susceptible parent Tifrunner, a late maturing and TSWV resistant cultivar. Molecular marker-assisted analysis indicated that two RIL703 × Tifrunner F_2 lines (C2997-03 and C2997-04) were segregating for two of our previously identified SR resistance QTLs. Ninety-six F_3 seeds from these two lines and ten seeds each from twenty-two GA-12Y × Marc I F_3 lines were screened for SR resistance against a highly aggressive strain of *A. rolfsii* isolate (SR-18) using a sophisticated phenotyping protocol. Each hybrid plant was individually rated on a 0–5 scale for stem rot susceptibility and lines with disease score 0 – 2 at the time of harvesting were selected. In addition to stem rot resistance, we also grew a portion of the F_3 seeds from the GA-12Y population to identify genotypes that show a higher percentage of synchronous maturity. Our preliminary analysis indicated the late-maturing nature of these lines. In summary, we have identified 76 highly SR resistant peanut lines by molecular marker and field screening. Some of these lines have shown higher seed weight than the parents. GA-12Y derived lines showed late maturity pattern though we could not screen the RIL703 derived lines due to limited numbers of seeds. We are in the process of sequencing of these lines for fine mapping the known QTLs in the RIL703 population and to identify new QTL(s) in the GA-12Y population. Lines with high resistance and synchronous seed maturity will be selected for developing SR resistant lines.

Identification of QTLs Underlying Physiological Traits Related to Drought Tolerance in Cultivated Peanuts

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Drought is one of the biggest factors causing peanut yield reductions. Drought tolerant cultivars had been screened for different drought tolerant strategies such as water spender and water savers among other. However, quantitative traits loci (QTLs) of physiological characteristics related to drought tolerance have not been well studied. In this study, a common parent genotype with sequenced genome, Tifrunner, was crossed with 8 different genotypes to generate different F_1 hybrids. In 2021, drought tolerance related physiological traits of parents and their F_1s were tested in rainout shelters under irrigated and drought conditions. Significant phenotypic variation in some F_1 and its parents under drought conditions was observed in single plant yield, shoot biomass, harvest index (HI), $\Delta^{13}C$ in the shoot, nitrogen concentration in the shoot, photosynthesis, and stomatal conductance. In 2022, an F_2 population derived from AP-3 and Tif-runner were planted in an incomplete augmented design in rainout shelters under drought conditions for phenotyping. F2 population was genotyping by whole genome sequencing. A total of 27 QTLs associated with drought-tolerant physiological traits were detected. This study highlights the potential of integrating physiological traits to enhance peanut drought tolerance through the application of the QTL associated DNA markers.

Multiresistant *Arachis* Population as a Genetic Resource for Breeding

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Identifying sources of resistance to multiple diseases is essential for a crop that provides a significant nutritional resource for approximately one-third of the world population. Peanut (*Arachis hypogaea*) diseases and abiotic stresses threaten global food security and affect sustainable crop production. Furthermore, improving the nutritional traits of peanuts, such as protein, sugar content, lipid profile, and mineral composition, relies on genetic diversity. Crossing wild species with cultivated peanuts enhances genetic diversity, addressing various challenges. Molecular markers in peanut breeding speed up selection, shortening the time to develop commercial varieties. The high segregation in interspecific Arachis populations helps identify QTL and markers to assist selection. A population of recombinant inbred lines (RILs) consisting of 164 lines was developed from a cross between *A. hypogaea subsp. hypogaea* (JS17304-7-B) and an artificial amphidiploid (JS1806, resistant). The amphidiploid parent was derived from the cross {[*A. correntina* (K 11905) x *A. cardenasii* (KSSc 36015)] x *A. batizocoi* (K 9484)4x}. This population has been evaluated for biotic factors like peanut smut (*Thecaphora frezii*), late leaf spot (*Nothopassalora arichidicola*), aflatoxin-production resistance, Sclerotinia blight (*Sclerotinia minor*), white mold (*Sclerotium rolfsii*), rust (*Puccinia arachidis),* and Rhizoctonia root rot (*Rhizoctonia* spp.), and the abiotic factor drought. Additionally, a proximal chemical characterization was conducted to assess protein, sugar, fiber, ash content, and lipid profile. The population was genotyped using the 48K ‘Axiom_Arachis 2’ SNP array and the HudsonAlpha Khufu-Peanut Target Coverage 0.5x sequencing service. Employing phenotypic and genotyping data, QTL for peanut smut, Sclerotinia blight, and all parameters of the proximal chemical traits were identified. Based on these detected QTL, SNP markers have been developed for peanut smut and Sclerotinia blight, which have been used for the past two years in the selection of resistant plants within the breeding programs of Criadero El Carmen S.A.

Epi-mutagenesis to Unleash Peanut Genome and Phenome Plasticity

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The epigenetic variations caused by DNA or histone modifications, without any changes to the underlying DNA sequences, can be inherited and pass to next generation. DNA methylation-based epigenetic variations play a crucial role in determining phenotypic and genomic plasticity, as well as gene expression, under different environmental conditions. Growing evidence supports a significant role for epigenetics in controlling many important crop traits. In this research, we aim to induce hypomethylated peanut plants, also known as epi-mutants, and then select and map the epi-alleles contributing to a target trait in a segregating population. To achieve this, we treated mature peanut seeds with a DNA demethylating agent, 5-azacytidine (5-AZA). We observed a stable dwarf line in several generations, which we then crossed with the untreated wild plant to generate an F_2 population segregating on the plant architecture trait. The parental dwarf epi-mutant, wild type plants, and the F_2 individuals bulked for dwarf and normal phenotypes, respectively, were subjected to whole-genome bisulfite sequencing. The results showed massive differences in the methylomes between the wild type and epi-mutant parental lines. The epi-mutant was largely demethylated across the genome, suggesting the successful treatment with the DNA demethylating agent. Also, a small portion of hypermethylation was observed. To identify the epi-allele controlling the dwarf epi-mutant, we developed a BS-Methyl-seq approach. The findings from this research have the potential to not only open the door to understanding the epigenetic mechanisms controlling important crop traits but also facilitate the development of strategies for applying epigenetics in crop improvement. Specifically, this proof-of-concept demonstrates that epi-mutation can be applied to enhance peanut genetic diversity and possibly improve crop resilience, such as transgenerational drought tolerance memory.

QTL Validation Study for Aflatoxin Resistance in a small Peanut Nested Association Mapping Population

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Aflatoxin cause millions of dollars of annual loss due to pre-harvest and post-harvest contamination in peanut. New peanut cultivars resistant to *Aspergillus* contamination and aflatoxin production is an economical way to reduce the aflatoxin problem. A total of 1345 F2 seeds from a small, nested association mapping population (MGC510 = CS229 x CSSL100, and MCG512 = CS229 x CSSL84), were screened with markers for alleles at aflatoxin resistance associated QTL. CS229 is an offspring F8 recombinant inbred line from ICG 1471 and Florida-07 used for a previous QTL seq study. ICG 1471 is a ssp. *fastigiata* line shown to have aflatoxin resistance. Florida-07, ssp *hypogaea* cultivar susceptible to aflatoxin. CSSL84 and CSSL100 are *A. hypogaea* interspecific chromosome segment substitution lines with potential aflatoxin resistance. A total of 17 lines from MGC510 and 39 from MGC512 were selected based on combinations of haplotypes positive for resistance alleles. Seed inoculation assay was conducted with F3 seeds. Seeds were inoculated with *A. flavus* AF13 strain and the aflatoxin level quantified through VICAM methanol extraction and fluorometric assay. Ten lines were grouped as having the lowest aflatoxin, and 16 lines were grouped at the highest aflatoxin contamination levels. A second assay showed consistent results for nine out of 13 tested lines. Significant association of the markers with resistance was tested for QTL validation. Student’s T-test showed that the Arahy20 QTL haplotype from ICG 1471 and its offspring CS229 showed significant association with resistance to aflatoxin contamination.

Yield Stability of Recently Released Runner Peanut Cultivars Tested in Georgia

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Grower's livelihoods are highly influenced by the cultivars they choose to grow. Picking a cultivar with poor performance can have severe consequences to their businesses. Thus, understanding the risks involved and evaluating long-term performance of a cultivar across years and environments is critical to minimizing the risk of choosing a cultivar with poor or unreliable performance. Georgia-06G, released in 2007, has been a popular cultivar in the southeastern US, especially in Georgia, since shortly after its release. One of the primary factors that has contributed to this popularity is consistently high performance for yield, grade, and disease resistance. This study aims to evaluate the yield performance stability of Georgia-06G compared to several contemporary cultivars tested across three locations in Georgia over several years with and without irrigation by the University of Georgia's Statewide Variety Testing Program.

Development and Characterization of Runner Peanut with Tolerance to Water Deficit and Heat Stress

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Declining groundwater levels in the southwest U.S. peanut growing region, and increasing temperatures throughout the growing region have made development of peanut varieties with tolerance to water deficit and heat stress important for continued profitability of peanut production. A breeding population was developed from a cross designed to combine tolerance to heat and water deficit stress with high oleic oil and adaptation to the southwest peanut growing region. From these, a varietal release proposal is being submitted for a runner with higher yields under water deficit stress, and with yields and grades as good as or better than check cultivars under irrigated conditions. Additional breeding lines have been identified with better yield yet under water deficit, although performance under irrigated conditions needs further testing. Heat stress testing and metabolomic analysis has demonstrated that tolerance to heat stress has been accompanied by remodeling of lipid composition of leaf tissue. It is hoped that release of improved varieties will help growers cope with changing growing conditions.

Smut Resistant Accessions in the ICRISAT Peanut Mini-Core Germplasm Collection

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Peanut smut, caused by *Thecaphora frezzii*, is an emerging threat to global peanut production. Found in 100% of Argentinian peanut growing regions, smut infestation can result in substantial yield reductions. Although peanut smut has not been reported outside of South America, immediate proactive measures must be taken so that global peanut production will not be threatened. The objective of this study was to identify germplasm resistant to *T. frezzii* that can be used to incorporate smut resistance into peanut cultivars. One hundred and twenty (120) single-seed purified accessions from the ICRISAT peanut mini-core germplasm collection along with susceptible and resistant controls were screened for smut resistance over 3 growing seasons (2021-2023). Each accession was also genotyped for the smut resistance QTL we previously identified on chromosome 12. Disease incidence among accessions ranged from 0-49% over the three-year period, with twelve (12) accessions exhibiting 0% disease. Genotyping results showed that most of the resistant accessions carried the same resistance QTL we previously identified, but one did not, indicating a possible new source not yet mapped. Additional studies are underway to map this new source of smut resistance. Accessions identified in this study can be used to incorporate smut resistance into new peanut cultivars.

How the Peanut Genome Helps Improve Peanut Varieties: Year 1

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The peanut genome initiative (PGI) delivered a physical map of the cultivated peanut genome. The first variety released that utilized products of the PGI was developed in 2022 and was shown to bring more revenue to growers with reduced fungicide sprays. In 2024, the Peanut Research Foundation approved projects that include 10,000 samples to be analyzed with whole genome sequencing data to support the accelerated improvement of peanut varieties. The samples, donated to the peanut breeding community by HudsonAlpha Institute for Biotechnology, will help the selection of drought tolerance in runner types, will facilitate the mapping of numerous high value traits for molecular marker development, and will help to identify wild species introgressions linked to disease resistance that will help sustain peanut production for decades to come. In this presentation we will describe the projects from year 1 of the next generation of the PGI.

Liftover Annotation As a Potential Approach to Annotate Non-reference Genomes at PeanutBase

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Advances in genome sequencing technology have enabled rapid production of high-quality genome assemblies in plants, including *Arachis*. PeanutBase has the responsibilities of sharing such assemblies with the peanut research community, and with helping to make these resources useful for genomic-informed peanut breeding programs. Annotating genome assemblies is one important way of adding value. Reference genomes are typically annotated de novo, by incorporating large amounts of RNA Seq data and sophisticated gene-modeling tools. This is an involved and time-consuming process. As an alternative, we are exploring the “liftover” annotation process, based on our high quality Tifrunner reference genome as the source and testing four target genome assemblies from four different peanut lines. The liftover process is faster, less resource-demanding, and is well suited when a target genome is closely related to the source genome. On the other hand, the approach makes assumptions that the structure of the target genes will be similar to those in the reference genome and its limitations should be understood, especially in the context a complex genome like *A. hypogaea* where differential incorporation of the progenitor subgenomes may be present between cultivars. This pilot study will help inform the best approach for annotating the large number of incoming genome assemblies and extending resources at PeanutBase such as pangene sets with the outcome. The liftover annotation is expected to serve as a useful approximation until the research community feels the necessity to generate a full scale high quality annotation set or could serve as a foundation for refined manual curation of specific genes of interest.

PeanutMAGIC and Pangenome

GUO, B.*, HOLBROOK, C.C., USDA-ARS, Crop Genetics and Breeding Research Unit, Tifton, GA; THOMPSON, E., WU, D., CULBREATH, A.K., University of Georgia, Department of Plant Pathology, Tifton, GA; KORANI, W., CLEVENGER, J.P., HudsonAlpha Institute for Biotechnology, Huntsville, AL.

Trait mapping relies on both a suitable population and an accurate genotyping method to identify variations linked to specific traits. Publications of peanut reference genomes have produced tools and resources and accelerated peanut genomic research in trait mapping and gene discovery. However, as sequencing costs have dropped and more genomes have been sequenced, a single reference genome is not adequate for accurate genotyping all variants in a population. Pangenomes improve accuracy in detection of genetic variations and enable new bioinformatics tools and methods like the Khufu platform. We developed a peanut multiparental advanced generation intercross (PeanutMAGIC) population with 3,187 recombinant inbred lines (RILs) derived from eight founders. We also constructed a PeanutMAGIC population-specific pangenome. The goal is to apply PeanutMAGIC pangenome for high-quality genotyping calling for trait-association studies. Using this strategy, we compared PeanutMAGIC pangenome-based markers to single-reference-based markers in trait mapping for three long-sought-after traits, resistance to Tomato spotted wilt virus (TSWV), resistance to root-knot nematode (RKN), and mid-oleic content. For TSWV, a 63.9 Kb InDel was identified from resistant founder NC94022, containing several additional copies of novel glutamate receptors. For RKN, InDels were mapped and one 46.3 Kb InDel with a specific candidate gene was identified from resistant founder TifNV-H O/L. For high oleic acid content, a third *FAD*2 gene, *FAD*2C, was identified, associated with oleic content. In the pangenome era, genotyping of large complex populations by whole genome sequencing and a population-specific pangenome improves mapping for the dissection of complex traits.

Enhancing Peanut Yield Estimation in Breeding Fields Using Machine Learning and Pod Attributes

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Yield estimation is essential in breeding programs to evaluate productivity of new cultivars while incorporating desirable traits such as disease resistance or environmental adaptation. Traditional methods, including the use of modified peanut combines for harvesting and weighing, are very time-consuming. This limits the number of plots or genotypes that can be assessed in breeding trials, limiting genetic improvement. Proximal sensing and autonomous systems provide efficient alternatives for in-field trait analysis, enabling high-throughput phenotyping (HTP) and improving yield assessments. In conjunction with these technologies, machine learning (ML) approaches have shown promise in detecting peanut pods from ground-level images of inverted plants. However, yield is a complex trait influenced by multiple components beyond pod count, including pod size and quality, leading to a weak correlation between pod number and final yield. In this study, we propose an ML-based data processing pipeline that integrates pod counts with additional yield components for a more comprehensive estimation in peanut breeding field trials. Using images collected with a mobile ground vehicle during the 2023 and 2024 seasons, we fine-tuned a pre-trained oriented bounding box variant of YOLOv8 to detect peanut pods, count them, and analyze their size from proximal imagery. Additionally, we incorporated breeders' knowledge of genotypic performance by assigning differential weights to training data, ensuring yield predictions align with expected genotype behavior under field conditions. We also explored pod density as a factor influencing productivity to strengthen the relationship between image-derived traits and measured yield components. Our findings highlight the potential of ML techniques to enhance yield estimation by streamlining data analysis, reducing subjectivity, and improving scalability, ultimately supporting precise, rapid phenotyping in peanut breeding programs to accelerate genetic improvement.

Markers for the Selection of Diverse Fatty Acid Composition from Samples within the USDA-ARS Germplasm Collection

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Peanuts serve as a valuable source of plant-based protein and oil, offering both monounsaturated and essential polyunsaturated fatty acids in consumer diets. Peanut oil contains approximately 80% unsaturated fat and 20% saturated fat, conventionally. High oleic peanuts have been developed to increase the monounsaturated fat content and improve the oxidative stability of peanuts. However, the shift in fatty acid composition (FAC) has led to an average decrease of 7-8% in saturated fat content, particularly palmitic acid. The purpose of this project was to survey the FAC of diverse samples for the selection and improvement of saturated fatty acid content, while maintaining the oxidative benefit currently available in high oleic varieties. 54 samples from the USDA-ARS Germplasm Resources Information Network (GRIN) were selected and analyzed for FAC. In the sample set, total saturated fat varied from 13.66 – 26.17%, stearic acid (C18) from 1.85 – 8.30%, and behenic acid (C22) from 2.11 – 5.44%. Two missense mutations from A05 located in genes YR3A5K and T0P5W2, have been reported to be associated with total oil, protein, and FAC. Kompetitive Allele Specific PCR (KASP) assays were developed and the collection genotyped using both markers. Results demonstrated significant differences in the saturated fat content from the mutant versus wild type populations. The results suggest that the markers could be used for the selection of genotypes to improve FAC diversity within breeding populations.

The Peanut Shell as a Defense Against Aflatoxin Contamination in Runner Type Peanuts

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Aflatoxin is a chronic problem in southeastern USA peanut production. Solutions have been sought for many years, but no single practice has proven to wholly eliminate or even substantially reduce aflatoxin risk in peanut except for irrigation. Irrigation is undoubtedly the most impactful practice, but at least half of the acreage is not irrigated, and if drought conditions are severe, as in 2019, even irrigated peanuts are at risk of aflatoxin. Other potential mitigating factors include breeding for resistance and manipulation of the fungus. These have shown success in research settings but have not been implemented commercially. One commercially available product utilizes non-toxigenic *Aspergillus* as a competitor with toxin-producing strains, but it has not been widely used in peanut. From the standpoint of breeding for resistance to aflatoxin contamination, drought tolerance and chemical components of the seed coat have been widely studied. Practically, breeding for drought tolerance is very difficult to implement in a breeding program. Similarly, and although seed coat of certain peanut genotypes has been shown to reduce aspergillus growth and aflatoxin production, no commercial cultivars are available with seed coat resistance. In both cases, successful breeding is difficult because phenotypic selection for drought and seed coat traits is challenging and costly and therefore breeding programs struggle to implement them routinely. One area of potential impact on aflatoxin mitigation that has not been studied much is the shell of peanut. Due largely to the potential negative impacts on shelling and grade, manipulating the peanut shell was disfavored as a target for breeding in ICRISAT (Nigam, et al., 2009). Research in the USA showed that sorting peanuts to remove other kernels, oil stock, damaged kernels and loose shelled kernels (LSK) from the total sound mature kernels reduced aflatoxin to below threshold of 15ppb in all but one out of six wagons that were at or above 14ppb (Dowell, et al., 1990). Given the relative ease of breeding for shell characteristics that might mitigate aflatoxin we evaluated the impact of the black pod trait, shell thickness, and seed/pod size for impact on aflatoxin risk factors. Extracts from the shell of black pod genotypes reduced growth of *Aspergillus parasiticus* in the lab compared to standard pod color genotype Georgia-06G. Extracts also reduced fluorescence of *A. parasiticus* colonies indicating reduced aflatoxin production. Genotypes varying in shell thickness and seed size were evaluated for generation of LSK, a major aflatoxin risk factor. Those with thicker shells had less LSK compared to those with thinner shells. However, genotypes with seed size of >62g per 100 seeds also had reduced LSK generation compared to those with <65g per 100 seeds regardless of shell thickness. These results show that seed size and shell characteristics beneficial to aflatoxin mitigation (i.e. reduction in LSK and *Aspergillus* growth) may not be detrimental to grade and therefore appropriate and easily phenotyped targets for breeding peanut to reduce aflatoxin contamination.

Unified Efforts Reveal Copy Number Variance Impacts TSWV Resistance

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Tomato spotted wilt virus (TSWV) can severly limit peanut production and is primarily managed through host resistance in a required integrated pest management system. NC94022 is known for its high TSWV resistance, however, it is not suitable for commercial production. Thus, several studies have been performed to understand its resistance and synthesize improved breeding materials. Our objective is to utilize pangenome-based genotyping, long read transcriptomics, digital droplet PCR (ddPCR), and long read low coverage (LRLC) sequencing to identify and validate genomic variance that confers TSWV resistance. We identified a 64 Kb copy number variant (CNV) from NC94022 that contains novel glutamate receptors through pangenome-based associations. This variant was found to significantly improve TSWV resistance in distinct populations using ddPCR and LRLC sequencing. Furthermore, the parental line of NC94022, SSD6, was found to have the CNV. We found SSD6-based populations can inherit the CNV, which significantly influences TSWV resistance. Here we present a unified effort to identify genomic variance that confers TSWV resistance for enhanced breeding resources to improve peanut production and sustainability.

Unlocking the Genetic Diversity of Peanut Wild Relatives: Progress and Prospects for Allotetraploid Production and Utilization

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The genus *Arachis* comprises over 80 described species, 33 of which belong to the same section as the cultivated peanut. These wild species harbor high genetic diversity and valuable resistance traits that can be utilized for peanut improvement. A classic example is *Arachis cardenasii*, which has contributed to all current root-knot nematode-resistant cultivars, as well as resistance to early and late leaf spot, rust, and smut. Many other desirable traits remain to be discovered among the remaining 32 species, which are reproductively isolated from the cultivated peanut due to the ploidy barrier. Here, we present a strategy for systematically producing new allotetraploids based on the phylogenetic relationships of diploid parents, maximizing the genetic diversity captured within section *Arachis*. To date, we have created 32 allotetraploids. However, before they can be deposited in seed banks, they must be properly characterized, and sufficient seed must be multiplied—a process that can take up to five years. So far, 11 allotetraploids have been deposited at the NPGS. In parallel, highly backcrossed populations are being developed to facilitate the early stages of diluting wild genetic contributions. This marks the first step in the Wild Peanut Lab's pipeline for increasing peanut diversity and ensuring the future sustainability of the crop.

A Second New Source of Nematode Resistance from *A. stenosperma* V10309

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Root-knot nematode (*Meloidogyne arenaria*) remains a major constraint to peanut production. While one strong resistance locus—introgressed from *Arachis cardenasii*—has been used in several released cultivars, susceptible lines remain widely grown. We previously reported two independent sources of root-knot nematode resistance from *Arachis stenosperma*, conferred by major-effect loci on chromosomes A02 and A09. Here, we tested the field performance of introgressed peanut lines carrying the A09 locus. In nematode-infested plots, these lines showed near-total resistance, their yields exceeded those of susceptible cultivars and were competitive with the resistant cultivar control (GA 14N). Pod shape and constriction were comparable to elite cultivars. These results confirm that a second, strong source of root-knot nematode resistance from *A. stenosperma*, located on chromosome A09, can be combined with agronomic performance competitive with leading cultivars.

Enhancing Methods for Polyploidy Induction in Wild Peanut Species

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Arachis duranensis (2n = 2x = AA) and *A. batizocoi* (2n = 2x = KK) possess valuable disease resistance traits that serve as critical resources for the breeding of cultivar peanut (*A. hypogaea*; 2n = 4x = AABB). Noticeably, the differences in ploidy levels present barriers to hybridization between these wild species and the cultivated peanut. Previous studies have shown that colchicine buffer submersion treatment succeeded in inducing tetraploidy of three AA genome *Arachis* species. Nevertheless, the high seed mortality in the treatment due to drowning during colchicine exposure caused a low limited number of tetraploid plants. To overcome this challenge, we evaluated two improved methods: a suspension system using a colchicine buffer with partial submersion and substrate-based treatments in which pre-germinated seeds were placed on dampened media (sphagnum moss, paper towel, or perlite) soaked with colchicine solution. As a result, sphagnum moss treatment in *A. batizocoi* resulted in an optimal result with 57.1% of treated seedlings turning into tetraploids, and suspension treatment in *A. duranensis* showed 14.3% conversion rate. In addition, treatments with a 20% survival rate generally showed the highest tetraploid conversion efficiency. The modified suspension method effectively mitigates the drowning issue in earlier studies and provides an enhanced method for future *Arachis* species ploidy manipulation research.

A Two-Year Evaluation of Root-knot Nematode (RKN) Resistant Peanut Varieties and a Plant Growth Regulator (PGR) in Southwest Georgia

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Root-knot nematodes (RKN) are a common problem in Southwest Georgia row crop fields, particularly in those with lighter, sandy soils. RKN feed on plant roots which leads to a decline in plant death and in severe infestations, a decrease in peanut yield. Planting RKN-resistant peanut varieties is the most economical method to combat this pest, but oftentimes the resistant varieties do not yield as well as the traditional susceptible varieties such as Georgia 06-G. Additionally, many of the RKN-resistant varieties exhibit excessive vine growth, leading to an increase in interest in the use of plant growth regulators (PGRs). Over two growing seasons in this study, four RKN-resistant peanut varieties (Georgia 22-MPR, TifNV-HG, TifNV-hiol, and Georgia 14N) were evaluated for yield and tomato spotted wilt virus (TSWV) incidence. In addition, the effects of the PGR product Kudos on the yield of the susceptible variety Georgia 06-G was evaluated in the first year while the effects of the product on two additional varieties (TifNV-HG and CB7) were investigated in the second year. The RKN-resistant TifNV-HG variety out yielded all other varieties over both growing seasons (5,641 lbs/acre), including the susceptible Georgia 06-G (3,929 lbs/acre) and the older RKN-resistant varieties Georgia 14N (5,006 lbs/acre) and TifNV-hiol (5,019 lbs/acre). The application of the PGR product Kudos did alter the growth habit of the plants (mainstem height and height-to-node ratio), but did not result in increased yield in all varieties in each year. Further development and testing of RKN-resistant varieties will be of paramount importance in the future as Georgia peanut growers continue to battle Root-knot nematodes while further investigation into the need and use of PGR’s will be critical also, as peanut profit margins grow tighter.

The SmartIrrigation CropFit App (SI CropFit) Gives Peanut Farmers Another Irrigation Scheduling Tool to Improve Water Use Efficiency

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Improving irrigation water use efficiency is essential for improving overall crop production efficiency and increasing environmental and economic sustainability of peanut production in Georgia. The SmartIrrigation CropFit App (SI CropFit) is a recently released irrigation scheduling tool developed with USDA-NIFA funds that operates on smartphone platform. It includes irrigation scheduling models for corn, cotton, peanut, and soybean. Based on evaluations conducted at Auburn, Mississippi State, the University of Florida, UGA, and the National Peanut Research Lab, scheduling irrigation with SI CropFit in corn, cotton, and soybean results in water savings of up to 40% and yield increases of up to 15% when compared to the traditional University of Georgia (UGA) Extension Checkbook method. SI CropFit irrigation scheduling results compare favorably to soil moisture sensor (SMS) - based scheduling often outperforming SMS yields. SI CropFit requires hyperlocal precipitation data to effectively schedule irrigation. If a UGA weather station is not nearby, it is recommended that an automated rain gauge be installed near the field. SI CropFit can automatically pull daily precipitation data from several commercially available rain gauges. There is also the option of entering precipitation data manually. The cost for reliable automated rain gages ranges between $400 and $800. No sensor installation is needed for SI CropFit.

The irrigation scheduling model for peanut was recently incorporated into SI CropFit and was used by select growers for beta testing in 2024. It was publicly released and available to all peanut growers for the 2025 growing season. Use of the SiCropFit in peanut can result in significant cost savings and flexibility to monitor additional fields.

The peanut model was further evaluated in replicated plot trials at the UGA Stripling Irrigation Research Park (SIRP) in 2024 and resulted in higher yields and higher irrigation water use efficiency than SMS scheduling. Grower experiences were overall positive although some concerns arose with peanut varieties with longer maturity dates.

All the crop models in the SI CropFit estimate daily crop water use (ETc) using the universally accepted FAO-56 method. The models all operate using a growing degree day (GDD) -based crop coefficient (Kc) curve developed for Georgia conditions. ETc is calculated by multiplying Penman-Monteith evapotranspiration (ETo) with a daily Kc value extracted from the Kc curve (ETc = ETo × Kc). ETo is easily calculated from meteorological data. In SI CropFit, ETc, precipitation, and soil properties are then used as inputs to a daily root zone soil water balance calculation that determines when irrigation is needed. The Kc curve included in the SI CropFit peanut model was developed primarily using medium-maturing cultivars like Georgia-06G and AUNPL-17. Because of this, irrigation scheduling recommendations cease while late-maturing cultivars like Georgia-12Y still require irrigation. During beta-testing with Georgia peanut growers in 2024, several expressed interest in using SI CropFit for later-maturing cultivars. Research planned for 2025 will focus on the development of a Kc curve for later-maturing cultivars as well as additional on-farm testing.

Assessing Aflatoxin Levels in Irrigated Peanut Fields with Dryland Corners

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Aflatoxin in peanut is always a potential concern for farmers and poses a significant risk to the entire peanut industry. In most instances, but not consistently, dryland fields have a greater potential incidence of aflatoxin. From 2022 to 2024, 15 irrigated peanut fields with dryland corners across South Georgia were selected by county agents with assistance from the UGA Ag Water Team as sites for this aflatoxin study. Five field sites were used each year. At each field location six soil moisture sensors were installed with three located in the dryland corners and three were located under center pivot irrigation. Each soil moisture sensor contained two watermark sensors with two depths, 15 and 30 cm. The sensors were installed by using an auger drill bit attached to a cordless drill and drilling a 5-cm diameter hole 30 cm into the soil and making a slurry mix to install each sensor. Sensor locations were carefully selected to represent the various soil types of the field. In addition, automated rain gauges collected rainfall, and irrigation amounts in the irrigated areas as well as rainfall in the dryland corners. Four 2-m^2 peanut samples were collected in a 10-m radius of each sensor location on the day the peanuts were inverted to assess aflatoxin levels. Aflatoxin levels were below 4 ppb for most of the situations. However, in Irwin in 2023, aflatoxin levels reached 8.6 ppb in samples from irrigated areas and 12.6 ppb in dryland corners, suggesting that not only lack of irrigation, but high temperatures can contribute to aflatoxin production in years with limited or poorly distributed rainfall events. This experiment will be conducted in 2025 in four additional fields.

Evaluation of Drought-Tolerant Novel Peanut (*Arachis hypogaea* L) Genotypes to Photosynthetic Rates and Yield

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Drought is a significant abiotic stressor that reduces peanut production because it alters photosynthetic activity and impacts crop growth. Therefore, developing drought-tolerant peanut genotypes capable of maintaining higher photosynthetic rates (*A*) under drought stress is crucial. This study assessed changes in photosynthetic and chlorophyll fluorescence responses and subsequent yield in newly bred drought-tolerant peanut genotypes. Ten genotypes [NM-3, NM-5, NM-6, NM-23, NM-69, NM-70, NM-74, NM-77, V-C, and C-76-16] were evaluated under full irrigation (FC_{100}) and deficit irrigation (FC_{50}) in a split-plot design with four replications in a greenhouse. Genotype NM-5 with deficit irrigation exhibited significantly higher *A*, stomatal conductance (*gs*), quantum efficiency of photosystem II (ΦPSII), and electron transport rate (ETR) by 40-59%, 135-525%, 31-212%, and 31-102%, respectively, than check varieties (V-C and C-76-16) and other genotypes. The NM-74 and NM-77 genotypes also performed well but with slightly lower *A*, *gs*, ΦPSII, and ETR. Whereas, NM-70 exhibited significantly higher pod weight (33.8 g/plant), kernel weight (23.4 g/plant) and biomass yield (44.3 g/plant) under deficit irrigation than other genotypes. Therefore, NM-70 maintained optimum photosynthetic rates with higher yield potential under deficit irrigation conditions than other genotypes.

Redefining Drought Tolerance in Peanut: Hydraulic Traits Emerge as Field-Relevant Predictors

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Drought stress is a major constraint to peanut (*Arachis hypogaea*) productivity, yet current classification frameworks for drought tolerance—based on gas exchange and carbon isotope discrimination—may not fully capture field-relevant mechanisms driving yield stability. Previous studies have categorized peanut genotypes into water use strategies (e.g., isohydric vs. anisohydric) using physiological data from small plot trials. In this study, we scaled up those same genotypes into larger plot and full-field conditions over two growing seasons to test the robustness of these classifications under realistic drought stress. Gas exchange parameters (photosynthesis, stomatal conductance, transpiration) exhibited high inter-annual variability and did not consistently segregate genotypes by water use strategy. In contrast, direct measurements of soil water potential, predawn, and midday plant water potentials revealed consistent, genotype-specific hydraulic patterns during dry periods. Structural equation modeling showed clear relationships between plant water status and yield, with distinct groupings emerging along a high-to-low yield gradient. These findings suggest that physiological classifications based solely on leaf-level traits may overlook deeper hydraulic coordination mechanisms that govern drought performance at field scale. Integrating soil-plant water potential dynamics into trait screening could improve the identification of drought-resilient genotypes for breeding programs targeting yield stability under water-limited conditions.

Experiences and Perspectives with On-Farm Trials in Martin County, North Carolina

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Results from on-farm tests are important in helping growers make decisions on inputs and practices that can help them be more successful. Harvesting peanuts in on-farm tests can challenging for Extension agents and in some cases a determent. With the help of NC Peanut Growers Association and several companies, NC State purchased two weigh buggies for on-farm testing. With the help of these buggies local agents across the state are able to put in large on-farm trials in there county for growers see first-hand how treatments or practices compare. Agents conduct numerous trials throughout the growing season including trials that compare varieties, fungicides, plant growth regulators, insecticides, and fertilizers to name a few. Being able to conduct on-farm trials in peanuts has been a major asset to the Extension program in Martin County, North Carolina. Using the buggy allows Extension agents to be efficient when harvesting and provides access grower-scale equipment for administering treatments and to develop data sets from trials that are replicated and conducted locally.

Results from a Grower Meeting Survey on Key Pests and Their Management in the Virginia-Carolina Region

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A survey of practices associated with insect management, tillage systems, herbicide use, and fungicide programs was conducted in 2025 at county production meetings for the 2023 cropping cycle in North Carolina (105 respondents representing 31% of acreage in the state) and statewide production meetings in Virginia (14 respondents representing 10% of acreage in the state) and South Carolina (5 respondents representing less than 5% of acreage). In these respective states, 21%, 60%, and 100% of growers planted in a reduced or minimum tillage system. Planting dates varied from early April through early June. In North Carolina, 2, 21, 79, 24, and 4% of growers indicated that they planted peanuts in April 1-15, April 16-31, May 1-15, May 16-31, and June 1 or later, respectively. In Virginia, 21% of growers reporting planting at least some peanuts in late April while all growers indicated that they planted some peanuts in early May. In South Carolina, growers reported that all peanuts were planted in early May. Burrower bug was not listed as an issue in Virginia or South Carolina in 2024. In North Carolina, this insect affected 2% of growers responding to the survey questions. This was significant decrease from reports in 2023 and 2024. Southern corn rootworm damage was not observed in South Carolina (only five farmers reporting) while 19% and 21% of growers reported at least some damage from this insect in North Carolina and Virginia, respectively. Although not asked on surveys, many of the growers made a note indicated that damage was either minor or not yield limiting for southern corn rootworm. The herbicide fluridone (Brake) was used by growers in North Carolina (13%) and Virginia (29%) but not by growers in South Carolina. Leaf spot and Sclerotinia blight advisories were used in North Carolina and Virginia. The question about advisory use was not included in the South Carolina survey. In North Carolina (49%) and Virginia (42%) of growers answering yes or no to the question of use indicated that they used the leaf spot advisory. A significant number of growers in North Carolina (26) and several in Virginia (2) did not circle either answer. The Sclerotinia blight advisory was used by 39% and 33% of growers in these respective states. The top five weeds mentioned by growers in North Carolina were Palmer amaranth/pigweeds (78), sicklepod (35), common ragweed (25), annual grasses (27), and morningglory (10). In Virginia, growers listed common ragweed (11), Palmer amaranth/pigweed (7), morningglory (5), sicklepod (3), and horsenettle (2) as the top five weeds. Palmer amaranth/pigweed (3), Texas panicum (2), sicklepod (1), and annual grasses (1) were mentioned in South Carolina. Twenty, ten, and four different species were listed in these respective states.

How On-Farm Trials are used to Support Extension Programming in North Carolina

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Peanut production plays a vital role in the agricultural economy of Hertford County, North Carolina, and is a key component of the diversified cropping systems found in the Coastal Plain region. To improve productivity and optimize farming practices, on-farm testing serves as an essential tool, helping growers make informed decisions about input use and best practices. In 2023 and 2024, a series of on-farm trials were conducted to evaluate different peanut varieties and other treatments that could affect pest control and peanut yield. These tests included: 1) comparison of commercially available peanut cultivars, 2) comparison of a non-treated peanut to Vydate and Velum plus imidacloprid applied in the seed furrow at planting, and 3) comparison of Hydra-Hume applied in the seed furrow at planting versus a non-treated control. All experiments were replicated 3 to 4 times within each field. Notably, plot sizes were significantly larger than those typically used in small-plot trials, and yield determined using a dump cart with scales to quantify yield outcomes accurately. In 2023, the cultivar Emery outperformed Bailey II and Sullivan while in 2024 yields of Bailey II, Emery, and NC 20 were similar. Tobacco thrips were suppressed similarly by Velum plus imidacloprid and Vydate. Peanut treated with Velum plus imidacloprid yielded more than Vydate-treated peanut; peanut treated with both insecticides yielded more than non-treated peanut. Population of root-knot nematode did not differ in soil at that the end of the season when comparing across treatments. The biostimulant Hydra-Hume applied in the seed furrow resulted in increased yield compared to the non-treated peanut. The on-farm tests conducted in Hertford County over the past two years have provided valuable insights into peanut cultivar performance and the effectiveness of various treatments. These results are instrumental in helping growers make informed decisions about input applications and management practices that can improve yields and overall farm success.

Peanut Variety Testing (Irrigated/Non-Irrigated) in Cook County, Georgia

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Georgia is the top peanut producing state in the United States. Released in 2006, Georgia 06-G has proven to be an overall high-quality peanut variety available for peanut producers and has been the predominant variety planted. However, producers are interested in newer varieties available and are requesting that data. University of Georgia's Statewide Variety Testing (SWVT) is a necessary and valuable tool for producers to assist in variety selections. Peanut variety data is generated at multiple locations in Georgia and that data is disseminated through UGA Extension Agents to the producers. Local county-based trials allow producers to personally observe varieties tested from planting to harvest and discuss with the cooperating producer or county agent each variety's growth characteristics. SWVT data in combination with locally generated data allows producers a solid set of unbiased research-based data from which to base their peanut variety selections. In response, Cook County Extension Agent Tucker Price and two Cook County peanut producers collaborated with UGA's Peanut Team to establish local variety trials. Data was collected and observations were made from planting to harvest in an irrigated and dry-land settings evaluating nine varieties. Variety weight differences were separated by 938 lbs. in the irrigated trial. The top four varieties (FloRun 52 N, TifCB7, GA06G, and GA 12Y) were separated only by 158 lbs. The non-irrigated trial weight differences were separated by 817 pounds. GA-18 RU, GA 12Y, FloRun 331, AUNPL17 and GA 06G were separated by 207 pounds. In both trials GA 12Y graded lowest compared to all varieties due to early harvest of that variety. FloRun 331 showed the greatest incidence of tomato spotted wilt virus among all varieties in both trials while GA 12Y showed the lowest. Data from the trial was shared via texts, blogs, emails, poster and oral presentations to Cook County peanut producers.

Phytosterol Analysis of Selected Peanut Genotypes from the USDA-ARS Germplasm Resources Information Network (GRIN)

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The defense system of the human body benefits from consuming high antioxidants containing plants. Antioxidants serve a critical role in protecting cellular damage by scavenging free radicals and thus preventing oxidative damage of biomolecules. Antioxidants, including phytosterols such as β-sitosterol, have been shown to positively impact health. Physiologically, antioxidants protect the plant from biotic and abiotic stress, particularly during germination and seed development. Antioxidants are a good source of phytonutrients, and the seed coat and seed of peanuts have been shown to contain several beneficial antioxidants. 54 accessions from the Germplasm Resource Information Network (GRIN) with varying seed colors were investigated. Results demonstrated that 56-88% of the total antioxidant capacity resides in the seed kernel (by mass). The following phytosterols were identified in both kernel and skin components with varying abundance based on component and skin color: cholesterol, campesterol, stigmasterol, β-sitosterol, isofucosterol, α-amyrin, and cycloartenol. Results suggest diversity within the germplasm which can be used to improve the antioxidant capacity of future cultivar development.

Incorporating High-Oleic Peanuts in Layer diets: Impact on Production, Nutritional Profile and Economic Viability

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The poultry industry seeks alternative protein sources to soybean meal due to rising costs and demand. High-oleic peanuts (HOPN), rich in monounsaturated fats and protein, may serve as a viable substitute. This study evaluated the effects of incorporating unblanched high-oleic peanuts at varying inclusion levels (0%, 5%, 10%, 15%, and 20%) in layer diets on production performance, egg quality and lipid chemistry over eight weeks. Two hundred 40-week-old Hy-Line Brown were randomly assigned to 5 dietary treatments for an 8-week trial. Key performance indicators, including hen-day egg production (HDEP), feed intake (FI), egg weight (EW), feed conversion ratio (FCR), and egg quality parameters were assessed. Results demonstrated that feed intake was significantly reduced in hens fed the 15% and 20% HOPN supplemented treatments compared to conventional fed hens at wk 4, 6 and 8 ($P < 0.01$). FCR was significantly improved in hens fed the 15% and 20% HOPN treatments as compared to conventional fed hens at wk 8 ($P < 0.01$), while at wk 6 FCR was significantly improved in the 20% HOPN treatment compared to the conventional fed hens ($P < 0.05$). There were no significant differences in any of the egg quality parameters at any of the time points measured. In general, eggs produced by hens fed the 10%, 15% or 20% HOPN diets had reduced saturated fats, and significantly higher levels of oleic acid and total omega 9 fatty acids as compared to conventional eggs at wk 8. While the experimental feed cost/ton was highest in the peanut-containing treatments, hens fed the peanut-containing diets consumed significantly less feed as compared to the conventional fed hens, lowering the final experimental feed cost for 15% and 20% supplemented treatments. Economic analysis revealed the 5% and 10% HOPN treatments had the best egg income, while return on investment (ROI) was best in the 10% HOPN treatment as compared to all other treatments, driven by improved feed efficiency and production performance.

Robotics and AI for Agriculture Production

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Much has been said about the potential for AI and robotics technologies to help advance agricultural production and breeding systems. This talk will provide an overview of the tools that have been used in the research domain and discuss potential paths to bring those tools into real-world use in agricultural environments. The focus will be on what it takes to enable robots to perform delicate dexterous manipulation tasks that have so far resisted automation. It will review perception work to date, which can be used to provide robots with detailed geometric and semantic understandings of their surroundings, though some challenges remain in the agricultural space. It will then propose methods of using that understanding to drive intelligent interactions with plants that will enable tasks such as harvesting or pruning in dense tree canopies. Examples showing robotic systems deployed in proof-of-concept tasks such as grapevine pruning and pepper harvesting will be presented.

Peanut Farming: The Way It Was

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The last 50 years has seen unprecedented change in the planting, nurturing and harvesting of peanuts in the United States. The farmer has been swept up in these changes, navigating the advantages and disadvantages of technology as they try and determine what is both good and essential for their particular farm in their particular area. A look at where we've come from is both essential and enlightening. What have we gained? And what have we lost? What can we learn from those "old peanut farmers", many of whom are no longer with us? I suggest a journey back, so that we might better see how to forge ahead. Rex Alphin, a farmer and writer, lives on a multigenerational farm in southeast Virginia. He cultivates about 2,000 acres, including 650 acres of peanuts. Despite his busy farming schedule, he makes time to share his captivating farming stories through his essays and poetry, including the books "The Nature of Things: Stories from the Land" and "Lamentations of a Son."

Early Detection, Early Intervention: Innovations in Sequenced-based Pathogen Identification for Plant Disease Prevention

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During the onset of a disease outbreak, early and accurate identification of its pathogenic source is essential to implement intervention strategies to contain the initial outbreak before it grows into an epidemic. Since traditional identification methods are pathogen-specific and thus limited in detecting newly emerging pathogen, a non-targeted approach is needed. Metagenomics, i.e., sequencing of all DNA or RNA in a sample, provides an effective alternative of using genetic signatures to accurately identify all present microbes including any potential emerging pathogen. However, two main challenges are poor pathogen signal and difficulty in distinguishing pathogenic sequences from non-pathogenic microbes leading to slow adoption of this technology. To improve and implement the use of this technology to the benefit of growers, Virginia Tech's plant disease clinic has partnered with the Virginia Tech Animal Laboratory Services to streamline the process as part of a combined metagenomic-based pathogen identification service. This service uses our continuously improving workflow that can even differentiate between closely-related fungi, for example, *Nothopassalora personata* and *Passalora arachidicola*, responsible for different leaf spot diseases in peanut plants. Using this approach, emerging pathogens can then be quickly (e.g., ~2 days) and routinely identified while allowing for development of targeted assessment and containment strategies to minimize the impact of the disease on peanut yield and quality. Alongside identification service, we are also developing informational databases to help users enter, track and retrieve all metadata, results, and reports provided by our center. We will give an overview of the current service provided and examples of pathogens identified so far.

Is AI the Missing Piece for Precision Agriculture?

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One of my main arguments about precision agriculture is that it has been so much slower than we anticipated. The biggest problem has been in sensor development for diagnosing underperforming crops. I think computer vision (a subset of AI) is the cure for most of these issues and we'll finally have precision agriculture that delivers value to farmers.

Comparison of Ten Peanut White Mold Fungicide Programs in Bulloch County, Georgia

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White mold is a critical problem for peanut producers in Bulloch County and must be addressed with additional on-farm research to establish “best management” practices. The producers’ current best line of defense to combat the problem involves selection of more-resistant varieties and judicious use of fungicides. Further research is needed to provide recommendations to growers regarding the use of newer fungicides and application strategies for the management of white mold. In this demonstration conducted in 2025, the effectiveness of ten different fungicide programs was evaluated. The experimental design was a complete block design with three replications. Data collected throughout this study included severity of leaf spot and incidence of white mold. Means were separated using Fisher’s protected LSD. From this research, the effectiveness of the fungicide treatments in reducing the incidence of white mold was evaluated as part of a disease management program to improve yield and quality. This data will play an important role in recommendations for future use of peanut fungicide selection to reduce white mold in Bulloch County and the Southeast.

How Approaches to Peanut Production Have Changed in Northampton County and North Carolina During the Past Three Decades and Where We are Heading

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The peanut industry in North Carolina has experienced major shifts since 2003 Federal farm policy was implemented. In Northampton County, acreage prior to this change was around 28,000. Acreage since that time has fluctuated between approximately 4,000 and 8,000. While peanut acreage decreased, yield per acre has increased. Demographics of the farming community has also changed as has pest and other production constraints.

The Peanut Variety and Quality Evaluation (PVQE) Program

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Determining the yield, value, and performance of experimental peanut lines is imperative to the release of Virginia-type peanut cultivars in the Virginia-Carolinas (V-C) region. In 2024, field tests were established with a split-plot design with digging date as the whole plot factor and genotype as the subplot factor. To assess maturity between the experimental breeding lines, two digging dates at each location were established, the first digging date was set based on pod blasting results for the earliest maturing lines, the second dig was set 10 days after the first dig for each location. The genotypes tested include 5 commercial cultivars, including Bailey II, Emery, NC-20, Sullivan, and Walton, 17 North Carolina State University breeding lines, and 8 breeding lines through a collaboration between Virginia Tech and University of Florida. Five field sites were established throughout the V-C region to represent major peanut growing areas throughout the region. These sites include Tidewater Agricultural Research and Extension Center (TAREC) in Suffolk, VA; Slade Farms located in Martin Co., NC; the Upper Coastal Plain Research Station in Rocky Mount, NC; McDuffie Farms in Bladen Co., NC; and at Edisto Research Station, in Blackville, SC; Data was collected on yield and grade factors to calculate a receipt loan value per acre based on 2024 USDA peanut price schedule. Other important industry parameters such as percent jumbo and fancy sized pods, percent super extra-large kernels, and hull brightness were also collected. Data was subjected to a mixed model in JMP Pro 17 software, with location, digging date, genotype, and there interactions treated as fixed effects, and replication as a random effect. Means were separated using Tukey’s HSD at a p-value < 0.05. The results of this study will be used to determine which of the experimental breeding lines should be grown commercially within the V-C region.

Evaluating Options for Rootworm Management in Peanut

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The rootworm complex in Georgia peanut is composed of the native southern corn rootworm, *Diabrotica undecimpunctata*, and the introduced banded cucumber beetle, *D. balteata*. These species can cause significant economic loss due to larval feeding that reduces yield and grade of harvested peanut. Recent increases in reported rootworm injury combined with the loss of tolerance for the insecticide chlorpyrifos heighten the need for new, effective management tactics. A series of field experiments conducted over multiple years evaluated the efficacy of various insecticide active ingredients and use patterns against the rootworm complex. No currently registered insecticide, other than chlorpyrifos, consistently reduced pod injury compared to the non-treated check. The pyrethroid bifenthrin, applied in irrigation water, reduced injury in some trials but not in others. The novel active ingredient isocycloseram consistently reduced rootworm pod injury compared to the non-treated check when applied in-furrow at plant and in a simulated irrigation treatment. Results suggest that isocycloseram could be an effective tool for managing rootworm in peanut, pending its registration.

Contributions of the Bureau of Food Security's Peanut Innovation Lab Production Packages Project on Ghana and North Carolina

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The benefits of the USAID Bureau of Food Security Innovation Lab for Peanuts for peanut producers in North Carolina and Ghana have been instrumental in developing effective production and pest management practices and securing funding to support research and extension programs. In addition to developing and improving recommendations on improved peanut production and aflatoxin mitigation in Ghana, the program increased institutional capacity through undergraduate and graduate degree programs. In the US, funds were used to support technical expertise in developing a risk tool in Microsoft Excel for peanut production in North Carolina. Once the template was created for the US, risk tools were developed for Ghana, Malawi, India, and Argentina. It is estimated that 25% of the annual budget for one PI in North Carolina was derived from the project in Ghana over recent years. Dual benefits of the USAID Bureau of Food Security Innovation Lab for Peanuts are well documented and point to a positive aspect of USAID that improves the lives of people in both countries.

Growth and Yield Response of Early Applications of Prohexadione Calcium in Peanut (*Arachis hypogaea* L.)

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The plant growth regulator prohexadione calcium is utilized to reduce vine growth and increase pod yield in peanut (*Arachis hypogaea* L.). Traditionally, prohexadione calcium has been applied twice: initially when 50% of lateral vines are touching (~90% lapped), followed by a second application within 21 days. Recent studies suggest that reduced rates (0.5x to 0.75x) can improve yields compared to the labeled rate (1x,140g ai/ha). This study aimed to evaluate the efficacy of prohexadione calcium (Kudos OD) at earlier timings and varied rates for managing vine growth and yield response in an on-farm trial in Tift County, Georgia. The treatments included: 1.) non-treated control, 2.) Kudos OD applied at 40.2 g ai/ha at 45, 65, 75, and 90 days after planting (DAP), 3.) Kudos OD applied at 40.2 g ai/ha at 45 DAP and 70 g ai/ha at 65 and 75 DAP, 4.) Kudos OD applied at 105 g ai/ha at 65 and 75 DAP, and 5.) Kudos OD applied at 140 g ai/ha at 65 and 75 DAP. Mainstem height was measured at 64 DAP and every two weeks thereafter until 129 DAP, along with yield (kg/ha). Kudos OD applied at 45 DAP significantly suppressed mainstem height compared to the untreated control and the labeled rate of 140 g ai/ha for most of the growing season. Kudos OD applied at 40.2 g ai/ha at 45 DAP and 70 g ai/ha at 65 and 75 DAP, as well as at 105 g ai/ha at 65 and 75 DAP, significantly increased yield over the untreated control. In summary, Kudos OD at lower rates and early application timings provided some enhanced vine growth management up to 115 DAP and achieved similar yields compared to the current application rates and times used in Georgia.

Influence of Calcium Sources on Soil and Pod Calcium Levels, and Peanut Yield

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Peanut is one of the major crops in the southeastern United States, with calcium playing an essential role in its growth and development. Adequate calcium availability in the soil promotes seed development, pod formation, and germination. To evaluate the effects of different calcium sources on peanut pod yield, as well as soil and pod calcium levels, a field experiment was conducted at the West Florida Research and Education Center in Jay, FL. The study included seven treatments: untreated control, calcium carbonate (18.71 L/ha), lime (2218.42 kg/ha), gypsum (1400.8 kg/ha), both lime and gypsum (2218.42 kg/ha and 1400.8 kg/ha, respectively), papermill lime (2224.64 kg/ha), and calcium chloride (37.42 L/ha). Results showed that papermill lime significantly increased soil calcium levels compared to untreated control, gypsum, calcium chloride, and calcium carbonate. Pod calcium levels were significantly higher in the lime + gypsum and gypsum treatments compared to calcium chloride, untreated control, and calcium carbonate while no significant difference was observed between papermill lime and other treatments. Calcium chloride and lime treatments significantly increased leaf chlorophyll content compared to the control, although no significant differences were observed among the other treatments. While lime resulted in the highest pod yield numerically, the differences were not statistically significant among all the treatments. In conclusion, papermill lime was the most effective treatment for improving soil calcium levels, while lime + gypsum and gypsum increased pod calcium levels. These findings highlight the importance of selecting the right calcium sources to optimize peanut production.

Percentage of In-Season Stand Reduction at Different Crop Growth Stages

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Stand reduction can occur for many different reasons during the growing season. Severe weather events, nutrient toxicity or deficiency, pesticide drift, improperly set cultivation equipment, and feeding by vermin are just a few of the more common events. In peanut (*Arachis hypogaea* L.), deer feeding has become a serious threat in recent years causing vegetative injury and sometimes plant mortality. An experiment was designed to test the effect of different levels of stand loss at various growth stages of peanut throughout the growing season. At approximately 1, 30, 60, 75, and 90 days after emergence (DAE), peanut plants were manually removed from the row corresponding to 25, 50, or 75% of the total plot length. To accomplish this yet keep some level of uniformity along the length of the row, equidistant sections within each row were established as 9 segments of 101.6 cm in 2022-2023, and 8 segments of 106.7 cm in 2024. In each segment, a random portion of either 25.4 (25%), 50.8 (50%), or 76.2 (75%) cm consecutive length of row was removed from that section in 2022-2023 for each growth stage. In 2024, a random section in each segment had either 26.7 (25%), 53.3 (50%), or 80.0 (75%) cm worth of plants removed. A non-disturbed check was included, as well as one treatment that was dug at 90 DAE to show the potential for yield gain/loss by carrying a late-season injured crop to maturity. The only treatments to maintain a yield equal to the check were when only 25% removal occurred at either 1 or 30 DAE. For any given level of reduction that occurred, a greater yield loss occurred with the later in the season that the plants were removed. With only 25% plant removal, yield loss was gradual until late in the season and only averaged a loss of 12 kg/ha per day with the delay in injury. When 50% or 75% of the stand was lost, the yield losses were 24.9 and 26.7 kg/ha per day from having later season injury, respectively. There was no yield advantage by digging the entire crop at the 90 DAE point, even when 75% of the plants were removed, and a considerable penalty in total sound mature kernels (TSMK) would occur by doing so (15-17% increase in TSMK to carry out to maturity). The improvement in pod yield between the 90 DAE digging compared to the non-disturbed check at full maturity was 3956 kg/ha (187% increase). These results show that peanut has some capacity to tolerate moderate stand reduction (25%) during the first 75 DAE, and that the greater the proportion of stand reduction, the greater the yield loss. Also, the later in the season that stand reduction occurs, the greater the loss in yield, regardless of the proportional loss in stand.

Benghal Dayflower in Georgia: A Review

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Benghal dayflower (*Commelina benghalensis*), also known as tropical spiderwort, became a serious pest in Georgia and other southeastern states in the early 2000's. Benghal dayflower, an invasive species, can produce 8,000-12,000 seeds/plant, cause devastating peanut yield losses, and serve as a host for southern stem rot (*Sclerotium rolfsii*), reniform nematodes (*Rotylenchulus reniformis*), and southern/peanut root knot nematodes (*Meloidogyne* spp.). Unique in comparison to other common species in the Commelinaceae plant family, Benghal dayflower has underground flowers that aid in its identification. Non-chemical control tactics for Benghal dayflower in peanut include deep tillage, earlier planting dates, and twin row spacing. Herbicide active ingredients used in peanut that have provided effective residual control of Benghal dayflower include the following: acetochlor, dimethenamid-*P*, pyroxasulfone, and *S*-metolachlor. Herbicide active ingredients applied postemergence in peanut that have provided effective control of Benghal dayflower include the following: bentazon, diclosulam, imazapic, and paraquat. Growers must aggressively manage Benghal dayflower in all rotational crops, especially after field corn harvest in the fall, to help reduce the soil seedbank load and minimize future peanut yield losses.

Enhancing Pod and Seed Phenotyping in Peanut Using Computer Vision and Low-Cost Imaging

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Peanut (*A. hypogaea*) pod and seed phenotyping methods have remained largely unchanged for the past 70 years. We present an innovative system that integrates Luxonis cameras, custom Mask R-CNN models, and our novel tracking algorithm to accurately measure length, width, and area of peanuts during pre-sizing and shelling processes. Our pod measurement method demonstrates strong correlation with conventional pod rolling techniques while providing enhanced sample characterization through precise measurements and detailed distribution analyses. The trained Mask R-CNN model achieved high Average Precision scores > 90 while our novel tracking algorithm outperformed other tracking methods with an RMSEadj = 7.24. For seed assessment, our approach correlates well with both traditional methods and the recently adopted Qsorter Explorer, additionally enabling accurate prediction of seed weight and shelling percentage. Classification performance achieved f1-scores > 0.83 across different pod sizes with lower standard deviations than traditional mechanical pre-sizers. These results demonstrate that low-cost scanning solutions combined with advanced computer vision techniques can significantly improve the speed, accuracy, and depth of phenotypic data collection for peanut breeding programs and in industry applications.

Revisiting A Kernel Moisture Loss Model During Windrow Curing

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The rate of peanut kernel moisture loss after inversion varies considerably during harvest due to fluctuating environmental conditions. This can result in peanuts harvested at too low or high kernel moisture reducing grower profitability. Therefore, the primary objective of this research is to determine if a previously developed kernel moisture loss model (Young, 1977) has sufficient accuracy to aid growers with harvest recommendations pertaining to kernel moisture. Research was conducted during the 2023 and 2024 growing season to determine the influence of starting kernel moisture and precipitation on model kernel moisture predictions. Experimental treatments consisted of three harvest times to maximize potential weather variation during peanut curing. Samples were collected daily for gravimetric kernel moisture content determination from the initial day of digging until harvest. Model accuracy was greatest when hourly weather data was used as compared to daily averages. The model coefficient of variation and slope was 0.83 and 0.96, respectively, when hourly weather data and observed starting kernel moisture was used for model prediction. An assumed starting kernel moisture content of 52% resulted in the most accurate kernel moisture prediction. Precipitation after digging reduced model accuracy by under predicting the moisture gain from a precipitation event. An additional study year is needed to further validate the most accurate assumed starting kernel moisture content, and further calibrate the model re-wetting coefficient.

Exploring Agronomic Management Practices to Improve Peanut Oil Production.

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Peanut is mostly cultivated in the U.S. for edible market. In the Southeastern U.S., its production is largely undertaken under rainfed conditions. This predisposes the crop to drought stress, enhancing the risk for aflatoxin production, which renders the harvested lots unfit for human consumption due to its carcinogenic nature. Additionally, peanut exhibits indeterminate flowering, resulting in non-uniform pod maturity within a plant, with smaller pods failing to meet the food quality standards. These challenges highlight the need to explore peanut's potential for oilseed production, where these factors are less critical. The objectives of this study were to evaluate the effects of agronomic manipulations on improving the oil yield and promoting a more determinate growth habit in peanut, and to determine the optimal harvest stage for maximizing oil production. The field study was conducted using a split-plot design with four replications. The main plot effect is represented by two row patterns (single and triple row). The sub-plot effects, at the same level, consisted of a combination of two cultivars (Georgia-06G and TifNV-HG) and two seeding rates (19.7 and 39.4 seed/m). Pod samples were collected from the plots at 60, 80, 99, 120, 140, and 161 days after planting (DAP). Measurements of number of pods, seed dry weight, and oil percentage were recorded. The results showed that pod number and seed dry weight were primarily influenced by seeding rate and row pattern whereas seed oil percentage was more consistently a result of cultivar differences. Despite the overall maximum pod number and seed dry weight occurring at 140 DAP, seed oil concentration reached a maximum at 120 DAP. A strong correlation between seed dry weight and total oil concentration indicated that oil accumulation plateaus before seed biomass peaks, with the model suggesting a maximum average oil concentration of 47% observed at a total seed dry weight of approximately 28 g/plant. These findings underscore the role of agronomic interventions for making peanut a more viable oil crop in the Southeastern U.S.

In vitro Temperature Response and Sensitivity of Three _Rhizopus_ spp. to Peanut Seed-Treatment Fungicides

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Rhizopus seed and seedling rot is a highly destructive peanut disease, causing rapid seed decay in 36-96 hours and leaving seeds and pre-emerged seedlings indistinguishable from the soil. Forty-five isolates from commercial seed were identified as *R. delemar, R. arrhizus,* and *R. stolonifer* (26, 16, and 3 isolates, respectively). A novel pathogenicity assay showed all 13 tested peanut cultivars were highly susceptible. Temperature assays using ‘Georiga-06G’ seeds inoculated with each *Rhizopus* spp. and incubated at 15, 20, 25, 30, and 35°C revealed species-specific thermotolerance. *Rhizopus delemar* and *R. arrhizus* exhibited rapid mycelial growth and high virulence on peanut seeds at all tested temperatures, while *R. stolonifer* exhibited significantly slower growth and no growth at 30°C and 35°C, respectively. Due to the reduced growth of *R. stolonifer* at 30°C and 35°C, some inoculated seeds managed to germinate (40.2% at 30°C and 72.2% at 35°C) and develop healthy radicles above 10 mm (37.5% at 30°C and 63.8% at 35°C). *In vitro* sensitivity of 15 isolates (6 *R. delemar,* 6 *R. arrhizus,* and 3 *R. stolonifer*) to eight seed treatment fungicides was assessed on amended medium using a mycelial growth inhibition assay to determine the effective concentration inhibiting 50% (EC_{50}). All three species responded similarly to fludioxonil, carboxin, and pydiflumetofen, which consistently provided the lowest mean EC_{50} (µg/mL) values across species (< 0.05 µg/mL). Sedaxane (3.2 – 7.0 µg/mL) and fluopyram (1.0 – 1.9 µg/mL) provided moderate efficacy, while azoxystrobin, mefenoxam, and ipconazole did not inhibit growth at the highest tested concentration (>10 µg/mL).

Determining Best Disease Management Programs for New Peanut Cultivar TifCB-7

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A major focus of peanut breeders in the United States (U.S.) has been to improve disease tolerance of peanut cultivars. One recent advancement has been the release of cultivar TifCB-7 that has been reported of having superior tolerance to late leaf spot *(Nothopassalora personata*). No specific leaf spot or white mold (*Athelia rolfsii*) management information currently exist for TifCB-7. Therefore, the objective of this proposed research is to determine the best disease management strategy for this cultivar and future cultivars that may have similar leaf spot tolerance. Seven different disease management plans were implemented for TifCB-7 and Georgia-06G in 2024. When average across all fungicide treatments TifCB-7 had lower leaf spot ratings and similar number of white mold incidence when compared to Georgia-06G. However, no fungicide treatment by variety interaction occurred indicating that the improved leaf spot tolerance of TifCB-7 is not great enough to reduce fungicide applications in fields with high disease pressure. Additional site-years are needed to confirm results and better understand regional differences in variety leaf spot tolerance.

Effects of Increased Seeding Rates on Late-Planted Peanuts

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Selecting the optimal planting date for peanuts (*Arachis hypogaea* L.) is critical for maximizing yield and quality. However, environmental constraints can delay planting beyond the ideal window. Previous studies have shown a decline in yield potential when planting is delayed from early May to mid-June. This study evaluated the yield response of peanut cultivars to increased seeding rates under late planting conditions. Field trials were conducted at the University of Georgia Plant Science Farm and the Abraham Baldwin Agricultural College (ABAC) Farm in Tifton, GA. Georgia-06G and Georgia-21GR cultivars were planted on May 29, 2024, and June 3, 2024, respectively, at the UGA and ABAC sites. Each cultivar was sown in two-row plots (1.83 m × 9.14 m) at four seeding rates: 19.7, 26.3, 32.8, and 39.4 seeds/m. A split-plot design was used, with cultivar as the main plot and seeding rate as the subplot. Treatments were replicated four times. Data collected included final plant stands, yield (kg/ha), and revenue. Statistical analysis was performed using Tukey's HSD at a significance level of $p = 0.10$. Due to differing weather conditions at planting, data from the two locations were analyzed separately.

No significant interactions were observed between cultivar and seeding rate. Across all seeding rates, Georgia-06G consistently outperformed Georgia-21GR in emergence, yield, and revenue. The highest final plant stands were observed at the 39.4 seeds/m rate when compared to the 19.7 seeds/m rate at both locations. However, increased seeding rates did not improve yield or revenue at the ABAC Farm. In contrast, at the UGA Tifton Campus, the 39.4 seeds/m rate significantly outperformed all other rates in both yield and revenue. These findings suggest that while higher seeding rates can improve stand establishment, their impact on yield and revenue is location/weather dependent. Therefore, increasing seeding rates may only be beneficial when poor seed quality or adverse weather conditions are anticipated.

Estimating Mating-type Frequencies and Genetic Diversity of *Passalora arachidicola* and *Nothopassalora personata*

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Two of the most devastating peanut foliar pathogens are *Passalora arachidicola,* which causes early leaf spot, and *Nothopassalora personata,* the causal agent of late leaf spot. Recent studies have characterized the genomes of these pathogens; however, little is known about the MAT1 genes associated with mating and the genetic diversity in field populations. For most ascomycete fungi, the MAT1 locus consists of two idiomorphs, MAT1-1 and MAT1-2. Genetic diversity is increased with the presence of sexual reproduction, which can be assumed if each mating type idiomorph is found in roughly equal frequencies. This study uses mating type primers developed based on available genome sequences for *P. arachidicola* and *N. personata* to determine mating type frequencies from field populations in Tifton, GA through multiplex PCR. Forty isolates of each species were grown in axenic culture. PCR results indicated that 100% of *P. arachidicola* isolates contained the MAT1-2 gene. For *N. personata*, 37.5% amplified MAT1-1 and 62.5% amplified MAT1-2. Short sequence repeats (SSRs) were found for *N. personata,* and primers were developed that work for each species to measure the genetic diversity within the population. By developing these microsatellite primers, we will be able to compare not only the genetic diversity within the population for each species but also compare how genetic diversity is affected by the possible presence of sexual reproduction within the *N. personata* population.

Peanut Plant Height, Peg Strength, Digging Efficiency, and Pod Yield as Influenced by Prohexadione Calcium

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Prohexadione calcium is well known for managing excessive vine growth in peanuts (*Arachis hypogaea* L.) by inhibiting shoot internode elongation. However, if not applied at correct rate and timing, it can negatively impact both vegetative and reproductive growth of peanuts. Therefore, a field study was conducted in 2023 and 2024 at the West Florida Research and Education Center in Jay, FL, to evaluate the effects of different application rates and timings of prohexadione calcium on plant height, peg strength, digging efficiency, and pod yield. Treatments included an untreated control and three rates of prohexadione calcium 105, 140, and 175 g a.i. ha^{-1} each applied using both single and split application methods. Prohexadione calcium significantly reduced plant height, with the greatest reduction of 15.8 cm observed under the 175 g a.i. ha^{-1} split application compared to the control. Chlorophyll content also increased significantly under this treatment across both years. Peg strength improved from 4.09 N in the control to 5.57 N under the 140 g a.i. ha^{-1} split application. However, digging efficiency and pod yield were not significantly affected by treatment. Significant year-to-year variation was observed, with all measured parameters higher in 2024 than in 2023. These findings suggest that prohexadione calcium is effective in controlling vine growth and enhancing chlorophyll content and peg strength, potentially improving harvest efficiency. However, its influence on pod yield remains inconsistent and may depend on environmental conditions.

Unknotting a Nematode: Exploring Wild *Arachis* Root Knot Nematode Resistance in Peanut

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Peanut root knot nematode (PRKN) (*Meloidogyne arenaria)* is a microscopic roundworm that primarily infects peanut. Peanut fields infected with PRKN demonstrate symptoms of malnourishment, reduced yields, and increased susceptibility to other opportunistic pathogens. In the state of Georgia, PRKN was responsible for $32.5 million in crop damage in 2022. For a state that is responsible for 55% of the peanut production in United States, this can be devastating. One of the most effective strategies to combat this pathogen is through growing cultivars with PRKN resistance. Currently, the only source of strong resistance derives from wild *Arachis* species. To characterize this resistance, genotypic and phenotypic experiments have been performed on recombinant lines. The results of these experiments have led to the identification of regions where the resistance gene(s) potentially resides.

Growth Regulation in Peanut: Investigating Prohexadione Calcium Tank-Mixed with Postemergence Herbicides

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When grown in excess, peanut vines have the potential for fostering disease under the canopy and can become damaged during mid-to-late season pesticide applications. The use of a plant growth regulator (PGR), specifically prohexadione calcium, in peanut can reduce vine growth and increase yield, with the potential of increasing overall net return. With input costs significantly increased, the use of tank-mixtures can alleviate the costs and loss of time from making sequential applications. However, limited information is available regarding the effects of tank-mixing prohexadione calcium with herbicide in peanut. Therefore, field studies were designed to determine cultivar specific effects on varying varieties by tank-mixing prohexadione calcium with commonly used postemergence peanut herbicides. The objectives of this study are to determine if there are any synergistic or antagonistic effects that arise with the addition of a PGR tank-mixed application. Experiments were conducted as a randomized complete block design at two field locations with four replications per treatment and repeated in time. Treatments include tank-mix combinations of prohexadione calcium (formulated as Kudos®) at 0.6X and 1X field-rates, chlorimuron, clethodim, sethoxydim, and 2,4-DB. Cultivars evaluated included GA-06G and GA-16HO. Differences among treatments were observed in visual injury, row spacing, main stem height, and node count; however, all effects were transient and no longer evident by the R5 growth stage. TSWV incidence did not differ among treatments, and yield data showed no significant PGR and herbicide interactions. These results indicate no adverse effects are associated with combining plant growth regulators and herbicides.

Quantifying in-furrow Insecticide Persistence and its effects on Tomato Spotted Wilt Virus in Peanut

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Tomato spotted wilt virus (TSWV; genus *Tospovirus*, family *Bunyaviridae*) is transmitted by nine species of thrips. The predominant thrips species in Alabama are tobacco thrips *Frankliniela fusca,* and western flower thrips (*Frankliniela occidentalis*) TSWV was first detected on peanuts in Texas in 1971. The virus continued to spread in the 1980’s, and was established in most of the peanut growing regions by the 1990’s. Initially the virus causes brown speckles, later symptoms include yellow mottling, crinkled leaves, with severe stunting of the leaves and vines. Plants infected with TSWV can die, but stunting is the most common symptom along with small or deformed pods. In terms of thrips management, there are several systemic in-furrow insecticides available to growers to combat peanut insect pests including phorate, aldicarb, and imidacloprid. Phorate is known to control thrips and reduce *Tomato spotted wilt virus* in peanuts by inducing a plant disease defense response. Thus, the objectives of this research are to i) quantify the amount of time these insecticides persist in plant tissue, ii) determine their impact on thrips damage, and iii) determine their impact on TSWV incidence and incited yield loss. To conduct this research, we collected peanut tissue samples at 15, 30, 42, 56, and 70 days after planting, to analyze the insecticide levels present in the plant over time by AOAC 2007.01. As well as thrips damage ratings, and TSWV incidence ratings.

Comparing *In Vitro* Assays for Detecting Fungicide Resistance in Early and Late Leaf Spot Pathogens of Peanuts

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The development of fungicide resistance in plant pathogens poses a significant threat to global food security. Early and late leaf spots, caused by *Passalora arachidicola* and *Nothopassalora personata*, respectively, are two important diseases of peanuts (*Arachis hypogaea*). Since these pathogens grow slowly and lack typical radial colony development, in vitro studies of *P. arachidicola* and *N. personata* have been limited. In vitro assays are essential tools for detecting and monitoring fungicide resistance. This study compares three *in vitro* assays: a biomass inhibition assay on solid media (BIA_sm), a biomass inhibition assay in liquid media (BIA_lm), and a resazurin assay (RSA) that detects metabolic inhibition, with a standard spore germination assay (GIA) to evaluate whether one or more is comparable to the GIA. For each assay, two isolates of *P. arachidicola* and *N. personata* were exposed to six concentrations of pydiflumetofen, penthiopyrad, azoxystrobin, or pyraclostrobin to determine relative percent growth inhibitions. The resulting data were analyzed using regression analyses to describe the relationship between the GIA and the other assays. All assays showed significant correlation to the GIA ($R=0.73-0.97$; $P<0.001$), with one exception: the BIA_lm assay with azoxystrobin and P. arachidicola ($R=0.52$; $P=0.07$). The significant relationships were best described as linear or quadratic. Estimates of fungicide sensitivities based on each assay were compared at two discriminatory doses, 0.1 µg/ml and 1.0 µg/ml, using analyses of variance and Tukey's post-hoc tests. For both doses, the BIA_lm estimated the same sensitivity levels as the GIA for seven of the eight fungicide species situations ($P>0.05$), while the BIA_sm estimates were significantly higher for four of the eight situations ($P>0.05$). At the lower dose, the RSA resembled the BIA_lm, providing the same sensitivity estimates as the GIA for seven out of eight cases. However, the RSA detected significantly less sensitivity at the higher dose in four of eight cases. While these results demonstrate that all three assays are acceptable for measuring fungicide sensitivity in these pathogens, the choice of *in vitro* assays may influence conclusions about fungicide resistance, with RSA being more likely to detect isolates with reduced fungicide sensitivities than the GIA at higher discriminatory doses.

Assessment of Reactive Oxygen Species and Photosynthetic Efficiency in Peanut in Response to Nothopassalora personata Infection

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Reactive oxygen species (ROS) play a crucial role in plant defense, accumulating after pathogen recognition to activate resistance genes or trigger a hypersensitive response. This study examines the responses of two peanut genotypes, G-13M (susceptible) and CB-7 (resistant), to *Nothopassalora personata*, the fungal pathogen responsible for late leaf spot disease, which negatively impacts photosynthetic efficiency and yield. Eight-week-old peanut plants were inoculated with *N. personata* (1×10^5 spores/ml) and maintained under controlled conditions (23°C, 99% RH, 12 h photoperiod) in a growth chamber. At 1, 3, 5, 7, 9, 12, 18 days after inoculation (dai), photosystem II quantum efficiency (Qymax) was measured using Pulse-Amplitude Modulated (PAM) fluorometry and ROS accumulation was quantified spectrophotometrically using an Amplex Red kit. Qymax declined over time for both infected genotypes, with G-13M having significantly lower values than CB-7 between 9 and 18 dai ($p \geq 0.05$). While ROS levels were significantly higher in both infected genotypes by 7 dai, ROS accumulation was significantly greater in CB-7 than G-13M from 9 to 18 dai ($p \geq 0.05$). These findings suggest that CB-7's resistance is associated with the maintenance of higher photosynthetic efficiency and elevated ROS production. This study provides fresh insights to breeders developing resistant peanut lines and geneticists characterizing resistance-associated genetic markers to enhance crop productivity.

Role of Harvest Methodology on Production and Pest Management Recommendations

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Recommendations to farmers on production and pest management practices for peanut are often based on small-plot research from trials that are replicated and conducted across multiple locations and years. This approach is efficient and allows researchers to make numerous comparisons of practices with limited space. However, there have been examples of research findings in recent years where results from small-plot research (plots 2 to 4 rows wide by 30 to 50 feet) are different from results observed when plots are much larger (8 rows by 500 feet, for example). Information is not present in the literature that compares yield response of peanut among treatment factors when the trial used large plots versus small plots. Experiments were conducted in 2022, 2023, and 2024 to compare the ranking of treatments when yield was determined from plots with a size of two rows by 30 feet compared with plots that were much larger. In these trials, a small section of land area with the same treatment was harvested. The remainder of the land area was harvested and considered the large-plot response. Data for peanut pod yield was determined and a statistical analysis was used to compare treatments. In 2024, trials comparing thrips management practices (3 trials), varieties (3 trials), prohexadione calcium treatments (3 trials), fungicide programs (2 trials), plant populations (1 trial), and tillage systems (2 trials), and planting pattern (1 trial) were included.

In eight of fifteen trials in 2024, peanut yield did not differ when comparing treatments regardless of plot size. Results from these experiments are considered inconclusive. In seven of fifteen trials, mean separations of treatment means differed when comparing the analysis for small plots versus large plots. Trials with differences included fungicide programs (1 of 2 trials), plant populations (1 trial), planting pattern (1 trial), prohexadione calcium treatments (2 of 3 trials), thrips management practices (2 of 3 trials), and varieties (1 of 3 trials). Recommendations for these trials would vary based on the results of the analysis based on plot size. In only one of the prohexadione calcium trials did the mean separation result in a similar statistical ranking of the treatments. The coefficient of variation (CV) was greater in all but one trial for the analysis of variance in small plots compared with large plots. In one instance, the CV from the small-plot analysis was lower than the CV for the large plot analysis; in one case, the CV value was similar. Results from these experiments provide insight into how plot size can influence recommendations based on comparisons of various inputs and practices associated with peanut production. Resource constraints, including land availability can limit experimentation with large plots, and the number of treatments that can be compared using large plots can be limited. None-the-less, these results serve as a reminder that recommendations on treatment effects can be impacted in large part based on methodology.

Impact of Variable Soil Water Tension Irrigation Thresholds on Georgia Peanut Production

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With roughly half of Georgia's peanut (*Arachis hypogaea L.)* production irrigated, maximizing irrigation water use efficiency (IWUE) is critical to remaining profitable and sustainable. The increase in use of soil moisture sensors has created a need to evaluate irrigation thresholds that maximize yield and profitability. The objective of this study was to evaluate the effects of managed soil water tension (SWT) levels throughout the growing season. In 2024 a randomized complete block design was implemented at the Stripling Irrigation Research Park (SIRP) in Camilla, Georgia. The study was conducted by employing a variable-rate overhead lateral irrigation system (Valmont Omaha, NE) to independently irrigate nine treatments with three replications. 'Georgia-06G' was planted and irrigated based on eight different irrigation schedules compared to a rainfed control. Watermark tensiometers integrated into a probe (Irrometer Co. Riverside, CA) at three depths (10.16cm, 30.48cm, 50.8cm) coupled with Realm5 telemetry (Realm, Lincoln, NE) were installed randomly into two of the three replicates for SWT measurements. SWT was logged hourly for all treatments and used for daily irrigation scheduling of appropriate plots. Results show minimal statistical variation between irrigated treatments for yield, IWUE, and profitability. Due to excessive rainfall during critical water requirement periods, it can be assumed full SWT treatment effects were not observed. When compared to the irrigated treatments the rainfed control had reductions in yield and profitability. Results currently indicate no clear recommended SWT irrigation threshold due to no statistically significant differences between threshold treatments. This study will be performed again for further evaluation.

Components of the Weed Management Risk Index used in the Peanut Risk Management Tool in North Carolina

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NC State Extension has developed Herbicide Selection Tool and Risk Management Tool in a Microsoft Excel platform for growers and their advisors to use when they management tweeds in peanut. The Herbicide Selection Tool is designed to get the user to a list of herbicide options as quickly as possible. The tool is not a replacement for product labels and other outlets for specific information related to factors such as herbicide rate, adjuvant selection, and weed size. The user can click on the herbicide combination on the output page and get general restrictions such as carryover potential (imazapic, for example) and restrictions on timing of application (paraquat, for example.) The Risk Management tool includes cultural practices and herbicide intensity and resistance in the ranking of risk as well as the impact of other pests on peanuts that influences the competitive ability of this crop with weeds. Similar to risk indices for other pests, the weed management index assigns scores based on the impact of various practices on weeds and their subsequent impact on peanut yield. The tool also includes an estimate of cost to the growers when practices are adjusted to decrease risk.

Developing an Economic Threshold for Lesser Cornstalk Borer in Peanut Based on Moth Capture in Pheromone Traps

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Lesser Cornstalk Borer (LCB), *Elasmopalpus lignosellus* (Zeller), is an economically important pest of peanut, *Arachis hypogaea,* causing damage to stem, pegs, and pods. Lesser cornstalk borer outbreaks primarily occur in hot, dry conditions where peanuts are grown in sandy soils. Current economic thresholds are based on larval abundance, but due to their cryptic behavior, LCB can be very difficult to monitor. Scouting for LCB is time consuming and expensive, and errors can lead to significant economic losses. A threshold based on moth captures in pheromone traps would provide significant cost savings to growers and reduce the likelihood of management mistakes. A study was designed to determine the relationship between LCB moth capture rates and: 1. larva abundance, 2. incidence of damage, and 3. number of moths observed in flush counts. The study was conducted in 2023 and 2024. Commercial peanut fields in Georgia were sampled weekly from May until September using pheromone traps, pitfall traps, whole plant examinations, and flush counts. The LCB day model indicated that pest populations should be below economic threshold in 2023, and there was no significant relationship between moth trap capture and any of the parameters tested. The study was repeated in 2024, and commercial peanut fields were sampled weekly from June to September using pheromone traps, pitfall traps, whole plant examinations, and flush counts. Data will be used to determine if moth numbers in traps can be used to accurately predict larval infestation. The goal of this project is to develop an economic threshold for LCB in peanut based on pheromone trap captures.

Exploring the Diversity of a Legacy Wild Peanut Collection to Enhance Cultivated Peanut

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The genetic diversity of the allotetraploid cultivated peanut (*Arachis hypogaea*) is limited due to a domestication bottleneck, which hinders the improvement of peanut cultivars. In contrast, wild diploid relatives are highly diverse and can be used to introduce beneficial traits, such as disease resistance. In the 1940s, James Louis "Cowboy" Stephens collected wild peanuts and other plant germplasm from South America, some of which have been growing for decades at the UGA Tifton campus without any research or passport information. This study aims to characterize the 'Stephens' wild peanut collections and evaluate their disease resistance. Genotyping by the Axiom_Arachis2 48K SNP array identified the six collections as A-genome species. Morphometric and genome size estimation of these accessions were associated with genotyping analysis for species identification. In vitro and field evaluations for early and late leaf spot, as well as tomato spotted wilt virus, revealed strong resistance in these accessions. This collection, along with 48 accessions representing 29 species in the section *Arachis*, will undergo whole exome sequencing to assess genetic variation. Interspecific crosses involving eight A-genome accessions and three B-genome species yielded multiple hybrids. Synthetic allotetraploids were recovered from eight combinations after colchicine treatment, and two synthetic allotetraploids produced seeds. This study created valuable genetic resources to enhance disease resistance in cultivated peanut.

Validation and Quantification of a Major Seed Size QTL in an Elite Biparental Peanut Population

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Seed size is a key trait in peanut production, influencing marketability, yield potential, and seed processing. In an F_2 mapping population, a large-effect QTL on chromosome 11 (B01) was identified for individual plant yield components (*qYC-Chr.11*), along with a major QTL for pod and seed size (*qSZ-Chr.16*) on chromosome 16 (B06). Kompetitive allele-specific PCR (KASP) markers tightly linked to these QTLs were tested for validation in $F_{2:3}$ segregating lines. One of the eight markers tested for yield components was polymorphic. Hence, additional polymorphic KASP markers for yield components are being developed near the QTL region. All eight of the tested markers for pod and seed size near *qSZ-Chr.16* were polymorphic and co-segregated with the phenotype. In 2023, individual plants were selected from $F_{2:3}$ segregating lines, and 12 exhibiting intermediate seed size phenotypes were advanced to the F_4 generation in 2024 as likely segregating lines. The 8 KASP markers linked to *qSZ-Chr.16* were tested in these segregating lines and a few recombinants were identified for further evaluation to refine the QTL region further. Additionally, $F_{3:4}$ lines were evaluated in a replicated trial and showed a strong association of the traits with different QTL classes. Further evaluation and fine-mapping of *qSZ-Chr.16* will be conducted in replicated trials in the coming seasons to better understand this large-effect QTL controlling seed size in peanuts. These validated QTLs and their associated markers will help define the genetic basis of peanut seed size and enhance peanut breeding efforts through marker-assisted selection.

Evaluation of Spanish Peanut Population for Dryland Cultivation

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Drought tolerance and high oleic content are important traits in global peanut (*Arachis hypogaea* L.) production. This study aims to determine the performance a Spanish-type peanut population derived from a cross between Schubert (a high-oleic cultivar) and 55-437 (a drought-tolerant cultivar). From 98 accessions, 44 genotypes selected from this population were evaluated under minimal irrigation across two environments for 2024 growing seasons in Lubbock, Texas. Separately, the population was narrowed down to 19 accessions in Ghana and in Senegal and evaluated in Ghana, Nyankpala. Both experiments were arranged in a Randomized Complete Block Design (RCBD). Data were collected on yield related traits (pod yield, kernel yield, 100-seed weight, and shelling percentage). Top performing lines from this population in Texas is being evaluated further for field performance and resistance to *A. flavus* colonization in 2025. Preliminary observations indicate that some genotypes exhibit consistently high performance across multiple environments.

Differential Harvesting in Peanut: Irrigated Fields with Rainfed Corners

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In Georgia, 50% of all peanut fields are irrigated, and the main irrigation system used is center pivot. Due to its circular trajectory, depending on the shape of the field, this system can leave parts of the field under rainfed conditions, as the irrigation cannot reach them. As a result, peanut yield and quality in these areas may be lower than those in irrigated areas, potentially affecting the overall quality if harvested together. Moreover, water stress in plants have been proved to increase the aflatoxin risk in peanuts, together with the presence of *Aspergillus flavus*, by reducing phytoalexin production (a compound that inhibits fungal growth). A premium price is paid for peanut with a high grade, increasing farmer revenue. However, loads containing visible *Aspergillus flavus* are considered segregation 3 and paid only 50% of premium. The aim of this study was to evaluate the benefits of harvesting those rainfed corners separately from the irrigated areas. Therefore, over three years (2022-24), fifteen fields in Georgia were analyzed. In each field, six moisture sensors were installed, three in the rainfed areas and three in the irrigated areas. Soil moisture levels, yield, seed germination rates, vigor, and grade were assessed in both areas from all fields. Dry and irrigated areas were mapped with QGIS and used to estimate economic parameters based on yield and segregation. Results indicated a clear distinction between rainfed and irrigated areas in terms of germination and vigor, with irrigated areas showing superior performance. In addition, yield and grade were greater in irrigated areas, and lower presence of *A. flavus* was detected in those areas. Depending on weather condition of temperature as well as amount and distribution of rainfall, harvesting separately the rainfed areas of an irrigated field could improve the lot quality and, consequently, increase the farmer revenue.

Characterizing Rootworm Feeding and its Impact on Peanut Pod Yield

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Two rootworm species are commonly found in peanut in Georgia. While the southern corn rootworm (SCR), Diabrotica undecimpunctata, is recognized as a serious pest of peanut, the pest status of the banded cucumber beetle (BCB), D. balteata, a native of the tropics, is less studied and understood. Recent studies show that BCB now outnumbers SCR in Georgia peanut fields and occurs in areas of the state where there is no previous history of rootworm infestation. The purpose of this study is to characterize rootworm feeding in terms of feeding site preference (i.e. fruiting structures) and time of feeding as well as determine the effect of feeding injury on seed yield and quality. A small-plot, replicated field study was conducted in 2022 and 2023 at the UGA Southwest Research and Education Center in Plains, GA. The field study was replicated a third time in 2024 with two trails located at the UGA Southwest Research and Education Center in Plains, GA; and a third trail located on the UGA Tifton Campus. Peanut treated with an experimental insecticide to reduce rootworm infestation was planted adjacent to non-treated peanut in a RCB design. Plants were sampled weekly in each plot beginning at pegging; all fruiting structures were removed, counted, measured, assessed for feeding injury, and dried and weighed. Seed yield and quality was assessed at harvest. Rootworm injury severity varied by year, but non-treated plants tended to have more fruiting structures but lower overall pod dry weight than treated plants. This work indicates that BCB presents a significant economic threat to peanut production in GA, and the development of effective IPM tactics is a priority.

Can Less Mean More?: Effect of Delayed Fungicide Timing and Reduced Applications for Control of Late Leaf Spot on Peanut

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Virginia type peanuts in North Carolina constitute around 130 thousand acres planted in 2024 with an estimated value of 157 million dollars. Historically, management of the peanut disease, late leaf spot (LLS), caused by the pathogen *Nothopassalora personata* is often mediated through a full season spray program consisting of four to six fungicide applications per season that include mixtures of multi- and single-site chemistry formulations. Current recommendations generally suggest fungicide programs begin between 45 and 55 days after planting (DAP). In recent years, the Virginia-Carolina peanut growing region has seen historically low rainfall in June, delaying disease pressure of LLS much later in the growing season. Management following current recommendations averages growers an input cost of over $52 dollars/acre, notwithstanding opportunity costs associated with making multiple applications over the course of the growing season. Therefore, the objective of this study was to evaluate a reduced number of fungicides and delay onset of fungicide programs in order to adapt recommendations to recent climate trends. Results determined that comparable or better amounts of control resulted from delaying the initial fungicide applications to 60 DAP. Similarly, comparable amounts of control were sustained from the 3 application spray program when compared to the 5 spray program. Across all timings and application dates, no significant differences in yield were observed, indicating the findings from this study can be used to recommend later and/or less applications of fungicides for peanut growers as we continue to face a drier climate in North Carolina.

Fitting Peanut Crop Coefficient Curves to Field Conditions Using Satellite Vegetation Indices

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Agricultural production depends heavily on water availability, making efficient irrigation management essential for sustaining yields and reducing losses from irregular precipitation. This growing need has driven the expansion of irrigated areas globally, requiring precise methods to meet crop water demands without compromising efficiency. The SI CropFit App is a user-friendly mobile tool developed to support this goal. It provides irrigation guidance for various agronomical crops using meteorological data from multiple sources and USDA NRCS SSURGO soil information to estimate daily plant-available soil water within the root zone. While scientific models based on weather data, such as Growing Degree Days (GDD), are effective under standard conditions, crop growth in the field is often affected by unpredictable factors. In such cases, relying solely on weather data can lead to inaccurate irrigation prescriptions. This study presents a refined irrigation management approach for peanut cultivation, integrating satellite imagery and weather data. The method employs linear models to estimate the Crop Coefficient (Kc), which typically rises through vegetative growth and declines during senescence. This pattern correlates with vegetation indices from satellite data. For peanuts, a strong linear relationship exists between these indices and Kc up to the peak vegetative stage. After this point, vegetation indices often plateau while Kc declines. To address this, GDD is incorporated, allowing linear regression to approximate crop stage transitions more accurately. This integrated approach improves crop stage estimation and supports more effective irrigation scheduling under variable field conditions.

Systematic Identification and Drought-Responsive Transcriptional Regulation of MAPK Genes in Cultivated and Diploid Peanut Species

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Mitogen-activated protein kinase (MAPK) cascades play crucial roles in various signal transduction pathways, affecting a wide range of physiological processes and stress responses in plants. MAPKs, as integral components of these cascades, perform vital functions in regulating cellular responses. However, a systematic analysis of the MAPK gene family in peanuts remains unexplored. In this study, we have identified the number of MAPK gene family members in three peanut species (Arachis hypogaea, Arachis duranensis and Arachis ipaensis). Specifically, we identified 30 MAPK genes in Arachis hypogaea, 16 MAPK genes in Arachis duranensis, and 15 MAPK genes in Arachis ipaensis. The gene family was circumscribed through bioinformatics approaches, considering synteny, the examination of cis-acting elements in promoter regions, phylogenetic relationships, and conserved motifs. Notably, all members displayed fully canonical motif structures characteristic of MAPK. The peanut MAPK gene family was classified into four major groups based on phylogenetic relationships. Gene structure analysis and the examination of cis-acting elements in promoter regions showed that groups A–C exhibited highly conserved exon-intron structures and predominantly contained the STKc_TEY_MAPK domain, whereas Group D displayed more complex gene structures and possessed the STKc_TDY_MAPK domain. RNA-seq analysis in drought-tolerant and drought-susceptible genotypes revealed that Ah_At_MAPK4 and Ah_Bt_MAPK4 were significantly upregulated under drought stress conditions, with substantially higher induction in drought-tolerant genotypes compared to drought-susceptible ones. Comprehensive analysis of the MAPK gene family in peanut provides new insights in potential function and regulation of MAPK genes in peanuts and enhancing the resistance to biotic and abiotic stresses for genetic improvement of peanut crops.

Balancing Weed Control: Evaluating Cover Crops and Herbicide Dissipation in Georgia Peanuts

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Georgia produces 53% of United States peanuts (*Arachis hypogaea*), with lucrative markets driving consistent production and regular herbicide use to maximize yields. Unfortunately, 12 cases of herbicide-resistant weeds have been reported in Georgia due to the continued use of herbicides. Growers are exploring cover crop use as a weed suppression tool to benefit and improve herbicide efficacy, slowing resistance development, despite risks like herbicide carryover injury to peanuts. Field trials at Midville and Tifton, Georgia in 2023 and 2024, were conducted to evaluate integrated practices on weed control and herbicide dissipation using three strategies: cover crop (cereal grain and no cover crop), planting arrangement (twin row and single row), and pre-emergence herbicides (no herbicide, flumioxazin @ 176.4 g ai ha-1 + diclosulam @ 25.2 g ai ha-1, and fluridone @ 0.42 kg ai ha-1 + diclosulam). Cereal rye was planted at 56 kg ha-1 in Midville 2024, and Tifton 2023 and 2024. A cereal grain mix (70% cereal rye; 20% oat; 10% wheat) was planted at 78.5 kg ha-1 in Midville 2023. Cover crop biomass, visual weed control and presence, soil cores, crop phenology, and pod yield data were collected. In Midville 2023, pre-emergence herbicides controlled >93% of weeds 4 weeks after planting (WAP), increasing to 99% at 8 WAP with post-emergence applications. In 2024, weed control reached 83% at 4 WAP and improved by 7% by 8 WAP. In Tifton, weed control improved by 16% at 8 WAP with 89% control in 2023 and achieved >90% weed control the entire season in 2024. Across locations in 2024, cereal rye cover crops enhanced weed control by 22% at 4 WAP and 11% at 6 WAP, suppressing up to 96% of weeds compared to no cover crop. Planting arrangement did not affect overall weed control. Pod yields generally exceeded the state average (4,550 kg ha-1). Pre-emergence herbicide by cover crop choice affected yield for 2023 Tifton, where pod yields declined by 1,378 kg ha-1 in the flumioxazin + diclosulam + cover crop treatment. In Midville 2024, twin row planting arrangements achieved higher pod yields than single row. Pre-emergence herbicide programs are essential in mitigating weed infestations, but implementing cereal rye as a cover crop can provide additional control of troublesome weeds. In addition to weed suppression, herbicide strategies may impact pod yields depending on the location and specific conditions. Producers can boost pod yields by planting twin rows. Understanding how herbicides interact with different management tactics can provide valuable insight for optimizing peanut production in Georgia.

Effect of mid-season heat and drought on reproductive physiology in virginia-type peanuts and the implications for peanut production in the Virginia-Carolina region

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Reproductive development encompasses some of the most energetically demanding changes a plant will undergo in its lifecycle and is therefore especially sensitive to adverse environmental conditions. For warm-season crops, such as peanut (*Arachis hypogaea* L.), heat and drought are an ever-present threat. To prevent yield and revenue losses through the destabilization of key developmental processes, a greater understanding of the physiological changes in reproductive tissues, as well as their relationship to yield, is essential. The study presented here is aimed to address these concerns through evaluation of current cultivars under compounding heat and drought stress, as well as to compare the physiological changes between isolated heat stress and compound stress, and to investigate the relationship between those changes and resulting yield. Five virginia-type cultivars (Bailey II, Emery, N.C. 20, Sullivan, and Walton) were evaluated over two consecutive seasons (2023 and 2024). Rainout shelters were utilized from mid-July until early September to create heat and drought microclimates over plots. In 2024, natural conditions (rainfed, uncovered) and single-stress heat (irrigated rainout shelter) treated groups were added to the trial to explore a larger range of conditions. Flower number (FN) and pollen viability assays (percent viability, PV) were collected over both seasons, and yield was additionally recorded in 2024. Under compound stress evaluation, N.C. 20 had the highest mean FN across both years, while Bailey II had the highest mean PV. Across all three conditions in 2024, single stress heat treated plots produced the lowest average yield/ft^2 (0.040 kg), 20% lower than plots under compound stress and over 100% lower than plots under natural conditions. However, low correlation was found between FN, PV, and yield, which highlights the complexity of plant responses to heat and drought stress and emphasizes the critical need for further research related to the reproductive efficiency of peanut.

Characterization of a Major QTL Influencing Shell Strength in Virginia-Type Peanuts: Genetic Basis, Evolutionary Origin, and Implications for Breeding

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Shell strength is an important trait in peanuts, influencing pod breakage and disease resistance. Despite its significance, the genetic basis of shell strength has remained poorly understood, with current evaluation methods being largely qualitative. To address this gap, we analyzed shell strength using a recombinant inbred line (RIL) population derived from the hard-shelled cultivar ‘Hanoch’ and the soft-shelled cultivar ‘Harari’. A texture analyzer-based quantitative method was used for phenotyping the trait among 235 RILs across two environments. Mapping was performed using an existing genetic map for this population. A major QTL (*qSSB02*) was revealed, explaining 18.7%–22.1% of the phenotypic variation. Remarkably, the allelic status of *qSSB02* aligned with cultivar designations for in-shell or shelled types across five decades of Israeli peanut breeding history. Unlike other QTLs associated with traits such as maturity and branching habit, *qSSB02* did not originate from the *fastigiata* ancestry of cv. Harari but from specific American *hypogaea* germplasm introduced into Israel in the 1970s. Physical analysis revealed that shell strength is primarily attributed to higher shell density rather than shell thickness. Chemical analyses showed that the shell of Hanoch is characterized by a high content of lignin, cellulose and crude fiber compared to Harari. In addition, anatomical characterization of the ripe fruit shell, in extreme RILs lines, revealed a stronger staining of the polymer lignin in the sub-epidermal cell layer. These findings provide insights into the genetic and compositional factors underlying shell strength in peanuts and lay a foundation for marker-assisted selection in breeding programs.

The Role of Genetic Instability in Peanut Domestication and Its Lasting Impact on Cultivated Varieties

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Peanut (*Arachis hypogaea*) is a segmental allotetraploid species that originated less than 10,000 years ago through hybridization and polyploidization of two diploid wild parents, *A. duranensis* and *A. ipaënsis*. While diploid species were cultivated in the past, only the allotetraploid peanut became a global crop, suggesting polyploidization conferred a significant advantage. To investigate the genetic basis of this advantage, we advanced lineages of the diploid parents and their neoallotetraploid hybrid, selecting for divergent seed weights. The neoallotetraploid exhibited greater phenotypic variation and responded more robustly to artificial selection compared to its parents. Genotyping and sequencing revealed substantial genetic instability, characterized by shifts in dosage balance across large chromosomal regions due to homoeologous exchange. These genetic alterations correlated with phenotypic changes from each parental species, supporting the idea that genetic instability following polyploidization facilitated this 'phenotypic boom,' contributing to its domestication advantage. To assess whether residual genetic instability persists in modern cultivated peanut, we advanced 36 'Tifrunner' lineages through seven generations in a pollinator-free greenhouse. Additionally, we conducted a large-scale analysis of individual peanuts from 90 grain samples of 'Georgia-06G', collected at buying points across 84 farms in Georgia and South Carolina. Among 227 Tifrunner plants, genotyping and sequencing identified three novel instability events: two monosomic compositions and a B-subgenome deletion associated with reduced pod width and seed weight. Among 288 Georgia-06G samples, genotyping detected one monosomic and two trisomic compositions, while sequencing identified a pentasomic composition. In both scenarios, over 1% of plants exhibited spontaneous large-scale chromosomal changes, revealing a surprising frequency of genetic instability in cultivated peanut. These findings highlight the key role of polyploidization and genetic instability in peanut domestication and show that cultivated peanut continues to experience residual instability with detectable phenotypic changes, providing a valuable source of variation likely contributing to its long-term adaptability and evolution.

Precision Peanut Maturity Mapping for Virginia-Type Cultivars using Aerial Spectral Imagery, Weather Data and Advanced Machine Learning

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Determining peanut maturity traditionally relies on pod-blasting, a labor-intensive and subjective process. This study proposes a data-driven alternative using UAS-based multispectral imagery, weather data, and advanced machine learning (ML). Multi-temporal imagery at 1 cm/pixel resolution was collected across three growing seasons (2022–2024) for five Virginia-type cultivars: Bailey II, Emery, NC-20, Sullivan, and Walton. Spectral reflectance and vegetation indices were extracted from the images and combined with Accumulated Growing Degree Days (AGDD) through ML. A total of 625 model combinations per cultivar were trained through a Multi-View Stacked Ensemble Learning framework to predict peanut maturity. Top-performing models for each cultivar are currently being validated over independent ground-truth datasets as well as for their deployment to generate precision peanut maturity status maps. Results will be presented in detail during the conference meeting. This approach provides an accessible data-driven solution that is expected to help growers make informed decisions on maturity and harvest planning.

MagDio*:* A new source of multiple peanut resistances for Africa

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Globally, diseases significantly lower peanut yields, with leaf spots (Early and Late), and groundnut rosette virus (GRD) being particularly devastating in East Africa. Currently, limited resistance exists in the pure pedigree of cultivated peanut lines, and novel sources of resistance are required to develop new varieties. Efforts to diversify the gene pool have resulted in the development of amphidiploid MagDio1 generated from *Arachis magna* and *A. diogoi*, which presumably may have strong resistance to leafspot, GRD, and other important traits of interest in Uganda. To expand the genetic diversity of peanuts, a targeted breeding program has been implemented using IAC 321 (a line with segments from the wild species *A. cardenasii*) and MagDio1. This initiative aims to assess these populations in subsequent generations for East Africa and the USA, focusing on resistance to GRD and leaf spots as well as to Tomato Spotted Wilt Virus, respectively.

In this study, 150 F_2 Individuals generated from crosses between IAC 321 and MagDio1 were characterized for ELS using detached leaf assays. Individual leaves were inoculated and evaluated for resistance by monitoring the number of lesions per leaf area. An index per area was also found using the number of lesions, the severity of the lesions, and sporulation status. Significant variation in resistance was observed among genotypes. The resistant lines identified represent promising novel sources of resistance to ELS for breeding programs in both the USA and Africa, and further analyses will focus on identifying the wild genomic segments that confer this resistance.

Evaluation of Peanut Herbicide Programs in Oklahoma

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Controlling weeds in Oklahoma peanut crops can be challenging due to herbicide-resistance, weather conditions, and limited effective postemergence herbicides options. These issues place an emphasis on the use of effective soil-residual herbicides. In 2024, a field study was conducted at the Caddo Research Station near Fort Cobb, Oklahoma. The objective of this study was to evaluate weed control and crop response in varying herbicide systems. Dual Magnum®, Valor® EZ, Outlook®, Warrant, Zidua®, Brake®, Pursuit®, and Cadre® were used in various tank-mixes applied at-plant or at-crack. Palmer amaranth (*Amaranthus palmeri*) control was greater than 91% for all treatments five weeks after planting. Ivy-leaf morningglory (*Ipomea hederacea*) control was greater than 98% for all treatments that contained Pursuit or Cadre and less than or equal to 96% for all other treatments five weeks after planting. Palmer amaranth control was 100 percent with Brake at 12 and 16 oz ac^{-1} plus Valor EZ and Dual Magnum 8 weeks after planting. Peanut yield ranged from 5,050 to 6,055 lbs ac^{-1}. The use of soil-residual herbicides in a peanut weed management program is a valuable tool to help manage troublesome weeds season-long.

Characterizing and Deploying Novel Disease Resistant Peanut Cultivars in the Southeastern US

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Peanut (*Arachis hypogaea* L.) is one of the most important crops grown in the Florida Panhandle. Fungal diseases of peanut, particularly Late Leaf Spot (LLS), are of critical importance to the area's peanut growers as they can devastate crop yields and are costly to control. To address this issue, the Peanut Breeding Program at the University of Florida has worked to develop several breeding lines with potential LLS resistance, but more data was needed to understand how to manage them in commercial settings and if less or less expensive fungicide inputs could be used. The objective of this work was to evaluate and determine fungicide regime (low-cost active ingredient rate and frequency) for three LLS resistant lines. The experiment was organized as a Randomized Complete Block Design with a split-plot arrangement, the experiment contained 3 blocks with 7 main plots each (0, 0.75 or 1.5 pts/a of chlorothalonil applied every 14, 21, or 28 days) and subplots of three LLS resistant varieties (UF experimental lines UF14x054-8-6-1-1, 15x084-HO1-1-SSD-19, and the commercially available Tif-CB7) and a susceptible control FloRun™ 'T61'. Planting occurred at the UF/IFAS NFREC in Marianna in late May, data was collected every two weeks beginning 63 days after planting (DAP), and plots were harvested in late October. Variety performance was evaluated using the Florida Leaf Spot Scale. Rating data was used to calculate the Area Under Disease Progress Curve (AUDPC), yield, and grade. Analysis of variance and mean separation tests were performed for the response variables yield, leaf spot rating, and AUDPC. All LLS resistant varieties had significantly higher yields and less disease than the susceptible control variety in all treatments. However, the amount of active ingredient required to achieve both those significantly higher yields and a final leaf spot rating acceptable to producers (for this experiment, we considered a rating of 5 or less acceptable prior to harvest) varied significantly among varieties. The susceptible FloRun™ 'T61' never achieved a rating of 5 or less regardless of the amount of fungicide applied; the commercially available Tif-CB7 required greater than 80 oz a.i. chlorothalonil/a; UF14x054-8-6-1-1 required less at 32.4 oz a.i. chlorothalonil/a; 15x084-HO1-1-SSD-19 achieved a final rating of 5 at less than 20 oz a.i. chlorothalonil/a. This experiment showed that there is significant resistance to LLS available in new peanut genotypes that are either currently available to growers (Tif-CB7) or soon to be available (the two UF experimental lines). In all cases, the resistant varieties performed significantly better than the untreated control with respect to yield and AUDPC regardless of treatment. This shows that, going forward, these new varieties should enable producers to have options to reduce inputs and therefore costs in their operations and/or expect better resilience relative to LLS defoliation in adverse conditions.

The 1,000 *Aspergillus flavus* Genomes Initiative: Exploring Genetic Diversity and Fungicide Resistance Distribution in Southeast Peanut Production

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Aspergillus flavus remains a persistent and costly problem for Southeast US peanut production despite the implementation of recommended management strategies. To better understand the genetic factors behind this ongoing challenge, our group has initiated the 1,000 *A. flavus* Genomes Initiative – taking advantage of population genomics to investigate the genetic diversity of *A. flavus* isolated from peanut production environments. Since 2023, 620 isolates have been collected from 34 counties in Georgia, as well as five counties in South Carolina and two counties in Alabama. So far, this study has analyzed 188 whole genome sequences, representing *A. flavus* isolated from peanut across 21 counties in Georgia in 2023. Variant calling was performed using GATK against a reference using the *A. flavus* AF13 (GCA_014117485.1) nuclear genome appended with the *A. flavus* NRRL3357 (JQ55000.1) mitochondrial genome, followed by linkage disequilibrium pruning using Plink2 – resulting in 9,432 single nucleotide polymorphisms (SNPs). Initial population analysis using STRUCTURE revealed two distinct populations: 112 (63.6%) in population 1 and 64 (36.4%) in population 2. Given the emerging resistance to QoI fungicides attributed to cytochrome B mutations, mitochondrial SNPs were examined and revealed that 20 (11%) isolates have the F129L mutation, and 50 (26%) have the G143A mutation. Interestingly, isolates harboring these cytochrome B mutations all belonged to population 1. Examining geographical distribution revealed that population 1 (including a majority of the cytochrome B mutations) was predominantly spread across southwest Georgia while population 2 was more localized in central and eastern Georgia. Predicting the potential distribution of QoI fungicide resistance in *A. flavus* is one example of how the 1,000 *A. flavus* Genomes Initiative can be utilized to inform extension recommendations. Additional fungicide resistances are also being examined in the larger study along with genome-wide association studies (GWAS) searching for novel aflatoxin regulatory genes.

Enhancing Crop Model Accuracy: Soil Profile Adjustments in DSSAT CSM-CROPGRO-Peanut for Aflatoxin Contamination Estimation

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There are several cases in the history of modeling in agricultural and environmental applications which models fail to function as expected due to oversimplification in parameterization phase of the modeling. There is a trade-off between avoiding the complexity and model performance if the parameters are not well known and selected. Previously, we incorporated Georgia-06G, a peanut cultivar in the DSSAT-CROPGRO model, in order to proceed with aflatoxin module recalibration to be used as a DSS to simulate the potential aflatoxin. Due to the exaggerated water stress simulated by the model, we aimed to perform a reverse engineering, to minimize the gap between simulated versus measured aflatoxin concentrations. To do so, we revised the soil profile we previously created for the model. Soil depth, saturation coefficient, water content at field capacity and wilting point, and root presence percentage at each soil layer in the profile were adjusted using either laboratory methods, or research available in the literature of the subject. The adjusted soil profile significantly impacted the soil-water factors and resulted in more accurate physiological and drought stress simulations that is known to be important in *Aspergillus* metabolism and aflatoxin biosynthesis.

Effects of Climate and Landscape Structure on Thrips Population Dynamics and Tomato Spotted Wilt Virus Incidence Within Fields Across the Florida Pan Handle

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Frankliniella fusca (Hinds) (Thysanoptera: Thripidae), a polyphagous herbivore and the principal vector of tomato spotted wilt virus (TSWV), overwinters on weedy vegetation and winter crops. It poses a significant threat to peanut (*Arachis hypogaea*) production through direct feeding damage and virus transmission. TSWV infection leads to spotted wilt disease, which manifests as chlorosis, stunted growth, and plant mortality, resulting in yield losses. The significance of landscape configuration and composition in influencing herbivore population dynamics and disease transmission in agroecosystems is unclear. Landscape elements such as the proportion of winter host crops, weedy field margins, and the spatial arrangement of cultivated and non-cultivated areas may influence the magnitude and timing of *F. fusca* immigration into fields. Heterogeneous landscapes may support higher overwintering survival and earlier colonization, potentially exacerbating TSWV transmission. Additionally, the within-field spatial variability of thrips populations and virus incidence has not been thoroughly studied. To investigate the influence of landscape-level factors on *F. fusca* abundance and TSWV incidence, early-season field sampling was conducted using yellow sticky traps across major peanut-producing counties in the Florida Panhandle. Winter and spring weather conditions are also important factors determining *F. fusca* population growth rates. Temperature accumulation from November through May is the primary abiotic factor affecting population growth rates. The total amount and frequency of precipitation events also influence *F. fusca*, with persistent wet conditions in the spring suppressing populations. Here, the preliminary findings suggest that heterogeneous landscapes may promote overwintering survival and facilitate earlier colonization of peanut fields by *F. fusca*, thereby intensifying TSWV pressure. These findings emphasize the importance of incorporating both landscape structure and abiotic environmental factors into predictive models of pest-vector dynamics and the development of integrated TSWV management strategies in peanut agroecosystems.

Potential New Sources of Stem Rot Resistance from Wild Peanuts

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Peanut (*Arachis hypogaea* L.) is an important agricultural commodity in Georgia, contributing about $2 billion to the state economy each year. However, peanut diseases can be expensive and difficult to manage. Stem rot, caused by the fungus *Agroathelia rolfsii*, costs farmers in Georgia upwards of $80 million each year between the cost of damage and control. Cultivated peanut is an allotetraploid species that lacks genetic diversity, making breeding for disease resistance within the primary gene pool challenging. Diploid wild peanut relatives that comprise the secondary gene pool can greatly expand the diversity available, and have previously been identified to be resistant to diseases such as root-knot nematodes, leaf spots, and rust. The objective of this research is to identify stem rot resistance in wild peanut species, so that new cultivars can be developed with higher levels of resistance than are currently available. 13 novel wild-derived allotetraploids created in the UGA Wild Peanut Lab, representing accessions of 13 species, were screened for resistance to stem rot in a greenhouse evaluation consisting of three experiments. Seven wild-derived allotetraploids showed significantly lower disease progression than at least one of the cultivated peanut controls in one or more experiments. A set of 10 advanced breeding lines with wild introgressions from *A. stenosperma* were also screened in the field for stem rot resistance. Eight of these lines were selected using genetic markers associated with two disease resistance QTL previously identified in *A. stenosperma*. While none of the lines showed significantly lower disease spread than the recurrent cultivated parent, seven of the eight lines had lower mean disease spread. Results show there is useful variation for stem rot resistance among wild peanut species, and will direct future breeding efforts to produce stem rot resistant cultivars.

Comparison of Weed Control with Fluridone and Flumioxazin Programs in Peanut in North Carolina

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Results from on-farm testing are important in helping growers make decisions on inputs and practices that can help them be more successful. Minimizing weed interference during the first 4-6 weeks of the season is important for optimizing yield of peanut (*Arachis hypogaea* L.). Presence of ALS-resistant and PPO-resistant Palmer amaranth (*Amaranthus palmeri* Watts.) and common ragweed (*Ambrosia artemisiifolia* L.) has made weed management in peanut more challenging. Fluridone offers a unique mode of action not previously available for use in this crop. Research was conducted to compare efficacy of fluridone applied with acetochlor, dimethenamid-*P*, flumioxazin, pendimethalin, or *S*-metoloachlor compared with *S*-metolachlor plus flumioxazin. Herbicides were applied immediately after planting and received rainfall of at least 1.5 cm within five days after planting. The experiment was conducted at two locations in North Carolina in 2023 and 2024. Carpetweed (*Mullugo verticillata* L.), common ragweed, entireleaf morningglory [*Ipomoea purpurea* L.), large crabgrass (*Digitaria sanguinalis* L.), and Texas millet [*Urochloa texana* (Buckley) R. Webster] control by *S*-metoloachlor plus flumioxazin was equal to or greater than control by fluridone regardless of the herbicide co-applied with fluridone. Common ragweed and Palmer amaranth were not resistant to PPO-inhibiting herbicides at these locations. Although fluridone treatments were no more effective than *S*-metolachlor plus flumioxazin, using fluridone provides a tool for herbicide resistance management in peanut. Research is currently underway to determine the feasibility of applying fluridone with *S*-metolachlor and flumioxazin in order to decrease selection pressure on weed populations and extend weed control further into the cropping cycle.

Assessing and Validating Thermal and Physical Properties of Shelled Peanuts Using CFD for Storage Simulation

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This study compares experimental data with advanced analytical methods to validate the physical and thermal properties of shelled peanuts and assess their airflow resistance. Experiments were conducted in a custom-designed test chamber at varying moisture levels (5.23%, 7.21%, 10.39%, 14.95%, and 18.16%) to measure pressure, airflow rate, temperature, and humidity. The results indicate that higher moisture content increases airflow resistance and leads to significant pressure drops, with the highest pressure observed at the base of the column. Additionally, moisture content influenced temperature and relative humidity distribution, with elevated levels contributing to greater thermal resistance. Computational Fluid Dynamics (CFD) simulations using Autodesk CFD 2024 validated the experimental findings, demonstrating consistent trends in pressure, temperature, and humidity. The validated data on material properties and airflow resistance will serve as crucial input for future CFD simulations of shelled peanut behavior in tote bags during storage and transportation. This research underscores the importance of accurate airflow and thermal modeling in optimizing peanut storage conditions, enhancing product quality, and minimizing spoilage.

Diversity Study of Tomato Spotted Wilt Virus in Major Cultivated Hosts in Southeast Georgia, United States

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Tomato spotted wilt disease (TSWD) caused by *Orthotospovirus tomatomaculae* (tomato spotted wilt virus; TSWV), severely impact horticultural and row crops, worldwide. In this study, we aimed to biologically and molecularly characterized TSWV isolates. TSWD incidence was monitored in *Arachis hypogaea* (peanut; year 1990 to 2024) and *Nicotiana tabacum* (tobacco; year 2000 to 2024) in commercial farmers' fields in the southeastern United States. To answer the variability in disease incidence, we biologically characterized TSWV isolates from peanut, tobacco, tomato-1 (Thunderbird; susceptible tomato cultivar), and tomato-2 (Red Snapper; resistant tomato cultivar). TSWV-peanut isolate displayed maximum virulence (p-*value* < 0.1) on *N. tabacum*. TSWV peanut isolate showed decreased virulence whereas severity of tomato-2 isolate remained stable from first to last (fifth) round of serial inoculations. Further, NSm (movement protein) gene sequenced from inoculated tobacco plants displayed highest percent nucleotide diversity (ranging from 96% to 100%). In addition, we performed molecular characterization by analyzing a total of 526 full length sequences of N- (nucleocapsid protein), NSm-, and NSs- (silencing suppressor) gene of TSWV. In our study we amplify full-length N, NSm and NSs genes (n = 284) from previously mentioned crop hosts including *Capsicum annum* (pepper) and retrieved 242 sequences from NCBI GenBank database. Our results suggest nucleotide-based phylogenetic analysis of N-, NSm-, and NSs-gene correlated with geographical location of the TSWV isolates, with notably higher substitution rates in the population of recent years. The neutrality tests and rate of substitution mutations inferred an overall non-neutral evolution with substantial purifying selection in TSWV populations. Strong purifying selection pressure in the populations might have caused low variation among the selected genes. We estimated high gene flow between TSWV population isolated from selected cultivated host crops. In addition, phylogenies-based Bayesian analysis predicted the time to the most common recent ancestor for TSWV isolates to be ~25 years ago. This data was further correlated with highest recorded disease incidence in the peanut crop. In conclusion, surveillance of TSWV isolates will help to monitor the diversity which can affect the effectiveness of management strategies against TSWV.

Rooting for Sustainability: Utilization of Plant Growth-Promoting Rhizobacteria as a Biological Control in Peanut Production

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From the moment a seed is planted, it is surrounded by innumerous microorganisms within the soil. While some provide essential ecosystem services, others seek to infect and destroy the seed before it germinates. In peanut (*Arachis* hypogaea L.) production systems, soil borne fungal pathogens, such as *Rhizoctonia solani,* cause multiple destructive diseases including damping-off, stem rot, and pod rot. Symptoms of *R. solani* infection can affect all parts of the peanut crop, leading to economic crop damage if left untreated. With negative impacts of conventional pesticides under scrutiny, biological alternatives have become a useful tool for disease suppression. Plant growth-promoting rhizobacteria (PGPR) are naturally occurring, soil dwelling microbes that enhance growth through a number of mechanisms. PGPR strains from collections at Auburn University have proven effective as biofertilizer and biocontrols in several plant systems. This study explores the potential of PGPR as a sustainable disease management and crop enhancement tool in peanut production systems. Through a series of in vitro and greenhouse trials, 110 PGPR strains were characterized for mechanisms of growth promotion, antagonism against *R. solani,* and direct crop enhancement of peanuts plants. The results of these studies enabled the creation of three PGPR consortia targeting *R. solani*, while enhancing nutrient uptake within the rhizosphere of peanuts. In a 2-year field evaluation, these PGPR treatments were compared to Abound (azoxystrobin) on Rancona treated and untreated seeds in a factorial randomized block. Stand counts, disease ratings, and yield data suggests PGPR-induced disease suppression and nutrient enhancement could be a useful tool in sustainable agriculture systems.

A Field Study on Peanut Responses to Midseason Combined Heat and Drought Stress

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Peanut production in rainfed systems is negatively influenced by drought, with heat stress further exacerbating its impact. This study evaluated the physiological and yield responses of peanuts to prolonged heat and drought stress using a rainout shelter experiment conducted in 2024 at the Tidewater Agricultural Research and Extension Center. The experiment followed a randomized complete block design with 12 peanut genotypes, two treatments, and four replications, totaling 96 experimental units. Stress was imposed at 46 days after planting (DAP), following the onset of flowering, and continued for 70 days. Air and soil temperature, relative humidity, stomatal conductance, and transpiration were monitored throughout the stress period. At 115 DAP, stomatal conductance, transpiration, canopy temperature, and leaf wilting ratings were recorded. After stress was relieved, plants were allowed to recover, and final yield and grade characteristics, including pod weight, extra-large kernels, and sound mature kernels, were assessed at 144 DAP. Data were analyzed using two-way ANOVA in R, with Fisher's LSD ($p<0.05$) for mean separation. Long-term stress reduced stomatal conductance and transpiration by 55% and 60%, respectively, while increasing canopy temperature by 5°C. Leaf wilting scores ranged from 0 under rainfed conditions to 2 under heat and drought stress. Yield declined by an average of 52%. These findings demonstrate that prolonged drought, when combined with heat stress, significantly impairs peanut physiology and reduces pod development, underscoring the need for improved stress-tolerant genotypes.

Defense Against Aflatoxin Contamination in Peanut Breeding Lines with Introgressions from Wild *Arachis cardenasii*

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The diploid wild *Arachis* species, *A. cardenasii* Krapov & W.C. Greg has been used extensively to improve disease response traits in cultivated peanut since the 1960s. The accession, GKP 10017 (PI 262141), is reported to be resistant to aflatoxin contamination by *Aspergillus flavus*. It was not previously known if the resistance from this accession is present in any cultivar that utilizes its genetics. We screened 17 breeding lines and six cultivars derived from this accession by *in vitro* seed inoculation assays and compared fungal growth and aflatoxin accumulation to two control cultivars. We also utilized the Axiom_*Arachis* v2 SNP array to confirm locations of wild segments present in each line. The six released cultivars with wild introgressions all showed high fungal growth and aflatoxin values that did not differ significantly from control cultivars Florida-07 (averaging 18,980 ppb aflatoxin) and ICG 1471 (averaging 26,860 ppb aflatoxin). However, seven of the breeding lines (GP-NC WS 6, 7, 9, 10, 12, 14 and 15) had visibly lower fungal contamination, and at least twenty-fold less aflatoxin on average than the controls. Breeding line, GP-NC WS 6, which had the lowest average aflatoxin (13 ppb), contains an introgression on chromosome A05 that is not present in any released cultivar. All breeding lines were initially developed for their resistance to other pathogens. Our findings suggest that wild diploid accession, *A. cardenasii* PI 262141, has high potential to improve defense against *A. flavus* in cultivated peanut.

Is Prohexadione Calcium Effect on Peanut Yield Dependent on Plot Size or Weather?

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Prohexadione calcium (PC) is a growth retardant primarily used to inhibit excessive vegetative growth in field crops, vegetables, and fruit trees and shrubs. It inhibits gibberellin and ethylene biosynthesis, the primary metabolites responsible for cellular growth and senescence, for which assimilates become more available to fruits rather than shoots increasing fruit set and yield.

In peanut (*Arachis hypogaea* L.) production, prohexadione calcium (PC) is largely used to control vine growth for guided digging, but the evidence that its application has a positive effect on yield and fruit set is unclear. This unclarity has been associated with the size of the test plot. For example, it has been shown that when plots are relatively large, yield variation among replicates is smaller than for relatively small plots, therefore it is easier to pick up statistical differences showing yield increase after PC application. While this is expected, plot size may not be the only reason for some experiments to show and some do not show a yield benefit when applying PC. This paper describes yield variation with and without PC in small and large plots, in 2022, 2023, and 2024. It describes a different view on when PC application would significantly increase yield that links PC application timing not just with the vine growth but also with weather, precipitation amount and distribution a month prior to PC application in particular.

A First Year Look at the Composition Changes Due in a Range of Peanut Lines Grown in Dryland Plots

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Thirteen peanut cultivars were planted in late May of the 2023 growing season. The varieties, Ga06G, Tifrunner, Line-8, AU18-35, AT3085RO, AU-NPL 17, AP-3, 587, PI502120, PI493329, AU 16-28, Ga Green, and C76-16 were arranged in a split plot design with dryland and full irrigation treatments with four replications. The plots were harvested in early October. After curing, the peanuts were shelled and size sorted for analysis. Analysis of total moisture, protein, and lipid was performed. The peanuts were also evaluated for fatty acid profiles, tocopherols, small carbohydrates and descriptive sensory analysis.

The average plot yields from the dryland plots were lower by 1.97% to 42.44% than from the irrigated using the cured shelled kernel weights. Lipid and protein values were higher in the irrigated plots which is indicative of maturation. In addition, the high oleic cultivars showed changes with seed size as well as with irrigation treatment. Oleic acid values increased. Total tocopherols were, in most cases, higher in the dryland plots with higher levels of the alpha form, while the irrigated samples had higher levels of the gamma form. Five samples from the dryland plots tested positive for aflatoxin above 5 ppb. Overall roasted peanut flavor scores were not significantly different between the treatments, but dryland plots presented with more off flavors. Lack of irrigation in the dryland plots tended to delay or reduce maturation.

Impact of Seed Traits on Seedling Vigor in Peanut

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Vigorous and rapid seedling emergence is a crucial trait for successful crop stand establishment in peanuts (*Arachis hypogaea* L.). Seed trait–based indicators of seedling vigor require further investigation to better understand early growth potential and support the development of high-performing cultivars. Although above-ground plant growth is commonly used to assess seedling vigor, measuring plant biomass is a destructive, labor-intensive, and time-consuming process—limiting its efficiency for large-scale screening in breeding programs.

Therefore, the first objective of this study was to evaluate the impact of seed traits on seedling vigor in peanut, and the second objective was to develop non-destructive, high-throughput phenotyping approaches for vigor assessment. The study included six runner-type cultivars, each with two seed size classes (small and large). Drone-based RGB images were collected on the same date as biomass sampling to enable comparison between ground and aerial measurements.

We found that within each cultivar, the number of seedlings emerged and above-ground biomass were significantly lower for small seeds compared to large seeds. However, seedling emergence and above-ground biomass were not dependent on seed size differences among cultivars. For example, although Georgia-09B had smaller seeds than Georgia-06G, seedling vigor—as assessed by above-ground dry biomass—was comparable between them. Above-ground biomass was strongly correlated with canopy volume ($R^2 = 0.95$) and canopy coverage ($R^2 = 0.88$) derived from drone-based RGB imagery. Overall, while seedling vigor was influenced by seed size variation within cultivars, it did not consistently align with seed size differences across cultivars. This suggests that other factors, such as seed composition, may contribute to variation in seedling vigor among cultivars. Canopy volume and canopy coverage derived from drone-based RGB imagery can be reliably used as non-destructive indicators to assess seedling vigor in peanut.

Photosynthetic Quantum Efficiency of Wild-Derived and Cultivated Peanuts

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Peanut plants are increasingly vulnerable to heat stress due to rising global temperatures, which poses significant challenges to sustainable production. Wild peanut species thrive in hot and arid climates, making them a valuable source of traits related to heat tolerance. Introgression lines have been used in improving peanut for resistance to several diseases. However, assessing these genotypes for heat tolerance has been underexplored. Therefore, the objectives of this research were to 1) explore the potential of wild-derived peanut genotypes as sources of heat tolerance and 2) assess heat tolerance differences among wild and cultivated peanut genotypes using OJIP chlorophyll fluorescence. This field study was conducted following a randomized complete block design with six replications, using seven genotypes, three being cultivated and four being wild-derived. The plots were covered with rainout shelters starting at 60 days after planting (DAP) for 14 days. This imposed heat stress to the plants, elevating temperatures inside the shelters by up to 10°C when compared to outside temperatures. Samples were collected and measurements were taken one day before the onset of heat stress, seven and 14 days after the onset of heat stress, and seven and 21 days after the end of heat stress for recovery assessment. Photosynthetic gas exchange and nighttime dark respiration were measured using the LI-6800 Infrared Gas Analyzer. Sampled leaves were dark adapted for 3 hours before conducting the OJIP test. F_v/F_m measured at 30 °C were not significantly different among the genotypes at each measurement timing; however, differences were observed when block temperature was raised to 40 °C. Genotypes that showed tolerance to heat stress were selected for OJIP assessment. Some of the wild-derived genotypes indicated greater photosynthetic heat tolerance for both F_v/F_m and OJIP parameters than cultivated peanuts, mainly associated with the initial light absorption and the beginning of electron transport as well as the energy flow through the electron transport chain.

Influence of Root Characteristics in Water User and Water Spender Drought Tolerant Peanut Cultivars

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Drought can cause yield reduction of up to 85% in the U. S. Many drought tolerant strategies have been discovered on peanuts, such as high biological nitrogen fixation, high water use efficiency (water saver cultivars), and high effective use of water (water spender cultivars). However, the relationship between root characteristics and drought tolerance has not been tested in peanut under field condition using the “shovelomics” method. In this experiment, eight cultivars known for its drought tolerance and sensitivity were grown in three environments under irrigated and rainfed/drought conditions in a split plot design with 4 replications per environment. During the growing season, gas exchange parameters, 20 root traits, pod yield and pod $\Delta^{13}C$ were collected. The results showed that drought significantly reduced yield only in rainout shelter facility in EV Smith Research Station (EVS) in 2022. In the other hand, $\Delta^{13}C$, photosynthesis and stomatal conductance were significantly decreased under drought in WREC 2021 and EVS 2022. The cultivar PI493329 showed more complex root structure in upper soil layers under drought and irrigated conditions but low yield. This could be caused by competition for the upper soil layers between roots and pegs. AU18-35 and AU-NPL 17 were water spender plants exhibiting high yield and high stomatal conductance under drought, which can be explained by more steep-angle root, indicating that they may develop deeper roots to have more access to water. Cultivars with more complex root systems that extend deeper into the soil appear to have a distinct advantage under drought tolerance, emphasizing the importance of selecting for the right root architecture to fit specific environments in breeding programs.

Plant Physiological Thresholds and their Links with Aflatoxin Production under Climate Stress

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Peanuts (*Arachis hypogaea*) are a widely consumed oilseed crop grown worldwide, predominantly in tropical and semi-arid regions. Approximately two-thirds of peanut production relies on rainfed systems without supplemental irrigation, making peanut crops particularly vulnerable to drought. Drought not only reduces yield and quality but also exacerbates the risk of aflatoxin contamination, a major challenge in peanut production. Detecting and mitigating the risk of aflatoxin contamination under drought conditions is increasingly critical. This study aims to assess physiological trait coordination across three contrasting genotypes (AP-3 (drought-sensitive genotype), UF14 (drought-tolerant genotype), and Georgia 06G (drought-tolerant genotype) and their correlation with aflatoxin contamination. In this experiment we measured two key traits: Turgor loss point (TLP) and xylem tension at 50% loss of conductivity (P_{50}), on each genotype at two water stress intensities. Before the onset of the stress, we measured TLP, leaf xylem vulnerability curves to determine P_{50}, residual conductance (g_{res}), and we also calculated the hydraulic safety margins for each genotype as the difference between TLP and P_{50}. During the drought experiment, we used a PlantArray System (Plant-Ditech) for physiological phenotyping, with near-real-time measurements including soil water potential, root influx rate, and plant transpiration, among others. We measured predawn water potentials during the stress and recovery periods to determine plant water status. We quantified aflatoxin levels using the Afla-V quantitative strip test (VICAM Aflatest, MA, USA). To assess the relationship between water potential and aflatoxin contamination, we performed a general linear model with a binomial distribution. No significant differences were observed between genotypes in TLP, P_{50}, or safety margins. However, genotype AP-3 exhibited significantly higher residual conductance (gres: 15.5 $mmol \cdot m^{-2} \cdot s^{-1}$) compared to UF14 (8.5 $mmol \cdot m^{-2} \cdot s^{-1}$) and Georgia 06G (9.2 $mmol \cdot m^{-2} \cdot s^{-1}$). During the drought period, all genotypes showed a decline in soil water potential, root influx rate, transpiration and leaf water potential when stress was initiated, followed by recovery upon rehydration. However, AP-3 reached the P_{50} stress level in 8 days, whereas Georgia 06G and UF14 required 10 and 11 days, respectively. Aflatoxin contamination probability increased with the severity of drought stress. We identified ~-1.6 MPa as the threshold drought intensity beyond which aflatoxin presence became more likely than not. All plants that presented water potential equal to or more negative than -5 MPa had aflatoxin contamination. While hydraulic parameters such as TLP and P_{50} exhibit relative consistency across peanut genotypes, residual conductance varies significantly, critically influencing the response to water stress. Leaf water potential serves as a key indicator of the critical plant water status below which the risk of aflatoxin formation increases.

Observations from 39 Years of Research on Fungicides for Soilborne Peanut Diseases

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Peanut is subject to attack by a variety of soilborne pathogens, primarily fungi and nematodes, that can cause serious crop loss if not properly managed. Genetic resistance is now the foundation of nematode management in peanut, but high level resistance to fungal pathogens has been more elusive. Growers continue to rely heavily on fungicides. Over the past 30 years the Group 3, 7 and 11 fungicides have been labeled for this purpose and have been generally effective. These same chemistries are also used on foliar diseases such as early and late leaf spot, but fungicide resistance in those pathogens has often resulted in reduced levels of control. Such resistance has not been found in the soilborne pathogens such as *Agroathelia rolfsii* or *Rhizoctonia solani*, but control is sometimes erratic due to the difficulty of delivering the fungicide to the infection court which lies deep within the plant canopy at or below the soil surface. Conventional sprayers deposit much of the fungicide on leaves in the upper part of the plant canopy. Higher spray volumes and pressures can improve canopy penetration, but post-spray irrigation and the use of night sprays when leaves are folded are the most effective ways to optimize control of soilborne diseases. The history of these fungicides will be reviewed, and a meta-analysis of nearly 40 years of peanut efficacy data will be presented to document the disease control and yield benefits of these fungicide classes.

Effect of Contiguous Peanut Genotypes on Incidence of Tomato Spotted Wilt in Georgia-06G

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Characterization of field response to *Orthotospovirus tomatomaculae* (TSWV) in peanut (*Arachis hypogaea*) genotypes typically includes random assignment of genotypes to plots in the field. Often, genotypes in contiguous plots have large differences in incidence or severity. However, the potential for interplot interference in such experiments has not been characterized. The objective of this study is to determine the effect of border plots of differing levels of field resistance to TSWV on incidence in an indicator plot. A field experiment was conducted in Tifton, GA in 2024. Treatments consisted of three different cultivars as border plots. Cultivars included TUFRunner '511' (TSWV Susceptible), Georgia-06G (TSWV Resistant), and Georgia-12Y (TSWV Highly Resistant). Borders were the same on each side of the indicator plots. Georgia-06G was used in all indicator plots. Planting date was 6 May 2024. No insecticide was applied for thrips (*Frankliniella fusca*) control. Plots were 13.7 m long, and each indicator plot and corresponding border beds were two single rows, 0.9 m apart on a 1.8 m bed. Experimental design was a randomized complete block with six replications. Incidence of spotted wilt was assessed 77 days after planting in both border rows and indicator plots. Among the borders, final incidence was 34.3%, 19.3%, and 3.9% (LSD = 5.2) for TUFRunner '511', Georgia-06G, and Georgia-12Y, respectively. Incidence in the indicator plots of Georgia-06G was 20.4, 15.7, and 10.7 (LSD = 4.1) when bordered by TUFRunner '511', Georgia-06G, and Georgia-12Y, respectively. The relationship between percent incidence in the indicator plots (INC_I) and percent incidence in the contiguous border plots (INC_B) was described by the positive linear function: $INC_I = 7.7 (\pm 1.8) + 0.4 (\pm 0.07) \times INC_B$; ($P < 0.0001$; $R^2 = 0.66$). These first-year results indicate incidence of spotted wilt in a peanut plot may be affected by genotypes in contiguous plots.

Efficacy of Fungicides for Managing *Rhizopus* Seed Rot and Improving Peanut Stand and Vigor

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Rhizopus seed rot (*Rhizopus* spp.) has been associated with poor or failed peanut stands under cool, wet conditions during germination in Virginia fields. Both field trials and in-vitro fungicide screens were conducted in 2024 to evaluate seed treatment and in-furrow fungicide efficacy in the field and determine fungicidal activity against *Rhizopus* spp in vitro. Seven fungicides commonly used in seed treatments and in-furrow, at-planting (fluopyram, ipconazole, fludioxonil, thiophanate-methyl, pydiflumetofen, azoxystrobin, and prothioconazole) were assessed in vitro at concentrations of 0.01, 0.1, 1, 10 ppm. Each fungicide concentration was added to full strength PDA and replicated four times, and the experiment was repeated three times. The field trial evaluated three peanut cultivars (Bailey II, Sullivan, and Emery) treated with Kannar (a combination of mefenoxam, ipconazole, fludioxonil, and thiophanate-methyl) alone or in combination with in-furrow treatments (fluopyram, azoxystrobin, and prothioconazole) in a split-split-plot design with four replicates per treatment. Stand and vigor were assessed. In vitro results indicated that ipconazole effectively suppressed *Rhizopus* growth at a concentration of 0.1 ppm, while fludioxonil only achieved full suppression at 10 ppm. Field results indicated no significant interactions between treatment combinations; however, cultivar and seed treatment effects were observed. Sullivan demonstrated higher stand counts than Bailey II and Emery. Seeds treated with Kannar exhibited improved stand counts and vigor compared to untreated seeds with or without in-furrow fungicides. Although yield differences were not statistically significant, Kannar-treated seeds produced an average yield increase of 155 lb/acre. Results suggest that seed treatments are more effective than in-furrow fungicides for improving stands and increasing vigor in peanuts and that ipconazole and fludioxonil may be key fungicides in commercial seed treatments for reducing stand losses to Rhizopus seed rot.

Genotypic Response of Peanut to Leaf Spot Under Different Fungicide Regimes

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Early and late leaf spot are damaging diseases of peanut (*Arachis hypogaea* L.) capable of defoliating plants and reducing yield. Various levels of genetic resistance to these diseases have been found, but the application of fungicides remains the best and most common management practice. This research aimed to evaluate the response of peanut genotypes to leaf spot disease under different fungicide programs. The experiment was an RCBD with a split-plot restriction where the fungicide treatment was the main-plots and genotypes as sub-plots. The experiment was conducted in 2022, 2023, and 2024 at the North Florida Research and Education Center near Marianna, FL. Plots were evaluated four times during the season and leafspot incidence rating was recorded based on the 1-10 Florida scale. At the same time five leaves were collected from each plot and later scanned using an EPSON v800 flatbed scanner. Scanned leaflets were analyzed using WinCAM software to determine the disease area. Disease ratings and disease area from the leaflet's scans were used to calculate the AUDPC for each plot. Analysis of variance was conducted on AUDPC and yield using SAS 9.4 software. Additionally, the correlation between the AUDPC of ratings and the AUDPC of scans was calculated as well as the correlation between AUDPC and yield. A strong correlation was found between the AUDPC of field ratings and the AUDPC of leaflet scans, meaning that ratings are still an excellent way to evaluate leafspot incidence in peanut fields (R^2 = 0.74). Likewise, it was observed that a higher AUPDC correlated with a lower yield. Additionally, in both assessment methods, the AUDPC of the plots with no fungicide treatment was higher than those of those that received four or eight applications ($p<0.05$). Differences in AUDPC among genotypes also showed that new UF advanced lines are similar to Georgia-12Y and Tif-CB7, and had lower AUDPC than FloRun 'T61', FloRun '52N', and TifNV-HG ($p<0.05$). In conclusion, a four or eight spray fungicide program continues to be the best management practice for leafspot. Nevertheless, breeding lines and newer varieties are promising in the control of leafspot and respond better than other commercial varieties to fungicide applications. Some appear to maintain similar leaf sport ratings when sprayed four times as more susceptible genotypes sprayed eight times.

Chromosome-Level Genome Assembly of *Thecaphora frezzii,* Cause of Peanut Smut, Reveals a Highly Repetitive Genome and the Largest of the True Smut Fungi

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Peanut smut, caused by the fungus *Thecaphora frezzii,* is a significant disease of peanuts in Argentina. The seeds of infected plants are replaced by a mass of dark teliospores, thereby reducing yield. To prevent spread of the pathogen, numerous countries have limited import of raw peanuts from Argentina, a major grower and exporter. Until now, a high-quality reference genome for *T. frezzii* was not available, limiting our capacity to understand its genetic diversity and evolution in response to the deployment of resistant host material. Following *in vitro* culture of the fungus in its haploid stage, we produced a chromosome level genome assembly of this species for the first time. At 39 Mb, *T. frezzii* has the largest smut genome sequenced to date due to high repeat and intron content relative to other smut fungi. Phylogenetic analysis places *T. frezzii* as distantly related to well-studied smuts, like *Ustilago maydis*. We compared the genome with those of 49 other species of true smut fungi, or Ustilaginomycetes, including species of medical, agricultural, and industrial importance. Comparison across the 50 genomes suggests some shared infection strategies across all smut fungi. Some core effectors previously identified in *M. maydis* are present in the genomes of 48-50 of the species we examined, even among non-pathogenic, environmental yeasts. Other candidate effectors are unique to *T. frezzii* or to *Thecaphora*, indicating some infection strategies are unique to the taxa. This high-quality reference genome of *T. frezzii* will improve diagnostics and facilitate breeding for disease resistance in peanuts.

A Protocol to Elicit in vitro Germination of *Thecaphora frezzii* Teliospores, the Causal Agent of Peanut Smut

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Peanut smut (*Thecaphora frezzii*) is a severely destructive fungal disease in this crop. To date, the distribution of this pathogen in commercial crops appears to be restricted to Argentina, although there are concerns it might spread to other peanut-producing regions of the world through trade or weather events. Management strategies are mostly focused on the development of resistant peanut cultivars, but the efficacy of this approach is dependent on the characteristics of the pathogen strain the cultivars were developed for. For this reason, accurate genetic identification of different pathogenic strains found in the field, including possible mutations, is of paramount importance. Peanut smut spore samples collected in the field are often insufficient for DNA extraction and *T. frezzii* teliospores do not normally germinate *in vitro*, which makes genetic classification challenging. We have developed a protocol to elicit teliospore germination *in vitro*, allowing us to obtain pure cultures of *T. frezzii* adequate for DNA extraction and sequencing, however small the field samples. This tool will help identify new strains of this fungus, map the geographical prevalence of known strains, and develop resistant cultivars to counter this threat.

Evaluation of Two Biological Products on Peanut Yields in Southwest Georgia

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In Southwest Georgia peanut production, many products are marketed as biologicals with the ability to increase peanut yield and grade. One such product, Nutriquire, is sold as a liquid in-furrow or foliar microbial-based product that allegedly introduces microbes into the soil, leading to increases in the active biomass in the soil and improved plant vigor and nutrient cycling. Nutriquire is recommended to be applied with a powder treatment called Terrasym. In 2025, Nutriquire will be sold as a pre-mix with the planter box powder product Terrasym which should also increase the ease of use for growers. This Nutriquire + Terrasym pre-mix product will be a synergistic combination of spore-forming microbials and siderophores to promote increased plant uptake. In 2024, however, the products were sold and applied separately which could be inconvenient and difficult for growers to use. Two products in different formulations also provided 8 different combinations of products for evaluation. This experiment evaluated the effects of 3 of those combinations (Terrasym Planter Box (PB), Nutriquire in-furrow (IF), and Terrasym Planter Box and Nutriquire in Furrow (PB + IF)) on peanut yield. Additionally, a second biological product, AMV6402 by AMVAC was evaluated for its effect on yield as well. The results from each trial were mixed, with some plots seeing a slightly higher yield while others were slightly lower. Neither product produced a significantly different yield from the untreated control.

2024 Webster County Peanut Drying Trial

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During harvest season, Georgia peanut growers take their peanuts to their local buying point where moisture is measured and the decision is made as to whether or not the peanuts must be dried. This drying process is a necessary evil, but there is also a risk involved if the peanuts are overdried. The drying process can be time-consuming and cost growers up to $60/ton in Southwest Georgia. Therefore, the question is raised: Is it more profitable to harvest peanuts at a high moisture level and pay the buying points to dry them or to let them field dry and avoid the drying cost? In this experiment, three treatments (high, medium, and low moisture) based on categories provided by the buying point on their price sheet were dug, harvested, and taken to a local buying point. The treatments were composed of (3) 18-row replications, each of which was dumped on its own wagon and analyzed (weight, moisture, etc.) at the buying point. At each replication, loss both behind the entire combine and just at the header was measured. This loss was calculated using the Kelly Manufacturing Peanut Loss Calculator®. Contrary to anecdotal evidence from local growers, very little loss was measured at the header. At greater moistures, there was not much difference between combine loss and header loss. Overall, there was greater loss as peanut moisture decreased.

Evaluating Peanut Fungicide Programs for Cost and Yield in Southwest Georgia

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In 2024, Georgia peanut production exceeded 800,000 acres planted with a production value of nearly $773 million. White Mold (WM) (*Sclerotium rolfsii*) is considered by growers to be the most destructive disease in peanut production. However, both late (*Nothopassalora personata)* and early (*Passalora arachidicola)* leafspot (LS) are additional diseases that can be detrimental to peanut production. In order to generate local data for peanut growers to base their disease management decisions and to increase economic returns on production investments, a fungicide trial evaluating peanut fungicide programs for WM and LS control was installed at the UGA Southwest Research and Education Center (SWREC). Ten fungicide programs (from 10 different companies) were tested in the replicated trial using products available to local peanut producers. Each program was generated by the company manufacturing the products in the trial according to their recommendations. Disease ratings and yield for each treatment were recorded. Local Agri-suppliers provided data on cost of fungicides. While there were no statistical differences in yield between the programs, the 2nd costliest program, Bayer ($144.75/acre), produced the highest yield (4,324 lbs/acre) and the highest net profit ($936.31/acre). Meanwhile, the cheapest base program ($35.73/acre; only chlorothalonil and tebuconazole) produced a moderate yield (3,875 lbs/acre) with the 2nd highest net profit ($932.98/acre).

Peanut Variety Evaluation in Colquitt County, Georgia

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Peanuts generated over $32 million dollars of farm gate value to growers in Colquitt County, Georgia. Historically, Colquitt County planted between 20,000 to 30,000 acres of peanuts every year depending on commodity prices and profitability. Two peanut variety trials were planted in 2023 and 2024 to evaluate 6 varieties in Colquitt County to gather information on disease resistance and yield potential. The 2023 and 2024 peanut variety trial were planted at the same irrigated location. Four varieties were planted both years and which included Georgia-O6G, Georgia-21GR, Georgia-22MPR and TifNV-HG. In 2023, Georgia-16HO and FloRun T61 was planted in the variety trial but were dropped in 2024. In 2024 Arnie and TifCB-7 replaced Georgia-16HO and FloRun T61. Plots were 6 rows wide and planted with a twin row planter and replicated four times. The plots averaged 500 ft long both years. In 2023, yield data showed no significant differences in yield among all varieties. Yields ranged from 5662 to 5993 lb per acre. TWSV ratings were also reported in 2023. FloRun T61 and Georgia-22MPR had less than 8% TWSV while all other varieties showed between 12 to 16% TWSV. In 2024, there was no significant difference in yield among all varieties. Yields ranged from 5633 to 5858 lb per acre. TifCB-7 yielding the lowest and Georgia-21MPR yielding the highest. TWSV ratings were also reported in 2024. Low TSWV pressure was noted at this location with all varieties less than 9%.

Two-Year Evaluation of Peanut Variety Response to Kudos Growth Regulator

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Growth regulator use in peanuts was used in the 70’s and 80’s production systems. During that time, many of the varieties exhibited heavy vine growth, which made overall management difficult, especially harvesting. New variety releases have demonstrated excessive vine growth in certain production environments that have increased the demand for growth regulator usage. The affordability of the modern regulators has also been a positive development for usage increases.

Research trials were conducted in years 2023 and 2024 to measure variety response to the application of the growth regulator Kudos. Each variety consisted of treated vs. untreated plots and were replicated four times in a randomized complete block design. Varieties assessed included: AUNPL-17, Georgia-06G, Georgia-12Y, Georgia-16HO, and Georgia-18RU. The 2023 and 2024 trials were planted on May 11 and May 3 and harvested on October 24 and October 15, respectively. The trial averages for both years in terms of yield were 6,094 lbs./A and 5,674 lbs./A for the treated and untreated respectively, which equated to an overall 420 lb yield advantage. AUNPL-17 was the only variety that yielded a statistical difference from all varietal counterparts when comparing the yield of combined treatments (PGR + non-PGR). From an individual variety standpoint GA-12Y exhibited the most yield response with 998 lbs./A over the untreated, while GA-06G had the least yield response yielding 276 lbs./A over the untreated. The difference in the trial average of combined treatments was 536 lbs./A and 343 lbs./A for 2023 and 2024.

The results of this trial support the fact that environmental conditions can impact yield response regarding the use of peanut plant growth regulators. The trial average amongst the treatments in 2023 vs. 2024 can be equated to harsher growing conditions in 2024, which produced unusually hot temperatures; as the soil type, production inputs and irrigation output levels remain similar for both years. GA-12Y showed the most response to the use of Kudos for both years, thus further substantiating the fact that growers should consider using a product such as Kudos in a hi yielding environment that includes GA-12Y. The data also demonstrates that while GA-06G may not respond well to plant growth regulators, the genetic yield potential is still strong enough to allow it to remain competitive with the newer varieties.

Registration of Texas A&M AgriLife Research's First High-oil Peanut Lines Tx137967 and 31-08-05-03

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In 2021, the United States produced an estimated 2.9 million tonnes of peanuts, making it the fourth-largest peanut-producing country in the world. Most U.S. peanuts are used in snacks, peanut butter, and confectionery products, while the remainder are crushed for oil. However, the country relies on imports to meet peanut oil demand. Establishing a peanut oil market could help alleviate the peanut oil shortage, create economic opportunities for producers, and drive research into its potential as a renewable fuel, further expanding the market. Texas A&M AgriLife Research has developed two peanut lines optimized for oil production. Cultivar 31-08-05-03 is a low-oleic, high-oil line with up to 57% oil content, while cultivar Tx137967 is a high-oleic, high-oil line with up to 55% oil content. Registered in 2024, these cultivars are the first in Texas A&M's OilMax$_{TM}$ series, which was created in anticipation of additional releases with the high-oil trait. The Tx137967 line is derived from 31-08-05-02 and Tx075307, developed through the pedigree method, while the 31-08-05-03 line is derived from Florunner and TxAG-6, developed through backcross introgression and bulk harvesting. Additional release data will be presented.

A Weather Driven Statistical Modeling Framework for Predicting Aflatoxin Risk in Peanut Production: Development of a Decision-Support Tool

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Aflatoxin contamination poses significant health risks for peanut (*Arachis hypogaea* L.) consumers and therefore economic risks for peanut growers. Accurate and actionable predictive tools of aflatoxin risk might enable proactive crop management. Value of the tools depend on both predictive reliability and clear communication of uncertainty to support informed decision-making. Existing models require detailed inputs and calibration, limiting their accessibility and ease of use for timely decision support. Our research approach addressed these gaps by providing uncertainty-aware predictions and accessible decision-support tools. In this study, we developed and evaluated three modeling approaches (i.e., stepwise regression, linear mixed-effect models, Bayesian hierarchical models) using weather variable selection to predict the percentage of peanut loads exceeding the regulatory threshold of 20 ppb of aflatoxin (PGT20). Models were trained using weather-related predictors, including temperature, rainfall, and drought periods, collected from weather stations located in the counties in Georgia where aflatoxin records were available over an eight-year period (2016–2023). Models were evaluated across cumulative training windows to test how well they could predict future risk. The BHM performed best overall with more accurate predictions and smaller uncertainty ranges, especially when trained on the most recent data (2020 – 2022). By capturing county- and year-level variability, the BHM offered more flexible and informative risk estimates than the other simpler models, making it better fitted for real-world decision making. As a practical outcome, two user friendly online tools were created: a spatial risk map showing areas with aflatoxin issues, and a weather-based prediction tool where growers can use their own weather data to estimate pre-harvest contamination risk. These tools will provide earlier, more location-specific warnings to help growers and stakeholders make informed management decisions based on current-season weather trends leading.

Virginia Peanut Maturity Indicators Obtained from Aerial Imaging and Analysis for Phenomic Prediction

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Current methods to estimate pod maturity and optimal digging time include approximate days from planting and destructive sampling measurements like pod blasting. To better predict pod maturity on a large scale for breeding programs, aerial drone imaging and manual phenotyping were performed on eight commercial Virginia-type peanut lines ranging from early to late maturing (Bailey, Bailey II, Comrade, Emery, NC20, NC21, Sullivan, and Walton). Weekly manual measurements of flowering period as well as drone imaging of Normalized Vegetation Index (NDVI) and Visible Atmospherically Resistant Index (VARI) were taken starting on June 13th, 2024 through the end of the season. We implemented a waypoint design for drone missions flown at 25 ft using a DJI Zenmuse P1 RGB sensor and a standard mapping mission at 100 ft using a MicaSense RedEdge Multispectral camera for imagery data collection. Pod blasting samples were taken from each line at two locations over five dig dates ranging from 120 to 155 days from planting. Flowering start and duration corresponding to optimal maturity dates suggests their potential as an above ground indicator for peanut maturity, implemented through a phenomic prediction model. This model will enable breeders to predict and select for early maturing lines without the need for individual pod blasting samples.

Identifying Optimal NIR-based Sorting Thresholds to Isolate Genotypes with Desired Compositional Traits for Peanut Breeding Programs

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Seed compositional traits such as oil content, protein content, and oleic acid concentration are critical factors for determining peanut cultivar end-uses, requiring breeders to develop germplasm that meet these market needs. The Qsorter Explorer is an instrument that predicts compositional traits such as oleic acid, protein, and oil concentration in seeds using non-destructive near infrared-spectroscopy (NIR). The Qsorter also has the unique ability to sort and separate seeds based on predetermined thresholds. The industry standard to be classified as a high oleic peanut is >65% oleic acid. However, this threshold is not ideal for sorting breeding samples because it is low enough to occasionally allow genotypes with normal oleic acid concentration to be advanced into high oleic nurseries. Using a threshold that is too high or stringent, could limit seed availability for subsequent field tests, a significant problem for breeding programs. Thus, our objective is to empirically determine the optimum threshold levels for the Qsorter that will reliably separate individual peanut seeds with high oleic acid from a heterozygous seed lot without discarding a large amount of potentially high oleic seed. Utilizing segregating F_5 populations, we have sorted the samples at oleic acid concentration thresholds of 60, 65, 70, and 75%. One group will be sorted at these thresholds with only a single pass through the machine, and another will be passed through the machine twice at the given threshold to determine if a double pass provides better purity. We are also testing the Qsorter's ability to isolate genotypes based on oil and protein concentrations following a similar experimental plan. Peanuts that meet the desired selection threshold will be planted in space-planted nurseries. Once harvested, the progeny from each entry will be evaluated for oleic acid concentration to determine which threshold provides optimum purity with minimal seed loss.

Improving Drought Resilience in Runner Peanuts: Breeding for High Yield, High Oleic Content, and Root Knot Nematode Resistance in West Texas

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Peanut production in West Texas experiences increasing challenges due to declining water levels in the Ogallala Aquifer and mid-season drought stress, necessitating the development of drought-tolerant varieties. This study evaluated 32 runner peanut genotypes (Population 1 AB lines) for two consecutive seasons (2022–2023) under well-watered and water-deficit conditions. Field trials at the USDA-ARS and Texas A&M AgriLife, Lubbock, Texas, were conducted using a randomized complete block design (RCBD) to assess phenotypic traits, such as SPAD chlorophyll index, NDVI, wilting response, paraheliotropism, and yield components. Mid-season drought stress was imposed by manipulating irrigation levels based on evapotranspiration (ET) to affect the crop at different growth stages, and phenotypic data were collected bi-weekly during the drought season. In addition, a greenhouse assay for Root-Knot Nematode(RKN) was conducted to test the top-performing lines for RKN resistance. Post-harvest data analyses identified superior drought-tolerant genotypes, TxL144301-117, TxL144301-103, and TxL144301-192, indicated superior yield potential, improved shell-out percentage, and tolerance to water-deficit conditions. These results provide enhanced understanding of peanut drought tolerance and contribute to breeding efforts to develop high-yielding, high-oleic, and RKN-resistant cultivars suited for semi-arid peanut production systems in West Texas.

Transcriptomic Analysis of *Arachis hypogaea L.* to Identify Genes Conferring Resistance to *Meloidogyne arenaria* (Neal) Chitwood

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The peanut root-knot nematode (*Meloidogyne arenaria* (Neal) Chitwood) can cause significant yield losses in cultivated peanut (*Arachis hypogaea L.),* making it crucial to identify genetic mechanisms for resistance. In this study, RNA sequencing (RNA-seq) is used to investigate the transcriptomic responses of five peanut genotypes, including the resistant check NemaTam and the susceptible check Florunner, across six time points (baseline, 10 Days after inoculation, 16DAI, 19DAI, 33DAI, 40DAI). Three biological replicates per genotype were included, with one replicate used for assessing nematode developmental stage at each time point. Genotypes were inoculated with 4000 eggs of *M. arenaria*. Temperature was monitored throughout the study, and samples were collected after a specific number of degree days, which are required for nematode development. The predicted results of this study are expected to reveal differentially expressed genes (DEGs) associated with nematode resistance. It is expected that comparative analysis between resistant and susceptible genotypes will highlight key defense-related pathways and candidate genes involved in nematode infection recognition and suppression. These findings will enhance our understanding of peanut-nematode interactions and identify candidate resistance genes that can be used for marker-assisted breeding to develop nematode-resistant peanut cultivars.

Evaluation of Late Leaf Spot-Resistant Peanut Breeding Lines with Putative Novel Resistance from TxAG-6

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Disease resulted in ~$122 million of loss to peanut production in Georgia in 2022 while also costing producers over $81 million in chemical control costs, accounting for a loss of over $203 million to growers' bottom line. One of the most persistent and expensive diseases affecting peanut production in Georgia is late leaf spot (LLS), a disease cause by the fungal pathogen *Nothopassalora personata*, which cost growers over $52 million in 2022. Several sources of genetic resistance to LLS have been introgressed into *Arachis hypogaea* germplasm and incorporated into cultivars. About 3 decades ago, a probable novel source of genetic resistance to LLS was described in the release of germplasm line TxAG-6, a tri-species synthetic allotetraploid that is interfertile with cultivated peanut and the source of root knot nematode resistance in commercial peanut cultivars. In the winter of 2018-19, TxAG-6 was crossed with elite cultivars from UGA's Peanut Breeding Program to evaluate and quantify this potential source of LLS resistance and identify corresponding DNA markers. In the F_3 and F_4 generations, progeny exhibiting LLS resistance in fungicide-free nursery plots were selected and subsequently coded as breeding lines in the $F_{4:5}$ generation. In 2024, 20 of these lines were tested in their first preliminary yield trial without fungicidal spays in Attapulgus, GA. Several of the TxAG-6 derived breeding lines scored significantly lower for LLS visual rating compared to LLS resistant checks. Furthermore, some of these new lines showed higher or similar yield to check cultivars, with two of the new LLS-resistant lines being in the top four for yield. In 2025, these breeding lines will be evaluated in multi-location yield trials. The TxAG-6-derived breeding lines will be genotyped to characterize the introgressed regions and reduce redundancy within the group. Releasing these novel LLS resistant lines with closely-linked genetic markers for LLS-resistance is the ultimate goal of this research.

Economic Feasibility Analysis of Peanut Crushing Plant for use of OilMax Peanut Varieties

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A Risk-based simulation model was developed to analyze the economic feasibility of a peanut crushing facility using OilMax versus conventional peanut varieties. The model defined, parameterized, simulated, and validated relevant risky variables, such as prices of inputs, acres produced, yields, and prices of peanut oil, meal and hulls, among other variables. The crushing capacity of the peanut facility was set at 110 tons of peanuts per day operating 350 days per year. Capital and operating expenses were also calculated. The model used stochastic sampling and development of probability distributions to generate empirical estimates of probability distributions for unobservable key output variables (KOV), such as net present value and annual cash flows. The results showed that OilMax varieties increase the probability of success, i.e. net present value of the investment is greater than zero, by 64 percent.

Consumer Perception of Peanuts and Peanut Products

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An online survey was conducted by the North Carolina State University Sensory Service Center to determine the purchase intent of consumers of peanuts and peanut-containing products that have been grown under organic conditions. From the surveys completed (313), it was determined that the highest number of consumers purchased peanuts either as peanut butter or as snack or energy bars. They considered organic foods to be more nutritious and safer than conventionally grown foods. The importance of organic peanuts and peanut products being available for purchase did not rate above no preference on a sliding scale. When asked about paying a premium price for organically produced peanut products, an increased price over that of conventionally produced products was small. The data indicates that the increased cost to growers in the North Carolina region to produce organically produced peanuts would not be justified at this time.

Efficacy of Isocycloseram Against Two Soil-Insect Pests of Peanut in a Laboratory Bioassay

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Banded cucumber beetle, *Diabrotica balteata,* (BCB) and peanut burrower bug, *Pangaeus bilineatus* Say, (PBB) are economically important insect pests of peanut (*Arachis hypogaea*) in Georgia. This study was designed to evaluate the efficacy of isocycloseram, a new active ingredient belonging to IRAC Group 30, against adult BCB and PBB in a laboratory bioassay. Topical assays were performed with insects of standard age and sorted by sex from colonies maintained at the University of Georgia Peanut Entomology Lab. A Hamilton repeating dispenser and 25-µL point style 3 gastight syringe was used to deliver the specified dose to the ventral surface of each insect. Mortality was recorded every 24 hours for 2 weeks. Results provide evidence of the potential utility of isocycloseram for insect management in peanut.

Susceptibility of Peanut Cultivars to Peanut Burrower Bug Feeding Injury in Georgia

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The peanut burrower bug (PBB), *Pangaeus bilineatus* (Say), is a polyphagous, subterranean insect belonging to the order Hemiptera, family Cydnidae, and it is a major pest of peanut in the southeastern United States. PBB adults and nymphs have piercing sucking mouthparts that penetrate the outer hull of a peanut pod and feed on the seed inside, which causes blemishes to the seed and leads to loss of crop value. Currently there are no effective chemical control options available for PBB management. Investigating host plant resistance to PBB feeding within commercial lines could be the first step in developing new pest management strategies. Ten commercial runner type peanut cultivars were evaluated in field trials to assess susceptibility of PBB feeding based on hull strength between 2016-2020. GA-06G, which is the predominately grown cultivar in Georgia, was the most susceptible to PBB injury in this study. However, hull strength and feeding position were not significant factors that led to GA-06Gs susceptibility. Although the reasons for its susceptibility to PBB feeding are still unclear, planting alternative cultivars of peanuts in fields with a history of PBB injury is now recommended.

Screening Advanced Peanut Breeding Lines for Photosynthetic Drought Tolerance

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Peanut (*Arachis hypogaea* L.) is a crop of major importance for the southeastern United States. However, the increasing frequency and severity of drought events driven by climate change pose a significant threat to peanut crops in the region. Drought reduces peanut yield in large part by hindering the plant’s ability to photosynthesize. Plants that can maintain their photosynthetic processes during drought conditions can potentially achieve higher yields. Thus, developing more drought-tolerant cultivars has become crucial for sustainable peanut production. Breeding programs have focused on developing cultivars with improved tolerance to drought conditions. The use of wild peanut species provides a broader genetic pool for exploring tolerance traits. The objectives of this study were to identify peanut genotypes with photosynthetic drought tolerance and to determine the potential value of breeding lines that contain wild genes for drought tolerance. The field experiment was conducted at the University of Georgia in 2024. Treatments consisted of six peanut genotypes, 1) GA-14N, 2) C76-16, 3) RBS-125, 4) RBS-131, 5) RBS-202, and 6) TVS-10-13-10, and two water regimes, 1) irrigated control and 2) drought stress between 71 and 91 days after planting. Rain-out shelters were used to cover the drought plots whenever rainfall was anticipated. Gas exchange, fluorescence, above-ground biomass, and relative water content were measured. The results indicated that all breeding lines, except for RBS-202, demonstrated the ability to recover from drought stress. After a recovery period of 21 days, no photosynthetic parameters returned to near control levels in RBS-202. RBS-131 and TVS-10-13-10 exhibited photosynthetic parameter values equal to or greater than the irrigated group during drought stress. This indicates potential drought tolerance in these genotypes.

Effectiveness of Controlled-Released Potassium Fertilization in Peanut Production in Sandy Soils of Northcentral Florida

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Potassium (K) is an essential macronutrient required by peanuts (*Arachis hypogaea*) for optimal plant growth, yield, and quality. Its deficiency can result in reduced yield and poor quality. Due to its ionic nature, potassium is highly susceptible to leaching, particularly in sandy soils, where conventional K fertilizer often become unavailable to crops throughout the growing season. This study evaluated the effectiveness of polymer-coated controlled-released potassium (CRK) fertilization in enhancing peanut growth, yield, and quality in sandy soils, while minimizing K leaching compared to conventional fertilization methods. Treatments included conventional fertilizer and controlled-released potassium applied at rates of 100 and 150 lbs/acre, and combination of conventional and CRK applied at 20:80 or 20:80 ratios, with total application rates of 100 and 150 lbs/acre. This three-year study was conducted at University of Florida North Florida Research and Education Centre-Suwannee Valley (NFREC-SV) in Live Oak, FL and Madison County. In low soil test K (STK) conditions, the 150 lbs/acre treatments involving conventional and CRK Blends (20:80 and 80:20) consistently produced higher yields across 2022-2024 seasons. Significant variations in total matured sound kernels (TMSK %) were observed for the 100 lbs/acre CRK and conventional (20:80) treatment and the 150 lbs/acre CRK treatment. However, during 2023 season, pod yield was not significantly affected by treatments. Fertilizing peanuts with 100lbs (80 CRK: 20 Conv) help in higher potassium availability during the critical growth stages. CRK fertilizers application helps in higher Calcium(ca) uptake in tissue, helps in desirable crop growth and consistent k throughout season and reduces the number of split applications.

Management Efficacy and Response to Post-Application Precipitation of Fungicides for Southern Stem Rot of Peanut and Evaluation of Co-Application with Micronized Sulfur

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Southern stem rot (SSR) is caused by *Athelia rolfsii* and is an economically important disease of peanut (Arachis hypogaea L.). Application of protectant fungicides is an effective management component for reducing levels of this soil-borne disease. The majority of peanut hectarage in South Carolina and Mississippi is rainfed. Timely precipitation has the potential to aid the movement of foliar-applied fungicides through the canopy and into contact with soil interfaces where SSR infections occur. Questions have arisen as to the quantitative relationship of post- application precipitation and fungicide-active ingredient efficacy in managing SSR and protecting associated pod yield potentials. To examine this, fungicide efficacy experiments were screened for inclusion in a meta-analysis, from which eleven experiments conducted from 2015 to 2023 were selected and paired with environmental data from nearby weather stations. Precipitation during the two days following fungicide application was associated with significant reduction in SSR incidence (logit rate of −0.0039/mm) and increased pod yield (log slope of 0.0028/mm). Active ingredient interactions with precipitation among pod yield but not SSR incidence data were present for benzovindiflupyr plus azoxystrobin, flutolanil, and tebuconazole. Fungicides with the greatest levels of control per application at maximum label rates were inpyrfluxam (18.8%), benzovindiflupyr plus azoxystrobin (15.4%), flutolanil (12.3%), and prothioconazole plus tebuconazole (10.5%). Micronized sulfur neither contributed to SSR control nor pod yield increase. Tebuconazole was associated with the greatest % SSR control per fungicide product cost (0.47%/$/ha/application) but was also the treatment with the least amount of control (3.5%) at its maximum label rate. Maximum label rates of benzovindiflupyr plus azoxystrobin (USD 637) and inpyrfluxam (USD 548) were estimated as conferring the greatest returns over the chlorothalonil-only control. Results serve as a helpful reference for farmers and practitioners in selecting fungicide management options and targeting application times, as feasible, to utilize natural precipitation to improve management outcomes.

South Carolina Peanut Farmer Production Practices Survey

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Farmer interest in the use and effectiveness of individual peanut management practices led to the initiation of a survey in South Carolina following the 2021 and 2022 growing seasons. Surveys responses were representative of predominant practices used across the farm. Responses from a total of 24 respondents from ten counties were collected and pooled for synthesis. A total of 54% rotated out of peanut for two years, 38% rotated to other crops for three years, and 4% rotated out of peanut for either one or four years prior to returning to peanut. Acephate was not reported as having been used during the corresponding growing seasons. Use of strip tillage (63%, 5830 kg/ha) was associated with greater yield than disc (8%, 4650 kg/ha) or minimum to no tillage (29%, 4150 kg/ha). Predominant planting dates were fairly evenly spread across April 15 to 30 (29%), May 1 to 10 (38%), and May 11 to 20 (33%). Planting from May 11 to 20 was associated with similar yields compared to earlier planting dates when fields were inverted not later than 155 days after planting. Latter May planting in combination with inversion dates after October 22 (159 to 164 days after planting) were associated with lower yield (3750 kg/ha) compared to earlier inversion times (5400 kg/ha) from the same planting window. Compared to seeding rates of 13 to 16 per m, seeding rates of 18 through 26 per m were associated with greater yield overall; however, there was not a further tendency for increased yield as seeding rates moved from 18 to 26 per m. The most frequently reported row pattern utilized was single rows on 96.5-cm centers (67%), for which yield was not different from that of single rows on 91.4-cm centers (21%). While use of twin row planting pattern was less frequent among those surveyed (8%, 6000 kg/ha), it was associated with greater yield than single row patterns on 91.4- or 96.5-cm centers (5390 kg/ha). Only 4% of respondents reported planting single rows on 76.2-cm centers. Utilization of auto steer (79%) was more prevalent than its absence (21%) and was related to greater yield (5720 vs. 3780 kg/ha, respectively). Variable rate application of fertilizer or lime (33%, 5960 kg/ha) compared to uniform rate application (67%, 5040 kg/ha) was also associated with greater yield. Gypsum was applied before planting (4%), following stand establishment (13%), at or shortly after bloom (58%), 45 days after planting (13%), or not at all (13%), with differences being present only with regard to the absence or presence of application (3750 vs. 4260 to 6280 kg/ha, respectively). Use of a consultant and frequency of scouting were not associated with a tendency for different yield among collected data. While reported yields were inherently downstream of a combination of multiple factors, results from this survey add context for the consideration of the effectiveness of management decisions across a range of production environments.

Harnessing Wild Arachis Species for Peanut Improvement Using CSSLs

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Cultivated peanuts have limited genetic diversity, restricting their adaptability to biological and environmental stresses. Wild Arachis species provide genetic variation that confers resistance to diseases and stress. However, using wild relatives in peanut breeding is complicated by differences in ploidy levels and associated linkage drag. Chromosome Segment Substitution Lines (CSSLs) effectively transfer beneficial traits from wild species into cultivated varieties. This study focuses on developing CSSLs from a cross between the elite peanut cultivar IAC OL4 and the induced amphidiploid GregSten1, derived from *A. gregoryii* V6389 and *A. stenosperma* V10309. We conducted marker-assisted backcrossing for two generations using OL4 as the female parent, followed by selfing, establishing a total of seven B_2F_3 families that yielded 26 seeds. We conducted preliminary field evaluations of the resulting twenty-six OGS CSSL populations in Midville, Georgia, using an augmented experimental design. We assessed for resistance to Tomato Spotted Wilt Virus (TSWV) at four intervals and scored on a severity scale ranging from 0 to 5. Additionally, agronomic traits, including canopy area, plant height, canopy temperature, pod yield, and vegetation indices (NDVI and NDRE), were recorded biweekly using drone imaging, starting in the second week after planting. Lines OGS_1, OGS_4, and OGS_5 showed notable resistance to TSWV, with OGS_1 and OGS_5 having high pod yields. This suggests the successful introgression of beneficial wild alleles that enhance disease resistance and productivity. A strong negative correlation existed between TSWV severity and plant vigor traits evaluated by drone imaging (NDVI, NDRE), canopy area, and pod yield. Canopy temperature was positively correlated with disease severity. These initial findings highlight the potential of these CSSLs as invaluable genetic resources for peanut improvement. Future plans involve SNP-based genotyping to assess the proportion of the wild genome in these lines and identify the introgressed segments associated with disease resistance and productivity traits.

Genomic Prediction and QTL-Mapping of TSWV Resistance in Cultivated Peanut using Conventional and High-Throughput Disease Assessment

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Tomato spotted wilt virus (TSWV) is a major limiting factor to the production of cultivated peanuts (*Arachis hypogaea*), especially the southeastern US. Previous studies have indicated the polygenic nature of inheritance for TSWV resistance in cultivated peanuts. This motivates us to evaluate the efficiency of genomic prediction (GP) breeding strategies for this trait in a joint population comprising three biparental F_5 populations generated by crossing a single susceptible common parent (Georgia Runner) with three different resistant founder parents (C-99R, Georgia-06G, and Georgia-12Y with gradually increasing resistance respectively) of historical importance to the industry and to peanut breeding. Moreover, the conventional visual disease assessment for TSWV infection is time-consuming and potentially inaccurate, due to which we will utilize both conventional visual methods and Convolutional Neural Network (CNN) based image analysis methods to evaluate the efficiency of the latter by estimating Pearson's product-moment correlation. In addition, joint linkage association mapping techniques will provide higher power and resolution for the identification of genomic regions controlling the TSWV resistance. The inclusion of low, medium, and highly resistant founder parents will help with the identification of QTL regions that contributed to the gradual increase in resistance to TSWV during the last 30 years of breeding. Genomic estimated breeding values (GEBVs) estimated by regressing multi-environmental disease data on highly dense genotypic data will help with the efficient and reliable selection of lines for further validation and cultivar development.

Identification of Southern Corn Rootworm Injury in Peanuts using Deep Convolutional Neural Network Based- YOLO

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Southern corn rootworm (SCRW, *Diabrotica undecimpunctata howardi*) has emerged as an economically critical insect pest of peanuts that significantly deteriorates peanut yield, quality, and market value. Conventionally, the infestation of this pest is determined by visual inspection-based grading, which is labour intensive, time consuming, and can often be subjective. This study presents an alternative automated approach based on deep learning and computer vision techniques to identify SCRW injuries in peanut pods. Pods of various peanut cultivars were collected from experimental as well as grower farms with documented SCRW infestation histories. After sample cleaning in laboratory, the pods were screened by entomologists to identify injured peanuts. Images of the pods were then captured using a high resolution DSLR camera and an iPhone 14 Pro Max from a vertical distance of about 1 foot from the samples. Images were then pre-processed, including resizing via bicubic interpolation, histogram equalization for contrast enhancement, and data augmentation. Prepared imagery dataset was then annotated into three different classes, injured, healthy, and others. Two data split scenarios – 80/20 and 70/30 – were tested for model formulation and training. Six YOLO model variants (YOLOv8x, YOLOv9x, YOLOv10x, YOLOv11x, YOLOv11n, and YOLOv12) was employed to identify the best SCRW detection model. YOLOv11n was specifically selected for its lightweight design, suitable for real-time applications. The trained models were evaluated on an independent imagery dataset developed out of various peanut cultivars to identify cultivars that are more prone to SCRW infestation. Results of this study have practical implications for farmers, as they could use the model to automatically distinguish infested from healthy peanuts through user-friendly applications, thereby prompting them to implement crop protection measures for enhanced harvest quality and economic value.

Genetic Improvement of High-Oil Peanut for Dual Stress Tolerance and Renewable Energy Production

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This work aims to increase the oil content of Spanish peanuts by incorporating high oil content from runner types, enhancing drought and salinity tolerance, and leveraging Raman spectroscopy and near-infrared for selection. Our approach involves (1) assessing 20 high-oil runner breeding lines under drought conditions across two locations in West Texas, (2) advancing the crossing program to introduce high oil content into Spanish-type peanuts, and (3) establishing Raman spectroscopy analysis for analyzing seed oil content on introgression lines and utilizing modern molecular tools to identify genes related to high oil content. Despite challenging water deficit and heat stress conditions in the year 2023, harvested Diesel Nut plots did not exhibit statistically significant yield variations. To combine the high oil content trait of runner-type peanuts with the Spanish-type, a series of crosses were attempted. A total of 10 crosses each for high oil drought tolerant and salinity tolerant Spanish populations were developed successfully. Each F_1 seed is being grown in a greenhouse environment to facilitate generation advancement. Also, we have retrieved a total of 240 gene sequences from the glycerophospholipid pathway of peanuts that could be used for the development of high-oil molecular markers. We are currently working on the use of Raman spectroscopy to identify high-oil peanuts and molecular tools to identify high-oil genes, providing valuable insights for enhancing biodiesel production through targeted breeding programs.

Transcriptomic Insights into Heat-Induced Lipid Remodeling for Thermotolerance in Peanut

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Lipid remodeling has been identified as a heat-tolerance mechanism in plants. The objective of this study was to quantify the expression of genes regulating lipid metabolic changes that contribute to heat tolerance in peanut genotypes. We conducted a comprehensive lipidome analysis of 52 peanut recombinant inbred lines (RILs) derived from a cross between the heat-tolerant genotype ICGS76 and the heat-susceptible genotype TamrunOL02 under optimum (29/20°C) and heat stress conditions (38/28°C). Our findings indicate that the sequestration of unsaturated acyl chains from membrane lipids into triacylglycerols (TG) and sterol esters (SE) helps reduce the unsaturation levels in membrane lipids. This, in turn, maintains optimal membrane fluidity and integrity under heat stress conditions. We further investigated the expression patterns of key genes involved in this lipid remodeling process. The genes analyzed included *diacylglycerol acyltransferases* (*DGAT1-2*, *DGAT3-3*), *fatty acid desaturase* (*FAD3-2*), *phospholipid:diacylglycerol acyltransferase* (*PDAT*), *acyl-coA:sterol acyltransferase* (*ASAT*), *phospholipid:sterol acyl transferase* (*PSAT*) and *heat-inducible lipase* (*HIL1*). Gene expression analysis revealed heat-induced upregulation of *ASAT, PSAT, DGAT3-3* and *PDAT*, which uniquely regulate the acylation of sterols and TGs. This result confirms the role of TGs and SEs in heat stress tolerance through acyl sequestration. In contrast, *FAD3-2* (which converts 18:2 fatty acids to 18:3) exhibited heat-induced downregulation, potentially reducing fatty acid unsaturation levels in membrane lipids by lowering the amount of 18:3 fatty-acids under heat stress. The identified genes (*ASAT, PSAT, DGAT3-3, PDAT,* and *FAD3-2*) and the associated lipid-related mechanisms of heat-stress tolerance will aid in developing heat-tolerant peanut varieties. Furthermore, the high- and low-expression alleles of these genes could serve as molecular markers for heat tolerance, accelerating peanut breeding programs aimed at improving heat resilience.

An updated KASP Marker-based Genetic Linkage Map of an Interspecific Introgression Population of Peanut (*Arachis hypogaea* L.) and Identification of Leafspot Resistance QTLs

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A revised genetic linkage map for a BC_1 interspecific peanut introgression population has been developed from SNP markers. The previous SNP map consisted of 139 SNP markers spanning a linkage distance of 2514.5 cM. Although several QTLs for early leaf spot disease resistance have been identified using this map, the previous map had few markers mapping to the A07 and A09 linkage groups based on the Tifrunner map. Our study aims at filling these gaps and identifying additional QTLs for early and late leafspot disease resistance and other traits. Forty-one genome specific markers targeting the LG A07 and A09 were developed. These markers and an additional 59 markers that did not map previously were genotyped using the LightCycler480 or thermalcycler (MJR) followed by reading on the fluorescent plate reader (Tecan Infinite F200). PACE Genotyping Master Mix was used in place of KASP master Mix. Till date, 242 SNP markers have been placed on 23 linkage groups spanning a linkage distance of 3174.6 cM. Scoring of 317 BC_3F_6 individuals is currently underway to identify additional QTLs for early and late leaf spot disease resistance.

Role of *FAD2* Genes in Conferring Heat-Tolerance and Enhancing Seed Oil Quality in Peanut

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Pod High oleic acid content in seeds is a desirable trait in the peanut industry, as it is associated with both the shelf life of processed peanut products and human health. The fatty acid desaturase (*FAD*) gene family, denoted *AhFAD2*, regulates the conversion of oleic acid to linoleic acid in peanut, thereby determining the oleic and linoleic acid contents in kernels. Mutations in *AhFAD2-A* and *AhFAD2-B* genes, located in the peanut A- and B-subgenomes, respectively, result in an overall reduction of FAD2 enzyme activity, an increase in the O/L (oleic acid/linoleic acid) ratio, and an accumulation of oleic acid in seeds. Additionally, the altered unsaturation levels in membrane lipids due to mutations in *FAD* genes also affect plant stress responses, as membrane lipid unsaturation levels are directly associated with membrane stability and cell function under stress. The objectives of this project were to (1) evaluate the heat stress responses of high-oleic peanut lines Tamrun OL01 and Tamrun OL02 (likely *AhFAD2A* and *AhFAD2B* double mutants) and Tamrun 96 (wild type *AhFAD2A* and *AhFAD2B*), in comparison with ICGS76 (a known heat-tolerant line) based on physiological and agronomic traits; and (2) determine how changes in the expression of *AhFAD* genes and fatty acid unsaturation levels are correlated with heat tolerance. Peanut plants were grown at optimal temperatures (29/20°C) until flowering. Thereafter, two treatments- optimum and high temperatures (38/28°C)- were applied for two weeks. Heat stress responses were assessed based on cell membrane leakage (relative injury %), photosynthesis, chlorophyll fluorescence (that measures the efficiency of photosystem II, Fv/Fm), and chlorophyll index (SPAD units) measured on the last day of stress. At that time, leaf and anther samples were collected for lipid and RNA extraction. After the end of the two-week heat-stress period, all plants were maintained at optimal temperatures until harvest. Pods were harvested at maturity and yield was measured. Based on physiological and yield data, heat stress responses of the mutants (Tamrun OL01 and Tamrun OL02) were similar to that of the control (ICGS76). In our previous research, we found that mutations in *FAD2* genes expressed in leaves and anthers result in reduced levels of polyunsaturated fatty acids, contributing to improved heat tolerance in plants. Further, mutations in *FAD2* genes expressed in seeds lead to high oleic acid content in oil. We propose that high oleic acid varieties with mutations in *FAD2* expressed exclusively in seeds will exhibit heat tolerance only if the mutations also occur in *FAD2* genes expressed in leaves and anthers. *FAD2* is a family of six genes in peanuts. Among them, *FAD2A* and *FAD2B*, which are likely mutated in Tamrun OL01 and Tamrun OL02, are exclusively expressed in seeds. Our previous research suggests that mutations in other *FAD2* genes, which are more ubiquitously expressed, including in leaves and anthers, are likely to confer heat tolerance through changes in membrane lipid composition. In our future research, we will test whether any of the *FAD2* genes, other than the seed-specific *FAD2A* and *FAD2B*, carry mutations in Tamrun OL01 and Tamrun OL02.

Evaluating Early Season Post-Emergence Herbicide Injury in Peanut

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Many of the early season post-emergence options used in peanut can cause significant foliar injury. Herbicide injury is primarily a visible measurement which is subject to differences between evaluators and could result in substantial error. The objective of this study was to evaluate differences in injury from early postemergence options in peanut. Additionally, this study aimed to examine a system to evaluate herbicide injury in a quantitative manner. In 2024, field sites at the Tidewater Agriculture and Research Extension Center (TAREC) and the Peanut Belt Research Station in Lewiston, NC were established. Treatments consisted of paraquat; paraquat and bentazon; paraquat and S-metolachlor; paraquat, S-metochlor, and bentazon; acifluorfen and bentazon; lactofen; lactofen and bentazon; and 2,4-DB. All treatments except for 2,4-DB were applied with non-ionic surfactant at 0.25% v/v. Treatments were arranged in a randomized complete block design with 4 replications. Data was collected at 3, 7, and 14 days after treatment and included visual crop injury which consisted of percent chlorosis, necrosis, and general crop injury. Peanut yield was also collected for each plot. Five representative leaves with visible injury from each plot were collected at each visual injury rating and analyzed through ImageJ software to determine percent necrosis. This percentage is based on the number of pixels within an image that corresponded to necrotic tissue of the leaves divided by the total number of pixels within the leaves. An ANOVA was conducted with JMP Pro 17 software and means were separated using Fisher's Protected LSD at a p-value <0.05. Simple linear regression was utilized to correlate software generated response data with visual injury data within the field. For the 3 days after treatment rating, treatments containing paraquat were the most injurious, however the addition of bentazon to paraquat based treatments helped reduce foliar injury. Although significant differences in herbicide injury were present, significant yield differences between treatments were not observed, showing that the injury was likely transient. The visual percent necrosis data was significantly correlated with the software generated response data at the Lewiston location (R^2= 0.93). These results show that significant differences exist for post-emergence herbicide injury in peanut. While only one year of data has been collected, this data demonstrates that there is potential for using a quantitative measurement tool for herbicide injury in peanut.

(*A. valida* x *A. duranensis*)^{4x}: a Novel Source of Resistance to Groundnut Rosette and Late Leaf Spot Diseases for African Peanut Cultivars

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Peanut (*Arachis hypogaea* L.) is a significant agricultural crop in Africa, primarily grown as an oilseed, feed, and food source. Peanut production in Africa is severely affected by Early and Late Leaf spots and groundnut rosette disease, which together can result in 100% yield loss in sub-Saharan Africa. Currently, cultivated peanut lines offer only limited resistance, and instances of disease breakdown have been reported. In contrast, diploid wild relatives from the secondary gene pool can expand genetic diversity and have recently been utilized to incorporate resistance to various diseases, including tomato spotted wilt and nematodes in cultivated lines. To broaden the gene pool, advanced breeding lines were generated in CEERAS in Senegal with amphidiploid (*A. valida* x *A. duranensis*)^{4x} and subsequently backcrossed three times to the cultivated parent. The objective of this research is to identify groundnut rosette and LLS resistance in this population and identify wild segments that may confer resistance. A total of 198 individuals were evaluated for resistance to Groundnut rosette disease (GRD) and LLS, as well as yield, across two agroecological zones in Uganda using a 19 × 20 alpha lattice design. Ten genotypes showed lower severity scores for both GRD and LLS. These lines serve as novel sources of resistance in the breeding program. These lines were previously genotyped using the Thermo Fisher Arachis Array with 36K SNP markers. By correlating these genotypic profiles with our phenotypic data, we aim to identify the genomic regions responsible for GRD and LLS resistance introduced from the wild. This will facilitate the development of novel, resistant peanut lines that will benefit peanut farmers in Africa.

Machine Learning Algorithms to Genomic Selection in a Peanut Breeding Program

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The complexity and high dimensionality of genomic data requires using flexible and powerful statistical machine learning tools for effective statistical analysis. Random Forest is a supervised machine learning algorithm that can handle binary, categorical, count, and continuous dependent variables. The aim of this work was to evaluate the machine learning algorithms prediction accuracy to smut incidence and pod maturity traits on the DRS-MANIAGRO peanut breeding program. Phenotypic evaluation of traits was evaluated in a population of 460 genotypes during 2023-2024 crop season in General Cabrera, Argentina. Smut incidence and pod maturity was scored on a sample of 300 pods per genotype. The genotyping of the population was performed by the 2.5K Groundnut DArTag SNP panel. Each genotype was classified in three categories for both traits according to classification performed in the breeding program. The classification algorithm used was Random Forest from CARET package in R software. Prediction accuracy was evaluated by 75-25% cross validation scheme. Confusion matrix was used to evaluate the performance of algorithms and potential for selection in breeding program. For smut incidence, the sensitivity (true positive rates) was 0.94, indicating that model allowed us to make forward selection for smut resistance. For pod maturity, the algorithm did not perform very well for forward selection, but the specificity (true negative rates) was 0.93, allowing us to discard genotypes with high precision. The results indicate that this algorithm allowed us to select genotypes for smut resistance and discard genotypes that do not fit maturity values threshold on the breeding program. Machine learning algorithms are a powerful tool for making genomic selection in the DRS-MANIAGRO peanut breeding program.

Accelerating High Oil Peanut Improvement through UAV-Enabled High-Throughput Phenotyping

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Peanut (*Arachis hypogaea* L.) provides a renewable alternative fuel compared to traditional petroleum and biofuels. It provides easy integration into the existing engines and can be produced in a low-input, sustainable manner. Texas A&M AgriLife Research, peanut breeding program has developed high-oil content peanut cultivars with the potential to be used in the cooking oil and the renewable fuel industries. To aid in cultivar development, the program has been developing high throughput phenotyping (HTP) methodologies since 2020. Compared to conventional hand phenotyping methods that are expensive, labor-intensive, susceptible to human error, and often destructive, high throughput phenotyping using tools such as Unmanned Aerial Vehicles (UAVs) has been proven to improve speed, accuracy, and efficiency, thereby reducing cost. During the 2024 season, using a multi-sensor UAV platform (RGB and multispectral), we collected weekly aerial images of research plots of high oil cultivars and breeding lines throughout the growth stages, from planting to harvest. Multiple ground control points (GPCs) were used to improve the georeferencing and overall quality of the data down to 2-3 cm accuracy. Images were processed and analyzed using the Structure from Motion (SfM) algorithm to generate a Digital Surface Model (DSM), orthomosaic images, and 3D point cloud data to extract phenotypic data, including canopy cover, canopy height, canopy volume, and plot length. We examined the statistical relationships between UAV-extracted phenotypic traits with the field data collected using established protocols. Data and results will be presented.

Genotypic Differences in Photosynthetic Heat Tolerance Using Wild-Derived and Cultivated Peanuts

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Rising heat waves pose a significant threat to peanut production, emphasizing the urgent need for heat-tolerant cultivars. While most cultivated peanut varieties are relatively sensitive to high temperatures, wild-derived genotypes may offer greater tolerance due to their broader genetic diversity and adaptation to variable environmental conditions. This study aimed to (1) use net photosynthesis (A_N) to discriminate between heat-sensitive and heat-tolerant peanut genotypes and (2) identify key underlying photosynthetic parameters that contribute to genotypic variation in heat response. The experiment was conducted under field conditions at the University of Georgia's Tifton campus, using 28 peanut genotypes, comprising 10 commercial cultivars and 18 advanced wild-derived genotypes, arranged in a randomized complete block design with six replications. To induce heat stress, rainout shelters were deployed over the plots from 60 to 74 days after planting (DAP), elevating air temperatures by up to 10 °C compared to ambient conditions. Temperature sensors were used to continuously monitor the temperature inside and outside the shelters. Photosynthetic gas exchange was measured using the LI-6800 Portable Photosynthesis System between 1200 and 1500 h at five time points: one day before imposing heat stress (baseline), seven and 14 days after the onset of heat stress, and seven and 28 days after the end of stress to assess recovery. Differences in A_N were observed across measurement timings, allowing the identification of genotypes with contrasting heat responses. Based on A_N performance, the top- and bottom-ranked genotypes were selected for principal component analysis (PCA) to identify the key photosynthetic traits underlying heat tolerance. This trait-based approach enabled the separation of heat-tolerant and heat-sensitive genotypes based on physiological response. Four advanced wild-derived lines alongside the commercial cultivar TifNV-High O/L were identified as the most heat-tolerant based on their sustained photosynthetic performance. PCA also revealed that both stomatal and non-stomatal photosynthetic factors contributed significantly to the differentiation of genotypic responses under heat stress. These included traits related to stomatal regulation, electron transport efficiency, and photochemical energy dissipation, highlighting the multifaceted nature of heat tolerance mechanisms in peanut.

Utilizing PACE Marker to Identify Candidate RKN-Resistance Gene Region on Chrom 9A Introgressed from *Arachis cardenasii*

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The North Carolina State University Peanut Breeding Program is the primary supplier of Virginia-type peanut (*Arachis hypogaea*) cultivars for the Virginia-Carolina (VC) region. Root-knot nematode (RKN, *Meloidogyne* spp.) can tremendously impact peanut production fields, with reported reductions in yield of up to 50%. Although current RKN incidence in the VC region is rare, no Virginia-type cultivars are available with known RKN resistance if incidences increase in the future. Therefore, this study aims to identify and transfer resistance from donor peanut germplasm into elite, Virginia-type backgrounds for cultivar development. GP-NC WS 06, developed from the wild peanut species *Arachis cardenasii*, demonstrates resistance to peanut root-knot nematode. Recent whole-genome sequencing revealed a 4Mb *A. cardenasii* introgression on Chr. A09, closely resembling known RKN resistance gene regions. Testing confirmed GP-NC WS 06 and the industry standard for RKN resistance, TifNV H/O, both possessing *A. cardenasii* introgressions (4 Mb and 112 Mb, respectively), had indistinguishable resistance when exposed to *Meloidogyne arenaria*, hinting that the resistance could rely within the smaller, 4 Mb block. Our marker-assisted selection program selected 111 F5 plants based on markers spanning the 4Mb region and other markers across the genome for traits critical to the peanut breeding program. We identified five single recombinants and two double recombinants within the Chr. A09 introgression during marker-assisted selection and narrowed the region to 1.8 Mb and 24 candidate R genes. Current work is revisiting lines GP-NC WS 02 and 05, which had unique recombinations within the Chr. A09 introgression, to narrow this region further.

Fungicide Program Evaluation in Short Rotation Irrigated Peanuts in Berrien County, Georgia

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Peanuts are a vitally important agricultural commodity produced in Georgia, with approximately 767,000 acres typically in production at an estimated economic value of over $760 million. Berrien County is an agriculturally diverse community in south central Georgia that typically produces over 20,000 acres of peanuts a year. Due to this, the Berrien County Extension service receives a heavy amount of peanut management related questions throughout the year. One of the more frequently asked questions regards selection of the appropriate peanut fungicide, of which there are several options to choose from. Due to this, the University of Georgia Extension's role in testing these products on-farm provides critical insight towards product efficacy to local farmers. In 2024, 6 fungicide programs were evaluated in an irrigated peanut field with a short rotation (1 year). These programs were developed using UGA and industry recommendations. Each program was replicated three times in a randomized completed block design (RCBD) and evaluated for leaf spot and white mole efficacy, as well as yield. The results showed that there were no statistical differences between any of the programs when evaluating yield or white mold incidence. Regarding leaf spot, the results showed the Elatus-Miravis program as having statistically higher leaf spot than all other treatments. Conversely, the Excalia, Teb-Bravo, and Elatus-Provysol programs had the least leaf spot, and were statistically similar. These results show that there are several quality fungicide options for peanut growers to select from, while also reinforcing the importance of applying these products in a timely manner for optimal efficacy.

Collecting Mating Type Data on *Nothopassalora personata* directly from Late Leaf Spot Tissue of Peanut

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Sexual reproduction allows organisms to create genetically-unique offspring. Pathogenic fungi such as *Nothopassalora personata* (Np), the causal agent of Late Leaf Spot of peanut (*Arachis hypogaea L.)*, are known to develop resistance to fungicide treatments, a process sped up by sexual reproduction and the increase in genetic diversity of a population. While no sexual structures of Np have been observed in peanut fields in many years, it is possible that sexual reproduction is occurring. Primers were developed to test for the presence of the two mating types in Np, mating type 1-1 (MAT1-1) and mating type 1-2 (MAT1-2), using isolates of Np collected from the field and grown in pure culture. However, culturing Np is a tedious process characterized by slow fungal growth and frequent contamination. Bypassing culturing to test peanut fields for mating types in Np populations would be advantageous in large scale survey of peanut pathogen populations. The current study asked the question "Can mating type be surveyed in populations of Np directly from late leaf spot tissue?" Fresh peanut leaves with late leaf spots were collected in Tifton, GA and mailed to Savannah, GA for processing. A total of 40 leaf spots were cut from leaf tissue and processed for DNA exaction using Zymo Research Corporation Quick-DNA Fungal/Bacterial Microprep Kit following manufacturer's instructions. A commercially available DNA kit was selected for ease and consistency. PCRs were performed to determine if the DNA extracted was of high enough quality and quantity to produce positive results. Approximately 40% of samples contained DNA that produced PCR results for each of the mating types. Possible explanations for lack of results in the remaining samples include the use of a kit that is designed for fungal tissue from culture, not from environmental samples. It is also possible that the positive DNA samples were taken from late leaf spots with sporulation occurring; therefore, more fungal material was available from which to extract quality DNA. Future work will test a more robust DNA extraction method that is low-cost, streamline, and effective. Late leaf spots will also be screened for sporulation before DNA is extracted to determine if the absence of sporulation correlates with low PCR success.

Soil Moisture Conservation in Peanut (*Archis hypogea* L.) Production Systems

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Soils in the southeastern Coastal Plain are often coarse-textured, depleted of organic matter, and low in water-holding capacity. Cover crops may have the ability to improve row crop productivity by improving soil organic matter and soil moisture retention in peanut production systems. An ongoing study was established in 2022 at the Wiregrass Research and Extension Center in Headland, Alabama to determine the effect of cover crops on soil moisture retention and peanut yields. This experiment was organized in a split plot design and replicated three times. Three irrigation treatments (i.e., 100%, 50%, and 0% irrigation) were treated as main plots and two cover crop treatments (i.e., cover crop and fallow) as sub plots. Cover crops consisted of 56 kg ha^{-1} oat (*Avena sativa* L.), 56 kg ha^{-1} rye (*Secale cereale* L.), and 8.96 kg ha^{-1} daikon radish (*Raphanus sativus* L.). Volumetric water content measurements were collected weekly with a neutron probe for 10-cm increments to a depth of 100 cm in the furrow and in the row middles from planting until harvest. Irrigation was the only factor the significantly impacted yield. Cover crop and its interaction with irrigation had no effect on peanut yield. Yields were 5305 kg ha^{-1} at 100% irrigation, 4683 kg ha^{-1} at 50% irrigation, and 4073 kg ha^{-1} at 0% irrigation. Further research on the influence of cover crops on soil moisture retention will be discussed.

Peanut Response to Variable Rate and Timing Applications of Aminopyralid (Milestone®)

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Declining commodity prices for agronomic crops such as cotton (*Gossypium hirsutum*) have increasingly shaped production decisions for Georgia growers, prompting shorter peanut (*Arachis hypogaea* L.) rotations and expansion beyond the current 343,990 planted hectares to sustain economic viability. In the Coastal Plains Region (CPR) of Georgia, forage pastures and hayfields have become integral to peanut crop rotation systems. While many herbicides used for weed control in pastures and rangelands are registered for peanuts, some, including aminopyralid (Milestone®; Corteva, Indianapolis, IN), applied in dedicated forage fields pose potential residual carryover risks to peanut. Current label restrictions for broadleaf crops recommend a two- to three-year plant-back interval. Therefore, this study evaluated peanut response to varying rates and application timings of aminopyralid in the sandy soils of the CPR. Replicated small-plot trials were conducted at the University of Georgia Ponder Research Farm from 2022 to 2023, using a randomized complete block design with a 5 × 3 factorial arrangement of herbicide rates (none, 1x, 1/5x, 1/10x, 1/100x) and application timings (preemergence [PRE], 30, and 60 days after planting [DAP]). Data were analyzed via ANOVA using PROC GLIMMIX, with means separated by Fisher's protected LSD test ($P = 0.10$). Results revealed a rate-by-timing interaction. PRE applications of aminopyralid caused significant peanut stunting (93%, 61%, and 33% at 1x, 1/5x, and 1/10x rates, respectively), with effects persisting season-long (1x: 100%, 1/5x: 75%, 1/10x: 38% at 105 DAP) compared to the non-treated control (NTC). At 30 DAP, stunting was 83%, 23%, and 21% for 1x, 1/5x, and 1/10x rates, respectively, and at 60 DAP, it was 97%, 48%, 40%, and 10% for 1x, 1/5x, 1/10x, and 1/100x rates. The 1/100x rate at PRE and 30 DAP showed no significant difference from the NTC. Although no rate-by-timing interaction was observed for yield, rate and timing effects were evident. Averaged across timings, peanut yield decreased with aminopyralid application, ranging from 0, 990, 2061, and 4588 kg ha^{-1} at 1x, 1/5x, 1/10x, and 1/100x rates, respectively, compared to the NTC yield of 5218 kg ha^{-1}. These findings underscore the importance of rate and timing considerations when managing aminopyralid residues in peanut rotations.

Weed Control and Peanut Tolerance with Norflurazon in Texas and Oklahoma

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Field experiments were conducted in south Texas and the Texas High Plains region during the 2019 and 2020 growing seasons and in Oklahoma in 2020 to evaluate peanut tolerance to norflurazon at 0.56 and 1.12 kg ai/ha applied preemergence (PRE) or early postemergence (EPOST). Norflurazon at 1.12 kg ai/ha caused more injury than norflurazon at 0.56 kg ai/ha in both years in south Texas, in 2019 in the High Plains region, and in Oklahoma. The EPOST application was more injurious in south Texas but not at the other locations. Peanut yield was only affected in the High Plains in 2020. Norflurazon at 1.12 kg ai/ha applied PRE caused a 25% yield reduction compared to the untreated check.

Weed control with norflurazon applied either preplant incorporated (PPI) or PRE was evaluated in south Texas. Preplant incorporated applications of norflurazon alone provided 89 to 94% early-season control of Texas millet [*Urochloa texana* (Buckl.)] and 96 to 100% control of both Palmer amaranth (*Amaranthus palmeri* L.) and smellmelon (*Cucumis melo* L.). Norflurazon applied PRE controlled Texas millet 73 to 98%, Palmer amaranth 91 to 98%, and smellmelon 88 to 98% early-season. However, late-season weed control with norflurazon alone was erratic and required the addition of a PRE application of either pendimethalin or ethalfluralin in combination with norflurazon for more consistent weed control.

There may be opportunities to utilize norflurazon in peanut in Texas or Oklahoma. However, norflurazon is not a stand-alone herbicide and there is potential for crop injury and yield reductions under certain environmental conditions.

Genotype-by-Environment Interaction and Genomic Breeding Strategies for Peanut Improvement in South Carolina State

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Peanut is a critical crop in the Southeastern United States, providing essential nutritional, economic, and agricultural value. In South Carolina, the industry is expanding rapidly, driven by major investments such as premium peanut. Despite this momentum, peanut production faces persistent biotic and abiotic stresses, including aflatoxin contamination, foliar diseases, and drought, which severely impact yield and profitability. Traditional management practices have not sufficiently mitigated these losses, highlighting the need for innovative, scalable solutions.

To address these challenges, South Carolina State University has established a new Center for Plant Breeding, Genetics and Genomics (CPBGG), with a mission to apply advanced genomic technologies to improve peanut breeding, enhance genetic diversity, and develop high-yielding, disease-resistant varieties. Preliminary research involving eight commercial peanut varieties has revealed differential response. Future efforts will focus on identifying early-generation genotypes with desirable traits and conducting genetic analyses to understand the underlying genetic mechanisms.

Assessment with over 50 small-scale farmers revealed a strong demand for improved access to agricultural technology and collaboration opportunities. Peanut grower farmers volunteered their land for experimental trials, underscoring the relevance and potential impact of CPBGG’s work. The center aims to foster partnerships with academic, industry, and farming stakeholders to drive innovation, increase agricultural resilience, and strengthen the peanut industry in South Carolina and beyond.

Optimizing Planting Date and Variety Selection for Insect Management in Virginia Peanuts

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Agronomic decisions, including planting date and variety selection, can play an important role in the overall success of peanut production in Virginia. Due to Virginia's relatively short growing season, having a well-established, vigorous stand of peanuts that can obtain enough growing degree days is crucial to developing a mature crop before the first fall frost. Differences in maturity of the varieties and planting date can both influence yield and quality potential, but may also impact the occurrence and injury potential of major insect pests. In 2025, we examined the effect of planting date and variety selection on the severity of key insect pests of peanut in Virginia, including thrips and southern corn rootworm. Because thrips are vectors of viral diseases of peanut, the impact of these cultural practices on the incidence of tomato spotted wilt virus was also assessed. The results of this study will allow us to provide recommendations to growers on important agronomic decisions with respect to their implications for both insect and disease management, and guide future efforts to refine these recommendations.

Plant Growth Regulator Enhances Peg Strength, and Pod Yield in Different Peanut Varieties

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Prohexadione calcium is a plant growth regulator that reduces excessive vine growth in peanut (*Arachis hypogaea* L.) by inhibiting gibberellin biosynthesis. However, new cultivars like Georgia-12Y and Arnie may respond differently to plant growth regulators due to variations in growth habits. A study was conducted to assess the effects of prohexadione calcium applied at 75% and 100% of labeled rate on two peanut varieties, Georgia-12Y and Arnie, compared to an untreated control. Prohexadione calcium application significantly reduced plant height in both varieties at both application rates. The height-to-node (H: N) ratio was significantly lower in Georgia-12Y, although no significant difference was observed between rates. Normalized difference vegetation index increased under the 75% rate in Arnie, while Georgia-12Y showed no difference. Chlorophyll content increased significantly in Georgia-12Y at the 75% rate compared to the control, with no significant difference recorded in Arnie. Peg strength increased at the 75% rate in both varieties; however, no significant difference among varieties was observed. Digging efficiency also increased significantly at the 75% rate in both varieties and was significantly higher in Georgia-12Y than in Arnie. Arnie had higher pod yields than Georgia-12Y but showed no significant differences among application rates, while Georgia-12Y exhibited a significant yield increase at the 100% rate compared to the control. These results suggest that reduced rates of prohexadione calcium effectively managed vine growth and improved digging efficiency. Varietal responses differed, with Georgia-12Y showing greater height reduction and improved digging efficiency, while Arnie consistently produced higher pod yields under all treatments.

The Evolution of the Spanish Peanut (*Arachis hypogaea*) through Selective Breeding

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The Spanish peanut (*Arachis hypogaea* var. *fastigiata*), a key cultivar in the peanut industry, has undergone significant evolution through selective breeding and hybridization. Originally domesticated in South America, the Spanish peanut is valued for its high oil content, compact growth habit, and distinct flavor. Over time, breeders have employed traditional crossbreeding techniques and modern genetic tools to enhance its agronomic traits, including disease resistance, drought tolerance, and yield improvement.

Early breeding efforts focused on selecting naturally occurring mutations and crossing with other peanut varieties, such as the Virginia and runner types, to introduce desirable traits while maintaining the small-seeded, high-oil characteristics of Spanish peanuts. Hybridization efforts have successfully introduced resistance to fungal diseases such as *Cercospora arachidicola* (early leaf spot) and *Aspergillus flavus* (aflatoxin contamination). In recent years, molecular marker-assisted breeding and genomic selection have accelerated the improvement of Spanish peanut cultivars, allowing for precise trait selection and shorter breeding cycles.

This poster explores the genetic evolution of the Spanish peanut through crossing, highlighting key breeding programs, genetic advancements, and the future potential of biotechnology in peanut improvement. Understanding these evolutionary changes is crucial for ensuring the sustainability and economic viability of Spanish peanut production in a rapidly changing agricultural landscape.

Strategies of Iron Management in Alkaline Sandy Soils for Peanut Production in North Florida

COMITRE, G.A.*, PIROLI, V.B., VIKASH, V., BOLTON, L., SIDHU, S.S, Agronomy Department, University of Florida – North Florida Research and Education Center, Institute of Food and Agricultural Sciences, Quincy, FL 32351; KUMAR, S., North Florida Research and Education Center-Suwannee Valley, University of Florida – Institute of Food and Agriculture Sciences, Live-Oak, FL 32060.

Iron (Fe) plays a critical role in photosynthesis, enzyme activation, chlorophyll synthesis, and nitrogen fixation. This study evaluated the efficacy of Fe-EDDHA applied via soil and foliar methods in peanut (Georgia O6-G) cultivation under high-pH sandy soils across two growing seasons, 2022 and 2024, at the North Florida Research and Education Center (NFREC) in Live Oak. A Randomized Complete Block Design (RCBD) was implemented with five treatments and four replications, T1- Control, T2- In furrow at planting (5lb/acre), T3- Banding at planting (5lb/acre), T4- Spray (1.5 lb/acre) start 35 DAP every week for 5 weeks, and T5- Spray (2.5 lb/acre) start at 35 DAP. Soil and tissue Fe concentrations were assessed throughout the growing season. The statistical analysis was performed in R software using LSD at a 5% significance level. Results indicated that Fe content in soil and plant tissues varied by treatment and DAP. In 2022, T2 achieved the highest yield, whereas T4 recorded the lowest. No significant differences were observed for TSMK, damage, hull, or other kernel parameters. In 2024, T2 and T4 yielded the highest production, while T1 had the lowest. TSMK was highest in T2, T4, and T5, while T1 exhibited the lowest. Hull percentages were highest in T1, whereas T2 and T4 had lower hull content. T1 and T3 had the highest split and other grain fractions, while T4 had the lowest. In overall, sprayed treatments achieved highest Fe content in tissues. Fe content in soil was no statistic significant among the treatments.

Utilizing Flow Cytometry to Estimate the Genome Sizes of Various *Arachis sp*. Species from Multiple Taxonomic Sections

COSTELLO, K.*, STELLY, D., HODNETT, G., Texas A&M, Department of Soil and Sciences, College Station, TX, 77840, CASON, J., SIMPSON, C., Texas A&M Research, Texas A&M University System, Stephenville, TX 76401, VERCHOT, J., Texas A&M, Department of Soil and Crop Sciences, Department of Plant Pathology and Microbiology, College Station, TX, 77840.

Various cytological methods have been used to determine *Arachis sp.* genome composition and size. Older methods such as Feulgen microdensitometry of individual nuclei often lead to an overestimation of the peanut genome size due to various factors affecting the accessibility and binding of the Feulgen stain. Using reassociation kinetics of single-copy DNA also resulted in an overestimation of the *Arachis* genome. Flow cytometry with fluorescently stained DNA has since been found to be a much more accurate method than Feulgen microdensitometry. This method has been used to correctly estimate the genome size of several *Arachis* species including cultivated peanut (*Arachis hypogaea* L.). Although flow cytometry has been found to be more accurate than these older methods, only a portion of *Arachis* species genomes have been reported using this method. Along with this, the only species that have been analyzed using this method are from the *Arachis* section. While the *Arachis* section does include a large portion of *Arachis* species, there are eight other sections that still need to be covered. This project will be using flow cytometry to analyze the DNA content of peanut species from eight of the nine *Arachis* sections. We will utilize every species currently available in the collection in Stephenville, TX from the *Arachis, Caulorrhizae, Erectoides, Extranervosae, Heteranthae, Procumbentes, Rhizomatosae,* and *Triseminatae* sections. This information will help fill a gap in the literature regarding the genome sizes of various wild *Arachis* species, which will benefit peanut breeders going forward.

Development and Analysis of Crosses Made from Runner Introgression Populations for High Oleic Oil Content and Resistance to Early Leaf Spot in Peanut

GAUS-BOWLING, T.*, Biological Sciences, Amarillo College, Amarillo, TX 79178, and Texas Tech University, Dept. of Plant and Soil Science, Lubbock, TX 79409**;** BENNETT, R., USDA-ARS, Stillwater, OK 74075; CASON, J., and SIMPSON, C., Texas A&M AgriLife Research, Stephenville, TX 76401; TENGEY, T., Savana Agricultural Research Institute, Ghana; and BUROW, M., Texas A&M AgriLife Research, Lubbock, TX 79403, and Texas Tech University, Dept. of Plant and Soil Science, Lubbock, TX 79409.

The peanut (*Arachis hypogaea* L.) is a crop that is cultivated in semiarid, tropical, and sub-tropical regions. This leguminous crop provides a major source of protein and oil worldwide. There are several foliar diseases that severely limit peanut yield, and one that impacts production the most is early leaf spot (ELS) (caused by *Cercospora arachidicola* S. Hori) (Berk. and Curtis) Deighton]. This fungal disease can cause significant yield losses in most of the areas where peanuts are grown, decreasing profitability to growers. Oftentimes, multiple diseases occur in the same field with at times one being more prevalent than the other. Pod losses can exceed 50% in fields where the diseases are not managed properly and when environmental conditions favor fungal pathogens. Additionally, multiple foliar diseases can cause complete defoliation (Knauft, Gorbert, & Nordern, 1988). The purpose of this study is to evaluate crosses between runner introgression lines for high oleic oil content and resistance to early leaf spot and early maturing, high oleic. Crosses were made between resistant BC_3 introgression lines from the TxAG-6 x Florunner population, and early-maturing runner breeding lines. Hybridity was confirmed by KASP Genotyping of the high oleic trait. This population was planted in 2022 and one ELS rating was taken and significant difference in resistance was observed. In Spring of 2025 KASP Genotyping for ELS markers was completed, and conferred phenotype results from Yoakum.

APRES Board of Directors Meeting Minutes 15 July 2025

Date: July 15, 2025
Location: Omni Richmond Hotel, Virginia

Attendance

Board Members: Shelly Nutt, Kelly Chamberlain, Emi Kimura, Maria Balota, Rebecca Bennett, Peggy Tsatsos, Soraya Bertioli, Keith Rucker, Nick Shay, Gary Schwarzlot, Dan Anco, Nick Shay.

Committee Chairs/Representatives: Darlene Cowart, Albert Culbreath, Brendan Zurweller, Kayla Eason, Todd Baughman, Chris Butts.

Staff: Richard Owen, Christina Taylor, Renee Deuell.

1. Call to Order

President Rebecca Bennett called the meeting to order at 5:08 PM.

2. Approval of Previous Minutes

Motion: Maria Bolota moved to approve the previous meeting minutes from July 7, 2025.
Second: Shelley Nutt
Outcome: Motion carried.

3. Meeting Update

Christina Taylor reported 247 attendees and 47 spouse members registered for the Annual Meeting. Attendance would have set a record if not for government travel restrictions.

4. Peanut Science Journal Update

- Publishing one issue annually; continuous article publication as approved.
- Volume 51 (2024): 15 articles; avg 197 days (submission to acceptance), 88 days (acceptance to publication).
- Volume 52-1 (2025): 13 articles; avg 55 days (submission to acceptance), 18 days (acceptance to publication).
- Volume 52-2 will be a commemorative issue featuring textbook-style review articles.
- Projected budget surplus from *Peanut Science* (income over expenses): $3,000 for FY25.
- Rejection rate: 2 out of 30 submissions.

5. Spouse Program

- $25 spouse/family fee added to cover expenses like breakfast, snacks, dinners, and social events.
- Suggestions include more control for the spouse room, engaging local tourism boards, and revisiting registration fee structures.

6. Finance Committee Report

- FY25 projected income: $158,000; Projected expenses: $177,000
- Projected net $12,000 deficit

Motion: Brendan Zurweller moved to implement a flat $1,500 fee for publishing in *Peanut Science*.
Second: Bob Kemerait
Outcome: Motion passed

Motion: Brendan Zurweller moved to add a co-editor to *Peanut Science* with a $5,000 stipend and $2,000 travel allowance.

Second: Keith Rucker
Outcome: All in favor.

- Discussions on timing and affordability of dues/registration increases followed.

7. Committee Reports (detailed committee reports will be submitted at Annual Business Meeting)

- Program: Positive feedback on session structure.
- Peanut Quality: Discussed aflatoxin data, peanut oil content, and breeding needs.
- Publications: Restore listing of past award winners in proceedings.
- Site Selection: Puerto Rico (2026), Texas and Southeast cities under consideration for 2027 and 2028 (FY27-FY28).
- Graduate Lunch: 64 students, social media engagement encouraged.
- Fellow of the Society: Nominees will be announced at Annual Business Meeting.
- Coyt T. Wilson Award: No nominations.
- Corteva Awards: Winners will be announced at Annual Business Meeting.
- Bailey Award: Winner will be announced at Annual Business Meeting; process improvements discussed.
- Joe Sugg Award: Presentations ongoing; 63 total student participants.
- Nominating Committee: Greg MacDonald selected as 2025–2026 President. All other board members will continue. There will be a new representative from the APRES Graduate Student Organization when a new President is selected on Thursday.

8. Executive Officer Transition

- Richard Owen announced departure from APC and APRES effective September 1.
- Interviews in progress; new hire expected by September.
- Bob Kemerait acknowledged Richard's leadership.

9. New Business

No new business introduced.

10. Adjournment

Motion: Bob Kemerait moved to adjourn the meeting.
Second: Maria Bolota
Outcome: Meeting adjourned at 6:32 PM.

AMERICAN PEANUT RESEARCH & EDUCATION SOCIETY, INC.

57th Annual Business Meeting

July 17, 2025
5-6 PM
Richmond, Virginia

Agenda

1) Call to Order	Rebecca Bennett, President
2) Old Business:	
Committee Reports	
• **Presidents Report**	Rebecca Bennett
• **Nominating Committee**	Bob Kemerait, Chair
• **APRES Graduate Student Organization**	Nick Shay, President
• **Site Selection Committee**	Todd Baughman, Chair
• **Program Committee**	Maria Balota, Chair
• **Peanut Quality Committee**	Chris Liebold, Chair
• **Publications and Editorial Committee**	Albert Culbreath
• **Public Relations Committee**	Darlene Cowart, Chair
3) Award Presentations:	
a. Fellows	Barry Tillman
b. Corteva Agriscience Research and Education	Mark Abney, Chair
c. Bailey Award	Kayla Eason, Chair
d. Joe Sugg Graduate Student Competition	Bob Kemerait, Chair

4) Passing of Gavel: President Rebecca Bennett to President-elect Maria Balota

a. Recognition of retiring board members

b. Past President's Award

5) Adjourn to Awards Reception – *Sponsored by Corteva Agriscience*

2025 APRES Nominating Committee Report

Bob Kemerait, Chairman

2025 New Board Members and Officers:
Maria Balota, President (Virginia Tech) (2027)
Greg MacDonald, President-Elect (Univ. of FL) (2028)
Rebecca Bennett, Past President (USDA-ARS) (2026)
Ranadheer Reddy, APRES Graduate Student Organization (2026)

Continuing Board Members:
Dan Anco, Clemson Univ. (2028)
Kelly Chamberlain, USDA ARS (2026)
Soraya Bertioli, Univ of Georgia (2027)
Clay Garnto, Premium Peanut (2027)
Emi Kamura, Texas A&M (2026)
Peggy Tsatso, Mars Wrigley (2026)
Shelly Nutt, Texas Peanut Producers Board (2026)
Keith Rucker, The Peanut Research Foundation (2026)
Neal Baxley, National Peanut Board (2027)
Ex-officio – Gary Swartzlose, By-Laws Committee Chair (2026)
Ex-officio – Richard Owen, APRES Executive Officer (2026)

APRES Graduate Student Organization Annual Report FY2025

Nicholas J. Shay, Ph.D.

The APRES Graduate Student Organization (GSO) continued its tradition of representing student members and collaborating with the APRES Board of Directors. In FY2025, the GSO committee worked closely with APRES to develop and implement student-focused activities for the 57th Annual Meeting held at the Omni Richmond Hotel in Richmond, Virginia.

Key Activities

Graduate Student Social: Following the ice cream social, a graduate student social was organized at Scott's Addition Brew Crawl, fostering networking and camaraderie among attendees.

Student Luncheon: Sponsored by Syngenta, the luncheon provided a platform for students to engage with peers and industry professionals during the annual meeting.

Goofy Goober Newsletter

The GSO committee set ambitious goals to enhance the *Goofy Goober Newsletter*, improving readability and engagement. The revamped newsletter featured:

- Impactful stories from members
- A historical overview of peanut production in Virginia
- Highlights of 2024 annual meeting award recipients
- Peanut industry news
- Introductions to the APRES GSO committee
- Inspirational messages in the Editor's Corner

Social Media Presence

In 2025, the GSO significantly increased its social media engagement, connecting with members and the public to promote activities and share updates throughout the year.

Leadership Transition

During the student luncheon at the 57th Annual Meeting, new GSO committee members were nominated and elected to lead the organization in FY2026. The incoming leadership includes:

- **President**: Ranadheer Reddy Vennam (former Vice President)
- **Vice President**: Malarvizhi Sathasivam
- **Recorder**: Teresa Gaus-Bowling
- **Social Media Chair**: Vikash Verma

Acknowledgments

The GSO extends heartfelt gratitude to the outgoing committee members for their dedication and contributions to the organization's success:

- Nicholas Shay (President)
- Samantha Bowen (Recorder)
- Aasish Pokhrel (Social Media Chair)

The APRES GSO remains committed to fostering student engagement, professional development, and impactful contributions to the peanut research community.

Site Selection Committee Report
Todd Baughman, Chair

The site selection committee met on Tuesday July 15th at the Omni Hotel in Richmond, VA. In attendance were: Todd Baughman, David Langston, Kris Balkcom, Cristina Taylor, and Rebecca Bennett. The 2026 meeting will be held at the Caribe Hilton – San Juan, Puerto Rico from July 14-16th. Member should watch for the earlier registration which will hopefully come out in late January or early February. The following locations were discussed for the 2027 meeting which will be held in the southwest region: Omni - Corpus Christi, Moody Gardens – Galveston, San Antonio, Sante Fe, NM, and Bentonville, AR. Finally, the following locations were discussed for the 2028 meeting which will be held in the VC region: Asheville, Raleigh, and Wilmington, NC, and Norfolk and Charlottesville, VA. Christina Taylor will begin checking on rates and availability for the 2027 and 2028 meetings. If anyone has any additional potential locations, please get in contact with one of the site selection committee members.

2025 PROGRAM COMMITTEE REPORT

Committee Members

David Langston, Local Arrangements Chair

- Dan Anco, Technical Program, Chair
- Beth Langston, Spouses' Program Chair; Suzanne Pruitt, Donna Holbrook, Jennifer Tillman
- Maria Balota, Program Committee Chair

Committee Planners

- Rebecca Bennett, APRES President
- Richard Owen, APRES Executive Officer

Christina Taylor, Gene Crawford, and Renne Deuell, APRES Staff

Participation:
247 registered attendees & 47 spouses and family members
97 oral presentations from which 22 MS and 19 PhD Joe Sugg presentations
57 posters from which 7 MS and 16 PhD student competition posters
Total of 154 presentations from which 64 student competition presentations

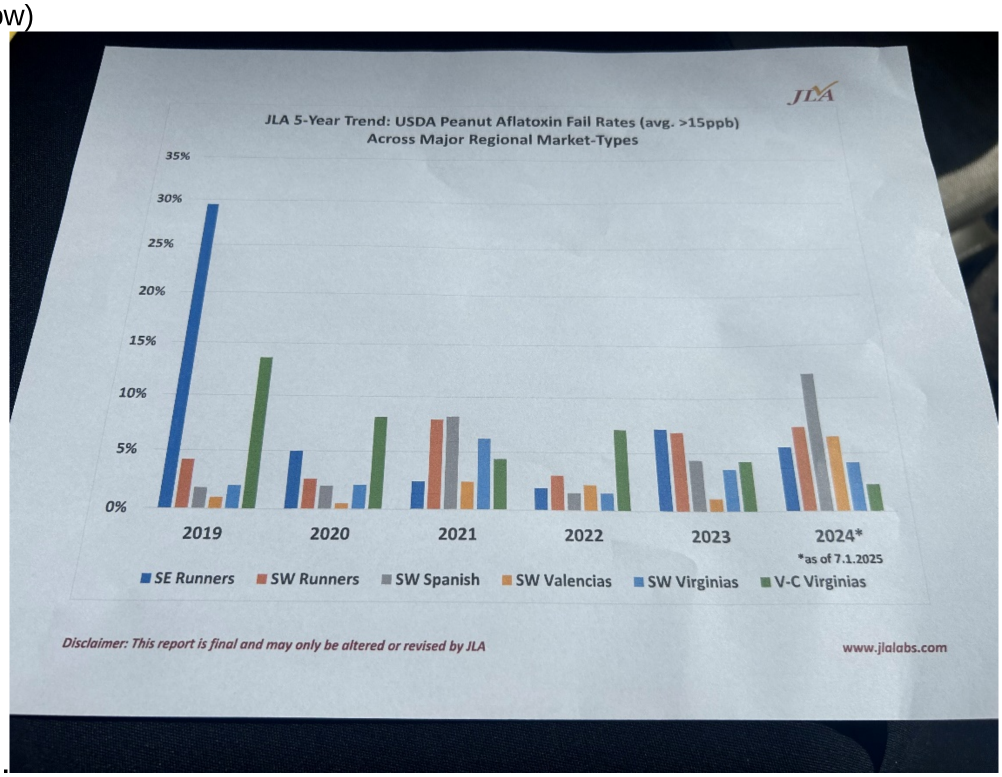
Sponsorship:
33 meeting sponsors: Bayer, BASF, Corteva Agriscience, Birdsong Peanuts, Syngenta, NC Peanuts, Hudson Alpha, VA Peanuts, FMC, VT/Tidewater AREC, Texas Peanuts, National Peanut Board, Premium Peanut, QualiSense, Hampton Farms, Coastal Agribusiness, FINE, JLA, Visjon Biologics, Smucker, ADAMA, OFI, Golden Peanut, Georgia Peanuts, Helena, Crop Excellence, Valent, Farm Credit, NICHINO, Wilco Peanut, Full Moon Engineering, American Peanut Council, AMVAC.
9 field tour sponsors: Ben-Gar Farms, Colonial Farm Credit, AMADAS, James River Equipment, Hoober Inc., VA Peanut Growers, NC Peanut Growers, Birdsong Peanuts, Tidewater AREC
1 Spouses' Program sponsor: Nutrien

Program:
Charles Simpson Wild Species Session, early morning Thu
Grower-Focused Session, mid-morning Thu.

Peanut Quality Committee Report

2024-25	Term End	Rep
Nino Brown, UGA	2025	Breeder (1)
Waltram Ravelombola, TAMU	2025	Breeder (1)
Julie Marshall, LCU	2025	Chemist (3)
Chris Liebold, Smuckers, Chair	***2026***	***Manufacturer (3)***
Peggy Tsatsos, Mars	2026	Manufacturer (3)
Donald Chase, GA Peanut Board	2027	Grower (3)
Raegan Wiggins, Premium	2027	Sheller (3)
Wilson Faircloth, Syngenta	2027	Services (3)

- Review of Past Meeting Notes – **Chris L.**
  - 2024 meeting notes shared out and no additional builds from the team.
- 2024 Raw Peanut Quality Result - **Chris L.**
  - Aflatoxin - **David D. (JLA)**
    - 5-Year Trend Data
- David D. shared the aflatoxin results from several years. 2024 is elevated in atox, but nothing is not worthy, other than SW Spanish peanuts are elevated higher than others,with failure rates about 10% (data below)



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- Seed Composition – **Julie M. (LCU) / JLA**
  - Protein
    - Protein for this crop year has remained consistent vs. pervious years at 23%.
    - JLA noted the same in their data.
    - Discussion on there has been a gradual decline over the years though.
    - Ask of the industry, breeders, etc. to keep protein top of mind.
    - Is there a need for high protein? Not at this time… sharing more for awareness to ensure its maintained.

        - % Fat
            - Fat remains fairly consistent year to year. Do you see a difference in the fat from the breeder vs. in the actual crop? Maturity plays a role in developing fat. Has the selection for larger seed led to higher fat in varieties?
        - Sugar
    - Federal/State Grade - **USDA**
        - 5-Year Trend
            - Raegan shared the data that things appear to be consistent year over year.
    - Shell-Out – **Sheller Representative**
        - 5-Year Trend
    - Federal/State vs. Shell-Out Data **– Committee Discussion**
        - Damage tends to be higher for shell data. Likely due to issues with the cucumber bug or burrow bug and lower maturity.
- High Oil Peanut Awareness
    - Segregation Impact – Potential Solution – **Committee Discussion**
        - The high oil peanut is for a certain industry. So the need for segregation is warranted.
        - Could it be isolated to a certain growing region?
    - % Fat vs. % Protein correlation **– Julie M. (LCU)**
        - Group discussion on this correlation. Everyone agrees the inverse relationship does exist.
    - SOI of PB 55% Total Fat – **Chris L.**
        - Peanuts that exceed do not meet the standard of identity for peanut butter—more for awareness than acting against.
- SE UPPT **- Nino Brown (UGA) / Barry Tillman(UF)**
    - Update
    - Help Needed
        - Sheller Characteristics & Quality
        - Flavor and Other Quality Traits
        - Funding Support needed. Plenty of interest, but what's the best approach?
        - Lots of discussion on quality traits to follow. The committee landed on Flavor, % Fat, O/L ratio, % protein, % sugar, fatty acid profile, and tocopherols as things to measure.
        - Peggy T (Mars) shared the 10:1 O/L ratio target as an example for HO peanuts .
        - Breeders asked for benchmarks for those traits.
            - Sub-Committee formed of Peggy T (Mars), Matt S. (JMS), Chris L. (JMS), and Kelly C. (USDA) to develop that. The team will also reach out to Lindsey (Algood).
        - Measuring those takes money, so how to fund it? UPPT Teams to submit a joint proposal to the Peanut Research Foundation.
        - Can provide better funding proposals once the quality metrics are set.
- VC UPPT – **Jeffery Dunn (NC State)**
    - Update
    - Help Needed
        - No help needed, but echoed the need for benchmarks.
- SW UPPT- **John Cason (Texas A&M)**
    - Update
    - Help Needed
        - No help needed, but echoed the remarks about needing benchmarks.
- Quality Traits to Monitor
- Total Antioxidant Capacity (Tocopherol follow-up) **– Julie M. (LCU)**
    - Measurement of tocopherols is straightforward. Once you run fatty acid, you dilute and shoot.
    - Post Quality Harvest Traits - **Committee**
        - Flavor
            - Flavor is an important metric. Some commented that the flavor may have declined somewhat.
        - Seed Size Concerns?

- Manufacturers prefer medium-sized peanuts.
      - Donald Chase discussed the need for a smaller seed size to assist the farmer's economics. Farmers prefer medium or smaller sizes due to that.
    - Blanching Concerns?
  - Pesticides update – **Marshall Lamb (USDA)**
- Improvement Opportunities **– Committee Discussion**
  - How can we utilize peanut quality traits to show sustainability metrics? **– Raegan (Premium)**
    - The group agreed that this would be a good exercise.
    - Leverage UPPT data to do this.
    - National Peanut Board leverages USDA data to share a sustainability story of peanuts to customers (Walmart, Costco, etc.) Unfortunately, the USDA no longer collects the data.
    - Dr. Cason mentioned using the carbon footprint as another metric. Used by oil industry
    - The Seam is working on collecting data at the farmer level.
    - Foy Mills (JLA) shared an article published ~ 1 month ago that provides a comparison of peanut vs. other protein sources. He's going to share with Chris L. to distribute.
  - APRES 2026 Combine Seed Summit with Peanut Quality Committee **– Chris L. (JMS) / Nino B. (UGA)**
    - Used to be together. Breeders held round tables with manufacturers.
    - The group agrees it would be great to bring them back together or at least have them back-to-back.

Publications and Editorial Committee Report

Albert Culbreath, Chair

TO: Dr. Maria Bolata
FROM: Albert Culbreath
RE: Publications and Editorial Committee
DATE: Aug 10, 2025

The Publications and Editorial Committee met Tues, July 15, 2025. Members present were Albert Culbreath and Leanne Lux. Chris Butts and Mark Abney also participated in the discussion. Prior to the meeting, we had email discussions with Peanut Science Editor Chris Butts regarding a proposal to establish an Editorial Succession for *Peanut Science.* A copy of the original proposal from Chris is attached. In short, we proposed that in addition to the Editor, Peanut Science should have a co-editor, to serve a 3-year term. It would be a compensated position ($5,000 compensation + $2,000 to cover travel to the APRES meeting per year). The succession would also include the “Past Editor” in a non-compensated, primarily advisory position. The Past Editor would serve a three year term after having served as Editor. We presented the proposal to the Finance Committee before proposing it to the Board of Directors.

In collaboration with Chris Butts and the Peanut Science Editors, we proposed setting a flat fee ($1,500) per article published in *Peanut Science*. We presented the proposal to the Finance Committee before proposing it to the Board of Directors.

The Committee recommended publishing lists of Past Presidents, Fellows and other awardees in each issue of the Proceedings of the Annual Meeting.

The Committee discussed a suggestion from Soraya Bertioli to change the format of APRES abstracts. We have suggested changing the format to be more like that used in articles published in Peanut Science, and we have been working on a draft of the proposed style and instructions.

Respectfully Submitted
Albert K. Culbreath

DATE: 02 June 2025

TO: APRES Publications and Editorial Committee
APRES Finance Committee

FROM: Chris Butts, Editor
Peanut Science

SUBJ: Proposal for Editorial Succession of *Peanut Science*

Peanut Science is the peer-reviewed journal of the American Peanut Research and Education Society and has been published continuously since 1974. During that 50+ year history, there have been six (6) editors serving an average of about 8 years each. The Editor of *Peanut Science*, currently serves in perpetuity at the pleasure of the Board of Directors of APRES upon recommendation of the Publications and Editorial Committee. The editor is currently compensated at a rate of $5,000 per fiscal year plus reimbursement of travel expenses and registration to the Annual Meeting.

Beginning with Volume 49, APRES began self-publishing *Peanut Science* and a web platform designed, developed, and supported by Janeway. The previous editor, was responsible for ensuring that manuscripts submitted for possible publication were reviewed Accepted, Revised, or Rejected based on recommendations of Associate Editors and anonymous reviewers. Following acceptance, the editor ensured that the article was in a suitable format for post-acceptance processing and subsequent publication. The previous executive officer received the accepted articles from the editor and processed the articles using a Add-In for Microsoft Word to tag, format, and generate pdf and xml galleys for review by the corresponding author. After acceptance by the corresponding author of the final version, the manuscript was registered with CrossRef and a digital object identifier (doi) was secured, then the article was on the *Peanut Science* platform.

Currently, the Editor of *Peanut Science* performs all functions related to the review and publication of articles in the journal. The Editor currently serves in perpetuity at the pleasure of the Board of Directors of APRES upon recommendation of the Publications and Editorial Committee. The editor is currently compensated at a rate of $5,000 per fiscal year plus reimbursement of travel expenses and registration to the Annual Meeting.

To maintain continuity of publication, the following proposal is presented to the Publications and Editorial Committee and the Finance Committee for consideration and action for a recommendation to the Board of Directors.

The Editorial Board for *Peanut Science* shall consist of the following.

Editor *Duties:* Editor is responsible for the general oversight of the publication of Peanut Science including, developing an annual budget, monitoring costs of publication, coordination with contractors for web platform maintenance, invoicing authors for page charges. Editor is directly responsible for copyediting, typesetting, and publishing articles once accepted. May occasionally fulfill role of Asst. Editor for manuscripts where Assistant Editor has a perceived conflict of interest. *Term:* Editor will serve a 3-year term after having served a 3-year term as Assistant. Appointment is recommended by the Publications and Editorial Committee and approved by the APRES Board of Directors. *Compensation:* A combination of stipend not to exceed $5,000 and reimbursement of expenses associated with attending the Annual APRES meeting. Payment of stipend is contingent upon satisfactory performance of duties as demonstrated by the ongoing publication Peanut Science.

Co Editor - *Duties:* Co-Editor is responsible for flow of manuscripts submitted for review including technical checks, assignment of Associate Editors, resolution of conflicts among reviewers when necessary, final acceptance/rejection of submitted articles. Assistant Editor may also assist Associate Editors in securing manuscript reviewers. *Term:* Assistant Editor will serve a 3-year term. Upon completion of that 3-year term as Co-Editor, they will become the Editor. Appointment shall be recommended by the Publications & Editorial Committee and approved by the APRES Board of Directors. Should have served at least term as Associate Editor, if possible. *Compensation:* A combination of stipend not to exceed $5,000 and reimbursement of expenses associated with attending the Annual APRES meeting. Payment of stipend is contingent upon satisfactory performance of duties as demonstrated by manuscripts progressing through the review process.

Past Editor - *Duties:* The Past Editor assists the Editor and Co-Editor in navigation of the submission and publication platform. Serves as Editor or Assistant Editor occasionally as needed. *Term:* 3 years following completion of term as Editor. *Compensation:* None.

Associate Editors - *Duties:* Associate Editors are subject matter experts and primarily responsible for securing peer reviews for manuscripts submitted for possible publication in Peanut Science. *Term:* Associate Editors will serve a 3-yr term, renewable for one additional 3-year term (total 6 years). Appointments are recommended by the Editor and Associate Editor and approved by the Publications and Editorial Committee. *Compensation:* None. Recognition upon completion of their term of service. *Suggested Subject Matter Areas:* Agronomy, Breeding/Genetics/Genomics, Economics/Sustainability, Engineering, Food Science/Food Safety, Pathology, and Weed Science

Reviewers - As needed (volunteer)

The budget for *Peanut Science* including the proposed compensation for the Editor and Co-Editor for FY2026 (July 2025 – June 2026) is shown on the following page.

FY 2026

July 1 2025 - June 30 2026

Expenses		**Unit Cost**	**Units**	**Quantity**		**Net**
Janeway Platform Subscription	$	3,500	Annual	1	$	3,500.00
Typesetting Add-In for Word/Article (icTect Tools, Inc)	$	200	Article	16	$	3,200
DOI Registration (Crossref)	$	1	Article	16	$	16
Editor Stipend	$	5,000	Annual	1	$	5,000
Editor Travel Expenses (APRES Annual Meeting)	$	2,000	Annual	1	$	2,000
Asst. Editor Stipend	$	5,000	Annual	1	$	5,000
Asst. Editor Travel Expenses (APRES Annual Meeting)	$	2,000	Annual	1	$	2,000
Total Annual Expenses					$	20,716.00
Income						
Page Charges						
Number of Articles per year		16				
Number of Pages per Article		9				
Page Charges per Article				$ 920		
Total Annual Income					$	14,720
Net (Income minus Expenses)					$	(5,996.00)

Finance Committee Report

Brendan Zurweller, Chairman

The finance committee met at the APRES meeting on July 15, 2025. Finance committee members present was Brendan Zurweller, Christiane Pilon, and Foy Mills. Other people present at the meeting was Richard Owen, Renee Deuell, and Christopher Butts. The 2025 budget was reviewed by members and discussions occurred regarding the financial deficit the society has incurred since 2022. Christopher Butts also outlined the Peanut Science editorial proposal of including travel ($2,000) and stipend ($5,000) compensation for the journal co-editor with an additional cost of $7,000 per year. The Peanut Science proposal also included changing the Peanut Science publishing fee from a page charge to flat rate fee. The committee approved the following motions for the APRES board of directors to consider: (i) increase membership dues by $100 for professional members to increase society revenue; (ii) add a co-editor stipend and travel expense of $7,000 per yer to improve long-term journal editor continuity; (iii) set Peanut Science publishing fees at a flat rate fee of $1,500 per article instead of the current page charge structure.

INCOME	2025 BUDGET
ANNUAL DUES	18,125.00
ANNUAL MEETING REGISTRATIONS	52,225.00
ANNUAL MEETING SPONSORSHIPS	64,400.00
PEANUT SCIENCE	20,760.00
BOOK SALES & SHIPPING	-
INTEREST & MISC INCOME	3,000.00
TOTAL INCOME	$158,510.00
EXPENSES	
ANNUAL MEETING	96,825.00
APC MANAGEMENT FEE	40,000.00
WEBSITE & DATABASE	8,000.00
PEANUT SCIENCE	17,622.00
BOOK PUBLISHING:	-
ADMINISTRATIVE	8,000.00
TOTAL EXPENSES	$170,447.00
SURPLUS/DEFICIT	$ (11,937.00)

Public Relations Committee Report

July 2025

Attendees: Darlene Cowart (Birdsong Peanuts), David West (GA Peanut Comm.)

Updates on current necrology report

Thomas G. Isleib, North Carolina State University
James L. Moore, JRJ James Brokerage
James Earl Carter, Jr – 39th President of the US, Peanut Farmer
Wilbur T. Gamble, Jr – Chairman, GA Peanut Commission
Dr. Ron Henning – University of Georgia
St. Elmo Harrison – Georgia Peanut Farmer 101 years old
Robert “Bob” Moss – UGA Experiment Station, Plains, GA
Glen Walters – Retired APPA Board Member – AL farmer
Lowell Bristow – NPBA Retired Board Member – AL farmer
Johnny Barnes – NC Grower
Jimmy Mason – PGCMA Board Member, NC Grower
Alan Ortloff – Clint Williams Co, OK
Jackie Don Simpson – Birdsong Peanuts – SW Division

Notable retirements in past year

Tim Brenneman, University of Georgia
Ken Barton, Florida Peanut Producers Association
Hugh Nall, Southern AG Carriers
Steve Brown – Peanut Research Foundation Exec. Director
Dell Cotton – PGCMA, Franklin, VA
Glenn Harris – University of Georgia

Cross-Promotion Opportunities

2025

- APRES Fun Run on Thursday morning, July 17 at 6:00 a.m.
- Donated Peanut Proud Peanut Butter to Central Virginia’s Feed More. $4,630 so far and matching funds from Peanut Butter for the Hungry.
- PREA Award to Dr. Barry Tillman
- APC Lifetime Achievement Award – Dr. Tim Brenneman

2026 and beyond

- Initiate the 2026 donation during APRES registration and donate Peanut Proud peanut butter or a monetary donation to a food bank in Puerto Rico.

Collaborative Event Forum Suggestions:

Article in Regional Farm Magazines about APRES – historical perspective – David West

APRES Fellow Award Committee Report

July 12, 2025

The APRES Fellow Committee received the following three (3) nominations:
Darlene Cowart, Birdsong Peanuts, nominated by Rebecca Bennett
Charles Chen, Auburn University, nominated by Austin Hagan
Bao Zhu Guo, USDA-ARS Tifton, nominated by Corley Holbrook

All candidates were unanimously accepted to receive the honor of APRES Fellow.

1. Dr. Darlene Cowart

Dr. Darlene Cowart's election as Fellow of the American Peanut Research and Education Society (APRES) reflects her groundbreaking impact on peanut food safety, industry leadership, and service to the profession. With over three decades dedicated solely to peanuts, Dr. Cowart has emerged as a national voice for food safety, earning widespread respect across industry and academia.

As Vice President of Food Safety and Quality at Birdsong Peanuts, she has spearheaded critical quality and safety initiatives and served as the industry's technical representative during major events, including testifying before Congress during the PCA salmonella outbreak. Her leadership catalyzed meaningful change—helping shape legislation like the Food Safety Modernization Act.

Her service spans the USDA Peanut Standards Board, the American Peanut Shellers Association, the Peanut Institute, the Peanut Research Foundation, and the American Peanut Council. She has played pivotal roles in promoting aflatoxin research, implementing safety standards for U.S. peanuts, and strengthening international market protocols.

Dr. Cowart also led the Peanut Institute's research committee and personally advanced its mission, including helping to select its executive director. She wrote a chapter in a foundational peanut textbook, and regularly engages media to educate and advocate. Even during peak shelling seasons, she hosts plant tours and supports public outreach.

Through APRES, she served on key committees (Public Relations, Finance, Peanut Quality), the Board of Directors, and as a recurring symposium speaker, showcasing her dedication to educating and leading across disciplines.

As one evaluator stated, "When serious technical issues arise in the US Peanut Industry, especially around food safety and/or food quality, Dr. Cowart is often the first person called to provide her perspective and organize an industry response." For all these reasons, her election as Fellow of APRES is both a recognition of immense influence and a testament to lifelong service.

2. Dr. Baozhu Guo

Dr. Baozhu Guo's election as a Fellow of the American Peanut Research and Education Society (APRES) underscores an extraordinary career spanning over three decades in plant pathology, with a significant impact on peanut disease resistance and genomics. As a Research Plant Pathologist in the USDA-ARS since 1996, Dr. Guo has pioneered efforts in mitigating aflatoxin contamination and enhancing resistance to TSWV, nematodes, and leaf spots through genetic and genomic innovations.

Among his major achievements are the development of foundational genetic resources, including expressed sequence tags, QTL maps, and microarrays for peanut, which were instrumental in sequencing the cultivar "Tifrunner" as the reference genome. His leadership in launching and advancing the U.S. Peanut Genome Initiative has driven international collaborations and genomic breakthroughs.

From 2020 onward, Dr. Guo led the creation of the first Aspergillus flavus pangenome and developed the PeanutMAGIC population—over 2,500 RILs—for high-resolution trait mapping, including newly identified genetic markers for resistance to TSWV and root-knot nematodes, and enhanced oleic acid content.

He has authored over 200 peer-reviewed publications and mentored numerous students, many of whom have achieved national recognition. His service to APRES includes committee leadership and significant contributions to graduate student development, fostering the next generation of researchers and advancing the society's mission. In the words of one former student: "To say Dr. Guo is a good mentor, is a gross understatement. His students are not a simple requirement of his position nor a line on a CV, but an honor that he upholds. Not only has he facilitated an environment to develop my scientific career through resources and connections but has improved my character through his wisdom and challenging experiences."

Dr. Guo's research has not only propelled scientific understanding but also enabled practical breeding tools for peanut improvement, earning him prestigious awards and a global reputation. His recognition as a Fellow of APRES reflects a legacy of innovation, mentorship, and transformative contributions to agricultural science.

3. Dr. Charles Chen

Dr. Charles Y. Chen’s induction as a Fellow of the American Peanut Research and Education Society (APRES) underscores his significant contributions to peanut breeding, genetics, and crop science. With over two decades of experience spanning academic and government research, Dr. Chen has elevated peanut breeding through pioneering development of high-yield, disease-resistant, and drought-tolerant cultivars—most notably the runner-type ‘AU-NPL 17’, which combines disease resistance and high yield.

He has secured more than $15 million in extramural funding, with over $4 million directly supporting his innovative research. Dr. Chen’s program has advanced peanut genome resources, identified key QTLs and disease-resistance traits, and provided essential insight into drought tolerance mechanisms through varieties like 'Line8'. His purification of the USDA mini-core peanut collection was instrumental to international breeding efforts and genomic studies.

Beyond research, Dr. Chen is a prolific author with more than 100 refereed publications, multiple patents, and international recognition through invited lectures and collaborations. He has mentored 17 graduate students, guided dozens more, and taught advanced courses in genetic data analysis and plant breeding. Dr. Chen has significantly contributed to APRES through leadership roles including symposium organizer, committee chair, section moderator, and technical program chair, enriching the society's mission through sustained and dedicated service.

His service extends to industry partnerships, technical consulting on seed purity, and co-authorship of vital resources like PEANUT Rx. Collectively, his achievements reflect a career devoted to enhancing peanut production and knowledge, advancing scientific discovery, and supporting the agricultural community all of which warrant his election as a Fellow of the American Peanut Research and Education Society.

Respectively Submitted by

Fellows Committee:

Pete Dotray, TX Tech, Chair 2027 SW
Peggy Ozias-Akins, UGA 2026 SE
David Jordan, NCSU 2026 VC
Barry Tillman, UF 2027 SE

Corteva Agrisciences Awards Committee

Report to the APRES Board of Directors
July 2025

Committee Members:
Mark Abney, Chair (2025)
Jeff Dunne (2025)
John Richburg (2025)
John Cason (2026)
Scott Tubbs (2026)
Ethan Carter (2027)
Michael Marshall (2027)

The call for nominations was sent by APRES on 1 April 2025.

The committee received and evaluated 4 nominees for the Education Award and one nominee for the Research Award.

Winners were agreed upon by the committee, and results were reported to Christina Taylor on 24 June.

The recipient of the Education Award is Dr. Nick Dufault.
The recipient of the Research Award is Dr. Soraya Bertioli.

The 2025 recipient of the Corteva Agriscience Excellence in Education Award works to integrate research, Extension, and teaching, with a focus on helping graduate students and Extension agents apply plant disease management strategies in real world settings. Whether in the classroom or in the field, Dr. Nick Dufault's goal is to build confidence in decision-making by connecting theory with practice.

Our award winner has developed educational programs that combine traditional and flipped classroom approaches. He provides students with a hands-on approach that makes complex topics like fungicide resistance, disease forecasting, and economic decision-making more approachable and meaningful.

Dr. Dufault stated in his nomination package: "My goal is to create learning environments that are collaborative, practical, and grounded in the needs of the people we serve. By supporting both students and agents as they build their skills, I hope to prepare the next generation of agricultural professionals who are ready to solve current and future challenges in plant health."

"Dr. Dufault exemplifies the spirit of the Corteva™ Agriscience Award through his tireless commitment to educational excellence, innovation, and impact. His programs are not only effective and engaging but transformative in how Extension education is delivered in Florida."

"I appreciate [his] support for county Extension work and the way he includes agents in his research and teaching. He has helped make applied trials a regular part of how we educate growers and build local programs. I am honored to support his nomination for the Corteva™ Agriscience Award for Excellence in Education."

Dr. Dufault's work has reshaped how peanut disease management research and education are conducted in Florida. Through over 30 coordinated research trials and a statewide shift to flipped classroom training for Extension Agents, he has built a pipeline that integrates science, education, and stakeholder engagement. His ability to transform fungicide trials into learning laboratories has empowered agents, improved grower decision-making, and prepared students for careers in agriculture.

The work conducted by Dr. Soraya Bertioli, the recipient of the 2025 Corteva Agriscience Award for Excellence in Research, is focused on using wild relatives of peanut to improve and understand pest and disease resistance. This research has tremendous potential impact on the future of peanuts. Her work has created a lasting resource in the form of marker sets, inbred lines, mapping populations, and inter-hybrid crosses that will facilitate the incorporation of wild diversity into peanut breeding programs throughout the world for decades to come. This enables the development of higher-yielding, more sustainable, and profitable peanuts for Georgia and the southeastern U.S., while also contributing to food security for vulnerable populations. She has received numerous honors and awards including the American Peanut Council's Award for Outstanding Contributions to the Peanut Industry. Dr. Bertioli has been extremely productive with a career total of 100 journal publications including papers in PNAS, Nature Genetics, and Nature Biotechnology, seven book chapters, and she has 14 germplasm releases. She also maintains multiple international collaborations to ensure that her work continues to improve food security in developing regions of the world. The overall impact of her research makes her an ideal recipient for the Corteva Award for Excellence in Research.

One reference letter stated, "She is a leader in the field, and for her many contributions, I am happy to nominate her."

Another writes, "While she is deeply committed to improving conditions in developing countries—using peanuts as a tool for impact—she also maintains an unwavering dedication to the U.S. peanut industry, particularly its farmers. Her work is instrumental in promoting the long-term sustainability of the peanut crop."

"Dr. Soraya Bertioli's work has had major impact globally in peanut breeding. I have complete confidence that [she] will continue to be an international leader in plant biology research, and that her work on peanut will continue and have major, ongoing impact. I strongly support her nomination for the APRES Corteva Award for Excellence in Research."

2025 Joe Sugg and Poster Contest Winners

Bob Kemerait, Chairman

Nearly 60 graduate students competed in the Joe Sugg Graduate Student Competition.

Sponsored by: North Carolina Peanut Growers Association and National Peanut Board.

Joe Sugg Winners

PhD category:
1st place – Santiago Emil Joson, University of Georgia
2nd place – Bhavya Shukla, University of Georgia
3rd place – Samuele Lamon, University of Georgia
Masters category:

- 1st place - Fnu Anshul, University of Georgia
- 2nd place – Lucinda McEachin, University of Georgia
- 3rd place – Hannah Grubbs, University of Georgia

NPB National Graduate Student Poster Competition

PhD category:

- 1st place – Nicole Pettit, North Carolina State University
- 2nd place – Jacob Forehand, Virginia Polytechnic Institute and State University

Masters category:

- 1st place – Andrew Marchetti, University of Georgia
- 2nd place – Vikash Verma, University of Florida

Peanut Science Editor's Report

Chris Butts, Editor

2025 Annual Meeting of the American Peanut Research and Education Society

Peanut Science has been published continuously for 51 years since the first volume was published in 1974. As editor, I can report that *Peanut Science* continues to publish research related to all things peanut from the ground to the table.

Beginning with Volume 51, a single volume per year is being published on a continuous basis. Accepted articles are published as they are accepted and as soon as possible. Volume 51(2024) contains 15 articles, eight of which were published between July 1 and December 30, 2024. All articles in Volume 51 took an average of 197 days from submission to acceptance. The average time from acceptance to publication in Volume 51 was 88 days.

From January 1 through June 30, 2025, there have been 13 articles accepted and published in Volume 52, Issue 1. The average time from submission to acceptance for these articles was 255 days. The average time from acceptance to publication was 18 days.

Volume 52, Issue 2 is a commemorative issue commemorating 50 years of *Peanut Science* and contains review articles originally intended for publication as a production technology textbook. Four articles have been received for publication in this issue. Six articles are anticipated. Two articles, "Peanut Seed Maturation, Quality, and Nutritional Composition" by Dean *et al* and "Peanut Physiology and Tolerance to Abiotic Stresses" by Balota *et al* have been published. "Biology and Management of Weeds in Peanut" by Leon *et al.* and "Peanut Growth and Development: From Fertilization to Mature Pod" by Tallury and Simpson have been submitted and are currently under review. Articles on general agronomics by Tubbs *et al.* and economics and sustainability by Lamb *et al.* are still undergoing final rewrites prior to submission.

The FY2025 financial report for *Peanut Science* is shown in *Table 1*.

Table 1. *Peanut Science* financial report for 01Jan 2025 to 30 Dec 2025 (FY2025).

January December 2025 (FY 2025)				
Expenses	**Unit Cost**	**Units**	**Quantity**	**Net**
Actual (January – June 2025)				
Janeway Platform Subscription	$ 3,500	Annual	1	$ 3,500
Editor Stipend	$ 2,500	Bi-annual	1	$ 2,500
Typesetting Add-In for Word/Article (icTect Tools, Inc)	$ 200	Article	10	$ 2,200
Projected (July – December 2025)				
Typesetting Add-In for Book Chapter Review Articles (IcTect Tools, Inc)	$ 200	Article	6	$ 1,200
Typesetting Add-In for Word/Article (icTect Tools, Inc)	$ 200	Article	6	$ 1,200
DOI Registration (Crossref)	$ 1	Article	22	$ 22
Editor Stipend	$ 2,500	bi-annually	1	$ 2,500
Editor Travel Expenses (2025 Annual Meeting)	$ 2,000	Annual	1	$ 2,000
Co-editor Stipend	$ 2,500	Bi-annually	1	$ 2,500
Total Annual Expenses				**$ 17,622**
Income				
Page Charges – 5 Articles published in 2024, Invoiced in 2025				$ 4,360
Page Charges - Articles Published/Invoice Jan – Jun 2025*		6		$ 9,680
Page Charges – Articles to be Published/Invoiced Jul – Dec 2025 **	$ 960	7		$ 6,720
Total Annual Income				**$20,760**
Net (Income minus Expenses)				$ 3,138
*13 articles published, 3 review articles (Book Chapters) published at no charge ** 10 articles anticipated, 3 will be review articles (Book Chapters) or Bailey Award published at no charge				

A proposal to add the position of Co-Editor as a compensated position has been proposed to the Publications and Editorial Committee and the Finance Committee. *Table 2* shows the budget with the proposed compensated co-editor and various scenarios for page charge revenue. Revenue was determined assuming that 16 9-page articles are published during FY2026.

Table 2. Proposed budget for 01 July 2025 - 30 June 2026 (FY2026) with proposed compensated co-editor and proposed page charge rate change.

FY 2026				
January - December 2026				
Expenses	**Unit Cost**	**Units**	**Quantity**	**Net**
Janeway Platform Subscription	$ 3,500	Annual	1	$ 3,500
Typesetting Add-In for Word/Article (icTect Tools, Inc)	$ 200		16	$ 3,200
DOI Registration (Crossref)	$ 1	Article	16	$ 16
Editor Stipend	$ 5,000	Annual	1	$ 5,000
Editor Travel Expenses Annual Meeting)	$ 2,000	Annual	1	$ 2,000
Co-Editor Stipend	$ 5,000	Annual	1	$ 5,000
Co-Editor Travel Expenses (Annual Meeting)	$ 2,000	Annual	1	$ 2,000
Total Annual Expenses				$ 20,716.00
Income*	**Pages Charges**	**# Articles**	**Income**	**Net Income**
Current Page Charges**	$ 920	16	$ 14,720	($ 5,966)
Breakeven @ Current Page Charges	$ 920	23	$ 21,160	$ 444
Flat Rate 1	$ 1,000	16	$ 16,000	($ 4,716)
Flat Rate 2	$ 1,200	16	$ 19,200	($ 1,516)
Flat Rate 3	$ 1,500	16	$ 24,000	$ 3,284

* Unless otherwise stated, 16 articles per year, 9 pages per article

** $80 per page for pages 1-4, $60/half-page for pages 5+

In order for *Peanut Science* to break-even with both an editor and co-editor compensated as proposed, 23 articles would have to be accepted and published annually at the current rate schedule for page charges. Table 2 shows the Net Income/Loss for various scenarios of flat rate page charges.

It should be noted that the page charges have remained the same for *Peanut Science* throughout its 50+ year history. *Peanut Science* is now fully open access with no additional charges for open access in contrast to many comparable journals that charge a surcharge of $1,500 to $2,000 in addition to page charges.

APRES Meeting Sites & Awardees

ANNUAL MEETING SITES

2025 – Richmond, VA
2024 – Oklahoma City, OK
2023 – Savannah, GA
2022 – Dallas, TX
2021 – Virtual
2020 – Virtual
2019 – Auburn, AL
2018 – Williamsburg, VA
2017 – Albuquerque, NM
2016 – Clearwater Beach, FL
2015 – Charleston, SC
2014 – San Antonio, TX
2013 – Young Harris, GA
2012 – Raleigh, NC
2011 – San Antonio, TX
2010 – Clearwater Beach, FL
2009 – Raleigh, NC
2008 – Oklahoma City, OK
2007 – Birmingham, AL
2006 – Savannah, GA
2005 – Portsmouth, VA
2004 – San Antonio, TX
2003 – Clearwater Beach, FL
2002 – Research Triangle Park, NC
2001 – Oklahoma City, OK
2000 – Point Clear, AL
1999 – Savannah, GA
1998 – Norfolk, VA
1997 – San Antonio, TX
1996 – Orlando, FL
1995 – Charlotte, NC
1994 – Tulsa, OK
1993 – Huntsville, AL
1992 – Norfolk, VA
1991 – San Antonio, TX
1990 – Stone Mountain, GA
1989 – Winston–Salem, NC
1988 – Tulsa, OK
1987 – Orlando, FL
1986 – Virginia Beach, VA
1985 – San Antonio, TX
1984 – Mobile, AL
1983 – Charlotte, NC
1982 – Albuquerque, NM
1981 – Savannah, GA
1980 – Richmond, VA
1979 – Tulsa, OK
1978 – Gainesville, FL
1977 – Asheville, NC
1976 – Dallas, TX
1975 – Dothan, AL
1974 – Williamsburg, VA
1973 – Oklahoma City, OK
1972 – Albany, GA
1971 – Raleigh, NC
1970 – San Antonio, TX
1969 – Atlanta, GA

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

PAST PRESIDENTS

Rebecca S. Bennett	2024-25
Robert C. Kemerait, Jr.	2023-24
Mark D. Burow	2022-23
David L. Jordan	2021-22
Gary L. Schwarzlose	2020-21
Barry L. Tillman	2019-20
Rick L. Brandenburg	2018-19
Peter A. Dotray	2017-18
C. Corley Holbrook	2016-17
H. Thomas Stalker	2015-16
Naveen Puppala	2014-15
Timothy B. Brenneman	2013-14
D. Ames Herbert, Jr.	2012-13
Todd A. Baughman	2011-12
Maria Gallo	2010-11
Barbara B. Shew	2009-10
Kelly Chenault Chamberlin	2008-09
Austin K. Hagan	2007-08
Albert K. Culbreath	2006-07
Patrick M. Phipps	2005-06
W. James Grichar	2004-05
E. Ben Whitty	2003-04
Thomas G. Isleib	2002-03
John P. Damicone	2001-02
Austin K. Hagan	2000-01
Robert E. Lynch	1999-00
Charles W. Swann	1998-99
Thomas A. Lee, Jr.	1997-98
Fred M. Shokes	1996-97
Harold E. Pattee	1995-96
William C. Odle	1994-95
Dallas Hartzog	1993-94
R. Walton Mozingo	1992-93
Charles E. Simpson	1991-92
Ronald J. Henning	1990-91
Johnny C. Wynne	1989-90
Hassan A. Melouk	1988-89
Daniel W. Gorbet	1987-88
D. Morris Porter	1986-87
Donald H. Smith	1985-86
Gale A. Buchanan	1984-85
Fred R. Cox	1983-84
David D. H. Hsi	1982-83
James L. Butler	1981-82
Allen H. Allison	1980-81
James S. Kirby	1979-80
Allen J. Norden	1978-79
Astor Perry	1977-78
Leland D. Tripp	1976-77
J. Frank McGill	1975-76
Kenneth H. Garren	1974-75
Edwin L. Sexton	1973-74
Olin D. Smith	1972-73
William T. Mills	1971-72
J.W. Dickens	1970-71
David L. Moake	1969-70
Norman D. Davis	1968-69

FELLOWS OF THE SOCIETY

Dr. Charles Y. Chen	2025
Dr. Darlene M. Cowart	2025
Dr. Baozhu Guo	2025
Dr. Craig K. Kvien	2023
Mr. Jim Elder	2022
Mr. Gary L. Schwarzlose	2022
Mr. Bob Sutter	2021
Dr. Timothy L. Grey	2020
Mr. Michael R. Baring	2019
Dr. Peter A. Dotray	2019
Dr. Barry L. Tillman	2019
Dr. Steve L. Brown	2017
Dr. Eric P. Prostko	2016
Dr. Robert C. Kemerait, Jr.	2015
Dr. Todd A. Baughman	2014
Dr. Austin K. Hagan	2014
Mr. Emory Murphy	2014
Dr. Jay W. Chapin	2013
Dr. Barbara B. Shew	2013
Mr. Howard Valentine	2013
Dr. Kelly D. Chamberlin	2012
Dr. Robin Y. Y. Chiou	2012
Dr. W. Carroll Johnson III	2012
Dr. Mark C. Black	2011
Dr. John P. Damicone	2011
Dr. David L. Jordan	2011
Dr. Christopher L. Butts	2010
Dr. Kenneth J. Boote	2009
Dr. Timothy B. Brenneman	2009
Dr. Albert K. Culbreath	2009
Mr. G.M. "Max" Grice	2007
Mr. W. James Grichar	2007
Dr. Thomas G. Isleib	2007
Mr. Dallas Hartzog	2006
Dr. C. Corley Holbrook	2006
Dr. Richard Rudolph	2006
Dr. Peggy Ozias-Akins	2005
Mr. James Ron Weeks	2005
Mr. Paul Blankenship	2004
Dr. Stanley M. Fletcher	2004
Mr. Bobby Walls, Jr.	2004
Dr. Rick Brandenburg	2003
Dr. James W. Todd	2003
Dr. John P. Beasley, Jr.	2002
Dr. Robert E. Lynch	2002
Dr. Patrick M. Phipps	2002
Dr. Ronald J. Henning	2001
Dr. Norris L. Powell	2001
Mr. E. Jay Williams	2001
Dr. Gale A. Buchanan	2000
Dr. Thomas A. Lee, Jr.	2000
Dr. Frederick M. Shokes	2000
Dr. Jack E. Bailey	1999
Dr. James R. Sholar	1999
Dr. John A. Baldwin	1998
Mr. William M. Birdsong, Jr.	1998
Dr. Gene A. Sullivan	1998
Dr. Timothy H. Sanders	1997
Dr. H. Thomas Stalker	1996
Dr. Charles W. Swann	1996
Dr. Thomas B. Whitaker	1996
Dr. David A. Knauft	1995
Dr. Charles E. Simpson	1995
Dr. William D. Branch	1994
Dr. Frederick R. Cox	1994
Dr. James H. Young	1994
Dr. Marvin K. Beute	1993
Dr. Terry A. Coffelt	1993
Dr. Hassan A. Melouk	1992
Dr. F. Scott Wright	1992
Dr. Johnny C. Wynne	1992
Dr. John C. French	1991
Dr. Daniel W. Gorbet	1991
Mr. Norfleet L. Sugg	1991
Dr. James S. Kirby	1990
Mr. R. Walton Mozingo	1990
Mrs. Ruth Ann Taber	1990
Dr. Darold L. Ketring	1989
Dr. D. Morris Porter	1989
Mr. J. Frank McGill	1988
Dr. Donald H. Smith	1988
Mr. Joe S. Sugg	1988
Dr. Donald J. Banks	1988
Dr. James L. Steele	1988
Dr. Daniel Hallock	1986
Dr. Clyde T. Young	1986
Dr. Olin D. Smith	1986
Mr. Allen H. Allison	1985
Mr. J.W. Dickens	1985
Dr. Thurman Boswell	1985
Dr. Allen J. Norden	1984
Dr. William V. Campbell	1984
Dr. Harold Pattee	1983
Dr. Leland Tripp	1983
Dr. Kenneth H. Garren	1982
Dr. Ray O. Hammons	1982
Mr. Astor Perry	1982

BAILEY AWARD

2025 K.D. Chamberlin*, R.S. Bennett, J.P. Clevenger, and W. Korani
2024 C. Pilon*, J.L. Snider, L. Moreno, C. Kvien, P. Ozias-Akins, and C.C. Holbrook
2023 K.D. Chamberlin*, R.S. Bennett, J. Baldessari, G. De la Barrera, G.G. Cordes, N.G. Grandon, E.M.C. Mamani, A. Rodriguez, S. Morichetti, C.C. Holbrook, P. Ozias-Akins, Y. Chu, S. Tallury, J. Clevenger, W. Korani, B. Scheffler, R.C. Youngblood, and S. Simpson
2022 S.B. Davis, R.S. Tubbs*, R.C. Kemerait, and A.K. Culbreath
2021 Award Suspended due to COVID
2020 R.S. Tubbs* and W.S. Monfort
2019 Y. Chu*, P. Ozias-Akins, P. Chee, A. Culbreath, T. G. Isleib, and C.C. Holbrook
2018 M.D. Burow*, R. Chopra, R. Kulkarni, T. Tengey, V. Belamkar, J. Chagoya, J. Wilson, M. G. Selvaraj, C. E. Simpson, M. R. Baring, F, Neya, P. Sankara, and N. Denwar
2017 J. Wang*, H. Zhou, Z. Peng, J. Maku, L. Tan, F. Liu, Y. Lopez, J. Wang, and M. Gallo
2016 J. Davis*, J. Leek, D. Sweigart, P. Dang, C. Butts, R. Sorenson, and M. Lamb
2015 J. Clevenger*, Y, Guo, and P. Ozias-Akins
2014 R. Srinivasan*, A. Culbreath, R. Kemerait, and S. Tubbs
2013 A.M. Stephens* and T.H. Sanders
2012 D.L. Rowland*, B. Colvin. W.H. Faircloth, and J.A. Ferrell
2011 T.G. Isleib, C.E. Rowe, V.J. Vontimitta and S.R. Milla-Lewis*
2010 T.B. Brenneman* and J. Augusto
2009 S.R. Milla-Lewis* and T.G. Isleib
2008 Y. Chu*, L. Ramos, P. Ozias-Akins, and C.C. Holbrook
2007 D.E. Partridge*, P.M. Phipps, D.L. Coker, and E.A. Grabau
2006 J.W. Chapin* and J.S. Thomas
2005 J.W. Wilcut*, A.J. Price, S.B. Clewis, and J.R. Cranmer
2004 R.W. Mozingo*, S.F. O'Keefe, T.H. Sanders and K.W. Hendrix
2003 T.H. Sanders*, K.W. Hendrix, T.D. Rausch, T.A. Katz and J.M. Drozd
2002 M. Gallo-Meagher*, K. Chengalrayan, J.M. Davis and G.G. MacDonald
2001 J.W. Dorner* and R.J. Cole
2000 G.T. Church*, C.E. Simpson and J.L. Starr
1999 None Awarded
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 D.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

BAILEY AWARD (CONTINUED)

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 COMPETITION AWARD

2025	S.E. Joson (PhD), F. Anshul (MS)
2024	E. Barnes (PhD), L. Dexter-Boone (MS)
2023	J. Bell (PhD), S. Webb (MS)
2022	E. Achola (PhD), J. Bell (MS)
2021	C. Newman (PhD), J. Bell (MS)
2020	C. Levinson
2019	A. Kaufman
2018	D.J. Mahoney
2017	J. Fountain, W. Carter, L. Christman*
2016	J. Clevenger, K. Racette*
2015	C. Klevorn
2014	Y. Tseng
2013	A. Fulmer
2012	R. Merchant
2011	S. Thornton
2010	A. Olubunmi
2009	G. Place
2008	J. Ayers
2007	J.M. Weeks, Jr.
2006	W.J. Everman
2005	D.L. Smith
2004	D.L. Smith
2003	D.C. Yoder
2002	S.C. Troxler
2001	S.L. Rideout
2000	D.L. Glenn
1999	J.H. Lyerly
1998	M.D. Franke
1997	R.E. Butchko
1996	M.D. Franke
1995	P.D. Brune
1994	J.S. Richburg
1993	P.D. Brune
1992	M.J. Bell
1991	T.E. Clemente
1990	R.M. Cu
1989	R.M. Cu

* 2016 and 2017 had two and three separate sessions, respectively

NATIONAL PEANUT BOARD GRADUATE STUDENT POSTER COMPETITION AWARD

2025	N. Pettit (PhD), A. Marchetti (MS)
2024	L. Commey (PhD), G. Paredes (MS)
2023	N. Shay (PhD), M. Sysskind (MS)
2022	M. Mills
2021	A. Skipper
2020	P.-C. Lai
2019	A. Peper
2018	C. Weaver

COYT T. WILSON DISTINGUISHED SERVICE AWARD

2025	No Nominations
2024	Dr. Rick L. Brandenburg
2023	Ms. Kim Cutchins
2022	Mr. Bob Sutter
2021	Dr. Robert C. Kemerait
2020	Dr. Kelly D. Chamberlin
2019	Dr. Timothy L. Grey
2018	Dr. Craig K. Kvien
2017	Dr. Austin K. Hagan
2016	Dr. Timothy B. Brenneman
2015	Mr. Howard Valentine
2014	Dr. Tom Isleib
2013	Dr. John P. Bealey, Jr.
2012	Dr. Patrick M. Phipps
2011	Mr. W. James Grichar
2010	Dr. Albert K. Culbreath
2009	No Nominations
2008	Dr. Frederick M. Shokes
2007	Dr. Christopher L. Butts
2006	Dr. Charles E. Simpson
2005	Dr. Thomas B. Whitaker
2004	Dr. Richard Rudolph
2003	Dr. Hassan A. Melouk
2002	Dr. H. Thomas Stalker
2001	Dr. Daniel W. Gorbet
2000	Mr. R. Walton Mozingo
1999	Dr. Ray O. Hammons
1998	Dr. C. Corley Holbrook
1997	Mr. J. Frank McGill
1996	Dr. Olin D. Smith
1995	Dr. Clyde T. Young
1994	Dr. James Ronald Sholar
1993	Dr. Harold E. Pattee
1992	Dr. Leland Tripp
1991	Dr. D.H. Smith

CORTEVA AGRISCIENCE AWARD FOR EXCELLENCE IN RESEARCH

2025 Soraya C.M. Leal-Bertioli
2024 R. Scott Tubbs
2023 Feed the Future Innovation Lab for Peanut
2022 C. Corley Holbrook
2021 No Recipient
2020 Ye Chu
2019 David J. Bertioli
2018 Barry L. Tillman
2017 Marshall C. Lamb
2016 H. Thomas Stalker
2015 Charles E. Simpson
2014 Michael R. Baring
2013 No Nominations
2012 Timothy H. Sanders
2011 Timothy L. Grey
2010 Peter A. Dotray
2009 Joe W. Dorner
2008 Jay W. Chapin
2007 James W. Todd
2006 No Award Given
2005 William D. Branch
2004 Stanley M. Fletcher
2003 John W. Wilcut
2002 W. Carroll Johnson, III
2001 Harold E. Pattee, Thomas G. Isleib
2000 Timothy B. Brenneman
1999 Daniel W. Gorbet
1998 Thomas B. Whitaker
1997 W. James Grichar
1996 R. Walton Mozingo
1995 Frederick M. Shokes
1994 Albert K. Culbreath, James W. Todd, James W. Demski
1993 Hassan A. Melouk
1992 Rodrigo Rodriguez-Kabana

1992-1996 DowElanco Award for Excellence in Research
1997 Changed to DowElanco Award for Excellence in Research
1998 Changed to Dow AgroSciences Award for Excellence in Research
2018 Changed to Corteva Agriscience™, Agriculture Division of DowDuPont™ Award for Excellence in Research
2019 Changed to Corteva™ Agriscience Award for Excellence in Research

CORTEVA AGRISCIENCE AWARD FOR EXCELLENCE IN EDUCATION

2025	Nicholas S. Dufault
2024	W. Scott Monfort
2023	Keith S. Rucker
2022	No Nominations
2021	Bob Sutter, Dell Cotton, Marianne Catalano
2020	C. Corley Holbrook
2019	No Nominations
2018	Peggy Ozias-Akins
2017	No Nominations
2016	Timothy L. Grey
2015	Jay W. Chapin
2014	Jason E. Woodward
2013	Peter A. Dotray
2012	Todd A. Baughman
2011	Austin K. Hagan
2010	David L. Jordan
2009	Robert C. Kemerait, Jr.
2008	Barbara B. Shew
2007	John P. Damicone
2006	Stanley M. Fletcher
2005	Eric P. Prostko
2004	Steve L. Brown
2003	Harold E. Pattee
2002	Kenneth E. Jackson
2001	Thomas A. Lee
2000	H. Thomas Stalker
1999	Patrick M. Phipps
1998	John P. Beasley, Jr.
1997	No Nominations
1996	John A. Baldwin
1995	Gene A. Sullivan
1994	Charles W. Swann
1993	A. Edwin Colburn
1992	J. Ronald Sholar

1992-1996	DowElanco Award for Excellence in Extension
1997	Changed to DowElanco Award for Excellence in Education
1998	Changed to Dow AgroSciences Award for Excellence in Education
2018	Changed to Corteva Agriscience™, Agriculture Division of Dow DuPont™ Award for Excellence in Education
2019	Changed to Corteva™ Agriscience Award for Excellence in Education

BY-LAWS

BY-LAWS
of the
AMERICAN PEANUT RESESEARCH and **EDUCATION SOCIETY, INC.**

ARTICLE 1. NAME

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

ARTICLE II. PURPOSE

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

ARTICLE III. MEMBERSHIP

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

a. Individual memberships:

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

2. *Retired*, persons who were regular members for at least five consecutive and immediately preceding years may request this status because of retirement from active employment within the peanut or academic community. Because of their past status as individual members and service to the society, retired member would retain all the right and privileges of regular individual membership.

3. *Student*, persons who are actively enrolled as a student in an academic institution and who wish to participate in the affairs of the society. Student members have the all rights and privileges of regular members except that they may not serve on the Board of Directors. Student members must be proposed by a faculty member from the student's academic institution and that faculty member must be regular or retired member of the society.

b. Sustaining memberships:
Industrial organizations and others that pay dues as fixed by the Board of Directors. Sustaining members are those who wish to support this Society financially to an extent beyond minimum requirements as set forth in Section 1c, Article III. Sustaining members may designate one representative who shall have individual member rights. Also, any organization may hold sustaining memberships for any or all of its divisions or sections with individual member rights accorded each sustaining membership.

1. *Silver Level*, this maintains the current level and is revenue neutral. Discounted meeting registration fees would result in revenue loss with no increase in membership fee. Registration discounts can be used as an incentive for higher levels of membership.

2. *Gold Level,* the person designated by the sustaining member would be entitled to a 50% discount on annual meeting registration. This benefit cannot be transferred to anyone else.

3. *Platinum Level,* the person designated by the sustaining member would be entitled to a 100% discount on annual meeting registration. This benefit cannot be transferred to anyone else.

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

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

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

ARTICLE IV. DUES AND FEES

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

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

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

ARTICLE V. MEETINGS

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

Opportunity shall be provided for discussion of these and other matters that members wish to have brought before the Board of Directors and/or general membership.

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

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

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

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

ARTICLE VI. QUORUM

Section 1. Those members present and entitled to vote at a meeting of the Society, after proper notice of the meeting, shall constitute a quorum.

Section 2. For meetings of the Board of Directors and all committees, a majority of the members duly assigned to such board or committee shall constitute a quorum for the transaction of business. The Board of Directors and all committees may conduct meetings and votes by conference call or by electronic means of communication as needed to carry out the affairs of the Society.

ARTICLE VII. OFFICERS

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

Section 2. The president and president-elect shall serve from the close of the annual meeting of this Society to the close of the next annual meeting. The president-elect shall automatically succeed to the presidency at the close of the annual meeting. If the president-elect should succeed to the presidency to complete an unexpired term, he/she shall then also serve as president for the following full term. In the event the president or president-elect, or both, should resign or become unable or unavailable to serve during their terms of office, the Board of Directors shall appoint a president, or both president-elect and president, to complete the unexpired terms until the next annual meeting when one or both offices, if necessary, will be filled by normal elective procedure. The most recent available past president shall serve as president until the Board of Directors can make such appointment.

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

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

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

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

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

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

1. Review performance of associate editors and reviewers. Recommend associate editors to the Publications and Editorial Committee as terms expire.

2. Conduct Associate Editors' meeting at least once per year. Associate Editors' meetings may be conducted in person at the Annual Meeting or via electronic means such as conference calls, web conferences, etc.

3. Establish standard electronic formats for manuscripts, tables, figures, and graphics in conjunction with Publications and Editorial Committee and publisher.

4. Supervise Administrative/Editorial assistant in:
    - Preparing routine correspondence with authors to provide progress report of manuscripts.
    - Preparing invoices and collecting page charges for accepted manuscripts.

5. Screen manuscript for content to determine the appropriate associate editor, and forward manuscript to appropriate associate editor.

6. Contact associate editors periodically to determine progress of manuscripts under review.

7. Receive reviewed and revised manuscripts from associate editor; review manuscript for grammar and formatting; resolve discrepancies in reviewers' and associate editor's acceptance decisions.

8. Correspond with author regarding decision to publish with instructions for final revisions or resubmission, as appropriate. Follow-up with authors of accepted manuscripts if final revisions have not been received within 30 days of notice of acceptance above.

9. Review final manuscripts for adherence to format requirements. If necessary, return the manuscript to the author for final format revisions.

10. Review final formatting and forward compiled articles to publisher for preparation of first run galley proofs.

11. Ensure timely progression of journal publication process including:
    - Development and review of galley proofs of individual articles.
    - Development and review of the journal proof (proof of all revised articles compiled in final publication format with tables of contents, page numbers, etc.)
    - Final publication and distribution to members and subscribers via electronic format.

12. Evaluate journal publisher periodically; negotiate publication contract and resolve problems; set page charges and subscription rates for electronic formats with approval of the Board of Directors.

13. Provide widest distribution of Peanut Science possible by listing in various on-line catalogues and databases.

ARTICLE VIII. BOARD OF DIRECTORS

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

a. The president
b. The most recent available past-president
c. The president-elect

d. Three University representatives - these directors are to be chosen based on their involvement in APRES activities, and knowledge in peanut research, and/or education, and/or regulatory programs. One director will be elected from each of the three main U.S. peanut producing areas (Virginia-Carolinas, Southeast, Southwest).

e. United States Department of Agriculture representative – this director is one whose employment is directly sponsored by the USDA or one of its agencies, and whose relation to peanuts principally concerns research, and/or education, and/or regulatory pursuits.

f. Three Industry representatives - these directors are (1) the production of peanuts; (2) crop protection; (3) grower association or commission; (4) the shelling, marketing, and storage of raw peanuts; (5) the production or preparation of consumer food-stuffs or manufactured products containing whole or parts of peanuts.

g. The President of the American Peanut Council or a representative of the President as designated by the American Peanut Council, will serve a three-year term.

h. The Executive Officer - non-voting member of the Board of Directors who may be compensated for his/her services on a part-time or full-time salary stipulated by the Board of Directors in consultation with the Finance Committee.

i. National Peanut Board representative, will serve a three-year term.

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

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

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

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

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

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

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

Section 8. Should a member of the Board of Directors resign from the board before the end of their term, the president shall request that the Nominating Committee nominate a qualified member of APRES to fill the remainder of the term of that individual and submit their name for approval by the Board of Directors.

ARTICLE IX. COMMITTEES

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

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

a. *Finance Committee:* This committee shall consist of four members that represent the diverse membership of the Society, each appointed to a three-year term. This committee shall be responsible for preparation of the financial budget of the Society and for promoting sound fiscal policies within the Society. They shall direct the audit of all financial records of the Society annually, and make such recommendations as they deem necessary or as requested or directed by the Board of Directors. The term of the chairperson shall close with preparation of the budget for the following year, or with the close of the annual meeting at which a report is given on the work of the Finance Committee under his/ her leadership, whichever is later.

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

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

c. *Publications and Editorial Committee:* This committee shall consist of four members that represent the diverse membership of the Society and who are appointed to three-year terms. The members may be appointed to two consecutive three-year terms. This committee shall be responsible for the publication of Society-sponsored publications as authorized by the Board of Directors in consultation with the Finance Committee. This committee shall formulate and enforce the editorial policies for all publications of the Society subject to the directives from the Board of Directors.

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

e. *Public Relations Committee:* This committee shall consist of four members that represent the diverse membership of the Society and are appointed for a three-year term. The primary purpose of this committee will be to publicize the meeting and make photographic records of important events at the meeting. This committee shall provide leadership and direction for the Society in the following areas:

- Membership: Development and implementation of mechanisms to create interest in the Society and increase its membership. These shall include, but not be limited to, preparing news releases for the home-town media of persons recognized at the meeting for significant achievements.

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

- Necrology: Proper recognition of deceased members.

- Resolutions: Proper recognition of special services provided by members and friends of the Society.

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

g. *Fellows Committee:* This committee shall consist of four members that represent the diverse membership of the Society and who are themselves Fellows of the Society. Terms of office shall be for three years. Nominations shall be in accordance with procedures adopted by the Society and published in the previous year's Proceedings of APRES. From nominations received, the committee shall select qualified nominees for approval by majority vote of the Board of Directors.

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

Site Selection Committee shall:

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

Board of Directors shall:

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

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

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

k. *Bylaws Committee:* This committee shall consist of three members. For the first appointment, The chair of the committee will serve for three years, one member will serve a two-year term and one member will serve a one-year term. Thereafter, all members shall serve a three-year term. The President shall appoint a Chair from among incumbent committee members. The primary function of this committee is to capture and maintain the procedures, rules, regulations, guidelines, interpretations, standard practice of APRES in one central location through the creation and maintenance of a Manual of Operations and the utilization of this document to provide guidance to the APRES Board of Directors, Committees and management structure. The Chair of the By-Laws Committee serves as an ex-officio member of the Board of Directors and Executive Committee.

ARTICLE X. AMENDMENTS

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

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

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

Amended at the
APRES Annual Meeting
July 2022, Dallas, Texas

GUIDELINES FOR THE AMERICAN PEANUT RESEARCH & EDUCATION SOCIETY'S

COYT T. WILSON DISTINGUISHED SERVICE AWARD

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

Eligibility of Nominators

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

Eligibility of Nominees

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

Nomination Procedures

Deadline

The deadline date for receipt of the nominations is listed in the Call for Nominations on the APRES website (www.apresinc.com).

Preparation

Careful preparation of the nomination based on the candidate's service to the Society is critical. The nominee may assist in order to assure the accuracy of the information needed. The documentation should be brief and devoid of repetition. Electronic copy or Six (6) hard copies of the nomination packet, plus a headshot photograph of the nominee should be sent to the committee chair.

Format

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

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

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

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

Qualifications of Nominees

Personal Achievements and Recognition:

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

Service to the Society:

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

Supporting letters:

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

Re-consideration of Nominations

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

Award and Presentation

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

Administrative Note

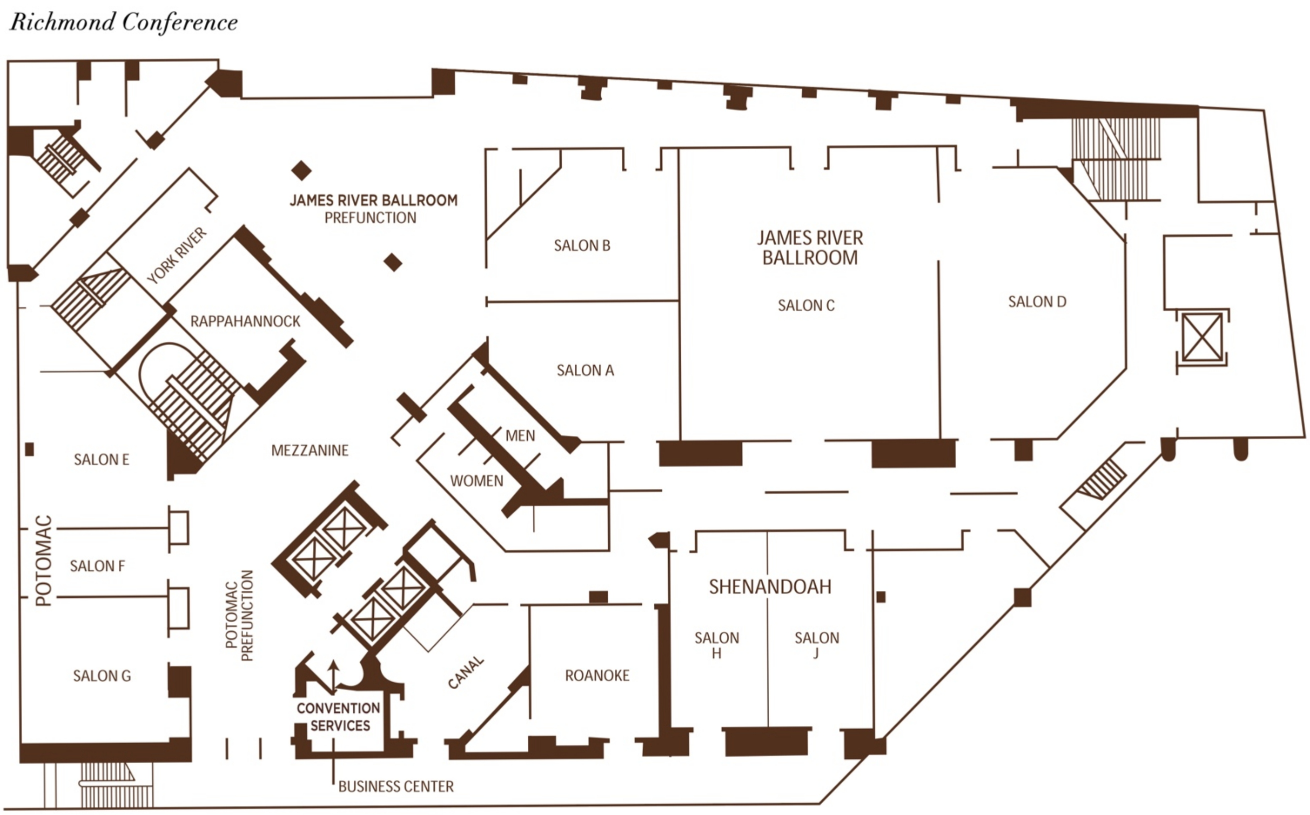
The BOD votes on the nomination of the award recipient prior to the July Board meeting. The recipient is notified by letter prior to the meeting to give them time to bring family to the meeting.

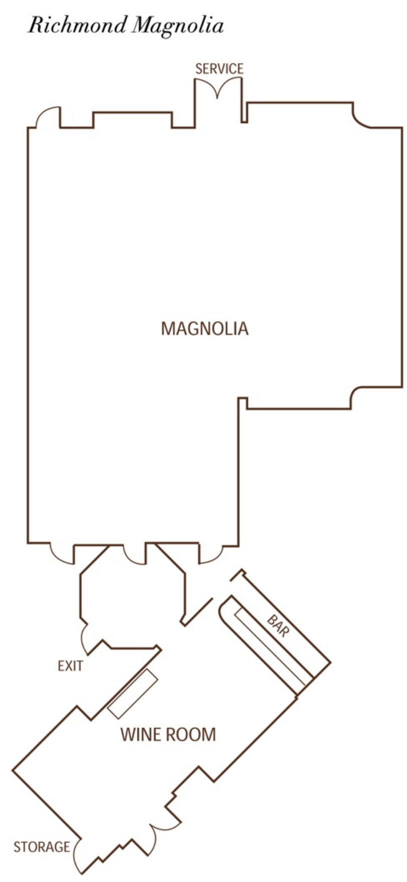
Amended July 2015

Index of Authors (*Presenting Author Abstract)

Hotel Meeting Space Floor Plans

Second Floor





First Floor