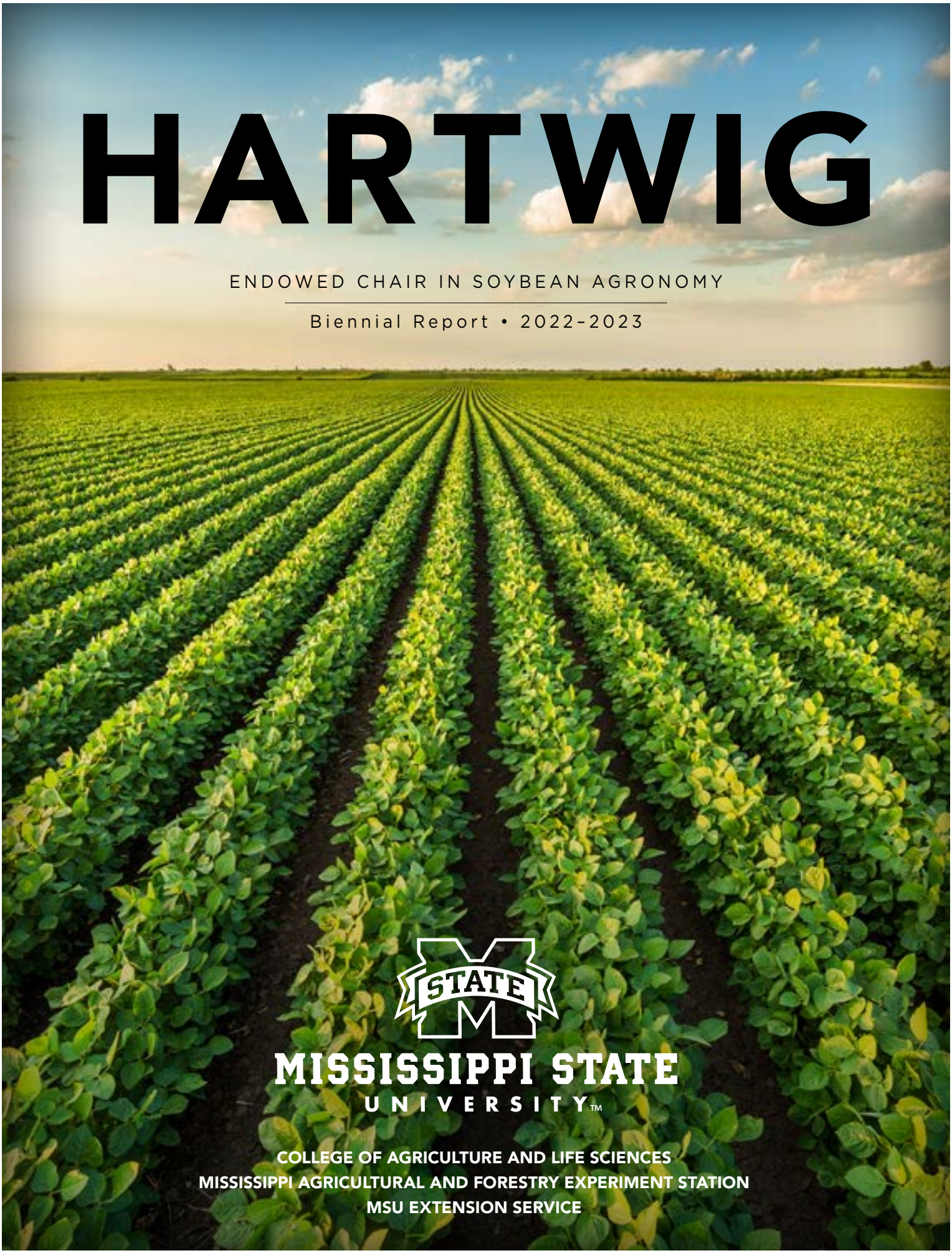


HARTWIG

ENDOWED CHAIR IN SOYBEAN AGRONOMY

Biennial Report • 2022–2023

MISSISSIPPI STATE UNIVERSITY™

COLLEGE OF AGRICULTURE AND LIFE SCIENCES
MISSISSIPPI AGRICULTURAL AND FORESTRY EXPERIMENT STATION
MSU EXTENSION SERVICE

EDGAR E. AND WINIFRED B. HARTWIG ENDOWED CHAIR IN SOYBEAN AGRONOMY

In 2013, the Mississippi Soybean Promotion Board invested in the creation of an endowed chair in soybean agronomy. The investment allowed Mississippi State University to leverage funds from industry partners Monsanto and Syngenta, and the Hartwig family, to create the Edgar E. and Winifred B. Hartwig Endowed Chair in Soybean Agronomy.

Hartwig spent 47 years with the U.S. Department of Agriculture's Agricultural Research Service in Stoneville. He was responsible for developing many of the soybean varieties grown both in the Southern U.S. and regions around the world with similar climates.

A 2007 contribution from Hartwig's wife, Winifred, established the endowment and provided support for graduate student research at Mississippi State. Investments from the Soybean Promotion Board and its industry partners were added to the original fund.

Visit our website
for more information:

www.soybean.msstate.edu

2022–2023 • **AT A GLANCE**

$1.7M
External funding
$11M in collaborative external funding

15
Peer-reviewed publications

6
Graduate Students

25
Conference presentations and abstracts

LETTER FROM THE CHAIR

For the past two years, I have been honored to serve as the Hartwig Chair for Soybean Agronomy at Mississippi State University. My short-term goal is to increase the research and extension capacity of the position while increasing the productivity and profitability of soybean farmers in the state and beyond.

In my first year, I endeavored to build bridges to colleagues in other departments on campus and in other states. We have active research and extension projects in the Department of Agricultural and Biological Engineering; the Department of Wildlife, Fisheries and Aquaculture; as well as within the Department of Plant and Soil Sciences. The visibility of the Hartwig Chair placed our program on the national stage with the incredibly productive **Science for Success** team, a national team of soybean extension specialists from around the country. With their partnership, we can replicate research in many states and bring national soybean research trials to Mississippi. We also have accessed research and extension funds—both regionally and outside of the Mid-South—and are bringing those intellectual and financial resources to bear on issues facing Mississippi's soybean producers.

But we won't stop there. We have attracted funding from the United Soybean Board and the USDA as well. We were recently awarded a **$10 million project by the USDA in collaboration with MSU Extension Service and Southern Ag Consulting**, among other partners, for verification of climate-smart agricultural practices in Mississippi. We have also been successful with our **$260,000 USDA Foreign Agriculture Service Scientific Exchange Program** proposal to train visiting agricultural professionals from abroad.

Naturally, the program is only as good as the people who work for it. I am very fortunate to have found John

Wallace, an outstanding Research Associate II, who ran the Service Department at Wade Tractor, and has extensive experience working with farmers in the Mississippi Delta. John is a certified John Deere mechanic as well as a certified Ford mechanic. We have also hired one Ph.D. student and two master's students. Of course, none of this would be possible without the support of the Mississippi Soybean Promotion Board and Hartwig Endowment. We are grateful for their feedback and support and look forward to serving you in our efforts to improve soybean production in Mississippi.

Dr. Michael J. Mulvaney, CCA
Hartwig Endowed Chair
for Soybean Agronomy
Mississippi State University

John Wallace and Mike Mulvaney inspect soybean quality at the R.R. Foil Plant Science Research Unit (North Farm), a unit of the Mississippi Agricultural and Forestry Experiment Station (MAFES).

Our People

John Wallace

Research Associate II

Oluwaseyi E. Olomitutu

Ph.D. Student

Grant Shavers

Master's Student

Tucker Hilyer

Master's Student

Hunter Borgstrom

Undergraduate Student
Agribusiness major

Sophia Gore

Undergraduate Student
Environmental Science in Agricultural Systems major

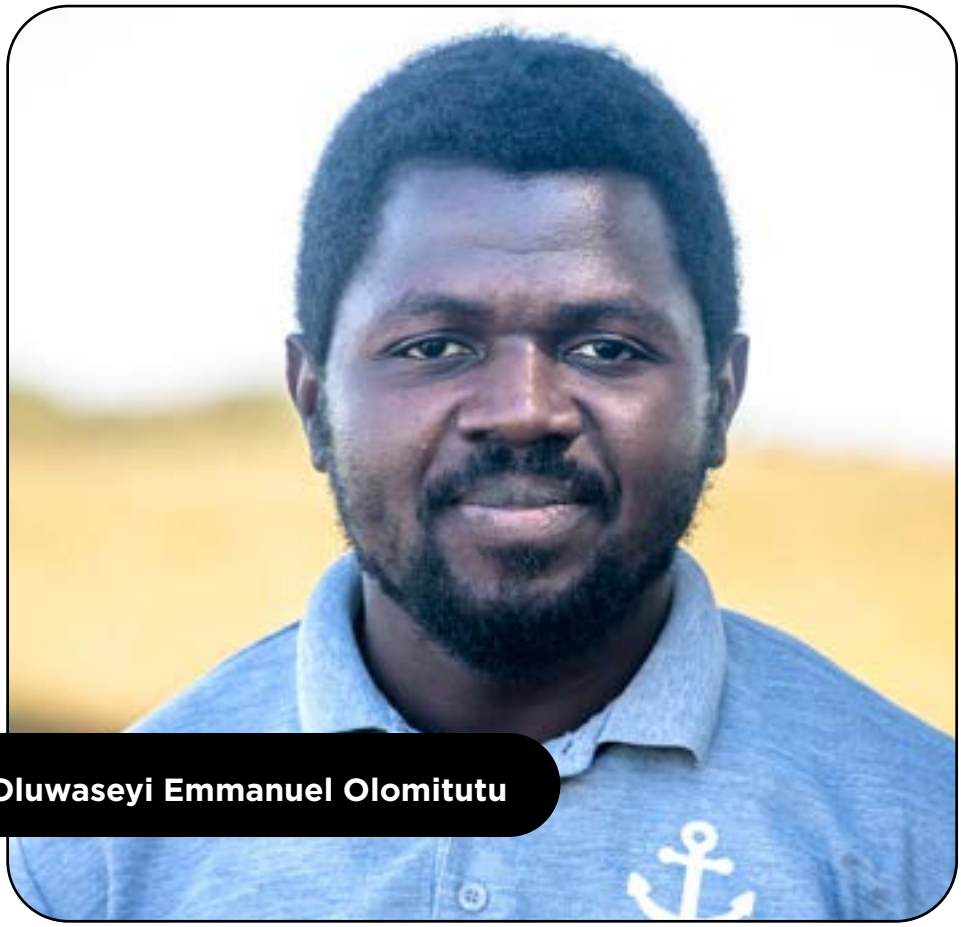
John Wallace

John Wallace grew up in Suwanee, Georgia. Following his passion as an avid automotive enthusiast, he attended Universal Technical Institute in Mooresville, North Carolina, and then began his automotive career working for Mercedes Benz. However, the impact of the financial crisis and recession of 2007–08 made a future in the automotive field uncertain.

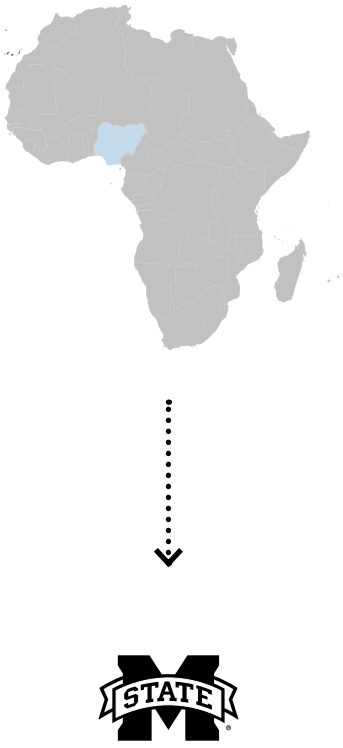
Wallace decided to pursue another life-long interest in agriculture and earned a bachelor's degree in ag engineering technology and business at Mississippi State University. After graduation, he took a research associate position at MSU under the extension corn and grains specialist, Dr. Erick Larson.

In the following decade, Wallace relocated to Hernando, where he worked on a large row crop farm in Tunica, followed by working as a field technician and as a service manager for John Deere.

As fate would have it, Wallace found himself back on MSU's campus. He has again taken on the role of research associate, but now under Dr. Mike Mulvaney. His past agriculture experience and mechanical aptitude has been very beneficial to helping run and expand Mulvaney's soybean research program at MSU.



Oluwaseyi Emmanuel Olomitutu



Having grown up in a small-scale farmers' community in Nigeria, Oluwaseyi Emmanuel Olomitutu was inspired to create agricultural solutions for our collective future. He began his journey toward an agricultural career attending the University of Ibadan, where he earned his master's degree in plant breeding. Before joining MSU in January 2023 as a Ph.D. student in agronomy, Olomitutuwas a graduate research fellow at the International Institute of Tropical Agriculture for four years, working on the genetic improvement of the African yam bean for yield-related traits and nutrient quality.

Olomitutu's graduate research focuses on increasing planting speed using off-the-shelf precision planting technology and evaluating soybean response to increased planting speeds. Due to weather constraints during soybean planting season, the most critical planting window is very short, and precision planters may be able to cover more acreage in less time than traditional planters. Olomitutu tested one of these precision planters and found that the precision planter exhibited the same level of performance (soybean plant stand, spacing distribution, and yield) running at 10 miles per hour as the traditional mechanical planter running at only five miles per hour.

In February 2023, Olomitutu placed first in the Ph.D. Student Oral Competition at the 23rd Graduate Research Symposium at Mississippi State University.

Tucker Hilyer

Tucker Hilyer grew up on a small cow-calf operation in Clanton, Alabama. While an undergraduate, Tucker competed on the 2022 Mississippi State Livestock Judging Team, and competitively judged livestock across the U.S. at major competitions. Hilyer had an interest in agriculture from his childhood but discovered his passion for soybean research during his internship at GDM Seed, a soybean breeding and research facility in Jonesboro, Arkansas. Hilyer earned his bachelor's degree from Mississippi State University in agronomy and is now pursuing a master's.

Hilyer's research examines the effects of biological products—living organisms that improve plant health, control pathogens, or increase immune response—on soybeans. His research examines soybean agronomic, physiological, and plant health response to biologicals. Hilyer's research is conducted at three different sites: Delta Research and Extension Center in Stoneville, North Mississippi Research and Extension Center in Verona, and the MAFES R.R. Foil Plant Science Research Center in Starkville. The effects of biologicals are important to understand so producers can make informed decisions with unbiased information on how to use the products to benefit soybean production systems.

Hilyer is also responsible for the United Soybean Board's (USB) national biological trial as well. The USB biological trial is in cooperation with 25 collaborators from 22 universities with Ohio State leading the project. The trial seeks to understand the effects of seed treatment biological products and how they affect soybean under various environments.

Grant Shavers

Grant Shavers began working with soybeans at the age of 13, helping at his grandfather's cattle and soybean operation in West Tennessee. During high school, he took every plant science class offered, including some college courses, and joined the local Future Farmers of America chapter.

Determined to pursue this field in college, he enrolled at Mississippi State University, where he earned his bachelor's degree in integrated pest management in the fall of 2022. The following semester, Grant began his master's degree program working with Dr. Mike Mulvaney.

Shavers is working on two projects for Mississippi soybean farmers. The first is to successfully establish cover crops into bedded systems. The goals of this project are to determine which methods are most effective for fall establishment and which methods do not hinder spring planting. His second project seeks to improve fertilizer use efficiency by comparing fall- and spring-applied fertilizers at different rates. His results may lead to fewer fall-applied fertilizer applications, which we hypothesize are subject to high loss and runoff into major waterways during heavy rain.

OUR RESEARCH

FUNDING SOURCES

MISSISSIPPI CORN PROMOTION BOARD

MISSISSIPPI SOYBEAN PROMOTION BOARD

UNITED SOYBEAN BOARD

USDA NATURAL RESOURCES CONSERVATION SERVICE

USDA NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

MSU COLLABORATORS

Tom Allen, Biochemistry, Molecular Biology, Entomology and Plant Pathology

Beth Baker, Wildlife, Fisheries and Aquaculture

Corey Bryant, Plant and Soil Sciences

Bill Burdine, Plant and Soil Sciences

Daniel Chesser, Agricultural and Biological Engineering

Joby Czarnecki, Geosystem Research Institute

Jagmandeep Dhillon, Plant and Soil Sciences

Jessica Drewry, Agricultural and Biological Engineering

Drew Gholson, Plant and Soil Sciences

Trent Irby, Plant and Soil Sciences

Wes Lowe, Agricultural and Biological Engineering

Will Maples, Agricultural Economics

Brian Mills, Agricultural Economics

Raju Rangappa, Plant and Soil Sciences

Vaughn Reed, Plant and Soil Sciences

Mark Shankle, Plant and Soil Sciences

Brian Smith, Industrial and Systems Engineering

Mary Love Tagert, Agricultural and Biological Engineering

RESEARCH

The Hartwig program tackles today's most urgent issues in soybean research using strategic and investigative themes. Strategic research seeks solutions to the problems faced by Mississippi soybean producers today, and investigative research determines whether a problem exists before engineering a solution.

While we maintain additional research efforts, such as those coordinated at the national level or led by other principal investigators, the following themes represent the current, overarching research strategy of the Hartwig program.

Strategic research theme 1:
Planting speed

Graduate students assigned:
Oluwaseyi Emmanuel Olomitutu
(Ph.D. student)

This initiative examines the speeds at which we can run high-speed planting technology without affecting yields.

Mississippi growers lose 0.4 bushels per acre each day in soybean yield when planted outside the optimal planting window, April 10 to May 1. But the three-week optimal planting window is often reduced to one week due to wet weather. This results in only 45% of Mississippi soybean acres planted before the optimal planting window closes.

Seven site-years of data show large replicated plots, including on-farm trials, using high speed planting technology, can be planted up to 10 miles per hour with no significant yield loss when compared to planting at 5 miles per hour. That's twice the acres planted, without the yield loss due to planting date.

Strategic research theme 2:
Cover crop establishment methods on beds

Graduate students assigned:
Grant Shavers (Master's student)

This initiative creates solutions to optimize cover crop management for bedded soybean production systems.

Establishing cover crops on raised beds is a unique challenge facing growers of the Lower Mississippi River Basin. In addition to the usual benefits of cover crops, using them in a bedded system may also improve bed stability and longevity. Since beds are formed in the fall, when cover crops must be planted, cover crop planting methods may include broadcasting prior to bed formation, broadcasting after bed formation, drilling, or broadcasting cover crop seed during the soybean harvest—which would save a pass in the field for planting. The latter two methods will be tested in 2023-24.

Funded by the Mississippi Soybean Promotion Board, our preliminary data show that the first two methods achieved acceptable cover crop stands, neither of which interfered with subsequent soybean stand or yield. The effect of the cover crop establishment method did not significantly improve bed stability, although broadcasting then hipping increased bed height compared to the no cover crop control.

Combine modified to broadcast cover crop seed during harvest, which would save a pass in the field and facilitate cover crop planting.

Investigative research theme 1:
Irrigation water quality

This initiative seeks to understand whether the salt concentration in Mississippi's irrigation water is high enough to affect soybean production. Our investigative study will determine whether we need to engineer solutions to reduce salt concentrations in irrigation water. Soybean is a moderately salt tolerant plant. However, the potential issue is that salts in irrigation water may accumulate in Mississippi soils since percolation is low. Repeated application of high-salt irrigation water during dry periods may limit crop growth or may accumulate over time to harmful levels in the future. The extent of this issue is unknown.

We conducted an irrigation water and soil survey with funding from the Mississippi Soybean Promotion Board. This survey showed that almost all salts in irrigation water were not problematic, with the notable exception of bicarbonates. The little research on the effects of bicarbonates on crop growth indicates that bicarbonate is harmful. Although the level considered "severe" for irrigation water varies, we considered 100 parts per million to be the threshold. Our survey results show the average bicarbonate concentration in Mississippi irrigation water to be 306 parts per million— three times that threshold. These preliminary results indicate that further research into this potential issue is warranted.

Peer-reviewed publications in 2022-2023

1. J. Dhillon, R.K. Sharma, P. Kumar, **M.J. Mulvaney**, V. Reed, R. Bheemanahalli, M.S. Cox, M.S. Kukal, K.N. Reddy. 2023. Climate trends and soybean production since 1970 in Mississippi: Empirical evidence from ARDL model. Science of the Total Environment 905:167046. https://doi.org/10.1016/j.scitotenv.2023.167046

2. B.T. Campbell, R. Seepaul, J.E. Iboyi, W.R. Anderson, B.S. Baldwin, R. Bennett, C.R. Crozier, S. George, A.K. Haaan, D. Lee, B. Macoon, D. Mailhot, J.I. Morrison, **M.J. Mulvaney**, A. Post, I.M. Small, D.L. Wright. 2023. Agronomic performance and the effect of genotype-by-environment interaction for *Brassica carinata* in the southeastern US. Industrial Crops and Products 203:117196. https://doi.org/10.1016/j.indcrop.2023.117196

3. R. Ochoa-Hueso, M. Delgado-Baquerizo, A.C. Risch, L. Ashton, D.J. Augustine, N. Bélanger, S.D. Bridgham, A.J. Britton, J.J. Camarero, G. Cornelissen, J.A Crawford, F. Dijkstra, A. Diochon, S. Earl, J. Edgerley, H.E. Epstein, A. Felton, J. Fortier, D. Gagnon, K. Greer, H. Griffiths, C. Halde, H.M. Hanslin, L.I. Harris, J. Hartsock, P. Hendrickson, K. A. Hovstad, J. Hu, A.D. Jani, K. Kent, D. Kerdraon-Byrne, S.D.S. Khalsa, D. Lai, F. Lambert, J.M. LaMontagne, S. Lavergne, B. Lawrence, A. Leeper, M. Licht, M.A. Liebig, M. McDaniel, J.R. Miesel, G. Moreno, R.J. Pakeman, P. Reed, E.J. Sayer, M. Strack, K. Littke, J. Lynn, J. Maclean, V. Martinsen, A. McIntosh, J. Miller, **M.J. Mulvaney**, L. Newstead, J. Pergl, J. Piñeiro, B. Pinno, K. Quigley, T. Radtke, V. Rolo, J. Rudgers, M. Rutherford, L. Serrano-Grijalva, N. Sukdeo, A. Taylor, E. Teen, B. Truax, L. Tsuji, N. van Gestel, K. van Sundert, B.M. Vaness, M. Vítková, R. Weigel, M. Wilton, Y. Yano, E. Bremer. 2023. Bioavailability of macro and micronutrients across global topsoils: Main drivers and global change impacts. Global Biogeochemical Cycles 37(6):e2022GB007680. https://doi.org/10.1029/2022GB007680

4. M. Bashyal, **M.J. Mulvaney,** P. Devkota, C. Wilson, J. Iboyi, R. Leon, G. Maltais-Landry, K. Boote. 2023. Summer crop rotational effects on carinata nitrogen management in the southeastern USA. Agronomy Journal 115(4):2030-2043. https://doi.org/10.1002/agj2.21373

5. J.E. Iboyi, **M.J. Mulvaney**, R.G. Leon, K.S. Balkcom, M. Bashyal, P. Devkota, I.M. Small. 2023. Double-cropping effects of *Brassica carinata* and summer crops: II. Effects of winter cropping history on subsequent summer crop production. Industrial Crops and Products 197:116609. https://doi.org/10.1016/j.indcrop.2023.116609

6. J.E. Iboyi, **M.J. Mulvaney**, R.G. Leon, K.S. Balkcom, M. Bashyal, P. Devkota, I.M. Small. 2023. Double-cropping effects of *Brassica carinata* and summer crops: I. Effects of summer cropping history on *carinata* production. Industrial Crops and Products 194:116364. https://doi.org/10.1016/j.indcrop.2023.116364

7. J.E. Iboyi, **M.J. Mulvaney,** R.G. Leon, K.S. Balkcom, M. Bashyal, D. Perondi, R. de S. Nóia Júnior, P. Devkota, I.M. Small. 2023. *Brassica carinata* physiological response to land preparation method and seeding rate. Journal of Crop Improvement 197:116609. https://doi.org/10.1080/15427528.2022.2163950

8. M. Bashyal, **M.J. Mulvaney**, C.R. Crozier, J.E. Iboyi, D. Perondi, A. Post, K. Iskandar, R.G. Leon, G.M. Landry, C. Wilson, K.J. Boote, P. Devkota. 2023. *Brassica carinata* nutrient accumulation and partitioning across maturity types and latitude. Crop Science 63(2):833-851. https://doi.org/10.1002/csc2.20900

9. F. Masum, J. Field, D. Geller, S. George, J. Miller, **M.J. Mulvaney**, S. Nana, R. Seepaul, D. Wright, P. Dwivedi. 2023. Supply chain optimization of sustainable aviation fuel from *carinata* in the Southeastern United States. Renewable and Sustainable Energy Reviews 171:113032. https://doi.org/10.1016/j.rser.2022.113032

10. D. Perondi, R. de Souza Nóia Júnior, L. Zotarelli, **M.J. Mulvaney**, C.W. Fraisse. 2022. Soybean maturity groups and sowing dates to minimize ENSO and extreme weather events effects on yield variability in the Southeastern U.S. Agricultural and Forest Meteorology 324:109104. https://doi.org/10.1016/j.agrformet.2022.109104

11. N. Honsdorf, **M.J. Mulvaney**, R.P. Singh, K. Ammar, B. Govaerts, N. Verhulst. 2022. Dataset of historic and modern bread and durum wheat cultivar performance under conventional and reduced tillage with full and reduced irrigation. Data in Brief 43:108439. https://doi.org/10.1016/j.fcr.2017.11.011

12. M.E. Camacho, T.W. Gannon, K.A. Ahmed, **M.J. Mulvaney**, J.L. Heitman, A. Amoozegar, R. Leon. 2022. Evaluation of imazapic and flumioxazin carryover risk for carinata (*Brassica carinata*) establishment. Weed Science 70(4). https://doi.org/10.1017/wsc.2022.27

13. J.L. Field, Y. Zhang, E. Marx, K.J. Boote, M. Easter, S. George, N. Hoghooghi, G. Johnston, F. Masum, **M. J. Mulvaney**, K. Paustian, R. Seepaul, A. Swan, S. Williams, D. Wright, P. Dwivedi. 2022. Modeling yield, biogenic emissions, and carbon sequestration in southeastern cropping systems with winter carinata. Frontiers in Energy Research 10. https://doi.org/10.3389/fenrg.2022.837883

14. D. Perondi, K. Boote, R. de Souza Nóia Júnior, **M.J. Mulvaney**, J. Iboyi, C. Fraisse. 2022. Assessment of soybean yield variability in the Southeastern U.S. with the calibration of genetic coefficients from variety trials using CROPGRO-Soybean. Agronomy Journal 114(2):1100-1114. https://doi.org/10.1002/agj2.20995

15. R.S. Nóia Júnior, C.W. Fraisse, M. Bashyal, **M.J. Mulvaney**, R. Seepaul, M.A. Zientarski Karrei, J.E. Iboyi, D. Perondi, V.A. Cerbaro, K.J. Boote. 2022. *Brassica carinata* as an off-season crop in the southeastern USA: Determining optimum sowing dates based on climate risks and potential effects on summer crop yield. Agricultural Systems 196:103344. https://doi.org/10.1016/j.agsy.2021.103344

Extension publications and outreach during 2022–2023

1. O.E. Olomitutu, **M.J. Mulvaney**, J.W. Lowe, C.J. Bryant, B. Mills, P. Dulaney, N. Harper, D. Chesser. 2023. How fast can we plant soybean in Mississippi? North Mississippi Research & Extension Center Producer Advisory Council, Verona, MS. Poster. Feb. 16, 2023.

2. J. Carleo, D. Carrijo, S. Casteel, S.P. Conley, E. Francisco, D. Holshouser, H. Kandel, J. Kleinjan, C. Lee, M. Licht, L. Lindsey, E.G. Matcham, D. Moseley, **M. Mulvaney**, S. Naeve, E. Nafziger, M. Plumblee, G.P. Fontes, J. Ross, M. Singh, R. Vann. 2023. Planter technologies. Soybean Research & Information Network (SRIN). https://soybeanresearchinfo.com/wp-content/uploads/2023/02/20230110_Factsheet_PlanterTechnologies_V2.pdf

3. J. Carleo, D. Carrijo, S. Casteel, S.P. Conley, E. Francisco, D. Holshouser, H. Kandel, J. Kleinjan, C. Lee, M. Licht, L. Lindsey, E.G. Matcham, D. Moseley, **M. Mulvaney**, S. Naeve, E. Nafziger, M. Plumblee, G.P. Fontes, J. Ross, M. Singh, R. Vann. 2023. Keys to success: Choosing the right soybean variety. Soybean Research & Information Network (SRIN). https://soybeanresearchinfo.com/wp-content/uploads/2023/02/20230124_Factsheet_VarietySelection_V2.pdf

4. J. Carleo, D. Carrijo, S. Casteel, S.P. Conley, E. Francisco, D. Holshouser, H. Kandel, J. Kleinjan, C. Lee, M. Licht, L. Lindsey, E.G. Matcham, D. Moseley, **M. Mulvaney**, S. Naeve, E. Nafziger, M. Plumblee, G.P. Fontes, J. Ross, M. Singh, R. Vann. 2023. Soybean plant stands: Is replanting necessary? Soybean Research & Information Network (SRIN). https://soybeanresearchinfo.com/wp-content/uploads/2023/02/20230125_Factsheet_Replant_V2.pdf

5. **M.J. Mulvaney**. 2023. In-furrow application technologies. In Planter Technologies (pp. 10). Soybean Research & Information Network (SRIN). https://soybeanresearchinfo.com/wp-content/uploads/2023/02/20230110_Factsheet_PlanterTechnologies_V2.pdf

6. **M.J. Mulvaney**. 2023. Nitrogen fixation and sulfur fertility in soybeans. Science for Success Webinar, March 31, 2023. 132 attendees. https://www.youtube.com/watch?v=N5WK0MAOhx8

7. **M.J. Mulvaney**. 2023. New planter technology mostly geared to corn. Southeast Farm Press. April 14, 2023. Based on webinar "What's New in Planter Technologies?" 12,900 subscribers. https://www.farmprogress.com/planting/new-planter-technology-mostly-geared-to-corn

8. **M.J. Mulvaney**. 2023. Should you replant a pitiful soybean stand? Southeast Farm Press. April 4, 2023. Based on factsheet "Soybean Plant Stands: Is Replanting Necessary?" 12,900 subscribers. https://www.farmprogress.com/soybean/should-you-replant-a-pitiful-soybean-stand

9. **M.J. Mulvaney**. 2023. What's new in planter technologies? 2023. Science for Success Webinar, March 24, 2023. 113 attendees. https://www.youtube.com/watch?v=ikZUWgK7Qrc

10. **M.J. Mulvaney**. 2023. Making soybean replant decisions. 2023. Science for Success Webinar, March 17, 2023. 148 attendees. https://www.youtube.com/watch?v=z4B-EUIXuZY

11. O.E. Olomitutu, **M.J. Mulvaney**. J.W. Lowe, C.J. Bryant, B. Mills, P. Dulaney, N. Harper, D. Chesser. 2023. How fast can we plant soybean in Mississippi? Mid-South Farm & Gin Show, Memphis, TN. Poster. Feb. 24-25, 2023.

12. **M.J. Mulvaney**. 2023. 2023 Alabama Precision Ag Workshop. Athens, AL. Feb. 8, 2023. Attendance: 63.

13. **M.J. Mulvaney**. 2022. Planter technologies and considerations to improve field performance and productivity. 2022 Mid-Atlantic Crop Management School, Ocean City, MD. Nov. 15-17, 2022.

14. **M.J. Mulvaney**. 2022. Noxubee turnrow talks/Field visits. Brooksville, MS. Jun. 30, 2022. Attendance 45.

15. **M.J. Mulvaney**. 2023. 2022 MSU Seed & Ag. Technology Short Course Planning Committee. Starkville, MS, Aug. 15-16, 2022.

Conference presentations/ abstracts

1. O.E. Olomitutu, **M.J. Mulvaney**, W.J. Lowe, C.J. Bryant, J. Wallace, N. Harper, G.M. Shavers. 2023. Advanced planting technology for soybean in Mississippi. ASA-CSSA-SSSA International Annual Meeting, St. Louis, MO, Oct. 29- Nov. 1, 2023.

2. O.E. Olomitutu, J. Dhillon, **M.J. Mulvaney**, W.J. Lowe, C.J. Bryant, J. Wallace, N. Harper, G.M. Shavers. 2023. Corn stands establishment and grain yield are influenced by planting speed. ASA-CSSA-SSSA International Annual Meeting, St. Louis, MO, Oct. 29- Nov. 1, 2023.

3. T. Hilyer, C.J. Bryant, **M.J. Mulvaney**, T. Allen, J. Wallace, G.M. Shavers, O.E. Olomitutu. 2023. Biological product effects on soybean in Mississippi. ASA-CSSA-SSSA International Annual Meeting, St. Louis, MO, Oct. 29- Nov. 1, 2023.

4. G.M. Shavers, **M.J. Mulvaney**, O.E. Olomitutu, J. Wallace, T. Hilyer. 2023. Cover crop establishment methods for soybeans on beds. ASA-CSSA-SSSA International Annual Meeting, St. Louis, MO, Oct. 29- Nov. 1, 2023.

5. G.M. Shavers, **M.J. Mulvaney**, O.E. Olomitutu, J. Wallace, T. Hilyer, C. Bryant, V. Reed. 2023. Fall vs. spring fertilizer application in Mississippi. ASA-CSSA-SSSA International Annual Meeting, St. Louis, MO, Oct. 29- Nov. 1, 2023.

6. H. Poffenbarger, L.P. Canisares, F. Miguez, R. Thapa, S.B. Mirsky, R. Ye, P. Poudel, **M.J. Mulvaney**, Y. Upadhyaya, P. Devkota, H. Singh, C.J. Pelzer, M. Ryan, K. Loria, E. Youngerman, A. Basche, T. Ferreira de Almeida, P.J. Tomlinson, D.R. Presley, K.L. Roozeboom, A. Correira, A. Sadeghpour, G.S.Guzel, C. Kula, M.D. Ruark, A. Waggoner, J.M. Wallace, J. Adam, J.O. Miller, A. Woodley, L.M. Fultz, A. Carrillo, H.M. Darby, L. Ruhl, S.D. Armstrong, A. Gautam. 2023. Winter cover crop effects on the optimum N rate of corn and cotton across multi-state field experiments. ASA-CSSA-SSSA International Annual Meeting, St. Louis, MO, Oct. 29- Nov. 1, 2023.

7. K. Singh, M. Bashyal, **M.J. Mulvaney**, P. Devkota, H. Singh. 2023. Yield and economic response of peanut to different rates of prohexadione calcium. Southern Branch American Society of Agronomy Annual Meeting, Oklahoma City, OK, Feb. 4-6, 2023.

8. **M.J. Mulvaney**, J.W. Lowe, C. Bryant, D. Chesser, B. Mills, P. Dulaney, N. Harper, R. Bheemanahalli. 2023. How fast can we plant soybean? Southern Branch American Society of Agronomy Annual Meeting, Oklahoma City, OK, Feb. 4-6, 2023.

9. **M.J. Mulvaney**, J.W. Lowe, C. Bryant, D. Chesser, B. Mills, R. Bheemanahalli, P. Dulaney, N. Harper. 2022. Increasing planting speed using off-the-shelf electronic planting technology. ASA-CSSA-SSSA International Annual Meeting, Baltimore, MD, Nov. 6-9, 2022.

10. R. Seepaul, J.E. Iboyi, **M.J. Mulvaney**, S. George, I.M. Small D.L. Wright. 2022. The effect of boron fertility on carinata growth, development, seed and seed chemical composition. ASA-CSSA-SSSA International Annual Meeting, Baltimore, MD, Nov. 6-9, 2022.

11. J. Douglas, C.J. Bryant, T. Irby, **M.J. Mulvaney**, B. Mills. 2022. Soybean response to late season flooding and foliar nitrogen applications. ASA-CSSA-SSSA International Annual Meeting, Baltimore, MD, Nov. 6-9, 2022.

12. Y. Upadhyaya, P. Devkota, **M.J. Mulvaney**, W. Hammond, H. Bayabil. 2022. Nitrogen management in industrial hemp in the Southeast US. ASA-CSSA-SSSA International Annual Meeting, Baltimore, MD, Nov. 6-9, 2022.

13. L.P. Canisares, F. Miguez, R. Thapa, S.B. Mirsky, R. Ye, P. Poudel, **M.J. Mulvaney**, Y. Upadhyaya, P. Devkota, C.J. Pelzer, M.R. Ryan, A. Basche, T. Ferreira de Almeida, P.J. Tomlinson, D.R. Presley, K.L. Roozeboom, A. Correira, A. Sadeghpour, G. Sener, C. Kula, M.D. Ruark, A. Waggoner, J.M. Wallace, J. Adam, J.O. Miller, A. Woodley, L.M. Fultz, P. Carrillo, H.M. Darby, L. Ruhl, S.D. Armstrong, A. Gautam, H. Poffenbarger. 2022. Legumes cover crops can reduce the corn reliance on nitrogen fertilizer when compared to cereal rye across multi-state field experiments. ASA-CSSA-SSSA International Annual Meeting, Baltimore, MD, Nov. 6-9, 2022.

14. A.D. Jani, **M.J. Mulvaney**, B.L. Tillman. 2022. Genotype x environment interactions on biological nitrogen fixation by peanut. ASA-CSSA-SSSA International Annual Meeting, Baltimore, MD, Nov. 6-9, 2022.

15. J.E. Iboyi, **M.J. Mulvaney**, K.S. Balkcom, R.G. Leon, M. Bashyal, P. Devkota, I.M. Small. 2022. Effect of *Brassica carinata* on subsequent summer crop production. ASA-CSSA-SSSA International Annual Meeting, Baltimore, MD, Nov. 6-9, 2022.

16. J.E. Iboyi, **M.J. Mulvaney**, K.S. Balkcom, R.G. Leon, M. Bashyal, P. Devkota, I.M. Small. 2022. Crop rotational effects of Brassica carinata and summer crops. ASA-CSSA-SSSA International Annual Meeting, Baltimore, MD, Nov. 6-9, 2022.

17. Y. Upadhyaya, P. Devkota, **M.J. Mulvaney**, W. Hammond, H. Bayabil. 2022. Cover crops for soil moisture management and temperature dynamics. ASA-CSSA-SSSA International Annual Meeting, Baltimore, MD, Nov. 6-9, 2022.

18. M. Bashyal, **M.J. Mulvaney**. 2022. Can the use of prohexadione calcium increase peanut peg strength and yield in north Florida? Southern Branch American Society of Agronomy Annual Meeting. New Orleans, LA. Feb. 12-15, 2022.

19. J.E. Iboyi, **M.J. Mulvaney**, R. Seepaul, I.M. Small, M. Bashyal, R.G. Leon, P. Devkota, K.S. Balkcom, S. George, D.L. Wright. 2022. Variation in NUE among Brassica carinata genotypes grown in a controlled environment. Southern Branch American Society of Agronomy Annual Meeting. New Orleans, LA. Feb. 12-15, 2022.

20. Y. Upadhyaya, P. Devkota, **M.J. Mulvaney**, W. Hammond, H. Bayabil. 2022. Cereal rye biomass and PRE-herbicides for weed management in cotton. Southern Branch American Society of Agronomy Annual Meeting. New Orleans, LA. Feb. 12-15, 2022.

21. L. Johnson, E. Carter, **M.J. Mulvaney**, Y. Upadhyaya. 2022. Winter fallow to cover crops: Local farmers transition to test theories on-farm. Southern Branch American Society of Agronomy Annual Meeting. New Orleans, LA. Feb. 12-15, 2022.

22. M. Bashyal, **M.J. Mulvaney**, R. Seepaul, J.E. Iboyi, S. George, G. Maltais-Landry, R.G. Leon, C.H. Wilson, K.J. Boote. 2022. Carinata C and N mineralization dynamics under different residue loads and tillage practices. Southern Branch American Society of Agronomy Annual Meeting. New Orleans, LA. Feb. 12-15, 2022.

23. J.E. Iboyi, **M.J. Mulvaney**, K.S. Balkcom, R.G. Leon, M. Bashyal, P. Devkota, I.M. Small. 2022. Winter cash cover crop effects on subsequent summer crop production and vice versa. Southern Branch American Society of Agronomy Annual Meeting. New Orleans, LA. Feb. 12-15, 2022.

24. Y. Upadhyaya, P. Devkota, **M.J. Mulvaney**, W. Hammond, H. Bayabil. 2022. Cover crops for weed management in cotton. Southern Branch American Society of Agronomy Annual Meeting. New Orleans, LA. Feb. 12-15, 2022.

25. L. Johnson, E. Carter, **M.J. Mulvaney**. 2022. Using soil moistures sensors in cover crops to determine the efficacy of using winter cover in northwestern Florida. Cotton Beltwide Conferences. San Antonio, TX, Jan. 4-6, 2022.

Leadership and Service

Technical Editor, Agronomy Journal, US Southern Major Crops Section, Jan. 2020-Dec. 2025. Agronomy Journal is the flagship journal of the American Society of Agronomy.

Executive Director, Mississippi Certified Crop Advisor program, 2022-present.

Paper of the Year Award Committee, Agronomy Journal, 2019-2025.

AR-LA-MS Certified Crop Advisor Exam Committee, member, 2022-present.

International Certified Crop Advisor Board Member, 2022-present.

APRES Coyt T. Wilson Distinguished Service Award Committee, 2021-2023.

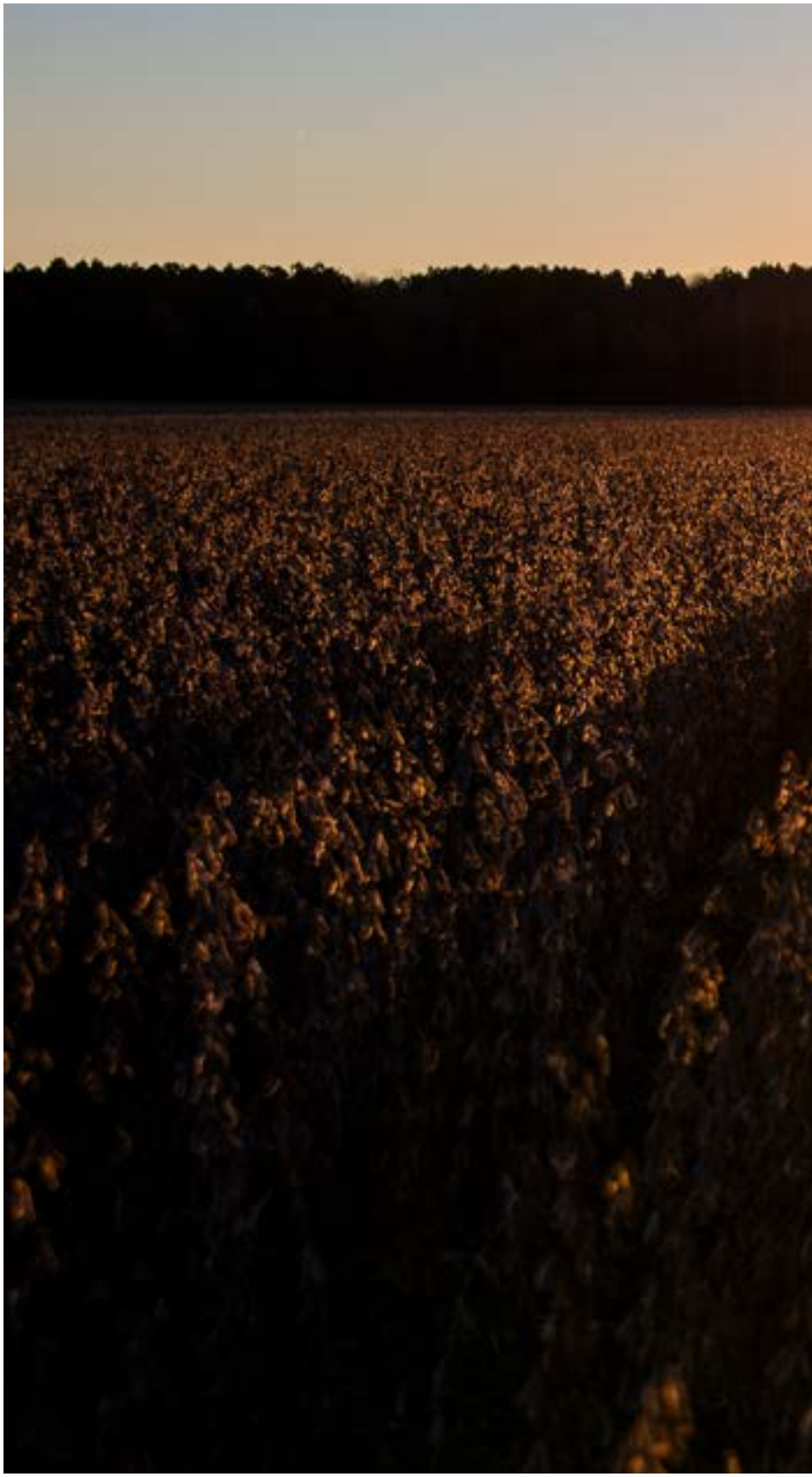
William M. White Special Project Awards. Selection Committee. Division of Agriculture, Forestry, and Veterinary Medicine, Mississippi State University, 2023.

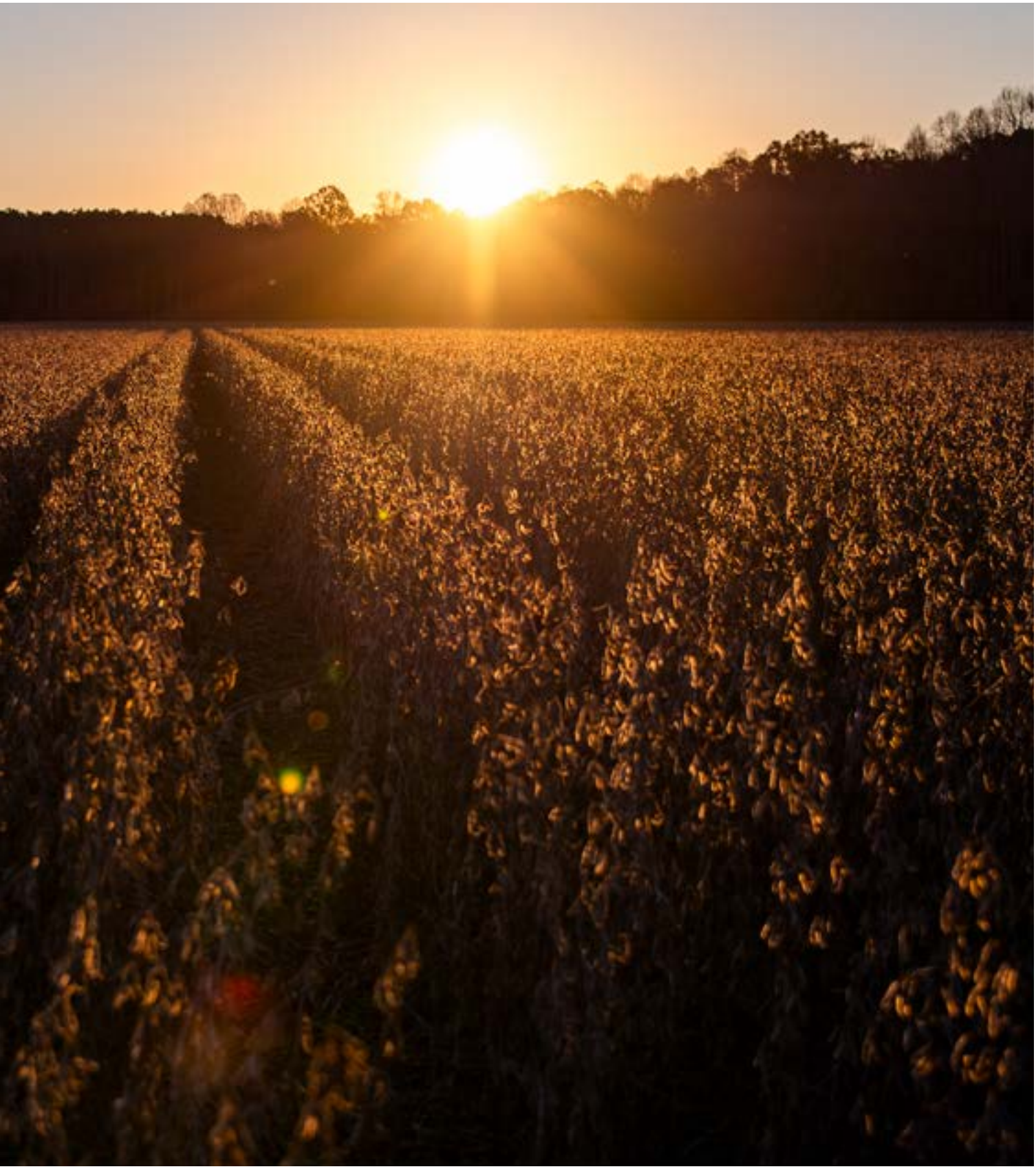
Most Outstanding Graduate Student Committee, Dept. Member, 2023.

Search and Screen Committee, Assistant Professor – Agroclimatology, Plant and Soil Sciences, Mississippi State University, 2022-23.

Search and Screen Committee, Assistant Clinical Professor – Precision Agriculture, Plant and Soil Sciences, Mississippi State University, 2022.

Instructor, PSS 4133/6133, Fiber and Oilseed Crops, Fall 2023.





2022-2023

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