MISSISSIPPI STATE UNIVERSITY™
DEPARTMENT OF AGRICULTURAL AND BIOLOGICAL ENGINEERING

Fall 2025

NEWSLETTER

Department of Agricultural and Biological Engineering

A letter from the Department Head

Dear ABE friends and family,

As in other areas of life, change is a constant in the Department of Agricultural and Biological Engineering (ABE) at Mississippi State University (MSU). One of our recent major changes involves departmental staff. Kayla Graviet, our former Administrative Assistant, moved over to MSU's Faculty Senate, and we have brought in Tosha Lann to fill her role. Kayla had been instrumental in producing the biannual newsletter, and with her departure in early September, we have scrambled to get a Fall 2025 newsletter out to all of you. Thus, this edition is a little later and shorter than usual, but we think it's important to communicate with you at least twice a year and update you on happenings in ABE.

You may have noticed MSU's student body has grown to a new record level. This is happening in the face of strong national headwinds including the impending "enrollment cliff," the name given to the downward trend in the number of graduating high schoolers. Like MSU, both colleges ABE reports to, the College of Agriculture and Life Science and the Bagley College of Engineering, have seen growth this year. Along these lines, ABE is holding steady in enrollment. Nevertheless, we are developing a strategy for recruiting, particularly for Biosystems Engineering, which is the smallest of our three degree programs. More on that in the next issue.

While all universities are dealing with uncertainty in federal funding and various policies, ABE's students, faculty, and staff continue to excel. That's the focus of this newsletter. I continue to be amazed by the quality and achievements of our students, the innovation and productivity of our faculty, and the dedication of our staff, without whom the department wouldn't function. As you read through the rest of this newsletter, please stop and consider what a mark this small group of people is making at MSU and beyond.

With the Christmas holidays coming up, we will take some time away, being thankful for what we have and what we've accomplished, and recharging for an even more stellar 2026.

Wishing you all the best!

J. Alex Thomasson, Ph.D.
ABE Department Head
& Professor

Faculty Spotlight

Dr. Sayantan Samanta

Our newest faculty member, Dr. Sayantan Samanta, joined ABE as an Assistant Professor in August 2025. He earned his Ph.D. (2023) and M.S. (2018) in Water Management and Hydrological Science at Texas A&M University, and his B.E. (2016) in Civil Engineering from Vellore Institute of Technology in India. Prior to joining ABE, Dr. Samanta worked as a Postdoctoral Research Associate at Texas A&M AgriLife Research & Extension Center at Vernon, TX.

Dr. Samanta's research aims to enhance the health of our agro-ecosystem through soil and water conservation while concurrently maximizing agricultural productivity. His research encompasses data-driven, process-based, hydrological and cropping-system modeling across scales. He is currently working on research to understand the impacts of widespread adoption of agricultural conservation practices such as no-till and cover cropping on downstream water quality and streamflow patterns. He is also developing a novel irrigation-scheduling decision-support system that would enhance water-use efficiency in the Mississippi Delta. Dr. Samanta is an active member of the American Society of Agricultural and Biological Engineers (ASABE) and was recognized with a 2025 Superior Paper Award for his research on modeling the impacts of tillage practices on plant-available water by accounting for changes in soil structure.

Dr. Mary Love Tagert

Dr. Mary Love Tagert earned a B.S. in Biology from Millsaps College and M.S. and Ph.D. degrees in Forest Products and Agricultural Sciences, respectively, from Mississippi State University. After completing her Ph.D. in 2006, she worked for the Mississippi Water Resources Institute for several years before joining the ABE faculty as an Assistant Extension Professor in 2013. She was promoted to Associate Extension Professor in 2019 and then full Extension Professor in 2025.

Dr. Tagert provides leadership in Extension programming and community-engaged learning (CEL) within the department. She helped convert ABE 4263/6263 Soil and Water Management to a CEL course in 2020, in which students work with a community partner to address an issue that relates to one or more learning objectives in the course. CEL courses provide a win-win situation: students benefit from experiential learning while they provide objective help to community partners. Dr. Tagert has co-taught ABE 4263/6263 since 2020 and taught it in its entirety in 2025. Her applied research and extension programs are focused on water resources, precision agriculture, waste management, and renewable energy, and they have been funded by USDA, NSF, Mississippi Department of Environmental Quality, and the state's agricultural commodity boards. Dr. Tagert is evaluating cropping systems that increase yield and reduce the symptoms of iron deficiency chlorosis in soybean, and she has a case study to implement variable-rate irrigation on a production field. Both projects are funded by the Mississippi Soybean Promotion Board. Her research has evaluated the benefits of on-farm water storage (OFWS) systems in different regions of the state, and she leads the state's waste pesticide disposal program. Finally, Dr. Tagert has developed hands-on STEM curricula for youth and enjoys training students and exposing youth to agricultural technologies.

MSU Shackouls Honors College Faculty Mentor Award

Dr. Lauren Priddy

Dr. Lauren Priddy, ABE Associate Professor, was recognized with the Faculty Mentor Award at MSU's Shackouls Honors College's 2025 award ceremony. Bagley College of Engineering Dean, Dr. David Ford, called it a "Meaningful and well-deserved award." Dr. Priddy says she is "grateful for the privilege of helping guide students in their journeys, and I'm humbled to receive this recognition." She began her faculty role in ABE in August 2016. Since that time, she has striven to inspire our students to think independently, communicate clearly and concisely, and apply their knowledge and skills to solve real-world problems. Her research focuses on bone healing, orthopedic implants, and strategies to prevent infection, and her lab is typically full of graduate and undergraduate students not only conducting research but co-authoring manuscripts on their discoveries.

Research highlights

Martinez, M., Kim, S., Bonatti, J. O., Wagner, W. R., & Riviere, C. N. (2025). Design and validation of a recirculating cooling system for robotic cardiac injection therapy to improve patient safety and surgeon workflow. ASME Journal of Medical Devices.

Aires, U. R., Martins, V. S., Ferreira, L. B., Huang, Y., Heintzman, L., & Ouyang, Y. (2025). Impact of sampling techniques on crop type mapping using multi-temporal composites from Harmonized Landsat–Sentinel images. Computers and Electronics in Agriculture

Vandenheever, D., Davidson, H., Kemp, J., Murphy, Z., Kujawa, A., Shi, J., Nadorff, M. R., Bates-Brantley, K., & Sidwell, M. (2025). Exploring facial expression processing with fast periodic visual stimulation and diverse stimuli. Brain and Cognition.

Lowe, J. W., Wise, K. C., Richardson, B. M., Chesser, G. D., Griffin, M. J., Beck, B., Waldbieser, G. C., Mischke, C. C., & Wise, D. J. (2025). Development of an automated application system to apply copper sulfate pentahydrate to commercial catfish ponds using precision dry fertilizer application technology. Applied Engineering in Agriculture

Caballero, C. B., Martins, V. S., Paulino, R. S., Lima, T. M., Butler, E., & Sparks, E. (2025). Sentinel-3 Coastal Analysis Ready Data (S3CARD): An operational framework for coastal water applications. Water Research

Lima, T. M., Martins, V. S., Paulino, R. S., Caballero, C. B., Barbosa, C. C., & Ashapure, A. (2025). AQUAVis: Landsat–Sentinel Virtual Constellation of Remote Sensing Reflectance (Rrs) product for coastal and inland waters. Science of Remote Sensing

Nouri, N., & Gharakhani, H. (2025). A dedicated review of robotic pruners: Current technologies, challenges, and future directions. Computers and Electronics in Agriculture

Yang, Y., Wijewardane, N. K., Harvey, L., & Zhang, X. (2025). Beyond flips and rotations: Evaluating NeRF and 3DGS-based synthetic view augmentation—A case study of detecting visual skinning damage on sweetpotato storage roots. Journal of Agriculture and Food Research

And more...

Our students are winning!

Fall 2025 Graduate Research Symposium

Kodai Watanabe (MS in BSE): 1st place in oral presentation
Yasas Gamagedara (PhD in BSE): 2nd place in oral presentation
Dakota Hester (PhD in BSE): 3rd place in oral presentation
Moeen Ul Islam (PhD in BSE): 1st place in poster presentation
Rejane Paulino (PhD in BSE): 2nd place in poster presentation
Chamika A. Silva (PhD in BSE): 3rd place in poster presentation

2025 Mississippi Water and Energy Conference

Yasas Gamagedara (PhD in BSE): 1st place in poster presentation
Cassia Caballero (PhD in BSE): 3rd place in oral presentation
Rejane Paulino (PhD in BSE): 3rd place in poster presentation

2025 American Society for Microbiology South Central Branch Meeting

BME students Grace Levine and Margaret Franks won first place in the undergraduate student poster presentations!

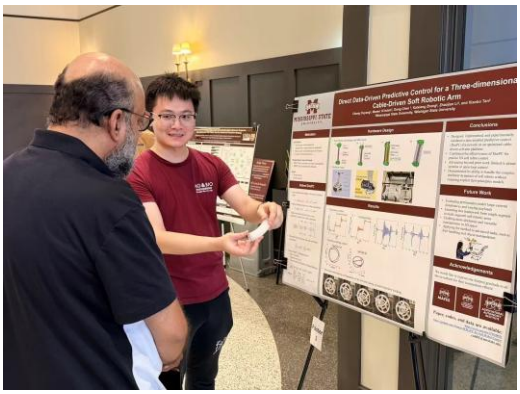
2025 AgGateway Annual Meeting and Conference

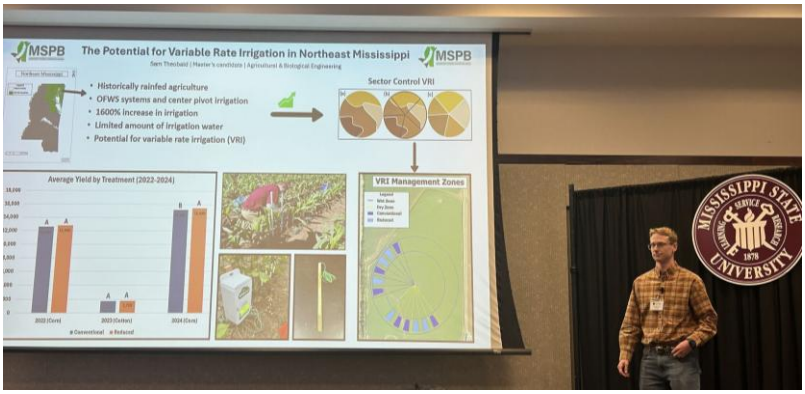
Two AETB juniors, Emma Koger and Patton Simbeck, earned a prestigious national honor by being selected for an exclusive agriculture career

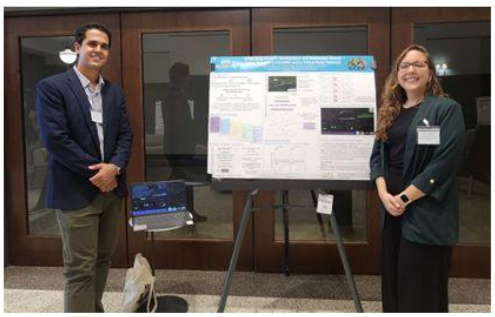
BCoE Simrall Engineering Excellence Award

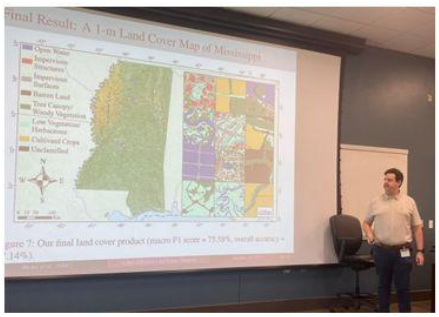
Haley Carpenter, a BME Senior student, was the recipient of this prestigious BCoE award

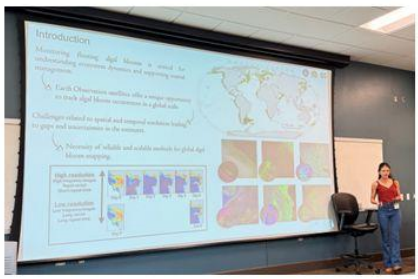
Multiple presentations

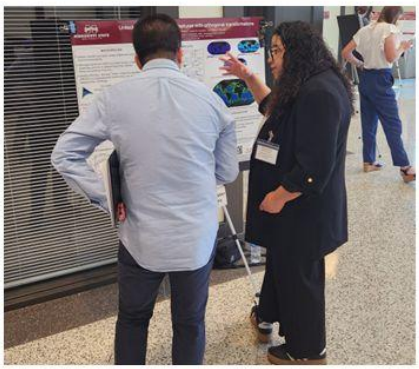


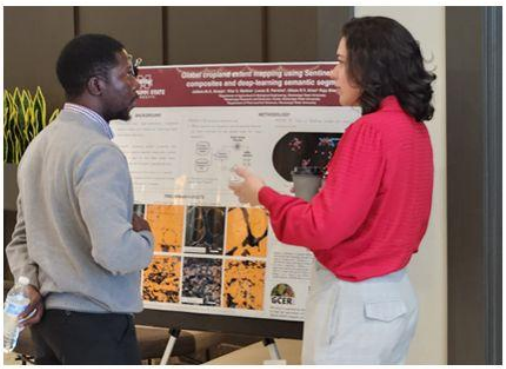












Traveling with ABE

2025 ASABE Annual International Meeting

Toronto, Canada

CANVAS 2025 Conference

Salt Lake City, Utah

2025 AGRITECHNICA

Hanover, Germany

Kathmandu University

Dhulikhel, Nepal

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