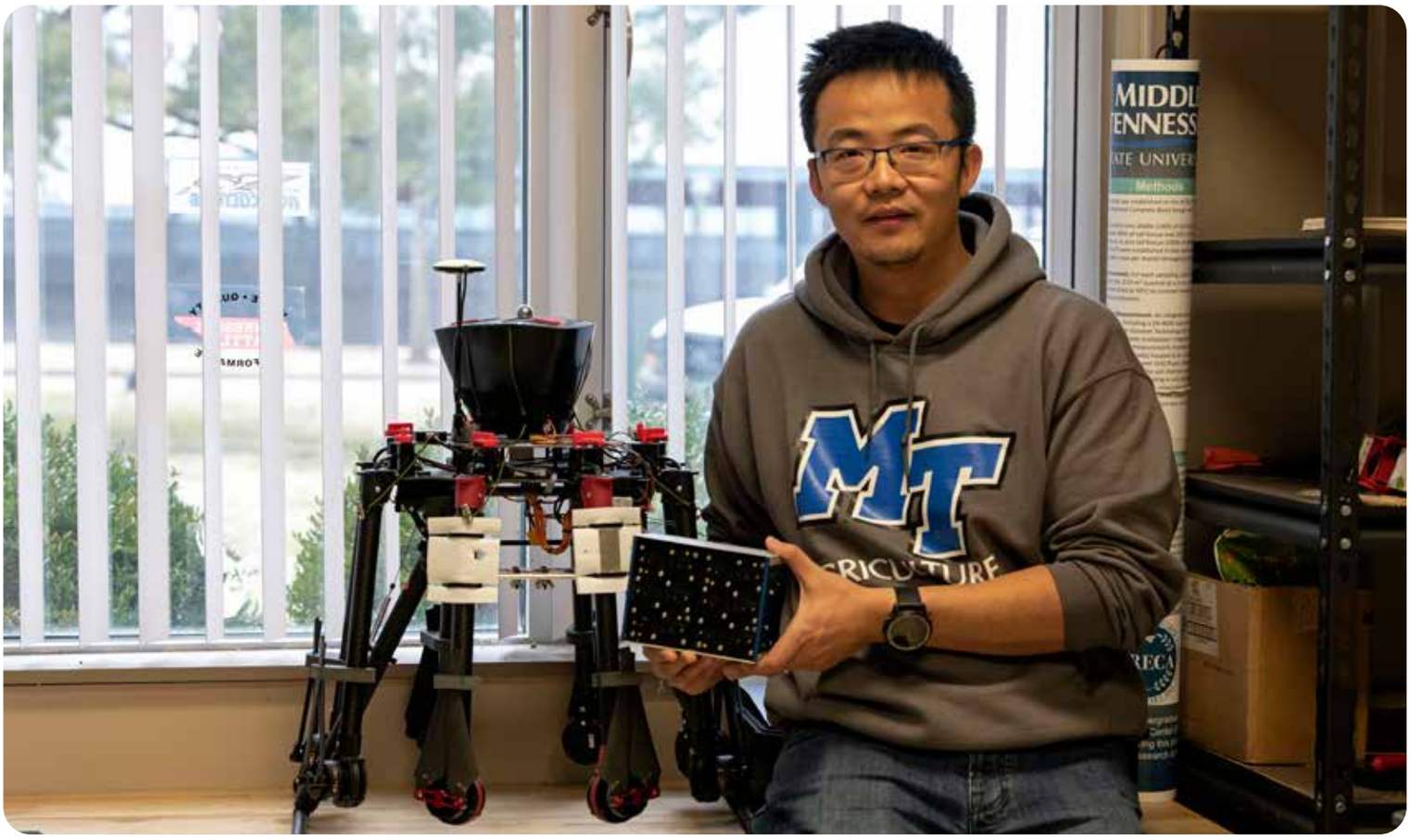

MTSU School of Agriculture associate professor Dr. Song Cui led the efforts to land a three-year, $750,000 USDA grant to establish the Tennessee Digital Agriculture Center. As part of the program, youth will learn how to assemble and fly drones for application in agriculture.

Ag education takes flight

Middle Tennessee State University launches new Tennessee Digital Agriculture Center

By Cara Moore

Middle Tennessee State University (MTSU) in Murfreesboro has launched a new education initiative — the Tennessee Digital Agriculture Center (TDAC) — that will focus on digital techniques, data gathering, and analysis, targeting high-schoolers and educators across the state.

The university was awarded a three-year, $750,000 grant from the United States Department of Agriculture (USDA) and National Institute of Food and Agriculture (NIFA) to develop the program, which combines agriculture, unmanned aircraft systems, data science, and science education. It consists of a series of student and non-formal education projects, including hands-on research and outreach events. Non-formal education refers to that held outside of a formal school system. Those involved may include after-school teachers, scout leaders, 4-H and FFA advisors, or parent and academic groups.

Dr. Song Cui, an associate professor in MTSU's School of Agriculture and TDAC project lead, says he's excited about the prospects of the new program.

"Students and educators will have the opportunity to experience digital, agricultural research and demonstration projects such as building drones, gathering data, and performing simple analyses," says Cui. "My hope is that these experiences will inspire youth down the road as they begin to think about their future."

The proposed programming for TDAC is divided into two main events, one focusing on non-formal educators and the other on students. The first, called the Digital Agriculture Academy, comprises a training program for non-formal educators structured around educational and interactive resources, seminars, and demonstrations. Non-formal educators will participate in the program over the first week of June and undergo a series of training activities to equip and inspire them to teach the next generation.

"During the Digital Agriculture Academy, our organizers will be demonstrating how to apply data science technology to agriculture, how to use sensors, and how to assemble and fly drones, among other things," says Cui. "If our educators are interested in doing a drone-related project with their students, then we will make sure to

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provide them with the training and resources to do this in the non-formal setting."

The second event, called the Digital Agriculture Summer Camp, is geared towards K-12 students, with high-schoolers being the primary target. Every summer, 15 students — one-third from under-represented groups — will participate in the three-week camp starting the first week of June. The students, who will live on campus during the program, will have the opportunity to participate in an aerospace drone training program, where they will learn to assemble a drone and use it to collect data. They will then work with MTSU's Department of Agriculture to engage in team-based learning on drone and data science application in agriculture.

"If we can train students to have both knowledge and expertise, they will be qualified to get any job they want in this field," says Cui. "And to better train the next generation, we know it's important to start as soon as possible."

Cui says he is thankful for the support he has received from USDA/NIFA and the MTSU faculty in developing the program and working towards its implementation.

"I love that this project has given me the opportunity to interact with so many individuals on and beyond campus," says Cui. "It has given us a purpose for coming together to educate students and make MTSU's program offerings more visible."

Within the School of Agriculture's own department, faculty members Dr. Chaney Mosley, Dr. Samuel Haruna, and Dr. Alanna Vaught provide key co-leadership support.

Dr. Song Cui monitors bioenergy crop production at the MTSU Farm in Lascassas using a DJI S-1000-plus drone and multispectral camera. Participants of the program make frequent visits to the farm for hands-on learning and data science application experiences such as this.

To further aid in the implementation of the program, MTSU's School of Agriculture has partnered with several other entities on campus, including MTSU's Data Science Institute, headed by Director Ryan Otter and Master's Program Director Qiang Wu, and the Tennessee Science, Technology, Engineering, Mathematics Education Center (TSEC). TSEC Director Greg Rushton says that he was eager to lend his resources and expertise to Dr. Cui and the new program.

"It's exciting to see how many different partners Cui and his team have assembled from MTSU that are coming together to support Science Technology Engineering and Math (STEM) education for our state's youth," says Rushton. "TSEC is honored to play a part in supporting its success over the coming years."

In addition, Cui says that the School of Agriculture's partnership with MTSU's Department of Aerospace and Unmanned Aircraft Systems Director Kevin Corns serves as an attractive feature to the program for those interested in crop scouting via drones.

"Not every school has an aerospace program, so our collaboration with them gives our students a unique opportunity to fly drones and obtain data from aerial imagery," says Cui. "This is not only entertaining for students but also educational and informative for our farmers."

The TDAC program is currently in its recruitment phase, with the training and summer camps scheduled to begin June 1. For more information, contact Dr. Song Cui at 615-898-5833.

Students who participate in the program will conduct soil analyses using MTSU's Multi-chamber Soil Respiration System. The school's four on-site greenhouses give students an opportunity for hands-on learning outside of a classroom setting.