MISSISSIPPI LANDMARKS

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DIVISION OF AGRICULTURE, FORESTRY, & VETERINARY MEDICINE

RESEARCH, EDUCATION, AND EXTENSION

MISSISSIPPI
LANDMARKS

Mississippi LandMarks is published by the Division of Agriculture, Forestry, and Veterinary Medicine at Mississippi State University.

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VICE PRESIDENT'S LETTER

At no other time in my career has the work of the MSU Division of Agriculture, Forestry, and Veterinary Medicine felt more vital. As I stated in the university's flagship publication, *Alumnus*, "Our programming affects all Mississippians, whether it be the food supply, sustainable natural resources, or animal welfare; we're here to ensure a better quality of life for everyone in our state. This is illustrated most often when our state is faced with uncertainty."

As we continue to weather the pandemic's challenges, I am more convinced than ever of our value. From practical information delivered through the MSU Extension Service to innovative agricultural and forestry research in the Mississippi Agricultural and Forestry Experiment Station and the Forest and Wildlife Research Center, DAFVM units remain committed to serving all Mississippians.

This fall, we delivered several of our most popular programs through web-based articles, numerous publications, and prerecorded and live video presentations. For example, our Virtual Turfgrass Field Day reached more than 275 participants, and these presentations are available online for even greater access.

The changes we made to our planned content and program delivery reflects our concern for the health and well-being of our clients, much like the time invested in planning for classes reflects our dedication to fostering a healthy environment for our students. MSU launched the Cowbell Well campaign to help keep our campus and community healthy by promoting simple behaviors, such as wearing masks, daily temperature checks, rigorous cleaning procedures, and physical distancing.

As we conclude a most unusual year, I'm eager to share some of the exciting news within DAFVM. MSU set a new enrollment record for the sixth consecutive year. A total of 22,986 students attended this fall, an increase of 3.4 percent over 2019. This enrollment includes 2,609 in the College of Agriculture and Life Sciences, 609 in the College of Forest Resources, and 498 in the College of Veterinary Medicine.

DAFVM units finished fiscal year 2020 with record-setting extramural awards. With a total of more than $110 million in grants and contracts, the division generated 42 percent of MSU's total research activity. In the first 2 months of FY2021, DAFVM units earned $13.6 million in new awards.

Thank you for your continued support of our students, faculty, staff, administrators, and programs.

With warm regards for a safe and healthy holiday season,

Reuben Moore

REUBEN MOORE
Interim Vice President

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ON THE COVER

Mississippi agricultural producers, including this soybean grower in Lowndes County, raced to harvest crops ahead of Hurricane Delta in early October 2020. (Photo by Michaela Parker)

Without Missing a Beat

Dr. David Buys, associate professor in the Department of Food Science, Nutrition, and Health Promotion and Extension health specialist, recorded a series of videos called *Conversations About Coronavirus*, which featured experts in medicine, child development, and nutrition to provide facts and helpful information about COVID-19. (Photo by Kevin Hudson)

DAFVM Units Serve Public Through Pandemic

Most people's daily routines ground to a halt during the COVID-19 pandemic, but many continued reporting to work because state residents counted on their services to confront the deadly virus.

The resources of each unit in the MSU Division of Agriculture, Forestry, and Veterinary Medicine (DAFVM) proved their value to Mississippians at this critical time.

As a land-grant university, MSU provides research, extension, and teaching to support the state's largest industry: Mississippi's $7 billion agricultural sector.

Dr. Reuben Moore, DAFVM interim vice president, said each unit played a distinctive role in responding to COVID-19 and carrying out essential tasks that keep Mississippi thriving.

"Our programming affects all Mississippians, whether it be the food supply, sustainable natural resources, or animal welfare," said Moore, who is also interim director of the Mississippi Agricultural and Forestry Experiment Station (MAFES). "We're here to ensure a better quality of life for everyone in our state.

"This is illustrated most often when our state is faced with uncertainty," he said. "Despite closures or crises, our faculty maintained continuity in agricultural and forestry research along with advancing knowledge through educational programming. Our scientists planted research plots to address critical issues faced by farmers and assisted those serving on the front lines, particularly in a state of emergency."

Throughout the spring, planting of an estimated 3,870 acres of row, forage, and horticultural crops continued at the 16 MAFES branch stations across the state. Crops for the MAFES official variety trials, vegetable trials, and studies in entomology, plant pathology, agronomy, and weed science all were planted during the COVID-19 pandemic.

> "We're here to ensure a better quality of life for everyone in our state."
>
> DR. REUBEN MOORE

The Bearden Dairy Research Center continued to care for more than 420 Holstein and Jersey cows, and the Custer Dairy Processing Plant continued to use milk from the center to make cheese. MAFES and MSU College of Agriculture and Life Sciences staff members also tended 2,500 cows in the MSU Beef Unit, 80 horses in the MSU Equine Unit, and nearly 2,800 broilers in the MSU Poultry Unit, along with many acres of aquacultural ponds.

Faculty, staff, and students had to take extra health precautions to minimize risks as they capitalized on breaks in the rainy weather to get personnel in the field. Nevertheless, those working on the farms remained dedicated to providing the necessary tasks to meet researchers' needs.

"Throughout the pandemic, many of the technicians and crews on campus and at research stations continued to come into work to make sure that Mississippi's agricultural research enterprises continued to function, and many more continued to work from home," said Dr. John Blanton, MAFES interim associate director and head of the Department of Animal and Dairy Sciences.

The MSU Extension Service is written into the Mississippi Emergency Management Agency's Comprehensive Emergency Management Plan as an essential agency. Extension personnel are placed on standby to assist state agencies when a state of emergency is declared. Extension's functions range from caring for animals and row crops to supporting the mass care and feeding of children and adults displaced or left without resources during or after a disaster.

"Throughout the pandemic, many technicians and crews on campus and at research stations came into work to make sure that Mississippi's agricultural research enterprises continued to function, and many more worked from home."

DR. JOHN BLANTON

"While people have turned to Extension for their educational needs for more than 100 years, they have also looked to us for leadership, encouragement, and stability during emergencies," said MSU Extension Director Gary Jackson. "We're perhaps best known for our work as an education agency supporting agriculture and 4-H, but we also provide essential education in family and consumer sciences, community development, and natural resources, and we do vital work in all of these areas."

For example, the Extension Center for Technology Outreach made internal training and Extension programs for the public available for online delivery. The center's staff facilitated webinars for producers on agricultural markets and the application process for funding from the Coronavirus Food Assistance Program. They also modified in-person training

(Top) Agricultural research continued despite the pandemic, including this corn hybrid trial hosted by Pilkinton, Dantzler, and Phillips Farm in Lowndes County. Pictured are Christian Singleton (front left), Jared McLaurin, Tony Dantzler, Holt Saulters, and Roscoe Ivy; Dr. Erick Larson (back left), Dr. Charlie Stokes, and Nolan Stapleton. (Photo by Reid Nevins)

(Bottom) Claiborne County Supervisor Terry Young and Extension agent Monica Beeman organized a drive to collect toiletries for veterans during the pandemic. (Submitted photo)

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>
> DR. GARY JACKSON

on meeting Food Safety Modernization Act regulations and provided the programs virtually.

One-third of Extension's statewide educational programs are now available online. In addition, the Extension Center for Government and Community Development assisted local government officials as they navigated their communities through unprecedented challenges.

The MSU Extension Office of Agricultural Communications produced 150 media releases, educational publications, blog posts, videos, and social-media graphics between the beginning of March and the end of May. Posts on MSU Extension and Mississippi 4-H social-media platforms reached more than 950,000 users. Find these resources online at ***http://msuext.ms/covid***.

The MSU College of Veterinary Medicine (CVM) continued its mission of educating future veterinarians and providing veterinary services while sharing its resources with state and local medical personnel. CVM scientists specializing

in infectious disease research assisted in Mississippi State Department of Health COVID-19 diagnostic work on human samples at the department's laboratory in Jackson during weekends in May.

CVM worked with the university's John C. Longest Student Health Center to expand polymerase chain reaction (PCR) diagnostic testing for COVID-19. Personnel from the college had processed 4,565 PCR tests as of late November. Their efforts significantly increased capacity for MSU diagnostic tests while drastically reducing wait time.

CVM also delivered personal protective equipment to the student health center and loaned two ventilators suitable for human use to Oktibbeha County Hospital (OCH) Regional Medical Center in Starkville. The college was prepared to commit personnel and resources to assist physicians and emergency preparedness representatives at OCH, the student health center, and the University of Mississippi Medical Center in Jackson to augment efforts to care for the public if needed.

The college also continued to provide essential services during the COVID-19 pandemic to ensure that veterinary care is available to agricultural and companion animals. Throughout this process, they adhered to federal, state, and university guidelines to maximize the safety of staff, clients, and patients.

"We are proud of our partnership with state and local agencies and health-care facilities," said CVM Dean Kent

(Top) Ann Fleming Leflore of Lafayette County won top poultry for the layer category at the socially distanced Lafayette County Poultry Chain Show. (Photo by Lance Newman)

(Bottom) MSU Extension agent Natasha Haynes (left) and MSU Office of Agricultural Communications videographer Johnathan Parrish practice social distancing while filming *The Food Factor*. This MSU Extension program maintained its production schedule during the COVID-19 pandemic to serve viewers. (Photo by Ellen Graves)

Dr. Brittany Moore-Henderson, a clinical instructor in the CVM Department of Clinical Sciences (right), examines a patient with Tyler Floyd, a member of the Class of 2022, in one of the new exam rooms during the pandemic. (Photo by Tom Thompson)

Hoblet. "We're also proud of our graduating class for the obstacles they overcame to complete their degrees and realize the dreams they worked so hard to reach for so many years. We know they are entering the field well prepared to meet the needs of animals in our ever-evolving world."

In the MSU College of Forest Resources and Forest and Wildlife Research Center, valuable research continued in support of forestry and forest products industries. Studies also continued to benefit wildlife and fisheries recreation, which generate a combined $15 million to the state's economy.

Faculty, students, and staff continued to produce high-quality research but worked differently, alternating remote work, field collection, and laboratory work with flexible scheduling. Examples of continued research include a wildlife project engaging citizen scientists, a $250,000 project focused on increasing the value of Southern pine, and a new app that allows farmers to make real-time assessments of the property damage caused by feral pigs, which is estimated at $66 million per year in Mississippi.

For the first time in its history, the Summer Field Program, a 9-week immersive field experience for forestry majors, was cancelled. However, alumni overwhelmingly stepped in to fill this void, providing additional jobs and internships so that students could engage in their chosen profession during the summer.

"Whatever Mississippians face, we are here to provide science-based answers to their questions," Moore concluded. "The Division of Agriculture, Forestry, and Veterinary Medicine is here to serve, educate, and support the people of our state."

BY NATHAN GREGORY, VANESSA BEESON, AND MELODY THURLOW

> "We're proud of our graduating class for the obstacles they overcame to complete their degrees. We know they are entering the field well prepared to meet the needs of animals in our ever-evolving world."
>
> DR. KENT HOBLET

Extending a Hand

Extension Assists Families, Industry After Easter Tornadoes

One of Kim Hancock's routine jobs is assisting Jones County 4-H'ers with their livestock projects, but Easter Sunday 2020 was anything but routine. She found herself helping some of those same young people and their families sort through the rubble of what was once their homes.

Jones was one of 32 Mississippi counties that reported damage from a tornado outbreak on April 12 that resulted in deaths, injuries, and catastrophic destruction to residential, commercial, and agricultural property.

"After the storm came through, we received texts from friends saying that they were trapped and had lost everything," said Hancock, an agent with the MSU Extension Service. "As soon as the weather cleared, we headed to them with chainsaws and other equipment to get them out. It blessed my heart to see everyone coming together to help."

MSU Extension is a supporting organization in the Mississippi Emergency Management Agency's emergency management plan. Hancock is one of more than 150 Extension agents in the state's 82 counties who assist local emergency personnel in the mass care and nourishment of those who are displaced or without resources after disasters. They also help with emergency response related to livestock, row crops, and domestic animals.

Dr. Shaun Tanger, Extension forestry specialist, was among several faculty and staff members in high demand after storms damaged 13,000 acres of private forestland, valued at almost $15 million, in the southern half of Mississippi.

"Landowners ask us how to determine if timber stands are salvageable, get a logger to their property to haul wood away, or get tax deductions for what they have lost," Tanger said. "In a salvage scenario, snapped trees will typically be processed as pulpwood. Mills and markets then become flooded with this product, which drives down value. Our presentations and publications are resources landowners use to make the most profitable decisions they can based on the condition of their stand."

Extension participated in relief efforts even as the state was under a shelter-in-place order for much of April to prevent the spread of COVID-19.

"This pandemic and the guidelines in place to mitigate it force people to social distance from others as they pick up the pieces, a challenge our personnel have never seen," said Dr. James Henderson, head of the MSU Coastal Research and Extension Center in Biloxi, Mississippi.

Twelve agents in 10 counties hardest hit by the storms, mostly across the state's southern half, were assigned by their

Kelby King, Extension agent in Jasper County, inspects his father's poultry house after the Easter tornado. (Photo by Alice Johnston)

Kameron Williams, Southwest Community College coach; A. J. Moore of the Houston Texans; homeowner Tracy Harvey; Thomas Brewer, Extension agent in Jefferson Davis County; C. J. Moore of the Detroit Lions; Rocheryl Ware, Extension agent in Hinds County; and Cornell Armstrong of the Houston Texans, participate in clean-up activities. (Photo by Sandra Expose)

The Meat Hook, a deer-processing operation and meat market in the Moss Community of Jasper County was reduced to a pile of rubble. (Photo by Mark Thornton, *Laurel Leader-Call*)

local emergency-management coordinators to conduct damage assessments for area producers who lost chicken houses, livestock, barns, equipment, livestock fencing, or timber. Agents documented the damage and directed producers to state and federal programs that could provide emergency funding.

Covington County sustained more than $3 million in residential damage alone from two separate tornadoes that touched down within miles of each other.

Extension agent Ellen Russell opened the multipurpose facility that serves as the county's tornado shelter before the storms hit and conducted damage assessments on agricultural property.

"We took a huge hit to homes, barns, vehicles, poultry farms, and stocker cattle and cow-calf operations," Russell said. "The initial response was chainsaw crews working to open roads, restore power, and secure livestock lost due to downed fencing. We helped organize local nonprofit organizations and cleanup crews, locate missing cattle, and collect and distribute supplies."

For more information about Extension's disaster response and a variety of disaster-response resources visit ***http://extension.msstate.edu/community/disaster-response.***

BY NATHAN GREGORY

Volunteers work to clear Highway 15 North near the intersection of Matthews Road in Jones County. (Photo by Mark Thornton, *Laurel Leader-Call*)

MSU veterinarian Dr. Debra Moore and Maggie Cooper, an animal trainer, work together to examine the health of a dolphin recovering in Gulfport at the Institute for Marine Mammal Studies.

GULF FRESHWATER GLUT LINKED TO

Dolphin and Sea Turtle Deaths?

When Mississippi River flooding in 2019 necessitated the extended opening of the Bonnet Carré Spillway north of New Orleans, the coastal waters along south Mississippi turned from salty to almost fresh, and a host of problems began.

In collaboration with the Institute for Marine Mammal Studies (IMMS), the MSU College of Veterinary Medicine (CVM) was called in to help determine the cause of some of those problems, specifically issues related to dolphins and sea turtles. These findings will inform future long-term planning and management decisions officials will make when confronted with Mississippi River flooding.

MSU scientists are trying to determine if there is evidence that the high dolphin and sea turtle mortalities seen in 2019 were linked to the massive freshwater incursion from the flooding Mississippi River.

Dr. Mark Lawrence, a professor in the CVM Department of Comparative Biomedical Sciences, is director of the Global Center for Aquatic Food Security. He leads the CVM scientists investigating the cause of dolphin and sea turtle mortalities during the 2019 freshwater incursion.

"In 2019, there was an extraordinary amount of rain in the Mississippi River floodplain, so as a result, there was a large amount of water from the river released into the Gulf," Lawrence said. "This quantity of water released through Lake Pontchartrain into the Mississippi Sound dropped the water salinity there to almost freshwater levels for a few months."

Soon, freshwater algae blooms appeared on the beaches, the oyster harvest was decimated, shrimp and fish populations dropped, and there were triple the usual number of stranded dolphins and sea turtles.

Lawrence said there is a known link between low salinity and dolphin and sea turtle mortalities, but the exact reason for these mortalities is unknown. To answer this question, CVM scientists are analyzing and comparing tissues from dolphins and sea turtles that died during the 2019 freshwater incursion to tissues from dolphins and sea turtles that died from other causes.

In addition to IMMS, CVM works with several other agencies in tackling this problem: the Mississippi State Chemical Laboratory, MSU Department of Chemistry, National Oceanic and Atmospheric Administration, and MSU Institute for Genomics, Biocomputing, and Biotechnology (IGBB). The question they are addressing is quite specific.

"Is there evidence that the high dolphin and sea turtle mortalities we saw in 2019 were linked to the massive freshwater incursion from the Mississippi River?" Lawrence asked. "The state of Mississippi is looking for better solutions to handling Mississippi River flooding that do not damage the city of New Orleans but still protect Mississippi fisheries and tourism."

CVM scientists will collaborate with the IGBB to use modern genome sequencing techniques to determine if there is a microbial pathogen associated with these mortalities.

Since the Mississippi River drains a large portion of the United States that includes both agricultural and major urban areas, the water carries runoff with a lot of chemical residue. Dr. Ashli Brown, state chemist and professor in the Department of Biochemistry, Molecular Biology, Entomology, and Plant Pathology, is looking for evidence of organic pollutants, pesticides, and heavy metals from the flood water that appears in the tissue of dead dolphins and sea turtles.

"These animals are prone to accumulate contaminants in their tissues at levels that may affect biological functions," Brown said. "This data will hopefully aid in the determination of mortality and lead to better floodplain management strategies."

BY BONNIE COBLENTZ • PHOTOS BY KEVIN HUDSON

Cooking Up Healthy Habits

4-H'er Wins Recipe Contest While Learning Good Nutrition

An avid participant in 4-H robotics, Kristin Jernigan learned more about nutrition and healthy cooking during the 2020 Virtual Club Congress nutrition contest.

Two years ago, Kristin Jernigan joined 4-H at the urging of her family and friends, and she found a place to explore and nurture her creativity.

From the beginning, she's been a member of the 4-H robotics club in Winston County.

"I like being able to work on a team and go to competitions," said Jernigan, 15. "I really like the whole process of building the robots, programming them, and competing with them."

As the youth development program of the MSU Extension Service, 4-H provides a wide variety of community-oriented learning experiences that lead to personal growth. Although livestock shows are what most people associate with 4-H, there are many other options: forestry; health and wellness; leadership and citizenship; S.A.F.E.T.Y., which includes firearms safety training and activities; and STEM, an acronym for science, technology, engineering, and math.

In summer 2020, Jernigan decided to try something new during Virtual Club Congress. An annual educational event that brings together senior 4-H'ers from across the state, Club Congress provides opportunities for young people to practice and improve their knowledge and skill sets. Traditionally a 3-day, in-person event on campus, Club Congress was held virtually in 2020 because of COVID-19.

Jernigan participated in and won the nutrition unit, which taught lessons on nutrition and balanced diets while challenging participants to create a healthy recipe or improve a favorite recipe by substituting healthier ingredients.

Jernigan's Healthy Orange Chicken over Brown Rice with Mixed Vegetables is a makeover recipe of one of the family's favorite meals.

"We make this recipe a lot, but I switched out some of the ingredients to make it healthier," Jernigan explained. "We usually use white rice and put brown sugar on the chicken. Instead, we used brown rice and substituted a mixture of orange juice and soy sauce for the sugar. And we baked some zucchini, yellow squash, and red onion to go along with it."

Qula Madkin, Extension instructor and registered dietitian, created the 4-H Healthy Recipe Competition for Club Congress. Participants completed a learning unit on food groups, nutrition, and diet that had them reference the U.S. Department of Agriculture MyPlate dietary guidelines. They also completed quizzes to reinforce the lessons. Afterward, they created and submitted their recipes to Madkin for judging.

"Kristin's recipe not only met the recipe contest criteria for being healthy, creative, and fun," Madkin said, "but she went even further by using seasonal vegetables in her recipe and notched up the flavor by using spices and flavor enhancers like soy sauce and citrus fruit. That was a huge plus."

Madkin's goal was simple. She wanted to encourage cooking and healthy eating in Mississippi's young people.

"I hope that I can create more nutrition learning opportunities for 4-H'ers," she said. "Our kids are so smart and creative. We need to encourage them to share their ideas when it comes to meals and cooking.

"Offering more nutrition-focused opportunities in 4-H is one way to help families start to think of eating healthier as an option," Madkin added. "I want to show them that healthier eating is not burdensome, boring, or hard, but that it can be fun, delicious, and budget-friendly. I want to encourage families to use what they have available and teach them to live healthier on their terms."

Jernigan said she and her family are implementing the things she learned during Virtual Club Congress at home.

"We buy more vegetables and pay more attention to what we eat and try to balance out what we eat," she said.

BY SUSAN COLLINS-SMITH
PHOTOS BY MICHAELA PARKER

Healthy Orange Chicken over Brown Rice with Mixed Vegetables

Servings: 2 Prep time: 10 minutes Cook time: 35 minutes Total time: 45 minutes

Ingredients

- 1 POUND BONELESS, SKINLESS CHICKEN BREAST, CUBED
- 1 TABLESPOON SESAME OIL
- 1 14-OUNCE PACKAGE INSTANT BROWN RICE, COOKED ACCORDING TO INSTRUCTIONS
- 2 CUPS MIXED ZUCCHINI AND SQUASH, CHOPPED
- ½ SMALL RED ONION, CHOPPED
- ½ GREEN BELL PEPPER, CHOPPED
- ½ RED BELL PEPPER, CHOPPED
- ½ TEASPOON GARLIC POWDER
- ¼ TEASPOON PEPPER
- 1 TABLESPOON LIGHT MARGARINE

Sauce

- 1 CUP ORANGE JUICE, NO PULP
- 1 TABLESPOON LOW-SODIUM SOY SAUCE
- ¼ CUP LOW-SODIUM CHICKEN BROTH
- 1 TABLESPOON HONEY
- ½ TEASPOON GARLIC POWDER
- ¼ TEASPOON PEPPER
- 1 TABLESPOON CORNSTARCH (MIXED WITH WATER) TO THICKEN

Instructions

In a large frying pan, heat the sesame oil and cook chicken until brown (10 minutes).

Add mixed zucchini, squash, red onion, and bell pepper to a baking dish. Add seasonings and light margarine, and cook 20 minutes at 400 degrees.

Stir together sauce mixture in a separate bowl.

Remove cooked chicken from the pan, and pour sauce mixture into the pan.

Bring the sauce mixture to a boil, and boil for 15 to 20 minutes, stirring every minute.

When the sauce thickens, add the cooked chicken back to the pan. Stir to coat the chicken.

Serve orange chicken over brown rice with a side of mixed vegetables.

Delta Water Center

DRAWS INTERNATIONAL TEAM

With aquifers declining all over the world as demand for water increases, it is no surprise the National Center for Alluvial Aquifer Research (NCAAR) is drawing a diverse team of scientists to Stoneville, Mississippi.

The U.S. Congress established the center in 2017 as a collaboration between the USDA Agricultural Research Service and the Mississippi Agricultural and Forestry Experiment Station (MAFES). In 2019, the MSU Extension Service became part of NCAAR. Experts in agricultural economics, agricultural engineering, soil science, hydrology, and irrigation work together to address water issues.

Dr. Drew Gholson, a MAFES assistant professor and Extension irrigation specialist, explained that the aquifer is being depleted faster than it is being recharged.

"We are looking at many ways to combat that hydrologically, through irrigation efficiency, agronomic practices with conservation systems, efficient cropping systems, improved water capture, distribution systems, management options, and economic risk assessment tools," Gholson said.

The team conducts applied research and Extension outreach that works for local agricultural producers.

"If we want folks to change, we have to show how it pays off," Gholson said. "So, we put economists on each one of these projects to show farmers where it will benefit them. At the end of the day, what we want is for proven practices to be adopted, so we have to meet farmers where they are. Can we use less water? From our standpoint, we can show it is possible to use less and maintain yields."

Dr. Gurpreet Kaur, a MAFES agronomist and assistant research professor at NCAAR, said the center provides a unique opportunity to collaborate with scientists from different disciplines to tackle water issues from all perspectives.

"It is important for people to acknowledge that there is a problem before you can solve it," she said. "I wish all stakeholders understood the current issue of declining water levels in the aquifer and how it will have a big impact on our agricultural production systems in the future."

Dr. Gurbir Singh is a MAFES agronomist and assistant research professor with more than 10 years of experience in conducting field and laboratory research. He advises and mentors several graduate students and staff members, and transfers science-based knowledge generated from his research to producers. In addition to 15 research projects, he is developing a state-of-the-art soil- and water-quality laboratory.

Singh sees parallels between Mississippi and his family's farm in India.

"I grew up at our family farm in Punjab, in the foothills of the Himalayas," he said. "The soils of Punjab are carved with rivers and with alluvial soils just like the Mississippi Delta. We had plenty of groundwater. In my lifetime, over 30 years, the water level dropped from 3 feet below the surface to 130 feet—more than a 4-foot drop in the water level each year—because of the overuse of groundwater for rice and wheat production.

"Coming to the Mississippi Delta and seeing groundwater pumped at a massive rate is déjà vu to me," Singh said. "I feel farmers here are lucky to have the luxury of pumping groundwater. But we need to think of what will happen in 20 to 30 years. Is groundwater overuse sustainable?"

NCAAR is a cooperative program between the USDA Agricultural Research Service and MAFES. The center was created to address the water resources challenges in the Mississippi River Alluvial Aquifer and is supported under Cooperative Agreement number 58-6001-7-001.

BY KERI COLLINS LEWIS • PHOTOS BY KEVIN HUDSON

“The soils of Punjab, in the foothills of the Himalayas, are carved with rivers and with alluvial soils just like the Mississippi Delta.”

DR. GURBIR SINGH

(Top) Using a hole-punch tool to create the correctly sized hole in poly pipe used for irrigation is a key factor in efficient water use. (Bottom left) Dr. Drew Gholson stands beside a soil moisture telemetry box in a soybean field that is part of the soil moisture sensor showcase created in 2020 to give producers the opportunity to see efficient irrigation equipment in action. (Bottom right) Dr. Gurpreet Kaur and Dr. Gurbir Singh use a soil moisture sensor in a soybean research plot to evaluate conservation practices promoting water-use efficiency.

Survey of 2019 Backwater Flood Reveals 2020 Losses

Larry Whitten of Issaquena County is one of thousands who continue to suffer mostly overlooked losses from the ongoing backwater flood in the lower Mississippi Delta.

The unrelenting backwater flood in the lower Mississippi Delta was a life-altering experience when it began in 2019, and it had caused tremendous economic, environmental, psychological, and societal impacts by late 2020.

Dr. Curt Lacy, an agricultural economist with the MSU Extension Service, said the effects of the flood in the Yazoo-Mississippi Delta will take years—in some instances, generations—to overcome.

"The backwater flood is largely overlooked for a variety of reasons, including the smaller population affected, the relative remoteness of the area, and the fact that it took weeks for the backwater flooding to occur, and now it has lasted for well more than a year," Lacy said. "A backwater flood is not only hard for more people outside the affected area to comprehend, but it lasts too long for most people's attention span."

The Extension Service compiled the results of a survey aimed at quantifying losses in the five counties that continue to be affected by backwater flooding. At its peak in May 2019, the Backwater Flood of 2019 inundated 548,000 acres, damaged hundreds of homes, and closed three highways. The affected area includes all or part of Warren, Yazoo, Issaquena, Sharkey, and Humphreys Counties. Flooding impacted an estimated 20,000 people.

"These findings show a terrible cost, which can be repeated each time the area floods," said Nicolas Quintana-Ashwell, an economist at the National Center for Alluvial Aquifer Research and a researcher with the Mississippi Agricultural and Forestry Experiment Station who is based at the MSU Delta Research and Extension Center in Stoneville.

"We found a $42,160 self-assessed loss per household in costs associated with the flood not covered by insurance or any assistance programs," Quintana-Ashwell said. "Additionally, 69 percent of workers reported a reduction in work productivity due to stress and fatigue associated with the flood."

The flood quantified in 2019 continues in many places, so its economic impact is still growing. By mid-May 2020, water accumulations in portions of the Delta were again causing rivers to overflow, spilling over into an estimated 200,000 acres of farmland.

"Several thousand acres have been under water for over a year and a half in places," said Dr. Ben Lawrence, an Extension agronomist and scientist in the Mississippi Agricultural and Forestry Experiment Station. "In the areas affected by the continuous flooding, people are reliving 2019, which would have been unimaginable for 2 years in a row."

That means the economic impact numbers of the backwater flood that began in 2019 are growing with each month the flood persists.

Emily Carter, Extension coordinator for Sharkey and Issaquena Counties, said the intangible losses to the flood are harder to measure.

"Many people who had to move out of their homes for most of 2019 were just completing renovations and getting back into their homes when they were displaced again this year," Carter said. "That caused a sense of hopelessness in some residents, but it also has drawn our community closer together as neighbor helps neighbor."

This sense of caring is combined with resilience.

"Many families in the south Delta have been here for generations, and they will stay here, persevering through the hard times like their ancestors," Carter said.

BY BONNIE COBLENTZ • PHOTOS BY KEVIN HUDSON

At its peak in May 2019, the backwater flood inundated 548,000 acres, damaging hundreds of homes, closing three highways, and flooding parts of Warren, Yazoo, Issaquena, Sharkey, and Humphreys Counties. In 2020, the ongoing flooding affected a peak of 200,000 acres.

"Many people who had to move out of their homes for most of 2019 were just completing renovations and getting back into their homes when they were displaced again this year."

EMILY CARTER

High School Food Science

Curriculum Debuts in 2020

A new food science curriculum being introduced in Mississippi high schools is aimed at helping students learn about a career path that many do not even know exists.

The Agricultural Food and Technology program was developed to be part of the Career Technical Education framework offered by the Mississippi Department of Education (MDE), according to Dr. Wes Schilling, a food science professor in the College of Agriculture and Life Sciences Department of Food Science, Nutrition, and Health Promotion.

"This curriculum is important for Mississippi schools because even if students don't choose food science as a career, they need to understand how food is kept safe, what makes food have particular tastes and flavors, and how their food is made," Schilling said. "The primary goal is to pique student interest in the field."

Schilling said Mississippi sends the majority of its farm crops to food companies in other states for value-added processing.

"There is a need for skilled workers in the area of food science to help develop the food industry in the state," he said. "The dream is that development of the food industry will contribute to an improved economy and food security."

Jasmine Hendrix (left) and Rebekah Schilling demonstrate an activity in a recently developed food science curriculum offered in Mississippi through the Career Technical Education framework.

Jasmine Hendrix, an MSU doctoral student in food science and technology, said this specialized curriculum is important because it comprehensively showcases the applied concepts of food science. Until now, food-related topics have been incorporated into various career technical education pathways but have not been the focus.

“Food can be used as a vehicle to teach subjects such as math, science, engineering, agriculture, and more,” Hendrix said. “For example, students can practice math skills while creating formulations for a new food product they wish to develop, or they can be exposed to various technology and engineering concepts by learning how food products are processed and made available to consumers.”

Hendrix said the rapidly advancing food-science industry needs knowledgeable and skilled professionals to meet the growing demand for affordable, nutritious, and safe food products.

“Students graduating with a bachelor’s degree in food science are hired for between $40,000 and $60,000 per year, and there is a shortage of graduates in this field,” she said.

Specific topics in the new curriculum include food product development, food chemistry, food safety, food processing, and sensory evaluation. To date, Tremont Attendance Center, the Houston Career and Technology Center, Kossuth High School, and Clarksdale High School piloted the program in spring 2020.

Betsey Smith, director of the MSU Research and Curriculum Unit (RCU), explained what will happen once the curriculum has been researched and developed.

“The RCU works with the Office of Career and Technical Education at MDE to prepare the document for Mississippi State Board of Education approval,” Smith said. “Once approved, the curriculum is sent on to a 90-day Administrative Procedures Act process, where the public can make comments and suggestions regarding the document.

“The document is then released and posted on the RCU’s website for use as needed by career and technical centers in Mississippi,” she said.

BY BONNIE COBLENTZ • PHOTOS BY KEVIN HUDSON

"It really has been a blessing to me during the flood and now the quarantine to be able to help in the community. And it's all information I got through Extension."

DR. PEGGY CALLAWAY

Alumna Becomes

Gardening Guru

During Flood and Virus Isolation


Dr. Peggy Callaway

Warren County Master Gardener volunteer Dr. Peggy Callaway is the type of person who finds the silver lining in every storm cloud, even when those clouds drop incessant rain that floods her neighborhood.

When she moved her container garden to high ground at her Eagle Lake home, she could not have predicted that the constant traffic by neighbors parking on the same high ground would generate so many conversations and turn her into a local gardening guru.

"Now I get pictures all the time: 'What's wrong with my tomato?' 'Come look at my garden and crape myrtles,'" Callaway shared. "It really has been a blessing to me during the flood and now the quarantine to be able to help in the community. And it's all information I got through Extension."

Callaway, who graduated with a doctorate in computer science from the MSU Bagley College of Engineering, retired from a successful 30-year career at the U.S. Army Engineer Research and Development Center in Vicksburg, Mississippi. One of her first goals in retirement was to complete the MSU Extension Service Master Gardener volunteer program, but it was not her first experience with Extension. Her mother was a longtime member of the local Mississippi Homemaker Volunteers (MHV).

"She did gardening, canning, and sewing," Callaway said. "I was always inspired by her and said she knew more than the Master Gardeners, so I was going to do it when I retired. Mom always took me to the office for her meetings, and I always knew to call Extension when I had questions."

Now, Callaway calls Extension specialists, including entomologist Dr. Blake Layton and *Southern Gardening* host Dr. Gary Bachman.

"Master Gardeners are just people, but we have access to great information," she explained. "Newsletters and publications make it easy. I can download resources and share information with people all over. I get questions from people in Texas and Georgia! I tell people that if I don't know the answer, I know who to ask."

Callaway challenges herself to learn a new skill each year.

"This year, we were quarantined by the flood and COVID-19, so I worked on starting seeds," she said. "My mom is 97 and in assisted living. She started onions this year. She always started tomatoes for me in the past. She even saved seeds from her salads served in the assisted living facility to start tomatoes. Now I've learned how to start seeds inside."

Sandy Havard, MSU Extension agent and Warren County coordinator, said Callaway not only uses Extension herself, but also connects others to resources. This skill was invaluable to Havard when she first started working in the Vicksburg office.

"Immediately, I knew I could trust her and she would help me," Havard recalled. "She has a great way of connecting people. She really cares about others. Anything I've ever needed with Extension, from Master Gardeners to mental health, she is one of my go-to people."

Havard said Callaway is the ideal Extension volunteer.

"Peggy is trained and taking information to the public, helping us educate more people," Havard said. "Every agent needs volunteers like her!"

BY KERI COLLINS LEWIS
PHOTOS BY KEVIN HUDSON

An Aerial View

Testing Drone Efficacy in Grassland Bird Study

Two Mississippi State graduate students and their professors want to learn whether drones can help researchers and land managers more easily and accurately monitor grassland bird species.

Graduate research assistants Megan Martin and Lori Hearon are using unmanned aerial systems with thermal-imaging cameras to count wild Northern bobwhite quail populations and nests, which can help with conservation efforts.

The traditional method for gathering quail population information is to conduct covey-call count surveys. These surveys require a lot of human resources and can be inaccurate.

"Covey-call counts require particular weather conditions," explained Martin, who is investigating whether quail coveys can be detected by thermal imaging. "The calling rate is dependent on a variety of factors, and some coveys may not even call. Using drones would allow us to get a better estimate of coveys for setting bag limits and evaluating quail response to various management regimes."

Hearon is testing drones in various types of grasses to find the ideal flight altitude for identifying nest locations. Although it is not frequently used to detect quail nests, rope dragging is traditionally used in nest detection of other grassland bird species. This method can be disruptive to the birds and time-consuming, as it requires two people to drag a 60-foot-long rope through a field until birds are flushed out. Part of her project is being conducted on the Mississippi Lignite Mining Company's Red Hills Mine property.

"The company was looking for a way to determine if planting native grasses on their reclaimed land had any ecological benefit, and they were most concerned about grassland birds," Hearon said. "In the grand scheme of things, this research could help better quantify ecological benefits of grasslands in an easier and more accurate way."

Numbers of quail and other grassland songbirds have been in decline since the mid-1960s because of habitat loss, shining a spotlight on the need for conservation through habitat management.

Dr. Jesse Morrison (left), Megan Martin, Dr. Mark McConnell, student worker Sarah Scott, and Lori Hearon conduct fieldwork using drones to study different factors related to grassland bird species.

"There are pockets of good habitat scattered across the state, and we want to make sure we are counting those populations accurately so that we can make scientifically sound management recommendations," said Martin's advisor, Dr. Mark McConnell, a Forest and Wildlife Research Center assistant professor in the Department of Wildlife, Fisheries, and Aquaculture. "Imprecise estimates of abundance make it difficult to determine if and to what extent habitat-management recommendations are working or not."

Martin and Hearon's research will help other scientists, researchers, and landowners determine if drones and thermal imaging can help them learn more about these details.

If drones prove to be an effective identifier of populations and nests, the technology could become widely used for other bird species, said Hearon's advisor, Dr. Jesse Morrison, a Mississippi Agricultural and Forestry Experiment Station

assistant research professor in the Department of Plant and Soil Sciences.

"Drones could be a great tool for anyone who manages property and wants to study the wildlife on that land," Morrison said. "They could collect data on their life cycles and habitat use, as well as track movements of larger species, like turkey."

Even if drones prove not to be a feasible way to gather data on grassland birds now, they could become feasible soon, Martin said.

"This technology is constantly improving, so I think it is very possible that drones will be a critical part of the future, for not just bobwhite surveys, but wildlife surveys in general," she said.

BY SUSAN COLLINS-SMITH
PHOTO BY KEVIN HUDSON

"In the grand scheme of things, this research could help better quantify ecological benefits of grasslands in an easier and more accurate way."

LORI HEARON

Mississippi Mister Keeps Dairy Cows

Affordably Cool

Farmers know that cows produce less milk in the summer, but it was prohibitively expensive for many pasture-based dairies to solve that problem with shade or sprinklers—until now.

Even a little heat stress creates a 5-day recovery period for cattle, said Dr. Amanda Stone, dairy specialist with the MSU Extension Service and an assistant professor in the College of Agriculture and Life Sciences Department of Animal and Dairy Sciences (ADS).

"Cows experience heat stress when the temperature and humidity index reaches 68 degrees, and Mississippi spends more than 6 months of the year above that threshold," Stone said.

Hot cows don't eat as much, and less food intake means less milk production. Heat stress costs the U.S. dairy industry $1.2 billion each year.

"Dairy cows in the Southeast produce about 15 percent less milk in the summer than in the winter," Stone said. "That accounts for 45,000 pounds of milk less per cow in the U.S."

Although milk production is the easy loss to identify, heat stress also diminishes fertility, decreases colostrum quality, reduces immune function, and lowers the animals' overall welfare.

Cooling equipment can be expensive. Inexpensive options, such as portable shade structures, are easily damaged by wind and rain.

Most of Mississippi's cows are kept on pasture. Although shade is considered the solution for pasture-raised cows, it only works for part of the day, and not all pastures have shade trees. Additionally, shade encourages cows to congregate. When they gather, they form muddy areas to lie in, which creates other health challenges.

Stone and ADS graduate student Carly Becker devised a solution. With the help of Stone's husband, Stephen, and MSU's farm crew, they bought about $150 worth of PVC pipe and designed a portable, overhead sprinkler system. The cows loved it, so Stone and Becker put it to the test.

"We compared a control group that had no shade and no water cooling with one group that had shade only and a third

> "The group with sprinklers far exceeded the others on any factor we examined."
>
> DR. AMANDA STONE

group that had sprinklers only," Stone said. "The group with sprinklers far exceeded the others on any factor we examined."

Cows with shade produced 11.73 percent more milk than those in the control group, but cows with sprinkler access produced 22.34 percent more milk. Cows pastured with the sprinkler system had greater udder health and were cleaner than the other cows.

Becker, a 2020 MSU master's graduate from Independence, Kentucky, said the cows that had access to sprinklers would spend the hottest part of the day chewing their cud underneath the cooling water.

"Cows with shade or no form of cooling were breathing heavily or panting as they grouped together underneath the shade structure, or they would try to escape the heat by wallowing in a mud puddle they had created by splashing water out of the water trough," Becker said.

MSU's inexpensive sprinkler design should help make this form of cooling more accessible to dairy producers in Mississippi. More research is planned to determine best uses for this tool.

"Producers can get inventive and figure out what is the best design for their farm and budget," Becker said.

For more information on how to make and use the sprinkler, see MSU Extension Publication 3392, *The Mississippi Mister: A More Affordable Way to Cool Pasture Animals.*

BY BONNIE COBLENTZ
PHOTOS BY MICHAELA PARKER

These dairy cows at the MAFES Bearden Dairy Research Unit produced more milk in the summer heat when they enjoyed the cooling benefits of a homemade, portable water sprinkling system.

BIGGER, STRONGER PELLET

Photo by Kevin Hudson

Delivers Clean Energy Overseas

Southern yellow pine trees are so common in Mississippi's landscape that many residents may not appreciate their value, but they are a gold mine for European countries trying to meet increased renewable energy standards.

All parts of these trees—even the branches, bark, and sawdust—can be converted into wood pellets, one of several energy sources used across the Atlantic Ocean as an alternative to fossil fuels. In 2018, the U.S. exported 6.04 million metric tons of wood pellets valued at $812 million. The United Kingdom alone imported 4.71 million metric tons of the product valued at $646 million.

Researchers with the MSU Forest and Wildlife Research Center are working to address one downside to wood pellets: what happens to them during shipping. If they begin to break down, they absorb moisture and are more difficult to handle.

"Pellets that are shipped on a barge can break up as they move overseas, and when they diminish in quality, they are not worth as much," said Dr. Jason Street, an assistant professor in the Department of Sustainable Bioproducts. "Our work involves improving the properties of pellets to make them more durable, which makes them more valuable and results in more profit for our landowners and mills."

Wood pellets generate energy through direct combustion or gasification. They are burned to create steam that powers turbines to generate electricity.

"Pellets are environmentally friendly for two major reasons: They burn clean, and they come from sustainable forestlands that are continually growing and being replanted," said Dr. Rubin Shmulsky, professor and head of the Department of Sustainable Bioproducts. "Because wood is mainly just carbohydrates, its byproducts are carbon dioxide and water with little or no heavy metals or other harmful air pollution. The net carbon dioxide that is produced when the pellets are burned is offset by the forest, which consumes carbon dioxide from the atmosphere in order to grow."

To determine methods for improving wood pellet characteristics, researchers tested a variety of agricultural waste products and chemicals—such as corn starch, vegetable oil, sweet potato peels, and microcrystalline cellulose—in a pelletizer with an industrial 125-horsepower motor. One product that yielded strong results was Bio-Oil, which is typically used for skin care.

"An important element in the production of pellets is energy savings, so we have a power meter hooked up to our pelletizer to see how much power is being used when the wood feedstock goes in," Shmulsky said. "We initially found Bio-Oil improved cost because it lowered the amount of energy used in a pelletizer because it acts as a lubricant."

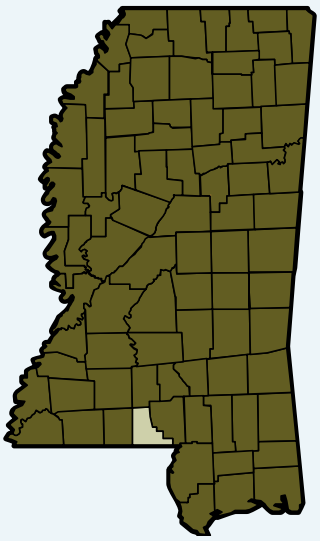
James Wooten, an Extension associate in the Department of Agricultural and Biological Engineering, monitors a pelletizer. Dr. Jason Street catches pellets to determine the machine's production rate. (Submitted Photo)

Shmulsky said this ongoing research is part of a constant process to offset the loss of jobs from paper mill closures by bolstering the pellet mill industry.

"One of our most prominent departmental goals is to improve the value of timberland," he said. "Our best approach toward that goal is to make existing products more valuable and to continually develop new wood products. Pellets are a great way to add value to very low-grade wood and residuals."

BY NATHAN GREGORY

The Walthall County Training School was built in 1920 as part of the Julius Rosenwald Fund program to build new African American schools. Educational efforts began on the site in the late 1800s. At its peak in the 1930s to 1950s, the campus grew to include several buildings. This remaining building is on the National Register of Historic Places and is one of the few surviving Rosenwald schools in Mississippi. (Photo by Kevin Hudson)



1/82: Walthall County

MSU in Walthall County:
250 Ball Ave.
Tylertown, MS 39667
walthall@msstate.edu

> "Walthall County is a peaceful, quiet farming county tucked away in south Mississippi bordering Louisiana to the south. Hospitality abounds as you travel along Highways 27, 583, or 98 to Hattiesburg, Jackson, McComb, or New Orleans. With an abundance of natural resources, our county is a wonderful place to visit, retire, or raise a family."
>
> RICHARD HAY, MSU Extension County Coordinator

County seat:	Tylertown
Population:	14,500
Municipalities:	Tylertown
Communities:	Lexie, Mesa, Salem, Sartinville, Enon, Darburn, Dexter, Knoxo, Dinan, Improve, Kirklin
Commodities:	dairy, beef, poultry, corn, soybeans, wheat, peanuts, hay, timber, vegetables
Industries:	Jones Lumber, Universal Wearparts, Tylertown Wearparts, Stringer Industries, Oldcastle, Brigade Manufacturing
Natural resources:	Bogue Chitto River, Magee's Creek, hunting and fishing
History notes:	Tylertown, the county seat and the only incorporated town in the county, was first known as Magee's Settlement. After Cullen Conerly arrived in 1850, bought some land, and started a small store and post office, the area was called Conerly's Community. In 1879, it was renamed Tyler Town for William G. Tyler. In 1894, it became Tylertown.
Attractions:	Dairy Festival, Bogue Chitto River, Magee's Creek, Holmes Water Park, Christmas Lights in the Park
Did you know?	Governor Earl Brewer created Walthall County in 1912 from parts of Pike County and Marion County. Walthall County once was a very productive cotton-growing area of Mississippi, but it transitioned to dairy after World War II. At one point, more than 400 dairies dotted the landscape, and Walthall County became known as the "Cream Pitcher of Mississippi." Poultry and timber are currently the leading commodities in the county's agricultural sector.

Editor's note: 1/82 is a regular feature highlighting one of Mississippi's 82 counties.

NewsNotes

Dodds

Freeman

Dr. Darrin Dodds, professor and head of the College of Agriculture and Life Sciences (CALS) Department of Plant and Soil Sciences, and **Dr. Charles Freeman**, associate professor in the School of Human Sciences, graduated from the national LEAD21 leadership development program. Administered by the Committees on Policy of the Associations of the Public and Land-Grant Universities and its strategic partners, the LEAD21 curriculum is designed specifically for faculty and staff of member institutions who strive to improve their leadership capabilities both in their present roles and future endeavors.

The 1-year LEAD21 core curriculum includes three sessions and a concurrent individual learning component. The program's goals include enhancing the application of skills and knowledge in four core leadership development areas (change, conflict, communication, and collaboration); developing a peer leadership network to enhance personal leadership practice, collaboration, and diversity of perspective; and developing and implementing an individual leadership development process.

Buys

Dr. David Buys, associate professor in the CALS Department of Food Science, Nutrition, and Health Promotion and state health specialist with the MSU Extension Service was named a fellow of the Gerontological Society of America (GSA). Being designated a fellow is the highest class of membership in this society, representing peer recognition of outstanding contributions to the field of gerontology.

As a gerontologist, Buys has focused much of his research on the intersection between nutrition and aging. He was recognized in the behavioral and social sciences section. As a CALS faculty member, Buys focuses on nutrition and aging with an emphasis on vulnerable populations. He is the first Mississippian to gain fellow status within GSA.

A health leadership team led by Extension has received a national award for its work to address mental health challenges in the state's agricultural community. Directors of the PReventing Opioid Misuse in the SouthEast (PROMISE) Initiative received the Southern Distinguished Team award from Epsilon Sigma Phi during the organization's annual national conference in October. Led by Buys, team members are project coordinator **Dr. Mary Nelson Robertson**, Extension state family life specialist **Dr. Alisha Hardman**, Extension state dairy specialist **Dr. Amanda Stone**, Extension associate professor **Dr. Laura Downey**, Department of Communication assistant professor **Dr. Holli Seitz**, MSU Extension instructor **Ann Sansing**, and graduate research assistant **Je'Kylynn Steen**.

Robertson

Hardman

Stone

Downey

Seitz

Sansing

Steen


Gore

Dr. Jeffrey Gore, an entomologist with the Mississippi Agricultural and Forestry Experiment Station (MAFES) and MSU Extension, was appointed to the Environmental Protection Agency's Farm, Ranch, and Rural Communities Committee. Established in 2008, this committee provides independent policy advice, information, and recommendations to the EPA administrator on a range of environmental issues and policies that are of importance to agriculture and rural communities.


Morrison

Dr. Jesse Morrison, an assistant research professor in MAFES and the CALS Department of Plant and Soil Sciences, received the Early Career Award from the American Forage and Grassland Council. The award honors an individual under the age of 40 who has made a significant contribution to the forage and grassland industry.


Huston

Dr. Carla Huston, Extension beef veterinarian and a professor in the Department of Pathobiology and Population Medicine in the College of Veterinary Medicine (CVM), was named liaison to the Presidential Advisory Council on Combating Antibiotic Resistant Bacteria on behalf of the American Association of Extension Veterinarians. As part of the U.S. Department of Health and Human Services, the council provides advice, information, and recommendations to the secretary of Health and Human Services regarding programs and policies intended to support and evaluate the implementation of U.S. government activities related to combating antibiotic-resistant bacteria.


Reddy

Dr. K. Raja Reddy, a research professor in the CALS Department of Plant and Soil Sciences and a MAFES scientist, was named Researcher of the Year by the International Cotton Advisory Committee, an honor recognized internationally as the top award in cotton science. He was also elected to lead the Mississippi Academy of Sciences by members at large. As president, Reddy plans to further the state's conversation on agricultural science and facilitate new student opportunities.


Khaitsa

Dr. Margaret Khaitsa, an epidemiology professor in the CVM Department of Pathobiology and Population Medicine, has received a Fulbright U.S. Scholar Program award to work in Kenya, where she will teach veterinary epidemiology and assist with the development of women in leadership.


Burger

Dr. Leslie Burger, assistant Extension professor in the Department of Wildlife, Fisheries, and Aquaculture in the College of Forest Resources was named a fellow of The Wildlife Society. As one of the highest awards bestowed by the society, this honor recognizes Burger for her remarkable service to the wildlife profession. For the past 12 years, Burger has created programs to educate youth and the broader community about natural resource conservation as it relates to wildlife. She also serves as her department's undergraduate coordinator, preparing students for a future in natural resources.


Silva

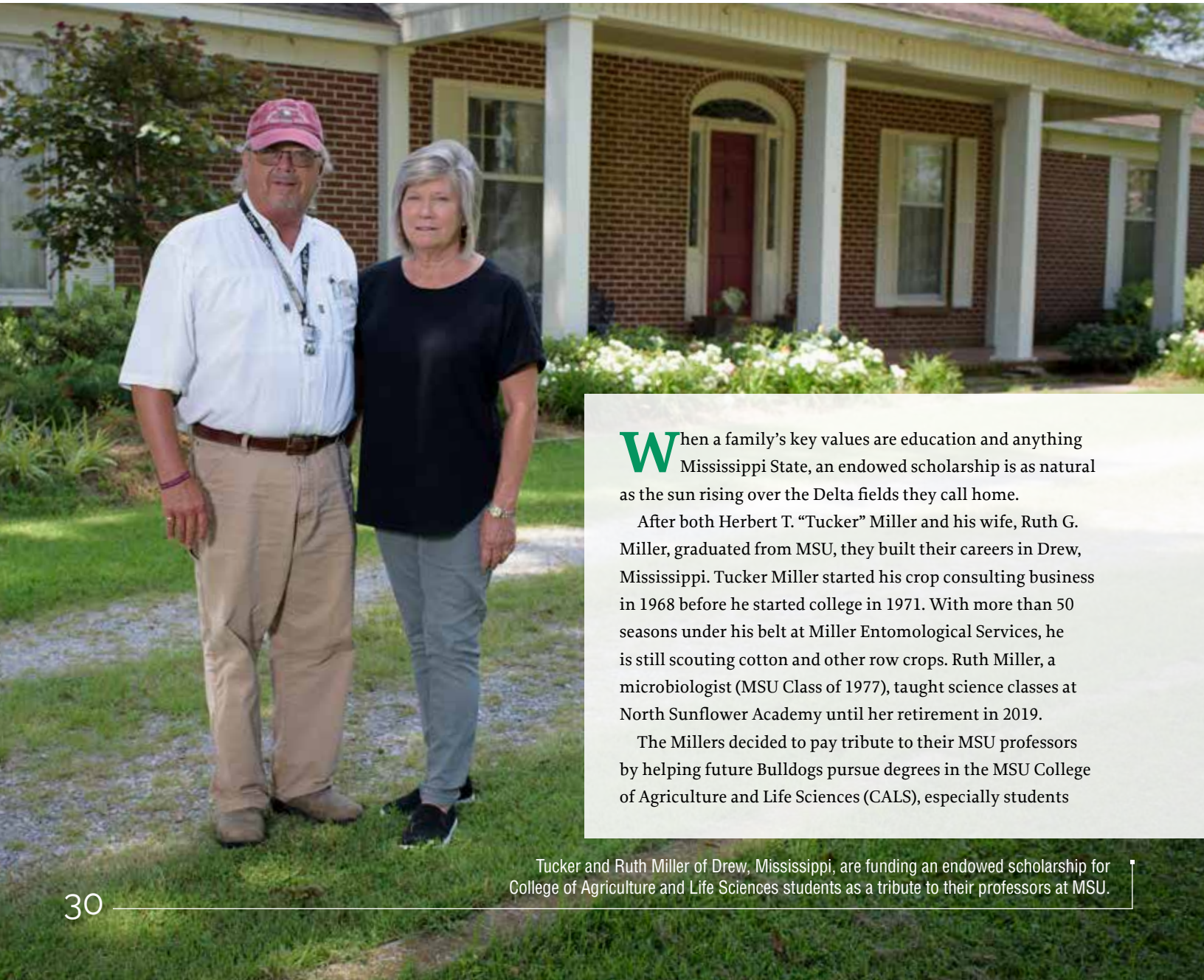
Dr. Juan Silva, a professor in the CALS Department of Food Science, Nutrition, and Health Promotion and Extension food-safety specialist, was selected from a pool of nearly 100 candidates to the nine-member executive board of the Food Safety Preventive Controls Alliance. He will serve 2 years on the newly created executive advisory board, which consists of representatives from industry, academia, and government. Established in 2011, the alliance supports safe food production for the U.S. market by developing a core curriculum and corresponding technical educational materials about food safety risk-reduction preventive controls that comply with the Food Safety Modernization Act.


Staggers

Will Staggers, director of development for CALS, Extension, and MAFES, was recognized by the National Agricultural Alumni Development Association for his early-career success and leadership. He received the organization's Up and Coming Award, which honors individuals with 2 to 5 years of experience in agricultural advancement professions. Staggers joined the MSU Foundation in 2015.

DevelopmentCorner

Miller Scholarship
Will Help Students Earn Agricultural Degrees



When a family's key values are education and anything Mississippi State, an endowed scholarship is as natural as the sun rising over the Delta fields they call home.

After both Herbert T. "Tucker" Miller and his wife, Ruth G. Miller, graduated from MSU, they built their careers in Drew, Mississippi. Tucker Miller started his crop consulting business in 1968 before he started college in 1971. With more than 50 seasons under his belt at Miller Entomological Services, he is still scouting cotton and other row crops. Ruth Miller, a microbiologist (MSU Class of 1977), taught science classes at North Sunflower Academy until her retirement in 2019.

The Millers decided to pay tribute to their MSU professors by helping future Bulldogs pursue degrees in the MSU College of Agriculture and Life Sciences (CALS), especially students

Tucker and Ruth Miller of Drew, Mississippi, are funding an endowed scholarship for College of Agriculture and Life Sciences students as a tribute to their professors at MSU.

interested in plant and soil sciences. Tucker Miller, who got his bachelor's degree in agronomy (Class of 1975) and his master's in pest management (Class of 1977), named some of the men who influenced him over the years: Dr. Henry Pitre, Dr. Clinton H. Graves, and Dr. Euel Coats.

"I had a great experience with all those guys," he said. "I learned a lot and was able to take what I learned and make a living for 50 years. I owe a lot of it to them."

Even though he left MSU's classrooms long ago, the crop consultant never stopped learning. Tucker Miller also credited Extension specialists for his success.

"This business requires continuing education every year, and Extension provides that," he said. "I was in grad school with Dr. Will McCarty (professor and MSU Extension associate director emeritus). It's like a big family. Everybody knows everybody. I felt like I owed them a little something."

The Millers' children, Herbert "Hub" Miller and Emily Miller Waters, both graduated from Mississippi State with degrees from the College of Agriculture and Life Sciences. Waters earned her bachelor's degree in food science and nutrition in 2005. Hub Miller got his bachelor's in agricultural pest management (Class of 2003) and master's in agronomy (Class of 2005). He now works for Corteva Agriscience as a global portfolio leader for pasture and land management.

"Our family's love for the university started with my grandfather, H. T. Miller Jr., who studied at MSU and farmed Promise Land Plantation after a stint in the U.S. Air Force," Hub Miller shared. "We participated in everything: alumni events, football and basketball games, baseball weekends. That was what our family did for fun. If we weren't there, we were listening on the radio. We'd go to the CALS Homecoming Breakfast together every year."

> "Our family is paying it forward to the next generation to support agriculture. We have been lifelong participants in that industry for generations, and we want to help others do the same."
>
> TUCKER MILLER

In 2004, all three generations of the family cheered as Tucker Miller walked his daughter down the 50-yard line to be crowned homecoming queen. To say this family is True Maroon is an understatement.

Hub Miller, who serves along with his father on the CALS Advisory Board, said scholarships make a positive impact on individual students while supporting MSU's mission.

"Our family is paying it forward to the next generation to support agriculture, which is the most noble profession of them all," he said. "We have been lifelong participants in that industry in one form or another for generations, and we want to help others do the same."

To learn more about creating an endowed scholarship or growing an existing scholarship fund, contact Will Staggers, director of development for CALS, Extension, and MAFES.

BY KERI COLLINS LEWIS • PHOTO BY KEVIN HUDSON

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Photo by Michaela Parker