International Travel Gives New Perspective … page 16

Research, Education, and Extension in the Division of Agriculture, Forestry, and Veterinary Medicine

Mississippi State University
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**On the Cover**
Combined race to harvest rice as a rainstorm advances on Satterfield Farms in Benoit. (Photo by Kevin Hudson)

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**Mississippi Landmarks**
**Vice President’s Letter**

January is a wonderful time for reflecting on the past calendar year and preparing for the new year. 2015 delivered its share of exciting discoveries, learning opportunities, partnerships, and plans. The MSU Division of Agriculture, Forestry, and Veterinary Medicine is a wonderful cross-section of the university’s best assets: enthusiastic students, dedicated faculty, inquisitive researchers, and devoted Extension educators. We strive in each issue of *LandMarks* to introduce you to some of these outstanding people.

One of the fall season’s highlights was working with many partners to showcase how life is “Sweeter in Mississippi” at the 2015 Sunbelt Ag Expo in Moultrie, Georgia. As the spotlight state, Mississippi enjoyed hosting visitors and sharing with them many of the state’s treasures and tastes. From fried catfish and Edam cheese to the Wood Magic trailer, MSU representatives gave Expo participants a flavorful and fun experience. Our thanks to Mississippi Farm Bureau Federation President Mike McCormick, Mississippi Sweet Potato Council, Alcorn State University, Commissioner of Agriculture Cindy Hyde-Smith, Mississippi Department of Tourism, and several MSU departments for their participation!

We also congratulate Allen Eubanks (MSU Class of 1992) for being named the 2015 Swisher Sweets/Sunbelt Ag Expo Mississippi Farmer of the Year. Eubanks Produce distributes Mississippi-grown fruits and vegetables all over the Southeast and Northeast from its 2,800-acre farm in Lucedale.

A recently released report from the National Science Foundation shows that research and development expenditures in agricultural sciences at MSU in fiscal year 2014 totaled just over $99 million. That put us in eighth place nationally and allowed us to be in the top 10 for the 17th consecutive year. Also, $99 million is 47 percent of MSU’s total R&D expenditures and 24 percent of total R&D expenditures by all Mississippi institutions. We continue to be pleased with these efforts.

On October 20, MSU Extension honored county supervisors across the state for their support by presenting a football to Mississippi Association of Supervisors President Eddie Dixon and Executive Director Derrick Surrette at the Kentucky game. In November, more than 500 research and Extension personnel, as well as many stakeholders, gathered at the new Mill Conference Center, housed in the old Cooley Building, for their annual conference, which focused on program planning.

To follow up on a summit with the Mississippi Department of Environmental Quality in the spring, we renewed our commitment to work together to protect the state’s important natural resources, especially water. Our collaborations have included investigating a variety of water quality and quantity issues, such as improving nutrient content of Mississippi lakes, streams, and rivers; developing a water resource management plan for Catalpa Creek located on and near our MSU campus; increasing job readiness of students interested in careers focusing on environmental, air, and water management; and enhancing and targeting the research activities of our Mississippi Water Resources Research Institute.

On behalf of everyone in the division, I extend our best wishes for a healthy and prosperous new year.

Gregory A. Bohach
A welcoming front porch, cool glasses of iced tea, and smiling faces showed thousands of visitors at the Sunbelt Ag Expo in Georgia that things are “Sweeter in Mississippi.”

The expo is billed as North America’s premier farm show, and Mississippi got the spotlight at the event held October 20–22 in Moultrie, Georgia. The 100-acre show site featured more than 1,200 exhibits from the 10 participating southern states, and Mississippi was right in the middle.

“This was a chance for us to really make Mississippi shine in a regional and even national forum,” said Dr. Gary Jackson, director of the MSU Extension Service. “We were able to showcase Extension’s valuable programs and how they help Mississippians.”

Organizers took inspiration from the Neshoba County Fair to create an inviting and colorful atmosphere. Visitors to the Mississippi exhibit were welcomed to sit in rocking chairs in a gazebo and sample fried farm-raised catfish, Edam cheese, Gulf Coast shrimp, sweet potato cake, and more.

“It was important to be able to sit down with visitors and talk to them about the importance of agriculture to the state and the advances MSU is making in agricultural research,” Jackson said.

Inside, exhibits and displays covered such topics as the battle against fire ants, poultry production, catfish production, cotton apparel, nutrition, horticulture, rice, the Master Gardener program, and Maggie, the cow that could be “milked.” Outdoors, interactive displays included the Wood Magic trailer, an ATV safety display, and more.

The Sunbelt Ag Expo, which annually features three action-filled days unveiling new technology in agriculture and rural liv-
At the Sunbelt Ag Expo, agriculture is still a primary business in Mississippi,” Avery said. “The Sunbelt Ag Expo shows the regional support of agriculture, and we hope that it also had some impact on recruiting students to MSU and Alcorn State University.”

The event would not have been complete without the help of partners, including Mississippi Farm Bureau, Alcorn State University, and the Mississippi Department of Agriculture and Commerce. Mike McCormick, Mississippi Farm Bureau Federation president, said those who attended the Sunbelt Expo saw Mississippi’s innovations in agriculture.

“We hope this will translate into a positive perception, not only of the industry itself, but of the state as a whole,” McCormick said. “As one of Mississippi’s largest industries, agriculture is leading the way in helping our state’s economy thrive. Mississippi farmers, other agricultural professionals, land-grant universities, and agricultural organizations are to be commended for the work they have done to ensure that our agricultural industry has become a great success story.”

Anthony Reed, interim associate Extension administrator at Alcorn State University, said working together on the exhibit was a team effort.

“The Sunbelt Expo is a perfect opportunity for the state of Mississippi to showcase what we have in agriculture, from traditional to nontraditional farming enterprises that we should be known for,” Reed said. “The state’s exhibition was an opportunity for all the institutions that service ag enterprises in Mississippi to work together to build a stronger program that serves all the ag participants in the state of Mississippi, regardless of farm size or farming enterprises.”

Commissioner of Agriculture and Commerce Cindy Hyde-Smith said this expo allowed Mississippians to showcase the state’s robust agriculture industry.

“Whether it is through research taking place, cutting-edge technology that is being developed, or the various programs that are being offered to our farmers and citizens, Mississippi is a leader in agriculture,” Hyde-Smith said. “One of the greatest compliments that we could receive would be in the form of other states seeing the great things taking place in our state and then replicating them in their own.”

By Bonnie Coblentz
The 2014 farm bill brought plenty of changes for Mississippi producers, who had to make informed decisions quickly that would impact their bottom line for years to come. Research and Extension personnel at MSU offered guidance to help them choose the best options for their needs.

Drs. Keith Coble and Barry Barnett, professors in the Department of Agricultural Economics in the College of Agriculture and Life Sciences, along with Dr. John Michael Riley, a former associate professor of agricultural economics, and Dr. Alba Dinarte, an assistant Extension professor of agricultural economics, helped producers navigate the new landscape.

“The Department of Agricultural Economics at Mississippi State has a long-standing tradition of being involved in farm policy,” Coble commented. “Many experts in this department have worked closely with different government agencies to help figure out how to implement legislation like the 2014 farm bill. That puts us in a unique position to transfer that knowledge on to the producer.”

Coble served as minority chief economist for the Senate Committee on Agriculture, Nutrition, and Forestry in 2013, when the bill was being written.

The 2014 farm bill, formally named the Agriculture Act of 2014, was signed into law February 7, 2014, and will remain in effect until 2018. The farm bill, which is split into 12 titles, contains two titles particularly relevant to producers: Title I, which covers the farm subsidy programs, and Title XI, which covers crop insurance.

Major changes to commodity subsidies included replacing direct payments with subsidy programs that protect against shallow loss. There were also significant changes to crop insurance programs that cover shallow and catastrophic loss.

“This farm bill, which did away with direct payments, focused on risk protection for producers,” Coble said. “The direct payments, which did not vary from year to year, were eliminated, and, basically, everything in these two titles is now meant to mitigate price, yield, or revenue losses.”

In 2015, landowners were allowed to update yield history and reallocate base acres. Commodity producers had to decide between two new subsidy programs within Title I designed to help manage risk: Agricultural Risk Coverage (ARC) and Price Loss Coverage (PLC). Cotton growers had the option to mitigate shallow-loss risk through the Stacked Income Protection Plan (STAX). Producers who didn’t select ARC could also elect the Supplemental Coverage Option (SCO).

“Cotton growers were in a unique situation because that commodity group had lost a case in the World Trade Organization brought by Brazil,” Coble said. “They made the boldest move, in part because they were singled out in a way that no other commodity group was.”

With so much to learn in such a short amount of time, producers took advantage of farm bill education efforts conducted by researchers in the Mississippi Agricultural and Forestry Experiment Station and experts from the MSU Extension Service.

“The entire process was a great collaboration between research and Extension faculty to analyze the options and conduct producer meetings around the state to help inform producers about the choices they had to make,” Coble said.

MSU agricultural economists ran simulation models to determine the best courses of action for the long term.

“The challenge on this particular farm bill was that producers were locked into a commitment, so if they chose ARC over PLC, for instance, they wouldn’t be able to change that decision for at least 5 years. Their uncertainty about prices and yields for the next 5 years...
impacted that choice,” Coble said. “Those were the types of scenarios we tried to simulate.”

The department also built tools to help producers make the best decisions for their individual operations.

“The decision tools were created by Dr. Larry Falconer in our department to help producers make decisions that were unique to their farm,” Barnett said. “We tried to create spreadsheets where producers could plug in information to help them think through a particular decision they might have to make.”

Barnett said preliminary data indicates that, for the most part, producers made decisions analysts had anticipated.

In Mississippi, most corn and soybean producers selected ARC, while most rice and peanut producers selected PLC. While the majority of the state’s wheat base acres were placed in ARC, 40 percent were placed in PLC.

“In 2015, we observed continued growth in crop insurance buy-up coverage rather than the minimum catastrophic coverage,” Barnett said. “Peanut insured acres rounded up to 100 percent buy-up coverage, while corn, cotton, and soybeans have buy-up participation in a range of 86 to 87 percent of insured acres. Rice had the lowest percentage buy-up at 62 percent.”

Buy-up coverage, which is part of Title XI, is insurance producers pay beyond the free catastrophic level that covers up to 30 percent.

Barnett explained that it is difficult to determine the impact of the farm bill at this point.

“Both crop insurance and the farm programs are now designed to help farmers manage risk and protect them when there are yield and/or price shortfalls,” Barnett said. “It looks like this was a pretty good year for most of our commodities, certainly in terms of yield. It’s the incredibly challenging years when these programs are put to the test. Hopefully, we won’t see one of those years anytime soon.”

Both researchers agree that this farm bill has brought risk management to the forefront for all producers.

“Increasingly, the viability of farm businesses is going to depend on revenue generated from the marketplace as opposed to payments received from government programs,” Barnett said.

They also agree it is important to grasp the tremendous size and scope of the current farm bill to better understand the context in which commodity subsidies and crop insurance exist. Beyond Title I and Title XI, 10 other titles cover everything from the U.S. food supply to rural development to conservation and more. Nutrition alone accounts for 80 percent of the allocated funds, while farm programs and crop insurance combined take up just 13 percent.

“Federal programs like SNAP and WIC are authorized by this legislation,” Barnett said. “Federal funding for entities like the Mississippi Agricultural and Forestry Experiment Station and the MSU Extension Service is also authorized through the bill.”

USDA agencies that handle food safety and inspection, food and nutrition, farm service and risk management, and foreign agricultural services are also funded by the farm bill.

“In an effort to reduce federal spending, Congress required that the 2014 farm bill save $23 billion dollars over a period of 10 years,” Barnett said. “That’s a critical fact to remember when considering the big picture.”

By Vanessa Beeson • Infographic by Dominique Belcher, MAFES
During Beefing Up the Bulldogs, MSU football players are served 1-pound ribeye steaks and challenge each other to see who can throw a bale of hay the farthest, but the annual event serves more important purposes.

Above all, the event is a chance for students in MSU’s Department of Animal and Dairy Sciences (ADS) to show the team what they study and the animals they work with every day.

Held for the fifth time in August, 2 weeks before the football team’s season began, Beefing Up the Bulldogs has become a staple for both the team and the ADS program, which is housed in the MSU College of Agriculture and Life Sciences. It is a pep rally of sorts for the team, whose members interact with some of the livestock from the H. H. Leveck Animal Research Center, commonly known as South Farm. The event is held at the Leo Seal Jr. Football Complex.

Many of the football players did not grow up around farms, so it is their first chance to see and interact with goats, horses, sheep, and cows. Students bring a dairy cow that players can milk.

Each year since the event began, ADS students have added educational activities to increase players’ understanding of the agricultural industry and MSU’s land-grant university roots.

Liz Wardell, a recent graduate of the program and a first-year graduate student in agricultural education at MSU, said her favorite part about the event is seeing the players’ reaction to the animals.

“As animal and dairy science students, we see and interact with livestock every day,” Wardell said. “They have their mind blown because they never get to experience it. Everybody knows MSU is a land-grant university, but they don’t know what comes with that, and this is one of those features.”

ADS works with the Mississippi Cattlemen’s Association and Mississippi Beef Council to hold the event. At the MSU Meat Lab, students cut and marinate about 250 pounds of beef from cattle raised on campus. Cattlemen from across the state volunteer to grill the beef. Ice cream made from the university’s dairy is served for dessert. All told, about 40 people work together to make sure the event is a success.

“It’s a big group effort to get this program going,” said Andy Berry, executive vice president of the Mississippi Cattlemen’s Association and Mississippi Beef Council. “We feel like, as cattle producers, we have a great opportunity to be able to show the players and the staff here at Mississippi State
how quality beef can be included in a healthy diet every day as they continue on in their training process and later on in their lives.”

ADS students often use their undergraduate work in the program as a springboard to post-graduate education. Senior Rachel Wilson, for example, is applying to veterinary medical school programs.

“I almost chose biology as my undergraduate study, but my passion has always been out in the field, and I wanted to go to veterinary school,” Wilson said. “The Animal and Dairy Science program has given me firsthand experience working with cattle and taught me about the industry, which I think will come in handy when I start the next phase of my education.”

Wardell said she is pursuing an education emphasis because she wants to teach agriculture in high school and at the university level.

“It’s important to teach people about the industry while they are young because that increases the chances of people gaining interest in the field,” she said. “It’s up to us to teach them now because they will be the ones passing that information on to future generations.”

Senior Haley Thompson said she grew up on a farm and became interested in the industry at an early age.

“I think it was just instilled in all of us when we were younger, and we want to keep it going,” she said. “One day, I’d like to see my child do what I’m doing now.”

Many ADS students also participate in the Collegiate Cattlemen’s Club, which is affiliated with the Mississippi Cattlemen’s Association and is open to any student on campus with an interest in cattle or beef. Wardell and Wilson are vice president and treasurer of the club, and seniors Austin Whitmon and Thompson serve as president and secretary. Members regularly hold fundraising events and use the funds to visit livestock operations in and out of state to learn more about the industry.

“Our main objective as Collegiate Cattlemen is to promote the beef industry. It’s our job to educate people on where that food comes from,” Whitmon said. “The main drive behind animal and dairy science is to keep potential farmers interested in the industry and to gain the public’s appreciation for what we do. People take for granted what kind of effort it takes to get food on a plate.”

Dr. Trent Smith, associate professor of animal and dairy sciences, said he looks forward to the event each year.

“We’ve got a lot of really good people in our department and the Mississippi Cattlemen’s Association and Mississippi Beef Council,” he said. “I think this is a great event because it shows our football team the importance of agriculture in the state and country. It puts that connection between the product and where it comes from. A lot of times, we can leave an impression on people and they can remember this day as they go on.”

By Nathan Gregory • Photos by Kat Lawrence

Starting Bulldog quarterback Dak Prescott learns about goats from the MSU students who study them. Foundation Herds facilities coordinator William White (background) helps with the annual event.

Freshman Alec Murphy of Nixa, Missouri, and other members of the MSU football team watch a goat play during the fifth annual Beefing Up the Bulldogs event.
Recent research on restoring natural shorelines could help private landowners on the Gulf Coast reduce erosion, support healthy coastal ecosystems, and boost local economies.

Scientists from MSU, University of South Alabama, Dauphin Island Sea Lab, University of Connecticut, The Nature Conservancy, and Grand Bay National Estuarine Research Reserve teamed up to find the most economical and effective method of salt marsh restoration for small-scale projects.

"Some information exists to guide restoration projects on large areas of land," said Dr. Eric Sparks, assistant Extension professor at MSU and a coastal ecology specialist with the Mississippi-Alabama Sea Grant Consortium. "But many of those large tracts of property belong to government entities, and the projects are too large and too costly to suitably apply the same restoration techniques to smaller, privately owned tracts of property, which make up the majority of our shoreline."

Salt marshes are an integral part of coastal ecosystems and provide valuable services to wildlife and humans. Found in estuaries, where rivers meet the ocean, these wetlands offer food and shelter for birds and fish, stabilize the shoreline, and filter nutrient pollution. But they are rapidly disappearing as people build hard structures, such as seawalls and bulkheads, to help lessen erosion, Sparks said.

"Human development in these wetlands all over the world is causing large losses of marshland, but the most dramatic losses in the United States are happening in the northern Gulf of Mexico, which includes Mississippi, Louisiana, Texas, Alabama, and Florida," Sparks said. "We hope that this research provides landowners with information on the ecological and economic benefits of re-naturalizing shorelines."

In the study, the group planted black needlerush in two different designs at the Grand Bay National Estuarine Research Reserve in Moss Point, Mississippi. Black needlerush is one of the dominant species of grass-like perennial foliage native to the Gulf and Atlantic coasts. It grows moderately fast, forming a deep, fibrous root system and dense aboveground canopy that provides habitat for waterfowl, muskrats, nongame birds, and organisms that are the base of the food chain for fish, shrimp, crabs, and other commercially important seafood.

They harvested the needlerush from a nearby marsh and used this donor area as a control site for comparison. Transplants were planted in one design area at 100 percent coverage and in the second design area at 50 percent coverage. After 2 years, both areas were performing similarly.

"The area we planted at 50 percent coverage gave the most bang for the buck," Sparks said. "It performed just as well as the area we planted at 100 percent."

The study found two other important factors for salt marsh restoration: proper slope and type of sediment.

Dr. Just Cebrian, senior marine scientist at the Dauphin Island Sea Lab in Alabama and one of the project researchers, said landowners must prepare the site correctly so that the restored marsh stays intact, filters groundwater correctly, and supports vegetation.

"Salt marshes act like kidneys between the land and the estuary, filtering out pollutants captured by runoff," said Cebrian, who also is a professor of marine sciences with the University of South Alabama. "But if the constructed marsh is not built right, it will not do its job the way it should."

Measurements collected during the study showed that both design areas filtered out 90 percent of the nutrients and sediment that entered the marsh.

"That is only 5 feet of marsh that we are talking about, which is a reasonable amount of area for private landowners to restore," Cebrian said. "That is like a home improvement project, and it can be very affordable."

Cost-effectiveness depends on how much site preparation must be done before planting, if seed or sod will be used to vegetate the site, and how much labor will be needed to prepare and plant the site. The study outlines different cost scenarios, including donation of all labor and materials, purchase of all labor and materials, and different combinations of donated and purchased labor and materials.

"Most sites are going to need some sediment added, and site preparation will be the most expensive portion of restoration if that labor is not donated or done by the landowner," Cebrian said. "But the cost of doing nothing is much higher. Pollution from runoff, especially in developed watershed areas with lots of pavement, can cause a lack of oxygen that kills fish. The water also becomes very dirty and develops an unpleasant odor."

Long-term, natural shorelines protect against coastal erosion better than hard structures do. Sea walls and other hard structures deteriorate from exposure to saltwater, and many must be replaced every 10 to 30 years.

"Natural shorelines do their job forever, keeping coastal ecosystems healthy for generations to come," Cebrian said.

The study was funded by the Mississippi-Alabama Sea Grant Consortium and published in the journals Ecological Engineering and Journal of Environmental Management.

Established in 1999, the Grand Bay National Estuarine Research Reserve is located in Jackson County. It is managed by the Mississippi Department of Marine Resources as part of the National Oceanic and Atmospheric Administration’s National Estuarine Research Reserve System. Major partners of the Reserve include the Mississippi Department of Marine Resources, Mississippi Secretary of State’s Office, MSU, The Nature Conservancy, United States Fish and Wildlife Service, and University of Southern Mississippi.

Dr. Eric Sparks studies economical and effective methods of salt marsh restoration for small-scale projects. (Photo by Susan Collins-Smith)

This crushed limestone retaining wall was designed to backfill with sediment to the correct elevation for black needlerush to prosper. (Photo by Chris May)

Graduate student Larisa Lee filters pore water samples from the marsh. These samples were analyzed to determine the amount of nutrients removed from each planting design. (Photo by Chris May)

The restored area immediately after planting. The block of vegetation on the right was planted at 50 percent coverage and the center block at 100 percent coverage. (Photo by Chris May)

The restored area 5 years after planting. The area is completely filled in with vegetation, with no noticeable differences between the different planting designs. (Photo by Eric Sparks)
STRENGTHENING RELATIONSHIPS
International Guests Benefit from Cochran Fellowship Program

CVM associate clinical professor Dr. Jim Brett (center right) discusses dairy cow genetics and profitability with a group of animal husbandry and nutrition professionals from Pakistan. (Photo by Kat Lawrence)

“This is a new era in the dairy industry of Pakistan: we are introducing U.S. Holstein cows into Pakistan. We are looking to U.S. genetics to learn how dairy cows can be managed to be more profitable. The environment in Mississippi is close to the environment in Pakistan, with the same heat problems and feeding challenges. We wanted to come to Mississippi State University because we wanted to learn how to manage livestock when we face those problems.”

Muhammad Saadullah

Kenneth Graves (right), MSU Foundation Herds dairy herdsmen, and visitors from Pakistan evaluate particle size of a total mixed ration. (Photo by Kat Lawrence)
Professionals and scholars from Albania, Bosnia-Herzegovina, and Pakistan turned to Mississippi’s flagship research university this summer to help them address their countries’ most pressing agricultural challenges.

Albania has transitioned into an open-market economy over the past 20 years, and implementing a new political and economic structure takes time. With nearly half of its working population on farms, agriculture is an important economic driver there.

Valbona Ylli, executive director of the Livestock Entrepreneurs Association of Albania, said producers should have a say in the agricultural policies of any country where agriculture is a major factor.

Influencing policy requires access to research, and the MSU Extension Service offers just that to producers across the state.

“In terms of Extension and research policies in agriculture, we are at a crossroads because we sometimes have a mixture of the two, but they are not working together as closely. You have some research stations that are not with any university,” Ylli said. “The role of land-grant universities in research and Extension is crucial. The idea of Extension is a relatively new thing to us. You have 150 years of experience in that here. We only have about 15.”

Ylli was a participant in one of several groups of agricultural professionals from three countries that visited MSU this summer to take advantage of training opportunities offered through the U.S. Department of Agriculture’s Foreign Agricultural Service.

Industry professionals, scholars, and government officials received training from universities, private companies, and government agencies across the state to enhance their skills in their choice of agricultural disciplines. Representatives of the MSU Extension Service and Mississippi Agricultural and Forestry Experiment Station hosted visitors at the H. H. Leveck Animal Research Center, the R. R. Foil Plant Science Research Center, and several other MSU facilities.

Ylli and other visitors from Albania participated in the program to learn more about agricultural policy from their American counterparts. Participants from Bosnia-Herzegovina came to Mississippi and MSU to study irrigation and drainage management systems. Pakistan’s agricultural representatives studied dairy herd management. The groups from Albania and Bosnia-Herzegovina were funded through the Cochran Fellowship Program.

Named after U.S. Senator Thad Cochran, the Cochran program has provided training for more than 16,300 fellows from more than 123 countries since it was established in 1984. The program is intended to help eligible middle-income countries to develop agricultural systems to meet the needs of their populations and to strengthen trade relations between those countries and agricultural interests in the U.S.

Dr. Mary Love Tagert, assistant Extension professor in the MSU Department of Agricultural and Biological Engineering, served as a host for the group from Bosnia-Herzegovina.

“They appreciated seeing how we irrigate and manage our water resources here in Mississippi, and they learned how soil moisture sensors can be used to improve irrigation scheduling,” Tagert said. “They were impressed with how we capture and reuse irrigation tailwater and hope to share that with farmers in Bosnia. They were surprised at how well various agencies, organizations, and academic institutions in Mississippi work together to address certain water resource issues.”

Tagert said the Cochran fellows from Bosnia also learned how effective the land-grant university system can be in disseminating research findings to stakeholders.

Bernisa Klepo, audit manager with organic production certification organization Organksa Kontrola in Bosnia-Herzegovina, said she wanted to take part in the Cochran program to study water conservation methods and practices in the U.S. Her aim is to improve irrigation systems currently used by producers in her home country. Bosnian producers who seek organic certification for produce exported to European Union countries must demonstrate water conservation practices.

“A lot of the methods we saw here were used on large-scale farms, but some of those are applicable in Bosnia. We have a lot of small-scale farmers, and a lot of techniques that are used here, such as soil moisture sensors, are used in Bosnia, but only at some research stations. You can’t find results of this research and how to implement it at real farms,” Klepo said.

“We don’t know where we are in using our water resources, and that’s a big issue. It’s important to take all these findings we’ve learned here to our governmental organizations in charge of measuring our water resources to ensure we are using our water efficiently.”

Muhammad Saadullah, a lecturer of animal husbandry and animal nutrition at the University of Veterinary and Animal Sciences at Lahore in Pakistan, said he is helping launch a demonstration farm for students at that university.

“This is a new era in the dairy industry of Pakistan: we are introducing U.S. Holstein cows into Pakistan,” Saadullah said. “We are looking to U.S. genetics to learn how dairy cows can be managed to be more profitable. The environment in Mississippi is close to the environment in Pakistan, with the same heat problems and feeding challenges. We wanted to come to Mississippi State University because we wanted to learn how to manage livestock when we face those problems.”

By Nathan Gregory
MSU researchers hope to help lay the groundwork for what home-owners can expect and how they can combat problems, such as mold growth and structural unsoundness, when floodwaters rise.

Homeowners throughout the United States face potential property damage from flooding. In the past 5 years, all 50 states have experienced floods or flash floods, according to the Federal Emergency Management Agency. Nationally, floods force 300,000 people from their homes and result in property damage in excess of $2 billion each year.

Dr. Hamid Borazjani, Forest and Wildlife Research Center scientist in the Department of Sustainable Bioproducts, recently participated in two studies on a house built specifically for testing the effects of flooding on mold development and building materials. The study house, constructed by Tuskegee University in Alabama, was created with materials typically used in American homes. The tests mimic the flood conditions that occurred in New Orleans when Hurricane Katrina struck.

“Since it is difficult to obtain access to houses that have been exposed to flooding in a controlled setting, where meaningful data collection can take place, Tuskegee’s structure provided the perfect solution for flood studies,” Borazjani said. “The university built the house next to a pond, where researchers could easily control water levels.”

In the first study, researchers embedded three types of sensors into the walls to measure the conditions inside the house. Then the house was flooded, left for 3 weeks, and drained. After draining,
the unit remained untouched for an additional 3 weeks. The sensors measured temperature, humidity, and moisture during the flooding and drying period. Afterward, researchers removed materials from the house and examined them for mold growth and other contaminants.

The study found that insulation supported more fungi and contained more moisture than all other wall materials. Gypsum, which is similar to drywall, did not support the presence of fungi on the interior of the board, but the paper sidings supported high levels of fungal growth.

“Mold can be hazardous to human health,” Borazjani said. “Many people are allergic to it, and it can cause symptoms like itching, sneezing, and coughing.”

The study reported that drying and treating the flooded unit produced a suitable indoor environment, reducing mold spores significantly. For homeowners who may be concerned about the air quality within their homes after flooding, it’s important to note that, with proper treatment, air quality can return to normal, and materials that weren’t structurally damaged by the flooding can be safely salvaged.

In the second study, scientists found that forced drying through dehumidification and air-conditioning minimized water damage. Study coauthor Dr. Susan Diehl, FWRC researcher and professor in the Department of Sustainable Bioproducts, noted that simply using windows to encourage natural ventilation was not effective in reducing moisture within the gypsum boards.

“The best way to treat mold is to remove the gypsum and insulation and clean the wood product surrounding it,” Diehl said. “In terms of drying, the faster the better. Forced air will more quickly alter the conditions needed for mold to develop.”

It is also important to remove materials that hold moisture, like carpeting. Because moisture is necessary for fungal growth, surfaces that dry quickly, such as tile or cement, are better suited for flood-prone areas.

The study also assessed the effect of flooding on material integrity. Scientists found that while short-term flooding, lasting 3 days or fewer, did not affect the structure of gypsum boards, long-term flooding rendered the material useless. Scientists recommend that, in flood-prone areas, gypsum board sheets be placed horizontally rather than vertically. This ensures that only bottom sheets need to be replaced, reducing overall repair costs.

This work was funded by the Department of Homeland Security, Southeast Region Initiative at the Department of Energy’s Oak Ridge National Laboratory, and National Science Foundation. MSU graduate student Trey Skrobot, MSU professor emeritus Dr. Terry Amburgey, and former associate professor Dr. Shane Kitchens also worked on this research.

By Sarah Buckleitner

Dr. Hamid Borazjani recently participated in two studies on a house built specifically for testing the effects of flooding on mold development and building materials. (Photo by Kevin Hudson)
Land-grant universities in the United States have the mission of sharing their expertise with the people of their states, but MSU is not content to stop even at national borders.

In 15 faculty-led summer programs, 288 MSU students traveled abroad in 2015 in the Bahamas, Ireland, South Africa, and beyond to study topics including geosciences, engineering, urban spaces, and veterinary medicine. The university has numerous ongoing projects that send faculty abroad to benefit other countries.

Dr. Jon Rezek, interim executive director of the International Institute at MSU, said globalization is one of the university’s strategic goals.

“We have an emphasis on increasing student participation in education abroad and increasing faculty participation in internationally oriented scholarly activities and funded research and outreach projects,” Rezek said. “More and more challenges are global in nature, and an interconnected, international perspective is required to address these challenges and take advantage of opportunities.”

The reason for the student emphasis is simple.

“Looking at the world from a different perspective helps students think critically about the challenges and opportunities our own society faces. It prepares them to live and work among people of different cultures who have different priorities and values, while understanding that we share similarities that unite us as people,” he said. “An international study experience provides a great way for ambitious students to differentiate themselves from their peers in the job market or on graduate school applications.”

Naomi Taylor, a junior from Southaven, completed an internship in August in Malawi with the Food and Agriculture Organization of the United Nations. She helped introduce irrigation systems to small-scale farmers.

Farmers relied on a single rainy season. But with Malawi’s erratic rainfall, introducing irrigation was a necessary step in beginning to solve problems such as low crop yields, low crop diversity, food insecurity, insufficient income, and malnutrition,” Taylor said. “The objective is to have multiple cropping seasons by creating irrigation schemes to be used during the dry season and in cases of extreme drought.”

Taylor, an environmental economics and management major pursuing a minor in international studies, saw firsthand how issues discussed in the classroom were applied at the international level.

Kristen Bloom, coordinator of the Study Abroad Office in MSU’s International Institute, said broadening education with international opportunities benefits students after graduation.

“To have had international experience can enhance students’ opportunities to market themselves and work in this global economy,” Bloom said. “Students are pushed outside their comfort zones in a way they would not experience if they just stayed on campus. These students even have a big impact on others at MSU who don’t leave because they bring new perspectives and other worldviews into the classroom.”

Bailey Martin, a recent graduate of the MSU Department of Food Science, Nutrition, and Health Promotion, was an intern with the Food and Agriculture Organization in Santiago, Chile, in summer 2014. She researched childhood obesity as part of the International Year of Family Farming project.

This initiative aims to focus world attention on the significant roles family farming and small farms have in improving livelihoods, managing natural resources, protecting the environment, achieving sustainable development, eradicating hunger and poverty, and providing food security and nutrition. Martin contributed by researching Chile’s public policy related to childhood obesity and comparing it with policy in the U.S.

Dr. Margaret Khaitsa, a professor of pathobiology and population medicine at the MSU College of Veterinary Medicine, spent 4 weeks in Uganda last summer with a group of veterinary students working with pandemic diseases of animals that are communicable to humans. Disease is not contained by geographic borders, so the fight against it calls for an interdisciplinary and global approach.

“Transboundary animal diseases in particular continue to cause major livestock production losses and inhibit or disrupt trade in livestock and their byproducts, posing a threat to food security,” Khaitsa said.

She worked in Sub-Saharan Africa with an African–U.S. higher education partnership grant to build the capacity of African and U.S.
colleges and universities to manage transboundary animal diseases and effect change in Africa. Transboundary animal diseases are highly contagious animal diseases that could potentially become widespread with serious economic and animal and public health consequences.

“One of the grants focused on offering global educational experiences with an emphasis on animal production and health and food security,” Khaitsa said. “MSU veterinary students helped with various parts of the project, which included conducting outreach activities including mass vaccinations of animals, assessment surveys, and public education.”

Dr. Rocky Lemus, a forage specialist at MSU, has been working to improve forage quality and pasture management in Nicaragua. Here, he collects data on native forage species.

Dr. Rocky Lemus is working to improve forage quality and pasture management in Nicaragua. Here, he collects data on native forage species.

“Dr. Barakat Mahmoud, an MSU research professor of food safety and microbiology, recently spent 3 weeks in Mozambique training 13 agriculture agents how to preserve and better market mangoes. Mahmoud taught farmers about drying foods, natural preservation, analyzing quality and safety, and processing juice, jam, and jelly.

Dr. Dan Reynolds, an MSU weed science professor, is hoping to reduce food insecurity in Ghana using research and demonstration farms. MSU is part of a team that has established three demonstration farms in the West African country.

“This work in Nicaragua helps us recruit students because it gives Mississippi State a place in the world so others can see that we have a good program. At the same time, it helps us develop training for graduate students who want to get international exposure,” Lemus said. “It also allows me to bring Mississippi producers new ideas they can incorporate here.”

Dr. Susan Seal, an MSU assistant professor of international agricultural and Extension education, said students who are engaged in international agricultural education in the classroom and through experiential learning abroad are prepared to improve their own communities and those around the world.

“For our students to be successful in agriculture today, it is critical that they have an understanding of the nature of the global marketplace, the interdependence of our global agricultural systems, and the current issues related to food security,” Seal said.

Dr. Margaret Khaitsa (center) takes groups of veterinary students to Uganda each summer to study pandemic diseases of animals. Some of the students include (from left) Jodi Richardson, Katy Fogt, Dr. Tori Hall, and Ashleigh Thomas.

Rezek said international exposure is good for faculty, as well.

“The academic reputation of faculty in many disciplines depends on how engaged they are internationally,” he said. “Maintaining membership in international organizations and having international colleagues allows faculty to collaborate with the most successful and highest-quality researchers in the world. In many cases, the presence of international colleagues allows researchers to investigate topics they would not otherwise be able to study. They can also augment the expertise of MSU researchers in ways that lead to research outputs that are far superior to what they would otherwise be.”

Dr. Rocky Lemus, a forage specialist at MSU, has been working since 2012 with farmers in Nicaragua. Through the United States Agency for International Development’s Farmer-to-Farmer Program, he is working to improve forage quality and pasture management in this Central American country.

“We’re developing grazing management practices for small cattle producers,” Lemus said. “Our goal is to show how to manage new forages that are on the market for tropical areas. We’re also looking at the quality and nutritive value of the forages, and helping them know when to graze and when to cut and store the forage for the dry-season feeding program.”

Just as he does when teaching similar skills in Mississippi, Lemus uses field days and farm demonstrations to show Nicaraguan farmers how to be better cattle producers.

Dr. George Awuni, Ghana native and Mississippi Agricultural and Forestry Experiment Station postdoctoral associate, is working in Ghana on this research and education project.

Mississippi State also has an impact on the world by attracting international students. This year, the MSU student body included 913 international students and 95 other nondegree international students. India and China send the most students to MSU, and the top fields of study for international students are engineering, business, and physical sciences.

Rezek said MSU provides a quality education at a relatively low price, which contributes to its international appeal.

“Even more importantly, MSU has high-quality programs in disciplines that are in high demand in many developing countries, particularly in the STEM fields,” he said. “MSU has strengths in agriculture-related disciplines, and graduates of such programs are in short supply worldwide.”

The university’s location in a largely rural area is appealing to many students, and parents of international scholars have peace of mind in sending their children to a safe location.

“For a relatively large university, MSU’s faculty and staff are extraordinarily friendly and accommodating,” Rezek said. “Many international students comment that the best experiences at MSU are related to their very actively involved faculty mentors.”
Go to college; see the world. As a globally engaged institution, Mississippi State University encourages its students, faculty, and staff to pursue international academic opportunities.

Two groups from MSU traveled to Italy last summer to study landscape architecture and fashion design as it relates to agriculture. Composed of both students and MSU personnel, the tours were designed to expand the experience and knowledge base of participants, better equipping them for what lies ahead.

Charles (Taze) Fulford, an associate professor of landscape architecture in the MSU College of Agriculture and Life Sciences, led a group of students on a study abroad opportunity in June that followed the usual academic format.

“We went to Rome, Siena, and Venice to examine historical architecture, urban plazas, and the culture of these places,” Fulford said. “We speak a good deal about place in our profession, and we are trying to show students that places are derived from climate, topography, and culture.”

While in Italy, students heard researchers from the National Institute of Agricultural Economics describe new...
ways to document urban agriculture in larger metropolitan areas. They also learned more about worldwide issues of urban agriculture while visiting the Food and Agriculture Organization headquarters in Rome.

Fulford said having firsthand experiences makes discussions rich and meaningful.

“The opportunity to be within the culture, to try to communicate with others who don’t speak your language, or to sit inside great monumental architecture and public spaces offers so much more than simply reading about it in a book or hearing someone else share their experiences in that place,” he said. “These students got to touch the Coliseum, sketch the Campo in Siena, and walk inside cathedrals filled with art by Michelangelo, Donatello, Pisano, and Bernini. We sat on the Spanish steps and watched the people in the space, we walked through the spaces that pilgrims have used for ages, and we looked at the relics of bygone empires that helped give rise to Western culture.”

Students on the trip are in a variety of majors, including pre-med, horticulture, and landscape architecture. Their past experiences and career goals made certain parts of the trip especially meaningful to them, but they came away with at least one new shared idea.

“They came to the realization that there is a big world out there that they fit into,” Fulford said.

Dr. Charles Freeman, an assistant professor in MSU’s fashion design and merchandising program, and Caroline Kobia, an instructor in the MSU School of Human Sciences, coordinated a trip in July 2015 that exposed students to the fashion of Italy with an agricultural spin. He said a major goal of the educational experience was to show the centuries-old connection between agriculture and apparel.

“Italy is well known globally for their fashion, but not a lot of people understand that the products that are used in high Italian fashion are found in agricultural production,” Freeman said. “For example, the leather for the shoes and bags they are famous for comes from cows or other animals raised on a farm.”

Travelers took in the beauty and culture of Italy while visiting wineries in the countryside, a leather school in a Franciscan monastery, and silk-weaving factories.

“From a faculty perspective, a great experience is seeing in students that ‘aha’ moment when they experience something new,” he said. “They may forget what I teach in a class, but they won’t forget that moment of seeing and feeling the finest leather and skins in the world.”

Freeman said the goal of an educational environment is to isolate students so they can focus on their training. But with that isolation can come a short-sighted perspective.

“International experience helps take those blinders off,” Freeman said. “Students on this trip saw that what they’re learning and doing at the university has a place in a global landscape.”
Mississippians Benefit from Italian Experience
Five MSU Extension Service agents who wanted a different perspective on programming took an educational trip to Italy last summer with some undergraduate students.

The agents were part of the Farm to Fashion: An Agricultural and Apparel Supply Chain Tour of Italy in mid-July. A course requirement was to develop a curriculum they could put in place in Mississippi based on something they learned or experienced in Italy.

Dr. Michael Newman, director of the MSU School of Human Sciences in the College of Agriculture and Life Sciences, said Family and Consumer Sciences Extension agents were encouraged to participate in the European experience.

“We encouraged Extension agents to go on the Farm to Fashion tour because [retired clothing specialist] Dr. Wanda Cheek has worked to create an invigorated program in clothing,” Newman said. “We want to continue that momentum we’ve started. We want our agents and clientele to see that it’s a big world, but it’s also a small world. It’s good for us to know about other places.”

Liz Sadler, Family and Consumer Sciences Extension agent in Lamar County, called the Farm to Fashion tour “the trip of a lifetime.” Sadler qualified to go on the trip based on programs and curriculum that she has already developed for Mississippians.

“I was overwhelmed by the art and history of Italy,” Sadler said. “I was really impressed that they still have artisans who do intricate work by hand. They have maintained that level of skill over the centuries and still have a market for their products, even though they are not cheap.”

A highlight of the experience for Sadler was visiting a school where workers were taught to weave jacquard silk, which creates patterns in the silk.

“Some of the fabrics that they weave have been used to dress popes and princesses and are used in home décor in some of the most lavish residences in the world,” Sadler said.

The trip inspired her to create an embroidery program.

“We took a class where a lady taught us to do hand-drawn embroidery work, a kind that has disappeared here,” Sadler said. “I plan to develop a curriculum related to embroidery that I can offer to my Mississippi clients. The Internet opens the door to international markets for items of fine quality and excellent craftsmanship.”

Fran Brock from Oktibbeha County was one of the agents who participated in the trip. Although the focus was on the agricultural roots of fashion, she went to Italy interested in nutrition.

“Italians eat a lot of pasta and bread, but they have a low obesity rate,” Brock said. “I wanted to learn how Italians are able to consume large amounts of carbohydrates on a regular basis yet maintain a healthy body mass index.”

Brock happily sampled a large variety of pizzas, cheeses, pastas, and sauces. She enjoyed the pizzas especially, and found that toppings included plenty of vegetables and seafood but much less cheese than American pizza and sometimes not even a marinara sauce.

Brock is pursuing a doctoral degree in agricultural and Extension education with a minor in human science. This educational trip counts as academic hours toward her degree.

“I’m developing a curriculum on Italian cuisine, and it will include recipes for dishes I sampled while on the tour,” Brock said.

“The ultimate goal for all of the participants is to bring new ideas home and put them to work.

In addition to Brock and Sadler, Extension agents Romona Edge from Itawamba County, Shelaine Pennington from Prentiss County, and Ann Twiner from Sunflower County toured Italy.

“We’re trying to internationalize what we’re doing,” Newman said. “It’s good for us to get out of our shells. These opportunities are good for personal development, and may lead to some good commerce in the future and some changes in how we do things or view things.”

Five MSU Extension agents visited Italy as part of a Farm to Fashion tour. They visited a school where workers learn to weave jacquard silk.
CVM researchers Drs. Peres Ramos Badial (left) and Camillo Bulla are studying how platelets alter cancer cells and help them metastasize.
Aspirin can knock out minor aches and pains, but what if it could play a role in cancer prevention?

That is the question a group of veterinarians at MSU are asking themselves. Drs. Kari Lunsford and Camilo Bulla are two members of a team that has spent about 5 years trying to understand the link between blood platelets and the spread of certain types of cancer. The two record observations from their canine patients being treated for cancer at the MSU College of Veterinary Medicine Animal Health Center.

“Doctors have prescribed low-dose aspirin for years as a blood thinner. The way it thins the blood is by stopping some of the actions of blood platelets,” said Lunsford, an associate professor of small animal internal medicine at the CVM. “People who have been on this therapy for many years have a lower incidence of some types of cancers. And veterinarians know that certain cancers can’t metastasize in animals that don’t have platelets, so we believe that platelets in some way control the behavior of cancer cells.”

The researchers want to find out how platelets alter cancer cells and help them metastasize. They hope the information will help them interrupt the process to slow or even stop the progression of common cancers in dogs and humans.

In several overlapping studies, they are focusing on breast cancer, lymphoma, and bone cancer, which act similarly in dogs and humans, said Lunsford, who also is program coordinator for the school’s Translational Biomedical Research Center.

Earlier research suggests that specific proteins in blood platelets do affect metastatic behavior in cancer cells in the lab, and now identifying and monitoring these proteins in dogs with cancer is one of the group’s many projects.

“Lymphoma is a cancer that can be treated successfully in dogs, but after about 1 year, it reoccurs,” Lunsford said. “By the time the animal’s lymph nodes are swollen, which is one of the first symptoms, billions of cancer cells have already formed. We are looking for ways to predict when metastasis will occur, so that we can make earlier diagnoses and begin treatment sooner.”

The group has made some exciting discoveries, including improving the process that helps search for those proteins in blood platelets. To look for these proteins, scientists use a blood sample from cancer patients or lab animals. Traditionally, samples had to be in large volumes because they go through a multi-step washing process to isolate the platelets. During the washing process, many of the platelets are lost, and other blood cells remain and contaminate the sample, which can skew the results of whatever test is being performed, Lunsford explained.

“We have pioneered a process that requires only a small volume of blood—the same amount a person or animal would give during an office visit—that is 99.99 percent pure after the washing process and yields a high number of platelets,” Lunsford said.

Dogs are excellent models for research on these types of cancers, not only because these cancers behave very similarly in humans, but also because the disease can be studied at an accelerated rate.

“For example, the type of bone cancer we are studying is diagnosed most often in teenagers and senior adults,” Lunsford said. “It is diagnosed in the same populations in dogs. But because of their naturally shorter life spans, dogs are teenagers at 1 to 2 years old and seniors at 10 to 12 years old. Interestingly, cancers seem to progress at proportionately accelerated rates. Cancers that tend to recur in 10 to 20 years in people may recur in 1 to 2 years in dogs, even with the best treatments.”

Because cancer is one of the leading causes of death among dogs, researchers can study animals with naturally occurring disease as opposed to laboratory models, said Bulla, an associate professor in the Department of Pathobiology and Population Medicine. The canine participants are patients undergoing treatments to save or prolong their lives.

“We have a high caseload of veterinary cancer patients,” Bulla said. “With dogs, we can study the disease in a similar situation as it would be found in a human patient. This gives us the opportunity to look at the entire picture. The dog’s immune system has already tried to defeat the disease, and couldn’t—just like in a human.”

Although no solid evidence exists to prove that environmental factors influence most cancers in dogs, many researchers believe the fact that dogs share humans’ environments is important when studying diseases.

“Dogs live in close proximity to us and share our lifestyle,” Bulla said. “We don’t have the same epidemiological data on dogs that has been gathered for people, but dogs live in our houses and share our environment, including the food we eat, the air we breathe, and even the beds we sleep in. How these things are important exactly, we don’t know for sure. But we do believe this proximity makes dogs better models than laboratory models.”

In addition to helping predict cancers earlier, the group’s work could also help find new drug therapies.

“These research projects could allow us to engineer a new drug or to revisit some existing drugs that could potentially be used in a new way,” Bulla said.

By Susan Collins-Smith   •   Photo by Tom Thompson
Mississippi State University is answering an industry need to renew educational efforts addressing seed technology issues.

An August short course was a small step forward for the university to provide information on current research and trends in seed production. The course served an additional benefit of networking for participants in the industry.

For decades, MSU laid the foundation for seed technology education, both nationally and internationally. Those years were significantly different times for the seed industry. Most companies were small, family-owned businesses. Today, they are large, publicly traded, global companies.

Attending the short course as a special guest of the organizers was Dr. Charles Vaughan, who was one of the first students in the seed technology program, earning his bachelor’s and master’s degrees in the 1950s. That early knowledge was enough to send him to Brazil for 2 years before he returned to complete his doctorate at North Carolina State University in the late ’60s. For the next 26 years, he was part of the dream team of seed technology professors at Mississippi State who conducted similar industry short courses for more than 40 years.

“There was a major international component in the program,” Vaughan said. “We were able to help many, many countries with their agricultural needs.”

Service and educational trips took the Maben native to 65 countries, including 22 trips to Africa. He said Mississippi State’s name was identified internationally with engineering and seed technology.

“Our seed technology program was one of the best advertisements for the university. It is great to see the topic getting new life—not just here but also in seed programs in other countries. Growth in this area at MSU could have far-reaching impacts.”

Dr. Charles Vaughan

In its heyday, the seed technology short course would attract 200 to 300 people from 30 to 40 states. This year, the program attracted 100 participants from 10 states as far away as Georgia, Texas, and Iowa.

“Networking was a key component of the short course,” said organizer Dr. Bennie Keith, executive secretary of the Mississippi Crop Improvement Association. “You don’t need to know everything about seed technology, but you need to know who to call.”

Keith said seed costs used to be minor factors in farm budgets.

“Today, seed costs and expectations are near the top of growers’ lists,” he said. “Seeds are expensive and demands are extremely high. Farmers want every seed in the bag to germinate and come up and produce good yields.”

For four decades, MSU’s seed technology program had several professors dedicated to research and education, teaching seven core classes in the program. Eventually, the classes were absorbed into the Department of Plant and Soil Sciences with only a couple classes remaining in the curriculum. As MSU’s core professors retired and biotechnology changed the seed business, the industry assumed much of the responsibility for promoting advancements in seed technology. Today, it finds a serious shortage of trained professionals to work in the field.

“Seed technology is a great direction for students. They can almost write their own tickets for careers because there are so few coming up to replace retirees,” Keith said.

Plans are under way to conduct another short course in 2016. Topics expected to be addressed include seed law, seed conditioning, and seed testing and evaluation.

By Linda Breazeale
Dr. Charles Vaughan (left), retired professor of seed technology at MSU, joined his son, Randy, and other participants at the 2015 Seed Technology Short Course. Randy Vaughan serves as the assistant director of research support units, primarily the Foundation Seed Program with the Mississippi Agricultural and Forestry Experiment Station.
Last summer, the MSU Extension Service lost the director who presided over the most difficult financial days in the organization’s first century.

Dr. James “Jamie” Carpenter, director of the Mississippi Cooperative Extension Service from 1982 to 1988, passed away in Starkville on June 3. He was 81.

A native of Noxubee County, Carpenter earned his bachelor’s degree from MSU in 1955 in agricultural administration before serving active duty in the army as a medical helicopter crew chief in Virginia and Germany. After his military service, Carpenter returned to his home state, where he worked as an assistant and associate county agent in Leake and Amite counties.

In 1962, Carpenter moved to Starkville, where he continued working with Extension at the state level as a specialist in resource development. He obtained a master’s in agriculture and Extension education from MSU before attending Louisiana State University and earning a doctorate in Extension education in 1973. Carpenter served as the assistant and associate director for agriculture programs during William Bost’s tenure as Extension director, 1962–1981.

Dan Bryant served alongside Carpenter. Bryant was Extension fiscal officer in the 1980s, which was a decade of tight budgets and personnel reductions.

“When Dr. Carpenter became director in 1982, we all knew that significant funding cuts were coming. In addition to overseeing Extension agriculture programs, he had also served as a legislative liaison for Extension,” Bryant said. “He held us together as well as anyone could have. He had good leadership skills and was a good communicator.”

Bryant said Extension administrators held “meeting on top of meeting” regarding budget shortfalls. They were forced to cut positions in a process known as a RIF, or reduction in force, at a time when personnel costs comprised about 90 percent of the Extension budget.

“Jamie was a compassionate man, and the RIF was very hard on him,” Bryant said. “He was a realist, but he knew how the cuts were going to affect a lot of people. Jamie and Skip Gardner (Extension personnel officer) worked well together to protect as many people as they could and to be sure all the cuts were legal.”

Bryant said other states with similar budget problems called on Mississippi’s leaders for advice.

Dr. Doss Broadnax worked in farm management and agricultural economics on the state level for Extension before becoming director of the Southern Rural Development Center. He said Carpenter’s reputation nationally helped the Extension Service in Mississippi.

“Jamie was recognized as a leader nationally even before he became our director. He provided leadership to the university review process and to other national projects that we conducted with other state Extension Services,” Broadnax said. “He was a quiet leader who was always willing to listen to other ideas, and he made decisions in a methodical way. He was always supportive.”

Danny Cheatham, who served in several administrative roles, said Carpenter wanted to leave a legacy that would help future members of the Extension family.

“We had numerous individuals and companies that contributed to an endowed scholarship fund for the children of Extension employees,” Cheatham said. “The scholarships were his way of helping and supporting sons and daughters of Extension employees.”

The James R. and Ressie Carpenter Scholarships have been offered since 1989. Two full-time MSU students who are children of Extension employees receive the $750 scholarships each year.

“These scholarships are a living legacy left by a director who considered Extension to be a big family,” Cheatham said. “He continued to be very supportive of Extension efforts long after he retired.”

Carpenter is survived by his wife, Ressie Carpenter of Starkville, his daughter Chris Carpenter of Trussville, Alabama, 10 grandchildren, and 11 great-grandchildren. He was preceded in death by his daughter Kelly Carpenter and his son Jay Carpenter Jr.

By Linda Breazeale
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The state’s oldest courthouse, built in 1839-41, is located in Liberty in Amite County.

County seat: Liberty
Population: 12,629
Municipalities: Liberty, Gloster, Crosby, Centreville
Communities: Perkinston, McHenry, Big Level, Magnolia, Ramsey Springs
Commodities: forestry, dairy, beef, poultry, wheat, soybeans
Industries: Drax Biomass Wood Pellet Mill, Gloster Chips, U.S. Metal, Zodiac Aerospace, Wallace Lumber Company
Natural resources: hardwood forests, pine plantations, wildlife, creeks, oil
History notes: Amite County was established in 1809. It was the fifth county formed in the Mississippi Territory and the first inland from the Mississippi River. The name Amite comes from the Amite River, which runs through the county. Amite County is the home of several historic buildings, including the state’s oldest courthouse and the first Confederate monument built in the country.
Attractions: Amite County War Memorial Monument, Camp Van Dorn World War II Museum, Ethel Stratton Vance Park, Jerry Clower Museum, Homochitto National Forrest, Little Red School House, Gloster Arboretum
Did you know? Amite County was the home of comedian Jerry Clower and the inventors of Borden’s condensed milk and Dr. Tichenor’s mouthwash.

“Amite County is full of historic landmarks and interesting stories from the past, but its abundant wildlife and natural resources attract many people to the area today.”

Amy Walsh, MSU Extension County Coordinator/FCS

Editor’s note: 1/82 is a regular feature highlighting one of Mississippi’s 82 counties.
MSU College of Veterinary Medicine professor and epidemiologist Dr. David Smith was presented with the American Association of Bovine Practitioners Award of Excellence at the organization’s national meeting in New Orleans. The Mikell and Mary Cheek Hall Davis Endowed Professor and CVM beef program leader was awarded by the AABP for his contributions to bovine practitioners around the country, his research and publications, and his part in regulatory and legislative activities that have enhanced bovine medicine delivery. The board-certified veterinary epidemiologist came to CVM in 2012 from the University of Nebraska. Smith focuses on the use of field epidemiology to discover how beef cattle production systems can be modified to improve the health, well being, and productivity of cattle, and benefit human and environmental health.

Dr. Jac Varco has been selected for the Dr. Glover B. and Imogene C. Triplett Endowed Chair in Agronomy. He is a professor in the College of Agriculture and Life Sciences’ plant and soil sciences department, as well as the Mississippi Agricultural and Forestry Experiment Station. Earlier this year, Varco received the college’s Excellence in Teaching, Upper Division Undergraduate Award. In 2014, he was named Conservation Systems Cotton Researcher of the Year at the 17th National Conservation Systems Cotton and Rice Conference. Varco, an MSU faculty member for nearly 30 years, is a University of Kentucky doctoral graduate in agronomy, and he completed bachelor’s and master’s degrees at the University of Florida.

The Crosby Arboretum Foundation and partners will construct a unique 900-square-foot quaking bog wetland exhibit at The Crosby Arboretum Interpretive Center in Picayune. The project site is located within a young wet flatwood that previously served as agricultural and forestry land. It has been designated by the Arboretum’s nationally award-winning master plan for pitcher plant bog restoration. Visitors will experience the feeling of a quaking bog through an ADA-accessible floating bridge that will be designed over the exhibit. Partners include MSU Extension, Mississippi Master Naturalists, Mississippi Native Plant Society, and Mississippi Master Gardeners.

Contributors to the Extension Outdoors news column series received the 2015 Conservation Education Award in the article series category from The Wildlife Society, the premier national society of wildlife professionals. Contributors to a new fisheries and wildlife management handbook won The Wildlife Society’s 2015 Conservation Education Award in the book series.

Dr. Ron McLaughlin, CVM professor and associate dean for administration, was selected as a 2015–16 Southeastern Conference Academic Leadership Development Program Fellow. McLaughlin, a board-certified veterinary surgeon who specializes in small animal surgery, started at MSU-CVM in 2000 as an associate professor and chief of surgery. He became associate dean for administration at the CVM in 2015. A University of Missouri-Columbia graduate, he provided leadership in establishing the college’s Veterinary Medical Technology program, one of only three 4-year veterinary technology programs in the country.
A new MSU team scored a major victory in its first season of competition. The MSU Horse Judging Team was named the Reserve Grand Champion Team at the All American Quarter Horse Congress in Columbus, Ohio. This is the largest horse show in the world. The team placed second in halter, third in performance, and second in stating reasons orally to achieve their overall second-place honor. Dr. Clay Cavin-der, Extension equine specialist and associate professor of animal and dairy sciences, is the team coach.

Landscape architecture associate professor Cory Gallo is part of a team of MSU faculty and students constructing a 1,500 square-foot bioretention basin (rain garden) that will be the first of its kind on campus. The green infrastructure demonstration project is funded by a $20,000 U.S. Environmental Protection Agency grant. It is a collaborative effort among landscape architecture, civil and environmental engineering, and art faculty and students. The rain garden is being designed, built, maintained, and monitored primarily through classroom activities.

Karissa A. Logan of Walls, a fashion design and merchandising student in the College of Agriculture and Life Sciences, was selected for a 2015–16 Dr. Pepper Scholarship. She is among the first 28 chosen for the $2,000 study-abroad awards. She traveled to Italy for 3 weeks during summer 2015, visiting Florence, Rome, and Venice as part of the School of Human Sciences’ Farm to Fashion academic program.

MSU senior Taylor M. Howell of Fayette, Alabama, began the 2015–16 school year with a major fashion design award. The fashion design and merchandising student in the School of Human Sciences in the College of Agriculture and Life Sciences won Best of Show honors in the undergraduate division of the recent 2015 Apparel, Textiles, and Design Community Juried Showcase and Exhibition. Taylor’s entry was a two-piece set with a cropped top and a circular skirt made from upcycled coffee filters, dryer sheets, and teabags. The unconventional creation debuted during MSU’s 2014 Trashion Show that featured clothes constructed from recycled materials.

MSU graduate student John T. Buol received the university’s 2015 Will D. Carpenter Distinguished Field Scientist Graduate Assistantship. The Monroe, Wisconsin, resident began work during the spring semester on a master’s degree in agronomy/weed science. The Monsanto-funded award honors the 1952 MSU agronomy graduate who spent 34 years of his career with the Missouri-based multinational agrichemical and agricultural biotechnology corporation. Carpenter retired in the early 1990s as vice president and general manager of the new products division. Buol is investigating cotton’s susceptibility to auxin herbicide injury. Weed science professor Dr. Dan Reynolds directs his work.

Camille Tedder of Jackson and Renee Wright of Douglasville, Georgia, received the overall baccalaureate school award at the recent American Institute of Floral Designers’ Student Floral Design Competition. The event was part of the organization’s 2015 national symposium in Denver, Colorado. Both students are horticulture/floral management majors. Tedder also is completing a double-major in business administration. Tedder received top individual honors, with highest overall scores and a first-place finish in both the body flowers and duplicate design categories. Additionally, she and Wright placed in the top 10 for bridal bouquets. Tedder also won the professional organization’s first scholarship that provides $3,000 toward her AIFD accreditation process. The professional test will be given at next year’s symposium in Seattle, Washington, and the award covers the test fee and travel and hotel expenses.
Just off the beaten path between Senatobia and Holly Springs, nestled among rolling hills and towering hardwoods, lies a tract of land that offers diverse terrain and picturesque views at every turn. Spirit Hill Farm bears witness to a long history of hard work and integrity. Through a generous bequest from Bob and Sheryl Bowen, the farm will continue to live up to its name for years to come.

Bob, a 1963 MSU graduate with a degree in history and political science, and his wife, Sheryl, have chosen to establish Spirit Hill Farm as a Legacy Forest within MSU’s Bulldog Forest. Spanning more than 1,000 acres, the farm has been in Bob’s family since the early 1800s. It is one of Mississippi’s Centennial Farms, a designation for farms owned by the same family and in continuous agricultural production for more than 100 years. Sustaining and rewarding its stewards for generations, the farm is more than a home to the Bowens—it’s a heritage.

“So many family farms are split up as they are passed from generation to generation,” Bob said. “My father asked me to keep the land as long as I could and to keep it intact as long as I could, and this gift accomplishes that wish.”

The property, which will be managed by the College of Forest Resources, will be used for a variety of purposes, including wildlife and forestry research, field day demonstrations, Extension and outreach projects, and other educational and training activities. A primary focus will involve the creation and management of wildlife habitats suitable for northern bobwhite quail in honor of the many quail hunts Bob and his brother shared with their father on the farm.

In addition to the farm, the couple has also established the Bowen Spirit Hill Farm Conservation Endowment to support and maintain the property. Proceeds from the endowment will support the upkeep of structures, machinery, and equipment, as well as the procurement of new facilities, materials, labor, utilities, and other improvements associated with the farm.

Beyond serving as an educational and research area, the farm has many agricultural opportunities, including row crops, timber, livestock production, and related pasturelands.

“Spirit Hill Farm will allow us to provide students, faculty, and landowners with valuable, hands-on learning opportunities,” said Jeff Little, director of development for the College of Forest Resources and The Bulldog Forest. “The benefit of the Bowens’ gifts is twofold—we are going to maximize and restore the function of the land, which will, in turn, help to grow MSU’s educational experience and service.”

The name Spirit Hill Farm comes from native folklore. According to locals, “good spirits” from the farm’s 1840s family cemetery, as well as an ancient Native American campground, have inhabited the property for decades.
“The stories about the spirits inspired the name because it has taken the hard work of everyone who has ever lived here to make this place what it is today,” Sheryl said. “Also, it’s not always about a physical ability to do something; it’s about your spirit and willingness to want to make something better than before.”

Since moving to the farm, the couple said the land has inspired them to feel differently about many things in life, including conservation and advocacy. “Living here has made us more sensitive to things we never had to think about before,” Sheryl said. “Some people think we should be leaving the farm to our children, but we think that giving this property to Mississippi State University is its best use. We don’t own anything in life; we are just caretakers for the next generation, and we all have something to give that will help make the world a better place.”

The Bowens’ dream to foster research and education while encouraging quality land and wildlife management will be accomplished through their generous gifts. With the help of MSU, Spirit Hill Farm will become a working landscape and premier wildlife habitat.

“We have built a great relationship with MSU, and we hope that our gifts will not only promote good conservation, but also inspire others to consider giving to Mississippi State,” Bob said. “There are multiple uses for this land, from food plots and research to propagation and development, all of which Mississippi State University does very well.”

More than just acreage, Spirit Hill Farm is a legacy that will live on in the students it serves. The land that has such a deep connection to the Bowen family’s past will create a bright future for MSU. Careful gift planning enables the land to stay together, and a family promise is fulfilled.

Gifts of real estate and timberland are often overlooked ways of giving to Mississippi State University. The MSU Bulldog Properties and Bulldog Forest programs give donors a unique way to invest in the betterment of the institution, while taking advantage of personal benefits.

Many types of properties can be considered for these programs, whether outright, through a bequest, or other means. These gifts provide an opportunity for donors to see their land managed and enhanced while benefiting MSU students, faculty, and countless others who are impacted by the university.

All properties must be approved by the MSU Foundation real estate team before becoming part of the programs. Read more at http://bulldogforest.msstate.edu.
MSU Extension 4-H’ers cheer with Extension Associate Director Paula Threadgill at the 2015 4-H Day at the MSU football game against Northwestern University. (Photo by Kat Lawrence)