Bully's healthy lifestyle…page 22

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

Mississippi State University
On the Cover
A therapeutic whirlpool bath is part of the expert care that keeps Bully in tip-top shape to perform his duties as MSU’s mascot. The story is on page 22. (Photo by Tom Thompson)

Back Cover
Roofing for some small South Farm structures had a “moving” experience during an October storm. After being blown from their original locations by a line of very strong winds, the twisted metal sections had to be moved from adjoining pastures by student worker Nick Simmons (left) and South Farm assistant manager Keith Daniels. (Photo by Jim Lytle)

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Development partners provide essential support for the division.
During the past few weeks, I have had the opportunity to visit more than half of our 82 county Extension offices and plan to make it to the rest during the weeks ahead.

The facilities that house Extension personnel are as diverse as the communities they serve. I have been in four former hospitals, the annex of a jail, county agricenters and livestock arenas, a former bank complete with its own vault, and a unique office occupying two FEMA trailers.

During one county visit, I learned about the county director’s love of the unique grape salad served at a local eatery. More importantly, I learned about the work he is doing with a group of award-winning young farmers in his county. I’ve seen quilt making in progress, and at more than one location, I saw vegetable gardens and flower beds planted and maintained by Master Gardener volunteers.

A recent visit was to a county office that has developed a handicapped-accessible garden with flowers, vegetables, and wildlife plantings and beds mulched with materials grown on the ground. It was even complete with a wild kid goat wearing a red collar that had escaped from the local fairground.

The most gratifying experiences have been meeting our county staffs and finding them doing those things Extension does best—helping people help themselves.

In my travels, I have learned some important Mississippi history and interesting trivia. I have been in the county where root beer was invented, another where shoes were first sold in pairs in boxes (right and left foot), and a town once featured in Life magazine for sending proportionally more men (38 percent) of its population to World War II than any other town of its size.

I’ve also learned that Mississippi:
- had the first standard gauge railroad;
- was the home of the inventor of the soft toilet seat;
- has the nation’s largest Bible-binding plant;
- was where stickball, the oldest game in the nation, was invented;
- was where rayon (the first real synthetic fiber) was invented;
- was home to the plant that first canned Borden’s condensed milk;
- has world’s largest cactus plantation, with more than 3,000 varieties;
- is home to the International Checkers Hall of Fame;
- has a town that claims the first football player to be on a box of Wheaties.

These are just some of the accomplishments that have occurred in Mississippi or have been accomplished by our sons and daughters. There are hundreds more, and still more will be added to the list in years to come.

Vance H. Watson

Vice President’s Letter

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FALL
2007
Modern Cotton Production Has Deep Delta Roots

By Bob Ratliff

Covered only with a coat of rust and adorned with a string of lights from a Christmas past, the vintage machine sitting on the edge of Highway 49 near Clarksdale is a reminder of a revolution that took place in southern agriculture more than 60 years ago.

The M12H International Harvester cotton picker was produced in the late 1940s and was among the second generation of commercially successful cotton pickers to hit the market. It is located on the Hopson Plantation, the site of field tests for mechanical pickers from the 1920s through the 1940s.

Picking cotton by hand was a sunup to sundown job, and a good picker could harvest about 250 to 275 pounds of cotton a day. About 1,200 pounds of hand-picked cotton is needed to produce a 500-pound bale of cleaned, dried lint ready for market.

“The long hours of back-breaking hand labor needed to produce cotton led to a lot of interest in mechanical pickers as far back as 1850,” said Mississippi State University agricultural engineer Herb Willcutt. “The first known patent for a cotton picker was issued to S.S. Rembert and Jebediah Prescott of Memphis in 1850.”

During the years that followed, engineers experimented with machines that removed cotton from bolls in a variety of ways, including the use of vacuum pumps to suck out the lint. Machines using spindles to separate lint from bolls proved the most successful.

“These machines use rows of barbed spindles rotating at high speed to remove the cotton from the plant. The cotton is then removed from the spindles by a counter-rotating cylinder called a doffer,” Willcutt said.

The Mississippi Delta was a popular testing ground for mechanical pickers because of its location in the heart of the nation’s Cotton Belt, the large number of acres devoted to cotton production in the region and the location of U.S. Department of Agriculture scientists at the Delta Branch Experiment Station. By the late 1920s, several companies, including John Deere and International Harvester (IH), had research and development plans for mechanical pickers and were getting close to commercial production. Economics, however, dealt their projects a serious blow.

“The 1929 stock market crash and the Great Depression dropped cotton prices to just 5 cents a pound and brought development of mechanical pickers to a standstill,” Willcutt said. “However, IH resumed work on its tractor-mounted pickers in the early 1930s.”

Testing of the IH machines and machines produced by the Rust Cotton Picker Company in Memphis took place at the Delta Branch throughout the 1930s, and IH sent engineers and prototype pickers to the Hopson Plantation.

A 1936 demonstration of the Rust tractor-pulled mechanical picker at the Delta Branch triggered an editorial in the Jackson Daily News stating that the machine “should be driven right out of the cotton fields and sunk into the Mississippi River,” out of fear that it would put millions of people out of work.
At the Hopson Plantation, IH engineers from the company’s Chicago headquarters were able to troubleshoot problems as they developed.

“The first pickers didn’t have a dump basket, and the cotton had to be unloaded to a wagon by hand,” said Walter Nance, a member of the Hopson family who grew up on the plantation during the 1940s. “One day, the engineers came in exhausted from unloading a picker basket, and they sat down under a tree and designed a dump basket. They took their plans back to Chicago, and when they came back the next fall they had a mechanical dump basket.”

While the IH engineers were working at the Hopson Plantation, USDA and Mississippi State researchers at the Delta Branch were studying mechanical pickers and conducting research on strengthening cotton fibers to withstand mechanical harvesting. The Delta Branch also was the site of research with defoliation, which was needed to remove the leaves from cotton plants before mechanical harvesting.

The work at the Delta Branch Experiment Station and at the Hopson Plantation led to commercial production of IH mechanical pickers, while war-time demand for factory workers was easing concern about the impact of replacing much of the South’s farm workforce with machines.

In 1942, IH produced 12 mechanical pickers on Model H Farmall tractors, and in 1943, 13 more were mounted on the Model H tractors and one on a larger Model M. Production increased to 40 of the machines for use on Model M tractors for the 1944 crop. Also in 1944, the Hopson Plantation produced the first cotton crop using just mechanical cultivation and harvesting, a feat that made the farm a tourist attraction.

“They’ve come from all over the Cotton Belt,” said Dick Hopson, one of the two brothers operating the plantation at the time, in a 1944 interview for ACCO Press, a cotton magazine. “Men from the eastern mills, bankers, in fact, just about every phase of the cotton business has been represented in those who have come to observe the picking operation this year.”

Also in 1944, the Delta Branch used an IH mechanical picker to harvest its cotton crop, marking the first time the experiment station successfully produced a cotton crop without a single hour of hand labor. The move to mechanization also spelled the end of mule power at the facility. In 1945, a new mule barn housed 40 mules, but by 1950, only one remained at the station. continued…

© Courtesy John Deere
While the engineers had produced a machine that could pick cotton of comparable quality to hand picking and at a faster pace, there were still concerns about the economics of mechanical cotton harvesting.

“They had a production model that was satisfactory, but it still had to be proved that this was a practical, economic thing,” Nance said. “So, the plantation had three bookkeepers with the most extensive cost accounting setup known to man at the time. Every nut, every bolt, every quart of oil, everything was accounted for in order to compare mechanical production to the hand labor used in the sharecropping system. They did prove that mechanical farming was economically practical.”

Mechanized production of cotton and other crops increased after World War II. A significant step forward was John Deere’s 1951 volume manufacturing of two-row cotton pickers. Today, six-row machines are the standard, but they still operate on the engineering principles developed more than 60 years ago.

“Current cotton pickers still use most of the concepts introduced in the 1943 IH production pickers,” Willcutt said. “However, one six-row harvester operating at 4.2 miles an hour in two-plus-bales-per-acre cotton can harvest 150 to 200 bales of high-quality fiber a day with a crew of three or four people. It would take 750 to 1,000 people to harvest the same amount by hand.”

The Hopson Plantation has been designated a Mississippi Landmark for the role played there in the development of mechanical cotton harvesting.

The M12H picker parked near the plantation’s former commissary is part of Delta history, said James Butler, who along with his wife, Cathy, a member of the Hopson family, own the area that served as the plantation’s headquarters. The commissary building is now a blues club, and former sharecropper houses and the gin building on the property are part of an inn that draws visitors from around the world.

“We would like to eventually restore the machine to the way it was in the 1940s when the plantation was part of important changes in Delta life,” he said.
Endowment Establishes Laboratory for Wood Protection Research

By Andrea Cooper

Wood products contribute $12.9 million to the Mississippi economy, but weather, insects and other destructive elements destroy one-tenth of the forest products produced in the state each year.

Wood preservatives are used to protect against losses, but there are environmental issues and toxicity problems associated with these products.

An endowment in the Forest and Wildlife Research Center is assisting with the process of developing eco-friendly wood preservatives. Funded by a land gift from Harold C. and Claire Lucas, the endowment has been used to establish the Lucas Laboratory for advanced biodeterioration research. Biodeterioration, the natural processes of microorganism activity in wood, often results in what is commonly referred to as wood decay or rot.

“The vision for the laboratory is to be a leading and recognized force in the development of environmentally friendly methods for understanding and controlling the biodeterioration of wood products,” said Darrel Nicholas, codirector and professor in forest products. “The Lucas Laboratory will use a team approach involving other MSU departments, industry, universities and federal labs to develop improved methods for preserving wood.”

Harold Lucas worked in the wood-preserving industry for many years. As executive vice president of the American Creosote Company, he became familiar with the work in wood preservation at MSU.

“Through this endowment, scientists have the resources to acquire and advance fundamental and applied understanding of the complex process of wood biodeterioration,” said Susan Diehl, codirector and associate professor of forest products. “The result will be better ways to protect wood products and use the natural processes of deterioration for industrial biomass applications.”

The lab will also study the positive side of the forces responsible for wood decay, Diehl added.

“Specific examples are the possible use of microorganisms and their enzymatic systems for biopulping and biobleaching processes, the discovery of unique organisms or microbial processes for biomass conversion to fuel or products, and bio-treatment of contaminated wastewater, air and other forest products industrial emissions,” she said.

The lab’s educational objectives will be supported by graduate degree programs within the College of Forest Resources. Research will be focused on understanding the microbial decomposition of wood and developing accelerated test methodology for evaluating wood protection systems.

“Biodeterioration is a natural process that plays an important role in the cycling of nutrients in forest situations,” Diehl said. “Unfortunately, this natural process also takes place in homes and buildings when wood is used as a building material.”

In order to control the process, the researchers at the lab hope to uncover the detailed nature of the microorganism community involved.

“With a better understanding of the colonization and interactions of the diverse microbial community associated with wood decay, we hope to be able to control the process,” Diehl said. “Ideally, we would like to be able to stop or slow the process in wood products and speed the process in situations where recycling of nutrients is the goal.”
Forget Worms: Producers May Put Fish on Insect Diet

By Bob Ratliff

Bugs are just pests for most people, but a group of Mississippi State University scientists is working to make insects an important crop.

“In early 2007, I was called by Ernest Papadoyianis, president of Neptune Industries in Boca Raton, Florida, about visiting MSU to talk about the mass rearing of insects,” said MSU entomologist Frank Davis. “His interest was in mass producing insects as a sustainable protein source to replace fishmeal in fish and livestock feeds.”

The call brought together a company with diversified interests in seafood and aquaculture technologies, including the integration of fish farming, hydroponics and waste-to-energy production, with perhaps the only university in the world with the ability to researching all aspects of rearing insects as a source of food for fish and other livestock.

“Growing insects for use in research began at MSU when the Department of Entomology established a facility called ‘The Worm Shed’ and U.S. Department of Agriculture entomologist R.T. Gast and I started growing several insect species on artificial diets in the 1960s at the Boll Weevil Research Laboratory,” Davis said. “During these years, rearing systems were developed for the boll weevil and other insects, including fall armyworms, corn earworms, southwestern corn borers and tobacco budworms, with the purpose of finding ways to rid crops of these costly pests.”

As a USDA entomologist for 35 years, Davis led a team that developed a major insect-rearing facility at the federal laboratory for rearing pest moth species for corn and cotton research. When he retired from USDA in 1999, Davis accepted a position as an emeritus adjunct professor in the Department of Entomology and Plant
Pathology at MSU. In that capacity, he organized the university’s first Insect Rearing Workshop in the fall of 2000. During the past seven years, the workshop has brought hundreds of scientists from throughout the United States and overseas to campus to learn about raising insects for use in research, for educational purposes and for commercial uses, including natural control of insect pests. The workshop has also led to the construction of the state-of-the-art Insect-Rearing Center on campus.

It was the workshop’s reputation as one of the few places in the world to learn about insect rearing that caught the attention of Neptune Industries.

“We were brainstorming about ways to eliminate one of the major bottlenecks in the aquaculture industry—reliance on fish meal for protein in fish diets—when someone mentioned insects. The light bulb immediately went off. We immediately began searching for the top entomology programs in the country to assist us in this research. Serendipitously, we saw a pet industry newspaper article on Dr. Davis and the insect rearing workshop at Mississippi State,” said Ernest Papadoyianis, president of Neptune. “We had just talked about how many freshwater fish species derive most of their nutrition from various stages of small insects, some just the size of the head of a pin.”

Aquaculture, the commercial production of seafood in managed ponds or tanks, currently supplies about 46 percent of all seafood consumed in the world today. The United Nations’ Food and Agriculture Organization predicts that commercially grown supplies will rise to 75 percent of consumption in the next 20 years.

“The supply of wild-caught fish has really been flat since the late 1980s, and those stocks have little chance of regaining their past levels because of pollution, overfishing and other factors affecting commercial fishing,” Papadoyianis said. “Aquaculture is left to bridge the widening gap, and we have to be sustainable in all aspects of our industry.”

More than 25 percent of all fish harvested today are used for fish meal, and the majority of fish meal is used to produce other fish, he said. These baitfish stocks such as anchovies, menhaden and herring are exploited and growing scarcer as time goes on. The result is an ever-tightening supply situation, which has caused sharp price increases over the last year. This trend is expected to worsen.

“In order for our industry to grow and become independent of protein from wild-caught fish, we have to come up with sources that are sustainable,” Papadoyianis said. “Having a source of high-quality protein that can be mass produced essentially from processing by-products from fruits, grains, and vegetables, and even fish and animal waste, would be an ideal situation for the aquaculture industry.”

Just days after the initial telephone call, Papadoyianis and Sal Cherch, Neptune’s chief operating officer, visited the MSU campus. The result of the visit with Davis, entomologist John Schneider, and entomology and plant pathology department head Clarence Collison was an agreement with the university to research the use of feed made from commercially grown insects for fish production.

“The first phase of the research was the selection of insect species with high amounts of protein that can be economically produced by the millions,” Davis said. “That part of the research was completed during the summer, and feeding trials with hybrid striped bass supplied by Neptune began during the early fall.”

The feeding trials are being conducted by Mississippi Agricultural and Forestry Experiment Station scientist Lou D’Abramo, who is comparing feed pellets made with fish meal to pellets produced from insects. Both were commercially produced and look identical.

“The early trial results indicate the fish have no real preference for one over the other,” D’Abramo said. “In the wild, fish do come to the surface to feed on dragonflies and other insects, so it makes sense that they will eat pellets made from insects.”

D’Abramo is also studying weight gain and other factors that will determine whether the insect-based diet is acceptable for commercial fish production.

The next phase of the research was conducted at MSU’s Garrison Sensory Evaluation Laboratory to determine whether an insect diet affects the taste, texture or other qualities of the fish.

“Our evaluation of the samples of hybrid striped bass from the feeding trial indicated no difference in appearance, flavor or texture of the fish grown on the insect-based diet and those grown on the fish meal diet,” said Patti Coggins, director of the sensory evaluation lab. “The only difference we found was that the fillets from the fish raised on the insect diet did not have a strong ‘fishy’ smell.”

With research pointing to the potential success of insect-based diets in fish production, Papadoyianis is looking ahead to the next step in the process—construction of a pilot insect-rearing facility to test growing, harvesting and processing methods.

“We’ve already had inquiries from all over the world about this,” Papadoyianis said. “Our vision is to have insect production facilities in all of the geographical regions with major commercial aquaculture industries in order to reduce freight costs. That will require researching the use of local insect species, nutrition and production methods, so we envision a long-term relationship with Mississippi State University.”
In October, oyster boats began harvesting from Mississippi reefs for the first time since Hurricane Katrina.

Shrimp boats and their tasty harvest are part of the image most people have of the Mississippi Gulf Coast, but other important seafood crops are pulled from the waters of the Gulf.

Oysters contribute to the economies of all the Gulf Coast states, and before Hurricane Katrina, the oyster industry pumped about $100 million into the Mississippi economy each year. In fact, Mississippi and other Gulf Coast states traditionally harvest the majority of the United States’ domestic oyster supply.

“The East Coast is famous for oysters, but today if you order fresh oysters in a restaurant on Maryland’s Chesapeake Bay, you’ll likely be eating Gulf Coast oysters because pollution and other factors have taken a toll on the industry in other areas of the nation,” said David Burrage, Extension professor of marine resources at Mississippi State University’s Coastal Research and Extension Center in Biloxi. “The Mississippi oyster industry was dealt a serious blow by Katrina, and there was no harvest between fall 2005 and this fall.”

Only about half of the 300 or so people who normally work in the oyster harvest are participating this year, he added. Also, the curtailed harvest is expected to total about 35,000 sacks of oysters between fall 2007 and spring 2008, or about 10 percent of the annual pre-Katrina harvest. Each sack of oysters in-the-shell weighs about 85 pounds.
“Hurricane Katrina damaged about 90 to 95 percent of Mississippi’s 12,000 acres of oyster beds on Aug. 29, 2005,” Burrage said. “The Mississippi Department of Marine Resources, with federal funding and the help of Mississippi’s oystermen, began rebuilding the oyster reefs in August 2006.”

Rebuilding damaged reefs and creating new ones is done with “culch plants.” The plants consist of oyster shells or crushed concrete rubble spread over the bottom of the Gulf using high-pressure hoses. The material gives young oysters, or spats, a clean surface on which to attach and grow. After they attach, it takes them about 18 to 24 months to reach marketable size.

“It’s one of our duties to see that our oyster reefs are developed and made as productive and profitable as possible,” said Marine Resources shellfish coordinator Scott Gordon. “The cultch planting is one of the most essential tools we have to achieve that.”

The success of the plants helped reopen the Mississippi oyster reefs to limited harvesting in the fall of 2007.

“It’s really good to see all the new growth that’s out there,” Gordon said. “We do have harvestable oysters, but we are limiting the harvest this year to protect the young oysters.”

Tradition is important in the oyster industry on the Gulf Coast, Gordon added, and it is a trade that is handed down from generation to generation.

“Most of the people on the oyster boats have been in the business for 10 or more years, and they learned from another fisherman, so it’s important that the industry’s infrastructure be rebuilt as soon as possible if we’re going to pass the business along to another generation,” he said.

The oystermen are proud of their business and are working to see that it remains a part of the Gulf Coast.

“We probably have the best oyster reefs in the world right here in the Gulf, and with proper management of the resources, the industry can come back,” said Rusty Quave, who started going out on oyster boats when he was 10 and now owns a boat. He also serves as mayor of the coastal town of D’Iberville.

“Seafood has always been an important industry in our community, and we would like to see it continue,” he said.

The return of oyster boats to the Mississippi Gulf in 2007 is encouraging for all aspects of the industry.

“We’re really not expecting much this year, but next year the harvest should be back to a good level,” said Phyllis Jenkins of Crystal Seas Oysters, a Jenkins family-owned business in Pass Christian specializing in oysters and shrimp.

“Most of the oysters we’re processing this year are from Louisiana, and we’re looking forward to Mississippi getting back into production,” Jenkins said.
Tour Takes Producers to Soybean Rust Sites

Most Mississippi farmers have never seen Asian soybean rust in their fields and hope to never encounter the yield-robbing disease.

Soybean producers throughout the state, however, are being educated about the disease, and one group had the opportunity to see the disease on plants during the 2007 season. About 35 Mississippi producers, agricultural chemical company representatives, crop consultants and Mississippi State University Extension Service personnel spent Aug. 6 and 7 touring sites where rust has been found in east Louisiana and southwest Mississippi.

The 2007 tour was organized by MSU-ES with support from the Mississippi Soybean Promotion Board and was led by members of the Extension soybean rust scouting team. The team includes Billy Moore, Extension plant pathologist emeritus; Alan Henn, associate Extension professor of entomology and plant pathology; and Tom Allen, Extension plant pathologist.

Asian soybean rust first appeared in Japan in 1902 and has since moved across Asia, Africa and South America. It made its first appearance in the United States in 2004, and the first confirmed case in Mississippi was in late fall 2004. Once a plant is infected, it can be completely defoliated by soybean rust.

“The early warning about the potential for a rust outbreak is important for producers.”

Mike Pannell

Story and Photos Bob Ratliff
The first stop on this year’s tour was Louisiana State University facilities in the Alexandria area, where the participants saw infested fields.

“The fields we saw south of Alexandria did have soybean rust that had been treated with fungicide, which had stopped the disease,” Moore said. “Even though the rust was no longer active, we did see what fungicide treatments do to the disease.”

The following day, tour participants saw the only location where soybean rust had been found in Mississippi at that time—kudzu near Woodville in Wilkinson County. Kudzu is a host plant for soybean rust, and monitoring the state’s estimated 250,000 acres of kudzu is part of the first line of defense against the disease.

The first 2007 report of the disease in a Mississippi producer’s field was made on Aug. 15 in Sunflower County. Earlier in the week, the disease was found in sentinel plots in Pearl River and Washington counties.

“Sentinel plots are small areas planted to soybeans throughout the state specifically to monitor for rust,” Moore said. “If rust spores are found in kudzu or sentinel plots, we can alert producers in surrounding areas of the need to apply fungicides to protect against the disease.”

The sentinel plots are planted in late February and early March so they will be susceptible to soybean rust before producers’ fields are susceptible.

The early warning is a critical part of heading off a major outbreak of the disease because of the way rust spreads and reproduces. Spores from infected plants can be carried by the wind but remain viable only for a limited time in intense sunlight.

“The spores are only viable for a short time,” Henn said. “From the time a spore lands on a leaf until it enters the plant and produces new spores is about seven to nine days under optimum conditions, which include temperatures between 67 and 77 degrees. During that time it is susceptible to certain fungicide applications.”

“The early warning about the potential for a rust outbreak is important for producers,” said tour participant Mike Pannell of Union County.

“We are looking for timely recommendations from the university about when and what to spray for rust control,” he said. “You can waste money on products that don’t work or make applications at the wrong time.”

Rust has been found as far north as Oklahoma, which has had the temperatures and moisture it needs, Moore said. He noted that all soybean varieties are susceptible, but environmental conditions play a big role in both the disease’s development and soybean losses.

“We have about 200,000 acres of soybeans that were planted behind wheat this summer, so while most of the state’s crop is beyond the stage where rust will have time to cause damage, those late-planted beans could still be damaged,” Moore said.

The tour participants learned about research currently under way to produce genetic resistance to soybean rust. They also received pointers on identifying the disease, which is hard to distinguish from some other soybean diseases.

“Being on the tour showed me the difference in soybean rust and other diseases,” Pannell said. “I still may not be able to positively identify it, but what I’ve learned will help me eliminate it as a possibility if what I’m looking at is another disease.”

Moore said the effort to monitor the disease and provide producers advanced warning has been one of the most well coordinated he as seen in more than 40 years as a plant pathologist.

“The U.S. Department of Agriculture, Extension, research scientists and producer organizations in northern states and across the South are all working together on this problem,” he said. “Teams like ours can’t, however, cover all the fields in the state, so it’s important to have producers who can help spot the disease in their fields.”
Research by scientists at the Mississippi Agricultural and Forestry Experiment Station is reaping benefits for Nature’s Catch, the largest pond-based producer of hybrid striped bass in the United States.

For more than 11 years, MSU researchers Lou D’Abramo and Terry Hanson have worked with managers of the Clarksdale-based aquaculture enterprise to develop a more efficient culture system for rearing hybrid striped bass.

In the past, pond culture of hybrid striped bass was based on a three-phase system. Fingerlings were stocked into ponds at a density of 8,000 to 12,000 per acre and grown to a stocking size, harvested and graded. The fish were then used to stock ponds at a density of 3,000 to 4,000 per acre and grown to market size.

“The problem with the old system is that there is intensive labor and high mortality associated with the transfer of the stocking size fish into ponds for final grow-out,” explained D’Abramo, a professor in the Department of Wildlife and Fisheries.

For this reason, research has focused on the elimination of the transfer phase. Field testing and economic analysis of the alternative two-phase system, termed “direct stock,” is encouraging.

“By eliminating the need to grade and transfer fish harvested from ponds, the direct stock management system decreases the potential for mortality,” said Bubba Groves, biologist and assistant manager at Nature’s Catch. Management of water quality, Groves added, should also be less resource demanding.

“Because we will stock the fingerlings at lower densities in the direct stock system, water quality is much easier to manage,” said Groves, an MSU aquaculture alumnus.

The lower densities for the direct stock system are associated with faster rates of growth and a decrease in turnover time to market size. Instead of the average 29 months to harvest with the three-phase system, direct stock produces harvestable fish in an average of 21 months.

The economic analysis, conducted by Terry Hanson of the Department of Agricultural Economics, indicates a 30 percent reduction in production costs realized through the decrease in turnover time.

“In addition, it has the potential to increase the total annual production,” D’Abramo said.

Another management advantage of the direct stock system is the elimination of the need to hold fish in a maintenance mode in ponds until ponds become available for stocking.

“Having to hold the fish creates an operational bottleneck that drains both labor and feed resources,” Groves said.

The new system has been tested for a year in commercial-sized ponds and worked extremely well, Groves said.

“Nature’s Catch is now totally transforming the current 884 water production acres of the farm to the direct system,” he said. “We are also constructing an additional 269 acres that will be managed under the direct-stock system.”

Groves estimates that after the 2 years required for implementation of the new system on the current 884 acres, the annual rate of production of Nature’s Catch will increase from 1.7 million pounds to 2.35 million pounds.

“That represents an increase of $1.9 million or 38 percent in total sales for Nature’s Catch,” Groves said.

With the proposed increase in acreage, annual sales should increase to approximately $8.9 million by 2010.

“That’s a lot of striped bass and a significant input into the economy of the state of Mississippi,” Groves added.
By the time she graduated from MSU in May 2007, Ellen Easley had a wealth of experience in her chosen field. The 21-year-old earned her bachelor’s degree in food science, nutrition and health promotion with a concentration in nutrition.

“My goal is to become a registered dietitian and use the skills I have learned to help people improve their lives by improving the way they eat,” Easley said. “I believe that to be successful at weight management or disease prevention, you must make lifestyle changes for the better. It’s not what we eat at one meal that makes us healthy or not, it’s what we eat every day.”

The path to Easley’s career began in her family’s kitchen in the Cedar Bluff community of Clay County, where she lived with her parents and four brothers and sisters.

“My mom has always been interested in nutrition, and when I was about 8 we started baking our own bread, which increased my interest in healthy food,” she said. “I was active in 4-H and learned a lot about food and nutrition through participation in the 4-H program.”

During high school, Easley participated in running as a sport, and that increased her interest in nutrition and healthy eating. At MSU, she was a member of the College of Agriculture and Life Sciences Ambassadors and the Student Dietetic Association and served as president of both organizations. During her senior year, she got the opportunity to put what she was learning in the classroom to work in the community.

“In 2006, I had the opportunity to volunteer to host a healthy cooking program on WCBI-TV in Columbus,” Easley said. “The 8-minute segment, called ‘Cooking with Ellen,’ aired live each Wednesday morning at 5:15, which meant I had to get up at 3.”

While the program made for some long days for an already busy student, it produced some long-lasting benefits.

“Each week, I would make a healthy recipe and give healthy cooking tips during the 8 minutes of air time,” Easley said. “I created a Web site, www.cookingwithellen.com, where viewers could print off each week’s recipe. Because of the show and the Web site, I quickly became known in the Golden Triangle community as ‘Cooking with Ellen’ and was recognized in stores and around campus by viewers.”

Following graduation from MSU, Easley had to give up the TV program in order to pursue an internship, but she kept the Web site and expanded the Cooking with Ellen persona to include an e-newsletter.

“I’m continuing my education by pursuing a dietetic internship through a 1-year distance learning program from the University of Northern Colorado,” she said. “I have set up my own intern rotations with dietitians in Jackson, Port Gibson, Baton Rouge and Memphis, but I can still use the Web site and newsletter to encourage people to eat healthy.”

Once she completes 1,020 hours of practical experience, Easley will be eligible to take the exam to become a registered dietitian.

“I enjoy meeting people one-on-one and would like to start my own business helping people manage their weight and improve the way they eat,” she said.
New Employees Find Good Reasons to Work at MSU

When deciding whether or not to accept a job offer, people consider many factors, including salary, location and work environment.

Sometimes, however, there are less obvious reasons for wanting to work somewhere. The employer’s reputation, past associations, the people the job candidate met during the interview process and other factors often come into play.

Those are all reasons some of the individuals who came to work at MSU’s Division of Agriculture, Forestry and Veterinary Medicine during the past year gave when asked what attracted them to the university.

People Drew Animal Scientist to MSU

Carolyn Buff, an animal scientist, said it was the people she met during her late-2006 interview at Mississippi State that made her want to join the Department of Animal and Dairy Science faculty.

“The people here, faculty and administrators, impressed me with their desire that their students succeed,” said Buff, who teaches, serves as the department’s undergraduate coordinator and advises early-entry pre-veterinary medicine students. “At some larger schools, there is more of a sink-or-swim attitude about students.”

Buff grew up in the suburbs of St. Louis, Mo., and earned her bachelor’s degree in animal science and her master’s degree in nutritional science at the University of Illinois-Urbana. Her doctorate is in animal science from the University of Missouri-Columbia.

She began teaching undergraduate students for the first time during the spring 2007 semester.

“Undergraduates come from different educational backgrounds and have different levels of preparation, so you have to find a good balance in your teaching so you don’t bore some and leave others lost,” she said. “It is gratifying, though, when you see your students have an ‘ah ha,’ that time when you make a connection and they comprehend something they didn’t see before.”
Forestry Specialist Brings Experience Back to Alma Mater

Only oaks stand taller than Randy Rousseau, hardwood specialist in the College of Forest Resources.

At more than 6 feet tall, Rousseau joined the faculty in September, bringing 25 years of experience in hardwood and genetic research.

“I have always had a special place in my heart for MSU,” Rousseau said.

Rousseau attended MSU as a doctoral student, working with forestry professors Sam Land and George Switzer.

“These guys influenced me greatly during my time at State, as well as John Hodges and Dick Porterfield,” Rousseau added. “When the MSU opportunity became available, I jumped at the chance to work at my alma mater.”

A native of Baton Rouge, La., Rousseau worked for Westvaco and MeadWestvaco for the past 25 years. He received bachelor’s and master’s degrees in forestry from Louisiana State University.

After attending LSU, Rousseau attended MSU for an interdisciplinary doctorate in genetics, which he received in 1980.

“My area of research includes a wide variety of topics but focuses primarily on hardwoods,” Rousseau said.

His current position is 80 percent extension and 20 percent research. Though he teaches no classes, he is responsible for numerous presentations on hardwood management in a variety of settings.

Including hardwood research, Rousseau also is working on topics such as carbon trading, biomass/bioenergy production, hardwood genetic conservation, stand dynamics of oak plantings, testing loblolly pine for selection of the best genotypes, optimal spacing for specific pine varieties, and combining wildlife and bioenergy plantings with pine varieties.

“I have always enjoyed spending time in outdoor activities, so forestry has been a passion and a natural fit,” Rousseau added.

The associate extension/research professor understands the responsibility of preserving and conserving Mississippi’s hardwood forests, which represent 69 percent of the forest in the state.

“I want to help landowners understand the importance and heritage of our state’s bottomland and upland hardwood forests. Today’s mighty oak is just yesterday’s nut that held its ground, just like me,” Rousseau added.
After growing up amid corn fields in the Land of Lincoln, **Darrin Dodds** is pursuing a career in the most southern of crops—cotton.

It was the reputation of MSU’s weed science program that brought the Illinois native to Mississippi.

“After completing a master’s degree in weed science at Purdue, I wanted to pursue a doctorate in the same field, and the program here stacks up with the best in the nation,” he said. “While working on the degree, I began working with weed scientist Dan Reynolds in the Department of Plant and Soil Sciences. That experience and seeing where the graduates of the program went following graduation confirmed that Mississippi State was the right place for anyone interested in a career in weed science.”

During the final stages of his doctorate, Dodds began pursuing his own job search and had some attractive offers. Then, however, there was an opportunity close to his adopted home.

“Tom Barber, the MSU Extension cotton specialist, left for a job in his home state of Arkansas, so there was an opportunity here,” he said. “I was interested because of my experience with the university and the hospitality my wife, Erin, and I received at MSU and from people across the state.”

Dodds was the successful candidate for the job and went to work just in time for one of the most trying cotton seasons for Mississippi producers in recent history.

“Extended bouts of dry weather during the growing season, plant bugs and high fertilizer prices were just a few of the challenges Mississippi cotton growers faced this year,” he said. “At the end of the season, however, yields were generally better than most people were expecting.”

Mississippi’s Extension cotton specialist has a history of being a major source of information and advice for the state’s producers. The specialist serves as the primary contact for Extension educational material, technology transfer and programming regarding cotton production.

“The specialists, including Tom Barber and Will McCarty and George Mullendore before him, have all been individuals cotton producers knew they could call on for help with their crop,” he said. “I’m working hard to continue that tradition.”

The Dodds became the proud parents of a daughter, Rose, in September.
For a veterinary parasitologist, Mississippi is a land of opportunity. Veterinary parasitology is the study of animal parasites and their relationships and interactions with their animal hosts.

**Dr. Andrea Varela-Stokes** teaches parasitology and conducts research in the field as a member of the College of Veterinary Medicine’s Department of Basic Sciences. She came to MSU in June from the University of Georgia, where her duties included teaching and directing the small animal parasitology course.

“I’m interested in research on tick-borne diseases, including some that are rarely looked at by researchers,” she said. “Mississippi’s tick population makes this a good area to conduct that type of research.”

Varela-Stokes earned a bachelor’s degree in animal science from Cook College, Rutgers University and the DVM degree from Tufts University School of Veterinary Medicine. At Georgia, she earned a doctoral degree in infectious diseases and completed a National Institutes of Health-funded postdoctoral fellowship.

“I was content at the University of Georgia, but the job here offers more opportunities for teaching and research experience,” she said. “I was also impressed with the people I met when I interviewed here and with the equipment and other resources available for research.”
Guiming Wang has spanned the globe in a quest to understand the impacts of climate changes on domestic cattle and wildlife.

Wang, a native of Huaian in the Jiangsu Province of China, brought his expertise in wildlife population and community ecology to MSU’s Forest and Wildlife Research Center last year. The opportunity to apply what he has learned at a school with a strong wildlife and fisheries program, he said, was a deciding factor in coming to MSU.

“My research interests revolve around models,” Wang said. “These include wildlife population models, community models and ecological modeling.”

Although Wang has worked in locations around the world, his findings can benefit Mississippi’s 20,000 cattle producers.

“For instance, I use modeling to assess the impacts of elevated carbon dioxide and global warming on livestock, grasslands and rangelands,” Wang said. “I also study long-term data sets with new analytical tools, which enhances the state’s ability to manage important game animals such as deer.”

Modeling and computational statistics help researchers discover why and when populations become threatened, why certain species are successful invaders, and how large-scale trends in climate change will alter species ranges and community composition, Wang added.

In addition to research, Wang shares his knowledge with graduate and undergraduate students, teaching wildlife and fisheries biometrics and applied wildlife population ecology.

“I love statistics, which are necessary for the courses I teach, but sometimes it is hard to arouse a student’s interest in statistics,” Wang said.

This is an obstacle he overcomes by bringing his international flair and experience in varied wildlife populations into the classroom and sometimes beyond.

This summer, he took graduate students to China to investigate the socioecology of Brandt’s Voles in Inner Mongolia.

“I offer something for everyone in my class, no matter what their interests,” Wang said. “This keeps the students engaged in the principles of statistics.”

Wang and his family moved to Mississippi from Colorado, where he was a research scientist at Colorado State University. His wife is a postdoctoral researcher in the Department of Plant and Soil Sciences at MSU.

Wang received his bachelor’s degree in biology at Nanjing Normal University in China, a master’s in animal ecology from the Institute of Zoology in the Chinese Academy of Sciences in Beijing, and a doctoral degree in wildlife science from Oregon State University.
Gene Blythe came to MSU’s South Mississippi Branch Experiment Station in Poplarville from California by way of Alabama’s Auburn University.

A California native, Blythe earned an MBA and two bachelor’s degrees (business administration and ornamental horticulture) at California State Polytechnic University. He left sunny California for Auburn, where he completed a master’s degree in probability and statistics and a doctorate in horticulture.

In 2005, he returned to California to conduct horticultural research at the University of California, Riverside. An opportunity to work in Poplarville brought him back to the South in early 2007.

“There is such a wide variety of plants to work with here that there are almost unlimited research opportunities,” he said. “Another nice thing about Poplarville is the variety of expertise among the USDA scientists, giving lots of opportunities for collaboration on research projects here.”

The U.S. Department of Agriculture-Agricultural Research Service’s Thad Cochran Southern Horticultural Laboratory is located at the South Mississippi Branch.

All of Blythe’s research is focused on supporting the expanding ornamental horticulture industry in Mississippi and other Gulf Coast states. He is collaborating with other scientists from California to Florida.

“My research interests include commercial plant propagation, nursery production systems and evaluation of ornamental plants for performance in specific regions,” he said. “One of the things I’m researching is new plants for the Gulf Coast. The climate here is good for so many types of plants that it is possible plants not traditionally grown here can be successfully introduced to our landscapes.”
His auspicious debut at a 1935 football game between Mississippi State and Alabama brought the Bulldogs good luck and a 20-7 victory.

More than 72 years later, the university’s canine mascot has become an icon. Because people instantly see Bully as the face of MSU, he must look good, feel great and behave properly to create a favorable impression. He succeeds as a goodwill ambassador because of the College of Veterinary Medicine’s comprehensive approach to overseeing his health care and daily routine.

Six-year-old Bully is the 19th English bulldog to assume the role of official mascot. Born in Waynesboro, he is a descendant of Bully XVI and Bully XVII and registered by the American Kennel Club as “Mississippi’s TaTonka Gold.” Unlike his predecessors, Bully is the first bulldog mascot owned by the university and trained into the role from the time he was 8 weeks old.

“We made an effort to put this cute, little, rambunctious puppy we had found after an 18-month search through some of the experiences he would have as an adult working dog,” said Dr. Margaret Kern, Bully’s primary care veterinarian. “We took him to band and football practice, we walked him on the turf at Scott Field, and we took him to university functions to get him used to being around people.”

Veterinary technician Lisa Chrestman was assigned the role of trainer, guardian and scheduler for Bully. She quickly became his “mama,” too. Chrestman and her family (husband Al, son Austin, 15, and daughter Laura Grace, 9) have raised the mascot as a family pet at their home in Mathiston. He still resides there, along with two other dogs and three cats.

“My children think living with Bully is just awesome,” Chrestman said. “At home, he loves to roll in the dirt and then shake off a huge cloud of dust.”

Bully, who is affectionately nicknamed “T” by his family and CVM associates, rides to work with Chrestman and leaves with her when the day is done. He eats an evening meal of nutritionally balanced dog food and enjoys doggie treats, but he is not allowed to have people food except for stray popcorn on the floor of Humphrey Coliseum at basketball games.
“Everything we do with Bully is based on the principle that his health and well-being come first,” Chrestman said.

Chrestman remains at Bully’s side for all public appearances, which include all football games, all home basketball games and several spring baseball games at home while the weather is tolerable.

“Bully knows exactly when it’s game day,” Chrestman said. “When he sees us get out the traditional MSU leather harness, he automatically goes into work mode.”

Because of their anatomy, many bulldogs are stressed by a combination of heat, humidity and overexertion, Kern said. The stress from those situations can cause respiratory difficulties. Some bulldogs are also prone to arthritis and other joint problems. Their body structure limits the amount of strenuous physical activity they can endure.

“We examine Bully the day before and the day of all public appearances to make sure he is capable of enduring the physical performance that is required of him,” Kern said. “I look closely for signs of breathing difficulty, particularly during and after exercise.”

Bully is a healthy, happy dog who exudes personality and exemplifies the standard of the breed. He weighs approximately 55 pounds, and his red-fawn and white coat is soft and thick. His confident nature allows him to remain unfazed by the excitement of sporting events and meeting strangers.

“Mrs. Chrestman’s personal vehicle is identified with magnetic signs that state that the official MSU mascot is on board,” Kern noted. “Adoring fans, who often want to see him in the car, always yield to the vehicle.”

Bully has such an outgoing, friendly disposition that other Southeastern Conference mascots such as Auburn’s Aubie, Alabama’s Big Al and LSU’s Mike the Tiger seek Bully out for a photo op.

“The other SEC schools have really been super to us,” Chrestman said. “They have provided us with access to veterinary care and air-conditioning, and the fans want to pet and pose with Bully.”

Elementary and secondary school students in Mississippi and neighboring states clamor for Bully’s attention also.

“The schoolchildren get excited when they hear ‘Who Let the Dogs Out’ because they know Bully’s getting ready to appear,” Kern said.

Bully must maintain limber joints, a sleek physique and a consistent level of energy to enjoy the public adoration. Kern has prescribed a health maintenance program of massage therapy, exercise and whirlpool treatments that Bully undergoes three times a week for approximately an hour.

To begin his workout, Bully receives a muscle massage by canine physical therapist Ruby Lynn Carter-Smith. Carter-Smith uses the massage, which is a series of hand strokes from his head down to his toes, to relax Bully and establish a bond between patient and therapist.

The massage also prepares his muscles for a short run on a treadmill to build up endurance.

“We start out at a slow speed,” Carter-Smith said. “Sometimes we will have a person in front of the treadmill, another behind it and me standing on the frame over him while he’s walking to give him security and monitor his progress.”

Treadmill training is followed by several run-throughs on the cavalettis rails, a system of poles that are staggered in height, to flex his joints and muscles as he steps over them.

“We usually start out with the poles low to the ground, and we raise them to give Bully’s muscles a challenge,” she said.

Once the workout concludes, Bully heads to the whirlpool where he is immersed up to his neck for 15 minutes of hydrotherapy. The gentle bubbles ease the strain put on his joints and muscles during the exercise routine.

The whirlpool does not faze Bully. Because he receives a bath and grooming before every public appearance, Bully is comfortable in water, Chrestman said. She and other veterinary technicians check his eyes and clean the characteristic folds around his muzzle. He welcomes the attention because he knows he will get his tummy rubbed and his back scratched.

In addition to Bully’s daily monitoring, she also gets comprehensive checkups by Kern every 6 weeks. She examines Bully’s eyes, ears, teeth, gums, throat, skin, joints, coat and paws. She also supervises the administration of preventive medications and vaccinations.

“Bully has a little cowbell on his harness, and when he walks through the halls of the animal hospital, everyone knows he’s coming,” Kern said. “This gives people enough time to quickly locate his treats.”

Kern is always on-call should Bully need medical assistance. During trips and appearances, Chrestman carries an emergency bag with medications and equipment to assist in restoring normal breathing if Bully were to experience problems. She also has a doggie water bottle if he needs hydration.

At home games, Bully rides with Chrestman in a golf cart to various appearances at FanFair and alumni functions before he arrives at Davis-Wade Stadium. The permanent doghouse built at the stadium for Bully has a concrete floor that contains copper pipes. Cool water is pumped through the pipes so that Bully will have a comfortable place to lie down should temperatures climb.

Is there anything Bully will refuse? Just one thing, according to Kern.

“He does not like to take medications in tablet form,” she said. “He can find pills when we hide them in a doggie treat or food. We have to be quick on the draw.”

Such is the life of this special dog.
More than 71 million Americans actively participate in bird watching, and they spend some $45 million each year on the sport.

Mississippi, however, has so far flown under the bird-watching radar, ranking 45th in income from birding. Researchers at MSU’s Forest and Wildlife Research Center are studying ways to improve the state’s revenue from birding activities, especially in areas along the Mississippi River.

“The Mississippi River and its 30-million-acre floodplain form a vital flyway for migratory birds and provide opportunities for anyone who enjoys bird watching,” said Steve Grado, natural resource economist and professor in the Department of Forestry. “The Great River Birding Trail, named for the federally designated scenic drive called the Great River Road, consists of more than 2,000 miles along the river from northern Minnesota to the Gulf of Mexico.”
Bird-watching sites have been established along the trail parallel to the river on both sides from its headwaters at Lake Itasca, Minn., downstream for 1,366 miles to the confluence with the Ohio River at Cairo, Ill.

“The next step in completing the trail is to extend it along both sides of the Lower Mississippi River to the Gulf of Mexico,” Grado said.

Audubon Mississippi and the U.S. Fish and Wildlife Service have identified about 300 Mississippi bird-watching sites and located bird species of interest. Two-thirds of these sites are already open to the public. About 5 percent are on private lands.

“By estimating potential impacts of the Great River Birding Trail, we hope to show private landowners the value of allowing bird watching on their lands,” Grado said.

Assisting Grado with the study is research associate and MSU alumnus Marcus Measells. The duo has surveyed participants at birding festivals in the state.

“Just two birding festivals in Mississippi had more than 8,000 participants and resulted in a $107,685 impact to the state in 2006,” Measells said. “And in 2006, wildlife watchers spent an estimated $181 million in Mississippi.”

The goal of their research is to help Audubon Mississippi increase private landowner participation.

“We hope the information from our study will assist natural resource and tourism agencies, as well as nongovernmental organizations in finishing the trail in the Lower Mississippi River area by increasing private landowner participation,” Measells said. “Without this information as a framework, it will be difficult to evaluate the benefits to private landowners in providing bird-watching opportunities to the public.”

The research will also allow rural land planners and policy makers to estimate the benefits gained from various land management options on areas related to the trail. On the basis of this research, funding for bird-watching area restoration, species sustainability, and tourism promotion can be justified from both a biological and economic standpoint.

Many of the proposed sites are public water bodies surrounded by private lands, so many of the economic benefits from the already existing lake sites would potentially roll over to the private sector if more landowners were involved.

“We will also visit birding site operators to create profiles for business owners and public sites,” Grado said. “This information can be used to establish birder-related marketing and policy strategies related to ecotourism and resource management.”

As the project continues, additional surveys will be conducted at other bird-watching festivals and events. That information will be combined with information about the economic impact from public and private bird-watching sites along the trail.

With just 1 year of data for the 3-year study gathered so far, Measells said it is already obvious that birding can have a significant economic impact in Mississippi.

“We have valuable natural resources here, and birding is a very sustainable, environmentally friendly way of using them,” he said.
Cotton producers need technological innovations to sustain profitable production in the United States, and a recent study found Roundup Ready cotton, biotechnology and boll weevil eradication to be important contributors.

Mississippi State University collaborated with researchers from North Carolina State University in Raleigh on the report that has a survey of cotton growers from west Texas, Delta states and the Southeast. It also includes interviews with cotton experts at the Beltwide Cotton Conference in January 2007.

“Drought-resistant cotton, improved cotton varieties, and expanded weed and insect control in the form of biotech traits are the most important future innovations in the minds of the surveyed growers,” the report states.

The report shows the most important innovations in the history of U.S. cotton and suggests innovations for the future.

Michele Marra, an NCSU professor and the report’s lead author, said the information is relevant to the U.S. cotton industry’s current state.

“Because the cotton innovations named by those surveyed are, for the most part, designed to reduce production costs, they are particularly important in times of low prices,” Marra said. “Also, this information coming from an unbiased third party could help guide the direction of future funds for cotton research in many organizations and private firms.”

Steve Martin, the report’s second author and an agricultural economist with the MSU Extension Service at the Delta Research and Extension Center in Stoneville, said a point of interest is the high ranking respondents gave boll weevil eradication. Eradication is a U.S. Department of Agriculture program started in the 1970s that successfully eliminated the boll weevil insect as a threat to cotton production in many states.

“It’s been a major event in the last two decades,” Martin said. “Even though there were concerns initially about the cost, producers feel like boll weevil eradication has been a good investment and something that needs to be maintained.”

Martin said respondents rarely cited global positioning system technology high on their lists of major cotton innovations.

“If we do this survey again in another 10 years, that response might change,” Martin said. “The GPS technology is really just now beginning to be accepted in cotton.”

Companies leading in cotton innovations are Monsanto, Bayer, Delta and Pine Land, and Stoneville Pedigreed Seed, according to the report’s survey.

“A few of the experts interviewed at the 2007 Beltwide Cotton Conference mentioned specifically that they think a combination of Monsanto Company’s newest biotech traits with the Delta and Pine Land Company’s best varieties would enhance Southern cotton growers’ yields substantially,” the report states.

The U.S. Department of Justice approved a merger of the two companies on May 31, with the condition that divestitures take place. Monsanto owns the rights to the highly popular Roundup Ready and Bollgard biotechnology traits, while Delta and Pine Land offers popular seed varieties.

U.S. cotton yields increased at a faster rate once genetically modified, or transgenic, cotton arrived in the mid-1990s. Cotton growers planted transgenic cotton varieties on 83 percent of U.S. cotton acres in 2006.

Cotton producer Bernie Jordan, who farms in Yazoo and Humphreys counties, said he would like to have more innovations in variable-rate technology.

“I think we need to refine variable-rate fertilizer applications as much as they can be refined because all of our fertilizer products have escalated almost 100 percent in cost in the last year,” Jordan said.

“There has been a lot of work done with variable-rate lime, potash and phosphate, but I think we need to concentrate on variable-rate nitrogen because that is getting to be one of our highest inputs right now,” he said.

Jordan has farmed cotton for more than 27 years and provided his opinions separately from the researchers’ report.

“Important Innovations in Cotton Production: An Assessment by U.S. Cotton Growers and Other Experts” is available online at www.cipm.info/cipmpubs/marra_cotton07.pdf.
Technology has changed the way we work, the way we play, the way we learn, the way we relate to others and even the way we think. While technology has forever changed our lives, it’s imperative that we critically assess the impact that this modern advancement has on families today and on generations to come.

Advantages of modern technology for the family

Technology is today the invisible thread in the social fabric of our lives, touching almost every aspect of family life.

In the area of personal finance, we are banking on-line, trading stocks and securities on-line, filing our taxes on-line, shopping on-line and even going into debt on-line. We keep our budgets electronically, receive our paychecks electronically and pay our bills electronically.

Cell phones and text messaging provide instant contact for latchkey children of working parents. Electronic mail and digital pictures shrink the miles for teenagers away at college or grandparents across the country. Crib monitors ease the fear of a young mother who is so close, yet feels so far away, from her baby in the nursery down the hall.

Technology has helped us learn how to become better parents through distance education seminars, podcasts and chatroom groups. Elderly family members are maintaining their independence longer than ever before through robotics, remote monitoring of vital signs and housing adaptations.

Concerns about modern technology and the family

For all of the advantages that technology has provided to families, there are pitfalls and challenges associated with technology-based consumer convenience.

While the Internet lets us keep in touch at almost any distance, it also presents threats to our marriages, our children’s safety and well-being and our financial stability by literally bringing the world into our homes.

Research has found that as people spend more time in the virtual world of the Internet, they spend less time in the real world with their family and friends. A Stanford University study suggested that “the Internet could be the ultimate isolating technology that further reduces our participation in communities even more than television did before.”

As a society, we are experiencing increased “connectivity,” but at the same time finding ourselves sometimes disconnected from our families and local communities.

The development of a world-wide electronic consumer credit bureau network has speeded up the process for acquiring consumer credit, but it has also created privacy issues for credit consumers. The ease of access to personal credit histories by multiple credit bureau subscribers, as well as the range of personal, financial and legal information included in today’s credit bureau files, leave a once protected credit consumer in a state of unprecedented vulnerability to multiple infringements, including identity theft.

Satellite and cable television can provide hours of entertainment and education for family members by offering hundreds of viewing options, but the wrong choices of programs to view and poor choices on length of viewing time can be detrimental to family members. The over-indulgence of television viewing has helped create a society of “couch potatoes,” threatening the health and well-being of the family.

Building social progress on technological advances

Technology is not going away—and it should not, for technology is a sign of progress.

What is important, however, is to keep technology in perspective. When home computers were first introduced, there were some who thought they would solve all their home management problems. They certainly can help, but just as with any other tool, we have to recognize their limitations and potential dangers and educate ourselves and our children to be responsible users of computer technology.

Computers, cell phones and other communications devices certainly help us stay in touch, but problems can arise if we are too busy taking advantage of the technology to communicate face to face with our families and friends.

Through Extension Family and Consumer Sciences programs, in collaboration with our partners, the Mississippi State University Extension Service educates families on how to use technology to enhance physical health, financial health and personal relationships.

These services are as close as your county Extension office or if you prefer to take advantage of technology, on the Web at www.msuces.com.
**NEWS NOTES**

**MSU Administrator to Head Leading Wildlife Society**

A nationally recognized administrator in Mississippi State’s College of Forest Resources is on track to become president of The Wildlife Society (TWS).

Bruce Leopold, head of the university’s wildlife and fisheries department, recently was elected as TWS vice president. In 2009, he moves to the top administrative office of the 10,000-member international organization founded in 1937.

The society is a nonprofit scientific and educational association dedicated to promoting the highest levels of wildlife stewardship. With headquarters in Bethesda, Md., it works to enhance the ability of wildlife professionals to conserve diversity, sustain productivity and ensure responsible use of wildlife resources for the benefit of humanity.

Acceptance of the TWS leadership role involves a 4-year commitment that includes a year as vice president, president-elect, president and immediate past-president, respectively. Leopold is a longtime Wildlife Society member who previously served on its governing council and as Southeastern Section representative.

**MSU Student Forestry Group Again Tops Among Peers**

Mississippi State University’s student chapter of the Society of American Foresters (SAF) continues among the top organizations of its kind in the nation.

The 40-member body recently placed first in the SAF Student Chapter Web site competition and now ranks second overall in the outstanding student chapter category.

The group has finished atop the overall chapter rankings for the past 8 years, capturing first place in the 1996-97, 2000-01, 2003-04, and 2005-06 school years; second place in 1998-99, 2001-02 and 2004-05; and third place in 2002-03.

The chapter now has won first place for 5 years in Web site competition. Designed and maintained by members, the site—www.cfr.msstate.edu/studentorgs/saf—was judged on design and content, among other criteria.

All forestry majors, the 2006-07 officers include president J. Eric Ezell of Starkville, vice president James D. Floyd of Thomasville, N.C., secretary Jean E. Chervenak of Poplar Bluff, Mo., and treasurer Emily M. Courtney of Clinton. Associate professor of forestry Donald L. Grebner is chapter adviser.

**MSU Graduate, Doctoral Candidate Named STAR Fellow**

A doctoral candidate in Mississippi State’s College of Forest Resources is receiving the U.S. Environmental Protection Agency’s STAR Fellowship.

Joshua P. Adams of Ruston, La., is among 65 graduate students—and the first from the university—named to the prestigious Science to Achieve Results Fellows Program. His award begins with the 2007-08 academic year and extends for the next 3 years.

Now in his second year of research, Adams is focusing on forest molecular genetics. Working with forestry assistant professor Cetin Yuceer, he is using the latest molecular techniques to modify trees for use in cleaning land sites contaminated with heavy metals that may cause cancer and other health problems.

Initiated by the EPA in 1995, the fellowship program is designed to encourage promising students to obtain advanced degrees and pursue careers in an environmental field. This goal is among major immediate and long-term missions of EPA to help protect the nation’s public health and the environment.

Adams, who received an MSU master’s degree in forestry in 2005, is among some 1,200 students honored with STAR fellowships since the program began. He earlier graduated from Louisiana Tech University with a degree in 2003.

Adams is using the poplar tree (genus Populus, and including cottonwoods, poplars and aspens, among others) for his study since its genome has been sequenced and transformation procedures have been refined, Yuceer said.

The genome is a full set of chromosomes that contains all the inheritable traits of an organism.

Yuceer said Adams’ research seeks to develop a tree variety that quickly absorbs heavy metals and harnesses fluorescent energy transfer that enables it to monitor metal contamination in soil and water.

“If successful, this project is expected to provide a high-biomass species with an accumulation and monitoring phenotype which is pursuant to the goal of ensuring plant, animal and human safety,” Yuceer emphasized.

**Hughes Honored with Service Award**

Glenn Hughes was recognized in July 2007 by the National Association of County Agricultural Agents at its 92nd Annual Meeting and Professional Improvement Conference in Grand Rapids, Mich., by receiving the association’s Distinguished Service Award. The award is presented to the top 2 percent of the county agents from each state with more than 10 years service in the nation’s Cooperative Extension Service. The selection is made by county agents in that state and endorsed by the state extension director. This year, 69 individuals from throughout the United States were presented the Distinguished Service Award.

Glenn Hughes

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The document contains text related to news and notes from Mississippi, including updates on wildlife society, forestry groups, and scientific research. The excerpts focus on various achievements and recognitions, highlighting individuals and organizations contributing to the fields of forestry, wildlife conservation, and environmental science.
Hughes provides outstanding educational support to timberland owners, Extension educators, 4-H youth, homeowners, industry groups and others interested in forest management throughout southeast Mississippi. He was instrumental in developing programs to meet educational needs of underserved forest landowners throughout the state, and he devoted many hours to helping clientele respond to and recover from Hurricane Katrina. Drawing upon expertise in many natural resource disciplines, his presentations and writings are beneficial to everyone interested in forest stewardship.

Donald Jackson of MSU Honored for Gulf Fisheries Research

An internationally recognized Mississippi State fisheries biologist is receiving a major honor for his post-Katrina work from a national professional society.

Donald C. Jackson, a 21-year teaching and research veteran of the university, was presented with the American Fisheries Society (AFS) 2007 Distinguished Service Award at the organization’s recent annual meeting in San Francisco, Calif.

Jackson was honored for contributions of time and energy spent restoring the professional capacities of fisheries biologists in the wake of the 2005 storm that did major damage to the Mississippi Gulf Coast and southeast Louisiana.

Jackson led the AFS Hurricane Disaster Relief Program. He assisted members in maintaining professional connections while also collecting funds to jump-start research and management programs of those affected.

Jackson also has led efforts to restore coastal fisheries. Working with graduate students from Mississippi, Iowa, Malaysia, New Jersey and Oregon, the College of Forest Resources professor is studying how fish populations in south Mississippi streams evolve following hurricanes.

In addition to tracking natural population processes, the study is examining effects of the supplemental stocking of game fish, primarily catfish and bass. A second study is focused on rebuilding artificial reefs offshore in the Gulf of Mexico. Critical components of fisheries-based economic enterprises all along the coast, the reefs were almost completely annihilated by the massive late-August hurricane. Jackson and his student team are working with the Mississippi Department of Marine Resources to determine the best way to re-establish the artificial structures and enhance local fishing.

A third Jackson project sponsored by the National Marine Fisheries Service deals with the potential impacts on commercial shrimp populations of weather-related river discharges into the Gulf of Mexico.

Phil Bushby Receives CVM Teaching Award

Dr. Phil Bushby, a faculty member recognized for his innovative approaches to education and animal health, is the 2007 recipient of the prestigious Carl Norden-Pfizer Distinguished Teacher Award for Mississippi State University’s College of Veterinary Medicine.

Each of the 28 veterinary colleges in the United States annually selects an outstanding faculty member for the teaching award. All state recipients are eligible for the national honor, sponsored by Pfizer Animal Health and to be announced by the Association of American Veterinary Medical Colleges in 2008.

Bushby said he tries to create an environment that maximizes a student’s opportunity to learn and allows consideration of different scenarios involving animal and client interactions.

“I don’t spend time in front of students lecturing or just telling them something,” he said. “I create situations for them to discover what they need to know.”

Each veterinary class nominates CVM full-time faculty for the award. Names of nominees are submitted to the senior class for final selection during the latter part of the spring semester, said Barbara Coats, student affairs coordinator at the college.

She said student comments on Bushby’s nomination included “caring,” “innovative,” “fabulous” and “there for us.”

“Phil Bushby is a person our students trust, both as a teacher and as a friend,” Coats said.

Bushby is service chief of primary care at the college’s Animal Health Center and was recently named as the Marcia P. Lane Endowed Professor in Humane Ethics and Animal Welfare. Bushby is also a professor in the Department of Clinical Sciences and was the former director of the Office of Educational Innovation. He is a diplomate of the American College of Veterinary Surgeons, and in 2000, he received a Fulbright Scholarship to Dublin, Ireland, for his development of teaching techniques for problem-based learning.

“Dr. Phil Bushby is recognized nationally as an innovator in veterinary medical education,” said Kent Hoblet, dean of the college. “Students recognize that he is committed to their education, thoroughly enjoys teaching and is genuine in his concern that they learn.”
Family Says “Thank You” Through Support for CVM

Two transplanted New York physicians have become members of the College of Veterinary Medicine family because of their appreciation for the animal hospital staff, veterinarians and the veterinary students who train there.

Dr. Rande Lazar is an otolaryngologist (head and neck surgeon), and his wife, Dr. Linda Lazar, is a pediatric gastroenterologist. They practice and make their home in Memphis. Their daughter Lauren is a student at Wake Forest.

Initially referred to MSU CVM by their local veterinarian, the Lazars brought their dog Dempsey to campus for treatments for a pancreatic disorder. Later, another Lazar family member, a mixed lab named Ruby, was also treated at CVM. Very impressed by the facility, the doctors and the loving care they repeatedly received, the Lazars committed themselves to the college’s success.

In 2001, when Dempsey lost his battle with poor health, the Lazars chose to memorialize him and to honor Ruby by establishing the Dempsey and Ruby Lazar Endowed Scholarship. The Lazars felt endowing a scholarship was a fitting way to thank MSU CVM for the quality care provided to their loving companions, while also recognizing the abiding love they have for their pets as loyal companions and family members.

The scholarship is awarded to full-time CVM students who demonstrate exceptional academic achievement and show promise for an outstanding future as veterinarians.

“It is our desire to support the education of future veterinarians who are committed to demonstrating a compassion and love for animals and professionalism toward patients,” said Dr. Rande Lazar. “We know our scholarship will help ensure that other families with companion animals receive the same quality care that we receive when we visit our local veterinarian and MSU CVM.”

The Lazars have also contributed significant quantities of medical supplies, equipment and anesthesia machines used in the Animal Health Center. Most recently, the Lazars committed to a generous gift to support CVM. This support provides students with educational opportunities needed for future success.

“Having donors like the Lazar family, who support the college through endowment-level gifts, gifts in kind and planned gifts, is why we continue to exceed expectations in research, teaching and service,” said Keith Gaskin, senior director of development.

If you are interested in discovering how you can develop a friendship with CVM, contact Keith Gaskin at 662-325-3815 or kgaskin@foundation.msstate.edu.
Creating Leaders, One Student at a Time

One young man traveled more than 900 miles, while the other traveled 90 to follow their dreams at Mississippi State. Mitch Weegman, a native of Winona, Minn., found a passion for waterfowl hunting and the outdoors at an early age. His father took him and his fraternal twin to the woods at the age of 3.

James Callicut, a native of New Albany, developed an interest in waterfowl when his uncles took him hunting and instilled in him an appreciation and respect for natural resources.

While these young men are from different parts of the country, they both love waterfowl and are recipients of the Scenic Homes/Dr. Richard M. Kaminski Scholarship in Waterfowl and Wetlands Conservation.

“This scholarship allows us to recruit students who aspire to become waterfowl biologists and continue engaging them in their passion for waterfowl and wetlands ecology and management,” said Kaminski, wildlife and fisheries professor. “The students we recruit with these scholarships are already leaders in waterfowl and show tremendous promise for a productive career in waterfowl. This is important for the 1.5 million waterfowl hunters in the country.”

For example, Weegman, an MSU track member, conducted research during junior high and high school.

“In seventh grade, I began conducting waterfowl-related research projects for local, regional, state, national and international science competitions,” Weegman said. “My brother and I teamed up and continued conducting research for 6 years. The science fairs allowed me to fuse my passion for waterfowl with science. We were very fortunate to publish our recent findings on invertebrates consumed by lesser scaup in the Journal of Wildlife Management.”

Weegman intends to become a waterfowl researcher and looks forward to learning waterfowl behavior on the wintering grounds of the Mississippi Alluvial Valley.

Callicut is a duck call maker and avid waterfowl hunter. The senior wildlife science major is working on a duck call that may soon be patented.

“I am going to further my knowledge of waterfowl conservation with an upcoming graduate opportunity,” Callicut said. “My long-term goal is to obtain a waterfowl biologist position and work with private landowners.”

Weegman and Callicut are rising stars in natural resource conservation, and scholarships helped make their success possible.

Won’t you help students seek their passion today? Scholarship gifts can change the lives of young people and help make their dreams come true.

If you are interested in helping deserving young people obtain their goals, please contact Jeff Little at 662-325-8151 or jlittle@cfr.msstate.edu.

Wanted: Great Teachers for Great Students

Remember that great teacher from high school or college, the one who encouraged you to do more and inspired you to try harder?

There is no doubt that great teachers lead to great students and even better graduates, so the College of Agriculture and Life Sciences is committed to recruiting and retaining the best faculty members to teach and mentor its students.

The university’s current capital campaign, State of the Future, aims to raise at least $400 million in private gifts or commitments by December 2008. The incredible generosity of alumni and friends has put the university nearly a full year ahead of schedule, with more than $386 million already counted for all advancement efforts, including scholarships, building programs, research and teaching endowments. Alumni and friends of CALS have been equally generous, committing more than $28 million to advance the college.

This is certainly a cause to celebrate, but it is also a time to focus on areas that still need support. One of those areas is endowed chairs and professorships.

In today’s competitive environment, endowed positions are crucial to attract and retain outstanding educators—teachers who can help our students succeed in their chosen fields and inspire them to chase innovative pursuits.

The college is proud of the alumni and friends who have chosen to endow faculty positions. Just this year, MSU professor Glover Triplett and his wife Imogene endowed the Triplett Chair in Agronomy. Also, Michael Havard created the Lewis M. Havard Endowed Professorship in the Department of Entomology and Plant Pathology to honor his late father.

These endowed positions will recruit top scholars to Mississippi State for centuries and will benefit students for generations. So one day, when your children or grandchildren are asked to name an influential teacher, they just might mention an endowed professorship holder at Mississippi State University.

Endowed chairs may be created with a minimum gift of $1.5 million, while professorships require a $500,000 minimum contribution. For more information, contact Jud Skelton, director of development for the college, at 662-325-0643 or jskelton@foundation.msstate.edu.
It’s all in the name. Check it out for news and information from the Division of Agriculture, Forestry and Veterinary Medicine.