

'The Human Touch'

Passion for Students Earns Horticulture's Eakes Honors by JAMIE CREAMER

"I believe in the human touch, which cultivates sympathy with my fellow men and mutual helpfulness and brings happiness for all."

—George Petrie

JOE EAKES IS NOT AN EASY A. In fact, the Auburn University horticulture professor's Small Trees, Shrubs and Vines class, in which students must learn more than they ever would have thought possible there was to know about 150-plus different plant varieties and their uses in the landscape, can be grueling.

Even so, semester after semester, Eakes earns some of the highest student evaluation ratings in the College of Agriculture. And in March, the 24-year veteran of Auburn's horticulture department was named the 2013 Outstanding Educator of the Year by the Academic Excellence Foundation of PLANET, the national trade association of landscape industry professionals.

His nomination for the prestigious honor was student driven and included an influential, student-produced video that gave those outside of Auburn a glimpse of how Eakes interacts with and supports his students. Yes, his classes are demanding, his tests challenging and his expectations high, but the video made it clear that what most stands out about Eakes to students is that the man genuinely cares. About them. In the classroom and beyond.

It's what The Auburn Creed—a framed copy of which hangs in Eakes' Funchess Hall office—calls "the human touch."

Take Biscuits with Bess and Joe, for instance.

Every Tuesday morning of every spring and fall semester, Eakes and wife Bess open their modest Heard Avenue home to Auburn students, who

are welcome to help themselves to a spread that typically includes ham, fresh fruits, cheese, coffee and OJ, jams and jellies and, the hottest items on the menu, Mrs. Eakes' golden-brown, melt-in-your-mouth, made-from-scratch biscuits.

The Eakes family—including son Joseph and daughter Nettie, Ace the boxer and Fathead the cat—hosted its first "Biscuits with Bess and Joe" five or six years ago, while Eakes, now Auburn's Jimmy and Chris Pursell Endowed Professor of Horticulture, was serving as interim department head.

"Actually, 'Biscuits' started when our son brought a homesick student to our house to spend the night, and then we ate breakfast together the next morning, just to give the student a feeling of family," Eakes says. "We'd been praying about a ministry for college kids and knew this was how we could share God's grace."

The first to learn about the Tuesday morning breakfasts with professor and family were horticulture students and students from the family's church, but word of mouth is a powerful advertising tool.

"Everyone is welcome, no strings attached," Eakes says.

While the Eakeses never know how big a crowd they'll have from one Tuesday to the next, they can always count on at least 25 or 30 undergrad and graduate students stopping by before, between and/or after morning classes.

"If they're homesick or stressed or just hungry and want to come hang out and have a cup of coffee and a biscuit, we want them to know that as long as they're in Auburn, they have a place to come," Eakes says.

The couple is up at 5 a.m. every day, but on Tuesdays, Mrs. Eakes heads straight for the kitchen.

"I love having the chance to get to know the students while they're at Auburn," she says. "This has been such a blessing in our lives."



BISCUITS WITH BESS AND JOE Bess Eakes pauses her biscuit making for a photo with her husband, Auburn horticulture professor Joe Eakes, in their kitchen on a recent Tuesday.



ALL ABOUT THE STUDENTS Joe Eakes, the Jimmy and Chris Pursell Endowed Professor of Horticulture at Auburn, has been recognized as the PLANET Academic Excellence Foundation's 2013 Outstanding Educator of the year. Above, Eakes and members of Auburn's student chapter of PLANET prepare to load dozens of plants that Mobile-area growers donated to the group for its annual spring plant sale.

That's mutual, says Taylor Vandiver, a horticulture master's student who's been enjoying Tuesday mornings at the Eakes home since her undergrad days.

"During my time here at Auburn I feel blessed to have gotten to know Dr. Eakes and his wife Bess," Vandiver says. "Friends of mine are always saying, 'You go to your professor's house? You know his wife? No way.'"

Eakes says that, Biscuits with Bess and Joe, he's simply extending the open-door policy he has at work to his home.

"I want my students to know they can come here or call on me any time they need to," Eakes says. "If they live in a trailer and it's going to be bad weather, or if they just need to talk to somebody."

A Huntsville native, Eakes came to Auburn in 1977 as a pre-engineering major but somehow wound up in an Evergreen Trees, Shrubs and Vines class—basically the same course that he now teaches—under a young faculty member by the name of Harry Ponder. This is the same Harry Ponder who is now Eakes' colleague and who was named PLANET's top educator in 2010.

"I loved Harry and his enthusiasm, and once he was able to convince me that you can actually make a living in horticulture, I changed my major," Eakes says.

Still, at the end of his freshman year, Eakes began rethinking this college thing.

"What I really wanted to do was get married,"—yes, to high-school sweetheart Bess—"but I couldn't do that until I'd saved up some money, and I couldn't save money because I was paying my way through school," Eakes says. "About that time, I got a call from a construction company I'd

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No. 1 Once Again

Williams, AU Equestrian Claim Third National Championship

by NATHAN KELLY, STUDENT INTERN

Nobody would have blamed Auburn University equestrian head coach Greg Williams if he had spent some time celebrating his team's 2012-13 season. Instead, less than a month after leading the Tigers to the National Collegiate Equestrian Association's 2013 National Championship, he was on the recruiting trail, his sights set, not on the coming season—"That's already taken care of," he says—but on his 2014-15 team. "Recruiting is the biggest thing in this sport, and we're on the ball to try to do it again," Williams says.

Recruiting for equestrian riders is just as competitive as recruiting for college football players, Williams says. But while football recruiters typically focus on regional players, Williams looks nationwide. Proof of that can be found by looking at his 2012-13 roster. Out of 40 listed riders, only four were from Alabama.

That means Williams spends a lot of time in the off season traveling the country to visit potential recruits. Obviously his strategy pays off: The 2013 championship was the Auburn equestrian team's third in seven years. The other titles came in 2006 and 2011.

Williams and Auburn's equestrian program go together like rodeos and cowboy hats. The program wouldn't be where it is today if not for Williams.

Williams grew up in Auburn, where he acquired his love for horses and horseback riding from his mother, Carolyn, an equine enthusiast. He earned his animal sciences degree from the College of Agriculture in 1986 and worked as a professional horse trainer and riding coach before returning to Auburn in 1989 as manager of the university's Horse Center on Wire Road.

One of his first moves was to revive Auburn's dormant Horseman's Club. Then, over the next few years, he put together an impressive competitive equestrian team that in 1996 was officially sanctioned by the university as a club sport.

But Williams dreamed of bigger and better things, and in 2002, six years and a lot of hard work and vigorous campaigning on the part of

Williams and his team later, equestrian was awarded varsity sport status at Auburn University, jointly sponsored by the Athletic Department and the College of Ag.

In the 2013 national collegiate championship showdown in Waco, Texas, Auburn clinched the hunt seat title, but the battle for the overall title came down to a ride-off between Auburn and the University of Georgia. In a ride-off, each team selects two riders, one to compete in hunt seat and the other in Western. Williams tapped Elizabeth Benson for the former and Cheyenne Cracraft for the latter, and their performances gave Auburn the win.

The equestrian team won the national championship on April 20, the same day that, back at home, tens of thousands of Auburn fans converged had gathered for Auburn football's annual A-Day Game and what was to be the Final Roll of the two cherished oaks at Toomer's Corner.


But, in fact, it wasn't. On April 21, about the time that work crews were to begin the post-final roll cleanup of Toomer's Corner, the Auburn equestrian team rolled into town after a 13-hour drive home and celebrated its victory by rolling the oaks one last time.

"I was talking to (Auburn Athletics Director) Jay Jacobs on the phone after we won, and he told me the team should come back and roll Toomer's," Williams says. "I thought it felt right, to celebrate the last rolling of the Toomer's oaks with a national championship."



CHAMPIONSHIP CELEBRATION The Auburn equestrian team and coaches pose for the camera after celebrating their 2013 National Collegiate Equestrian Association Championship with what truly was the last rolling of the oaks at Toomer's Corner on April 21. For head coach Greg Williams, the lone male in the photo, the championship was the third since 2006.

As for the 2013-14 equestrian season and Auburn's chances to win back-to-back national titles, Williams won't go there yet.

"We'll see," he says. "I'm part of the selection committee that ranks the teams, and we're just beginning the process of putting together a preseason poll. But I think we can be pretty good next season." 



DISTINGUISHED FELLOWS Gary Lemme, left, Alabama Cooperative Extension System director, and Steve Taylor, right, Department of Biosystems Engineering department head, are the newest members of the Auburn University College of Agriculture's Academy of Fellows. The academy, established in 2012, recognizes faculty in the college who have been awarded fellow status in professional societies in their respective fields. Taylor, who also heads Auburn's Center for Bioenergy and Bioproducts, has been named a fellow of the American Society of Agricultural and Biological Engineers, while Lemme has attained that status in the North American Colleges and Teachers of Agriculture. Taylor and Lemme join the 13 faculty who were named to the college's Academy of Fellows last year. Visit www.ag.auburn.edu/dean/awards/fellows.php to learn more about all 15 academy inductees.



SAY IT WITH TURFGRASS Faculty, staff and students in the Department of Agronomy and Soils' turfgrass management program show off a giant interlocking AU logo that officially welcomed industry professionals ranging from sod producers to golf course superintendents to the Auburn Turfgrass Research Unit for the program's annual research field day. Phil Bruner and Patrick Conard, both graduate students working under the guidance of professor Beth Guertal, created the turfgrass logo on a dormant Bermuda grass research plot overseeded with perennial ryegrass. Bruner and Conard used a stencil borrowed from Auburn Athletics, so the logo was indeed "official." Turfgrass management professor Beth Guertal says the logo was done "mostly to amuse ourselves," but it wound up being a big hit with the field day crowd.

Auburn, Wallace State Offer 2+2 Poultry Science Program

Alabama's largest agricultural industry is the focus of a new 2+2 educational partnership between Auburn University and Wallace State Community College in Hanceville. The partnership is designed to open more career doors in a part of the state where much of the poultry industry is concentrated.

Under the 2+2 program, students will complete their freshman and sophomore years at Wallace State and their junior and senior years at Auburn, graduating with a bachelor's degree in poultry science.

"This is an excellent opportunity, not only for Auburn and for Wallace State, but for the state of Alabama," Bill Batchelor, dean of Auburn's College of Agriculture, says. "Poultry is our state's leading agricultural industry. It's an industry of great economic importance to us, and it's an industry offering excellent career paths for students. We're grateful to our friends at Wallace State for helping make this partnership possible."

Alabama's poultry industry generates more than \$3.1 billion each year and accounts for more than 65 percent of the state's annual farming revenues.

"Wallace State values this partnership with Auburn University, which recognizes the strength of our poultry industry in Cullman County and surrounding counties and which provides a ringing endorsement of the outstanding education Wallace State offers," says Wallace State President Vicki Hawsey. "Thanks to the work of the Auburn University poultry science program and the graduates we are pleased to now produce together, there is growing demand from around the world for our state's expertise in this area."

Hawsey credits Fred Cespedes, recently retired vice president of American Proteins and Wallace State Future Foundation Board member, with helping spearhead the partnership. Fred and wife Holly have established a scholarship for Wallace State students interested in entering the field.

"As important as poultry is to our area, it has made sense to me for a long time that Wallace State should have this program and that a partnership with Auburn would be a proverbial 'match made in heaven'—a win for both institutions," Cespedes says.

Faculty Accomplishments

Agronomy and soils professor **David Weaver** has been appointed to a three-year term as the Auburn University Ralph "Shug" Jordan Professor of Writing, effective Aug. 15. Weaver is only the second Auburn faculty member appointed to the Jordan professorship, which Auburn Athletics established in 2009. As Professor of Writing, Weaver's duties will include serving on the University Writing Committee, attending Writing across the Curriculum conferences, presenting faculty development workshops, promoting writing in the College of Ag and serving as a resource to faculty across campus.

Amy Wright, Department of Horticulture professor, was one of four faculty members campus-wide selected by the Graduate Student Council as Outstanding Graduate Mentor for the 2012-13 academic year. Wright and the three other winners were selected for the honor from a pool of nearly 40 nominees. The awards recognize graduate faculty members who go above and beyond their duties as teachers, advisers and mentors.

Shelly McKee, associate professor in the Department of Poultry Science, has been named the Poultry Science Association's 2013 Novus International Teaching Award and will be presented the award this summer during the association's annual meeting in San Diego. The award recognizes an exceptional poultry science faculty member for his or her work both inside and outside of the classroom and for his or her contributions to the poultry industry.

Darrell Rankins, animal sciences professor and Extension specialist, received the Alabama Beef Cattle Improvement

Association's 2012 Outstanding Extension Educator Award.

Scott McElroy, associate professor in agronomy and soils, was named the SGA Outstanding Faculty Member for the College of Agriculture for the 2012-13 academic year.

Auburn plant pathology professor **Ed Sikora** was installed as president of the Southern Soybean Disease Workers at the organization's 40th annual meeting.

Student Accomplishments

Four College of Ag master's and Ph.D. students were selected as Auburn University's 2012-13 Outstanding Graduate Student Award honorees. **Leanne Dillard** in animal sciences and **Ting Li** in entomology and plant pathology were named two of 10 Outstanding Doctoral Student Award winners, and **Julie Davis** in fisheries and allied aquacultures and **Zach DeVries** in entomology and plant pathology were among 10 Outstanding Master's Students cited campus-wide. Animal sciences professor **Russ Muntifering**, entomology professor **Nannan Liu**, fisheries assistant professor **Bill Walton** and entomology and plant pathology professor and department chair **Art Appel**, respectively, are the four students' major professors.

The College of Agriculture has awarded undergraduate research fellowships to four students for summer 2013 through spring 2014. The four, their majors and their mentors **Basia Bartczak**, environmental science, agronomy and soils professor **Wes Wood**; **Jacqueline Tomei**, animal sciences, animal sciences assistant professor **Terry Brandebourg**; **Paul Bartley**, horticulture, horticulture associate professor **Glenn Fain**; and **Caitlyn Duffy**, environmental science,

Cespedes helped Hawsey round up industry support for such a program and garnered endorsements from industry leaders, including Randall Ennis, chief executive officer at Aviagen; Ricky Walker, complex manager of Tyson Foods Inc.'s Alabama operations; Bill Ingram, president of Golden Rod/Ingram Farms; and Jason Spann, general manager of American Proteins' Hanceville division.

Spann says 2+2 will benefit both students and industry. "As a former student of a similar 2+2 program, I can speak firsthand on the amazing benefits a program like this allows students," Spann says. "Not only does it provide students with a quality education; it also offers students an opportunity to live and work at home, or closer to home, gaining knowledge and experience before facing the challenges of life at a large university."

Aviagen's Ennis and Tyson's Walker note the healthy job market that awaits poultry science graduates.

"The job opportunities are endless and compensation packages are very competitive," Ennis says. And those opportunities exist in Alabama, across the U.S. and internationally.

As further evidence of the strong demand, Auburn's Department of Poultry Science for several years now has held a 100 percent job-placement rate of its graduates, department head Don Conner says.

While at Wallace State, students enrolled in the partnership program will complete their core courses as well as an introductory agriculture course that will be streamed live from the Auburn campus.

Scholarships are available to poultry science students at both Auburn and Wallace State, including the Fred and Holly Cespedes Endowed Scholarship Fund, available to Wallace State students studying agriculture, horticulture production, poultry science or a related field. Wallace State students are also eligible for the Allied Scholarship offered by the Alabama Poultry and Egg Association and other scholarships through the Wallace State Future Foundation.

For enrollment information, contact the Wallace State Office of Admissions at 256-352-8238 or lioncentral@wallacestate.edu, or the Auburn Department of Poultry Science at 334-844-2881 or plastrc@auburn.edu.

agronomy and soils assistant professor **Eve Brantley**.

Zhen Tao, a graduate student in fisheries and allied aquaculture working under the direction of associate professor **Cova Arias**, has been named the College of Agriculture's Outstanding International Graduate Student for 2013. Each of the college's eight academic departments nominated its top international grad student, and Tao was selected from among the eight nominees.

Jack LeCroy, a master's student in horticulture at Auburn, received the 2013 HighGrove Partners Scholarship during PLANET Student Career Days held at Auburn in March. LeCroy, a member of Auburn's PLANET student chapter, expects to graduate in August and then complete an internship that will help him earn a certificate in public horticulture from Auburn.

Drew Lowry, a May 2013 animal sciences/pre-vet graduate, was recognized as the SGA Outstanding Student. He has been accepted to Auburn's College of Veterinary Medicine and will start there fall semester.

Horticulture's **Kira Chaloupka** received both the 2013 Dean's Award, presented to students who have demonstrated leadership and service to the college and exhibited excellence in scholastic accomplishment, and the Claude Hardee Memorial Award in Agriculture, awarded annually to recognize an outstanding senior student in the college based on scholarship, leadership and character. Chaloupka will remain at Auburn to pursue a master's degree in the public horticulture program.

Agronomy and soils graduating senior **April Maxwell** was selected as graduation marshal for the College of Agriculture for spring

2013. To be selected for this honor, students must have distinguished themselves by service to the college and possess the qualities of leadership, citizenship, character and promise of professional ability.

Mary McClosky, animal sciences/pre-vet, received the Comer Medal for Excellence in Agricultural Science, which is presented to the highest ranking student in their class and in their field of study. McClosky will enter Auburn's College of Veterinary Medicine in the fall.

College Announcements

Retirements

Ronald Phelps, associate professor in the Department of Fisheries and Allied Aquacultures, retired May 1. Retiring effective July 1 will be fisheries research fellow and Alabama Water Watch organizer and director **Bill Deutsch** and poultry science associate professor **Roger Lien**.

Upper Coastal Plain Agricultural Research Center director **Randall Rawls** retired June 1 after almost 25 years of service at the unit in Winfield.

New Hires

Karen Veverica is the new director of the E.W. Shell Fisheries Research Center, effective April 15. Veverica joined the Department of Fisheries and Allied Aquacultures at Auburn in 1989 as an aquaculture technician and through the years has been a leader in several international aquaculture projects. She had served as interim director of the Shell center since January 2012.

Relevant Research

Don't Let Them Bite

Scientists Investigating What Makes Bedbugs Tick

by JAMIE CREAMER

The first thing that Zach DeVries does when he opens the door to a new hotel room is put his luggage in the bathtub.

"I'm not being paranoid," DeVries says. "I'm being cautious."

It is a caution borne of insight that DeVries has acquired over the past couple of years as an Auburn University master's-level entomology graduate student whose research is aimed at discovering basic biological information to add to the relatively shallow body of scientific knowledge about bedbugs.

So there is method to his madness: He puts his bags in the tub so that, if his subsequent examination of the bed and everything around it reveals the tell-tale signs of bedbugs—mainly fecal and blood stains in the seams and crevices of mattresses—he can grab that luggage and scam.

"All it takes is one female bedbug that has been mated getting into your luggage and going home with you, and you could have a real problem," DeVries says, noting that the insects can lay as many as 500 eggs in their lifetimes.

Working under the guidance of Department of Entomology and Plant Pathology head and professor Art Appel, DeVries is studying bedbug metabolism—specifically, how the tiny pests' metabolic rates are affected by feeding and starvation and what is at play metabolically that enables bedbugs to survive a year or longer without feeding.

Bedbugs are a global pest and for centuries have plagued people physically, psychologically and financially, but the insects seemed to disappear in the U.S. in the early 1950s, a situation likely attributable to the use of DDT. So it was that many Baby Boomers and Gen Xers grew up thinking that the bedbugs of bedtime-rhyme fame were more or less imaginary.

As bedbug populations dwindled, so did the scientific community's interest in studying and searching for control strategies of the parasitic pests. Thus, when the insects returned with a vengeance in the late 1990s and early 2000s, the most recent research was four decades old and light-years removed from today's technology.

"Some of the research today is on different insecticides to try to control bedbugs because they quickly build up resistance, but the overall goal of our research is first to better understand these cryptic pests," DeVries says.



TELL-TALE SIGNS Adult bedbugs are tiny, only about one-eighth of an inch long, but their fecal stains and shed skins are undeniable evidence that they are present. Auburn entomologists recommend that, when you check into a hotel, especially in a major tourist city, you should always inspect your room first thing, particularly the mattresses and areas surrounding the beds. If any stains similar to the ones here are visible, demand another room.

In their project, DeVries and Appel are using closed-system respirometry to measure bedbug metabolism. Specifically, they are measuring oxygen consumption and carbon dioxide production for individual bed bugs and have measured the metabolic rates of immature bedbugs as they progress through their five developmental stages and of adults for more than 800 hours after feeding. Their findings thus far indicate that the insects' metabolic rate slows significantly during starvation.

"When they have a constant food supply"—a bedbug feeds, on average, about once a week—"their metabolism is at a rate that allows them to grow and reproduce at an optimal level," DeVries says. "If they miss feeding, in the first few days after that, their metabolism basically plateaus, but then they enter energy conservation mode. The metabolism drops noticeably. We believe it's their way of conserving energy in an effort to survive for as long as possible, until food becomes available again."

The Auburn scientists are also studying the effects of temperature on bedbug metabolism.

"We believe this information will be helpful in control methods, although the benefits won't necessarily be realized right away," DeVries says. "After we complete the study, we won't have the cure for bedbugs, but the findings will help us better understand bedbugs and therefore be better able to control and manage them down the road."

Though bedbug infestations currently are most severe in major tourist cities, the pests are a growing problem in the South. To help Alabamians become more familiar with and alert to bedbugs, DeVries, Appel and Auburn entomology professor Xing Ping Hu have written a highly informative publication about the pests titled "Battling Bed Bugs: Know the Enemy." To find the report online, go to www.aces.edu and search for ANR-1464. **CS**

Auburn Food Systems Initiative Earns Institute Status

An Auburn University initiative established through the Alabama Agricultural Experiment Station in 2011 to promote interdisciplinary research aimed at improving the nation's food system has achieved "institute" status.

The Auburn University Food Systems Initiative accomplished the goal due to committed multidisciplinary faculty and a string of successful ventures, including bringing in some \$11 million in extramural funding, AUFISI director Pat Curtis says.

"Our transition from initiative to institute is a huge step in helping us reach our ultimate goal of safely and efficiently feeding more than 300 million people in the U.S. and of reaching out globally," Curtis, a professor of poultry science, said. "We are proud of the hard work and accomplishments of our core faculty members who contribute to Auburn University's diverse research efforts."

The initiative-turned-institute is dedicated to improving the food system, which includes the growing, harvesting, processing, packaging, transporting, marketing, consumption and disposal of food. The institute, jointly funded by the Alabama Agricultural Experiment Station and

the Office of the Vice President for Research at Auburn, allows experts from various disciplines and departments to collaborate on improving the safety and quality of the U.S. food supply.

At Auburn, an initiative typically begins when a small group of people interested in a specific topic come together. When those individuals have demonstrated success in several key areas, an initiative can then be formalized as an institute.

In addition to acquiring millions of dollars in grants for food systems-related projects since its inception in 2011, the AUFISI has organized several working groups of faculty from different colleges and departments and has created the Virtual Food Systems Training Consortium to develop standardized training programs for food safety inspectors at the national, state and local levels. Curtis said the initiative was awarded a five-year, \$6.5 million National Institutes of Health grant in 2011 to get the consortium off the ground, and many training courses are almost complete.

The benefits of obtaining institute status include greater visibility on campus, increased potential to acquire external funding and permanence as an organization, Curtis said.

The official Centers and Institutes Policy passed by the Auburn University Board of Trustees designates an institute as a well-defined area of instruction, research or outreach and involves faculty from multiple disciplines, departments, colleges or schools. Research, instruction and outreach among these various departments must be enhanced as a result of the institute. The policy also requires academic deans to be directly involved in an institute's administration, which AUFISI implemented in 2012 with the establishment of its Advisory Board.

As an institute, AUFISI will undergo external review at least every five years to assess its effectiveness.

Carl A. Pinkert, associate vice president for research at Auburn, said the food systems initiative has earned the institute designation.

"The Auburn University Food Systems Institute has demonstrated its strategic commitment to uniting the efforts of researchers from a variety of disciplines in order to meet the needs of U.S. and global food systems," Pinkert said. "Its establishment will be a significant asset to a host of university research programs."

Eleven of the institute's 23 core faculty are in the College of Agriculture.

Scientists Develop Innovative Platform for Vaccines

by JAMIE CREAMER

Researchers in Auburn University's College of Veterinary Medicine have developed a novel vaccine-delivery formulation that could be used as the delivery method for immunizations against a wide range of serious human diseases—from malaria to cancer—as well as a number of commercially significant animal diseases.

The vaccine platform that Dr. Bernhard Kaltenboeck, professor of pathology in the college, and research associates Erfan Chowdhury and Yihang Li have developed is designed to treat intracellular diseases for which traditional vaccines that cause the body's immune system to produce antibodies against specific illnesses don't work.

"Some diseases occur primarily inside cells, and antibodies are ineffective in these situations," Kaltenboeck, an Alabama Agricultural Experiment Station scientist, says. "What is needed is a cellular immune response that can remove these diseased cells."

To meet that need, Kaltenboeck and team departed from traditional vaccine protocol, in which large doses of vaccine are given in order to stimulate antibody production. Instead, the Auburn scientists drastically lowered the dose, to less than one hundredth of 1 percent the dosage in traditional vaccines, and discovered that this prompts the body to initiate an immune-cell response, which is exactly what is needed to attack intracellular diseases. Such a response can serve as a preventive measure or as a way to treat chronic infections.

Vaccines also typically contain weakened or dead bacteria or viruses, but the Auburn scientists' platform technology uses synthetic peptides instead of actual pathogens. By creating a fully manmade vaccine, the Auburn platform should prove to be not only safer than traditional vaccines but also much less expensive.

The human diseases that could be treated with Kaltenboeck's vaccine approach include malaria, tuberculosis, HIV, dengue fever and cancer, but those are many years and millions of dollars away from reaching the market. That's why the Auburn scientists are focusing first on vaccines to protect animals against major diseases.

"The veterinary route is going to produce a much quicker return on a lower investment than human vaccine," Kaltenboeck says. "Animal vaccines are what we consider the low-hanging fruit in a very good market."

In fact, Kaltenboeck and Auburn's Office of Technology Transfer are currently in negotiations with an out-of-state start-up company to market the innovative platform in a vaccine against porcine reproductive and respiratory syndrome, or PRRS, a serious infection that causes weight loss and spontane-



TARGETING DISEASE Dr. Bernhard Kaltenboeck, right, and research associate Erfan Chowdhury, both in the College of Veterinary Medicine, work to develop vaccines against a number of intracellular disease using an innovative, patent-pending delivery technology they produced after more than four years of research.

ous abortions in swine and that costs U.S. pork producers an estimated \$500 million a year in direct losses.

The vaccine, called Porcera, not only would prevent PRRS but also would treat existing infections in swine. Business-model projections estimate domestic sales of Porcera could exceed \$40 million annually. Given the low cost and simplicity of the formulations, multiple start-up companies could be formed, says Brian Wright, OTT associate director for commercialization.

In addition to PRRS, another potential disease target is a vaccine against the bacterium chlamydia, Kaltenboeck's primary research interest. Chlamydia, long associated with being a sexually transmitted disease, has numerous species that produce chronic infections in humans and animals, including cattle. The vaccine platform's effectiveness has already been demonstrated against chlamydia in mice.

John Weete, assistant vice president for technology transfer and commercialization at Auburn, says he is excited about the vaccine platform and its potential public benefit.

"When you see the list of diseases that this technology could affect, the potential societal impact becomes self-evident," Weete says. "While we know we're very early in the process, we're still very optimistic about what this could do for both global public health and worldwide food production."

Study Investigates Chemical's Effects on Mussel Populations

by JAMIE CREAMER



MUSSEL WORK Auburn fisheries scientist Jim Stoeckel discusses his study to determine whether use of a common herbicide impacts mussel populations in ponds. He is conducting his project at 12 research ponds in south Auburn.

Alabama is home to the most diverse freshwater mussel population in all of North America, with 180 known species dwelling or having once dwelled in the state's rivers and streams. But in recent decades, their numbers have plummeted as a result of dramatic changes in the bivalve mollusks' habitat.

The changes became noticeable in the early 20th century with the construction of dams that dramatically changed mussel habitats. In addition to dams, channel dredging and sedimentation are deemed major culprits in the shrinking mussel population. But other environmental stressors could be at

play, and Jim Stoeckel, assistant professor of fisheries and allied aquacultures at Auburn University, has a research program aimed at determining how some of these factors—drought, temperatures, soil runoff and agricultural chemicals—impact mussel population dynamics.

In a project he has underway in 12 research ponds located at the E.W. Shell Fisheries Research Center's south Auburn unit, Stoeckel is investigating the effects that glyphosate, more commonly known by the brand name Roundup, has on mussel reproduction and survival.

"We want to identify whether herbicide runoff into streams and ponds is contributing to population declines by increasing the mortality of juvenile mussels," Stoeckel says.

To accomplish that, Stoeckel and graduate research assistant Michael Hart have stocked each pond with 200 fish of specific species and 10 mussels carrying hundreds to thousands of fertilized eggs. And it is here that Stoeckel pauses to offer a brief glimpse into the fascinating and complex

reproductive process of mussels.

The process begins in spawning season, he says, when a male mussel upstream releases sperm and a random female downstream draws in the sperm as she filters water for food. The sperm fertilize the female's eggs, and the mussel holds the fertilized eggs in its gills, where they develop into larvae known as glochidia.

The mussel then releases the glochidia, which must attach to the gills or fins of a host fish to survive. There, they spend the next several weeks as parasites, growing and feeding on the bodily fluids of the fish until they mature into juvenile mussels. At that point, they drop off the fish and settle to the bottom of the river, stream or pond to develop into adulthood and continue the life cycle.

The catch here is that for many mussel varieties, only specific species of fish can serve as hosts. In the south Auburn study, Stoeckel used bluegill to stock the ponds, as previous research has shown the species to be the necessary host for *Ligumia subrostrata*, or pond mussel, the mussel species Stoeckel is using in his study.

Four months after stocking the ponds, the researchers applied low concentrations of Roundup over four of the ponds and high concentrations over four others, leaving the final four control ponds untreated. All ponds are covered with netting to keep birds of prey out.

This fall, the researchers will drain the ponds and count the number of new mussels that have been produced in order to determine whether, in this study, the herbicide has affected mussel reproduction population growth.

"Our work isn't intended to build a case against the use of Roundup or other agricultural chemicals, but to help identify areas where improvements in best management practices and policy related to herbicide application and runoff can help create conditions necessary for the maintenance and recovery of mussel populations," Stoeckel says.

As filter feeders, freshwater mussels ingest suspended nutrients in the water column and have the ability to greatly improve water quality. When they occur in large enough numbers, they also can help stabilize stream sediments, and healthy populations can provide economic benefits when commercial harvests collect mussel shells for sale to the cultured pearl industry.

Stoeckel also has investigated the effects that drought, temperatures and suspended sediments have on mussel populations and is documenting the various ways that mussel survivorship and reproduction are significantly impacted by all such factors.

'Tailgate at the Park' Offers Game Day Parking Options



Auburn fans looking to maximize their Game Day experience this football season are invited to "Tailgate at the Park"—as in Ag Heritage Park.

A number of tailgating and parking options will be offered at Ag Heritage Park for the 2013 season, ranging from single-car, parking-only spaces to large tailgate packages that include multiple parking spots and the rental of build-

ings, such as the Red Barn and the Herdsman's House. And, new for this fall, lakeside tailgating sites will be available. The large packages are available on a per-game basis; all other spaces can be reserved for the entire season.

Ag Heritage Park, situated on 30-plus acres at the southwest corner of Samford Avenue and Donahue Drive, is an ideal tailgating location for

Auburn fans, in part because of its proximity to Tiger Walk and Jordan-Hare Stadium, says Robert Hensarling, Ag Heritage Park director.

"Having a reserved parking spot also makes the Game Day experience more enjoyable because it eliminates the hassle and stress of searching for one," Hensarling says.

Tailgate at the Park registration forms are available online at www.ag.auburn.edu/tailgate. A major portion of the net proceeds will be used to support ongoing projects and maintenance at the park, Hensarling says.

For more information, contact Hensarling at hensara@auburn.edu, or follow the College of Agriculture at Auburn University on Facebook at www.facebook.com/AuburnAg or on Twitter at @AuburnAg.

Ag Heritage Park, a joint venture of the Auburn University College of Agriculture and the Agricultural Alumni Association, pays tribute to Alabama's farmers and the agricultural sector while also serving as a gathering place for students, faculty, alumni and friends throughout the year.

Williams Appointed to Botts Endowed Professorship

by WENDY REED

A gift of more than half a million dollars from the estate of an Auburn horticulture alumnus and his wife has fully funded an endowed professorship in the Department of Horticulture and strengthened a scholarship fund for Auburn horticulture students.

The professorship, funded with \$300,000 of the total gift, is the Elbert A. and Barbara L. Botts Endowed Professorship in Horticulture, and Dave Williams, horticulture professor and former department head, has been awarded the appointment.

Elbert "Burt" Botts graduated with a degree in ornamental horticulture from Alabama Polytechnic Institute in 1950 and went on to build a highly successful career as a nurseryman in Augusta, Ga., where his nursery and garden center was known for its exceptional customer service and high-quality merchandise. Botts and his wife were also instrumental in establishing the Georgia Botanical Gardens in Augusta and Athens.

Before his death in 1995, Botts established the Elbert A. and Barbara A. Botts Fund for Excellence in Horticulture at his alma mater to provide scholarships to horticulture students and programmatic support to the Department of Horticulture. In 2003, Mrs. Botts set up the endowed professorship through a bequest. Mrs. Botts died in April 2010.

The remaining almost \$224,000 from the Botts estate has gone toward the Botts Fund for Excellence, bringing the total in that account to \$254,000.

Williams, who earned his bachelor's and master's degrees in horticulture from Auburn in 1980 and 1985, respectively, joined the faculty in 1991. In 2006, he was named department head and held that role until Nov. 1, 2012, except for a period of 19 months during which time he served as associate dean for instruction for the College of Agriculture.

In addition to Williams' appointment, three other College of Ag faculty members who were named to endowed professorships in 2010 have been reappointed to serve in those capacities until 2016.

- Entomology professor Nannan Liu, has been reappointed as the Entomology and Plant Pathology Faculty Endowed Professor. Faculty in the Department of Entomology and Plant Pathology established the professorship to encourage and reward excellence in the department.
- Horticulture professor and current department head Jeff Sibley remains the Barbara and Charles Bohmann Endowed Professor, a professorship established by friends of the Bohmanns to recognize the couple's lifelong commitments to the advancement and enjoyment of horticulture as well as their long service to the Garden Clubs of Alabama Inc.
- Gary Keever, the Dr. Thomas H. Dodd Jr. Endowed Professor in Horticulture, has been reappointed to that position, which honors the memory of Dodd, a highly successful nurseryman at his family's nursery in Semmes and a pioneer in the nursery industry.

All appointments and reappointments were made after formal and competitive searches conducted by committees comprised of faculty from the College of Ag as well as from other colleges and schools on campus. Each professorship appointment is for three years.



FLYING HIGH Mark Wilton, College of Ag Development Office director, and Grace Smith Ellis, development officer, have received two of the top annual honors from the Auburn University Foundation Development Committee in recognition of their outstanding fundraising accomplishments in 2012. Wilton was presented the central office's Soaring Eagle Award, which goes to the colleague who made the greatest number of major-gift solicitations of any development representative campus-wide. Wilton made 42 solicitations of gifts \$25,000 or more during the year. Smith, who was responsible for securing almost \$1.6 million in new gifts and commitments for the College of Ag during the year, was presented the Rising Star Award, newly established by the foundation to recognize the first- or second-year development officer who has exceeded his or her individual goal by the greatest percentage. Ellis exceeded her goal by 112 percent. For 2012, the College of Ag development office secured \$7.4 million in new gifts and commitments, about \$1.4 million over its fundraising goal. Supporting Wilton and Ellis in their fundraising efforts is Amanda Nims, development coordinator for the office.

Student Spotlight

Finding Her Calling

Years of Floundering Led Grad Student to Fisheries

by JAMIE CREAMER

Some people are born knowing what they want to be when they grow up. Mollie Smith was not one of them.

She had no clear vision of her future when she enrolled at Auburn University as a freshman in 2000, nor did she four years later, when she received her bachelor's degree in psychology. But one thing she was dead certain about. "I did not want to get caught in a job that didn't mean anything," she says.

It took a good six years and four unconventional work experiences on two continents for her to figure things out, but the Bridgeport native finally found her calling—and it brought her back to Auburn for a master's degree that she intends to use fulfilling that Chinese proverb about teaching men to fish so they can feed themselves for a lifetime.

Smith, who began her master's work in fisheries and allied aquaculture at Auburn summer semester 2011, chalks her unlikely choice of careers up to pure serendipity.

"When I finished college and had no real direction, I was fortunate enough to have the opportunity to flounder for a while and just pay attention to my heart," she says. "And everything I did finally came together to put me where I am."

Her days of wandering had included two year-long stints teaching English in China, which showed her she wanted to work internationally; a semester studying international development at the University of Pittsburgh, which was frustrating, she says, because "it was more about managing poverty than it was about doing something about it"; and a couple of stretches working in missions and then with a community development agency in the inner cities of Chicago and Pittsburgh, experiences that exposed her to a world drastically different from the rural northeast Alabama community she called home.

"All those experiences opened my eyes to the huge needs that exist everywhere, here and around the world, and to the impending food and water crises that our world is facing," she says. "Fisheries has allowed me to become part of the conversation on poverty and world hunger around the world."

She hasn't simply sat on the sidelines in that conversation, either. As an Auburn fisheries grad student, Smith, a potter by hobby, spent two weeks in Nicaragua on a water-purifying mission with the group Potters for Peace; accompanied Karen Veverica, director of Auburn's E.W. Shell Fisheries Center and a veteran in the field of international aquaculture development, on a four-week visit to fish farmers in Ghana and Uganda; spent another two



THE RIGHT PATH At left, Mollie Smith, who graduated with a master's degree in fisheries and allied aquacultures in May 2013 but remains at Auburn as part of the fisheries department's international aquaculture efforts, shapes a piece of pottery at the ceramics studios on campus. Above, Smith displays a low-cost ceramic water purifier designed to filter contaminants from water so that it can be used for drinking. The filters are a project of the nonprofit group Potters for Peace, of which Smith is a member.

months in Ghana to help manage Auburn University feed trials supported by the soybean industry; and worked in Liberia for several weeks, assisting Auburn fisheries associate professor Ron Phelps in training fish farmers there in hatchery operations.

And though she completed her master's degree in May, she remains at Auburn as a temporary employee to continue working in Ghana and Liberia in support of Phelps' and Veverica's projects in those countries. She expects to make as many as four trips to Liberia in the coming year to oversee the management of the local hatchery. The aim there, she says, is to demonstrate to locals fish farming's income potential and help those interested overcome barriers to success.

"In aquaculture, we talk about 'carrying capacity,' in that there's a finite amount of oxygen in a pond and if you overstock the pond and don't use aeration, the oxygen won't support the fish population," she says. "Our environment has its own carrying capacity, and the way society functions now, it won't be able to sustain the 9 billion people expected to populate the earth by 2050."

"I think that there's so much to be done, and that even a little change can have an impact," Smith says. "In my years of searching, I wanted to do something to help make a difference. Fisheries is so right for me." ☞

Last of Iconic Oaks' Direct Descendants Now Available

Forty-six live oaks that Auburn University horticulture professor Gary Keever grew from acorns he gathered underneath the beloved oaks at Toomer's Corner five years ago—before the Auburn family had ever heard of Harvey Updyke—are now available for purchase through the Department of Horticulture and College of Agriculture's development team.

The healthy young trees, which range in height from 4 to 10 feet, are the last remaining direct descendants of the legendary Toomer's oaks that will be available to the public. As opposed to the Toomer's oaks seedlings sold for several years through the School of Forestry and Wildlife Sciences, the oaks currently available will provide an immediate impact on a home's landscape because of their size, says Keever, the Dr. Thomas H. Dodd Jr. Endowed Professor in horticulture at Auburn and, since February 2010 when Updyke's poisoning of the Toomer's oaks was announced, the university's official oaks spokesman.

Like the parent trees, the offspring of the legendary oaks at Toomer's Corner are a coastal species native to a region extending from Virginia to the Florida Keys and west to Texas, and, as such, they do best when grown in USDA hardiness zones 8, 9 and 10; they will grow, however, in zone 7.

The 4- to 6-foot-tall oaks are selling for \$1,000 each and the 8- to 10-footers for \$1,500. All proceeds will go toward the Dodd Endowed Professorship in Horticulture. Dodd, now deceased, was a lifelong nurseryman at his family's nursery in Semmes and a pioneer in the nursery industry.

Because individuals who buy the trees are receiving something of value in return, the purchase price is not tax deductible.

For information on purchasing one of the last first-generation Toomer's oaks, contact Grace Smith Ellis in the College of Agriculture Development Office at 334-844-3472 or smitmgr@auburn.edu.

College of Veterinary Medicine

Johnson Assumes Role as Dean of Vet Med



Calvin Johnson

Dr. Calvin Johnson, a professor in and alumnus of the Auburn University College of Veterinary Medicine, was named dean of the college, effective March 1.

"I am very honored to have been named dean and am enthusiastic about working with the faculty, staff, students and alumni to mold our programs to meet the needs of a 21st-century global society while preserving Auburn's historical strengths in veterinary medicine," Johnson says.

A native of Auburn, Johnson was awarded his bachelor's degree in animal and dairy sciences from the College of Agriculture in 1983 and his veterinary degree from Auburn three years later. He earned his Ph.D. in veterinary medical science, pathology, from North Carolina State University in 1992 and spent 11 years on the faculty at the University of Florida.

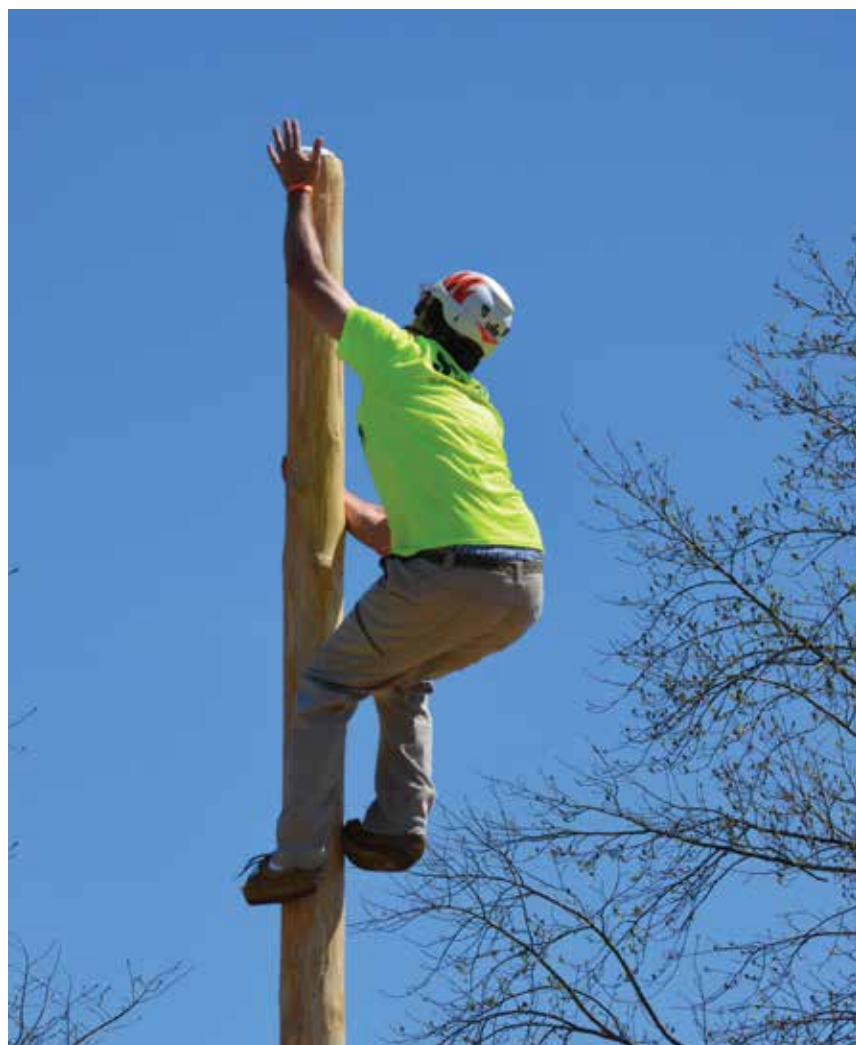
He returned to Auburn and the College of Veterinary Medicine as professor of pathobiology in 2003 and two years later was selected to head the Department of Pathobiology. In 2011, when then-CVM Dean Timothy Boosinger was named Auburn's provost, Johnson became acting dean and served in that position for 17 months.

Johnson, who becomes the seventh dean in CVM's 106-year history, says his goal is to build upon the successful leadership of his predecessors.

"The Auburn brand of veterinary medicine is well recognized because of its commitment to an exceptional educational experience and a mutual devotion to student success," Johnson says. "If we are effective as educators, then the citizens of Alabama, our educational partners in Kentucky and animal owners in the Southeast and beyond will benefit."

Johnson's father, the late Wiley C. Johnson, was an emeritus professor of agronomy in the College of Agriculture.

School of Forestry and Wildlife Sciences



AT THE TOP Sam Massey, a senior forestry major at Auburn, reaches for the top during pole-climbing competition held during the 56th annual Southern Forestry Conclave that Auburn's School of Forestry and Wildlife Sciences hosted spring semester. The conclave featured both technical and physical competitions related to forestry. Among the 14 universities that participated in the 2013 conclave, Auburn claimed first place in the technical events and came in seventh overall. In addition to the student competitions, the event raised \$1,800 for Log-a-Load, a statewide fundraising campaign on behalf of Children's Hospital of Alabama sponsored by the Alabama Loggers Council and the Alabama Forestry Association.

College of Sciences and Mathematics



PERFECT SPECIMEN A preserved hibiscus is among the 57,000 specimens in the John D. Freeman Herbarium collection that is part of Auburn's Museum of Natural History. The museum, which boasts more than 1 million total specimens, is now housed in the Auburn University Biodiversity Learning Center that officially opened in April.

COSAM Opens Biodiversity Center, New Home to Museum

The College of Sciences and Mathematics has cut the ribbon on the new, \$3.5 million Biodiversity Learning Center, a 15,000-square-foot facility that is located on the Auburn University campus between Funchess Hall and Rouse Life Sciences Building and that now is home to the university's Museum of Natural History.

For more than 25 years, the museum collection was located in Funchess Hall and the Physiology Building on campus.

"Research, education and outreach are the major components of the museum, and the new infrastructure will help us to meet our goals," says Jason Bond, museum director.

The museum's collection boasts hundreds of thousands of specimens that represent the rich history of Alabama, the Southeast and beyond. Included are a large collection of insects, more than 450,000 preserved fish specimens, the John D. Freeman Herbarium and an impressive collection of southeastern frogs, snakes and lizards.

Some of the most important specimens are those characterized as "types," which are specimens associated with species the museum's curators were the first to describe. The collection includes type specimens for several new fish species and, notably, for *Myrmekiaphila tigris*, an arachnid species that Bond identified last year and that is more commonly known as the Auburn Tiger Trapdoor Spider.

The museum, sponsored by the College of Sciences and Mathematics, is used primarily by Auburn professors and students conducting biodiversity research. Museum curators will also periodically extend the vast collection beyond campus and provide specimens to outside researchers as well as to K-12 outreach programs.

"There is an ongoing loss of biodiversity," Bond says. "Natural history collections serve as a record of what is here, what we are losing and how the ranges of species are changing through time."

Biodiversity, Bond says, is integral to human health, to quality of life and, ultimately, to our survival as a species, and museum collections help highlight that.

"As a museum we are very committed to the concept that natural history collections play a significant and important role in biodiversity research, conservation and education, a role that is integral to the land-grant mission of Auburn University," Bond says.

The specimens contained in the museum are maintained by eight museum curators and four collections managers, including Jonathan Armbruster, curator of fishes; Troy Best, curator of mammals; Bond, curator of arachnids and myriapods; Stephen Dobson, curator at large; Jack Feminella, curator of aquatic invertebrates; Les Goertzen, curator of plants; Craig Guyer, curator of amphibians and reptiles; Geoffrey Hill, curator of birds; Curtis Hansen, collections manager for plants; Brian Helms, collections manager for invertebrates; David Laurencio, collections manager for tetrapods; and David Werneke, collections manager for fishes.

To learn more about the Museum of Natural History, visit the website at www.aumnh.org.

4-H Gardening Program Teaches Students about Life

Lee County Master Gardener Betsy Jordan says the mission of the 4-H Junior Master Gardener program at Auburn's Richland Elementary School can be summed up with one of her favorite quotes: When you teach yourself to learn the finer points of something, it provides enrichment that lasts a lifetime.

"Getting kids to slow down and look at what's around them—teaching them the importance of planting, tending and reaping the benefits of their work—gives youths a lifetime advantage, not just a few hours of fun," she says. "Gardening helps us all be more observant, and it especially speaks to those kids who might have a difficult time slowing down, focusing, paying attention and learning."

The 4-H JMG and Cloverbud programs at Richland Elementary are among the largest in the state and have a committed group of school leaders, community partners and parent volunteers. For the 2012-13 school year, about a fourth of the school's students were members of one of the two clubs, each of which met twice a month, says Jennifer Mesman, a second-grade teacher at Richland Elementary who brought 4-H to the school when it opened three years ago.

"When the school opened, it didn't have clubs available for younger grades, and I had been involved with 4-H at another school and knew about the great programs 4-H has for

youth," Mesman said. "I talked to the Lee County Extension Office about starting both a 4-H and a Cloverbud program."

Working with Auburn City Schools, Mesman received a grant to build an outdoor classroom at the school, and then she and Jordan proceeded to get parents involved. Local businesses and parents have also been supportive of the program, donating time and needed materials. Mesman, Jordan and a group of parents built four raised beds and in the past three years have planted various plants and trees around the beds.

Each month students learned different aspects of gardening based on the original grant's objective to educate children on the differences between heirloom plant varieties and traditional gardening styles and modern techniques and varieties. Also, bed construction and diverse plant materials provided multiple educational topics.

One example was an "international garlic project," where students studied numerous garlic varieties. The children took ownership in tending their specific varieties, and the garlic they produced was sold to families and donated to a local food bank.

The food bank was also the recipient of beans, tomatoes, cucumbers and squash from the students' gardens, as was Richland's cafeteria, which prepared the vegetables and served them to students.



FACTS ABOUT FIRE ANTS Students at Richland Road Elementary School in Auburn listen intently as Fudd Graham, a research fellow in the Auburn University Department of Entomology and Plant Pathology and coordinator of the Alabama Fire Ant Management Program, teaches them about fire ants. The students are members of the Richland Road's 4-H Junior Master Gardener club.

"The children felt pride in eating something they helped with and in donating the fruits of their labors," Jordan says.

Alabama 4-H is the state's largest youth education organization, reaching more than 107,000 students ages 9-18. The 4-H Junior Master Gardener Program is an international youth gardening initiative, and Cloverbud is a development program for children 5-8. More about Alabama 4-H, JMG and Cloverbud is available online at www.Alabama4H.com.

Value of Alabama Row Crops Hits \$1 Billion in 2012



ECONOMIC IMPACT The value of Alabama's 2012 peanut crop, at almost \$295 million, was more than double the value in the crop in 2011. National Ag Statistics Service data indicate that the total value of Alabama's five major row crops hit a record \$1 billion last year, up almost 23 percent from 2011.

The combined value of Alabama's five major row crops hit a record \$1 billion in 2012, up almost 23 percent from 2011.

Three of those crops—peanuts, soybeans and corn—posted significant gains in value in 2012, National Agricultural Statistics Service data show. Peanuts led the way, jumping from about \$144 million in 2011 to close to \$295 million in 2012. Soybeans, valued at \$116.82 in 2011, rose to nearly \$220.1 million, and the state's corn crop increased to \$203.8 million from 2011's \$180.1 million.

Max Runge, an Alabama Cooperative Extension System economist in the College of Agriculture at Auburn, says a number of factors contributed to the strong showing, but improved farming technologies are among the major ones.

"We're benefitting from better crop genetics and better technology, such as precision agriculture, and with all of these improvements, we're also seeing increasing attention to detail," Runge says.

A prime example of this enhanced attention to detail is the near-pinpoint accuracy of fertilizer, pesticide and herbicide applications secured through advances in precision farming technology, Runge says. Such tools are helping farmers realize not only higher yields but substantial savings in production costs.

But credit is due as well to other older, less visible improvements in production practices, such as no-till farming, crop scouting and soil testing. Runge says all these improvements underscore the enduring value of land-grant universities, particularly their research and Extension functions, in advancing the fortunes of production agriculture.

"It really is a reflection of what's been done over many years, not only in terms of research but also in how the practical value of this research has been extended so that producers can make use of it," he says.

While 2012 was a good year for the state's peanut, soybean and corn crops, cotton and wheat did not fare as well. Cotton incurred the biggest loss, dropping from \$303 million in 2011 to about \$242 million in 2012, and wheat also declined, from \$98 million in 2011 to about \$75 million in 2012.

Annie's Project Strengthens Women's Roles in Farming

In an effort to equip Alabama women in farming with advanced management skills, the Alabama Cooperative Extension System has launched "Annie's Project," a six-week program dedicated to strengthening women's roles in the modern farm enterprise and aimed at women who run and/or own or co-own farms, as well as women who just want to know more about farming.

Annie's Project debuted in the state earlier this year in Montgomery with a class of 15 members ranging in age from the early 20s to late 70s. Some were newcomers to the agriculture business scene, while others were second- and third-generation farm women. Their businesses included row crops, cattle, horses, goats, timber and bees. The number of acres owned per farm ranged from 100 to more than 1,000.

Diana Simpson, a regional Extension consumer science and personal financial management agent in Lee County, says the class was an "opportunity for these women, who come from diverse backgrounds, to discuss topics of shared importance and help each other during the learning process."

The venture that would become Annie's Project began in 2004, and since then, thousands of women across the country have participated in the workshop that is named in honor of Annie Kohlhausen Fleck, whose life as a young schoolteacher changed the day she married a dairy farmer. Mrs. Fleck, whose agricultural training literally occurred on the job, kept the records for the farm, monitored the cash flow and kept up with changes in laws and policies, all while raising four children.

To supplement the family's meager finances, Mrs. Fleck ran an egg business and her husband got an off-farm job, and though they struggled, the young couple did not give up. Profits increased, and after 55 years in the farm business, Fleck died a wealthy woman. Annie's Project is modeled after the original Annie's good management skills.

One presenter in one of the Montgomery workshop sessions was Auburn University associate professor Robert Tufts in the School of Forestry and Wildlife Science, who discussed business infrastructure, estate planning and business entities. Workshop participants described the session as intensive and packed with valuable information. Other of the three-hour sessions focused on business plans, time management, risk management, strategic planning, human resources, financial documentation and more.

With the number of female-operated farms on the rise nationally—a 46 percent increase from 1997 to 2007—specialized courses may increase. Plans are underway to host the program in other Alabama counties, including St. Clair, Baldwin and Lee, and to offer another series of sessions on new topics in Montgomery County in the fall.

For information on Annie's Project, contact Simpson at dgs0007@aces.edu, 334-749-3353 or 334-750-8779.

College of Ag Building Social Media Presence

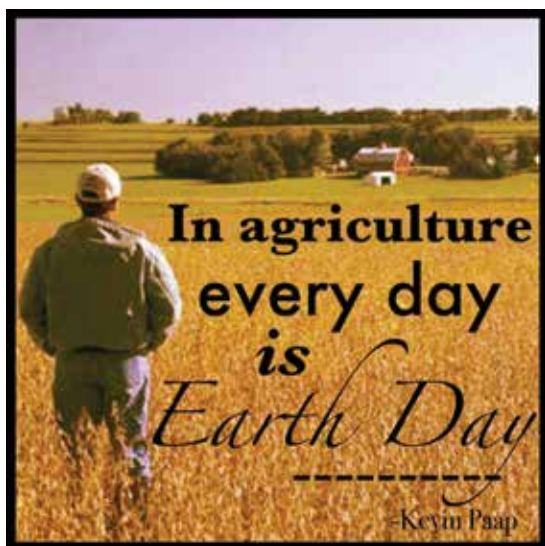
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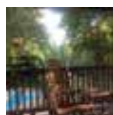
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Throwback Thursday! Recognize any of these Ag Ambassadors from the 90s? Tell us what they are up to now!

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AG illustrated

Recipe File

Just Like Grandma's

Bess Eakes' Biscuits a Hit with Auburn Students

Ag Illustrated usually doesn't specify particular brands in recipes, but Bess Eakes' biscuit recipe is an exception.

"My mother used White Lily flour, my grandmother used White Lily, and it's the only flour I've ever used for biscuits," says Mrs. Eakes, wife of Auburn horticulture professor Joe Eakes and the Bess in "Biscuits with Bess and Joe." (Story, Page 1)

For generations, White Lily has been Southern bakers' flour of choice, especially when it comes to making tender, melt-in-your-mouth biscuits, and as it turns out, Southern cooks know best. According to the folks at White Lily, theirs is the only brand of flour in the U.S. that is milled entirely from soft winter wheat, which contains less protein than hard wheat and thus makes for flakier biscuits and pie crusts.

Still, technique is important to biscuit making, too, and Mrs. Eakes has that down to an art. Her number one piece of advice for producing the lightest, fluffiest biscuits is to avoid overworking the dough. "I don't knead my dough or roll it out, because the more you handle it, the tougher your biscuits are going to be," she says.

Bess' Biscuits

2 cups White Lily self-rising flour

¼ cup solid vegetable shortening

¾ to ¾ cup buttermilk

Spoon flour into measuring cup and level with a knife. Place flour into bowl. Cut in shortening until mixture resembles coarse crumbs. Make a well in the center of the flour and blend in buttermilk with a fork until sticky but not soupy. Turn dough out onto a generously floured surface. Using floured hands, lightly press dough to ½-inch thickness. Cut using a 2-inch biscuit cutter or a glass that has been dipped in flour. Shake excess flour off biscuits and place, sides touching, on a baking sheet that has been coated with non-stick cooking spray. Bake at 500 degrees for 8 to 10 minutes, or until golden brown. If desired, take a stick of softened butter and run over the tops of hot biscuits before serving. Makes 12.

