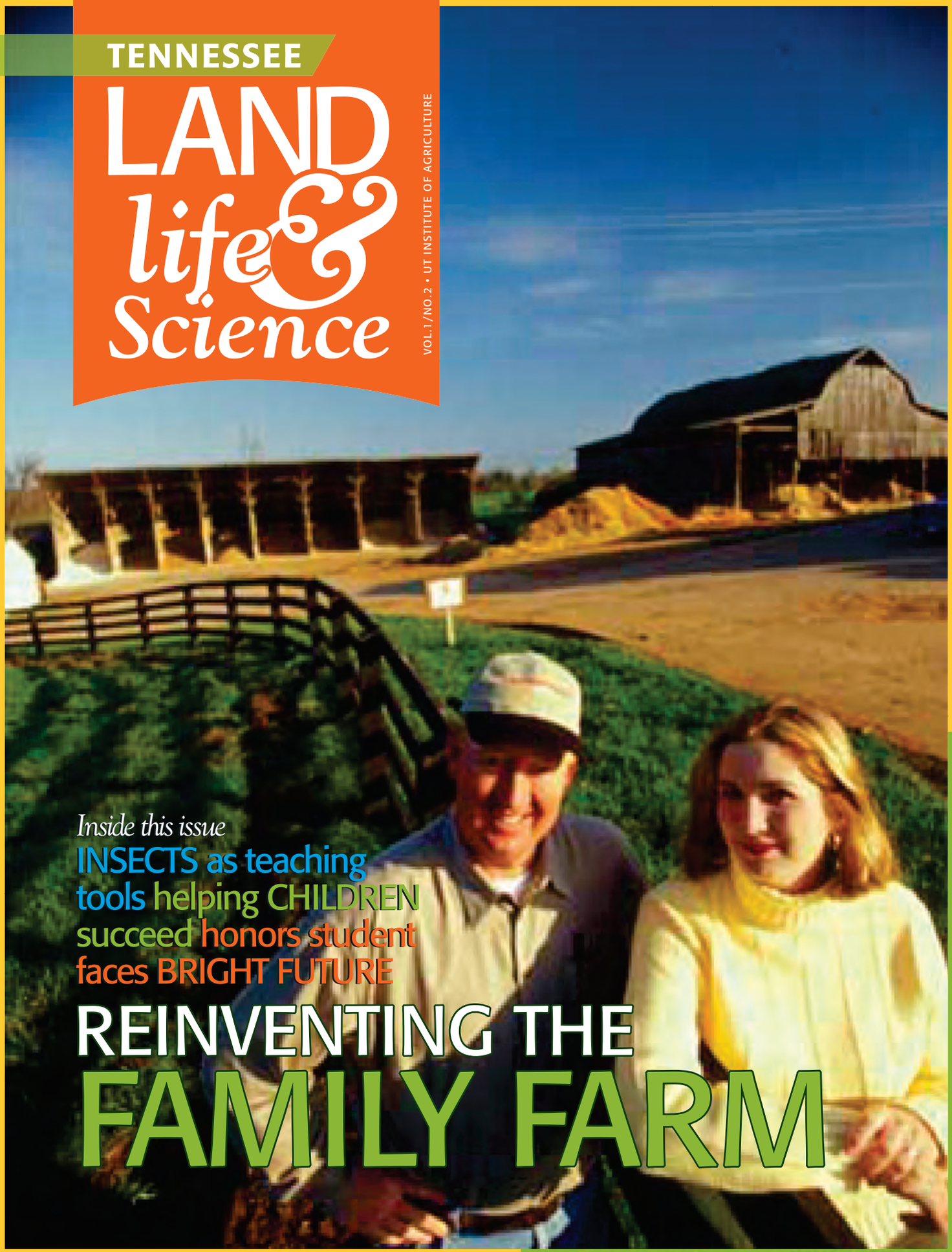
TENNESSEE

LAND life & Science

VOL.1/NO.2 • UT INSTITUTE OF AGRICULTURE



Inside this issue

INSECTS as teaching tools helping CHILDREN succeed honors student faces BRIGHT FUTURE

REINVENTING THE FAMILY FARM

A FOCUS ON AGRICULTURE AND NATURAL RESOURCES PROGRAMS

THE UNIVERSITY of TENNESSEE

PERSPECTIVES ON CHANGE

Responding to change in order to improve lives, build stronger families and strengthen communities is the mission of the University of Tennessee Agricultural Extension Service. From the most fundamental issues of homeland security and our children's character to harnessing the benefits of scientific advances in biotechnology and human health, Extension works every day to equip Tennessee residents to survive and thrive in a climate of change.

One way that farmers can cope with economic change is to add value to their crop, livestock, and forest products. Through a partnership with the Tennessee Farm Bureau Federation, we are working to identify new ways of adding value to Tennessee farms through our Center for Profitable Agriculture. The Center is opening doors to profitable and exciting new opportunities for Tennessee farm families.

Providing our children with healthy learning environments, teaching them to have an appreciation for our environment, and fostering greater knowledge of our multicultural world help strengthen our communities and make for a brighter future. Read more about developments in these areas in this issue.

Does change mean that we lose touch with our roots? Absolutely not. As an example of our service to commercial agriculture, our standardized crop variety testing program is among the best in the nation, integrating data from hundreds of on-farm and Experiment Station plots to provide Tennessee farmers with current, unbiased information about yield potential as well as disease and pest resistance for Tennessee's major row crops. We offer many other programs to to meet the changing needs of livestock producers, the green industry, and Tennessee's growing fruit and vegetable industry.

Change is inevitable, and we're all in this together. Your thoughts and comments about our programs are always welcome, and we're open to receive your comments at an office near you.

Charles L. Norman
Dean, Agricultural Extension Service

ON THE COVER
In Philadelphia, Tennessee, John and Dr. Celia Harrison found a way to preserve the dairy farm that has been in their family for six generations by diversifying into cheese making. Today Sweetwater Valley Farm produces about 250,000 pounds of fine artisan cheeses a year. Diversification can infuse new life and income to farm operations. *See page 10 for details.*

TENNESSEE LAND *life & Science*

Vol. 1/No. 2/2003

A Publication of
The University of Tennessee
Institute of Agriculture
101 Morgan Hall
Knoxville, TN 37996-4505

President
John W. Shumaker

Vice President for Agriculture
Jack H. Britt

Dean, Tennessee Agricultural Extension Service
Charles L. Norman

Dean, College of Veterinary Medicine
Michael J. Blackwell

Associate Dean, College of Agricultural Sciences and Natural Resources
Mary Lewnes Albrecht

Associate Dean, Tennessee Agricultural Experiment Station
Thomas H. Klindt

The University of Tennessee does not discriminate on the basis of race, sex, color, religion, national origin, age, disability, or veteran status in provision of education programs and services or employment opportunities and benefits. This policy extends to both employment by and admission to the University.

The university does not discriminate on the basis of race, sex, or disability in the education programs and activities pursuant to the requirements of Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act (ADA) of 1990.

Inquiries and charges of violation concerning Title VI, Title IX, Section 504, ADA, the Age Discrimination in Employment Act (ADEA), or any of the other above referenced policies should be directed to the Office of Equity and Diversity, 1840 Melrose Avenue, Knoxville TN 37996-3560; telephone (865) 974-2498 (TTY available). Requests for accommodation of a disability should be directed to the ADA Coordinator at the Office of Human Resources Management, 600 Henley Street, Knoxville TN 37996-4125

PA# E11-1101-00-005-03

A project of Marketing and Communications Services, the University of Tennessee Institute of Agriculture, in collaboration with Angie Dobbs. Editorial contact: Margot Pantalone, senior writer/producer, (865) 974-7141, mpantalo@edu. Photos: Jack Parker, Carrie Sims, Jamie Heinrich, USDA-NASULGG and others.

www.agriculture.utk.edu/lls/

CLONING TEAM on show

The Institute's animal cloning team led by Dr. Lannett Edwards, Animal Science, traveled to Capitol Hill in March to meet with members of congress and their staffs.

The team took part in a land grant exhibit and reception hosted by the National Association of State Universities and Land-Grant Colleges. Edwards (back row, right, in photo) and her research associates discussed their use of cloning as a tool to learn more about embryo development and the genetic factors involved in disease resistance. The project's goals are simple: improved reproductive efficiency, lower costs for producers, and safer and less costly meat and dairy products.

ALL-AMERICA HONORS for ag economics senior

USA Today named UT agricultural economics senior Julie Pedigo to its 2003 All-USA Academic team. The selection marks Pedigo as one of the top 40 students in the nation based on academics, leadership, and activities. Five hundred undergraduate students were nominated nationwide for the honor. Of these, only 60 students were chosen. Pedigo made the second of three teams.

The Coffee County native is also a National Merit Scholar and recipient of a Whittle Scholarship, the highest scholarship offered by the university, and the Torchbearer Award, the highest honor UT bestows on students. Read more about this standout student on page 19.

A BIG WIN for wildlife, fisheries students

A national championship. That's how Dr. George Hopper, head of the Department of Forestry, Wildlife and Fisheries, describes his students' win over 22 other schools in the 2003 Southeastern Wildlife Conclave.

While regional in scope, the three-day event draws teams from the some of the nation's largest and most prestigious wildlife and fisheries programs, providing support to Hopper's claim.

Mixing professionalism with play, the conclave provides students with valuable career and graduate school contacts while challenging them in 20 academic and sporting contests. Events range from a college quiz bowl and applied management field events to boat races, turkey calling, and a tough obstacle course with stream crossings, boulder dodges, and other barriers the students are expected to handle with ease as professionals in their fields.

Led by senior co-presidents Aubrey Deck, senior from Mascot, Tenn., and Jason Burke, senior from Durham, N.C., UT won 16 first-place titles including overall best school, first place in team competition and the quiz bowl, and three second-place titles. The university also won the overall event in 2002.

"The wins tell us that our program is preparing students with exceptional abilities and skills for their chosen fields," Hopper says. "For our students the future starts today. We plan to build for an even stronger tomorrow."

FALL DEDICATION set for new biotechnology building

Biotechnology is changing plant sciences. The Plant Biotechnology Building at the heart of the Institute's campus in Knoxville is expected to have an equally transforming effect on research, service, and teaching programs at the Institute and across the state.

Researchers will begin moving into the new facility in late spring. A fall dedication is planned, with tours, symposia, and other events. Call (865) 974-8622 or visit the Institute's Web site as fall nears for more details.

For more about these and other developments, visit us on the Internet at www.agriculture.utk.edu.

BEAUTY *AND* BRAINS

by Amy Yancey

A stroll through the University of Tennessee Gardens reveals the telltale signs of spring. Bright green grass sprouts along stone walkways. Here and there, tiny flowers pepper the ground with yellow and violet. Vivid pansies stand sentinel at the entrance, and goldfish linger near the sunny surface of a pond. Everywhere the gardens burst with renewal, flooding the senses in a sea of color, texture, and fragrance.

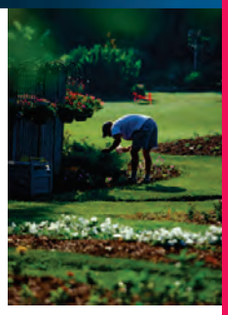
The University of Tennessee Gardens educate, while delighting the senses

The expanse of gardens on the university's Agriculture Campus has been called a rare gem. With a trove of rare and unusual plants lining gazebos and water bogs, they are one of Tennessee's greatest public spaces. Perhaps more importantly, though, these gardens play a crucial role in science and education. As an outdoor laboratory and classroom, the gardens give researchers and students a living, breathing workshop.

A botanical garden is defined as a place where plants are grown for scientific study. Indeed, the gardens serve two distinct scientific roles. As part of the Tennessee Agricultural Experiment Station, they serve as the site for studying an array of flora, planted in annual tests to determine their suitability for Tennessee's climate. The research serves the booming state nursery and floriculture industry, or green industry, with vital information. The Tennessee green industry has an economic impact of about $439 million annually on the state.

The gardens are also one of only 34 test sites nationwide in the All-American Selections (AAS) program. AAS test sites are responsible for observing and rating seed performance for a variety of plant species. According to Dr. Sue

Visitors to the UT Gardens find an ever-changing panorama of plant life. Winding walkways, arbors, and overlooks invite guests to linger.



Hamilton, gardens director and associate professor of plant sciences, "Tennessee's hot, humid summers and erratic winters make the gardens an ideal AAS location."

Possibly the gardens' most essential role is serving as a five-acre classroom to an array of students. Plant science majors get a hands-on chance to study horticulture in an outdoor environment, evaluating and studying the effects of sun, moisture, soil composition, and temperature on a diversity of plant life. Entomology and plant pathology students study the interplay of plants, diseases, and insects. Even biosystems engineering students find opportunity in the gardens, from devising solar-powered sensors that count visitors to exercises in surveying and mapping.

Through a diversity of roles, the gardens truly offer life lessons to everyone.

The UT Gardens are open daily from dawn until dusk. Admission and parking are free. For information about guided tours or for questions about the gardens, visit the Web at http://gardens.ag.utk.edu, or call Dr. Sue Hamilton at (865) 974-7324 or Curator James Newburn at (865) 974-7256.

BLOOMS DAYS
Garden Festival & Marketplace
JUNE 28 & 29, 2003

Join us for the first annual Blooms Days Garden Festival and Marketplace, June 28 and 29 in the UT Gardens in the Knoxville agriculture campus.

The marketplace will feature crafts and gardening goods as well as specialty plants produced by the gardens exclusively for this event. Adult garden-related programs and activities for children are included in the admission as is live music. Tickets are $8 and children under 13 are free. Proceeds benefit Friends of the Garden and the UT Gardens.

For more information, call (865) 525-4555 or email info@bloomsdays.org.

TAKING THE BITE OUT OF SUMMER

by Lisa Byerley Gary

Dr. Reid Gerhardt, at left, M.S. graduate Joey Sailor, bottom left, and student Nathan Caldwell are finding that tracts of forests may factor in the spread of La Crosse Encephalitis in Tennessee.

Gerhardt and crew tackle the mysteries of mosquito-borne illnesses

Science

When Dr. Reid Gerhardt and his team of research associates and students go outside, they specifically look for critters most of us take pains to avoid. They watch for mosquitoes, examining which types can be found in which areas. And this summer they'll be looking for furry pests as well—the squirrels and chipmunks that may harbor mosquito-borne diseases.

Gerhardt, a professor in entomology with 40 years of mosquito research on his dossier, doesn't get tired of the blood-sucking insects. "It's what I do," he says.

What he does has always been important to the rest of us, but with West Nile virus and La Crosse encephalitis making headlines in recent summers, mosquito research is taking on even greater significance.

Asian tiger mosquitoes, a particularly aggressive breed known for biting even in the heat of the day, are implicated as carriers of both diseases and "are in almost everyone's back yard," Gerhardt says. But how do mosquitoes get the diseases?

Blood-sucking insects are attracted to most warm-blooded animals and carry diseases from one species to another.

"What we're doing this summer is collecting blood samples from squirrels and chipmunks from areas in and around Knoxville, Nashville, and Memphis. It's a long state and the diseases vary from one end to the other. Memphis has high West Nile areas. Knoxville has clusters of La Crosse."

His team will target two spots in each of the three areas—one known for low disease activity and the other for high disease presence. Live trapping methods, done under the supervision of an animal care

committee, will "harm the animals in the least way possible," Gerhardt says. Scientists will examine blood samples for the presence of both diseases.

Understanding the transmission of these diseases between humans and animals is complex. Gerhardt works closely with Tennessee's medical entomologist, Kristy Gottfried, a UT graduate who previously worked for the Centers for Disease Control. Her work makes it easier to collect medical and other data statewide to correlate with UT research.

On Gerhardt's office wall is a map of Tennessee with pins marking known outbreaks of West Nile and La Crosse. That diseases appear in clusters is abundantly clear. This summer he hopes their work will add yet another overlay to the map—presence of the two diseases in rodent populations. If that data corresponds with the outbreak clusters, the total picture becomes more clear and control methods can be developed that hit the diseases at their source.

And just what is that source of the cluster outbreaks? For La Crosse, the UT team has its suspicions.

"We're suspicious about large, unbroken forest areas," Gerhardt says. If (medical professionals) continue to tell us about new cases so that we can map them and if we can line up physical features on the ground with where the cases are, then we may know for sure."

West Nile gets lots of press, Gerhardt says, but La Crosse encephalitis is probably underreported and underappreciated as a threat because doctors often don't find the exact cause of a virus when the treatment will be the same regardless. Yet La Crosse threatens at-risk populations, especially children younger than 15, and over the past six years in the greater Knoxville area, 12 to 15 people a year have been hospitalized with it. Though the virus is rarely fatal, the cost to families and to society is enormous, often involving hospital care and follow-up treatment.

Eliminating the disease requires understanding it. If Gerhardt's team can relate disease-carrying rodents to outbreak areas, the next step may be a comprehensive control plan.

LA CROSSE ENCEPHALITIS IS "THE RODNEY DANGERFIELD OF DISEASES," HE SAYS.

BUGGING THE INSECT WORLD

by Elise LeQuire

Biosystems research aims to build a better insect trap

It's a fly, it's a mosquito…no, it's a bee. Our ears tell us ASAP which buzz is bugging us. Dr. Raj Raman, an associate professor in the Institute of Agriculture's Biosystems Engineering and Environmental Science Department, is perfecting a digital monitoring device even more discerning than the human ear to sound out the distinct acoustic signatures of flying insects.

"This department has a history of developing sensing technology with practical agricultural applications," Raman says. "We're on track to move a monitor from the lab to the field within a year." Within three years, the cost of monitors could drop as low as $20 to $50, making them practical in Integrated Pest Management (IPM) strategies.

Unlike traditional traps that sweep up any insect attracted to bait such as light or pheromones, acoustic monitors don't kill the insect. This will make them useful in second and third generation IPM systems. "Traditional monitors kill not just the pest, but the beneficial predators as well." Raman says.

Dr. Raj Raman's end goal is to protect helpful insects while controlling ones that cause harm.

Raman is collaborating with Reid Gerhardt, a medical-veterinary entomologist at the Institute, John Wilkerson, biosystems engineering associate professor, and with scientists Cy Smith and Glenn Allgood at Oak Ridge National Laboratory.

Contact: Dr. Raj Raman, (865) 974-7266, draman@utk.edu. For more information on the Institute's sensing work, visit http://bioengr.ag.utk.edu/.

A MATTER OF TIME AND DISTANCE

Extension's Plant and Pest Diagnostic Center identifies problems—often within an hour

by Elise LeQuire

Whether you're a large-scale producer confronting a new disease in your fields, a homeowner with a strange bug inside your house, or a commercial greenhouse tomato grower with blighted seedlings, the University of Tennessee's Plant and Pest Diagnostic Center in Nashville can help you identify the pest via the Internet.

In 2002, the center identified nearly 1,000 disease and insect problems through distance diagnosis, which can provide results in less than an hour. Typically an Extension agent will come to a site, take a specimen, place it under a microscope, photograph it with a digital camera, and send the image electronically to the center.

"We are the only laboratory of this type in the state," says Dr. Alan Windham, a professor of plant pathology with the Agricultural Extension Service. "There is no private alternative to our expertise." Currently all Extension offices in Tennessee have digital cameras, and almost half have microscopes.

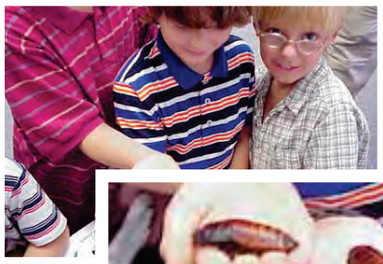
The service, funded in part by the Tennessee Department of Agriculture, is one arm of the Extension Service's mission to serve and educate commercial growers and homeowners. The center is also building an on-line digital library for public reference.

View images of plant pests and find out more about identification and assay services at the center's Web site, http://web.utk.edu/~extepp/diagnost.htm.

A carpenter ant gets a close-up inspection by technician David Cook, above. At right, plant pathologists Dr. Steve Bost, Dr. Alan Windham and Tom Stebbins identify the disease affecting a plug of turf sent in by a golf course in Jackson. Teamwork, at every stage of the process, makes the center a success.

BUG'S RULE!

When insects are the topic, Dr. Paris Lambdin, left, can count on rapt attention and lots of questions. Madagascar hissing cockroaches are particularly popular.



by Mary Tebo

Teachers buggy about using insects as teaching tools

With state funding in short supply, Tennessee's rural elementary teachers often have less than $50 a year to buy resources to create engaging lessons for their students. That's why Drs. Jerome Grant and Paris Lambdin of the University of Tenenssee want to introduce teachers to some teaching aids that are plentiful, available everywhere, and above all *free!*

What are they? Insects. What else would you expect from two professors in the university's Department of Entomology and Plant Pathology? Over the past two years, Grant and Lambdin have welcomed 56 teachers to "Insects in the Classroom: A Summer Workshop for K-4 Educators," expertly converting those who were "bug phobic" into fans. They have especially recruited teachers from rural East Tennessee counties that receive very little funding for science education.

Workshop participants learn how to capture insects, make an insect collection, create lesson plans built around different aspects of insects, and do experiments with insects.

"They also get lots of goodies—that's a real draw," said Grant. Each participant receives a set of teaching tools, including videos, books and posters, valued at $350.

Many of the workshop participants have become so infected with "the bug" that they returned to school and shared their newfound ideas with the entire teaching staff. As first-grade teacher Alice Golden said, "Although we are financially impoverished, we are richly blessed with insects and our students can gain a rich background in science."

IPM FOR HEALTHY SCHOOLS *by Elise LeQuire*

PEST CONTROL STRATEGY BENEFITS SCHOOLS AND CHILDREN'S HEALTH.

Integrated Pest Management (IPM) can help create healthy indoor environments for children, from preschool through high school.

"You have to be prudent, using the least amount of the correct pesticide only when and where it's needed," says Dr. Martha Keel, a housing and environmental health specialist with the University of Tennessee's Agricultural Extension Service.

"We must be especially diligent with children, who are believed to be more at risk."

Keel and Dr. Karen Vail, an urban entomologist with the Agricultural Extension Service, are introducing IPM to schools and childcare providers, in collaboration with a team of partner agencies.

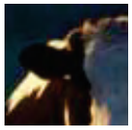
Vail initiated the program in 1996 and has been helping schools adopt IPM ever since. For instance, in 2000, she received a call for assistance from a school in Monroe County. Vail showed how pest proofing, such as sealing openings around sinks and installing weather stripping around doors, and using glue boards to monitor and baits to control pests, could reduce or eliminate the need for monthly applications of pesticides.

"In July 2002, we went countywide with IPM with great results," says Charles Underwood, facilities director for the Monroe County school system, "and it doesn't cost any more than regular pesticide applications."

Contacts: Dr. Karen Vail, kvail@tennessee.edu, (865) 974-7138, or Dr. Martha Keel, mkeel@tennessee.edu, (865) 974-8197.

REINVENTING THE FAMILY FARM

by Trish Milburn



Farming has never been an easy way to make a living, but many farmers can't imagine making their living any other way.

Helping to keep Tennessee's family-owned farms viable in the face of today's many challenges is the Center for Profitable Agriculture, a joint venture between the University of Tennessee Institute of Agriculture and the Tennessee Farm Bureau, which was established to help farmers stay sustainable through value-added agriculture.

The center, located in Spring Hill, opened in 2002 and replaced the Extension Service's Agricultural Development Center which had aided farmers since 1998.

Tennessee's Center for Profitable Agriculture helps farmers evaluate new revenue sources

"There is an increasing recognition by farm families, and those who work with and serve farm families, of the need to aggressively identify and pursue new, innovative ways of capturing a greater share of the consumers' food and fiber dollar," says Dan Wheeler, center director and former Tennessee Commissioner for Agriculture.

"That increasing recognition is brought about because of several factors, the most important being the long-term, lingering low commodity prices and increasing cost of inputs that continues to put tremendous economic pressure on farm families."

Farmers with a business idea that adds value to a tried-and-true farm commodity can have the idea analyzed by the Center to determine its feasibility and under what conditions the idea would be

UT alumnus John Harrison has found success in cheesemaking at Sweetwater Valley Farms. At center, Tennessee-grown products are diverse.

From apples to wineries,

opportunities to create products from raw materials on the farm abound. The key li
both to a farm's capabilities and to market demand. A sampling of Tennessee's value-adc

Adding Value to Sweet Potatoes • Agri-Tourism • Apple Butter • Bottled Water • Boxed Vegetable Deliveries • Cabin Rentals for Agritourism • Canne
Herb Marketing • Commercial Turfgrass-Sod Production • Composted Cotton Gin Trash • Rural Wilderness Retreat • Cottage Cheese Whey • Custom
for a Lavender Enterprise • Enhancing Markets for Jams & Jellies • Entertainment Farming through School Tours • Environmental Education • Eva
Farm-Fresh Dairy Products • Farm Retail Sales & Agritainment Considerations • Farm Tours for Children's Groups • Fee Fishing • Free-Range Chicken F
Goat/Sheep Processing & Marketing • Horse Manure Compost • Hot Sauce and Salsa Marketing • Hydroponic Greenhouse • Improving Income for
Livestock Production and Processing • Manufacturing and Marketing Beef Jerky on a Small Farm • Marketing a Patented Honey Jelly • Marketing F
Farm Waste Products • Pastured Poultry Processing and Marketing • Popcorn • Poultry-Waste Compost • Puree Foods • Retail Meat and Specialty F
with Retail Craft Business Exploring School Tour Concept • Gourmet Slaw with Salsa Twist • Smoked Fish • Specialty Soybean Enterprises • Speci
Cookies • Specialty Mushroom Production and Marketing • Squirrel Corn and Corn-Stalks • Treating Forest Products • Using the Internet to Sell H
Working-Farm Vacation Business • Wineries

most successful. Potential projects come to the center for evaluation through the online application at the center's Web site (http://cpa.utk.edu), through county Extension agents and through outreach efforts.

In the past five years, the ADC and the CPA have completed 79 projects and had 10 additional project evaluations under way earlier this spring. Rob Holland, an Extension specialist at the CPA, says work on each is unique. Some only take 30 days while others require up to two years. No fee is charged to farmers; funds for special market development studies and survey work often come from grants.

If a project is deemed feasible, CPA specialists work closely with the Tennessee Department of Agriculture Divison of Market Development to help the farmer get new products to market. "They provide a great deal of assistance once a product is ready for sale," Holland says. "Most of our work involves just trying to figure out if it will sell . . . at a profit."

Earlier this spring, the center organized a sustainable agriculture tour called "A Statewide Journey." The tour combined stops at farms and businesses with classroom-style seminars. Response was overwhelming, and the training materials used in the tour are now available at the center's Web site.

The CPA's board of directors is working to develop a strategy for the future focus of the center. Individual project analysis will continue and broader efforts may also be developed to potentially impact more people.

Learn more about the Center for Profitable Agriculture at its Web site, http://cpa.utk.edu/.

es in selecting ideas that are well-suited
ded endeavors includes:

d Tomato Products • Colored Mulch • Commercial Greenhouse Retailing • Commercial -Beef Marketing • Dehydrating Chicken Litter for Use as Fertilizer • Developing Markets luating a Dairy Processing and Retailing Business • Farm Camping • Farm Campsites Production and Marketing • Fresh Grain Baking Mixes • Fresh Salsa • Freshwater Shrimp Hunting Operations • Investigating Market for Organic Grain & Grain Products resh-Cut Flowers • Niche Marketing Lamb Meat • Ostrich Meat Marketing • Packaging Products Marketing • Retail Meat Marketing • Roadside Retail Marketing • Sheep Farm al Recipe Strawberry Preserves • Specialized Wood Furniture Components • Specialty landcrafted Wooden Toys • Value-Added Dairy Products • Value-Added Woodworking

PUTTING NEW VARIETIES TO THE TEST

by Elise LeQuire

For Tennessee farmers, choosing the highest-yielding varieties of corn, soybean, wheat, or sorghum seed can mean the difference between profit and loss. In a six-county area in northwest Tennessee, producers work with seed suppliers and the Agricultural Extension Service in its State Variety Testing Program to field test more than 200 varieties of row crops on 1,890 test plots under actual farm conditions.

Extension Specialist Bob Williams oversees the program, distributing test seed provided by participating suppliers. At harvest time, county Extension agents help collect, assess, and weigh the crop and feed the data back to the Extension Service.

UT Extension Agent Tim Smith, left, in Obion County with producer Bill Thompson, the second generation of his family to take part in UT's standardized tests.

Rhett McIntosh, who farms about 1,650 acres in Obion County, participates in the program. "The seed companies come out with new varieties every year. We test them all in the same manner with our farm machines and farm conditions. We learn the varieties we need to switch from and go to," he says.

A TEAM OF UT AGENTS AND FARMERS TAKE THE RISK WITH SEED RELEASES, SO TENNESSEE PRODUCERS WON'T HAVE TO

PICK AND CHOOSE

The Experiment Station also collects information on conventional and hybrid varieties planted on small plots at seven branch stations in the Tennessee Agricultural Experiment Station system. This data, which establishes a base line of information on the performance of varieties, is then merged with the field test data. The field trials and combined information add a level of confidence to producers, who can see what they grow in their own fields. "Farmers have to rely either on our data or the companies' data," Williams says. "Our information is unbiased."

By the first week of November, the information is available by newsletter and via the Internet to retailers and growers planning for the spring planting season. Ron Akin, technical development manager for Monsanto Company's Tennessee and Missouri Bootheel regions, says the program is one of the best in the region. "I use UT's information regularly in determining corn hybrid or soybean varieties' suitability for Tennessee farmers," he says. Producers count on the program to decide in advance what varieties to purchase and receive a discount by paying for next year's supplies in advance.

NUMBERS ADD UP

Row-crop farmers can make a substantial difference in their income by choosing the top yielding versus the bottom yielding varieties or hybrids based on UT's variety test data.

Fred Allen, professor and test coordinator with the program, estimates that a producer in 2001 farming 1,000-acres who planted with the highest yielding versus the lowest yielding varieties could realize more than $100,000 of extra income. In 2001, for example, a producer farming 1,000 acres who planted 500 acres of the highest-yielding medium-season corn, another 500 of the highest-yielding Maturity Group 5 Roundup Ready soybeans, and who also double cropped 250 acres of the soybeans with a top-yielding variety of wheat each year, could realize more than $100,000 in extra income.

Statewide, assuming that 50 percent of producers implemented that strategy, the difference in farm income would approach $80 million each year.

HELPING CHILDREN SUCCEED IN LIFE

by Kris Christen

With a federal grant, lots of motivation, and overwhelming community support, Haywood County has built a family resource center network that has grown from one center to three over the past eight years, along with a number of offshoots. The effort, a cooperative venture between the Haywood County Board of Education and Agricultural Extension Service, targets at-risk children in a rural community where more than 20 percent live below the poverty level.

"The motivation is really to give these children a better chance by reaching them from many sides—from teachers, their own parents, and directly with resources from the center," says Dr. Matt Devereaux, Extension child development specialist and family resource center project director.

The centers house learning libraries that parents can visit with their children and check out educational materials free of charge, including books, videos, games, computer software, and CD-ROMs. In 2000 alone, nearly 6,000 parents visited the centers, checked out 9,368 items, and logged more than 2,000 computer hours.

But the centers are more than just a library. They're also a hub for parent training where parents can come to discuss just about anything from drug education to how difficult it is to raise children. "We also do lots of hands-on activities such as inexpensive games that parents can make at the center and take home to play with their children," says Center Director Peggy Jackson.

Initially geared toward preschool children and their parents, the resource centers have broadened their reach to include teachers and children through the sixth grade. "It's exciting because it was the parents who wanted the program to grow," Jackson says. "They asked for more meetings and activities as their children grew older." And the statistics show how phenomenal parental involvement has been. More than 1,400 different families are registered to check out center materials, in a community of only 20,000 people.

Correspondingly, test scores, grades, and overall behavioral problems have improved significantly, Jackson notes. Local resident Sharon Clark's three children are a case in point. "I have a five-year-old who is in the gifted program, and I believe that has a lot to do with our having access to the many materials in the resource center," Clark explains, adding that her older two children are "always on the honor roll."

Offshoots of the center include a program that pairs adult volunteers with children to reinforce skills, provide support, and offer an ear for listening.

Haywood County Resource Centers assist at-risk youth

A literacy program gives away three books per year to nearly 2,400 children in the county school system. Areas the centers are working to expand into include assisting high school students who have committed misdemeanor crimes, helping pregnant teens, offering programs and materials to junior high students, and adding Spanish-language materials to assist the recent influx of Hispanics to the area.

RESOURCE CENTERS ARE NOW IN OPERATION IN GRUNDY, PERRY, UNICOI, AND BEDFORD COUNTIES, SERVING YOUTH, CHILD-CARE PROFESSIONALS, AND LATINOS.

Contact: Dr. Matt Devereaux, (865) 974-7193, mdeverea@tennessee.edu

BUILDING BETTER ENVIRONMENTAL STEWARDSHIP

4-H Center opens youths' eyes to nature and conservation

by Kris Christen

DID YOU KNOW THAT 4-H IS TENNESSEE'S LARGEST YOUTH ORGANIZATION? MORE THAN 186,000 STATE YOUTH ARE ENGAGED IN 4-H SERVICE AND LEARNING OPPORTUNITIES IN TENNESSEE'S 95 COUNTIES.

Through hands-on outdoor science programs, kids in grades K-8 are getting an up close and personal view of the natural world around them at the William P. Ridley 4-H Center in Columbia, Tenn.

As one of four 4-H Centers located across the state, the Ridley Center has made environmental education a component in a year-round program of educational activities for students, says Terri Quillin, the center's program director. During the past year alone, nearly 2,000 kids participated in programs tying together themes in land, life, and science.

They come for a day or stay for several days and nights, and "we give them the opportunity to learn outside," Quillin says. At the shore of a small pond, for example, they'll learn about water and the critters that live there by turning over rocks and looking for crawfish, minnows, or insect larvae. They'll learn about water pollution and how that can affect aquatic organisms. They'll even learn about the plants that line the path leading to the water's edge and the role they play in the forest ecosystem as a whole.

The Ridley Center works with between 25 to 30 schools in Middle Tennessee, and teachers get a chance to roll up their sleeves, too, through an in-service training program typically conducted during the summer. Working with agencies such as the Agricultural Extension Service, Tennessee Wildlife Resources Agency, soil and water conservation districts, and the Tennessee Farm Bureau, Quillin pulls together environmental science activities that teachers can take back to the classroom. By involving people from these agencies, "teachers have a name and a face that they can call to assist with a classroom project," she says.

Of course, the Ridley Center also hosts the summer camps that 4-H is known for, with arts, crafts, and tie-dying activities, not to mention rifle and archery sports, and an Olympic-sized swimming pool. At a brand-new technology camp, kids can also shoot digital footage of camp life to put up on a Web site for parents to log onto and see what their kids are doing. Additionally, an outdoor adventures program targets area scout groups. Altogether, close to 4,000 kids participated in summer offerings last year.

The center's biggest impact on youth development, however, occurs year-round through a spectrum of activities and programs that open children's eyes to respect the outdoors, be more conservative of water, and even landscape their own backyards to increase animal habitat.

"A lot of children tell us when they leave that they plan to recycle because they understand the need for it," Quillin says. "They also say they plan to check out books from the library and read more about particular animals or habitats."

But the true impact may lie years down the road. Quillin notes that parents coming back to the centers with their kids often tell her about decisions they've made over the years that were based on lessons learned from the centers.

Contact your county Extension office to find out more about Tennessee 4-H Clubs.

ENVIRONMENTAL PROGRAMS ARE ALSO UNDERWAY AT 4-H CENTERS IN CROSSVILLE AND GREENEVILLE. THE 4-H CENTER IN MILAN WILL HOST 4-H'S STATE WILDLIFE CONFERENCE JUNE 2-6.

GROWING THE BUDGET

by Lisa Byerley Gary

In a time when most states are struggling financially and Tennessee is cutting more than $100 million from higher education budgets, the University of Tennessee's ability to attract other types of funding has become especially crucial. Luckily for the Institute of Agriculture, faculty have become increasingly adept at doing just that.

University scientists have always attracted research dollars from producer groups as well as state and federal government budgets. Some funding came like clockwork every fiscal year. That's no longer the case.

"Both federal and state governments are moving away from annual appropriations and more toward competitive-based grants and contracts," says Dr. Jack Britt, UT vice president for agriculture. "This includes the USDA as well as other agencies."

Increasingly, support for the Institute's work comes from competitive-based funding

Competition for funds means faculty must offer research and service that are both unique and worthwhile, and that reach beyond the state's borders.

"The Institute leads the entire University of Tennessee system in growth of grants and contracts," Britt explains. "The Institute grew more than 30 percent as compared to about six percent for the next closest unit. We have more faculty applying for funding and we are recruiting grant-competitive faculty."

Outside funding has become a major portion of the Institute's budget. The College of Veterinary Medicine gets 15 percent of its budget from grants and contracts. The Agricultural Experiment Station gets at least a quarter of its funding this way, and the Extension Service gets fully a third of its budget from outside sources, up five percent in the last year alone.

It isn't just philanthropic interests that cause organizations and individuals to give money to the university. They expect a measurable return on the investment, delivered through research impacts or service that can make a difference economically.

The Tennessee Forest Products Center receives some $415,000 each year through the special research grants program of the USDA to aid its quest to benefit that industry. It's an important one. Timber sales reach more than $367 million per year statewide and related industries cause a ripple effect throughout the state economy.

Dogwood research is netting new disease-resistant varieties to boost the state's $50 million dogwood nursery industry through another $885,000 in federal funds, spread out over five years, and may soon share in some $750,000 more.

The Institute attracts donor dollars for endowments as well.

"While we still suffer from severe under-funding in many areas, our endowment helps the Institute and its programs continue to achieve excellence in critically important areas," Britt said.

Annual giving and interest income from the endowment will contribute $2.8 million to the Institute's budget this academic year, and that doesn't include gifts and income for individual departments.

"Nothing can take the place of a steady revenue stream from the state," Britt says. "But our ability to attract outside funding is a strong indication that the Institute is in touch with what the agriculture and natural resources industries need and want. That, in turn, means we can better prepare our students to take their place in those industries."

SAVING TENNESSEE HEMLOCKS

Institute scientists are partners in a multi-agency task force to control a devastating pest

Pseudoscymnus tsugae (Pt) may look unassuming, but this lady beetle is a fierce predator to the hemlock woolly adelgid, an invasive pest that is threatening the majestic and ecologically significant eastern hemlock. The Pt beetle may in fact be the best chance foresters have of saving Tennessee hemlocks from the adelgid.

In January, a new multi-state, multi-agency action team formed to combat the adelgid. Scientists from the University of Tennessee's Institute of Agriculture, the United States Department of Agriculture Forest Service, the National Park Service, and other North Carolina, Georgia, Tennessee, and U.S. agencies and organizations are cooperating to control hemlock woolly adelgids in Southern Appalachia.*

For decades the adelgid mostly affected hemlocks in northern forests. Entomologists believe birds spread the pest southward, aided by strong storm systems and a string of mild winters. Last year, the adelgid turned up in the Great Smoky Mountains National Park.

Hemlocks are an important species in East Tennessee, blanketing more than 5,000 acres in the park alone. The trees provide crucial habitat for white-tailed deer and migratory birds. And their presence along streams and creeks helps maintain water temperatures and oxygen levels hospitable to trout and other aquatic life.

Over the past two decades, eastern hemlock stands farther north have been decimated by the adelgid. "The mortality rate is 100 percent," says U.S. Forest Service hemlock woolly adelgid expert Rusty Rhea. "If you want to see how devastating it is, visit Shenandoah National Park. It's jaw dropping."

Mild southern winters could provide greater opportunity for the adelgid to wreak havoc in Tennessee. According to Dr. Ernest Bernard, professor in the Department of Entomology and Plant Pathology, "The hemlock woolly adelgid is moving into a climate more like its native habitat. It will thrive here."

Chemical injections and soaping are effective for treating small stands and landscape trees—good news for nursery growers and homeowners. But those methods are impossible for large forest stands, where the only current option is releasing artificially reared Pt beetles. Right now, there aren't enough rearing facilities to supply the 14 states facing the hemlock crisis.

"We are working closely with the park service and other team members to try to bring more Pt beetles to Tennessee," says Dr. Carl Jones, department head and professor in Entomology and Plant Pathology. The Institute is also participating in the outreach and research efforts of the team.

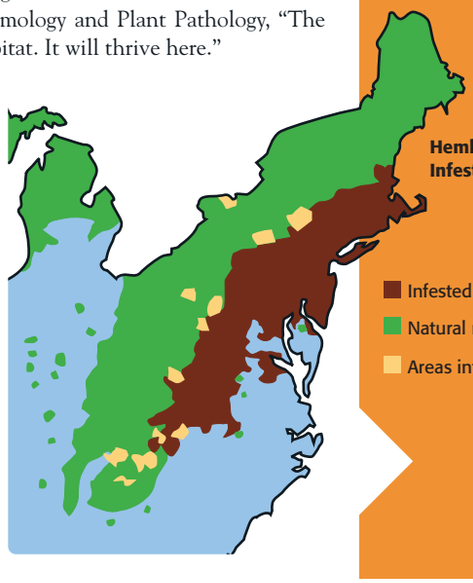
For information, contact Dr. Carl Jones or Dr. Ernest Bernard at (865) 974-7135.

**For a full list of cooperating agencies, visit www.savethehemlocks.net*

HEMLOCKS ARE AMONG THE TRULY IRREPLACEABLE PARTS OF THEIR ECOSYSTEM. THEY STABILIZE SOIL, PROVIDE DENSE SHADE THAT LOWERS WATER TEMPERATURES AS MUCH AS 6-8 DEGREES F., AND SERVE AS COVER AND FORAGE FOR MANY SPECIES OF BIRDS AND WILDLIFE.

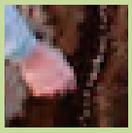
by Amy Yancey

IN STUDIES OF HEMLOCK'S IMPORTANCE TO THE NESTING SUCCESS OF DARK-EYED JUNCOS, BLACK-THROATED BLUE WARBLERS AND BLUE-HEADED VIREOS, MASTER'S STUDENT AARON KELLER AND DR. DAVID BUEHLER FOUND INDICATIONS THAT LOSS OF HEMLOCK HABITAT IN SOUTHERN APPALACHIAN FORESTS COULD IMPACT A NUMBER OF AVIAN SPECIES THAT WERE NOT PREVIOUSLY CONSIDERED DEPENDENT ON THE TREES.



TRUST CONTINUES SUPPORT FOR HARDWOOD IMPROVEMENT

by Amy Yancey

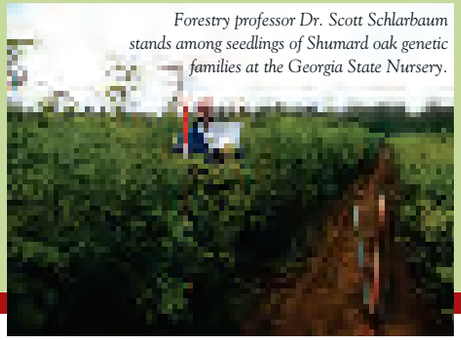


The beautiful hardwood forests of the Mid-South may not look troubled now. But a host of stressors, from urban sprawl to invasive species, are taking their toll on the economically important hardwoods and the wildlife that depend on them. Fortunately, researchers from the institute's Department of Forestry, Wildlife and Fisheries are well on their way to improving hardwood values. Support from the Margaret Finley Shackelford Trust and Ames Plantation has helped them make rapid strides to establish a unique complex of hardwood seed orchards.

Two years ago, forestry researchers began the daunting task of creating the hardwood seedling orchards that will eventually improve hardwood forests. A $224,000 grant from the Shackelford Trust to Drs. Don Hodges, Steve Knowe, and Scott Schlarbaum allowed Schlarbaum and Dr. Allan Houston of the Ames Plantation to begin collecting wild seeds in Tennessee, Mississippi, and Arkansas. The seeds were then transported and planted at the Georgia Forestry Commission's state nursery.

Genetically superior forests take root in new seed orchards

The hard work paid off this spring when an impressive crop of seedlings was lifted and packaged for the return trip to Tennessee. The hardiest specimens are planted at Ames on 59 acres of recently transformed prime agricultural land and additional acres of bottomland. In December, the trust granted an



Forestry professor Dr. Scott Schlarbaum stands among seedlings of Shumard oak genetic families at the Georgia State Nursery.

SOUND INVESTMENTS FOR UNCERTAIN TIMES

by Dennis Jones

"Put not your trust in money; put your money in trust." Benjamin Franklin had the right idea—as do many friends of the Institute of Agriculture who have created charitable trusts.

To understand how a trust works, take the case of Bill and Barbara Smith (not their real names). Bill and Barbara are in their early 60s and looking forward to retirement. In viewing their assets, needs and giving goals, they considered what to do with a piece of appreciated real estate.

Twenty years ago the property cost $25,000 and today it's worth $250,000. If they sold it, they could reinvest the proceeds in something that could produce retirement income. One problem: capital gains tax. After paying the tax on the capital gain the Smiths would not have as much as they thought to reinvest for income.

They also considered selling the property and giving a portion of the proceeds to the university. The resulting income tax charitable deduction could then be used to help offset the capital gains tax. One problem: they needed more income than the remaining funds would be able to generate.

Enter the charitable remainder unitrust. The Smiths established a charitable remainder unitrust with the university and placed the entire property in the trust (stock can also be used). Since the trust qualifies as a charitable trust, it sold the property without incurring any capital gains tax. The full amount of the proceeds (less closing costs) was then invested in a balanced portfolio of stocks and bonds—the right mix to provide a 6 percent annual payout to the Smiths plus enough added appreciation to keep the trust growing.

Each year, in January, the trust is revalued and 6 percent of the new value is sent to Bill and Barbara in quarterly payments. This will continue all the way through their retirement years. And at the end of the trust, whatever remains will come to the Institute of Agriculture. Such a remainder gift will likely be far more than the original $250,000.

Just look at a few of the benefits: (1) lifetime income; (2) immediate income tax charitable deduction; (3) bypass of capital gains tax; (4) complete estate tax deduction; and (5) a major deferred gift to the Institute.

For more information, contact Dennis Jones at (865) 974-5779.

UT students planting seeds at the Georgia State Nursery. The best of the resulting seedlings will be used for the Shackelford Orchard Complex.

additional $334,000, which funded Schlarbaum's and Houston's efforts to convert the cropland at Ames to seed orchards, paying for personnel, an irrigation system, building renovation, and equipment.

The new Margaret Finley Shackelford Orchard Complex, named for the trust's founder, will eventually lead to production of locally adapted hardwood seedlings that are genetically superior for both nursery production and field performance. The species included in the complex will not be exclusively for timber production, making the program unique. Species that provide food, called mast, and habitat for game and non-game wildlife will also be cultivated. Furthermore, the complex will be used to plant grafts of surviving regional butternut (white walnut) to conserve the genetic resources of the species, which has decimated by an exotic fungal disease called butternut canker.

According to Schlarbaum, "We have been extremely fortunate that the Shackelford Trust has been so generous in funding our research. Because of their support, the UT Tree Improvement Program can take a holistic approach toward improving the forests of Tennessee, benefiting industry and wildlife."

Says Dr. Allan Houston, "It's a great opportunity to be part of a project that entails all the components of research, natural resource management, and conservation."

For more information on hardwood improvement, contact Dr. Scott Schlarbaum at (865) 974-7993 or Dr. Allan Houston at (901) 878-1067.

ANNOUNCEMENTS & EVENTS

NEW APPOINTMENTS

Dennis Jones has been appointed to the position of director of planned giving for the Institute. According to Buddy Mitchell, associate vice president for agricultural development, "Dennis is a proven fund-raiser who brings many outstanding personal and professional strengths to his new position."

A search committee has been formed to fill Dennis's former position of director of alumni and development. For information about the search, contact Mark Gateley at (865) 974-7436.

Claire Eldridge began work this spring as director of development for the College of Veterinary Medicine. She previously served as director for the university's College of Arts and Sciences and held the top development position at two other universities.

"We're delighted to attract an individual who has such a strong background in development and an in-depth knowledge of the University of Tennessee and our donors," Mitchell says. "I am confident that Claire will provide the hands-on development expertise we need to help move the College of Veterinary Medicine to significant new levels of giving.

SALUTE TO MAJOR DONORS

The annual Leaders & Legacies event to recognize and update individuals or organizations who have given $50,000 or more to support Institute programs is scheduled for June 6. Call Amy Yancey at (865) 974-8622.

MARK YOUR CALENDARS FOR AG DAY '03

Last year produced record attendance, and another exciting event is being planned for this fall. Ag Day will be held Saturday, Sept. 27, on the ag campus. Tickets for the Tennessee vs. South Carolina game are available by calling University Athletics at (800) 332-VOLS (8657) or (865) 656-1200. For information about Ag Day, contact Amy Yancey at (865) 974-8622.

CLASS NOTES ARE ONLINE

And so are our alumni e-mail directory and other useful resources like news, events, online giving, and a link to the Institute's new Ag Store. Visit www.agriculture.utk.edu/dev to stay in touch!

INSTITUTE OF AGRICULTURE DEVELOPMENT TEAM

BUDDY MITCHELL
associate vice president for ag development
(865) 974-5779

DENNIS JONES
director of planned giving
(865) 974-5779

SHARON LITTLEPAGE
director of external relations
(865) 974-7439

AMY YANCEY
communications coordinator
(865) 974-8622

For more information about these or other Institute of Agriculture programs, contact any member of the Institute's development team.

TEAMING UP

by Lisa Byerley Gary

Professional activities prepare students for life after graduation

UT's quarter-scale tractor team, at left, has won numerous honors. College ambassadors, pictured below, aid outreach and recruitment efforts.

Students in biosystems engineering have belonged to the American Association of Agricultural Engineers (ASAE) for decades, but a capstone class for seniors is now integrating career preparation with a national engineering competition.

It's "the closest thing we can give them to real life job experience before going out into the real world," says Dr. William Hart, associate professor. Some students in the two-semester design course develop a quarter-scale working tractor. The students are given a strict timeline, and they must submit a report to "upper management" to sell their idea. They also recruit corporate sponsorship and give an oral presentation to a dozen or so seasoned engineers. The students have been among the top four teams in the international competition four of the past five years.

Students in animal science have participated in Block and Bridle club since 1947. The tradition includes everything from helping high school 4-H and FFA members learn to show and judge livestock to doing odd jobs for senior citizens and giving inner-city children hands-on experience with animal agriculture.

"Companies can train you to do the work they want you to do," advisor Greg Upchurch says. "But if you're not a good person to work with, if you're not easy to get along with, you can't get a job. These clubs and judging team activities build kids."

STUDENTS IN AGRICULTURE AND NATURAL RESOURCES AT UNIVERSITY OF TENNESSEE ARE MANAGING LARGE-SCALE PROJECTS, LEARNING, AND GIVING BACK TO THE COMMUNITY THROUGH CO-CURRICULAR ACTIVITIES THAT GO FAR BEYOND BUILDING A RÉSUMÉ.

Student members of the National Agricultural Marketing Association (NAMA) put together a total marketing plan for a new product sold to or by farmers, such as this year's biodegradable twine and wrap for hay bales. They define the market, target customers, evaluate competition, and come up with a plan of action including everything from a competitive price to contingencies to implement if goals are not met.

All of this is very real-world, says Dr. John Riley, professor in agricultural economics.

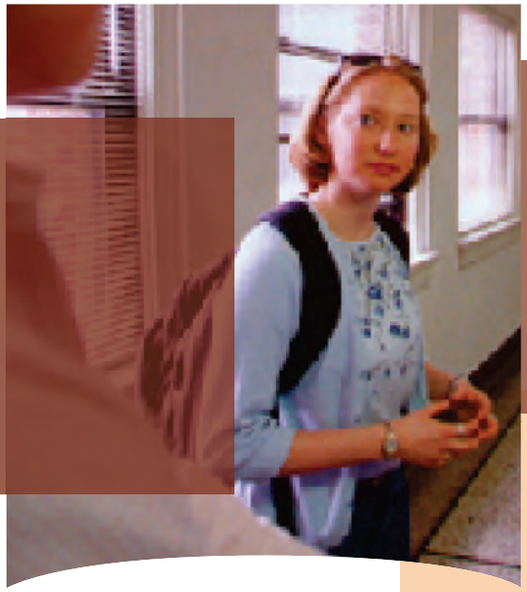
Professionals judge an executive summary and a 20-minute presentation from each team. In the three years it has competed, the university has advanced to first runner up in the competition. Students can earn scholarships at the event and make contacts to land future employment.

The event exemplifies what co-curricular experiences are all about—helping students connect their present to the future, and prepare for the careers and lives that await them.

Explore the diversity of student clubs and organizations at www.agriculture.utk.edu/faq/faq12.htm.

AGRICULTURE, LAW AND SPOTTED SADDLEHORSES

Information on the university's honors program is available at www.acad.utk.edu/honors/programs.htm.



A life in farming and a bright future fit together beautifully for this honors student

by Mary Tebo

Four years ago Julie Pedigo graduated from Coffee County Central High. As valedictorian of her class and a National Merit Finalist, she could have gone to any university, studied any discipline. But this 4-H member did not question her vocation.

"One reason I chose to come to the University of Tennessee was because it has such a strong agriculture program," said Pedigo.

In February *USA Today* named Pedigo to its All-USA Academic second team, one of three teams comprising 60 college students who were judged best in the nation in academics, leadership, and activities. It appears she is still influenced by her experience in 4-H where, she said, she was taught to believe in "making the best better."

It was through her family's intense involvement in FFA programs and 4-H projects that Pedigo first became acquainted with some of the university's faculty who ultimately recruited her.

"The projects I focused on were public speaking and horses," Pedigo said. She raised and trained spotted saddlehorses—a breed she calls "the poor man's walking horse." She still rides her eight-year-old, 16.2 hand gelding, Domino, when she returns home to visit.

Meanwhile, Pedigo has handled her demanding class schedule with much the same calmness and confidence it takes to manage a spirited horse. She has maintained a perfect grade point average while taking far more than the required number of honors courses—never letting her course load run away with her. Professor John Riley described her as someone who "does not let a topic get her down" and who often chooses honors classes "outside the box" because of the intellectual challenge they pose.

Increasingly, it has been law that intrigues Pedigo. While serving as a legislative intern with the Tennessee Farm Bureau Federation during the summer of 2001, she witnessed how economics and regulation can interact, observing that better access to legal counsel and assistance could greatly benefit the average farmer.

She developed these ideas further last summer as an intern with the London-based Environmental Law Foundation. Pedigo noted how their legal referral system helped concerned environmentalists connect with barristers to bring about legal action. Her senior honors thesis topic, "Discovering the legal needs of the agricultural community and the feasibility of an agricultural law center in Tennessee," illustrates how this farm-raised Tenneseean believes that the nation's legal framework can better support all farmers.

"It's an issue of fairness: how some people know how to use the legal system to serve their needs while others don't. Farmers often aren't aware of their legal rights. But there are ways to change that," Pedigo said.

With her eyes on a career in law, Pedigo just might be the person to do it.

WORKING WITH MOTHER NATURE

by Elise LeQuire

Plants can't flirt with pollinators or outrun their enemies, but they have evolved complex chemical strategies for survival. The Bioactive Natural Products Center of Excellence wants to harness the power of these natural compounds to control plant diseases and explore environmentally sound ways to reduce weed and insect pests.

The center, funded in 2001, is already poised to market novel uses of the herbaceous perennial Monarda, also known as bee balm or Oswego tea. "The complex chemicals this plant produces in its flowers and leaves have potential as antifungicidal agents. We have applied for a patent for the use of Monarda as a delivery system for bioactive compounds," says Dr. Kimberly Gwinn, acting science director for the center.

BIOACTIVE PLANTS SHOW PROMISE AS NICHE CROP FOR TENNESSEE FARMERS

Science

This compound is of potential interest to the multi-million-dollar greenhouse and container plant industries in Tennessee. "Before a plant leaves the greenhouse, it receives several fungicidal applications. If we can reduce those, then we have done a good thing for the environment and worker safety," Gwinn says.

Monarda's volatile essential oils can also act as a weed suppressant, says Mary Collins-Shepard, the center's administrative director. "We are working very hard to make use of the seed money awarded to the center to develop proposals and marketing strategies for bioactive products," Collins-Shepard says

For farmers, bioactive crops could help offset income lost through reductions in the amount of tobacco they grow. Moreover, growing and harvesting plants such as Monarda is less labor intensive than many traditional crops and requires few, if any, applications of pesticides. "We want to offer farmers and growers choices and do as much as possible to help our environment," Gwinn says.

The center collaborates with researchers at Oak Ridge National Laboratory's (ORNL) world-class Environmental Sciences and Chemical Sciences divisions. "With ORNL, we are simulating what bioactive agents would do in the environment. We don't want to release something that has a negative impact on the environment," Gwinn says.

Dr. Kimberly Gwinn with monarda. The native plant is rich in potential for bioactive compounds.

Contact: Dr. Kimberly Gwinn, (865) 974-7135, kgwinn@tennessee.edu

THE UNIVERSITY of TENNESSEE

The University of Tennessee
INSTITUTE OF AGRICULTURE
101 Morgan Hall
Knoxville, TN 37996-4505

NONPROFIT ORG.
U.S. POSTAGE
PAID
PERMIT #481
KNOXVILLE TN