AAES **Impact**

RESEARCH NEWS FROM THE ALABAMA AGRICULTURAL EXPERIMENT STATION

August 2005 *vol. 3, no. 4*

LOGGING ON

Today's highly mechanized timber harvesting systems have greatly increased the efficiency of harvesting large tracts of timber, but those large-scale efficiencies disappear on small tracts 50 acres and under. Consequently, many small-tract forestland owners have been left with no means of harvesting and no market access for their timber.

In Alabama's Black Belt, this situation has created a paradox: an abundance of a prized natural resource—timber—in a region that is characterized by persistent rural poverty and substandard housing.

That combination of factors is the inspiration behind an innovative project that three AAES scientists—including a rural sociologist, a forester and an ag economist—and the head of the AU School of Architecture's highly acclaimed Black Belt–based Rural Studio program (www.ruralstudio.com) have launched in west Alabama.

"We're asking the question: What can we do to better integrate local resources with local needs," says Conner Bailey, the rural sociologist on the project.

The research team's goal in west Alabama is to identify and promote economical, small-scale harvesting

Animal-powered logging is one environmentally friendly option for harvesting timber from small tracts of forestland.

systems, such as ones using farm tractors or horses and mules, as well as scale-appropriate wood-processing technologies—e.g., portable sawmills—that would produce valuable building materials Rural Studio students could use to build homes for families currently living in substandard housing.

Funded by a $460,000 USDA grant, this project will extend to other regions in Alabama and the South where forestland is divided into large numbers of small tracts.

In addition to generating income and employment and producing building materials, the project will help owners of small parcels thin their pine stands and thereby reduce the threat of Southern pine bark beetle infestations. ◆

Getting the rust out

David Weaver has 300 different lines of soybeans planted in AAES research fields near Tallassee.

Now, the AU plant breeder is waiting to see whether Asian soybean rust, a pernicious and aggressive exotic soybean disease that rode into the U.S. last year on the winds of Hurricane Ivan, will invade the fields and, if it does, whether any of the lines prove to be genetically resistant to the fungus.

Weaver's work is part of a nationwide initiative to field test nearly 800 soybean lines from soybean-growing regions worldwide that in laboratories have shown at least some tolerance to the disease.

Soybean rust, which reduces crop yields by up to 80 percent, was detected in one Alabama soybean crop last month and is expected to spread statewide.

While rust can be controlled with fungicides, the cost of applying such chemicals is high, potentially upping already financially strapped soybean farmers' costs by as much as $35 an acre. In Alabama, where soybean acreage has plunged from a million-plus acres in 1985 to 240,000 in '95 to 150,000 this year, rust could force more growers out of the business. ◆

Also in the Black Belt: Taking the initiative

Flounder that's fresh, not from the Gulf, but from saltwater ponds in west Alabama? Indeed, a handful of the region's fish farmers already are experimenting with growing flounder in their ponds, but a Legislature-funded initiative designed to create jobs and income in the Black Belt by strengthening aquaculture in the region aims to propel west Alabama production of flounder, shrimp and other marine species into a viable industry.

Inland marine fish and shrimp production holds promise in the Black Belt, where much of the groundwater has an elevated salt content. Using a portion of the total $1.2 million state appropriation for the initiative, AAES researchers are investigating the variability of the salt content, and they're establishing a collection of best management practices that address such issues as spawning, growth, disease and other management and production issues.

A fish story of global proportions, Page 2

Of course, a primary objective of the aquaculture research initiative that's based at the Black Belt Research and Extension Center in Marion Junction is to enhance the region's existing catfish industry by enabling newcomers, especially small producers, to get into the business and by finding ways for current producers to maximize their profits.

That includes helping growers prepare to make the transition as early as this fall from the channel catfish they raise now to the new faster-growing and higher-yielding AU Hybrid.◆

IMPACT is a bimonthly newsletter the Alabama Agricultural Experiment Station (AAES) publishes to inform state and federal legislators, public policy makers and the general public about AAES research projects and how they affect all Alabamians. The AAES (www.ag.auburn.edu/aaes/) is based at Auburn University (www.auburn.edu). Contact **IMPACT** at 334-844-2783 or jcreamer@auburn.edu.

SEARCHING FOR A BETTER MELON

Odds are that, when you slice into a big juicy watermelon, you aren't thinking about the sweet fruit's genes.

You can leave that to AAES plant geneticist Fenny Dane. As one of only a handful of scientists in the U.S. researching watermelon genetics, Dane is working to identify and map out the watermelon's genes, with the goal of giving producers and consumers better melons in the future.

Specifically, she and her research associates are tagging the genes that control fruit size, taste and color as well as yield, growth rate and disease and drought resistance.

Included in their analyses are wild cultivars, which, while not suitable for the market, often contain the genetic survival traits lacking in their domestic counterparts.

An understanding of the watermelon's genetic information also will be used to unravel the ancient fruit's evolution and origins.

AU plant geneticist Fenny Dane and visiting Fulbright Scholar Gábor Gyulai of Hungary analyze DNA from 600-year-old watermelon seeds.

Dane's research tracing the evolution of the watermelon has gotten a major boost this summer with the arrival in Auburn of visiting Fulbright Scholar Gábor Gyulai of Hungary.

Gyulai brought with him a DNA collection from 15th-century watermelon seeds discovered in the excavation of the Royal Palace in Budapest. The seeds trace dramatic changes in DNA over 600 years. ◆

Teaching a man to fish (farm)

The AU College of Agriculture's International Center for Aquaculture and Aquatic Environments has landed a $2.5 million award from the U.S. Agency for International Development to jump-start the commercial fish-farming industry in Uganda.

In the 40-month project, a team of AU fisheries faculty will set up model cage- and pond-based fish farms in Uganda to demonstrate fish farming based on high-quality fish feeds and best management practices for viable commercial production of fish, primarily tilapia and catfish.

The project aims to increase the quality and quantity of protein food for Ugandans, to boost employment and to help the African country generate export income, primarily from neighboring countries.

Fish consumption is high and demand is increasing in Uganda, but the vast majority of the supply for both domestic consumption and export is natural catch from the country's lakes and rivers. With those supplies threatened by increased pollution and unsustainable fishing practices, a conversion to fish farming, or aquaculture, is crucial.

AU fisheries research associate Karen Veverica has moved to Uganda as chief of party and is overseeing the project there and serving as the technical expert on pond construction and management and fish production. AAES scientist Bill Daniels is directing the project from Auburn.

Other AU faculty, including fish nutritionists, aquatic ecologists, agricultural economists and rural sociologists will also be participating in the project. ◆

Making scents

When it comes to moths and mating, it's all a matter of scents.

Females emit chemical substances, called pheromones, that attract male moths. Once they mate, they lay eggs on crops' leaves or fruit. When the eggs hatch, the larvae start munching away, leading to the need for pesticides.

In his lab at Auburn, AAES entomologist Henry Fadamiro is out to nip this problem in the bud by uncovering ways to disrupt the mating rituals of moths, specifically those that attack cabbage, collards, tomatoes, corn, cotton and various tree fruit crops.

Henry Fadamiro tests pheromones in a six-foot-long wind tunnel.

He's formulating synthetic pheremone blends and testing them by putting the phermones in one end of a six-foot-long wind tunnel and releasing a male moth at the other end, downwind of the substance. If the blend is correct, the male will make a beeline toward the source.

The synthetic pheromones can either be used in traps to monitor moth populations so that farmers will know when to apply insecticides, or they can be used to disrupt mating by releasing the scents from numerous sources in a field. This confuses the males so that fewer can locate real females. If they don't mate, they can't procreate, and the need for pesticides drops.

Fadamiro's also studying an environmentally sound "attract-and-kill" tactic that uses pheromones to lure moths to specific areas in a crop field, where they are killed with a toxicant. That eliminates the need for blanket pesticide applications. ◆

Office of Agricultural Communications
Alabama Agricultural Experiment Station
2 Comer Hall
Auburn University AL 36849