
AAES Impact

RESEARCH NEWS FROM THE ALABAMA AGRICULTURAL EXPERIMENT STATION

August 2006

vol. 4, no. 4

To irrigate or not to irrigate: why is that a question?

Estimates are that only 179,000 acres of Alabama farmland—less than 14 percent of the state's total cultivated acreage—are currently under irrigation.

Especially in drought years like this, you have to wonder: Why don't more Alabama farmers irrigate their cropland?

That's the question at the heart of a new four-year study that a dozen AAES scientists at AU and researchers from four other Alabama universities have undertaken.

The study will provide valuable insights into the potential that large-scale irrigation could provide to Alabama's agriculture industry.

A major thrust of the project will be to determine the feasibility of developing a statewide system of off-stream reservoirs and ponds that would capture winter rainfall which farmers could tap into during dry summer months.

Another aspect of the study will focus on Alabama's water-use policies and how they could be revised to encourage irrigation. Currently,

Alabama adheres to the riparian rights water-use doctrine, which states that only the landowner adjacent to a stream has the right to the water in that stream.

Still other scientists in the study will look at the potential economic impact that increased irrigation would have on Alabama agriculture and the state as a whole.

Joining AU in the federally funded study are the University of Alabama in Huntsville, UA-Tuscaloosa, Alabama A&M and Tuskegee University. ♦

Fire ants: farmers' friends and foes

Like homeowners, most farmers would love to see fire ants disappear. Large fire ant mounds can severely damage farm equipment and attack farm workers, crop scouts and livestock.

But for some farmers—specifically, cotton producers—fire ants can actually be beneficial, because they prey on insects such as caterpillars that can devastate crops.

In fact, research by AAES entomologist Micky Eubanks of AU shows that fire ants in cotton fields can increase yields by as much as 15 percent, due to reduced pressures from crop-decimating pests.

The same isn't true for all crops, however. Take tomatoes, for instance. Eubanks' research indicates fire ant infestations in or near tomato fields create big problems.

Here's why. Fire ants thrive on honeydew, a sticky, sweet sub-



Fire ants devour a cotton-destroying bollworm caterpillar.

stance that aphids—notorious transmitters of tomato-killing viruses—secrete onto tomato plants. So, instead of attacking aphids, fire ants actually protect them against other insects. As a result, aphid populations—and, subsequently, disease outbreaks—skyrocket.

Farmers can use this information to determine whether they should invest in fire ant control measures or not. ♦

B6—the making of a vitamin

An AAES scientist has identified two genes crucial to a plant's ability to manufacture vitamin B6.

That discovery by AU molecular biologist Robert Locy will contribute to the breeding of hardier, more nutritious food crops.

B6 performs a wide variety of functions in your body and is essential for your good health. For example, vitamin B6 is needed for the metabolism of protein and red blood cells and for the efficient functioning of your nervous and immune systems, where it is known to function as a powerful antioxidant. Only plants, fungi and bacteria can manufacture B6; humans and most animals have to get it through their diets.

Now that these two genes essential to the plant's B6-manufacturing processes have been identified, scientists should be able to manipulate them to increase the concentration of the most active form of the vitamin in plants, resulting in more nutritious foods.

There is evidence, too, that overexpressing these genes will create plants that are more tolerant to drought, heat and other environmental stressors. ♦

AAES-DEVELOPED LURE NAMED AN ALL-TIME BEST

Biodegradable fishing lures that three AAES scientists at AU developed have only been on the market three years, but they've already been dubbed one of the 50 all-time best lures by *Field & Stream* magazine.

The magazine says the all-natural lures, manufactured and marketed as FoodSource Lures by a Birmingham-based company, "are environmentally friendly—and they catch fish."

Credited with developing the lures are AU food scientists Jean Weese and Leonard Bell and fisheries associate professor Russell Wright. ♦

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.

SEEKING TO SAVE AN ENDANGERED FLOWER

In 1980, a Vanderbilt University botanist collecting plant specimens along the Alabama roadsides stumbled across a mass of blue-violet, bell-shaped flowers in St. Clair County like none he'd ever seen before. It turned out to be a previously undiscovered species which the botanist named *Clematis socialis*, or the Alabama leather flower as it's now commonly known.

This beautiful native plant is only found at a few sites—four in St. Clair and Cherokee counties in northeast Alabama and one in Floyd County in northwest Georgia. It has been on the federal endangered species list since 1986.

But now, a team of AAES horticulture researchers is working to eventually get the flower off that list and give Alabama gardeners the opportunity to experience the plant's attractive flowers and foliage and its spreading growth habit right in their own backyards.

AU horticulture professor Joe Eakes and research assistants Laura Bruner and Connie Johnson are investigating how to best propagate the flower from stem cuttings.



Alabama leather flower

They're currently looking at the rooting performance of Alabama leather flower stem cuttings in a variety of planting media and have found the most effective and cost-efficient medium to be sand.

Data on the successful rooting of the flower's stem cuttings could be beneficial in establishing self-sustaining populations, in providing genetic material for future hybridization and in potentially introducing a new flowering groundcover to the nursery industry. ♦

Vaccines and the fight against catfish disease

Fish diseases long have been the major economic bane of U.S. catfish producers, with two illnesses—enteric septicemia and columnaris—causing problems on 65 percent of catfish farms and costing the industry up to \$70 million annually.

That cost should begin to decline dramatically, however, now that vaccines against the two diseases are available. In a team effort, USDA researchers in Auburn developed the vaccines while AAES scientists at AU are working to integrate the vaccine into farm management protocols and assessing economic impacts.

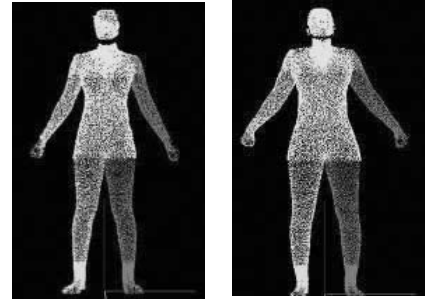
These vaccines, which are administered by bath immersion to large numbers of young fish (fry) at a time, appear to provide life-long protection. That significantly



reduces producers' need for antibiotics, thus cutting their production costs and alleviating concerns about environmental contamination.

Currently, about 25 percent of the 1 billion fry produced annually in the U.S. are vaccinated with one or both of the vaccines. At 100 percent, the economic benefit of the vaccines would be an estimated \$50 million a year.

Meanwhile, AU fish geneticist John Liu works to map the catfish genome, with the goal of one day being able to selectively breed fish that are naturally disease resistant. ♦



Body scans of a preteen, left, and her mother

Scanning bodies for clothes that fit

Attempting to find clothes that fit and flatter makes shopping a highly frustrating experience for most American women. That's because clothes today are sized inconsistently and are mass-produced based on outdated measurements and body-shape standards that were formulated 60 years ago from a small sampling of women in the military.

But a major revolution in the apparel industry is taking place, reshaping how the fashion industry measures bodies and develops clothing patterns, and AAES apparel product development specialists Lenda Jo Connell, Pamela Ulrich and Karla Simmons at AU have been at the forefront of the change.

At the heart of the revolution is body scanning, a digital imaging process that generates 3-D images detailing an individual's precise measurements and proportions. Auburn is one of only a handful of universities with a body scanner for use in research in this area.

Using AU-developed statistical-analysis computer software and body scans from hundreds of women—and, more recently, “tween” girls—Connell and colleagues are providing the apparel industry with new data that should help bridge the gap between what it produces and the fit and styling customers actually want. ♦

Information contained herein is available to all persons without regard to race, religion, gender or national origin.