IMPACT

RESEARCH NEWS FROM THE ALABAMA AGRICULTURAL EXPERIMENT STATION

June 2004 *vol. 2, no. 3*

Taking the initiatives

Alabama lawmakers' decision last month to fund two major agricultural research initiatives important to the state represents a solid investment that will generate strong returns in terms of new jobs, invigorated economies and improved quality of life for rural Alabamians.

"We're extremely grateful to our legislators for supporting these projects and for sharing our vision of agriculture as a key to Alabama's economic growth," John Jensen, interim AAES director, says.

Teams of AAES researchers, Alabama Cooperative Extension System (ACES) specialists and others are finalizing plans to launch the two funded projects—one based at the Black Belt Research and Extension Center (REC) in Marion Junction and focusing on developing new aquaculture and business opportunities in west Alabama, the other at the Sand Mountain REC in Crossville with the goal of finding ways to convert poultry waste into new products and more jobs.

The AAESand ACES continue, too, to develop economically stimulating research priorities for its Tennessee Valley, Gulf Coast, Wiregrass and Chilton RECs. ◆

Getting the ROPS just right

Operators of hydraulic excavator–based timber harvesting machinery soon will have significantly more protection against injury and death in the event of rollovers, thanks in large part to AAES biosystems engineering researchers at AU.

Safety standards will help protect timber harvesters in rollovers.

Heavy-equipment manufacturers worldwide recognize the dire need for international rollover protective structures (ROPS)safety standards for excavators, but they haven't been able to agree on the specific levels of dynamic forces and energy absorption values the ROPS should be designed to withstand.

Enter AU biosystems engineers—primarily, graduate student Matt Veal—who developed sophisticated computer simulation models that predict these forces and energy values in dozens of scenarios involving excavators of a wide range of sizes.

The models will give design engineers a formula where, by plugging in the excavator size, they can calculate exactly how strong and how flexible the ROPS should be.

Incidentally, gathering the volume of data the computer models provide by actual physical testing would have required rolling over and destroying more than 200 $150,000 excavators. ◆

Presenting THE VIRTUAL CHICKEN

Coming soon, to a computer near you: The Virtual Chicken.

Specifically, it will be a 3-D animated interactive DVD of the reproductive tract of a chicken, an educational product that will put you—virtually speaking—inside that tract to see, among other things, how an egg forms.

The Virtual Chicken is the brainchild of AU poultry scientist Pat Curtis, whose research focuses on poultry and egg product safety and quality. She's working closely with AU info tech specialists, who are actually designing the program according to her specifications.

A USDA grant designed to link research with education is funding this phase of the project. Curtis is working to obtain more funding to complete the whole chicken. ◆

AU food scientist Jean Weese shows off biodegradable artificial fishing lures.

A WHOLE NEW BUCKET OF WORMS

A feature article in the March *Field & Stream* magazine has fueled fishing enthusiasts' interest in a hot new artificial lure that AAES food science and fisheries researchers at Auburn University worked two-plus years to develop and test.

FoodSource™ Lures, introduced last summer at a Vegas sportfishing convention, are 100 percent protein- and nutrient-rich fish food and are completely biodegradable. Left in water, they dissolve in three weeks.

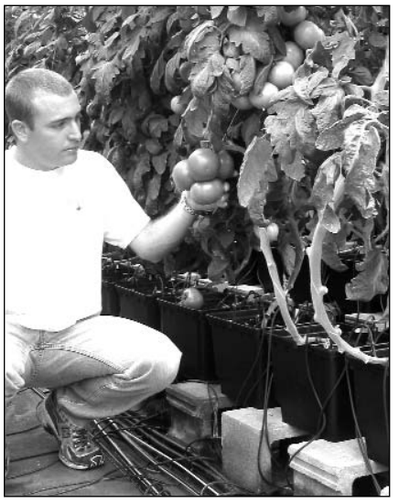
They also contain powerful fish-attracting scents like garlic, crawfish and earthworm. FoodSource Corp, the Birmingham-based firm marketing the bait, says that makes them "the lures fish LOVE to eat."

AU food scientists Jean Weese and Leonard Bell developed the "recipe" for the biodegradable lures, and Russell Wright, AU fisheries professor, handled all field testing. Market analysis was conducted by AU business faculty.

Continuing research indicates the FoodSource material could be used for other products, the most promising of which probably is feed for farm-raised fish.

FoodSource Lures are available online (www.fslures.com), but the company says it will soon have them on shelves wherever fishing lures are sold. ◆

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). Reach **IMPACT** at 334-844-2783; jcreamer@auburn.edu.



WASTE NOT: Brian Jackson, a horticulture graduate student at AU, checks the plump, juicy greenhouse tomatoes he's growing in a medium that's a mixture of pine bark mulch and cotton gin waste. His work is part of a study Auburn horticulture professor Jeff Sibley is leading to determine whether cotton gin trash and other agricultural wastes, namely poultry litter and composted dairy manure, can be used in greenhouse production of tomatoes and various shrubs and plants. In a related study, Sibley is evaluating the use of composted municipal garbage in the production of bedding plants.

BIOTECH & WORLD HUNGER

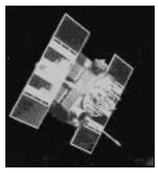
An AU ag economist internationally recognized for his research on the economic and environmental impacts of genetically altered crops has contributed a chapter to a new U.N. Food and Agriculture Organization report, "Agricultural Biotechnology: Meeting the Needs of the Poor?"

Greg Traxler's chapter, one of nine in the 208-page publication, supports the report's conclusion that biotechnology can be an invaluable tool in the war on world hunger, but not until corporations controlling the genetically modified food industry focus on improving the food crops poor countries grow. ◆

Farming with PRECISION

Precision agriculture is a new approach to farming that links space-age technology with down-to-earth farm management practices.

Using global positioning system (GPS) satellite signals, geographic information system (GIS) software and sensors installed on farm machinery, producers gain detailed information about how soil fertility, terrain, moisture levels, weed populations, crop yields and other conditions vary within a given field. That information helps them know precisely when and where to apply fertilizer, pesticides, water and other inputs.



GPS satellites orbiting earth send signals farmers pick up with tractor-mounted sensors.

Precision agriculture helps producers maximize efficiency and profits and reduce environmental pressures. But switching from conventional farming to precision ag requires substantial capital outlay.

For farmers in Alabama and the Southeast, is investing in the expensive technology cost-effective?

That's one of the key questions AAES and USDA researchers aim to answer in a 20-acre long-term field-scale study under way at the the AAES's E.V. Smith Research and Extension Center in Shorter.

"Farmers here are going to have to adopt some of this technology to remain competitive," AU soil scientist and principal investigator Joey Shaw says. "This is an objective evaluation of the technologies to show which are the best investment, which will pay in the long run."

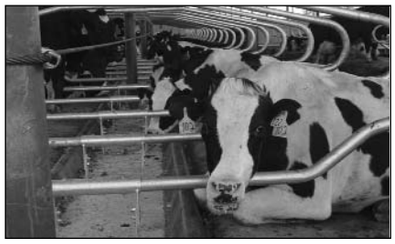
In the comprehensive study, the researchers are using precision technology to evaluate how different cropping systems and tillage practices interact with landscape and soil variability to impact crop productivity and soil quality. ◆

Lime for udder health

One of the biggest headaches dairy farmers face is mastitis. Mastitis, an inflammation of cows' udders, costs U.S. milk producers an estimated $1.4 billion a year in terms of lost milk production, discarded milk, vet and medication bills and culled cows.

Numerous bacteria—which, by the nature of the business, are present in even the cleanest of dairy barns—can cause mastitis. And while the condition usually can be treated with antibiotics, the use of antibiotics in food animals has become a hotly debated issue.

The key, obviously, is prevention and control, and AAES researcher and AU animal scientist Tom McCaskey has launched a study that could provide dairy farmers with a highly economical, all-natural mastitis-preventing tool: hydrated lime.



An AAES study will determine whether applying lime to dairy cows' "mattress pads" is effective in preventing mastitis.

Previous AU research with beef cattle has shown that lime kills bacteria in manure. This study will determine whether applying hydrated lime in dry powder form on the "mattress pads" where dairy cows rest will help keep the animals mastitis-free. ◆

Agricultural Communications & Marketing
Alabama Agricultural Experiment Station
2 Comer Hall
Auburn University AL 36849