
AAES Impact

RESEARCH NEWS FROM THE ALABAMA AGRICULTURAL EXPERIMENT STATION

Winter 2009

vol. 7, no. 4

Study targets two threats to Alabama's ecosystems and economy

A team of Auburn University scientists led by College of Agriculture agronomist and invasive plant specialist Stephen Enloe has been awarded a \$490,000 grant from the National Institute of Food and Agriculture to investigate possible links between two biological phenomena that are threatening Alabama ecologically as well as economically.

Working with Auburn forest ecologist Nancy Loewenstein, forest pathologist/entomologist Lori Eckhardt and entomologist David Held, Enloe will determine whether the spread of cogongrass—ranked as the seventh worst weed in the world and known as “the mother of all invasive species”—through Alabama is contributing to an increased incidence of pine decline,



SAMPLING TROUBLE—Stephen Enloe, standing, right, and crew sample a plot of cogongrass in Mobile County. The wicked weed spreads quickly, by seed and by rhizome.

a syndrome that is jeopardizing the health and survivability of loblolly pine plantations statewide.

Cogongrass is an aggressive, highly flammable, nonnative grass that invades forests and other uncultivated areas such as pastures and

rights of way and quickly forms dense, thick layers of thatch that choke out native plants and that potentially alter insect diversity.

In the NIFA-funded project, the Auburn researchers will evaluate the impact that cogongrass invasions as well as the strategies that are being used to manage the invasive weed have on insect communities in pine ecosystems in Alabama and the Southeast, particularly in terms of insects that transmit the pathogenic fungi found in the roots of trees showing pine decline symptoms.

The study's findings will give forest landowners and managers science-based cogongrass-control recommendations that can help them improve the health and productivity of their timber stands. ♦



BIG-BUCKS BIRD—Read the full quail-hunting survey analysis at www.ag.auburn.edu/agec/pubs/HuntingManuscript.pdf.

Quail hunting sparks spending in state

They may be small, but bobwhite quail—specifically, the hunting of them—pumped \$40.2 million into the state's coffers in the 2007-08 quail season, says Auburn/AAES ag economist John Adrian.

That's one of his findings in a survey he conducted during that season to determine the characteristics of quail hunters and the sport's economic impact in Alabama. His survey also showed that:

- Land-management costs accounted for \$18.4 million of the \$40.2 million and another \$5.48 million was spent on hunting dogs;

- 13,452 folks hunted quail in Alabama that season, and of those,

85 percent were Alabama residents, 57 percent were in the 45 to 65 age range, 85 percent were employed and almost 52 percent had household incomes of at least \$120,000;

- 32 percent of the quail-hunting outings included travel to lodges or other hunting facilities that provide services for hunters, while 68 percent were hunt-on-your-own or independent hunting experiences with no services provided;

- Pen-raised quail accounted for 96.75 percent of quail harvested in the 2007-08 hunting season.

A similar survey is going on this quail season, which ends Feb. 28. ♦

AAES scientist, collaborator develop medication-release method

Auburn animal sciences professor and molecular biologist Jacek Wower has teamed with Auburn chemical engineer Mark Byrne to develop a drug-delivery method that can control when, where, how much and how fast multiple medications are released into a person's bloodstream.

The discovery should lead to tailor-made treatments, especially for patients with cancer and viral infections, that take into account each person's response to disease and medications. It also should mean fewer side effects from multiple drugs.

As an AAES scientist, Wower uses his expertise in the structure

and function of RNA molecules to help resolve critical health and reproduction issues in farm animals. He currently is working on innovative ways to stop the spread of disease among animals by inhibiting specific parts of cells that invading organisms need in order to reproduce in the host animal. ♦

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

Poultry plant surveys, audits point to rampant waste of water

All combined, the 19 poultry processing plants located in Alabama use an estimated 9 billion gallons of water a year in the process of processing birds.

But a just-completed study at Auburn University indicates those companies could cut their water usage by up to half just by enforcing basic, common-sense conservation practices—turning water off when it isn't being used, for instance—in their plants.

In addition to slashing their water and sewer bills, processors would be conserving a valuable natural resource—one that's often in short supply in rural water systems during summertime droughts—and they'd be discharging far less potentially pollutant-filled wastewater.

Auburn poultry science professor Pat Curtis led the two-year study and in year one assessed the situation in Alabama via written surveys in which broiler processors provided detailed information about water use and wastewater discharge at their plants.

Water use by the processing industry in Alabama and nation-



WHAT A WASTE—Water sprays from nozzles on a poultry processing plant's picker even when no birds—or employees—are anywhere near.

wide rose sharply in 1998 when the federal government tightened its food-safety regulations for poultry. In an effort to comply, processors increased the washing time for poultry carcasses. According to the Auburn survey, Alabama processors currently average using 6.7 gallons of water per bird.

In the second phase of the study, Curtis and team conducted in-plant water-use audits at three

poultry processors in the state to detect waste and suggest solutions.

By far, the most common problem cited was constantly running water, water that employees didn't turn off even when the processing line was idle, including during breaks and lunch. In one situation, water sprayed nonstop from 252 nozzles on six idle feather-picking machines, representing an estimated 4.7 million gallons—with a price tag of \$8,300—annually.

The auditing team's top two water-saving and wastewater-discharge-reducing recommendations to the processors were to closely monitor water use at equipment stations on the processing line and to use dry cleanup on solid wastes instead of washing them down the drain.

Since the audits were conducted, one of the three audited processing plants has closed due to the economy, but the other two companies have made changes based on Curtis' recommendations.

The survey and audit results will be the basis for developing water-saving strategies for all poultry processing plants, Curtis says. ♦

Scientists put 'green' concrete to the test

A year-long stormwater-quality-improvement research project that began in early spring and is now winding down at the Donald E. Davis Arboretum in Auburn could pave the way to "greener" parking lots.

Auburn University biosystems engineering, building science and landscape architecture faculty are collaborating on the study to determine how effectively pervious, or porous, concrete captures and purifies stormwater runoff. Pervious concrete permeability is similar to that of well-drained soil

Biosystems engineer and AAES researcher Mark Dougherty has led

the water-monitoring aspect of the study. Using an infiltrometer testing device he designed and built, he has tested surface and subsurface water from both the pervious concrete parking lot and an older asphalt lot adjacent to it at least twice a month following heavy rains.

Though official study results won't be reported until the scientists have fully analyzed the data, preliminary findings indicate that the number and levels of contaminants—including oil and grease—in stormwater that leaches through pervious concrete are significantly lower than in runoff from asphalt surfaces. ♦



PAVING THE WAY—Auburn building science and biosystem engineering students smooth freshly poured pervious concrete in the arboretum parking lot in April.

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