AAES **Impact**

RESEARCH NEWS FROM THE ALABAMA AGRICULTURAL EXPERIMENT STATION

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Study aims to make blueberries profitable

What do you get when you cross a Southern highbush blueberry with a sparkleberry? That's what Jay Spiers of Auburn's horticulture department and fellow scientists at the University of Florida and Oregon State University will determine in a project aimed at bringing down the high costs of Southern highbush production.

SWEET—A new hybridcould mean May blueberries.

Southern highbush is a relative newcomer to commercial blueberry plantings which, in Alabama, are mostly rabbiteye blueberries. The beauty of Southern highbush, though, is that its berries are ready to harvest in early May, a good month before the widely grown rabbiteyes start ripening. That jump on the market can translate into premium prices.

However, establishing and maintaining a Southern highbush blueberry orchard can run as much as $20,000 per acre, nearly double that for rabbiteyes. Soil amendments account for much of the higher cost, as highbushes demand soils that are more acidic (pH 4.0-5.5) and higher in organic matter than rabbiteyes. The highbush is also multi-trunked, which means it has to be hand-picked, not machine harvested.

Here's where the sparkleberry comes in. It is a wild blueberry that grows well in nonamended soils, is drought-resistant and has a single trunk. Spiers and cohorts intend to breed and graft those desirable traits into the Southern highbush so it will be more tolerant of soil conditions and have a tree-like growth suited to mechanical harvesting.

Spiers' role in the study is to collect and germinate sparkleberry seeds from across the state and plant the bushes at the Alabama Ag Experiment Station's Wiregrass Research and Extension Center in Headland to observe growth habits and select candidate rootstocks. Using the rootstocks, Florida scientists will concentrate on breeding highbush/sparkleberry hybrids and Oregon researchers on grafting.

In 2011, the hybrids and the grafted plants will be planted in a research/demonstration plot at the Gulf Coast REC in Fairhope and evaluated for soil adaptation, mechanical harvest potential and fruit yield/quantity. ◆

TREED—This lovely crapemyrtle is one of the Auburn campus's 7,000-plus trees, all of which have been inventoried as part of a U.S. Forest Service–funded study to determine whether a computer program developed to analyze the environmental impacts and dollar values of urban forests in the Northeast proves accurate in Southeastern states as well. The USFS will use Auburn's data to adapt the program to urban forests in the Southeast, giving cities and schools in the region a free tool for assessing and enhancing their urban forests. Auburn forestry professor Art Chappelka, AAES researcher and study leader, says the program calculated the value of Auburn's tree inventory at $10 million. Auburn is a Tree Campus USA.

BUG CHECK—Auburn researcher David Held, left, and graduate research assistant Ray Young check an insect trap on a cherry tree at their phenology garden in Auburn.

Plant phenology aids in pest control

Within the next couple of years, Auburn entomologist David Held will offer Alabama nursery and landscape professionals a new tool that can help them control pests more efficiently and effectively. The tool: a phenology calendar.

Phenology is the study of the climate's effects on the annual life cycles of plants and animals—insects included. In five phenology research gardens across the state, Held is monitoring the leafing, flowering and other developmental stages of 13 "indicator" plants, flowers and trees that span the growing season and correlating those phases with the developmental stages of 10 common landscape and nursery insect pests.

Using the phenology calendar Held develops instead of the 12-month calendar, green industry professionals will know when to scout for specific insects based on plant activitiy and can time pesticides more accurately and at insects' most vulnerable stages.

Follow the study online at auburn.edu/phenology. ◆

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.

What's all this about poultry litter?

Software could aid litter management

An Auburn biosystems engineer has developed a Web-based computer software program that could lead to cleaner water in Alabama's top poultry-producing region and greener pastures in the Black Belt.

Associate professor Puneet Srivastava's user-friendly Poultry Litter Decision Support System would help poultry farmers avoid applying too much nutrient-rich chicken litter to their pastures and crops and get word to farmers and livestock producers in areas of the state with nutrient-deficient soils that they had surplus litter for sale.

That could have a major environmental impact in Alabama's hilly and poultry-intense Sand Mountain region, where for decades, the availability, low cost and high nutrient content of poultry litter have made it the fertilizer of choice for area crop and livestock producers. But such use has led to nutrient overload in soils, and those surplus nutrients, such as phosphorous, are showing up in nearby rivers and streams.

Using Srivastava's free, easy-to-access software, poultry farmers could develop customized comprehensive nutrient-management plans to balance their crops' needs with their use of litter and other fertilizers to maximize their yields and minimize impact on water quality. And the program's online bulletin board would create a cyber marketplace that could pave the way for excess litter from Alabama's leading poultry-producing areas to wind up fertilizing pastures and enriching farmland elsewhere in the state.

The provisionally patented software prototype won't be available to farmers until a public- or private-sector entity moves it to the mainstream. ◆

SPREADING LITTER—Every year, the billion-plus broilers produced in Alabama leave about 1.7 million tons of soil-enriching litter in their wake. Almost all of that litter is used to fertilize pastures and row crops.

High-tech tools spread litter with precision

Farmers who fertilize their fields with chicken litter can distribute it more uniformly and reduce overlap applications as much as 20 to 30 percent using precision agriculture technologies, a team of Alabama Ag Experiment Station researchers has found.

Poultry litter is inherently variable in physical and chemical characteristics such as density and moisture content, but the litter spreaders most farmers currently use apply litter at one set rate, regardless of how heavy or light it is. The single setup can affect how accurately and how evenly litter is delivered.

In the Auburn study, led by biosystems engineering's John Fulton, when an in-cab control that electronically adjusted the speed of the spreader's spinner discs responsible for spreading the litter was used, litter could be 17 percent more uniformly distributed over a field than with the traditional litter spreader.

The integration of a GPS receiver into the control to add guidance-system and section-control technologies could result in the 20 to 30 percent reduction in overapplication.

In addition to saving farmers money and time and increasing their yield potentials, the high-tech tools can help them guard against applying excessive, potentially water-polluting nutrients to the soil, lessening farming's environmental impact.

Farmers can use the findings when considering the pros and cons of purchasing precision-ag technologies, Fulton says. ◆

Researcher seeks new uses for juvenile pines

Two projects aimed at adding value to those small-diameter and juvenile Southern pines the timber industry now deems worthless are under way at Auburn. Brian Via, assistant professor of forestry and specialist in wood composite products, heads both studies.

In one, his objective is to convert juvenile pines into a bio-oil that could replace petroleum-based wax and resins in bonding solid- and composite-wood products. Besides its environmental and economical advantages, bio-oil would boost composites' moisture resistance.

In study two, funded by an Alabama Ag Experiment Station grant, Via is developing a rapid system to scan composite flakes milled from juvenile pines and sort out the strongest and stiffest flakes to apply to the surfaces of juvenile-wood composites manufactured in the South. He predicts the high-strength flakes will yield stronger, more lightweight wood composites that will be more competitive with hardwood-flake composites Northern states produce. ◆

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