AAES **Impact**

RESEARCH NEWS FROM THE ALABAMA AGRICULTURAL EXPERIMENT STATION

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RAISING THEM ON PASTURE—Before they stopped to pose for the camera, the cow on the left was grazing on oats, and the two across the fence, on ryegrass. In test cattle at the Alabama Ag Experiment Station's Wiregrass and Black Belt research and extension centers and E.V. Smith Research Center, scientists are studying the effects of different warm- and cool-season forages on the animals and the meat. If the 500,000 Alabama cows now being shipped to feedlots were kept here in pasture-raised systems, it could generate as much as $93 million for Alabama cattle producers.

Grass may be greener on forage-finished-beef side of the fence

When Auburn University meat scientist Chris Kerth expanded his research program into the area of grass-fed beef six or so years ago, most Alabama cattle producers weren't all that interested in it.

They were making a living doing business the way they had for years: shipping feeder calves to Midwestern feedlots to be fattened on grain and then slaughtered.

But today, some are taking a second look at pasture-raised beef and Kerth's research. High prices on fuel to haul cattle from Alabama to Kansas and soaring costs for feed grains to fatten them at the feedlots have taken a big bite out of farm income and made it more profitable, especially for small to midsized operations, to keep cattle on the farm, let them graze their way to market weight and have them processed and marketed locally to consumers.

Kerth's early work found that half of all Alabamians preferred the taste of grass-fed beef over grain-fed and said they would pay significantly more for the former. He also identified small packing plants statewide that would be willing to process the local beef.

Now the research is focusing on production, specifically how different forage systems affect cattle performance, meat quality and taste and the nutrient content of the beef. ◆

Research helps Milo's market used tea leaves

The December 2007 issue of *Impact* included an article about a Milo's Tea–funded study that Auburn horticulturists Jeff Sibley and Daniel Wells were conducting. Their mission: to determine whether the 15 tons of spent tea leaves the Bessemer-based company pays to dispose of each week could be put to use, perhaps in the nursery business.

The AAES scientists found that, when mixed with pine bark, the tea leaves make for an outstanding planting medium for container-grown ornamentals.

Milo's shared the findings with Scotts Miracle-Gro and in June began shipping tea leaves to Scotts' Vance plant. Scotts is conducting its required tests and says Milo's tea leaves should be part of the Miracle-Gro mix soon. ◆

Biofuel by-product shows promise on crops

Record-high prices for petroleum-based diesel have fueled an explosion of growth in the biodiesel industry. As of January, 171 biodiesel plants in the U.S. had the capacity to produce 2.24 billion gallons annually, and estimates are capacity will increase to 3.47 billion gallons by year's end.

But increased production of this clean-burning diesel-fuel replacement that's made from natural oils and fats has flooded the market with crude glycerin, the main by-product of biodiesel production.

In the past, biodiesel plants have been able to sell the glycerin for profit, but the surplus now has some plants paying to dispose of it.

Finding profitable, value-added uses for crude glycerin has grabbed the attention of scientists worldwide, including AAES scientist Rod Rodriguez-Kabana at Auburn.

Kabana is a nemotologist who long has worked to develop alternatives to methyl bromide, a now-banned fumigant growers relied on for years to control soilborne pests, such as nematodes, and diseases.

Now, he and co-investigators may have found a highly effective alternative, in the form of crude glycerin. Using crude glycerin both alone and blended with commercial fertilizers, he has developed formulations that, when injected into the soil at varying rates, perform extremely well in controlling weeds and crop-destroying nematodes.

Because crude glycerin is considered a natural substance, Kabana says it could be used in organic farm production. He also expects that some of the crude-glycerin formulations will be on the market within three to five years—a very short time compared to the time it takes a non-organic pesticidal compound to get registered. ◆

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.ag.auburn.edu/aaes/) is based at Auburn University (www.auburn.edu). Contact **IMPACT** at 334-844-2783 or jcreamer@auburn.edu.

COCKROACH KILL—Left, AU entomology graduate student Alicia Phillips applies drops of trans-cinnamaldehyde, a component of cinnamon oil, on six German cockroaches she briefly anesthetized with carbon dioxide. She places them into a plastic cup with lid and places the cup alongside two long rows of cups that are grouped according to dosages. Right photo, every hour for eight hours, and then again at 24 hours, she checks each cup to record mortality. The data measure how long a component takes to kill and at what dose.

Aromatic oils kill filthy cockroaches

An AAES-funded study headed by AU entomologist Art Appel could one day give humans highly effective weapons against the lowly, filthy, seemingly invincible German cockroach.

At the heart of the project are essential oils—the oils that carry the distinctive aromas of plants—or, actually, components of those oils, such as carvacol, which is present in the thyme oil that's extracted from thyme plants.

Appel and team are evaluating how effective a dozen different components are at killing and/or repelling cockroaches and then ranking them accordingly. Soon, they will rate the substances' effectiveness as fumigants.

Such research should yield commercial German-cockroach-killing products in the relatively near future. And since the essential oil components included in the study are non-toxic to humans and pets, these insecticides could be applied in sensitive areas, namely, kitchens.

But German cockroaches aren't the study's only targets. Up next: developing essential oils to control the fierce fire ant. ◆

Setting bass free at one site yields 'skinny' fish

Lake Martin has just one major boat ramp, at Wind Creek State Park, and it's from there that all boats, be that 25 or 125, that participate in the 50 to 75 bass tournaments held on the lake each year launch and then return for weigh-ins.

It's also where all contestants set free their day's catch: 10,000 bass a year, released at one site, miles from where they were captured.

Not a good practice, says Mike Maceina, sportfish management authority in Auburn's fisheries department. His research has shown that overcrowding and competition for food at the release site and long migrations away from the site make the fish "skinny," meaning fewer trophy bass to fish for.

Use of a live-release trailer that redistributes tourney bass to different locations around the lake is one solution, Maceina says. ◆

Excess Sand Mountain poultry litter to make Black Belt soil fertile

Chicken litter is a top-notch, low-cost fertilizer that for years, in heavy poultry-producing parts of the state, has been applied over pastureland and forage crops in order to enrich the soil with nitrogen, phosphorus, potassium and other key nutrients litter contains.

But on Sand Mountain, where poultry farming is big, the volume of litter produced can surpass local farms' needs. Hauling loads of litter to farms farther away, however, is cost-prohibitive. Thus, repeated applications to Sand Mountain fields and pastures over the years have led to phosphorus buildup that can be carried by runoff into rivers and streams, possibly creating water-quality issues that threaten the future of poultry industry there.

Meanwhile, in the Black Belt, the problem is the direct opposite. Lack of nutrients in soil and poor soil fertility in pastures, hayfields and cropland are key causes of the region's depressed farm economy. If only Black Belt farmers had Sand Mountain's surplus chicken litter.

Using a systems approach, an AAES research team that includes AU biosystems engineers, agronomists, animal scientists and entomologists is on the verge of making that happen.

They have devised a way, using slightly adapted existing farm equipment, to densify poultry litter into bales that double the volume of litter a truck can haul. They also have developed guidelines for transporting and storing the densified litter; a GPS-based transportation analysis system to connect the haves with the have-nots; and strategies for optimal on-farm use of poultry litter. Field days will be conducted soon to share the findings with producers. ◆

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