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## Farm, forest products as biofuels

Thursday, August 6, 2009

By Bruce Schultz

The potential and problems of converting forest and agricultural products into biofuels was the focus of the third Louisiana Natural Resources Symposium held this summer.

Mike Salassi, LSU AgCenter economist, said biodiesel production is expected to increase substantially during the next two years. Converting biomass to energy has the potential to offset petroleum use in the United States by 20 percent, he said.

Salassi said Exxon-Mobil recently has decided to invest heavily in making fuel from algae because it can be grown on a large scale to provide adequate feedstock.

Waste products from the forestry industry also have potential for being converted into fuel, said Richard Vlosky, director of the Louisiana Forest Products Development Center in the LSU AgCenter. Vlosky said Louisiana and the rest of the South have considerable potential for making fuels from wood biomass.

Chevron and Weyerhaeuser have formed a partnership to convert biomass into fuel. "I think we'll see some interesting developments within the year," Vlosky said.

Mark Zappi, dean of the College of Engineering at the University of Louisiana at Lafayette, said the biofuels industry has huge potential, but it has yet to overcome challenges in supply, infrastructure, storage and distribution.

"We're still a few breakthroughs from hitting a home run," Zappi said.

Converting biomass into energy can be done through three different cellululosic processes, but none can be done profitably on a large scale. Zappi said algae has the potential for providing much of the feedstock for biodiesel, but sewage sludge and sweet potatoes also could be used.

"There's a lot of good stuff we are throwing away that has a high Btu (British thermal unit) rating."

Biofuels will not completely offset U.S. dependence on petroleum, said Donal Day, a researcher with the LSU AgCenter's Audubon Sugar Institute.

"We can't replace oil with biofuels," Day said. "We can supplement the supply."

Rakesh Bajpai, a chemical engineering professor at the University of Louisiana at Lafayette, said algae has the annual potential to make 4,000 gallons of biofuel per acre using land unsuited for traditional agriculture.

The Chinese tallow tree, also known as a chicken tree, could be grown to produce even more biofuel per acre than soybeans, using land that is too salty, too wet or too infertile for other crops, said Gary Breitenbeck, a researcher in the LSU AgCenter's School of Plant, Environmental and Soil Sciences.

"We can get 1,000 gallons per acre without difficulty," Breitenbeck said.

The tallow tree has been grown in China for at least 1,500 years and was introduced into the United States as an ornamental plant. The Chinese have used it to make an artificial creamer and to make chocolate.

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"In the last few years, they realized the potential for biodiesel," Breitenbeck said.

A crop could be ready three years after planting to produce seeds that contain oil and tallow that can be used for fuel.

Breitenbeck said he has not been able to find any major pests of the tree, but the species has a wide genetic variation that results in many trees that produce few, if any, oil-bearing seeds. The researcher has been selecting trees in the wild that yield large amounts of seeds and then cloning those plants. The tallow tree naturally reproduces by cross pollination, resulting in diverse characteristics from tree to tree.

Breitenbeck is confident the species could be a moneymaker for Louisiana landowners. "The tallow tree has the potential to become our more energy-efficient and profitable oilseed crop."

More than 100 people — including land managers, foresters, landowners, entrepreneurs and researchers — attended the two-day event at the Lod Cook Conference Center on the LSU campus.

The symposium was sponsored by the LSU AgCenter, Southern Regional Extension Forestry, U.S. Department of Agriculture Forest Service, Louisiana Forestry Association and the Louisiana Society of American Foresters.

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