Local Feedstocks

Pilot Cellulosic Ethanol Plant Designed For Local Crops

A 30 to 50-liter capacity pilot cellulosic ethanol plant being built by the Clemson University Restoration Institute (CURI) in North Charleston, SC will focus on using locally-grown feedstocks such as switchgrass, sweet sorghum and pine.

The $800,000 pilot plant, to be completed this fall, is the first of a three-phase project that will eventually scale up to 3,000 liter capacity possibly by 2009.

The plant is designed to accept the following locally-grown feedstocks:

• Switchgrass containing C5 and C6 sugars.

• Sweet sorghum, which has been historically grown across the region as a feed crop for cattle, but has fallen out of use. The bagasse contains C12 sugar which would be converted to ethanol with a new cellulosic ethanol process being developed by Clemson University scientists.

• Coastal loblolly pine containing C5 and C6 sugars.

New Process

The new Clemson process utilizes a fungal system that eliminates the need to add enzymes.

The fungus expresses an enzyme that breaks down cellulose into sugars for conversion to ethanol.

Tom French, manager of bioenergy programs at Savannah River National Laboratory (SRNL), and one of the partners in the CURI project, said the process includes a pretreatment which is less energy intensive, reducing cost-per-gallon.

“We feel that optimizing the pretreatment, hydrolyses, and single-step fermentation, we’re going to have a very low energy, cost-effective process,” French said.

The pilot cellulosic ethanol plant project is the result of a partnership between three institutions and three private companies, according to CURI Director Karl Kelly (843-554-7226).

Commercial partners are Dyadic of Jupiter, FL, Fagen Inc., Granite Falls, MN, and Spinx, Greenville, SC.

Institutional partners include Savannah River National Laboratory (SRNL), and South Carolina State University.

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