New DOE Grant Expands East Tennessee Switchgrass Research To Almost 7000 Acres

Award Increases State's ROI To More Than $163.5 Million

KNOXVILLE, TENN.

The University of Tennessee Biofuels Initiative continues to be recognized as among the nation's leaders in the development of biofuels. On November 12, USDA and DOE announced a new round of $24 million in research grants, and the UT Biofuels Initiative is slated to receive some $2.35 million in funding to research and demonstrate various aspects of switchgrass production, harvesting and transportation logistics and ethanol yield for some 2000 acres of locally produced switchgrass.

Dr. Sam Jackson and Dr. Nicole Labbé, scientists with the UT Institute of Agriculture who specialize in bioenergy research, will lead the UT AgResearch efforts. Approximately 1000 acres of improved varieties of switchgrass will be planted and compared to 1000 acres of the current variety – acres that are already growing as part of the UTBI farmer incentive program funded by state dollars.

The state's cost match was required for the project to compete for the additional funding.

Three varieties of switchgrass will be compared on a variety of field plot sizes: the current Alamo variety, the Ceres EG 1101 improved Alamo variety, and the Ceres EG 1102 Kanlow variety. Ceres, a biotechnology company that is developing improved varieties of switchgrass seed, is named as a partner in the project as is Dupont Danisco Cellulosic Ethanol, (DDCE), which is working with the UT Research Foundation through Genera Energy LLC to construct a pilot-scale biorefinery and process development unit (PDU) in Vonore, Tennessee. The pilot refinery is scheduled to begin producing cellulosic ethanol in December.

The award ranks among the top third of the funded proposals and totals $2,345,290. It includes funds for producer incentives to grow the dedicated energy crop as well as funding for chemical and compositional analysis of the switchgrass and other project costs.

The demonstration will involve planting 1000 acres of the current, unimproved Alamo switchgrass variety, 800 acres of the Ceres EG 1101 improved Alamo variety, and 200 acres of the Ceres EG 1102 Kanlow variety. Jackson says the project will focus on comparing the large-scale production of the different varieties of the energy crop as well as analyzing the chemical and structural characteristics of the varieties, evaluating preprocessing techniques at Genera's facility in Vonore and converting the switchgrass into liquid fuel.

"The large acreages to be planted are needed not only for varietal growth comparisons but also for demonstration of the entire supply chain to local farm producers," Jackson said. "This project will demonstrate the practicality of producing improved varieties of dedicated energy crops while providing a hands-on opportunity for farmers to be engaged in the process and to have input into the various components of the supply chain."

The state initially invested $70 million in 2007 to establish the UTBI for the construction of a pilot-scale biorefinery as well as for farmer incentives to grow the new energy crop and for research to help develop a new farm-based bioenergy industry for Tennessee. Dr. Kelly Tiller, director of external operations for the UT Office of Bioenergy Programs and president and CEO of Genera Energy says this new DOE award brings the total return on the state's investment to more than 130 percent.

"Despite being only two-and-a-half-years into a five-year investment plan, the state's initial $70 million investment has already returned more than $163.5 million in new federal research dollars and industrial capital," Tiller said. She is referring to the $135 million DOE invested in the federal BioEnergy Science Center (BESC) in Oak Ridge; the more than $20 million DDCE is investing to partner in the biorefinery; $4.9 million from DOE for a biomass production and transportation project headed by Genera Energy; a $1.1 million grant from DOE for UTBI's participation in the C3Bio Project; and now $2.35 million in the new switchgrass production comparison project.

The UTBI is currently completing the harvest of some 2600 acres of locally grown switchgrass, and 3000 additional acres are planned for planting under the program in spring 2010. This new award will allow for additional farmer incentives to grow another 1,000 acres on top of the currently planned 6000 acres of the state-funded initiative. The UTBI estimates that Tennessee farmers could produce enough switchgrass by 2025 to produce more than a billion gallons of ethanol annually on some 1 million acres without displacing the production of food and fiber crops.

Clyde Thurman of Monroe County, Tenn., shows off his 76 acres of switchgrass. The field was planted in Spring 2008 and is in its second year of production. Thurman was among the original 16 farmers to grow switchgrass as part of the UTBI's first year of contracting with local farmers.

Round bales of harvested switchgrass dot this Tellico Plains, Tenn., farm. Methods and length of storage are among the issues that can potentially affect the crop's chemical and structural characteristics as it moves from the farm to the processing facility.

"This is only the beginning for the production of dedicated energy crops throughout the state, including switchgrass and other biomass," Tiller predicted. "The state is well positioned as a national leader in biobased energy research and development, and we are developing a complete farm to fuel model." Tiller further said, "We fully expect additional public and private capital will keep Tennessee a leader in the nation's new vital bioenergy industry."

In announcing the body of awards Energy Secretary Steven Chu said, "The selected projects will help make bioenergy production from renewable resources more efficient, cost-effective and sustainable." He also said the work will "benefit rural America by leading to new processing plants and new opportunities for U.S. farmers and foresters."

Agriculture Secretary Tom Vilsack declared, "Innovation is crucial to the advancement of alternative, renewable energy sources, and these awards will spur the research needed to make significant progress in bioenergy development."

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