

Ceres Sweet Sorghum Hybrids Processed by Amyris

Pilot project validates U.S.-produced sweet sorghum as a potential feedstock for advanced biofuels and bio-products.



THOUSAND OAKS, Calif., May 03, 2012 (BUSINESS WIRE) -- Conversion efficiency of sweet sorghum sugars were similar to sugarcane.

Energy crop company Ceres, Inc. **CERE -4.80%** today announced its improved sweet sorghum hybrids were successfully processed into renewable diesel by Amyris, Inc. **AMRS -6.36%** under a U.S. Department of Energy (DOE) grant. Amyris is expected to present a summary of the results this afternoon at the 34th Symposium on Biotechnology for Fuels and Chemicals in New Orleans, Louisiana.

The pilot-scale project evaluated both sugars and biomass from Ceres' sweet sorghum hybrids grown in Alabama, Florida, Hawaii, Louisiana and Tennessee. To process the sugars that accumulate in the plants, known as free or soluble sugars, the sorghum juice was first extracted from the stems and concentrated into sugar syrup by Ceres. The syrup was then processed by Amyris at its California pilot facility using its proprietary yeast fermentation system that converts plant sugars into its trademarked product, Biofene, a renewable hydrocarbon commonly known as farnesene, which can be readily processed into renewable fuels and chemicals.

The inedible plant fibers of the sweet sorghum, known as cellulosic biomass or bagasse, provided an additional source of what are called cellulosic sugars. The DOE's National Renewable Energy Laboratory (NREL), at its Colorado pilot-scale biochemical conversion facility, converted the biomass from Ceres' hybrids into cellulosic sugars, which Amyris subsequently fermented into renewable farnesene. The joint evaluation project was funded in part by a U.S. Department of Energy Integrated Biorefinery grant awarded to Amyris. The grant included a sub-contract award to Ceres.

"We believe that sweet sorghum could be an important and complementary source of fermentable sugars as the U.S. expands the production of renewable biofuels and biochemicals through the use of non-food crops outside of prime cropland," said Spencer Swayze, Ceres director of business development. He noted that the free sugars in sweet sorghum are readily accessible, and with new technology as demonstrated by NREL, larger quantities of low-cost sugars could be made available. "As an energy crop, sweet sorghum is an impressive producer of low-cost, fermentable sugars. A second stream of sugars from the biomass would be highly compelling," Swayze said.

"The results from these evaluations confirmed that the Amyris No Compromise renewable diesel production process performs well across different sugar sources. Ceres' sweet sorghum hybrids produced sugars that yielded comparable levels of farnesene as sugarcane and other sugar sources Amyris has utilized," said Todd Pray, Amyris director of product management. "Sweet sorghum can provide timely feedstock flexibility with environmental benefits. We look forward to utilizing Ceres' sweet sorghum in our commercial-scale production facilities," Pray concluded.

As a dedicated energy crop, sweet sorghum has a number of advantages. It is fast-growing and can efficiently produce both large amounts of fermentable sugars and biomass. The plants require substantially less fertilizer than sugarcane, and can be grown in drier areas since they utilize water more efficiently.

Ceres first commercialized its improved hybrids in Brazil this season. This spring, Ceres also introduced its first two hybrids to supply larger-scale evaluations in the United States. Ceres anticipates Florida and the Gulf Coast as well as California's Imperial Valley, Arizona and Hawaii could be markets for sweet sorghum production.

ABOUT CERES

Ceres, Inc. is an agricultural biotechnology company that markets seeds for energy crops used in the production of renewable transportation fuels, electricity and bio-based products. Ceres combines advanced plant breeding and biotechnology to develop products that can address the limitations of first-generation bioenergy feedstocks, increase biomass productivity, reduce crop inputs and improve cultivation on marginal land. Its development activities include sweet sorghum, high-biomass sorghum, switchgrass and miscanthus. Ceres markets its products under its Blade brand.