

Regional Feedstock Partnership Highlights—Energycane

Energycane and sugarcane are extremely close relatives. The energycane we have been working with in the DOE Regional Feedstock Partnership has been screened for delayed spring emergence and cold hardiness. Energycane is derived from crosses between domestic sugarcane and a cold-hardy relative of sugarcane called *Saccharum spontaneum*. These crosses were made by USDA-ARS scientists at the Houma Sugarcane Research Station. While the offspring gain cold hardiness from the *S. spontaneum* parent, they lose some of their sugar producing ability. As a result, most of the energycane is generally lower in sugar compared to sugarcane (10-11% for energycane vs. 12-14% for sugarcane).

Environments: Testing of energycane has been underway for four years at seven southern locations (Tifton and Athens, GA; Starkville and Raymond MS; St. Gabriel, LA; Beaumont and College Station, TX) and also at Waimanalo, HI. While it may seem that testing energycane in Hawai'i is like "bringing coal to Newcastle", the population has forced sugarcane production up the mountain sides, away from the coast, to cooler areas at higher altitudes.

Genetics: There are five types of energycane being tested for their yield potential at the various locations. Average yields during the first three years of establishment are 3 dry tons/acre/yr at the two northern locations (Athens, GA and Starkville, MS). Yields at Tifton, GA and Beaumont TX are roughly 5.5 dry tons/acre/yr, and 11 dry tons/acre/yr at St. Gabriel, LA (the only site actually in the sugarcane growing region).

Yield: After four years of monitoring, harvest data from all locations (other than St. Gabriel, LA) indicate that yields are still increasing. Yields more than doubled from Year 1 to Year 2, and doubled again from Year 2 to Year 3. Two of these locations (Starkville, MS and Athens, GA) are 300 miles north of the traditional sugarcane growing regions. While yields are lower at the northern sites, these locations serve to indicate the limitations of the material being tested. This testing has resulted in additional collaboration between USDA-ARS at Houma and the scientist at Starkville, MS. He was able to use a second DOE Funding Award (# DE-FG3606GO86025; SERC at Miss. State Univ.) to evaluate greater than 300 additional energycane progeny for their resistance to freezing.



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For more information visit <http://www.sungrant.org> or email sungrant@sdstate.edu