

Diverse Support Moves Biodiesel to the Energy Mainstream



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San Fernando

MSU biological engineer San Fernando, above, and entertainer Willie Nelson, opposite, share a passion for bringing biodiesel into the energy mainstream.



By Bob Ratliff

Country music legend Willie Nelson and biological engineer San Fernando have a lot in common.

The common link between the singer and the Mississippi State University professor is biodiesel, a fuel for diesel engines produced by blending petroleum diesel with refined vegetable oil. Nelson is promoting biodiesel

as an alternative to pure petroleum-based diesel and as a way to support U.S. farmers. Fernando is researching ways to make production of the fuel easier and more cost-effective.

Fernando, who has been a member of the MSU faculty since 2003, said there are good reasons for focusing energy research on diesel engines.

"When you look at the large energy picture, you have to be concerned with energy efficiency," he said. "The most energy-efficient engine in mass use right now is the diesel engine, and the best alternative fuel for that engine is biodiesel."

The biodiesel available at the pump for consumers is a blend of refined vegetable oil and petroleum diesel. The blend most often found at retail outlets is 20 percent biodiesel, referred to as B20.

Fernando added that it has been proven in Europe and now in the U.S. that biodiesel is a good alternative to pure petroleum diesel and is here to stay. Its advantages over pure petroleum diesel, he said, include significantly lower emissions.

"Biodiesel is meeting with success in the marketplace," he said. "In our research here at MSU we are looking for ways to improve it so that success will continue."

The research Fernando is conducting in the Department of Agricultural and Biological Engineering is focused on ways to streamline the production process for biodiesel and uses for the byproducts of the process. He is using soybean oil in his research because it is the raw material most readily available for biodiesel plants in Mississippi.

"Most of the biodiesel plants in Mississippi are using soybean oil right now," Fernando said. "That could change as more plants come online, because there might not be enough soybeans grown in the state to supply their needs if demand takes off."

Creating strong demand for soybeans and other U.S. farm products is one of the goals of Earth Biofuels, Inc. The

company sells the BioWillie brand of biodiesel fuel at about 20 locations, including one near Grenada, Miss. The company has other ties to Mississippi. Its board of directors includes Clarksdale businessman and attorney Bill Luckett and actor Morgan Freeman, who makes his home in Charleston.

"The demand for biodiesel is growing," Luckett said. "Truckers are helping the American farmer and reducing dependence on foreign oil by embracing BioWillie biodiesel."

The price, he said, is about the same as pure petroleum diesel and has even been selling for 3 to 4 cents a gallon less at some Texas BioWillie outlets this summer.

Earth Biofuels has manufacturing facilities in Meridian and Durant, Okla., and Luckett said the company plans to open other plants.

"We are studying development concepts for our facility in Greenville," he said. "We need to locate plants where raw materials are available, and soy oil is available in the Mississippi Delta."

Soybean producers stand to benefit from an upsurge in demand for soy oil by the biodiesel industry and are supporting efforts to increase acceptance of biodiesel by a variety of customers.

Farmers have been the biggest users of biodiesel since it came on the scene about 10 years ago, said Jerry Slocum of Coldwater, a soybean producer and director of the Mississippi Soybean Promotion Board. He expects farmers to remain the biggest customers, at least for the near term.

"It's likely farmers will remain the biggest buyers of biodiesel for the next two years or so," he said. "After then, we hope to see greater acceptance by the other major consumers of diesel fuel, including trucking companies."

The key to acceptance of biodiesel by nonfarm customers, Slocum added, is assurance that engine manufacturers will warrant their products for use with the fuel. Soybean producers pay into a fund, called a checkoff, to support soybean research and promotion every time they sell their beans. At the national level, the United Soybean Board administers the funds raised by the checkoff.

"The board is using checkoff funds for engine testing and creation of standards for the use of biodiesel," Slocum said. "This is the type of testing and standards the big users of diesel, including the major trucking and barge companies, must have before they will demand biodiesel."

The giant tractor-maker John Deere already approves B5 biodiesel in its engines and last year began shipping tractors and combines from its factories with B2 biodiesel in their tanks.