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## Ethanol pioneers dream big

By Jane Bussey

[jbussey@MiamiHerald.com](mailto:jbussey@MiamiHerald.com)

As corn prices hovered at their lowest level in a decade in early 2001, a group of Midwestern farmers visited Monsanto and suggested the giant seed and chemicals company could help them develop the ethanol market.

Monsanto, one of the largest agriculture biotechnology companies in the world, tapped biochemist Bradley Krohn to work on a project to develop hybrid corn seeds that would improve ethanol yields for farmers.

Krohn said he was instantly hooked on ethanol, a biodegradable fuel that's usually made from corn or sugar cane. After carrying out trials at a number of commercial ethanol plants, he quit his job at St. Louis-based Monsanto, moved to Florida and established U.S. EnviroFuels in 2004 to try to produce ethanol himself.

In the emerging and rapidly changing ethanol industry, business executives, farmers and scientists view biofuels as both a business and a mission to help reduce U.S. dependence on oil and help the environment.

"This is a passion," said Krohn, who is president and chief technical officer of Port Sutton-based U.S. EnviroFuels. "Our country has to do whatever it can to reduce its dependence on foreign oil."

The United States surpassed Brazil last year as the world's largest ethanol producer with around five billion gallons compared to some 4.3 billion gallons produced in Brazil. But the United States needs around 14 billion gallons just to provide enough for a 10 percent blend in this country's gasoline supply.

The biofuels boom also has triggered interest in producing ethanol from other materials. Ethanol made from wood chips, grasses, sugar-cane stalks and citrus waste is on the horizon. Experts say that if the United States wants to produce some 15 billion gallons of ethanol annually, it must use these cellulosic materials.

Ethanol production "no longer will be consigned to the Corn Belt because of the investment in new research and new technology," said Matt Hartwig, spokesman for the Renewable Fuels Association, a Washington-based trade association for the ethanol industry.

Already the demand for corn to produce ethanol has driven up not only the price of corn and other commodities but also of cattle feed and tortillas in Mexico.

Despite ethanol's potential to reduce dependence on foreign oil, getting a Florida ethanol plant launched has been a challenge for Krohn.

His plan is to produce ethanol at the Port of Tampa that would be blended into Florida gasoline. Currently no ethanol is produced in Florida nor is ethanol mixed with gasoline sold in the state. The plant would also produce two byproducts: distillers grain -- a high-protein animal feed -- for Florida feedlots and liquid beverage-grade carbon dioxide used to carbonate drinks.

## **ONE GIANT OBSTACLE**

At this point, the biggest obstacle in Krohn's dream to build a 50-million-gallon plant has been neither technology nor financing but a complaint filed by another port tenant, an environmental testing lab called PEL Laboratories.

PEL wants an injunction barring construction of the plant alleging that its emissions would put the testing lab out of business. It complains the Port of Tampa failed to carry out a formal impact study.

"They are going to put their tanks 80 feet away from our client's property," said Marion Hale, a Clearwater lawyer representing PEL. "Our client would be put out of business."

"It's extortion," Krohn said. "PEL Laboratories wants to be moved and they want us to pay to move them."

The Port of Tampa has countersued PEL Laboratories, claiming that the company has violated its lease by interfering with port business and U.S. EnviroFuels' option to lease property from the port.

PEL and U.S. EnviroFuels will present oral arguments before the Hillsborough County Circuit Court for business litigation on Aug. 13.

Hale said if the summary judgment doesn't go in PEL's favor, the environmental testing lab will sue for damages.

All this creates a Catch 22 for Krohn, because he cannot close on financing for the plant until the legal issues surrounding the PEL complaint are resolved. Once they are, he said construction could begin almost immediately and the plant could be operating in 18 months.

Another Florida project would turn citrus waste into ethanol. David Stewart, a serial entrepreneur, said he spotted biofuels as the next up and coming thing several years ago. But even he "didn't expect the price of oil to go up so far," making ethanol a more attractive option.

Stewart's Boca Raton-based Citrus Energy plans to start building an ethanol plant in Clewiston this fall.

In the Midwest -- more traditional turf for the ethanol boom, Dennis Langley sees ethanol as both a mission and good business.

In 1999, Langley sold his Kansas Pipeline Co., a natural gas pipelines business in Kansas and Missouri, and founded Earth, Energy and Environment. The company's flagship unit E BioFuels began operating its first closed-loop ethanol plant, Genesis, in Mead, Neb. -- outside Omaha -- in April.

Langley said the plant is "dramatically" more energy-efficient than regular ethanol plants.

### **FROM WASTE TO FUEL**

Power comes from cattle urine and manure from nearby feedlots that is transported in pipes to the Genesis plant and used to make biogas that fuels the plant where corn is fermented and then distilled to make ethanol.

The ethanol is sold and then transported by tankers to Midwest or East Coast refineries, by rail to Houston or down the Mississippi by barge to Gulf refineries.

Besides ethanol, Langley's plant will also produce distillers grain and fertilizer in a bio-friendly solid state to avoid ground run-off.

E BioFuels has committed to building three plants a year for five years. Langley said he also has been talking with businesses in Brazil and Argentina about using his technology.

Not only does the Genesis plant remove tons of noxious waste stored in huge reservoirs at the feedlots but it also eliminates the greenhouse-gas effect produced by rotting manure.

"Our facility would be the equivalent of removing about 75,000 cars a year from the road in terms of carbon dioxide effect," Langley said.

Using manure to make fuel certainly wouldn't work in Tampa. But the differences in approach underscore the diversity of the young industry.

"It's an example of how dynamic the U.S. ethanol industry is," said Hartwig of the Renewable Fuels Association. "Producers are willing to adapt and adopt new technologies."

Despite the hype surrounding ethanol production, financing is still an uphill struggle. "If I were to go and finance an [oil] refinery, I could finance that over 30 years," Langley said. "You are required to finance [an ethanol plant] over seven years. That creates an unlevel playing field."

Meanwhile, the corn farmers who helped trigger Krohn's interest in ethanol have seen results.

Monsanto has developed so-called "Processor-Preferred" hybrid seeds, which deliver 2 percent to 4 percent more ethanol per bushel of corn. Some 50 ethanol refineries now use the seeds and more than 90 independent seed varieties carry the "Processor-Preferred" designation, said Monsanto spokesman Darren Wallis.

The payoff for farmers is that grain elevators often pay a premium for corn grown with the hybrid seeds because it delivers more ethanol.