Cellulosic Ethanol: A Cleaner, Lower-Cost Alternative To Petroleum

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Because of increasing costs and dwindling reserves of petroleum, the world is focusing more on ethanol as an alternative fuel. Ethanol can be created from a variety of plants, the most well-known being corn. In the late 1980s, professor Lonnie Ingram, Ph.D., of the University of Florida in Gainesville, developed technology that enables the production of cellulosic ethanol from biomass derived from specific energy crops, such as sugarcane bagasse and specially bred energy cane.

Funding for this research was provided by the U.S. Department of Energy and the U.S. Department of Agriculture. Dr. Ingram's process, which was disclosed in 1989 and patented in 1991, breaks down biomass cells and reduces the cellulosic matter to five sugars. The sugars are then fermented to produce cellulosic ethanol.

> *Prior to this discovery it was not feasible to use cell matter to produce ethanol.*

Yields of cellulosic ethanol are about five times higher per acre than ethanol produced from corn. Another big

advantage over corn is that cellulosic ethanol does not compete with the food supply (the demand for corn to produce ethanol has a tremendous impact on the price and availability of corn for consumption).

In 1991 the University of Florida launched Verenium Corp., a start-up company, to commercialize this unique production process. They have worked together to continuously improve their core cellulosic ethanol technology. Today Verenium is known around the world for its expertise in pre-treatment, enzyme development, fermentation, engineering and project development. The company has upgraded and expanded its production facility in Louisiana and is testing yields from diverse regional feedstocks. By 2010 the facility is expected to produce about 30 million gallons of cellulosic ethanol annually.

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