



Linda H. Smith DTN Markets Editor [Biografia](#)

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### **In the Future: Ethanol from Agave?**

From a special symposium to a special issue of the journal *Global Change Biology Bioenergy*, ethanol from agave is getting attention. Sarah Davis, a bioenergy scientist and analyst at the University of Illinois, said, "We need bioenergy crops that have a low risk of unintended land use change. Biomass from Agave can be harvested as a co-product of tequila production without additional land demands."

Agave is used for tequila, but also for natural fibers, though competing synthetic fibers have led to some plantations in Mexico and Africa being abandoned. Dual or exclusively fuel uses possibly could bring back viability to those operations.

Agaves are also known for their high biomass, which could be converted into ethanol. The plants use water and soil more efficiently than any other plant or tree in the world, according to Arturo Valez Jimenez, founder of The Agave Project for the National Confederation of Forestry Producers in Mexico. "They don't require watering or fertilizing and they can absorb carbon dioxide during the night," he said. The plants annually produce almost half a million pounds of biomass per acre.

Agave fibers contain 65 percent to 78 percent cellulose, and current technology breaks down more than 90 percent of the cellulose, increasing ethanol yield. Mexico could produce more than 5 billion metric tons of biomass on marginal land, Jimenez estimates. Another study indicated that plants in the Yucatán that extract fiber currently produce 75 million liters of juice per year, which could be converted to 5 million liters or 1.3 million gallons of ethanol.

The most expensive part of making ethanol from lignocelluloses is pretreating the biomass to make it accessible to the enzymes that degrade the polymers into sugars that can be fermented into ethanol, according to the article in *Global Change Biology Bioenergy*. "Further work is required to determine the optimum enzymatic and microbial processing to convert the biomass into ethanol before varieties of agaves can be selected for biofuel production. More comprehensive studies are required to determine the true potential of these plants in the generation of biofuels."

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Posted at 11:21AM CST 01/28/11 by Linda H Smith

Comments (1)

Something is seriously wrong with this article. And yet these folks are claiming almost half a million pounds (250 tons) of biomass per acre under arid conditions?!! Numbers I have seen have been on the order of 100 wet metric tons (110 short tons) of biomass per acre annually, or 20 dry metric tons per acre. (Yields of 10-15 dry tonnes [30,000 pounds] of biomass per acre are considered very good for rain-fed crops, such as miscanthus.) Even if they are referring to wet tons, to get that kind of yield requires additional water. We have been hearing about the wonders of Agave for years now. Is there anybody out there commercially producing ethanol from the plant, other than the expensive kind with a worm in the bottle?

Posted by Ronald STEENBLIK at 6:40AM CST 02/01/11

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