

Drink it or Drive it: The Promise of Agave for Ethanol

Corn has given ethanol a bad name and scientists are searching far and wide for alternative feedstock. Agave has been getting attention lately and looks very promising, although tequila connoisseurs may not be cheering.

Here's why Agave is so much appealing:

High Yield Per Acre

Soybeans generate a measly 60 gallons of biodiesel annually from an acre of land and has an energy balance of 2.5. Corn generates about 300-400 gallons of ethanol per acre and has an energy balance of 1.3. Sugar cane can generate 600-800 gallons of ethanol per acre annually and has an energy balance of 8. Sugar cane unfortunately is very labor intensive to cultivate and could contribute to deforestation.

Agave however can yield an impressive 2,000 gallons of distilled ethanol per acre each year annually. Cellulosic ethanol from agave has 6 to 9 times the yield per acre. This would significantly reduce the quantity of land needed to produce the same quantity of transportations fuels.

Thrives in Wastelands

Agave fixes nitrogen in the soil and actually improves the soil quality where it is grown. 95% of the *Agavaceae* family calls Mexico home and 50% of the country is ideally suited for agave cultivation. Dry, arid, and steep terrain typically have fewer economic opportunities and greater poverty. Ethanol from agave would open up new markets in marginalized lands.

Few other ethanol feedstocks grow well on marginalized lands. Sugar cane, which is used widely in Brazil for ethanol production, is grown in tropical regions and can drive deforestation.

Low Water Requirements

Agave does not require much water for cultivation, making it favorable over many of the alternatives because it does not need to be irrigated. Dependence on irrigation brings a myriad of problems. Water scarcity can cause competition between irrigation and drinking water. Farmers with crops reliant on water are more vulnerable to droughts. Increasing water costs can create more volatile crop prices. Because agave doesn't need agrochemicals, it also helps protect water quality.

Doesn't Require Cellulosic Technology

Although the ethanol yield from agave increases dramatically when the cellulose is used, this evolving technology is not essential. This should help shorten the time needed for ethanol from agave to hit the market in large quantities.

Opportunity for Farmers

Agave production was estimated to have decreased by 25% - 35% in 2007. High global tequila demand had previously caused agave prices to increase. As a result, production increased and prices fell. As a result, many Mexican farmers began cultivating corn to satisfy the U.S. demand for corn-based ethanol. Unfortunately corn is considered a "prima donna" crop and requires considerably more fertilizer and water than agave.

Ethanol from agave will open a new market for the agave plant and increase economic opportunities. It doesn't need agrochemicals or irrigation and is not labor intensive, lowering the overhead costs to growers. On the downside, what effect will this development have on the price of tequila? Hopefully tequila riots will not ensue.