

Ethanol and Water Use

The Basics

It is true that ethanol production requires water use. Today, ethanol processing requires approximately three gallons of water to produce one gallon of ethanol. This may sound like a lot, but there are several important things to consider:

- (1) Ethanol is an alternative to gasoline. Conoco Phillips recently reported that water usage for refining alone requires eight gallons of water for every gallon of unleaded gasoline.*
- (2) In the last ten years, the ethanol industry has reduced water usage by nearly 50 percent, through direct improvements in production efficiencies and water recycling technologies.**

Understanding the real impact of ethanol production on water usage requires a consideration of these and other (more localized) factors. But it is clear that ethanol producers are becoming increasingly sensitive to water usage, and that ethanol is better than gasoline in this category.

New Feedstocks and New Technologies

There are several other factors to consider in the context of the ethanol industry's impact on resource utilization, including water use.

Today's ethanol producers are at the forefront of the effort to produce renewable fuels from a variety of feedstocks, including agricultural and urban waste, native grasses, and other cellulose-based resources. These companies are spending money internally on cellulosic R&D, partnering with universities on research projects, and investing in existing independent cellulosic ethanol development companies.

There is no question that a healthy ethanol industry today is supporting and advancing the more sustainable renewable fuels industry of tomorrow. So-called "advanced biofuels" could drastically improve the overall sustainability of the transportation fuels industry.

In addition, significant increases in crop yields and the rise of drought resistant crops are combining to improve the efficiency of biofuel production. The trend is clear: every year renewable fuel production requires less and less water.

There are two important additional facts about corn ethanol in California today:

- (1) The vast majority of corn used for California ethanol production is imported from non-irrigated farms in the Midwest.
- (2) Much of the water used in ethanol production is given back as liquid feed for livestock, directly displacing water in livestock diets. Ethanol from corn is a net water-saver to the livestock industry.

The Bottom Line

While ethanol production does require water use, it is important to consider the (gasoline) displacement value of ethanol on natural resource utilization, as well as emerging trends in the renewable fuels industry in the context of current and future natural resource utilization. Too often the analysis of water usage and ethanol is superficial or incomplete.

* December 13, 2006 , Iowa State University, Renewable Fuels Panel

** "Water Use by Ethanol Plants," Institute for Agriculture and Trade Policy