

Ethanol Takes More Energy Than It Gives

by Marjorie Mazel Hecht

The truth about ethanol, the wonder fuel that is supposed to replace U.S. dependence on “foreign oil,” is that it takes more energy to produce the ethanol, than the resulting ethanol fuel will provide. And to replace imported oil with ethanol would require covering more than half the land area of the United States in corn or other biomass.

One of the strongest arguments against the use of ethanol comes from Prof. David Pimentel of Cornell University, a longtime low-technology advocate. He and a colleague, Tad W. Patzek, professor of civil and environmental engineering at the University of California at Berkeley, conducted a detailed analysis of energy input-yield ratios of producing ethanol from corn, switchgrass, and wood biomass. Their findings, published in *Natural Resources Research* (Vol. 14, No. 1, March 2005, pp. 65-76), are that

- ethanol from corn requires 29% more fossil fuel energy than the fuel produced;
- ethanol from switchgrass requires 45% more fossil energy than the fuel produced; and
- ethanol from wood biomass requires 57% more fossil energy than the fuel produced.

Pimentel and Patzek looked at the energy used in producing the crop, which includes pesticide and fertilizer production, farm machinery, irrigation, and transportation, and the energy necessary for distilling the ethanol.

As Pimentel told the Cornell University News Service in July 2005, “There is just no energy benefit to using biomass for liquid fuel. These strategies are not sustainable. . . . Ethanol production requires large fossil energy input, and therefore is contributing to oil and natural gas imports and U.S. deficits.”

Pimentel calculated that it takes about 131,000 BTUs (British Thermal Units) to make 1 gallon of ethanol—but 1 gallon of ethanol has an energy value of only 77,000 BTU—a net loss of 54,000 BTU per gallon.

Pimentel and Patzek did not include in their calculations the cost of the Federal and state subsidies that are handed out to the large corporate biomass-energy producers. Pimentel, it should be noted, supports the use of biomass (wood) for home heating, just not for producing liquid fuel.

But that’s not all. Even the cheerleaders for ethanol production, such as former CIA director James Woolsey, note

that the main obstacle to ethanol replacement for gasoline is its “high cost of production” and the fact that it requires “large subsidies.” Woolsey and others point to new research in genetic engineering that will develop special microbes to ferment the corn and other biomass. But Woolsey et al. miss the ethanol elephant sitting in the middle of their arguments: land use.

The Yellowing of America?

Dr. Howard Hayden, professor emeritus from the University of Connecticut and publisher of *The Energy Advocate* newsletter, notes in an article in the Spring 2006 issue of *21st Century Science & Technology*, that “to produce ethanol with as much energy as we use in transportation would require 1.1 billion acres devoted to high-yield corn production, complete with all the things environmentalists hate—fertilizer, irrigation, and pesticides. That’s about 1.8 million square miles, some 51 percent of the land area of the 50 states.”

This staggering amount of land-use doesn’t faze the many companies, which are intoxicated with the prospect of government subsidies for distilling alcohol for fuel. The U.S. Department of Agriculture announced in April that a Florida company, Progress Energy Florida, signed a 25-year contract to buy power from a 130-megawatt “grassy biomass” power plant in central Florida, which will get a government subsidy for the next ten years.

In Georgia, another alternative energy company, Earth Resources, plans a chicken-litter power plant (the technology for which was funded with a \$1 million grant from the USDA). Other companies are pioneering the use of cow manure with government subsidy.

In California, long a leader in anti-physical-economy energy schemes, Gov. Arnold Schwarzenegger just signed an executive order setting goals to produce 20% of the state’s 900 million gallons per year of biofuels within the state by 2010, increasing to 40% by 2020, and to 75% by 2050. The order also calls for biomass to provide 20% of the electricity generated to meet the state’s renewable power requirements—a real energy loser.

At the same time, California green groups are citing a University of California report that documents how the use of ethanol would result in higher concentrations of toxic air contaminants.

Today’s drive for ethanol comes directly out of the 1960s counterculture, foisted on the United States 30-some years ago, with the promotion of a post-industrial society and the devolution of science and technology. Reality and physical economy became irrelevant, and like Orwell’s 1984 “New-speak,” more became less, and Mother Nature became more important than human development. Hence the popularity of ethanol, and the non-development of advanced technologies—nuclear and fusion—that can power an industrial society.