

ETHANOL QUARTERLY

MINNESOTA COALITION FOR ETHANOL PUBLICATION

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Over the past several years, ethanol and the use of “food for fuels” has become a hot topic, both at the state legislature and around the dinner table. We want to dispel some of the misconceptions about ethanol, as well as provide information regarding the many advances being made in the industry to ensure greater efficiencies using fewer resources.

In a time when the ethanol industry is poised to supply more than 13 billion gallons of ethanol to the country, representing 10 percent of the nation’s gasoline demand, shouldn’t we be asking how we get the most out of this important alternative energy process?

REALITY CHECK

Is ethanol causing the increase in food prices? The reality is that there are both average annual food inflation costs (around 2.9 percent for the past 25 years) and other strains on the market that are driving retail food prices up, including dramatically increasing fuel costs. The U.S. Commerce Department reports that from January 2006 to March 2007, corn prices nearly doubled but consumer food costs increased only 2.1 percent – less than the 25-year average!

Source: Minnesota Department of Agriculture.

In fact, as ethanol output continues to increase, corn and soybean prices have fallen almost 50 percent since June, while spring wheat prices are down approximately 70 percent.

Source: “Grain Drain,” St. Paul Pioneer Press, 10/08/08.

ETHANOL MISCONCEPTIONS:

MISCONCEPTION #1 – ETHANOL ONLY PROVIDES A SMALL REDUCTION IN GREENHOUSE GASES.

The truth is that the production and use of 6.5 billion gallons of ethanol in the United States reduced CO₂ – equivalent greenhouse gas (GHG) emissions by approximately 10.1 million tons in 2007, the equivalent of removing more than 1.5 million cars from America’s roadways. Using ethanol in place of gasoline helps reduce CO₂ and other GHG emissions by up to 29 percent given today’s technology.

Source: Renewable Fuels Association.

MISCONCEPTION #2 – CORN DEMAND HAS NOTICEABLY IMPACTED RETAIL FOOD PRICES.

Recent increases in corn prices, spurred by the demand for ethanol, are driving the assumption that there is a translation to higher food costs for consumers. That argument just doesn’t hold up to the facts.

The overwhelming majority of U.S. corn, including exported corn, is used to feed livestock – not humans. For the corn that is utilized for food production, numerous factors contribute to retail food costs, and in fact, just 19 cents of every consumer dollar can be attributed to the actual cost of food! 38 cents goes to labor and 24 cents goes to packaging, transportation, energy, advertising and profits. Also, retail food products such as cereals, snack foods and beverages contain very little corn – even if corn prices are \$4 a bushel, a box of corn flakes contains less than a nickel’s worth of corn.

Source: Renewable Fuels Association, Food vs. Fuel Fact Sheet

MISCONCEPTION #3 – IT’S ALL ABOUT CORN!

Like all technologies, we begin with what we know and can afford and we continue to improve over time. Do you remember your first cell phone? Did it look or function anything like an iPhone or a Blackberry? Today, ethanol is blended into more than 70 percent of the gasoline sold in the US, the majority as E10. Ethanol production is at an all time high, breaking records every year, and bringing new infrastructure and jobs to rural (and not so rural) America. And we continue to get better.

Efficiencies at ethanol plants have increased dramatically. Existing ethanol facilities are working to find ways to recapture waste CO₂ in order to reduce the environmental impact of the plant, as well as drive additional revenues. For example, Winthrop, Al-Corn, and Corn Plus, all Minnesota ethanol plants, are selling their CO₂ to be used in greenhouses, fish farms, algae production and beverage carbonation.

Those ethanol facilities that continue to use corn for fuel production are coming up with new ways to reduce their use of fossil fuels. Local examples include:

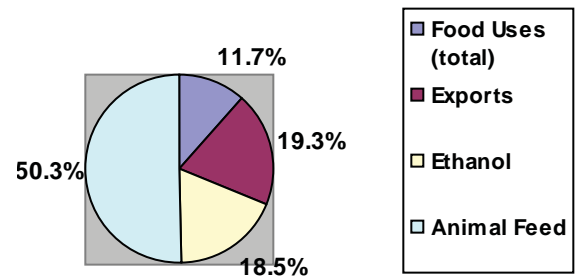
- Corn Plus in Winnebago, Minn., is installing two 2.2 megawatt wind turbines that will provide about 45 percent of the biorefinery's electric needs. In addition, Corn Plus has installed a fluidized bed to burn corn syrup, resulting in a 50 percent reduction in natural gas usage;
- Central Minnesota Ethanol Coop in Little Falls, Minn., is installing technology to burn wood waste to eliminate its need for natural gas and electricity;
- Chippewa Valley Ethanol, in Benson, Minn., has installed technology to burn corn cobs to generate energy to run its plant; and
- Al-Corn Clean Fuel in Claremont, Minn., has improved existing technology with such success that the biorefinery now emits zero liquid discharge.

Cellulosic ethanol, ethanol derived from cellulose plant fibers ranging from switchgrass to municipal waste, is also at the leading edge of the industry's new technology, reducing the dependence of the industry on corn. Here are a few examples:

- Alico, Inc. in LaBelle, Fla., will produce 13.9 million gallons of ethanol a year from yard and vegetative waste as well as generate 6,255 kilowatts of electric power;
- Range Fuels in Soperton, Ga., will produce about 40 million gallons of ethanol annually and 9 million gallons per year of methanol from wood residues; and
- Bluefire Ethanol, Inc. in Southern California will produce about 19 million gallons annually from organic municipal solid waste and be sited on an existing landfill.

All of these new and improved technologies will allow the industry to continue to provide efficiently-produced ethanol that reduces our dependence on foreign oil.

USE OF CORN GROWN IN THE U.S.



About half of the U.S. corn crop goes to feed livestock. Over the past 30 years, there has been a significant move away from pasture-raised livestock to livestock raised primarily on corn and soybeans. Of the 11.7 percent of the U.S. corn crop that is used for human food production:

- High fructose corn syrup = 4.4 percent
- Starch = 2.2 percent
- Other sweeteners = 2.1 percent
- Cereal/other = 1.6 percent
- Beverage/Alcohol = 1.2 percent

Source: USDA Feed Grains Database

ETHANOL FACTS

- Early ethanol production at Minnesota ethanol plants equaled 2.2 gallons of ethanol per bushel of corn. Through innovation and advancements in technology, today's yield is 2.8 gallons of ethanol per bushel of corn. That's an increase of almost 25 percent!
- Part of any ethanol discussion must be about residual, or distillers grains, which are used as a high protein animal feed. During the production of corn-based ethanol, a bushel of corn will yield approximately 2.8 gallons of fuel ethanol and 18 pounds of residual grains. **Residual grains account for one-third of the total amount of corn used and are returned to the livestock feed market.**

KEY ETHANOL STATISTICS (2007)

Source: Minnesota Department of Agriculture

Number of Ethanol Plants	171 in 25 states.
Estimated 2008 Production	9 billion gallons.
Estimated Livestock Feed Production	30 million metric tons.
Percent of Gasoline Blended with Ethanol	70 percent.
Impact on Gasoline Price	<p>\$0.29-0.40 per gallon reduction, (according to Iowa State University).</p> <p>This saved the average Minnesota household between \$204.29 and \$510.27 between March 2007 and March 2008 as a result of increasing ethanol production.</p>
Impact on Oil Imports	228 million fewer barrels of oil imported in 2007 as a result of ethanol production and use. At an average price of over \$100/barrel, this is a savings of at least \$22.8 billion.
Economic Impact	238,000 new jobs and \$47.6 billion added to GDP in 2007.
Economic Impact in Minnesota	<p>At the 550 million gallon production level in 2006, Minnesota's ethanol industry generated an estimated \$2.77 billion in total economic impact.</p> <p>It is estimated that in 2008, the 17 ethanol plants operating in MN will produce about 1 billion gallons of ethanol and will have a total economic impact of nearly \$5 billion.</p> <p>The ethanol industry provides more than 18,000 jobs in Minnesota and helps Minnesota communities thrive. Many of these jobs are located in rural Minnesota, providing job opportunities for young individuals and families.</p>

MISCONCEPTION # 4 – IT’S ALL ABOUT WATER!

The most often tossed about negative statement about ethanol is that its production consumes huge amounts of water. Ethanol plants in Minnesota are continually working to find ways to increase efficiencies in water consumption, through recapture, recycling and better technological processes.

The following facts were put together by the US Geological Survey, National Renewable Energy Laboratory:

- 3 gallons of water are required to produce a gallon of ethanol.
- 2 – 2.5 gallons of water are required to produce a gallon of gasoline. Some estimates suggest as much as 8 gallons of water are needed to refine a gallon of gasoline.
- 4 gallons of water are needed to produce a pound of hamburger.
- 11.6 gallons of water are needed to produce one pound of chicken.
- A typical 40 million gallon per year ethanol plant uses an amount of water daily that is equivalent to the daily water use of a standard 18-hole golf course.
- 300 million gallons of water are needed to produce a single day’s supply of US newsprint.
- 3/5 gallon of water is required per kilowatt hour at a coal-fired power plant (1 kwh is required for a 100-watt light bulb to burn for 10 hours).

ETHANOL QUICK NOTES

- The American Lung Association of Metropolitan Chicago credits ethanol-blended fuels with reducing smog formation by 25 percent.
- The average amount of energy required to produce ethanol and its livestock feed co-product across all ethanol production technologies was reduced by 13.5 percent between 2004 and 2007. Some refineries reduced energy consumption by up to 19 percent.

Source: Renewable Fuels Association

ADDITIONAL ETHANOL RESOURCES

Renewable Fuels Association

<http://www.ethanolrfa.org>

Minnesota Corn Growers Association

<http://www.mncorn.org>

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