

13 - Renewable Energy

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The United States is overly dependent on foreign oil. Using corn as a renewable resource reduces this dependency and provides an alternative use for our farm products. As corn acreage increases in Arkansas, so will opportunities to use corn as a renewable resource in the area.

Corn Products¹

Corn refiners use shelled corn which has been stripped from the cob during harvesting. Refiners separate the corn into its components – starch, oil, protein and fiber – and convert them into higher value products.

Corn sweeteners (<http://www.corn.org/web/sweeten.htm>) are the most important refined corn products. Last year, corn sweeteners supplied more than 56 percent of the U.S. nutritive sweetener market.

The second major refined corn product is **ethanol** (<http://www.corn.org/web/ethanol.htm>) which is gaining increasing acceptance as a cleaner burning option for motor fuels. The ethanol industry continues on its record production pace. When 2002 is over, the United States ethanol industry will have produced over 2 billion gallons of high octane, American-made ethanol. That's 2 billion gallons of fuel that we didn't have to import from the Middle East.²

The third major corn product – a mainstay of the industry and of the U.S. economy – is **Starch** (<http://www.corn.org/web/starch.htm>). Americans rely on corn refiners for over 90 percent of their starch needs.

Corn refining is America's premier **bioproducts** (<http://www.corn.org/web/bioproduct.htm>) industry, with increasing production of amino acids,

antibiotics and degradable plastics adding further value to the U.S. corn crop.

In addition to starches, sweeteners and ethanol – all made from the starch portion of the corn – refiners produce **corn oil** (<http://www.corn.org/web/cornoil.htm>) and a variety of important **feed products** (<http://www.corn.org/web/feed.htm>).

Ethanol Information³

Consumer Benefits

U.S. consumers use more than 18 billion gallons of high performance, cleaner burning ethanol-blended gasoline each year.

- Ethanol increases oxygenate supplies, reducing the need for MTBE, methyl tertiary butyl ether, imports and helping to reduce consumer costs.
- Ethanol is a high-octane blending component used by many gasoline marketers – helping to keep this important class of trade viable and creating competition for the major oil companies.
- Since the petroleum refining industry is running at near capacity, the ethanol industry helps extend our petroleum supply, thereby helping moderate fuels costs to consumers.

Taxpayer Benefits

- The partial excise tax exemption available to gasoline marketers for ethanol and ETBE blends saves money. A General Accounting Office (GAO) study has shown that reduced farm program costs and increased income tax revenues offset the cost of the incentive.

¹<http://www.corn.org/web/products.htm>; ²<http://www.ethanol.org> - American Coalition for Ethanol;

³www.ethanol.org/information/ethanol_information.htm

- The economic activity attributable to the ethanol industry will generate \$3.5 billion in additional income tax revenue over the next five years – \$1 billion more than the cost of the exemption. The U.S. ethanol industry will create a net gain to the taxpayers of almost \$4 billion over the next five years.

Economic Benefits

- More than \$3 billion has been invested in 60 ethanol production facilities operating in 20 states across the country.
- The ethanol industry is responsible for more than 40,000 direct and indirect jobs, creating more than \$1.3 billion in increased household income annually, and more than \$12.6 billion over the next five years.
- The ethanol industry directly and indirectly adds more than \$6 billion to the American economy each year.
- The demand for grain created by ethanol production increases net farm income more than \$12 billion annually.
- As the economic activity created by the ethanol industry rippled throughout the economy, it generated \$30 billion in final demand between 1996 and 2000.
- Increases in ethanol production offer enormous potential for economic growth in small rural communities. USDA has estimated that a 100 million gallon ethanol plant could create 2,250 local jobs.

Agricultural Benefits

- Industrial corn use, which includes ethanol and sweetener production, is now the second largest consumer of corn in America. Each \$1 of upstream and on-farm economic activity generates \$3.20 in downstream economic stimulus attributable to ethanol processing, compared to just \$0.31 when corn is exported.

- Ethanol production consumed 535 million bushels of corn in 1994 (5.3 percent of the record 10 billion bushel corn crop). About 667 million bushels of corn were used for ethanol in 2001.
- The demand for corn created by the ethanol industry increases crop values – accounting for approximately \$0.14 of the value of every bushel of corn sold, or \$1.4 billion.
- If the market for ethanol did not exist, corn stocks would rise and net income to American corn farmers would be reduced by \$6 billion over the next five years, or about 11 percent.
- Many farmers now own and operate ethanol plants, allowing them to add value to their own corn.

Energy/Trade Benefits

- Domestic ethanol production reduces demand for imported oil and imported MTBE which drain our economy. Oil and MTBE imports now represent almost 80 percent of the U.S. trade deficit.
- Currently, imported oil accounts for about 56 percent of oil used, and imported MTBE is at a record 31 percent of domestic production.
- Today, ethanol reduces the demand for gasoline and MTBE imports by 98,000 barrels per day. A 98,000 barrel/day replacement of imported MTBE would represent a \$1.1 billion reduction to our annual trade deficit.
- Ethanol production also generates exports of feed co-products, such as corn gluten, further enhancing our balance of trade.
- Ethanol production is extremely energy efficient, with a positive energy balance of 125 percent, compared to 85 percent for gasoline. Ethanol production is by far the most efficient method of producing liquid transportation fuels. According to USDA, each Btu used to produce a Btu of gasoline could be used to produce 8 Btus of ethanol.

Environmental Benefits

- 10-percent ethanol blends reduce carbon monoxide better than any other reformulated gasoline blend, more than 25 percent.
- Ethanol is low in reactivity and high in oxygen content, making it an effective tool in reducing ozone pollution.
- Ethanol is a safe replacement for toxic octane enhancers in gasoline such as benzene, toluene and xylene.
- Oil companies are now starting to acknowledge the environmental and energy benefits of ethanol. For example, see the brochure published by Mobil.

The information contained in this chapter is intended to be an awareness introduction to the many possibilities available to use corn as a renewable resource. The internet is an excellent resource for additional contacts and information on this topic. Search engines for renewable resources, ethanol, alternative fuels, corn byproducts and others will uncover a wealth of data.