



Project  
GREEN

# IMPACT

*Addressing plant industry research and educational needs and sustaining Michigan's plant agriculture industry*



## Evaluating the Impacts of an Increase in Fuel Ethanol Demand on Michigan Agriculture and Economy

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**Project length: 1 year (fiscal year 2002)**



Demand for fuel ethanol is likely to increase sharply over the next few years, in part because of a proposed ban on the gasoline additive methyl tertiary butyl ether (MTBE), proposed renewable fuels standard, rising petroleum prices and revised ozone air quality standards. Michigan agriculture could benefit from an increased demand for fuel ethanol through increased corn prices, increased supply of byproduct distiller's dried grains (DDG), and ripple effects on other crops and animal feeds. State of Michigan finances will also be significantly affected through the current ethanol subsidy structure and the dependence of highway funds on the federal gasoline tax.



## 2003 Value Added

## Objectives

- Determine the effects of a ban on MTBE, a renewable fuel mandate, the new ozone standards and various combinations of these factors on the automobile fuel market and demand for ethanol nationally and in Michigan.
- Determine how increased ethanol production will affect supplies and prices of corn, DDG, soybean meal, other crops and livestock.
- Predict the impact of increased ethanol production on retail prices and net farm income in Michigan.
- Determine how the state's finances will be affected if there is a substantial increase in ethanol use under the current ethanol tax, subsidy and revenue-sharing arrangement.

## Challenges

Increased demand for fuel ethanol will have significant economic implications for Michigan agriculture and the state's economy.

## Conclusions

- Corn prices received by U.S. farmers could increase by 18 percent by 2007 and by another 7 percent by 2010, due to increased ethanol production.
- Utilization of soybean meal as an animal feed supplement could decrease by 3.6 percent by 2010 because of the increased availability of high protein feed byproducts from ethanol production. Higher corn prices, however, could offset the increased availability of high protein feeds; soybean meal prices could actually be higher under high ethanol production levels.
- Corn acreage in the United States could increase by 4 percent by 2010; soybean acreage could decline by 3 percent.
- U.S. wheat acreage would increase because livestock owners would feed more wheat as a result of higher corn prices.
- Corn, soybean and wheat acreage could increase in Michigan by 1 percent by 2010.
- Expanded ethanol production could increase corn and soybean production in Michigan by 4 to 5 percent by 2010. Wheat production could be as much as 10 percent higher in 2010, but livestock production could be slightly lower.
- The gross profit margin over variable costs would be significantly higher for corn and somewhat higher for soybeans and wheat. Higher prices for corn and other major crops could draw acreage away from

national dry bean production, thus enhancing prices for Michigan dry bean production.

- Higher feed prices could reduce gross profit margins over variable costs for milk, hog, and beef and feeder cattle production.
- The annual average net cash income for Michigan farmers would increase 4.1 percent for the period of 2003 to 2010 from \$976 million to \$1,016 million.
- Assuming that ethanol is sold as a 10 percent mixture with gasoline and Michigan gas consumption remains unchanged, state gasoline tax revenues could increase by \$4.8 million. Michigan's contribution to the Highway Trust Fund would decline at the rate of about \$0.751 per gallon of ethanol sold in the state, or as much as \$51 million in 2010.

## Industry impacts

This research analysis provides Michigan plant agriculture decision makers and state policy-makers data to make timely and informed decisions about fuel ethanol production and business opportunities.

## The future

Michigan is witnessing increased interest in establishing fuel ethanol plants in the state.

## Funding partners

Project GREEN awarded \$30,000 to this project. Results from this research project contributed to a research grant aimed at assessing the potential for fuel ethanol from cellulosic biomass funded by General Motors and the National Science and Engineering Research Council of Canada for \$706,044 CDN. The direct support leverage factor for this project was 23.5.

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For more information on this project, visit <<http://www.green.msu.edu/July03FINAL/02-074.pdf>>.

<sup>1</sup>High ethanol production level is projected at 3,250 million gallons per year in 2003 to 4,670 million gallons per year in 2010.

<sup>2</sup>National ethanol production is projected at 2,500 million gallons per year in 2003 to 2,880 million gallons per year in 2010.



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