New research says corn is most profitable cellulosic biofuel crop in Michigan

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(PhysOrg.com) -- When deciding which crops to grow for cellulosic biofuels, return on investment is one variable farmers must consider. Currently, corn stalks and leaves offer the most profit according to new research by Michigan State University scientists.

But that could change if federal policy offers incentives to grow crops that offer more environmental benefits than corn.

Cellulosic biofuels use the leaves, stems and other fibrous parts of a plant to make fuels.

Scott Swinton, MSU agricultural, food, and resource economics professor, teamed up with MSU crop and soil associate professor Kurt Thelen and graduate student Laura James to analyze the economics of growing various crops for cellulosic ethanol. The results are published in the March-April 2010 edition of Agronomy Journal.

“Many farmers are curious about whether they should be growing crops for cellulosic biofuels,” Swinton said. “They need to know what they can earn for those crops, what the yields will be and what the costs are to produce crops for biofuels.”

The study, funded by the U.S. Department of Energy, found that corn stover (stalks and leaves) is the most profitable cellulosic biofuel crop in the Great Lakes region, across a range of likely prices.

“For now, corn looks like the cellulosic bioenergy crop of choice,” Swinton said. “Of course that could change with environmental policy that rewards the water quality and climate change benefits from perennial crops such as switchgrass, poplar trees and mixed grasses.”

Perennial crops offer more environmental benefits than corn, including lower amounts of greenhouse gases released, improved water quality and better wildlife habitat.

“Having more corn in the landscape does come at a social cost,” Swinton said. “However, without special subsidies, perennial grasses and poplar don't match the profitability of corn unless biomass prices rise to more than $90 a ton.”

The researchers calculated the cellulosic biomass prices and yields for potential energy crops in southern Michigan using price and cost-of-production data from 2006 to 2009 and yield values from published literature. They then compared those prices and yields to corn and corn stover production systems.

Great Lakes Bioenergy Research Center researchers are testing a variety of crops to evaluate yields under field conditions at sites in Wisconsin and Michigan, Swinton said. Results from these experiments will enable researchers to update and evaluate results from the current study.

The GLBRC, funded by the Department of Energy, is a partnership between MSU and the University of Wisconsin-Madison aimed at solving some of the most complex problems in converting natural materials to energy.

More information: www.agronomy.org/publications/agronomy-journal

Provided by Michigan State University