

## University of Guelph analysis adds momentum to idea of producing industrial-use sugars in the Chemical Valley

*By Debora Van Brenk, The London Free Press*

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A sweet new use for cornstalks might lead to another revenue stream for Southwestern Ontario farmers and a renewable source of industrial materials coming from Canada's Chemical Valley.

A \$70-million, sugars-from-cornstalks facility is not only logistically and economically viable, it could become reality within five years, said Murray McLaughlin, executive director of the Bioindustrial Innovation Centre in Sarnia.

"The idea has been kicking around for a while," but has been little more than a hopeful dream, he said. "(Now) you can almost reach out and touch it."

The turning point is a ground-breaking analysis co-authored by researchers Randy Duffy and Lynn Marchand of the University of Guelph, Ridgetown campus.

The report, with research aid from a consortium of industry and grower groups, concludes that:

- A four-county region around Sarnia could supply more than 250,000 tonnes of cornstalks at competitive rates.
- The stalks could be converted to industrial-use sugars that would augment or replace some petroleum-based plastics and vinyls.
- A growing co-operative that includes suppliers as investors would best suit a such a biomass venture.
- A demonstration-sized facility costing \$70 million would attract enough raw materials and generate enough end-user interest to grow other facilities.

"It's got a lot of potential," said Duffy, whose report says a pilot-scale facility in Sarnia would be centrally located to suppliers from Chatham-Kent and Middlesex, Lambton and Huron counties and to biochemical companies needing the end product.

This is the first case study in Ontario to analyze the technology, supply, market, costs and sector-by-sector interest in a cornstalk-to-sugars plant. Corn-rich Iowa is nearing production on facilities that will convert cornstalk cellulose to fuel ethanol.

The cellulose in corn and in other plants such as miscanthus and switchgrass can be processed chemically into sugars — not as food, but as the building blocks of plastics, resins, fibres, lubricants and other materials made of non-renewable petrochemicals.

Southwestern Ontario is the corn belt of Canada and is a natural for such a facility.

A farmer who harvests one tonne of field corn — for livestock use, not for human consumption — must also deal with about one tonne of stalks, also called corn stover.

Stover is usually shredded and blown onto fields during harvest to enhance soil quality and nutrient value; sometimes, it's harvested and used as cattle fodder or bedding.

But increasingly productive corn fields also mean there's more stover than can be used on the land or by livestock, the report says. The excess stalks could be baled, shipped and processed into cellulosic sugars for use in industry.

"It's a new area of opportunity. It's taking product that nobody saw a lot of value in before and making a use for it," McLaughlin said.

And wherever it's built, it will attract half a dozen biochemical companies that need the end-product, he predicted.

"You can really see the building of a strong cluster, here in Sarnia and probably in the rest of Ontario," McLaughlin said.

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#### **Potential benefits**

New revenues for farmers and possibility of higher crop yields when excess stalks removed from land.

New jobs, taxes, revenue streams, and diversification.

Companies using sugars from cornstalks can claim their products have smaller environmental impact than petroleum-base products

#### **Potential challenges**

Changing market values of corn and sugars might lead to supply/profitability issues.

Farmer may need to use different equipment to gather/bale cornstalks.

Stover-to-sugar conversion technology still young.

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#### **WHAT'S NEXT**

Select appropriate technology to convert biomass to sugars.

Research business innovation to support a bio refinery.

Build demonstration-sized plant to test the sugar conversion technology.