



Economic Effects of Bioproduct Efforts on Ontario Agriculture

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Bioeconomy Research Highlights and Expo Day

December 7, 2011



Goal of Proposed Research

- To evaluate the economic, environmental and land-use impacts of green policies on the Ontario agricultural sector



Recent Related Research

1. *Effects of Bioproduct Developments on the Ontario Soybean Sector*

- Largest benefits from US biofuel policy
- Higher returns to producers from developing products for Ontario-specific uses
 - Build upon Ontario's IP system
 - Ontario is a price taker for homogeneous soybeans



Recent Related Research

2. Impact of DDGS on Ration and Fertilizer Costs for Swine Farmers

- DDGS lowers ration costs by 15%
- Small effect on fertilizer costs
- Could offset corn price increase due to basis change



Recent Related Research

3. *Commercialization Potential of Soybean Peroxidase*

- NPV of \$1.5m for plant investment of \$10m
- Results are sensitive to cost of spray dryer (90% of cost) and peroxidase price.
- A 5% increase in peroxidase content increases value of the project by 100%



Recent Related Research

4. *Assessment of Biomass Supply from:*

a. Crop Residue

b. Dedicated Energy Crops

- Discussed by Bill Deen



Current Bioproduct Research

1. *Distribution of Biomass*

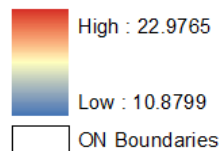
- Yields of Miscanthus are higher than switchgrass but break-even price lower
- GIS-based bio-economic model
- Climate scenarios cause greater yield increases in the north
 - break-even prices converge



Miscanthus & Switchgrass Yields in Ontario Croplands

Miscanthus Yield (t/ha)

Value

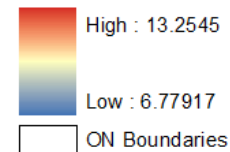


0 100 200 400 Kilometers

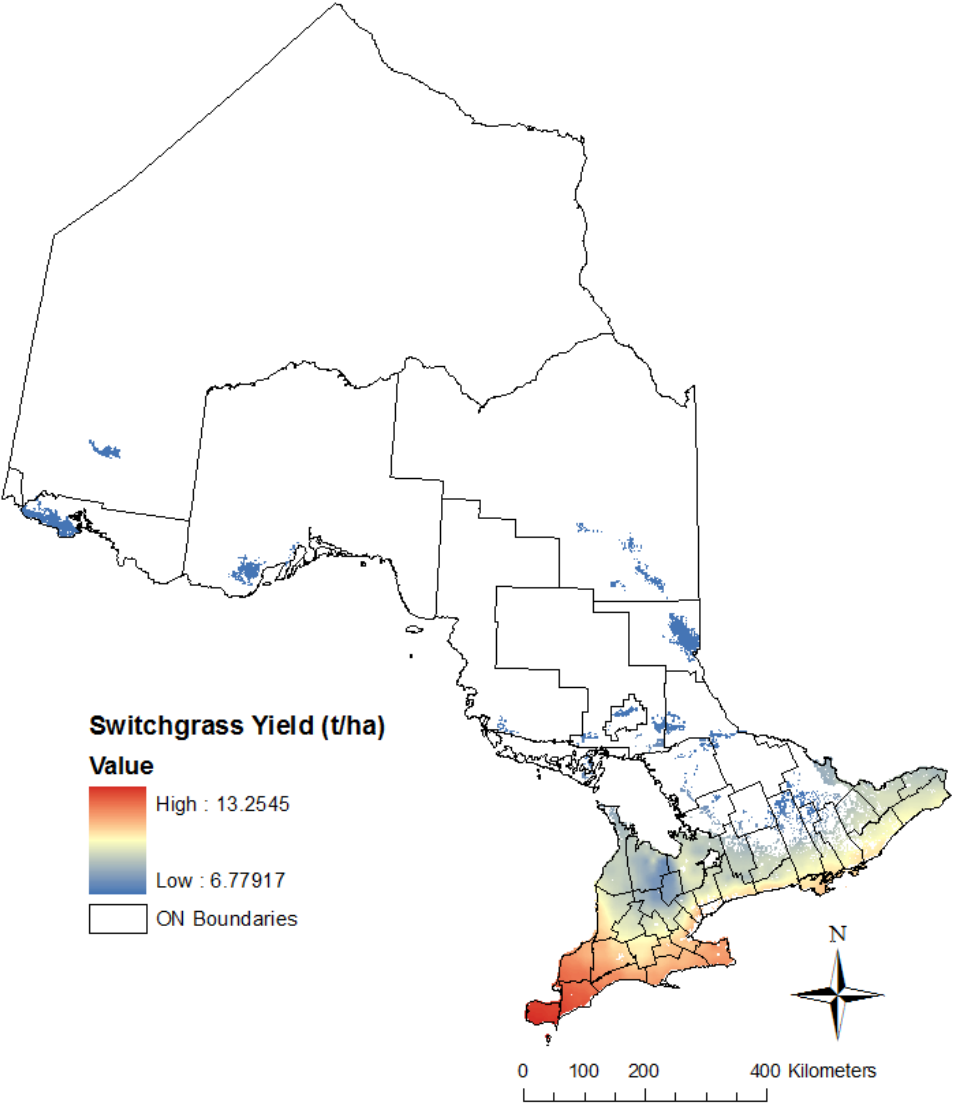
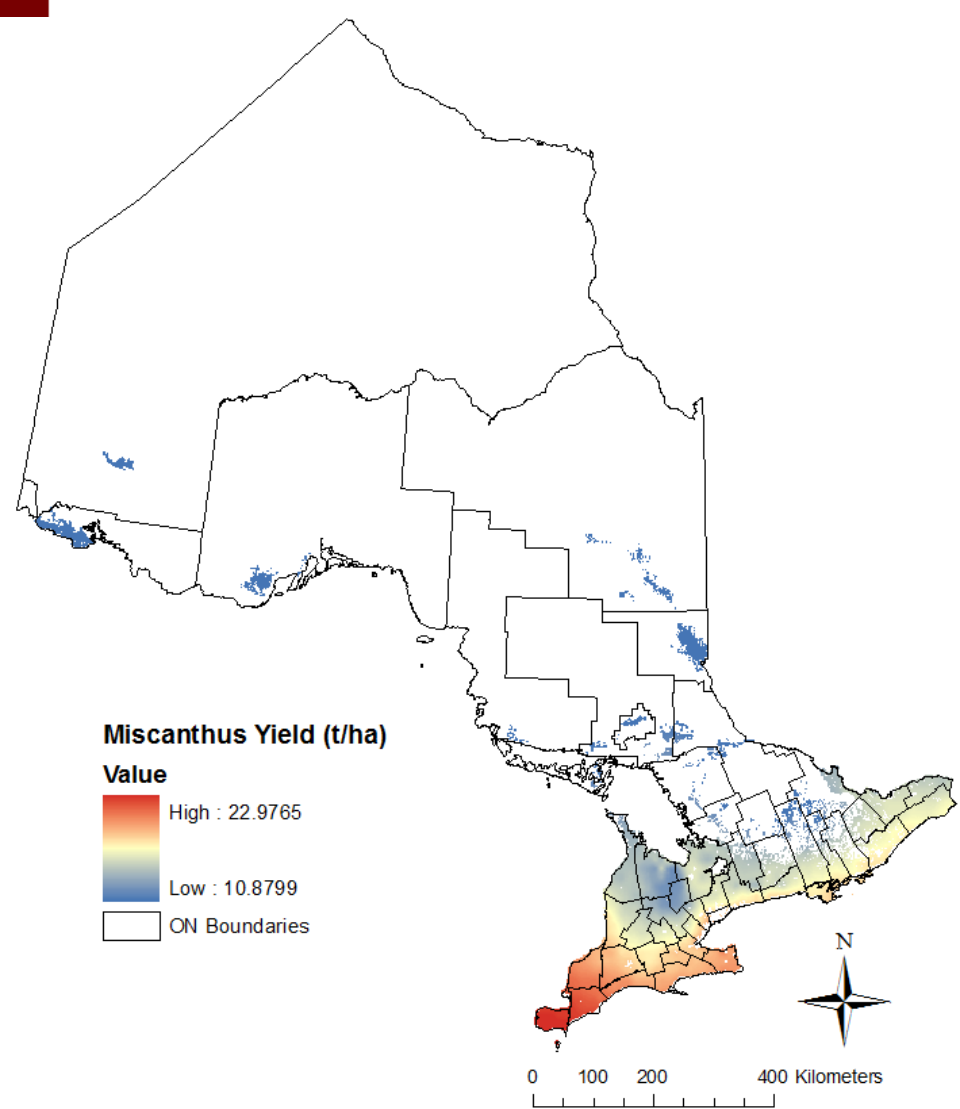


Switchgrass Yield (t/ha)

Value



0 100 200 400 Kilometers





Current Bioproduct Research

2. *Financial Feasibility of Methane Digesters*

- Spreadsheet model developed for use by OMAFRA staff and potential buyers

- Feasibility depends on
 - FIT price
 - Cost investment
 - Size
 - Availability of off-farm substrate



Current Bioproduct Research

3. *Factors Affecting Basis for Soybeans and Corn*

- Basis (CBOT – cash price) is higher at harvest (effect of increased local supply)

- Positive effect of
 - Interest rate
 - Inventory
 - Transportation costs



Current Bioproduct Research

4. *Global Effects of Biofuel Policies*

- Mandates for biofuel use ensure continued support for commodity prices
- Future effects without mandates depend critically on energy prices
- Developing country effects depend on role of commodities in economy
 - China- poverty elimination impact



Future Bioproduct Research

1. *Distribution of Biomass*

- Assessment of the spatial land use impacts of changes in farm-gate biomass prices relative to crop prices

- Supply chain issues
 - Where/who to pelletize, store



Future Bioproduct Research

2. *Livestock Inventory Effects from Feed Price Changes*

- Examine the relationship between the prices of DDGS and competing feedstuffs.
- Assess the effects of ethanol production on regional livestock production patterns



Future Bioproduct Research

3. *Applied Bean Genomics and Bioproducts*

- www.beangenomics.ca
- Sequencing the entire bean genome will accelerate development of varieties with:
 - improved disease resistance,
 - higher levels of naturally found nutraceuticals,
 - improved utility for bean protein in bioproducts industry.



Future Bioproduct Research

4. Global Impact Pathways from Biofuels

- Land expansion effects to be considered within global model



Summary of Bioproduct Research

- Variety of projects at the
 - Firm-level
 - Regional
 - Global
- www.bioeconproject.com