Economic Effects of Bioproduct Efforts on Ontario Agriculture

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Bioeconomy Research Highlights and Expo Day

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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*

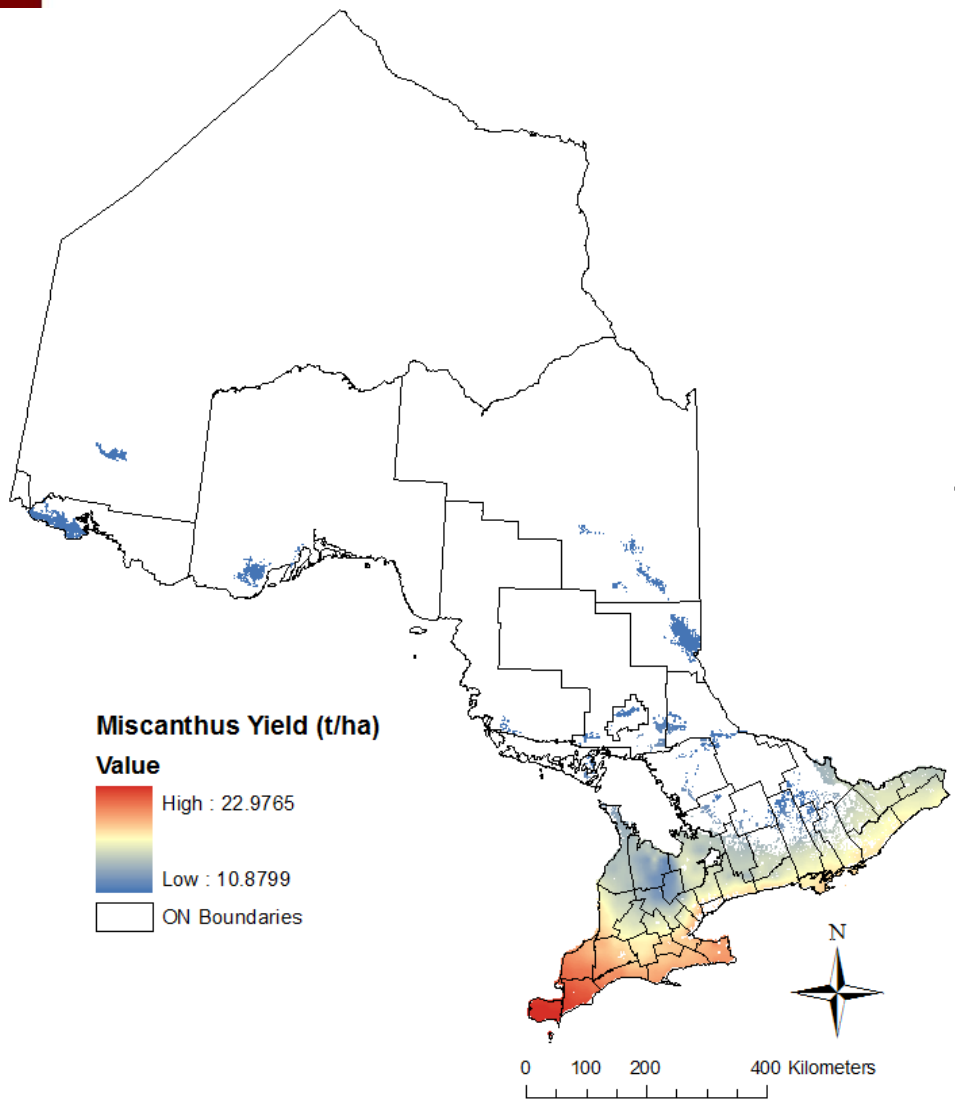
- Discussed by Bill Deen

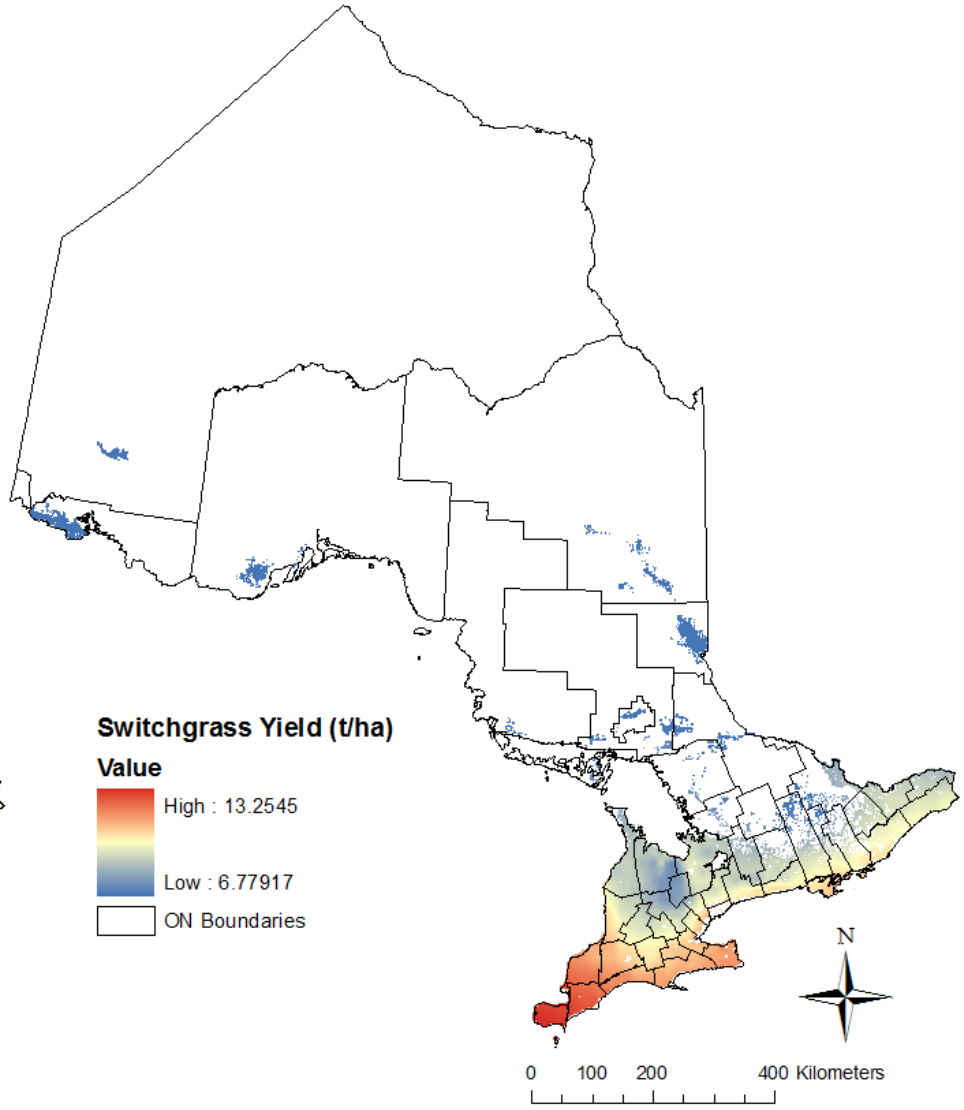
Current Bioproduct Research

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





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