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
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
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](http://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