

# OFA Biomass Projects Lessons Learned and Future

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Agriculture and  
Agri-Food Canada

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Agroalimentaire Canada

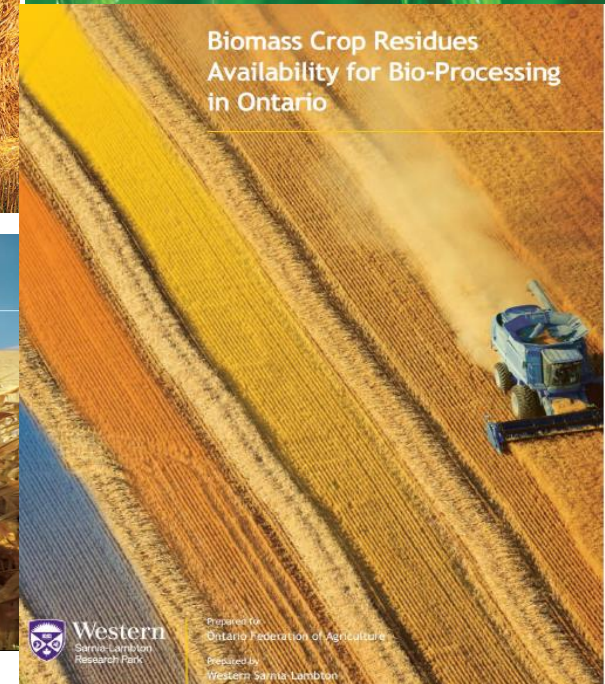
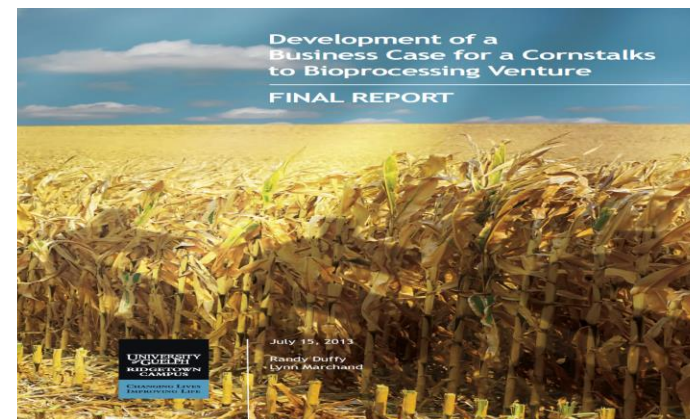
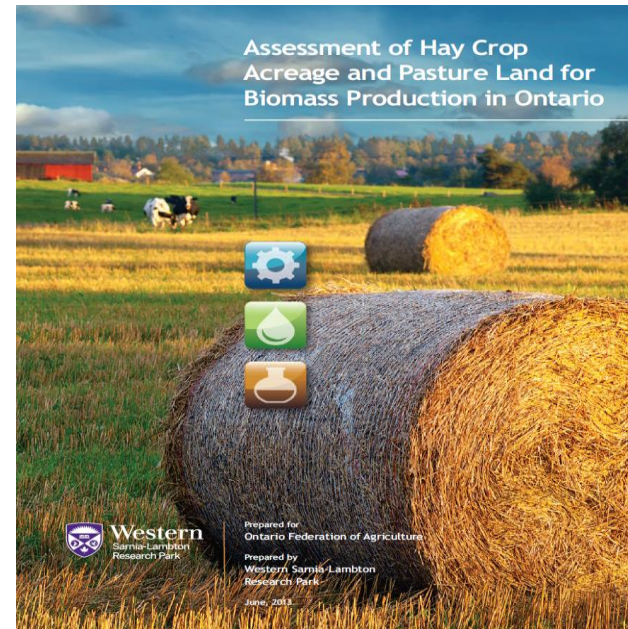
# Positioning Ontario For Investments

- Capacity to produce purpose grown
- Availability of crop residue
- Land use
- Business cases (2)

Report on Literature Review of Agronomic Practices for Energy Crop Production under Ontario Conditions



UNIVERSITY OF GUELPH  
JUNE, 2011

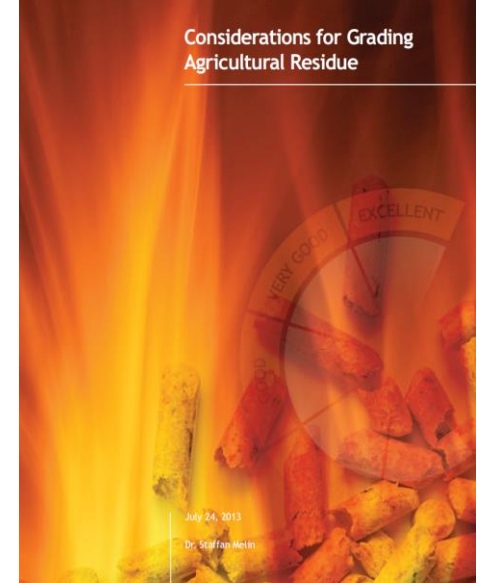


# Positioning Biomass Attributes

- For fuel
- For nutrient extraction
- For environmental attributes



**ONTARIO SWITCHGRASS AND MISCANTHUS FARM GATE CARBON FOOTPRINTS**  
*FINAL REPORT – OCTOBER 2013*



**Optimization and Scale-up of  
Liquid Nutrient Extraction and  
Recovery Process**



February 2012  
**CENNA TEK** BIOANALYTICAL SERVICES  
CENNA TEK BIOANALYTICAL SERVICES  
*The Future Looks Greener*

# Value Chains

|                         | Technology Maturity | Profitability | Economic Development Potential | Competition with Substitutes | Niche Market Existence | Regulatory & Institutional Support | Existing Value Chain Infrastructure | Total Score (Max. 135) |
|-------------------------|---------------------|---------------|--------------------------------|------------------------------|------------------------|------------------------------------|-------------------------------------|------------------------|
| Weighting               | 4                   | 4             | 5                              | 4                            | 3                      | 3                                  | 4                                   |                        |
| Bio-Energy              |                     |               |                                |                              |                        |                                    |                                     |                        |
| Space Heating           | 4                   | 2             | 2                              | 1                            | 2                      | 1                                  | 1                                   | 51                     |
| Combined Heat and Power | 4                   | 1             | 2                              | 1                            | 2                      | 3                                  | 1                                   | 53                     |
| Bio-Fuels/ Chemicals    |                     |               |                                |                              |                        |                                    |                                     |                        |
| Liquid Fuels            | 2                   | 2             | 3                              | 1                            | 3                      | 3                                  | 5                                   | 73                     |
| Chemicals               | 2                   | 1             | 4                              | 1                            | 3                      | 3                                  | 5                                   | 74                     |
| Bio-Materials           |                     |               |                                |                              |                        |                                    |                                     |                        |
| Bio-Composites          | 4                   | 3             | 4                              | 3                            | 4                      | 2                                  | 1                                   | 82                     |
| Bio-Plastics/ Polymers  | 2                   | 1             | 3                              | 1                            | 4                      | 2                                  | 1                                   | 53                     |

# The Cornstalk Project

- Value Chain Approach
  - Farmers to manufacturers and government
- Partnership
  - Knowledge exchange
  - Business Model expertise at commercial scale
  - Financing opportunities with government agencies
- Identified Benefits
  - Part of the emerging bio-economy
  - New market for farmers and farm jobs
  - New jobs for rural communities

**LANXESS**  
Energizing Chemistry

**BioAmber**  
CHEMISTRY INSPIRED BY NATURE

**Midori**  
RENEWABLES

**BIOINDUSTRIAL**  
INNOVATION CENTRE

**AGRIS**  
CO-OPERATIVE  
AGRICULTURAL INNOVATION & SOLUTIONS



**OFA** Ontario  
Federation of  
Agriculture

Ontario  
Agri-Food  
Technologies  
*from discovery to profit*

 Ontario

 **AAC**  
agricultural adaptation council



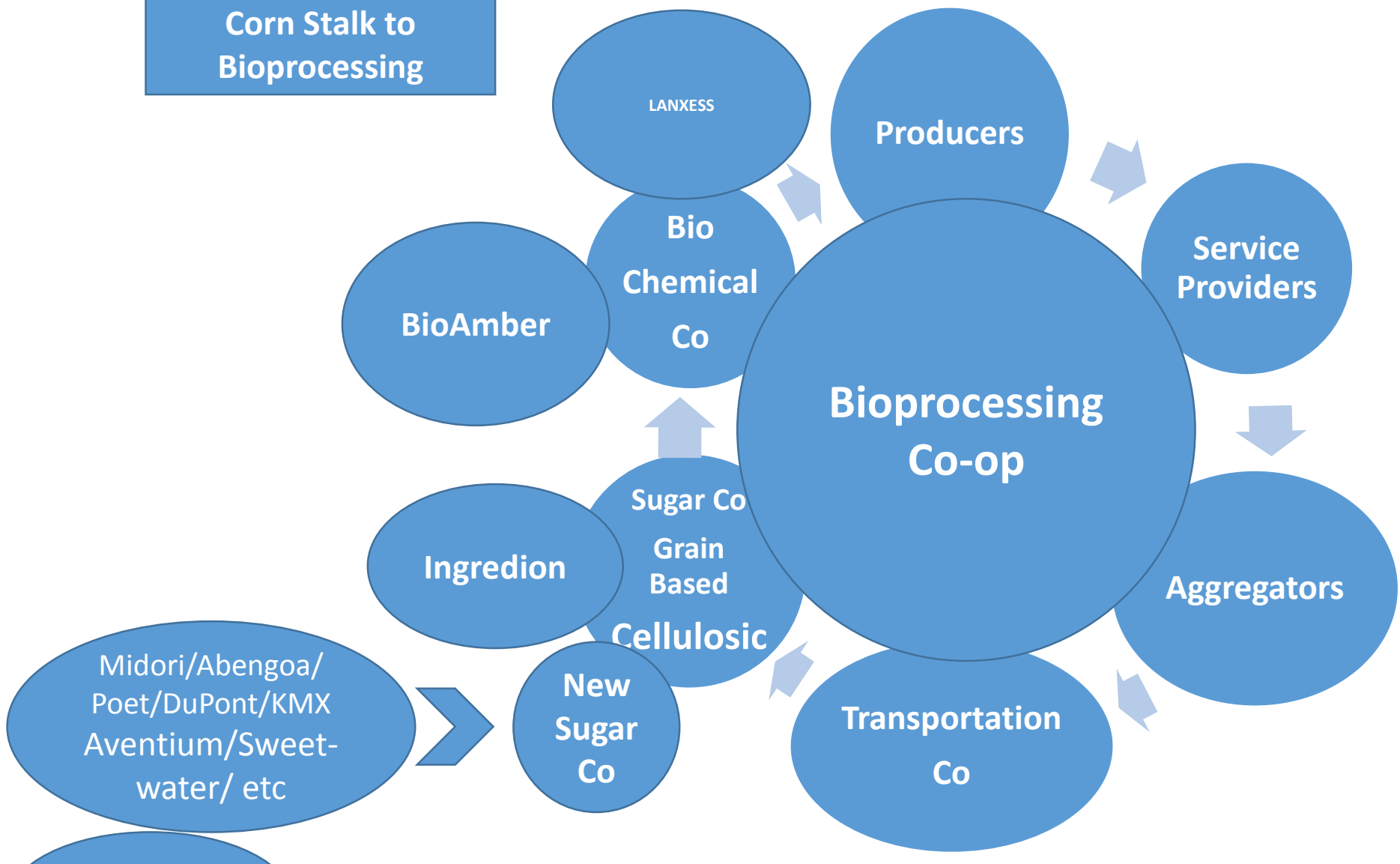
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# Co-op Model

- A business model based on supply and investment to enable feedstock suppliers to garner a fair share of the value chain benefits beyond the farm gate

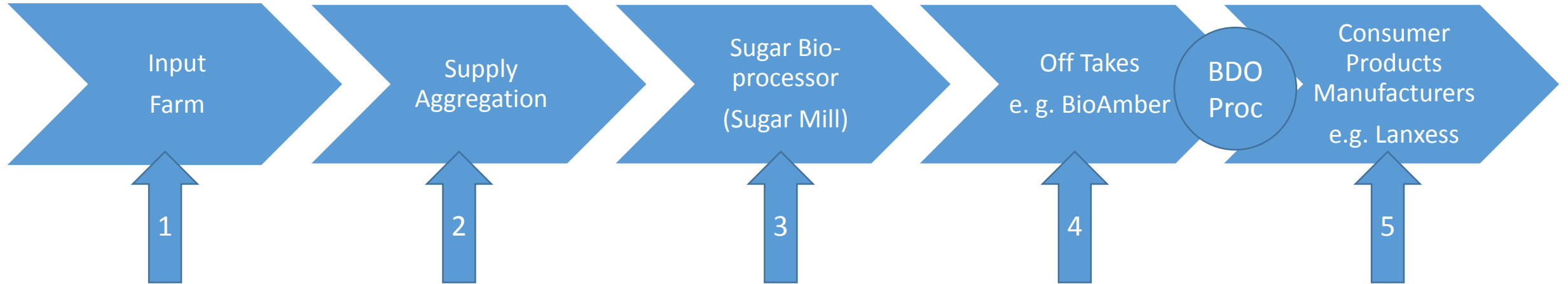
**Bio Economy  
Corn Stalk to  
Bioprocessing**



Midori/Abengoa/  
Poet/DuPont/KMX  
Aventium/Sweet-  
water/ etc

Research  
Institutions

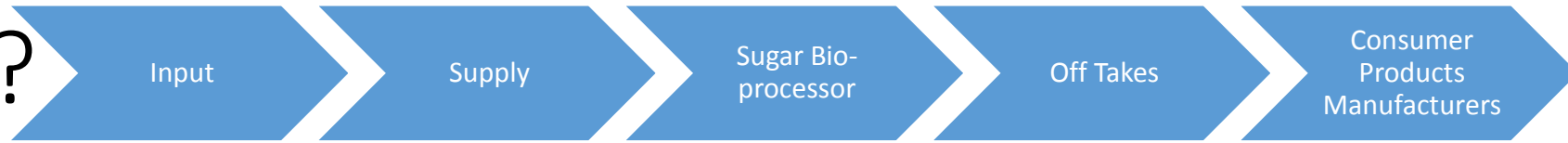
# Cornstalk Risk Mitigation Model



- Each step must be mitigated
- Mitigation starts one level down from the farm activity and finished one level up from the bio-processor off take agreements



# Who De-Risks?



- OFA Approach on the Sugar Bio-Processor
  - Public policy analysis
  - Sustainability parameters (food & feed, soil then bio-economy opportunities)
- The OFA Approach through Partnerships and Advisory Committee
  - Input interface with equipment manufacturers, service providers and farmers
  - De-risking sugar technology (efficiency, scale and readiness) through BIC
  - De-risk technology partnership members at corporate management levels through BIC
  - De-risking supply and aggregation through focus groups with local producers and local cooperatives (e.g. AGRIS)
  - De-risking financing through investors & government support (e.g. SDTC and MEDTE)
  - De-risking sugar bio-processor operation through off-take agreements
  - De-risking off-take agreements through local manufacturer demand

# Future Opportunities – Regional Scale

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# Leadership

- Investment Driven
- Regional
- Many Players
- Value chain partnerships

# OFA 2014 Agenda

- Soil Profile
- Harvesting Protocol Demo
  - Canada Outdoor Farm Show
  - Lambton Farm
- International Sustainability Assessment
- Stover sampling and analysis

Each Day Counts Building a Business

Thank you