

## Canada's Organic Science Cluster: Science with Impact for Profitability, Sustainability and Competitiveness

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### Abstract

*Organic science must be a catalyst that explores opportunities and creates a platform for processors and producers to link, while promoting stability and creating an environment for growth in production to support processing and to capture domestic markets. In this paper we provide an overview of the goals and potential benefits of a national science program for organic agriculture in Canada from 2013-2018. The "Organic Science Cluster II (OSCII): Science With Impact for Profitability, Sustainability and Competitiveness" is linked with Canada's Organic Value Chain Roundtable, the think tank addressing priorities for increasing capacity and market development for organic. OSCII will increase competitiveness by addressing barriers that are constraining production and by capturing new market opportunities. OSCII will be coordinated and managed by the Organic Agriculture Centre of Canada at Dalhousie University's Faculty of Agriculture on behalf of the industry applicant, the Organic Federation of Canada.*

### Introduction

Organic agriculture is a model of food production that is guided by principles of sustainability in terms of environment, resources, economics and animal well-being. It is a regulated and inspected production system driven by consumer demand domestically and internationally. Canada has established regulated standards (CAN/CGSB 2008) and equivalency agreements with the U.S. and E.U., which account for over 90% of the global organic market. Consumers are willing to pay premium prices for raw products, suggesting that the production system in itself adds value in their view. The organic sector is like a premium brand spanning all commodity markets. It captures the willingness of consumers to pay more for practices that are grounded in environmental sustainability and hence lower social cost.

As the market for organic food continues to grow, the gap between Canadian supply and demand is widening. Approximately 80% of organic product consumed in Canada is imported (AAFC 2010). This presents a significant opportunity for Canadian producers to expand production. In order to thrive, organic agriculture and food production must have a stable and diverse base of production that supports the entire value chain.

### Cluster Goals Match National Strategy

Canada's Organic Value Chain Roundtable (OVCRT) was launched in 2006 to build a shared understanding of its competitive position, create consensus on how to improve it, and put plans into action (AAFC 2011). OVCRT has recognized the need for science supporting organic production and market development in its strategic plan and the Research and Innovation Working Group (RIWG) was established as the Steering Committee for OSCII. The RIWG is responsible for identifying the broad-scope research priorities for organic agriculture. This has been supported by national surveys (OACC 2008) and consultations held at the Canadian Organic Science Conference (OACC 2012). The vision of the Cluster is that "Science and innovation enables organic agriculture to thrive in Canada" and it is supported by the following goals and objectives:

Goals:

- A. Enable organic agriculture to thrive in Canada through science and innovation,
- B. Increase profitability and competitiveness of Canadian producers and processors in organic markets by resolving barriers,
- C. Capture growing organic market opportunities through development of innovative products, practices and processes,
- D. Canada is a leading nation in organic agriculture guided by science and innovation,

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- E. Support development of sustainable production systems that reduce business and environmental risk for all producers by using ecologically sound management,
- F. Maintain Canada's reputation as a leader in organic standards development in compliance with international equivalency agreements,
- G. Optimize the impact of investment in applied agricultural science by linking stakeholders with scientists and scientists with each other.

**Objectives:**

1. Intensify agricultural production in an ecological approach through improved understanding of interactions at the farm level and application of ecologically sound practices, inputs and technologies,
2. Identify innovative and ecologically sound solutions to pest problems by advancing and applying our understanding of pest life cycles and management practices,
3. Identify improved practices and alternative products for maintaining the health and welfare of livestock under organic management,
4. Increase the profitability and competitiveness of Canadian products in the marketplace by developing value-added options and technologies and studying marketing strategies,
5. Maximize impact of science in organic agriculture through knowledge transfer directed at both organic and non-organic stakeholders,
6. Ensure Canadian stakeholders are aware of the latest advances in organic science in order to maintain standards and increase competitiveness and profitability in the marketplace,
7. Increase and support Canada's scientific capacity in organic by working with scientists, linking with stakeholders, and training new highly qualified personnel.

**Overview of Project**

The organic sector is unique in the agricultural community in Canada in that it represents a regulated and inspected production system driven by consumer demand domestically and internationally rather than a single or small group of commodities. Organic agriculture is a model of food production that is guided by principles of sustainability in terms of environment, resources, economics and animal well-being. As such, the research and development priorities for organic agriculture may span all commodity groups and applies to the entire value chain, from production through to the consumer. This Cluster is very much industry-led research and development and its outcomes are centered on competitiveness, market growth, adaptability and sustainability. This will be accomplished by using innovation to drive 'ecological intensification' through the following Themes:

- A. Field Crops: Optimizing productivity and competitiveness through adaptable systems for field crops,
- B. Horticultural crops: Advancing the science of vegetable, fruit novel horticultural crop production
- C. Crop pests: Innovation in sustainable pest management strategies,
- D. Livestock: Optimizing animal health and welfare for productivity and quality,
- E. Markets: Adding value to capture markets, understanding consumer demand and marketing structures, and
- F. Knowledge Transfer: Creating impact through knowledge translation and transfer to organic stakeholders.

The Field Crop and Horticultural Crop themes will generate new knowledge and innovative practices with activities that include both station- and farm-based, medium and long-term research trials to maximize research relevance and impact for industry stakeholders. The Field Crop theme will examine new crops for Canada, advance the genetics of cereal cultivars through traditional and participatory breeding programs, and studying low-input and sustainable solutions for managing soil fertility. The Horticultural theme will explore season extension and energy efficiency strategies, soil management and compost utilization, flavour and quality improvement, enhancement of health promoting properties, and production of various organic ornamental crops. Weeds, insects and diseases are an on-going challenge for all producers. In organic agriculture adoption of cultural controls is favoured to reduce risks associated with pesticides. The theme of Crop Pests seeks innovative solutions that are suitable for dealing with pests under organic management. Solutions for diseases in horticultural and grain crops both in storage and in the field will be explored.

Practices for insect and weed management in both field and horticultural cropping systems need to continuously evolve. The standards for organic livestock production are unique in that they not only establish production guidelines but they also address animal welfare and potential risks outside of production. OSCII will explore feeding, housing and disease management in dairy, poultry and aquaculture.

### **Knowledge, Translation and Transfer**

Organic science must be relevant and presented in an accessible form to stakeholders who can use it. A key strength of this Cluster is the linkages that have been strongly encouraged and established between stakeholders and scientists. Knowledge translation and transfer will occur through: a) the research Activities led by the researcher and their collaborators, and b) aggregated knowledge dissemination by the Organic Agriculture Centre of Canada by:

1. Awareness Building: increasing recognition of the credible, peer-reviewed applied science that is conducted in Canada,
2. Knowledge Translation: translation of knowledge both from academic to accessible as well as between Canada's two official languages (English and French).
3. Knowledge and Technology Transfer: dissemination of results targeted toward stakeholders that can use it through documents, conferences, videos, etc.

### **Discussion**

Although a relatively small market for organic product in the world, Canada maintains a strong reputation for quality in export markets. Domestically, Canada is far from achieving its full capacity to satisfy domestic markets. Organic science is needed to support enhanced production and value adding through innovation, increased efficiency and addressing constraints to production and processing. Organic Science Cluster II links industry stakeholders with university, private and government researchers, making the science relevant and impactful. Results of the Cluster research program will be accessible through websites, conferences, videos and documents that are accessible to stakeholders.

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