

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

BACKGROUND

Canada's Organic Science Cluster II (OSCII) is an industry-driven research and development initiative comprised of 37 research activities across Canada, with an overall vision that "Science and innovation enables organic agriculture to thrive in Canada." Led by the Organic Agriculture Centre of Canada (OACC) at Dalhousie University and the Organic Federation of Canada (OFC), OSCII addresses research priorities for Canadian organic agriculture with a goal of increasing competitiveness by capturing new opportunities and addressing barriers that are constraining production. OSCII follows and builds upon the first Organic Science Cluster, which ran from 2009-2013. OSCII is funded by the Canadian Government's Agriculture and Agri-Food Canada's *Growing Forward 2* (GF2) program with support from 65 industry partners.

OSCII PROCESS

OSCII unites researchers and the organic community, with funding from the federal government (75%) and industry partners (25%). OSCII aims to increase and support Canada's scientific capacity in organic agriculture, linking scientists with stakeholders and maximizing the impact of organic science through knowledge transfer. A rigorous process is followed for all aspects of OSCII, including:

1. The Research and Innovation Working Group of Canada's Organic Value Chain Roundtable serves as the Steering Committee for OSCII, directing OSCII's strategy and research priorities.
2. Research prioritization was carried out through surveys and consultations with stakeholders. Over 100 preliminary proposals were screened by stakeholders and organic professionals for relevance and potential impact.
3. Full proposals were prepared by lead researchers, and a comprehensive application was prepared and submitted by OACC and OFC.
4. Scientific peer review of all proposals was completed by at least two scientists with expertise in the subject area.
5. Funding decisions were made through a government review process.
6. Program implementation by researchers, cluster management by OACC and OFC and targeted knowledge transfer to stakeholders by all parties.
7. Scientific progress and performance are evaluated on an ongoing basis by a Science Advisory Body.

OSCII THEMES



A: FIELD CROPS

Objective: Ecologically intensify organic field crop production for domestic and international markets through an improved understanding of interactions at the farm level and the application of sound practices, inputs and technologies. Researchers will study:

- Participatory and traditional plant breeding and seed production
- Reduced tillage and diversified cropping sequences
- Restoring yield productivity and C sequestration in organic farming systems: The role of composted manure in long-term studies
- Effects of composted manure application on soil mineral nutrients, yield, and crop nutrient uptake
- Optimizing green manure and fertility management
- Applying ecology for pulse-based cropping systems: Phosphorus sources and soil microbiology

B: HORTICULTURE CROPS

Objective: Optimize and innovate organic horticulture production using ecological practices, inputs and technologies. Research will examine:

- Integrated organic practices and exclusion nets for organic apples
- Microbial management in organic viticulture
- High tunnels for high-value organic vegetable and nutraceutical crops
- Optimization of cooling and dehumidifying methods for organic greenhouses
- Increased productivity and quality of organic greenhouse grown vegetables
- Impact of green and organic fertilizers on the yield and safety of organic carrots
- Production of organic cuttings and potted flowering plants under LED lights
- Organic fertilization of hops intended for food and nutraceutical processing
- Soil management to improve flavor and phytochemical content of carrot

C: CROP PESTS

Objective: Identify innovative and ecologically sound solutions to pest problems by advancing and applying our understanding of pest life cycles and management practices. Activities will explore:

- Organic control strategies for apple scab
- Using strawberry's natural genetic ability to absorb silicon
- Postharvest UV light for preservation of fresh organic fruits and vegetables
- Seed disinfection for organic production of sprouted vegetables
- Organic integrated pest management for grain storage and processing facilities
- Plant essential oils for protection against blueberry insect pests
- Integrated pest management strategies for new viral biopesticides
- Weed control for organic flax, pea and lentil production
- Irrigation regimes for weed control in organic cranberry production
- Innovative weed management for organic crops
- Biofumigation for weed seedbank management

D: LIVESTOCK

Objective: Identify improved practices and alternative products for maintaining the health and welfare of livestock under organic management. Research activities include:

- Sustainable alternative sources of bedding for dairy cows
- Exercise and stall modifications for cow comfort and performance in tie-stalls
- Alternative therapies for the treatment of clinical mastitis on organic dairies
- Bioactives for control of internal and external parasites in large ruminants
- Fruit pomaces to improve immunity and health of organic chickens

E: VALUE ADDING

Objective: Increase the profitability and competitiveness of Canadian products in the marketplace by developing value-added options and technologies. Researchers will pursue:

- Identifying and overcoming limiting factors to organic food processing
- Organic production of vegetable extracts for food markets and nutraceuticals
- Alternative approaches to direct addition of nitrite/nitrate for organic cured meats

Organic Agriculture in Canada:

- Regulated standards implemented in 2009
- 3,713 certified organic farms in 2011
- 1.8% of agricultural operations in Canada are organic, occupying 900,000 hectares
- Organic market worth \$3.7 billion in 2012

ACKNOWLEDGMENTS

OSCII is managed by Dalhousie University in collaboration with the Organic Federation of Canada, and is funded by the Government of Canada's *Growing Forward 2* initiative and 65 industry partners.

For more information, please visit:
www.dal.ca/oacc