



Connecting Environmental Sustainability with the Science of Organic Production | 2018-2023

The Organic Federation of Canada (OFC) in collaboration with the Organic Agriculture Centre of Canada (OACC) at Dalhousie University are pleased to introduce Organic Science Cluster 3 (OSC3): Connecting Environmental Sustainability with the Science of Organic Production. OSC3 is supported by the AgriScience Program under Agriculture and Agri-Food Canada's Canadian Agricultural Partnership (an investment by federal, provincial and territorial governments) and by over 70 partners from the agricultural community.

Organic Science Cluster 3 provides funding for 28 research activities. Work will be done by 60 researchers at 15 AAFC research centres and 14 universities/research institutions across Canada. Research will also take place at almost 150 Canadian farms. 41 graduate students are expected to participate.

The Cluster also includes a science coordination and national science communication program, to ensure the integrity and impact of the work.

Organic Science Cluster 3 builds on the success of OSC I and OSC II, and is part of the strategic plan of the Organic Value Chain Roundtable. The research activities included in OSC3 are the result of a national research needs and prioritization process, followed by a call for letters of intent. Letters of intent were reviewed for organic sector relevance and impact by a committee of 20 organic sector professionals. The invited full proposals underwent a rigorous scientific peer review process for scientific merit.

Public attention is increasingly being directed toward the roles of agriculture as a source of food and feed, in protecting the shared environment, and in taking responsibility for mitigating and adapting to climate change. Organic agriculture is a model of food production guided by principles of sustainability in terms of environment, resources, economics and animal well-being. The Canadian organic market is thriving, with double digit growth rates over the past decade, and the 5th-largest organic market in the world.

Organic production uses reduced-input, agro-ecological approaches. The research and development priorities for organic agriculture span all commodity groups and apply to the entire value chain, from production to consumption.

OSC3 research:

- a) Targets environmental challenges associated with agriculture,
- b) Supports new crop and variety development to diversify risk management options in an increasingly turbulent economic and ecological environment,
- c) Identifies low risk solutions to address pest problems,
- d) Explores options for improving the health and welfare of livestock,
- e) Transfers scientific knowledge to stakeholders in a form that they can use, and
- f) Builds scientific capacity in ecologically-based agricultural production.

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Themes & Activities

Partners

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| | <p>Cluster Administration. Nicole Boudreau, Organic Federation of Canada - info@organicfederation.ca Margaret Graves, Organic Agriculture Centre of Canada, Dalhousie University – gravesm@dal.ca</p> |
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Science Coordination

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| 1 | <p>Ensuring OSC3 science has integrity and impact. Dr. Andrew Hammermeister & Margaret Graves, Organic Agriculture Centre of Canada, Dalhousie University</p> |
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Field Crops

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| 2 | <p>Development of breeding strategies for organic soybean production systems in Canada. Dr. Istvan Rajcan, University of Guelph</p> | Field Farms Marketing Ltd., Organic Council of Ontario, Manitoba Pulse & Soybean Growers, Grain Farmers of Ontario, Western Grains Research Foundation |
| 3 | <p>Evaluation of farmer-selected wheat, oat and potato genotypes under organic production in eastern and western Canada. Dr. Martin Entz, University of Manitoba</p> | Western Grains Research Foundation, Organic Alberta, The Bauta Family Initiative on Canadian Seed Security - USC Canada, FarmFolk CityFolk |
| 4 | <p>Efficacy of using cover crops in 2 of the 3 growing seasons on nitrogen supply in an organic soybean-winter wheat-corn rotation. Dr. Xueming Yang, AAFC Harrow</p> | Grain Farmers of Ontario |
| 5 | <p>Organic oat breeding / oat cultivars specifically developed for organic production systems in Canada. Dr. Jennifer Mitchell Fetch, AAFC Brandon</p> | Grain Millers, Inc., Nature's Path, Prairie Oat Growers Association |
| 6 | <p>Breeding of winter cereals to benefit no-till organic production systems. Dr. Jamie Larsen, AAFC Lethbridge</p> | Western Grains Research Foundation, FP Genetics, SeCan, Saskatchewan Winter Cereals Development Commission, Duban Farms Ltd, Organic Alberta |
| 7 | <p>Optimizing yield and resilience of organically grown milling oat. Dr. Steve Shirtliffe, University of Saskatchewan</p> | Western Grains Research Foundation |
| 8 | <p>The right balance: management strategies for plugging organic soil health constraints and moving forward. Dr. Bobbi Helgason, University of Saskatchewan Dr. Reynald Lemke, AAFC Saskatoon</p> | Orval G. Caldwell and H. Ruth Gardner Caldwell Fellowship in Sustainable Agriculture/Agroecology, Organic Agriculture Fund Private Endowment, Western Grains Research Foundation, Leffers Brothers Ltd., City of Saskatoon |
| 9 | <p>Diversified cropping strategies to improve sustainability of organic crop production in the Brown soil zone. Dr. Myriam Fernandez, AAFC Swift Current</p> | Western Grains Research Foundation, Grain Millers, Inc., Imperial Seed Ltd., Cody Straza, Blair Metke |
| 10 | <p>Agronomic performance, resilience and baking quality of wheat cultivar mixtures adapted to organic management in Eastern Canada. Dr. André Comeau & Julie-Anne Wilkinson, Centre d'expertise et de transfert en agriculture biologique et de proximité (CETAB+)</p> | La Milanaise |



Horticulture

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| 11 | Participatory variety trialing and breeding for commercial organic vegetable growers and seed producers in Canada. Dr. Hannah Wittman, University of British Columbia | The Bauta Family Initiative on Canadian Seed Security - USC Canada |
| 12 | Development of an organically managed baby greens production system: a multidisciplinary approach. Dr. Caroline Côté, Institut de recherche et de développement en agroenvironnement (IRDA) | Vert Nature |
| 13 | Organic vertical farming vs. smart use of greenhouses. Dr. Martine Dorais, Université Laval | L'Abri végétal, Inno-3B, Premier Tech Ltd. |
| 14 | Improving organic vegetable farm sustainability through enhanced nutrient management planning. Dr. Sean Smukler, University of British Columbia | Anonymous |
| 15 | Unique cover crops, rootstocks, and irrigation techniques for Canadian vineyards. Dr. Liette Vasseur & Dr. Andrew Reynolds, Brock University Dr. Mehdi Sharifi, AAFC Summerland | BC Wine Grape Council, Heather Laundry's Vineyard, Southbrook Vineyards |
| 16 | Physical control of pests and increasing the harvesting season via an innovative high tunnel adapted to organic berry farming, rain shelter and insect-proof nets. Dr. Martine Dorais, Université Laval | Les fraises de l'île d'Orléans inc., Les Industries Harnois inc., Dubois Agrinovation |

Pest Management

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| 17 | Optimizing tillage and competitive green manures for Canada thistle control. Dr. Steve Shirliff, University of Saskatchewan | Western Grains Research Foundation |
| 18 | Potential of predatory bugs (Nabis and Orius) as biological control agents of the tarnished plant bug (<i>Lygus lineolaris</i>) in organic strawberry field. Dr. Caroline Provost, Centre de recherche agroalimentaire de Mirabel (CRAM) | Centre de recherche agroalimentaire de Mirabel, L'Institut national de la recherche scientifique, Association des producteurs de fraises et de framboises du Québec |
| 19 | Saponins as inducers of host resistance for insect and disease management in organic greenhouse production. Dr. Simon Lachance, University of Guelph | Erievue Acres, Freeman Herbs, Ontario Greenhouse Vegetable Growers |
| 20 | Ecological pest management for Spotted Wing Drosophila. Dr. Juli Carrillo, University of British Columbia Dr. Annabelle Firlej, Institut de recherche et de développement en agroenvironnement (IRDA) | Active Agriscience Inc., The Carrillo Lab, Association des producteurs de fraises et de framboises du Québec |

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| 21 | Managing wireworms in vegetable crops using novel tactics. Dr. Todd Kabaluk, AAFC Agassiz | Enterra Feed Corporation, Red Soil Organics, Amara Farm, GWR Visser Farm, Fraser Valley Organic Producers Association, Lower Mainland Horticultural Improvement Association, Mid-Island Farmers Institute, PEI Potato Board, Snow Farms Ltd., Terralink-Biofert, E.S. Cropconsult Ltd., Eatmore Sprouts & Greens Ltd., Fraserland Organics, Growers Supply Co., West Coast Seeds |
| 22 | Biological control and management of Fusarium head blight and associated diseases in organic grain production. Dr. Manish Raizada, University of Guelph Dr. Myriam Fernandez, AAFC Swift Current | Grain Farmers of Ontario, Alberta Wheat Commission, Saskatchewan Wheat Development Commission, Prairie Heritage Seeds Organics Inc., Denis Brisebois, Martin Meinert, Dwayne Smith |
| 23 | Development of postharvest UV light therapy system and technology for extended preservation of fresh organic fruits and vegetables. Dr. Joseph Arul, Université Laval | Ardor Corporation |

Livestock

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| 24 | Optimization of berry by-products use in organic poultry production. Dr. Moussa Diarra, AAFC Guelph | Wild Blueberry Association of North America, Canadian Cranberry Growers Coalition, Fruit d'Or, Centre de recherche en sciences animales de Deschambault, Rosebank Farms |
| 25 | Welfare friendly alternative to surgical castration for organic pigs. Dr. James Squires, University of Guelph | Canadian Centre for Swine Improvement |

Environment

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| 26 | The effects on soil biology, soil chemistry, and water quality of amending organically managed soils with struvite. Dr. Henry Wilson, AAFC Brandon | Ostara Nutrient Recovery Technologies Inc., Western Grains Research Foundation |
| 27 | Soil health in organic tillage-based systems. Dr. Derek Lynch, Dalhousie University | Grower participants (12) |
| 28 | Increasing pollination, biological control and beneficial insect diversity farms using flowering habitats. Dr. Jason Gibbs, University of Manitoba | Western Grains Research Foundation, Grower participants (25-30) |
| 29 | Net life cycle greenhouse gas emissions of Canadian organic field crop production systems. Dr. Peter Tyedmers, Dalhousie University | Grower participants (up to 60) |

Knowledge Transfer

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| 30 | Enhancing research impact: knowledge translation and transfer (KTT) for the Canadian organic community. Nicole Boudreau, Organic Federation of Canada Dr. Andrew Hammermeister, Organic Agriculture Centre of Canada, Dalhousie University | All industry partners support OSC3's KTT effort |
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