Linking **Organic** Knowledge

OACC

Organic Agriculture Centre of Canada

Linking Organic Knowledge

Organic Science Cluster

NSAC. Embrace Your World.

2011 - 2012 Annual Report

Organic Science Cluster Partners & Sponsors 2011-2012

Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

Growing Forward — a federal-provincial-territorial initiative

NSAC. Embrace Your World.

OFC FBC — Organic Federation of Canada / Fédération biologique du Canada

CWB

Ontario

Home hardware

Les fraises de l'Île d'Orléans inc.

Les Serres Lefort

Olymel

Jardins-Nature

Organic Meadow

Biologico — Sainte-Sophie Saguenay — Sagami

Western Ag Innovations

Demers — Fruits rouges, culture verte.

Les Serres Frank Zyromski

Berger

Ontario Sheep Marketing Agency

CSGA — ACPS

Grain Millers

BC New Varieties Development Council

Jardinerie Fortier

Prince Edward Island Canada

Anne's PEI Farm

L'Abri Végétal — Culture biologique en serre

novozymes — Rethink Tomorrow

Nature's Path — Organic · Biologique

Homestead Organics

Prairie Oat Growers Association

Organic Grocer

Kubota

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University of Manitoba

organic Alberta

Additional OACC Partners & Sponsors 2011-2012

Agri-Futures

Nova Scotia

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LaHave Forests

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Director's Message

The Organic Agriculture Centre of Canada celebrated its 10th anniversary on July 12, 2011. Over the last 10 years, OACC has evolved to become a prominent centre supporting research and education in organic agriculture across Canada. Last year, we celebrated Dr. Ralph Martin, the Founding Director of the OACC who has moved on to pursue other career endeavours, but still remains one of our greatest supporters. This year, I would like to acknowledge the long standing support that OACC has received as a part of the Nova Scotia Agricultural College (NSAC). Without the support of the NSAC administration, faculty and staff, the OACC is not likely to be in existence today. The 2011-12 year marks the last year the OACC will be recognized as a part of the NSAC, as the NSAC undergoes a merger with Dalhousie University. OACC will become a centre within Dalhousie University as NSAC becomes the new Faculty of Agriculture. During this time of change we are exploring the many new opportunities that this merger presents to us.

Over the last 10 years, OACC has worked on hundreds of farms in Canada, either directly or through collaboration with others. Each year we train graduate students and employ summer students and technicians who move on to professional and production careers in agriculture with exposure to organic research, production and certification. These individuals are a part of the future of organic in Canada, and we feel privileged to have an opportunity to get to know them. The OACC Advisory Board has worked hard to update our vision, mission and policy manual and will be holding meetings to strategically plan for the future of the OACC.

OACC would not exist without the financial and in-kind support of our industry partners, the funding provided by Agriculture and Agri-Food Canada through a variety of national programs, and the project support provided by many provincial agricultural departments/programs. Most recently, our primary work has been the management of the Organic Science Cluster, an $8.8 million initiative involving over 50 scientists at 35 research stations or collaborator sites across Canada. We work in close partnership with the Organic Federation of Canada (OFC), the industry applicant for the Cluster, as we manage the finances, reporting and communications related to the Cluster. This program would not be possible without the financial support provided by industry stakeholders which leverages government funds.

This past year was highlighted by the Canadian Organic Science Conference held in Winnipeg in February, where OACC, OFC and the University of Manitoba (Dr. Martin Entz and company) worked closely to host a very enjoyable conference and strategic meeting. Over 160 scientists, students, farmers, industry stakeholders and government workers were present to hear and talk about research including soil fertility management, cropping systems, greenhouse production, environmental sustainability, and social sciences. In addition, a special session was held to discuss the issues and opportunities relating to extension (i.e. translating science into farmer practices). The message from the conference was clear: Everyone was amazed by the scope of organic research being conducted, but at the same time wanted to see more promotion of the research so that farmers were made aware of what was happening, and so the research can be turned into a positive impact on the organic sector.

Our work at OACC continues to fall into the following categories:

i. Management and administration of the Organic Science Cluster
ii. Communication of organic science to industry stakeholders
iii. Research led out of the OACC office
iv. Collaboration with researchers across Canada
v. Service (working on national, regional and local committees)

As we move into the final year of the Organic Science Cluster, we also turn our attention towards Growing Forward II, the next policy framework for agriculture in Canada, and the next Organic Science Cluster, which could set the federally funded research agenda for organic agriculture for 2013-18. OACC is working with the organic sector to identify research priorities and industry partners who are prepared to advance the science of organic in Canada.

We look forward to continuing to work with stakeholders across the organic sector over the coming years and welcome all comments and suggestions relating to how we can better serve the interests of the sector.

Andrew M. Hammermeister Ph.D., P. Ag.
Director, OACC
Assistant Professor, NSAC

OACC Vision and Mission

Vision

Sustainable and science-based organic agricultural systems supporting healthy Canadian communities.

Mission

OACC facilitates and leads research and education supporting organic producers, consumers and other organic sector stakeholders to foster sustainable communities.

OACC Advisory Board

OACC is an operating division of the Nova Scotia Agricultural College (NSAC) and is guided by an Advisory Board representing stakeholder groups from across Canada. It is comprised of members appointed by the President of NSAC for staggered three year terms. The 2011 Board is shown below.

For a current list of Board Members, please see: www.oacc.info/Board/board_welcome.asp

OACC Board members deliberate and make recommendations about policy, strategic directions and sustaining OACC. The Board considers feedback from Advisory Forums held at organic conferences across Canada each year. Groups represented on the Board include organic farmers, transitional farmers, food distributors and retailers, university researchers, students, Agriculture and Agri-Food Canada and organic organizations. The board is designed in such a way that it must include at least one member from Manitoba or Alberta, and each of British Columbia, Saskatchewan, Ontario, Québec and the Atlantic provinces.

We are indebted to past and current Board members who selflessly contribute time and help us to pursue our vision.

2011 Advisory Board Members:

- **Claude Berthélémé** - New Brunswick Department of Agriculture, Aquaculture and Fisheries, NB
- **Chris Cutler** - Nova Scotia Agricultural College, NS
- **Loïc Dewavrin** - Les Fermes Longprés, QC
- **Deb Foote** – The Organic Grocer, BC
- **Peter Hicklenton** – Agriculture and Agri-Food Canada, NS
- **Chantal Jacobs** - Saskatchewan Agriculture and Food, SK
- **Rebecca Kneen** – Crannóg Ales/Left Fields, BC
- **Maryse Leblanc** - Institut de recherche et de développement en agroenvironnement, QC
- **Dorothy Marshall** - Campbellton Farm, AB
- **Kim Schneider** - Student, University of Guelph, ON
- **Dean Spaner** - University of Alberta, AB
- **Randy Whitteker** – Ontario Natural Food Co-op, ON
- **Dwayne Woolhouse** - Crestview Organic Farms, SK

OACC Staff

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Di Yao

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David Hobson (M.Sc.)
Julie MacKenzie (M.Sc.)
Nicholas Taylor (M.Sc.)

OACC Affiliates

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Financial Statement

OACC Financial Statement as of March 31, 2012 for the 2011/2012 fiscal year

Expenditures	**Total**
Information Dissemination	$167,484.52
Translation	$3,327.91
Travel	$15,209.59
Financial Management	$81,737.91
Total Expenditures	**$267,759.93**

Revenue	**Total**
Conference Revenue	$17,905.00
Homestead Organic	$2,500.00
Home Hardware	$40,000.00
Kubota	$500.00
Organic Science Cluster (AAFC Growing Forward via Organic Federation of Canada)	$206,854.93
Total Revenue	**$267,759.93**

Notes:

- This statement does not include the salary of Director, which is paid through NSAC faculty.
- These are unaudited expenditures for the fiscal year ending March 31, 2012.
- This statement represents core OACC financials. Specific research contracts held in whole or in part by OACC staff are not included in this statement. Other research costs are included on those contracts.
- In-kind contributions (not shown here) are significant, especially those of the Nova Scotia Agricultural College.

Organic Science Cluster

Organic Science Cluster – Overview

Canada's Organic Science Cluster (OSC) is a collaborative effort led jointly by the Organic Agriculture Centre of Canada (OACC) at the Nova Scotia Agricultural College and the Organic Federation of Canada (OFC). The Organic Science Cluster is part of the Canadian Agri-Science Clusters Initiative of Agriculture and Agri-Food Canada's Growing Forward Policy Framework and is supported by contributions from industry partners.

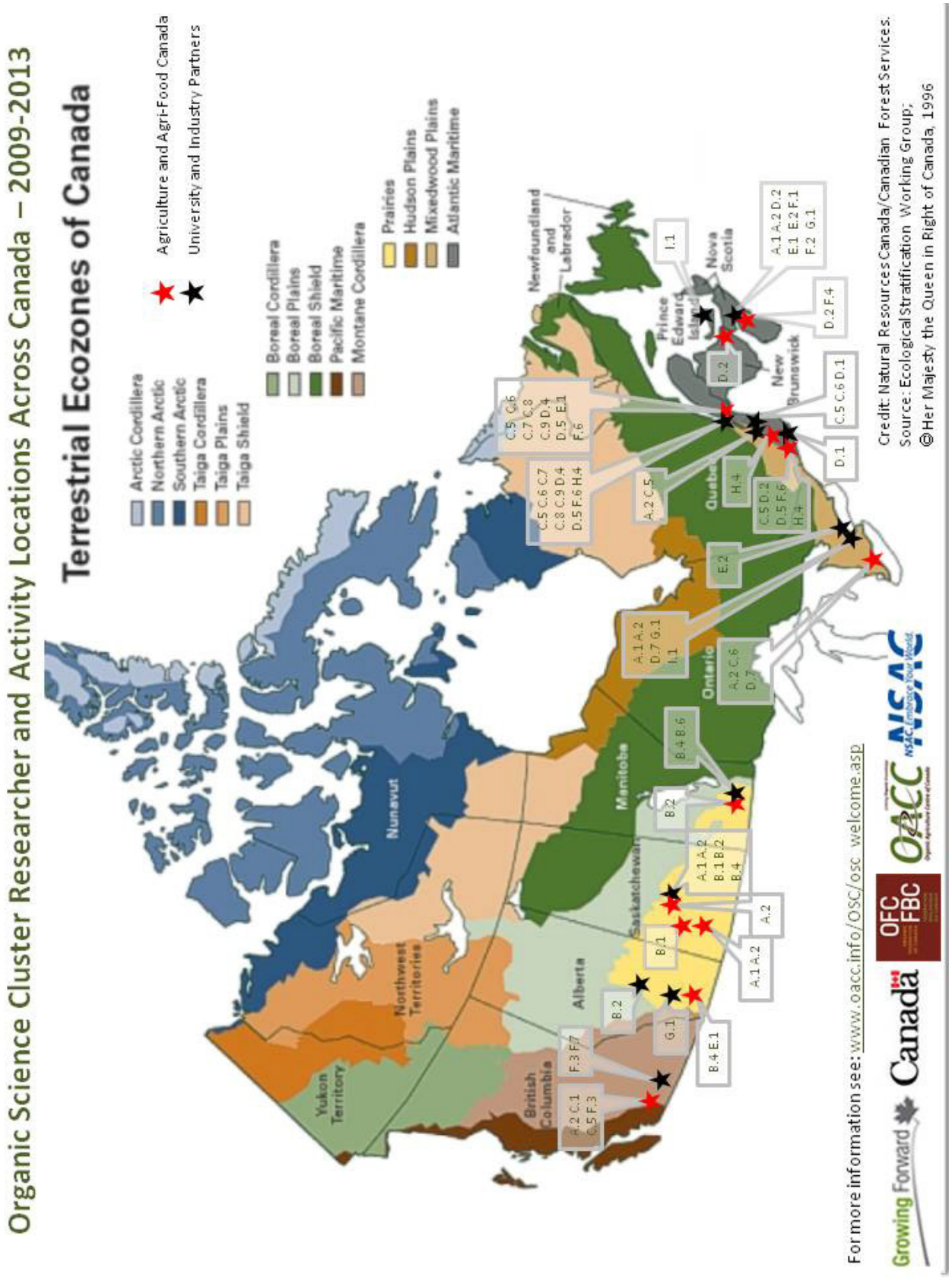
The goals of the Organic Science Cluster are to facilitate a national strategic approach to organic science in Canada, link scientists across the country and disseminate the knowledge generated to organic stakeholders.

The Organic Science Cluster has identified 10 sub-projects including 29 research and communications activities that will be conducted by over 50 researchers and collaborators in approximately 36 research institutions and facilities across Canada. Activities of the Organic Science Cluster include work in fruit horticulture, agronomy, cereal crop breeding, soil fertility management, vegetable production, greenhouse production, dairy production systems, parasite control in ruminants, environmental sustainability, and food processing. This research comes at a time when there is renewed emphasis on innovation, efficiency (energy, labour, economics), and capturing value-added markets. Most of this research directed toward organic agriculture can also be applied to conventional production systems, drawing interest to this cluster from producers across Canada.

The Organic Agriculture Centre of Canada is responsible for overseeing the operation of the Organic Science Cluster, including management tasks such as the management of financials, reporting, fundraising, and communications.

For more information on the Canadian Organic Science Cluster, please visit:
www.oacc.info/osc/osc_welcome.asp

Organic Science Cluster – Map



Organic Science Cluster – Research Activities

Subproject A: Biologically-Based Fertility Management

Activity A.1: Characterizing soil phosphorus dynamics and availability under organic crop production

Activity A.2: Predictive tools for characterizing mycorrhizal contributions to phosphorus uptake by organic crops

Subproject B: Integrated Grain-Based Cropping Systems

Activity B.1: Changing weed populations under long-term organic crop production

Activity B.2: Organic cereal crop breeding

Activity B.4: Low-tillage grain production systems that suppress weeds and minimize tillage

Activity B.6: Integrated grain-based cropping systems for biological and economic sustainability

Subproject C: Organic Greenhouse Production

Activity C.1: Crop nutrition for vegetable plant propagation

Activity C.5: Development of an organic greenhouse growing system for tomato that improves energy use efficiency and reuses the crop effluent as nutrient solution

Activity C.6: Development of an organic greenhouse system for intercrop tomato and extended sweet pepper crop grown under supplemental lighting for year-round locally-grown fruit production

Activity C.7: Feasibility of using geothermal energy as heat and humidity control for an organic greenhouse tomato crop

Activity C.8: Optimizing fertilization and irrigation management for a closed greenhouse organic tomato growing system

Activity C.9: Production of organic cuttings and pot plants

Subproject D: Integrated Management of Horticultural Field Crops

Activity D.1: Agroecosystem management for pest control in organic vegetable production

Activity D.2: System productivity and N flows in two organic vegetable long term rotations: high intensity stocked rotation versus a low intensity stockless rotation

Activity D.4: Organic production of vegetable transplants for gardeners

Activity D.5: Organic production of peat blocks for vegetable seedlings and detection of abiotic and biotic stresses

Activity D.7: Development of a weed management system for pumpkins grown for seed in Ontario

Subproject E: Environmental Stewardship and Product Branding

Activity E.1: Modeling farm scale energy and nutrient efficiency, and Global Warming Potential, as affected by management

Activity E.2: Modeling Global Warming Potential (GWP) reductions associated with sub-watershed wide transition to organic farming

Subproject F: High Value Fruit Production

Activity F.1: Organic management of black currant during early establishment and production for an export market

Activity F.2: Weed management for organic wild blueberry production

Activity F.3: Ecologically sound soil management in perennial fruit plantings

Activity F.4: Innovative herbicide and fungicide replacement strategies for organic apple production

Activity F.6: Organic production of strawberries and raspberries under tunnels

Activity F.7: Control of Rosy Apple Aphid (RAA) in organic apple orchards

Subproject G: Benchmarking the Organic Dairy Production System

Activity G.1: Assessment of health, welfare and milk composition on organic and conventional dairy farms

Subproject H: Organic Food Processing

Activity H.4: Alternative approaches to direct addition of nitrite/nitrate for organic cured meats

Subproject I: Sheep Parasite Control

Activity I.1: Over-wintering of gastrointestinal parasites in organic sheep production

Organic Science Cluster – Activity Leaders

Activity A.1 – Derek Lynch, Nova Scotia Agricultural College
Activity A.2 – Chantal Hamel, Agriculture and Agri-Food Canada (Swift Current)
Activity B.1 – Steve Shirtliffe, University of Saskatchewan
Activity B.2 – Stephen Fox, Agriculture and Agri-Food Canada (Winnipeg)
Activity B.4 – Martin Entz, University of Manitoba
Activity B.6 – Martin Entz, University of Manitoba
Activity C.1 – David Ehret, Agriculture and Agri-Food Canada (Agassiz)
Activity C.5 – Martine Dorais, Agriculture and Agri-Food Canada (Quebec)
Activity C.6 – Steeve Pépin, Université Laval
Activity C.7 – Damien deHalleux, Université Laval
Activity C.8 – Martine Dorais, Agriculture and Agri-Food Canada (Quebec)
Activity C.9 – Blanche Dansereau, Université Laval
Activity D.1 – Maryse Leblanc, IRDA
Activity D.2 – Josée Owen, Agriculture and Agri-Food Canada (Bouctouche)
Activity D.4 – Martine Dorais, Agriculture and Agri-Food Canada (Quebec)
Activity D.5 – Nicolas Tremblay, Agriculture and Agri-Food Canada (St-Jean-sur-Richelieu)
Activity D.7 – Robert Nurse, Agriculture and Agri-Food Canada (Harrow)
Activity E.1 – Derek Lynch, Nova Scotia Agricultural College
Activity E.2 – Rod MacRae, York University
Activity F.1 – Andrew Hammermeister, Organic Agriculture Centre of Canada
Activity F.2 – Nathan Boyd, Nova Scotia Agricultural College
Activity F.3 – Louise Nelson, University of British Columbia
Activity F.4 – Julia Reekie, Agriculture and Agri-Food Canada (Kentville)
Activity F.6 – Shahrokh Khanizadeh, Agriculture and Agri-Food Canada (St-Jean-sur-Richelieu)
Activity F.7 – Linda Edwards, Mennell Orchards
Activity G.1 – Trevor DeVries, University of Guelph
Activity H.4 – Joseph Arul – Université Laval
Activity I.1 – Andrew Peregrine, University of Guelph

Note: To see a complete list of researchers involved in the Organic Science Cluster, please visit www.oacc.info/OSC/osc_researchers.asp.

Organic Science Cluster – Research Coordination

One of the roles that OACC assumes in the Organic Science Cluster is that of research coordination. In addition to general management, 28 science activities and three communication activities received funding. Arrangements were made with all of the participating researchers. Activity leaders submitted their annual performance reports and these were compiled and submitted to Agriculture and Agri-Food Canada (AAFC).

Activities include work on fruit horticulture, agronomy, cereal crop breeding, soil fertility management, vegetable production, greenhouse production, dairy production systems, parasite control in ruminants and environmental sustainability. The Science Advisory Board has met and deliberated on all research activities; all research activities have gone through the peer review process.

Other activities undertaken in 2011 include:

- Maintaining and consistently expanding research information on the website.
- Continuing to work in twenty-nine Organic Science Cluster activities as part of the prescribed plan.
- Reporting, as required, towards the research activities planned.

Organic Science Cluster – Management

One of the key roles undertaken by OACC towards the Organic Science Cluster is to oversee and administer the Organic Science Cluster on behalf of the Organic Federation of Canada (OFC). Working with the Nova Scotia Agricultural College (NSAC) Research and Graduate Studies and Financial Services offices, OACC coordinates the establishment and maintenance of agreements with industry partners and the universities, distributes funding, and manages reporting to the AAFC Science Cluster Initiative.

- A representative of OFC visited OACC/NSAC during the year to evaluate management practices and to discuss the progress of the research activities.
- The Canadian Organic Science Conference, held in Winnipeg from February 21-23rd 2012, was organized and attended by international and national scientists, students, organizations and government representatives.
- The Science Advisory Body met as required to maintain the peer review process of the Organic Science Cluster.
- Major administrative undertakings involved quarterly reporting of financial activities to AAFC, as well as creating and maintaining the flow of funds to researchers and retrieving documentation required to produce financial claims. All researchers received reporting documentation as required and have reported as required for their respective activities. Progress reporting was completed as required, twice during the year.

Organic Science Cluster – Communication

The Organic Agriculture Centre of Canada manages the communication aspects of the Canadian Organic Science Cluster (OSC), largely through the activities of Subproject J. The OSC will be generating valuable information, adding credibility to the science and practice of organic agriculture. The communication of these research results is an important part of this initiative. There are three main components to the communication plan:

1. ***Disseminating Information for Use by Practitioners***
   - Provide an online overview of Canada's Organic Science Cluster.
   - Have a webpage dedicated to reporting progress and results of OSC- associated research.
   - Translate the science of the OSC research into extension communications for practitioners.
   - Increase awareness of organic research and the Organic Science Cluster.
2. ***Translation***
   - Make research results available in both official languages.
3. ***Scientific Conferences, and Communications***
   - Facilitate venues for organic researchers to gather, share results, and communicate, including a national organic science conference in 2012.

During the 2011-2012 fiscal year, much progress was made in meeting the communications mandate of the Organic Science Cluster, including:

- Webpages dedicated to the OSC were maintained and updated on the OACC website in English and in French (www.oacc.info/osc/osc_welcome.asp).
- Organic research and extension articles are routinely posted on the OACC website. Twelve monthly E-zines in English and French were prepared and distributed to a mailing list of 17,800, providing updates to Canadian organic stakeholders as to progress in organic research. For more information, please see below.
- Twenty-three newspaper articles on various topics relevant to organic agriculture in Canada were submitted to over 300 media contacts across Canada and posted on the OACC website. For an overview of the articles published, please see below.
- The Canadian Organic Science Conference was held in Winnipeg from February 21-23, 2012. For more information, please see below.
- The Organic and Sustainable Agriculture Session, chaired by OACC Director Andy Hammermeister, was held in conjunction with the Canadian Society of Agronomy at the Plant Canada Conference, held in Halifax, Nova Scotia from July 17-21, 2011.
- The Organic Science Cluster was recognized as a global leading cluster in research when invited to participate in the First Plant Intercluster Meetings in Paris. At this event, 25 research clusters from around the world were invited to give an overview of their clusters and discuss collaboration.
- In total, twelve conferences and meetings were attended by the staff of the Organic Agriculture Centre of Canada to discuss and disseminate information about the Organic Science Cluster. For more information, please see the listings below.
- Ongoing translation of organic research abstracts, science cluster documents and extension files also took place over the past year, allowing research results to be made available in both official languages.

Canadian Organic Science Conference (COSC)

Conference Overview

Over 160 scientists, students, farmers, extension personnel and government and industry representatives alike converged in Winnipeg for the first Canadian Organic Science Conference and Science Cluster Strategic Meetings, held from February 21-23, 2012 at the University of Manitoba. Guests hailed from across Canada, the United States and Europe, and brought with them many unique perspectives relating to the science and knowledge transfer of organic agriculture.

This youthful conference, attended by many graduate and undergraduate students who represent the future of organic researchers and professionals in Canada, provided a welcoming venue for knowledge exchange, networking and interaction between the various factions of Canada's organic industry. Meanwhile, leading scientists and students presented current advances in soil fertility and biology, sustainability and organic food production systems, organic cereal production, organic greenhouse practices, the production of organic fruits and vegetables, the rearing of organic livestock, the social aspects of organic agriculture and the transfer of knowledge.

Today's thriving organic research community must also look towards the future. The final day of the conference provided an opportunity to discuss and identify the future research needs of Canada's organic sector. With this information, generated by the diverse group of conference participants, the future of organic agriculture in Canada is looking bright.

Travel Awards were offered to sixteen undergraduate and graduate students from across the country, as well as ten organic farmers

Many conference resources have been made available on the OACC website, in an effort to continue the knowledge transfer so successfully begun at the conference. Please see www.oacc.info/COSC to access these resources. Resources available online include: conference proceedings, featuring one-page summaries of each poster and presentation; video recordings of each keynote and research presentation; and, The Science of Organic Farming in Canada, a series of four 20 minute films, featuring interviews of researchers and farmers produced by the Organic Federation of Canada.

Conference Steering & Program Committees

COSC Program Committee	COSC Steering Committee
Dr. Martin Entz, Co-chair University of Manitoba **Dr. Andy Hammermeister, Co-chair** Organic Agriculture Centre of Canada, Nova Scotia Agricultural College **Dr. Trevor DeVries** University of Guelph **Dr. Martine Dorais** Agriculture and Agri-Food Canada **Dr. Yvonne Lawley** University of Manitoba **Dr. Derek Lynch** Nova Scotia Agricultural College **Dr. Gerry Neilsen** Agriculture and Agri-Food Canada **Karen Nelson** Organic Agriculture Centre of Canada **Dr. Rob Nurse** Agriculture and Agri-Food Canada **Dr. Steve Shirtliffe** University of Saskatchewan **Dr. Jennifer Sumner** University of Toronto	**Dr. Andy Hammermeister, Co-chair** Organic Agriculture Centre of Canada Nova Scotia Agricultural College **Dr. Martin Entz, Co-chair** University of Manitoba **Nicole Boudreau** Organic Federation of Canada **Joanna MacKenzie** Organic Agriculture Centre of Canada **Karen Nelson** Organic Agriculture Centre of Canada **Margaret Savard** Organic Agriculture Centre of Canada **Iris Vaisman** University of Manitoba

OACC Research

Organic Management and Processing of Black Currants for an Export Market.

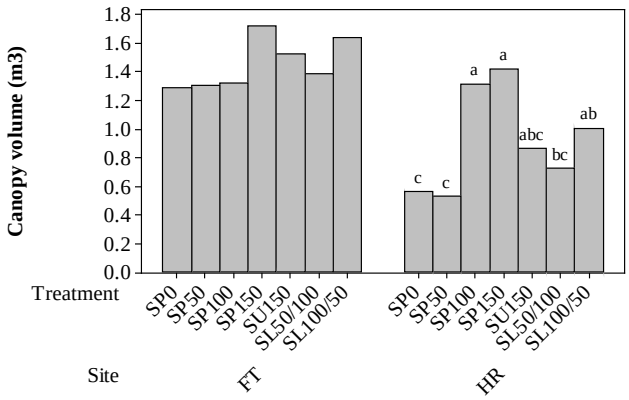
Organic producers in Prince Edward Island (PEI) are utilizing blackcurrants (*Ribes nigrum* L.) to diversify their operations and supply the market demand in Japan. The organic black currant research program during 2011-12 included five projects:

a. Fertility Management Trial
b. Flower Removal Trial
c. Weed Management Trial
d. Berry Quality and Processing
e. Cultivar Trial

a) Fertility Management of Establishing Organic Black Currants (*Ribes nigrum* L.).

Background: While black currant (*Ribes nigrum* L.) production is prevalent in Europe and New Zealand, it has been slow to take off in North America. However, with increasingly resistant cultivars, a recent interest in organic production on Prince Edward Island has arisen to satisfy a health-savvy Japanese market that prizes black currant berries for their high vitamin C, antioxidant levels and flavor. However, organic production of this fruit is extremely limited globally, and the growing conditions in Atlantic Canada are starkly different from other countries.

Project Overview: Two sites of black currant cv. "Titania" were established on PEI in 2009 to measure the effects of nutrient rate and timing on the growth, yield and nutrient uptake of establishing plants. Seven fertility treatments were used based on kg ha^{-1} of available N applied: control (SP0), three spring treatments (SP50, SP100 and SP150), one summer (SU150) and two treatments split across spring and summer (SL100/50 and SL50/100). The amendments were a mix of crab meal and poultry manure (Nutriwave™). Black plastic mulch was used to prevent weed growth. The two sites responded differently, with the FT having almost twice the yield of the HR site, and the treatments followed very different patterns. In 2011, there was no difference in bush volume or yield among amendment treatments at the FT site, unlike the HR site. Growth was highest for the SP150 at both sites, but the split treatments had higher yields. At HR, the growth rates of the summer-only and split treatments were much less than at FT. Tissue N was significantly higher in amended treatments than the control at both sites. Tissue tests revealed that K may be limiting at the HR site. No signs of nutrient deficiencies were noted at either site.



Canopy volume of black currant in response to soil amendments applied based on available N application rates in the spring (SP), summer (SU) or split spring and summer (SL).

Conclusions: The best treatment for yield was SL100/50; SP50 and SU150 are not recommended, as the growth was much lower. Potassium may be limiting on one site.

Acknowledgments: Funding was provided through the Canadian Agri-Science Clusters Initiative of Agriculture and Agri-Food Canada's Growing Forward Policy Framework and Anne's PEI Farm; in-kind support of participating farmers is also acknowledged.

b) Flower Removal on Establishing Organic Black Currants.

Background: This trial will run from 2009-2012. At the Fertility Management sites, the effect of removing flowers on increased vegetative growth and yield is also being examined. Flowers were removed in the spring of 2010 by hand, but left on the plants in 2011 to observe the effect on yield in the following year. The hypothesis is that plants will be able to put more energy and resources into vegetative growth in its developing years, therefore achieving optimal growth sooner, and possibly increasing yield in the year following deflowering. This is a common practice in other fruits like strawberries and blueberries.

Project Overview: The fertility amendments used were the same as the Fertility Management Trial, but flower removal was examined in only four of the fertility rates, instead of all seven. The total amount of amendment applied to each of the three amended treatments was the same, only timings differed. Fertility treatments consisted of one spring-only application (SPR-High), one summer-only application (SUM-High) and one application that was split between the spring and summer (SPL-M/L), as well as an unamended treatment (NoAmend).

Flower removal from bushes in the year before commercial production was found to increase yield. Poor soil fertility and plant deficiencies in P and K were linked to lower growth rates and yields at one site, but this site showed higher growth rates from deflowering, while the other site showed decreased growth rates from deflowering over both years. There were no interactions with deflowering and fertility treatments, but in the –FLWR treatments SPR-High plants tended to show greater growth in the deflower year, but decreased growth in the following year, while SUM-High and SPL-M/L tended to have greater yields.

Conclusions: Bushes that were at the higher-growth site tended to increase only yield with deflowering, where bushes at the lower-growth site also increased growth with deflowering. As manual flower removal is labour intensive, deflowering will only be economically viable if a method can be found to manually or chemically remove the flowers at a low cost.

Acknowledgments: Funding was provided through the Canadian Agri-Science Clusters Initiative of Agriculture and Agri-Food Canada's Growing Forward Policy Framework; in-kind support of participating farmers, particularly Stephen Cousins, Mike Whitty, Mike Doucette, Raymond Loo, Frank Whitty, and Ron Walsh.

c) Weed Management for Establishing Organic Black Currants.

Background: Without effective weed management, blackcurrants will not establish, and can die within two years of planting. To find the most cost-effective weed management strategy, a weed management trial was established in the Orchard at NSAC in Truro, NS in the spring of 2010.

Project Overview: Initial treatments included: (a) Landscape fabric, (b) Black plastic, (c) Cultivation + hand hoeing (in row), (d) Cultivation + 10% acetic acid (in row), (e) Cultivation + flaming (in row), and (f) Mowing. Three additional treatments were included in a 2011 trial planted in Brookside, NS with cv. Resista: Organic mulch (straw), Black plastic + hay underneath, and White fabric (used in rows of apple orchards to give colour).

Bare-root cv. Whistler bush growth was measured from 2010-2011 and yield was measured in 2011. Soil probes measured soil temperature and moisture under five of the treatments. By the end of 2010, the flame treatment had many plants that were accidentally scorched, so they were removed from the trial. The number of treatment applications and the time they took was estimated, in order to determine which would require the most labour and overall cost.

Acetic acid was good at eliminating emerging annual weeds if applied promptly and repeated each time emergence occurred, but was ineffective at reducing perennial weeds, particularly grasses. Established weeds were set back but not eliminated by the acid treatments, which necessitated repeated cultivation treatments. While the number of cultivations was reduced with acetic acid, the cost of the acid and the high number of treatments required makes this treatment cost-prohibitive.

Flaming too easily torched young black currant leaves close to the ground, so this treatment is not

recommended unless performed properly, using a shield. Flaming eliminated most weeds, but established perennial weeds required cultivation. Less cultivation was required with this treatment.

Black fabric provided good weed control for the first few months, however soil that accumulated on top of the fabric, or soil that was used to hold the fabric down, became covered by spreading weeds, which were able to send roots through the permeable fabric. This made the fabric good at controlling most weeds, but these creeping weeds colonized the top of the fabric.

Cultivation provided good weed control of annual and perennial weeds. When bushes became large and particularly when they sprawled out into the alleys, however, cultivation became difficult.

Black plastic provided very good weed control. However, at Brookside holes were made larger than the other site, and weeds established closely around the plants. In terms of cost and effectiveness, this treatment was the best.

Mowing did not provide adequate weed control, and bushes suffered from severe moisture stress during hot, dry periods, and many died. Mowing had to be done on a regular basis during the summer, almost once a week, and had to be done by hand to get around the plants, so was very labour intensive. This treatment is not recommended.

Conclusions: Bush growth was not strongly affected by weed treatments, except for mowing which was severely restricted. Cultivation and black plastic had the highest soil moisture, and black plastic provided slightly higher temperatures, on average about one degree Celsius. In terms of cost-effectiveness, the black plastic was the superior treatment.

At Brookside, only one year of data was collected, and the three new treatments have not shown any growth differences yet. Straw inhibited weed growth until mid-summer, when grasses started to grow through. The white fabric prevented most weeds from growing, but as it allowed some light under it, there were some very shallow-rooted weeds that colonized underneath. These weeds have not shown any negative affect yet on plant growth for this treatment.

Acknowledgments: Funding was provided through the Canadian Agri-Science Clusters Initiative of Agriculture and Agri-Food Canada's Growing Forward Policy Framework and the Nova Scotia Technology Development Program; in-kind support of participating farmers, particularly Stephen Cousins, Mike Whitty, Mike Doucette, Raymond Loo, Frank Whitty, and Ron Walsh.

d) Characterization of Berry Quality of Black Currant in Relation to Harvest Timing and Cultivar.

Background: Consumers are constantly looking for new functional foods to incorporate into their diet. With that in mind, PEI farmers have started growing black currants (*Ribes nigrum* L.) to capture this market because studies have shown that black currants provide protection from certain cancers, cardiovascular diseases, type II diabetes, obesity, and age-related macular degeneration. These health benefits are provided by anthocyanins, a water-soluble pigment found in black currants. Black currants have never been grown commercially in PEI, so research on production practices and their effects on berry yield and quality is needed. Like most specialized fruit, growing organic black currants for large scale production requires specialized knowledge of factors that can affect berry quality. Understanding factors that can influence berry qualities like anthocyanins is important if growers intend to market their product as a functional food item. What are the most important factors affecting black currant berry quality?

Project Overview: The specific objectives are to see how berry quality is affected by cultivar choice, harvest timing and site effect under PEI conditions. Berry qualities of interest are size, juice pH, titratable acidity (TA), total soluble solids (TSS) (measured as ^{o}Brix), total antioxidant capacity (TAC), total phenolic content (TPC) and anthocyanins (Figure 1). Seven cultivars were established in a randomized block design including: Titania, Blackhome, Ben Alder, Ben Connan, Ben Sarek, Ben Tirran, and Whistler with two harvest timings, each replicated three times. The effect of harvest timing on berry quality characteristics of Titania was examined on two sites at four different harvest timings. Timing trials have been established on two sites with four harvest timings. Site effects are being measured on Titania growing on five separate farms.

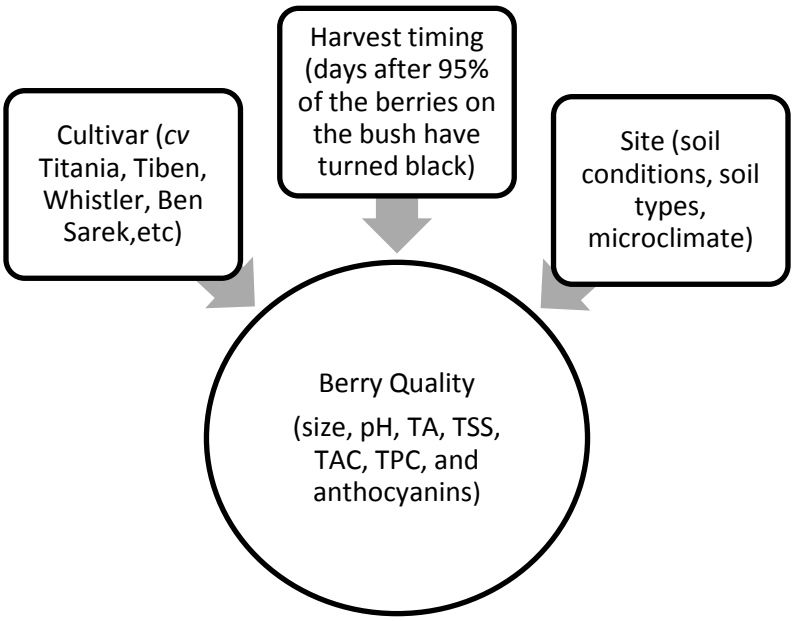


Figure 1. Factors affecting black currant quality

Conclusions: Preliminary data analysis has indicated that there could be differences in the quality of berries harvested at different times and among different cultivars. These factors could be important in farmer cultivar selection and harvest management.

Acknowledgments: Funding for this research was provided by the PEI Agricultural Research Fund. Thanks to farmer co-operators Stephen Cousins, Mike and Frank Whitty, Ron Walsh, Mike Doucette, Raymond Loo, OACC and Tree Fruit Bio-product lab technical staff.

e) Black Currant Cultivar Evaluation.

Background: Cultivar selection is important in the fruit and berry industry as it can affect the end product. We investigated seven cultivars at one site in PEI to assess performance under Maritime conditions.

Project Overview: Seven cultivars were planted in 2010 with black plastic used for weed control and fertility applied at a rate of 100 kg N ha^{-1} (50:50 mix of pelletized poultry manure and crab meal). The cultivars planted included Ben Alder, Ben Connan, Ben Tirran, Ben Sarek, Whistler, Blackhome and Titania. Half of the plants received a foliar spray of sulphur every three weeks to assess the cultivars' interaction with a disease control. This was to assess if some cultivars are naturally more resistant to diseases such as white pine blister rust (WPBR) and powdery mildew, or if the use of a disease control can impact their establishment. Plant volume (height and width) and resistance to disease were assessed in the first year. In the future, we plan to assess the berry yield, hundred berry weights, soluble sugars, fruit quality (total anthocyanin and total phenolics) and harvest ability.

Results: Plant volume (height and width) and resistance to disease were assessed in the first year. Berry yield, hundred berry weights, soluble sugars, fruit quality (total anthocyanin and total phenolics) and harvest ability were assessed in the second year. In the first year, no interactive effect (disease control x cultivar) was found on plant volume; however, there was a cultivar effect, with Whistler and Ben Tirran demonstrating greatest overall plant growth during the first year. White pine blister rust was the most prominent disease on all cultivars. The interactive effects of cultivar with disease control were significant, as were the cultivar effects, with Titania having the highest disease incidence. However, when Titania was removed from analysis there was only a cultivar effect. Ben Sarek had significantly lower disease incidence, however, disease incidence was low on all cultivars with less than 20% coverage in year 1. In the second year of the trial, cultivar 'Whistler' was found to exceed the other seven cultivars in plant growth, berry size and sugar content. Ben Connan had overall greatest yields, however 'Whistler' was found to have similar yields, though this cultivar illustrated a great deal of variability between plants. 'Ben Alder' had the least amount of growth and lowest yields of the other cultivars in year 2. This reduced growth in 'Ben Alder' indicates that it will not lend itself to machine harvesting. As well, its lower berry quality will also make it less desired for commercial and pick-your-own operations. White pine blister rust was the most prominent disease again on all cultivars, having greater than 90% infection rates. This could be a concern for future yields and plant growth, as this disease can stunt growth and result in reduced yields. As this is only the second year of the trial, and the first year for berry production of these crops, it will be of interesting to see if 'Whistler' continues to be a suitable cultivar for organic production in Atlantic Canada.

Acknowledgments: Funding was provided through the Province of Prince Edward Island; in-kind support of participating farmers particularly Stephen Cousins, Mike Whitty, Mike Doucette, Raymond Loo, Frank Whitty, and Ron Walsh.

Strategies for Organic Management of Haskap (*Lonicera caerulea* L.*)* in Nova Scotia.

Background: The organic food market in North America is one of the most active and rapidly growing sectors in the food industry. To meet these markets, Maritime organic producers are diversifying and expanding their operations through the addition of high-value crops and value-added products. The collaborating industry partner on this project is presently establishing a commercial scale organic Haskap farm and is seeking support to identify the best management practices for Haskap under Nova Scotia growing conditions. They are also interested in conducting exploratory trials with new crops including Goji.

Haskap, also known as Blue Honeysuckles, Honeyberries, and *Lonicera caerulea* L., are relatively new to North America, however they are popular in Siberia, North Eastern Asia, and Japan. The University of Saskatchewan has been working with germplasm to develop Haskap varieties that are suitable for cultivation and machine harvesting since 2000. The early season production of the Haskap, weeks before strawberries, can assist farmers in extending their harvest season.

This edible berry is a small, elongated purple fruit similar to blueberries or concord grapes, and tends to be sweeter than other edible blue honeysuckle cultivars currently available. The flavour has been described as a combination of blueberries and raspberries. These plants are considered well adapted for production in colder climates such as Canada as they are hardy to -47^{o}C temperatures, and their flowers have also been found to withstand -7^{o}C temperatures (Bors, 2005; Hummer, 2006). They are therefore well adapted to late frosts that can affect productivity in other small fruit crops. Haskap are a particularly promising crop for organic production, as they currently have no commercially significant diseases or pests that attack the fruit, which may perhaps be due to their early ripening. After seven years of observation, Bors (2009) indicated that there are no relevant pest issues except for bird, which can be controlled with overhead netting.

Haskap are self-incompatible and therefore require a compatible pollinizer for cross pollination. These pollinators will also bear fruit, and should be planted at a ratio of approximately one pollinator for every eight Haskap plants to maximize yields. The plants have a bush growth habit reaching a height of 1-2 m at maturity, with the berries tending to uniformly ripen. Also, the bushes do not produce suckers and are of similar size to other fruits that are harvested by machines, making them ideally suited for machine harvesting. The plants begin to produce fruit in the second year, and will reach maturity within 4 to 5 years, at which time they will produce 2 to 5 kg/berry/bush. The plants are expected to survive for up to 25-30 years. The berries can be sold fresh or used in value-added products such as jam, wine, candy, pastries, ice-cream and health products.

Project Overview: As this is a new crop, there is virtually no information relating to Haskap and Blue Honeysuckle management in the Maritimes, much less for organic production. Management of weeds and soil fertility for establishing fruits is critical. The objectives of this study include:

1. Assess the impact of the weed-management strategies on bush growth, yield and berry quality.
2. Determine the benefit of biochar, compost tea and compost blends for bush growth and yield.
3. Evaluate the pest and disease susceptibility of Haskap under our Maritime conditions.
4. Assess which varieties of Haskap are more productive and suited to the Maritime climate.
5. Determine the most cost-effective weed management strategy for establishing Haskap.
6. Evaluate the growth and survival of Goji berry under organic management in Nova Scotia.

Collaborators: Logie Cassells, LaHave Forests; Dr. Kris Pruski, NSAC

Organic and Integrated Approaches to European Wireworm Control in Atlantic Canada.

Significant losses in crop yield, quality, and marketability have been attributed to wireworms. Control of wireworms through the use of insecticides has proven difficult as most damage occurs after insecticides have lost effectiveness, and many are being deregistered. This has led to the need to develop alternative, integrated strategies that can be employed by both organic and conventional producers.

Four projects have been pursued to develop organic management strategies for wireworms:

a) Push-Pull-Immobilize Strategy
b) Evaluation of the Effect of Cover Crops
c) Damage Reduction with Deterrents
d) Bait Strip Trial

Acknowledgments: Thank you to Nova Scotia Department of Agriculture's Technology Development Program, the Province of Prince Edward Island, Bragg Lumber, Peter Swetnam (Dominion Produce), Horticulture Nova Scotia, and the Soil and Crop Improvement Association of Nova Scotia for their support and funding towards this project.

a) Development and Evaluation of a Push-Pull-Immobilize Strategy to Limit Wireworm Damage to Cash Crops.

Background: This objective investigated the development of a push-pull-immobilize strategy, in which wireworms are pushed away from a cash crop through the use of feeding deterrents, pulled away through the use of attractive bait crops, and immobilized using physical or chemical agents

Project Overview: The results of lab trials were used to guide the design of field-scale tests of various combinations of these agents in a push-pull-immobilize strategy. From these trials, wheat was selected as a pull agent for further evaluation, while neem oil was selected as a potential push agent. Lab trials did not reveal a strong immobilization candidate, so field trials were focused on the evaluation of the promising push and pull agents alone.

Field treatments therefore included: (a) Untreated control, (b) Wheat inter-planted between carrot rows, (c) A drench of 10% Neem oil, (d) A drench of 5% Neem oil, and (e) Wheat inter-planted between carrot rows with a drench of 10% Neem oil

Wheat was planted between carrot rows one month before carrot harvest.

Conclusions: Neither neem nor wheat on their own or in combination significantly reduced levels of wireworm damage to carrots, although trends do suggest that there may be potential for these agents. The lower strength neem solution (5%) seems to have elevated wireworm damage significantly over the control, for unknown reasons. None of the treatments significantly impacted overall or marketable carrot yield from the plots. New information now suggests that a neem product that was under testing for minor use registration in Canada may now be dropped. Alternatives will be explored.

b) Evaluation of the Effect of Cover Crops in a Cash Crop Rotation on Wireworm Populations.

Background: This objective examines the use of rotational strategies for wireworm management.

Project Overview: Plots were seeded to cover crops in the 2007 and 2008 growing season, followed by carrots in 2009 in an effort to examine the residual effects of these cover crops on a subsequent root cash crop. The rotational crops included buckwheat, brown mustard, flax, alfalfa and barley undersown with clover. Wireworm population levels in the plots were monitored with bait traps and soil sampling over the course of the two years.

Conclusions: There were trends toward lower levels of wireworms in the mustard plots in the 2007 and 2008 season, with a significant reduction in wireworm damage to carrots planted after the brown mustard cover crops. This suggests that the glucosinolates present in the brown mustard plants may have an overall effect on the levels and/or feeding activity of wireworms that carries over into the next crop year. Unfortunately, the reduction in wireworm damage came at the expense of carrot yield, which was also significantly lower for the carrot crop following brown mustard. The highest levels of wireworm damage were seen in the carrots following an alfalfa crop, despite low levels of wireworm catches in the alfalfa plots in 2007 and 2008. This suggests that alfalfa itself may not deter wireworms by creating an inhospitable, dry soil environment, but may instead provide an attractive food source courtesy of its extensive root system.

c) Reduction of Wireworm Damage to Root Crops Through the Use of Deterrents.

Background: Laboratory trials were to focus on employing seaweed extracts to prime plant defenses against herbivory and thereby limit wireworm damage to root cash crops.

Project Overview: As the seaweed extract was not available, ground brown mustard seed was instead utilized to determine if it can act as a deterrent to wireworms, as it was previously found to reduce the incidence of wireworms in the "Evaluation of the effect of cover crops in a cash crop rotation on wireworm populations" section. The bait consisted of chopped carrots or potatoes, chosen due to the prevalence of wireworm damage in these root crops in the Maritimes, placed at one end of the chamber (50 cm long), with 10 wireworms placed at the opposite end. The treatments (n=8) included 0, 15, 30, or 60 g of ground brown mustard placed 20 cm from the bait. The number of wireworms 5 cm from the bait, 5-20 cm from the bait, 20-30 cm from the bait and greater than 30 cm from the bait was assessed.

There was no significant difference between the attractiveness of the potatoes or carrots as a bait crop. However, the rate of brown mustard meal was found to significantly reduce the number of wireworms passing through the mustard meal to the bait crops (travelled within the 0-5cm region). Results indicate that the mustard meal at the high and medium (180 and 90 g/m, respectively) rates reduced the movement of wireworms to the baits, whereas 50% or more of the wireworms in the control and low treatments rates passed through the mustard meal to the bait crops. Results also indicated that more of the wireworms subjected to the high rate of the mustard meal remained in the 30+ cm zone where they had initially been placed into the containers, whereas the control and low rates of mustard meal indicated a greater movement of the wireworms towards the bait.

Conclusions: Use of medium and high rates (90 and 180 g/m) of mustard meal significantly reduced the number of wireworms feeding on the bait crop (carrots and potatoes). The higher rates of mustard meal also reduced the movement of the wireworms through the substrate towards the bait crops.

d) Bait Strip Trial.

Background: In 2010, a field trial was initiated to assess the use of bait strips (consisting of plants thought to be attractive to wireworms) and rotational crops (consisting of a plant generally used in Maritime crop rotations, a plant thought to be unattractive or damaging to wireworms, and a fallow area void of food sources for the wireworm) at various widths to determine if wireworm populations could be effectively pushed from the field.

Project Overview: In 2010, bait strips 10 m long and 0.3 m wide were planted consisting of wheat, clover and timothy. Bait strips were spaced either 3 m or 6 m apart, with rotational crops consisting of brown mustard, barley or the area left fallow. The mustard was tilled into the plots in August and the barley harvested. Bait traps were set up in the rotational crops and the bait strips to determine wireworm populations. In 2011, potatoes were planted between the bait strips in the previous rotational crops and wireworm populations reassessed and cash crop yield and wireworm damage analyzed.

Results obtained from this trial found that the previous crop and distance to the bait strips did not have an impact on the movement of wireworms in 2010 during the cover crop planting or in 2011 during the planting of the cash crop of potatoes. However, the wireworm population trapped in the bait pots was considerably lower in 2011 compared to the 2010 counts. This may have been caused by the lower temperatures and increased amount of precipitation received throughout the 2011 season. Potato yields obtained following the previous crops were found to be comparable (p=0.659). No differences were found among the amount of wireworm damage sustained to the potatoes under each of the treatments (p=0.2892). Less than 18% of the potatoes indicated severe damage (more than 5 holes per potato) which may have been caused by the wireworms residing at deeper depths due to the cooler weather conditions experienced.

Conclusions: The incorporation of bait strips to attract wireworms was not found to pull the wireworms from the field into these strips upon comparison of the wireworm levels under the rotation crops and in the bait strips. Damage to the potato crop by wireworms was also not found to be altered by the use of the three previous crops or the width of the plots.

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Education

OACC web-based courses are available to farmers, students, and others involved in organic agriculture. Participants can register for the courses regardless of their location and participate in the course material during the hours most suitable to them. Many students have found the interactive approach to be enjoyable and educational. It can be a valuable experience to interact with the instructor and with classmates that have similar interests and questions while sitting comfortably at home.

The courses offered in 2011-2012 are listed below, followed by the host institution.

- Composting and Compost Use (Nova Scotia Agricultural College - NSAC).
- Key Indicators of Sustainable Agriculture (University of British Columbia).
- Organic Crop Production on the Prairies (University of Manitoba).
- Organic Field Crop Management (NSAC).
- Organic Livestock Production (NSAC).
- Organic Marketing (University of Guelph).
- Organic Soil Fertilization (McGill University).
- Principles of Organic Horticulture (NSAC).
- Transition to Organic Agriculture (NSAC).
- Weed Control in Organic Agriculture (University of Saskatchewan).

Five web-based courses were offered in French, through l'Université Laval and McGill University. These courses are roughly equivalent to the corresponding English courses offered at NSAC.

- Compostage et utilisation du compost en agriculture biologique (Université Laval).
- Fertilisation biologique des sols (McGill University).
- Productions animales biologiques (Université Laval).
- Production biologique des cultures en champ (Université Laval).
- Transitions vers l'agriculture biologique (Université Laval).

NSAC offers a "Certificate of Specialization in Organic Agriculture". Any student who has successfully completed four of the eligible organic agriculture credit courses (including at least two courses from NSAC), and who has an overall average of at least 60% in these courses can apply to receive a Certificate of Specialization in Organic Agriculture.

For more information or to register for a course please visit the OACC website:
www.oacc.info/Courses/course_web.asp

Communications

OACC/CABC Website Report

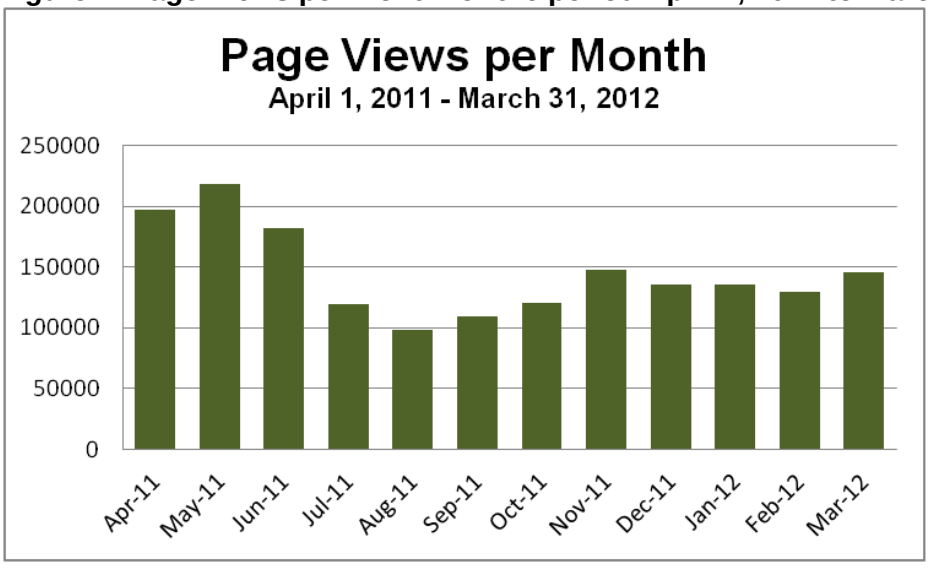
While the list of highly visible changes to www.oacc.info this year is less substantial than last, there was much work behind the scenes to keep the site current, consistent and tidy. New web pages for the Canadian Organic Science Conference (http://www.oacc.info/COSC/) were designed, populated and launched, serving to promote the conference and provide useful information to potential participants. Additionally, in the past year, OACC has also begun a partnership with Organic Eprints (http://www.orgprints.org/), an international open-access archive for resources related to organic agriculture. While total page views have declined slightly in the period spanning April 1, 2011 to March 31, 2012, we have seen an increased number of visitors and visits (Table 1). Once again, the OACC website remains strong and continues to evolve.

The ***Organic Friends' E-Zine/Cyberbulletin Les amis du bio*** marked the beginning of its 8th year of publication in 2011. The E-zine distribution list has grown by 2200 over the past year, with over 17,800 subscribers. In addition, the visibility of the E-zine has remained strong, with a constant rate of 15-20% of recipients opening the distribution e-mail, and 30% of those clicking links to the main monthly E-zine page. A website and E-zine survey was launched in March 2012, in an effort to better know OACC's online audience and to best target materials to their needs.

Table 1: OACC/CABC Website Summary Statistics for the 2010/2011 and 2011/2012 Fiscal Years

	April 1, 2010 – March 31, 2011	April 1, 2011 – March 31, 2012
Total Page Views	1,880,084	1,739,183
# Unique Visitors	230,600	263,702
# Visits	581,900	643,175
% Returning Visitors	51%	51%
Average Visits per Visitor	2.53	2.47

Figure 1. Page Views per Month for the period April 1, 2011 to March 31, 2012



E-zine

A monthly E-zine is published electronically in both English and French by the Organic Agriculture Centre of Canada. The Organic Friends' E-zine / Cyberbulletin Les amis du bio provides subcribers with an easy-to-use list of the new articles, research abstracts and extension bulletins that have been posted on the OACC website (www.oacc.info) each month. In 2011/2012, monthly E-zines were published in both English and French and distributed to a list of subscribers that grew to tally in at just over 17,800.

English Organic Friends' E-zines 2011-2012	French Cyberbulletin Les amis du bio 2011-2012
March 2012	Mars 2012
February 2012	Février 2012
January 2012	Janvier 2012
December 2011	Décembre 2011
November 2011	Novembre 2011
October 2011	Octobre 2011
September 2011	Septembre 2011
August 2011	Août 2011
July 2011	Juillet 2011
June 2011	Juin 2011
May 2011	Mai 2011
April 2011	Avril 2011

Newspaper Articles

Every month, organic research and innovation in Canada is highlighted in one or more newspaper articles that are distributed to over 300 media contacts across the country, including the Western Producer, Farm Focus and Ontario Farmer. These articles are posted on the OACC website one month after publication. To read, please see the list below, or visit http://www.oacc.info/NewspaperArticles/na_welcome.asp

March 2012	Approaching Organic No-Till on the Canadian Prairies Cultiver sans labour ou presque dans les Prairies canadiennes
February 2012	Is Organic Farming More Profitable? Est-ce que l'agriculture biologique est plus profitable?
January 2012	AAFC Gets to the Root of Organic Fruit Crops in BC AAC prend à la racine les problèmes de la fruiticulture biologique en Colombie-britannique
December 2011	Organic Farming...Organic Varieties? De nouvelles variétés pour l'agriculture biologique?
November 2011	Equivalency for Organic Trade Le commerce des produits biologiques : une question d'équivalence
October 2011	Growing Oilseed Pumpkins Cultiver des citrouilles à graines oléagineuses
	The Not So Lowly Carrot: Import Replacement Opportunities for Canadian Organic Producers Pas si modeste, la carotte biologique canadienne!
	More than Just Taste: Comparisons of Organic and Conventional Bread Même goût pour le pain biologique et traditionnel
September 2011	Bacteria May be the Solution to Replant Problems in Organic Orchards Les bactéries solubilisant le phosphore : une solution aux problèmes de replantation dans les vergers biologiques?
	The Canadian Organic System: Learning the ABC's Les Systèmes de production biologique : Apprendre l'ABC

August 2011	Cross Canada Green Manure Use on Organic Vegetable Farms Utilisation d'engrais verts dans les fermes maraîchères biologiques au Canada
	Organic Farming Systems Yield Energy Savings of 20% or More Les systèmes d'agriculture biologique permettent des économies d'énergie de 20% ou plus
July 2011	If at First You don't Succeed, Try, Try Again – Interpreting the Organic Standards Vingt fois sur le métier, remettez votre ouvrage – Interpréter la norme
	Organic Strawberries and Raspberries: The Berry Best Fraises et framboises biologiques du Canada : franchement meilleures!
	Using Cellulose Sheeting to Control Pests and Weeds in Organic Apple Orchards Un paillis de cellulose pour lutter contre les ravageurs et les mauvaises herbes dans les pommeraies biologiques
June 2011	Organic Cereal Breeding in Western Canada Sélection de céréales biologiques dans l'Ouest canadien
	Organic Greenhouse Tomatoes Pick of the Crop Tomates de serre biologiques : le dessus du panier
May 2011	The Ubiquitous Use of Plastic Mulch in Organic Systems De l'usage des paillis de plastique en agriculture biologique
	AAFC Gets the Dirt on Organic Fruit Crops in BC AAC : des nouvelles fraîches de la fruiticulture biologique en Colombie-Britannique
	Organic Potting Soil Considerations Critères de choix d'un milieu de culture biologique
	Organic Ornamentals: Canadian Researchers Look Beyond Organic Food Plantes ornementales biologiques : des chercheurs canadiens voient plus loin que les aliments biologiques
April 2011	Agroecology is a Big Word, Requiring Broad Research Agroécologie est un grand mot qui nécessite de vastes recherches
	Organic Systems Energy Winners in 2 out of 3 Farming Goals Les systèmes biologiques sont gagnants sur le plan énergétique pour deux des trois objectifs agricoles

Committees and Professional Activities

Andrew M. Hammermeister

Advisor, Landscape Indicators and Agri-Environmental Policies for Biodiversity, Carleton University
Chair, AAFC Science Peer Review Committee – Plant Science
Chair (Co), Canadian Organic Science Conference Organizing Committee
Chair (Co), Canadian Organic Science Conference Program Committee
Chair, Hiring Committee for NSAC Plant and Animal Science Faculty Member – Organic Cropping Systems Specialist
Chair, National Organic Extension Forum
Chair, NSAC Continuing and Distance Education Faculty Committee
Chair (Interim), Research and Innovation Working Group, Organic Value Chain Roundtable (OVCRT)
Member, Agricultural Institute of Canada Honours and Awards Committee
Member, Canadian Society of Agronomy Planning Committee for the Plant Canada Conference
Member, Canadian Society of Agronomy Session Committee, Plant Canada Conference
Member, Guelph Organic Conference Committee
Member, Graduate Student Committees: David Hobson (co-supervisor), Nicholas Taylor (co-supervisor), Kyle Gallant (co-supervisor), Julie MacKenzie (co-supervisor), Caroline Halde, Harun Cicek, Emily Clegg
Member, NSAC Campus Sustainability Committee
Member, NSAC Faculty Council
Member, Platform for Innovation in Organic Agriculture, Québec
Member, Research and Innovation Working Group of the Organic Value Chain Roundtable (OVCRT)
Member, Steering Committee of the Organic Value Chain Roundtable
Supervisor, Undergraduate Student Projects: Di Yao, Lyne Dijkman, Hanqi Liu
Supervisor, NSAC Chef's Garden Manager

Joanna MacKenzie

Member, Canadian Organic Extension Network (COEN)
Member, Canadian Organic Science Conference Organizing Committee
Member, Nova Scotia Institute of Agrologists

Karen Nelson

Member, Canadian Organic Science Conference Program Committee
Member, Canadian Organic Science Conference Organizing Committee
Member, Nova Scotia Institute of Agrologists

Margaret Savard

Member, Canadian Organic Science Conference Organizing Committee

Peer Reviewed Publications

Halde, C., Hammermeister, A. M., McLean, N. L., Webb, K. T. and Martin, R. C. 2011. Soil compaction under varying rest periods and levels of mechanical disturbance in a rotational grazing system. Can. J. Soil Sci. 91: 957-964.

Liu, K., Hammermeister, A. M., Warman, P. R., Drury, C. F. and Martin, R. C. 2011. Assessing soil nitrogen availability in contrasting cropping systems at the end of transition to organic production. Can. J. Soil Sci. 91: 493-501.

Non Refereed Publications

Lynch, D.H., Sharifi, M., Hammermeister, A**.** and Burton, D. 2011. Nitrogen management in organic potato production. In Zhongi He, Robert P. Larkin and C. Wayne Honeycutt (Eds) Sustainable Potato Production: Global Case Studies. Springer. (Book Chapter)

Conference Presentations and Posters

Halde, C., Gulden, R. H., Hammermeister, A. M., Ominski, K. H., Tenuta, M. and Entz, M. H. 2012. Using mulches to reduce tillage in organic grain production in Western Canada. Canadian Organic Science Conference. Winnipeg, MB.

Hammermeister, A. M. 2012. Canada's Organic Science Cluster. Canadian Organic Science Conference. Winnipeg, MB.

Hammermeister, A. M**.**, and Nelson, K. L. 2011. Fertility management for organic cereal production. Plant Canada Conference. Halifax, NS.

Hobson, D., Hammermeister, A. M., Lynch, D. H. and Pruski, K. 2011. Fertility management of establishing organic black currants (*Ribes nigrum* L.) in Atlantic Canada. Plant Canada Conference. Halifax, NS.

Hobson, D., Hammermeister, A. M., Pruski, K. and Lynch, D. H. 2012. Fertility management of establishing organic blackcurrants (*Ribes nigrum* L.). Canadian Organic Science Conference. Winnipeg, MB.

Lynch, D. H., Sharifi, M., Burton, D. and Hammermeister, A. M**.** 2011. Crop productivity and marketability and nitrogen dynamics under extended organic vegetable rotations. Plant Canada Conference. Halifax, NS.

Mahoney, K., Sharifi, M. and Hammermeister, A. M. 2011. Evaluation of Mussel Sediments as Soil Amendment and/or Weed Suppressant. Plant Canada Conference. Halifax, NS.

Nelson, K. L. and Hammermeister, A. M. 2011. Best management practices for organic black currant production. Plant Canada Conference. Halifax, NS.

Nelson, K. L., MacKenzie, J. L. and Hammermeister, A. M. 2012. Organic and integrated approaches to European wireworm control in Atlantic Canada. Canadian Organic Science Conference. Winnipeg, MB.

Sharifi, M., Lynch, D., Hammermeister, A. M. and Burton, D. 2011. Effect of Strategy of Conversion to Organic on Potato Yield and Nitrogen Losses. Northeast Potato Technology Forum. Fredericton, NB.

Sharifi, M., Hammermeister, A. H. and Mahoney, K. 2011. Evaluation of Mussel Sediments Fertility Value. ASA/CSSS Joint Meeting.

Taylor, N., Hammermeister, A. M**.** and Rupasinghe, H. P. V. 2012. Characterization of berry quality of *Ribes nigrum* in relation to harvest timing and cultivar. Canadian Organic Science Conference. Winnipeg, MB.

Invited Talks

Hammermeister, A. M. 2012. Canada's Organic Science Cluster. Plant Intercluster Meetings. Paris, France.

Hammermeister, A. M. 2012. An overview of Canada's Organic Science Cluster. COABC Conference. Chilliwack, BC.

Hammermeister, A. M., MacKenzie, J. L. and Nelson, K. L. 2011. Approaches to the management of wireworm (*Agriotes* spp.). ACORN Conference. Dartmouth, NS.

Nelson, K. L. and Hobson, D. 2011. Optimizing management for black currant establishment. ACORN Conference. Fredericton, NB.

Meetings, Field Days and Workshops

Atlantic Canadian Organic Regional Network (ACORN) 11th Annual Conference. Dartmouth, NS. November 11-13, 2011.

Canadian Organic Science Conference and Science Cluster Strategic Meetings. Winnipeg, MB. February 21-23, 2012.

Certified Organic Associations of British Columbia (COABC) Conference. Chilliwack, BC. February 23-25, 2012.

Haskap Field Day. Bridgewater, NS. October 11, 2011.

Landscape Indicators and Agri-Environmental Policies for Biodiversity Enhancement on Agricultural Lands Workshop. Carleton University, Ottawa, ON. March 20, 2012.

Organic Value Chain Roundtable (OVCRT) Meetings. Ottawa, ON. November 15-16, 2011.

Plant Canada Conference. Halifax, NS. July 17-21, 2011.

Plant Canada Field Tour. Brookside, NS. July 18, 2011.

Plant Intercluster Meetings. Paris, France. May 23-25, 2011.

Prince Edward Island Blackcurrant Producers Field Tour. Various locations, PE. March, 2012.

Research Field Tour of Brookside. NS Field Research Plots. July 20, 2011.

Meetings or Conference Sessions, Organized or Chaired

Canadian Organic Science Conference and Strategic Meetings. Winnipeg, MB. February 21-23, 2012.

Organic and Sustainable Agriculture Joint Session of the CSA/CSHS/OACC at Plant Canada. July 17-21, 2011. Halifax, NS.

Research and Innovation Working Group of the Organic Value Chain Roundtable. February 24, 2012. Winnipeg, MB.

OACC Partners

Note: These partners represent financial and in-kind contributions to OACC and the Organic Science Cluster, its management and communication programs.

Canadian Agri-Science Clusters Initiative
Growing Forward
Agriculture and Agri-Food Canada
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British Columbia New Varieties Development Council
Canadian Seed Growers Association
Canadian Wheat Board
Dubois Agrinovation
Grain Millers Canada
Home Hardware
Homestead Organics
Kubota Canada
L'Abri Végétal SENC
LaHave Forests
La Jardinerie Fortier
Les Fraises de l'Île d'Orléans
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