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Welcome to “ON Organic”

Hugh Martin, Organic Crop Production Program Lead, OMAFRA

Welcome to the October 2009 issue of ON Organic. It is difficult to believe that another growing season is coming to an end. I hope it was a good year for you but I know there has been some challenges. This month's issue covers a wide range of issues with a lot of short items.

Thanks to Ecological Farmers Association of Ontario (EFAO) and Organic Council of Ontario (OCO) for forwarding this on to their email lists, and I encourage you to share it with other colleagues who may find it useful. As always we welcome your comments.

Subscription to this newsletter is easy and no cost. For details go to the webpage: <http://www.omafra.gov.on.ca/english/subscribe/index.html#organic>

The newsletter is also posted on the OMAFRA website at: <http://www.omafra.gov.on.ca/english/crops/organic/news/news-organic.html>

The French version of these newsletters is available at: <http://www.omafra.gov.on.ca/french/crops/organic/news/news-organic.html>

The OMAFRA Organic pages are linked from: <http://www.ontario.ca/organic> and <http://www.ontario.ca/biologique>

The ON Organic Team

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Study of the Population Dynamics of Gastrointestinal Nematodes in Organic Sheep Farms in Canada with an Attempt to Introduce Sustainable Parasite Control Measures

Study by Mederos, A. (1,2), Peregrine A. (3), Fernández, S. (1,3), Menzies P. (2), VanLeeuwen J.(4), Kelton, D. (3), Martin, R.C. (1)

Over the past 3 years, sheep producers from central Canada participated in a study to help define how gastrointestinal parasites behave in sheep flocks in this part of the world, so that veterinarians and farmers can better control losses. Gastrointestinal nematode parasites, also known as GIN, infect lambs and adult sheep at pasture and can cause severe diarrhea, debilitation, and even death. Producers have used de-wormers (anthelmintics) for decades in the battle to prevent losses – but with the increasing problem of resistance of the worms to these drugs, as well as the desire to farm without having to rely on the use of chemicals – it is important to develop sustainable methods of control. To do this, we must first understand how the parasites behave under our climate and management practices, how the sheep respond to the infection, and which parasites are most important.

Thirty-two producers from Ontario and Quebec, representing certified organic, non-certified organic and conventional sheep farms, participated in the study from spring of 2006 to the fall of 2008. Fecal samples and pasture samples were collected monthly during the grazing season and also during the winter. Sheep and lambs were assessed as to body condition, evidence of diarrhea as well as anaemia. The numbers of parasite eggs were determined in the feces, as well as which parasites were most prevalent. Grass samples from pasture were assessed for presence of the free-living larval stages of the parasites. The history of pasture grazing was also determined at each visit. Producers were requested not to de-worm the sheep unless there was evidence of disease or if the fecal egg counts were dangerously elevated.

The results showed that there was tremendous variation from farm-to-farm in the level of parasites found. There were also significant differences between provinces and between years. However, some strong general trends were still evident. In the spring, adult ewes had the highest fecal egg counts (April-May). This is probably due to the commonly observed egg rise seen in late pregnant and early lactation ewes due to a relaxation in immunity. On pasture, the levels of free-living larvae were low in the spring but

increased through the summer – initially because of the contamination from the feces of infected ewes, and then later from infected lambs. Dry weather delayed this rise, while wet weather hastened its development. The infection levels in lambs tended to peak in late July and August, then declined in the fall (October-November). Other pertinent findings included the following: The most commonly identified parasites (*Teladorsagia* [*Ostertagia*], *Trichostrongylus* and *Haemonchus*) can all survive the winter on pasture. Secondly, one of the management practices most strongly associated with high parasite loads was spreading manure on pasture. Lastly, organic sheep farms tended to have lower parasite counts than conventional farms.

Some recommendations that can be made from this study are that ewes should be de-wormed before lambing, and before being put to pasture in the spring, in order to prevent the egg rise around lambing. Young lambs may require preventive deworming 4-8 weeks after placement on pasture. In addition, they should ideally not be placed on spring pastures that were grazed by heavily infected sheep the previous grazing season. Instead, pastures should be used that were grazed by either adult sheep that tend not to have heavy loads due to acquired immunity, or an alternate species such as cattle (not goats). Finally, fecal egg counts in lambs should be regularly monitored, starting 4 weeks after being put to pasture – but no later than early to mid-July.

There are many other issues to take into account when designing a sustainable control program for gastrointestinal parasites. More information can be obtained from a handbook on the Control of Gastrointestinal Parasites of Sheep written for Canadian producers and veterinarians. A free copy can be downloaded at <http://www.uoguelph.ca/~pmenzies/index.html>

For farms that wish to farm organically:

Producers that wish to reduce routine use of anthelmintics in ewes in the spring, can choose to lamb indoors to reduce pasture contamination from the periparturient egg rise, and then either graze ewes and lambs on pasture that did not have sheep or goats the previous year, or hold the ewes and lambs off pasture until weaning and then graze the lambs on clean pasture. This must be accompanied by surveillance of lambs using fecal egg counts and should begin about 4 weeks after lambs are put to pasture and done at intervals not greater than every 4 weeks.

The Organic Production Systems—General Principles and Management Standards (*CAN/CGSB 32.310-2006 Amended October 2008*) state that “medical treatment for sick or injured livestock **shall not be withheld** to preserve their organic status. All appropriate medications shall be used to restore livestock to health when methods acceptable to organic production fail.”

As per Section 6.7.9, when preventive measures fail to control parasites, anthelmintics can be used provided that:

1. fecal samples or animal examination indicate that an individual or group of animals are infected with parasites;
2. a producer has received written instructions from a veterinarian indicating the product to be used, the individual or group of animals to be treated, the dose and route of administration;
3. withdrawal times are twice the label requirement or 14 days, whichever is longer;
4. slaughter animals under one year of age can be treated only once and slaughter animals over a year of age can receive a maximum of two treatments;
5. dairy animals needing more than two treatments per year (antibiotics and/or anthelmintics) will lose their organic status;
6. a producer will create a written action plan (including timing), describing how they will adjust/change their parasite control plan to avoid similar emergencies.

Producers should always check with their organic certification body for proper interpretation of the regulations and standards prior to treating animals with products to make sure that they allowed to be used in their production system.

Production Insurance for Organic Crops

Just a reminder that Agricorp is offering a crop production insurance program for organic winter wheat and spelt.

Details were in the last newsletter see <http://www.omafra.gov.on.ca/english/crops/organic/news/2009-09a4.htm>

Enrolment

To apply for PI for organic winter wheat and organic winter spelt, contact Agricorp by November 1, 2009 at 1-888-247-4999, Monday to Friday, 7 a.m. to 5 p.m. The deadline to apply for PI for organic soybeans is May 1, 2010.

For more information visit our website at www.agricorp.com or call Agricorp at 1-888-247-4999.

Canadian Organic Research Inventory by Subject – 2008

The Organic Agriculture Centre of Canada (OACC) conducted a survey in 2008 of known organic research in Canada. This 277 page report includes a number of projects under various headings. See the OACC website at http://www.oacc.info/Docs/Organic%20researchers%20in%20Canada_2008.pdf

While efforts were made to make this inventory complete, it is likely that some projects were accidentally omitted. The contents of the inventory may include research that is not specifically related to organic production, but is relevant. Researchers wishing to have their work included should contact Andy Hammermeister: ahammermeister@nsac.ca or call 902-893-8037.

Management of Pest Flies on Organic Farms

Produced in consultation with the ECOA Animal Welfare Task Force, July 2009

Flies are more than an irritation for animals, workers, and neighbours. They affect the health and comfort of animals and reduce feed intake impacting weight gains, milk production and milk fat content. Research shows that stable flies can reduce feed conversion by up to 20% and economic impacts are observed with as few as five flies per animal. Flies can spread bacterial and viral disease with potential for threats to human health as well as increased veterinary costs. Mastitis, for example, can be spread by flies and fly bites will also cause sores on teats.

Fly management is essential to maintain good animal welfare but organic farmers cannot use synthetic insecticide sprays or impregnated ear tags. This factsheet provides information on some of the alternatives available. The first step in any management program is to know the pest. Appropriate identification of your enemy is critical in developing control strategies.

For the complete 4 page colour factsheet see http://www.oacc.info/Docs/AnimalWelfare/AWTF/Fly_control.pdf

Clean Ontario Farms

Obsolete pesticides, livestock medicines and used sharps collection program. Dispose of your obsolete pesticides, unused animal health products and used sharps in a safe, environmentally responsible manner.
...And it's free!

Check the dates. Locations are happening October 20-22, 2009.

See <http://www.agcare.org/File.aspx?id=e21e48ad-92be-4095-a1de-6c8fffa605a8>

Articles from OMAFRA Newsletters

Biodegradable Plastic Mulches

by Erin Styles, Berry Crop Summer Assistant and
Pam Fisher, Berry Crop Specialist

Millions of acres of farmland are cultivated under plastic mulch worldwide. In Ontario, strawberry growers have adopted the use of plastic mulches for day neutral and some June-bearing strawberry production. These mulches are laid over the soil to warm the soil, suppress nutrient leaching and weed growth, and to conserve soil moisture. Despite being effective and affordable during crop production, the disposal of the mulch is increasingly costly and environmentally sensitive. It is estimated that for each acre of plastic, pick up and disposal costs are between \$25 and \$100 for labour and landfill fees (Rangarajan, 2006).

What Are Biodegradable Mulches?

Biodegradable plastic mulches are made primarily from plant starches and can be tilled at the end of the season, reducing labour costs for plastic removal and disposal. They can be broken down by micro-organisms in the soil such as bacteria, fungi and algae.

How Well Do They Work?

How to Succeed with Biodegradable Mulch?

What Have Researchers Found?

See full article in the OMAFRA Ontario Berry Grower newsletter at <http://www.omafra.gov.on.ca/english/crops/hort/news/allontario/ao0509a1.htm>

Frosted Soybeans?!

by Horst Bohner - Soybean Specialist and
Albert Tenuta - Field Plant Pathologist

Mechanism

Low temperatures injure plants primarily by inducing ice formation between or within cells. The water that surrounds the plant cells freezes first (at about 0 C), while the water within the cell contains dissolved substances that depress the freezing point of water by several degrees. When the water around the cells becomes ice, water vapour moves out of the cells and into the spaces around the cell, where it becomes ice. The reduced water content of the cells depresses further the freezing point of the intracellular water. This can continue to a point without damaging the cell, but below a certain point, ice crystals form within the cell, disrupt the cell membrane, and cause injury to the cell.

Late-Season Frost Injury

Studies indicate that soybeans are easily injured by frost until they reach physiological maturity or R7 stage. Prior to this stage, soybeans will be injured both for grain and seed purposes. Soybean reproductive development can be divided into eight stages (Table 1).

See full article from OMAFRA CropPest newsletter at <http://www.omafra.gov.on.ca/english/crops/field/news/croppest/2009/17cpo09a5.htm>

Rotational Grazing

by Jack Kyle - Grazier Specialist

What is rotational grazing? As I talk to farmers across the province about grazing management, I have come to realize that rotational grazing means different things to different people.

The dictionary definition of rotation is "to change or alternate in a particular sequence; regular variation". To a crop producer, rotation means a different crop or sequence of crops in a field over a number of years. When we talk about rotation in relation to grazing, the most important factor is the state of the grass growth. The guiding principal of rotational grazing is to give the grass crop every opportunity to grow and produce forage for the livestock. The rotation refers to the movement of the livestock from one paddock to another during the grazing season.

According to the University of Guelph and OMAFRA Beef Cow-Calf Benchmarking Study, the biggest cost component is feed. When asked about grazing practices, over half of the participants reported that they were rotational grazing. However, there was a big range in the results that they were achieving.

Grazing & Rest Periods

The concept behind rotational grazing is to harvest the grass quickly and then give the forage time to recover and re-grow. This is accomplished by giving the livestock enough grass for the prescribed feeding period and then moving them to a new field. The more frequent these moves, the more productive the pastures will be. The maximum length of time in a paddock should be 5 days. Why 5 days? Grass starts to re-grow five days after it is harvested. When does a hay field begin to green-up after being cut? There is usually new growth started in 5-6 days. In a pasture, this new growth is candy to the livestock and they quickly re-graze it. This re-grazing depletes the root reserves of the plants, reducing plant vigour and subsequent growth.

An optimal rotational grazing system has the livestock moving to fresh grass every 1 to 3 days. If the grazing period is longer, there will be reduced performance by both the livestock and the grass. Think of the pasture field as a feed bunk. Would you expect livestock to perform well if the feed bunk was only filled every five days? Fresh feed encourages consumption and increased consumption means increased performance.

Number of Paddocks Required Increased Season Long Carrying Capacity

For full article see OMAFRA CropTalk newsletter at <http://www.omafra.gov.on.ca/english/crops/field/news/croptalk/2009/ct-0909a5.htm>

Simple Ways to Check the Health of Your Soil by Adam Hayes - Soil Management Specialist/Field Crops

As humans, many of us try to look after our health and go to the doctor regularly for a check up. Farmers take soil samples from their fields to check the fertility status every three years. Those who have implemented best management practices for their soil often wonder if their efforts are paying off. Good soil management can pay off in more consistent and higher yields. But, how do you know how healthy your soil is?

Cornell University in New York State has developed a Soil Health Assessment and set up a lab to do the analysis. OMAFRA is currently evaluating this for Ontario conditions and commercial viability. However, there are some simple assessments that can be done on-farm by the farmer or an agronomist. Ten easy soil health assessments include - soil structure, soil compaction, soil organic matter, soil colour, soil life, drainage, water-holding capacity, plant growth, root growth and nutrient levels.

Soil Structure Soil Compaction, Organic Matter & Colour Soil Life, Drainage, Water Holding Capacity Plant Growth, Root Growth, & Soil Nutrients Basic Soil Health Assessments

For Full article from OMAFRA CropTalk newsletter see <http://www.omafra.gov.on.ca/english/crops/field/news/croptalk/2009/ct-0909a6.htm>

Cleanup Reminders

by Gillian Ferguson - Greenhouse Vegetable IPM Specialist

We are again at that time of year when greenhouse vegetable growers are either thinking, or will soon be thinking, of cleaning up for the spring crop. This is a tedious job, no doubt, but one which tolerates no shortcuts. Some would like to believe that subjecting the greenhouse structure and growing media to a couple of weeks of cold weather should "freeze out" pests. However, insects, mites, and disease-causing organisms have all evolved mechanisms by which they can survive the cold winters, and this basic fact makes it virtually impossible to simply freeze out them out. Many organisms are very hardy and persistent. As an example of their longevity, survival of the canker-causing bacteria on most surfaces is about one month, and can be at least 71 weeks in debris and contaminated rockwool. Other examples of very persistent disease organisms include Tobacco mosaic virus and related viruses. These viruses can survive for years in dry infected debris. These examples illustrate the importance of removing all infected plant material and growing media, and cleaning up as best as possible to minimize carryover of disease sources to the new crop.

Follow these 8 steps for a good cleanup:

1. Don't Overlap Crops
2. Maintain Warm Temperatures
3. Ambush those Pests
4. Properly Dispose of Crop Residues
5. Disinfect Everything
6. Keep Out Dirt
7. Keep Out Weeds
8. Maintain Biosecurity/Sanitation Practices

For full article go to OMAFRA Greenhouse Grower Notes newsletter <http://www.omafra.gov.on.ca/english/crops/hort/news/grower/2009/10gn09a1.htm>

Late Blight News

by Eugenia Banks, Potato Specialist

This past season, the severity of late blight in the Maritimes and in the Eastern US was unprecedented. The disease developed very early, and the cool, rainy weather provided favorable conditions for spores to spread. Clouds protected the spores from the lethal effects of ultraviolet radiation. Stormy weather spread spores in wind currents. Rain washed the spores out of air, onto the plants and provided the moisture needed for infection.

Researchers in the Eastern US found that this past season tomatoes were slightly more susceptible than potatoes to late blight. Are we dealing with a new strain? This will take time to sort out based on characterizing a large number of isolates collected from tomatoes and potatoes over a wide area

New Late Blight Strain Identification

Rick Peters, an Agriculture and Agri-Food Canada researcher based in PEI, will isolate the late blight fungus from infected tubers. If you find tubers infected with late blight you can send the tubers to Rick at the address below. Tubers should have as much healthy tissue as possible. Send the samples by courier to:

Rick Peters
Agriculture and Agri-Food Canada
440 University Ave
Charlottetown, PEI
C1A 4N6

Eugenia will be sending a couple of samples. If you wish, I can include your sample with my shipment. Give me a call (519-766-5337) if you wish to do this. Growers' names will be kept confidential.

Chilling Injury and Sweet Potatoes by Melanie Filotas , Specialty Crop IPM Specialist

It is commonly known that sweet potatoes cannot tolerate a heavy spring or fall frost, and this fact influences the timing of both planting and harvest in northern growing regions. However, as we head into the cooler temperatures of fall, it is important to remember that sweet potatoes are also susceptible to chilling injury when roots are exposed to temperatures of 10-12°C or less.

Chilling injury can be defined as damage to fruits and vegetables exposed to temperatures above their freezing point but below some minimum temperature (usually 5-15°C). It is common in plants originating from tropical or subtropical regions. Chilling injury differs from injury due to freezing, where damage is due to ice crystals forming in the tissues and is immediately obvious. With chilling injury, exposure to lower temperatures can damage cell membranes or affect the normal metabolism of plant tissues, resulting in a cascade of other reactions. In contrast to freezing damage, chilled roots often appear fine when dug, but may decay quickly during curing. Sometimes, symptoms may not even become evident until several weeks after roots are placed into storage. Symptoms of chilling injury in sweet potatoes can be difficult to diagnose and include surface pitting, loss of dry matter, internal breakdown and discolouration of tissue when exposed to air (Figure 1 and 2). Chilling greatly increases

susceptibility of roots to decay in storage due to a variety of fungi (Figure 3). Chilling can also negatively affect the colour, texture, taste and smell of sweet potatoes, and the core of the root may stay hard after cooking.

For full article go to OMAFRA HortMatter newsletter at <http://www.omafra.gov.on.ca/english/crops/hort/news/hortmatt/2009/21hrt09a1.htm>

New Publications

09-039: Six Elements of Effective Spraying in Orchards and Vineyards

<http://www.omafra.gov.on.ca/english/crops/facts/09-039.htm>

09-043W: Growing Non-Traditional Crops in Ontario

This is an excellent overview of how to get started with a new crop.

<http://www.omafra.gov.on.ca/english/crops/facts/09-043w.htm>

09-045: Weed Management in Carrots <http://www.omafra.gov.on.ca/english/crops/facts/09-045w.htm>

How to Order OMAFRA Publications

Publications can be ordered through ServiceOntario Online at [ServiceOntario Publications](#)

By phone through the ServiceOntario Contact Centre
Monday to Friday, 8:30 AM to 5:00 PM
416-326-5300
416-325-3408 (TTY)
1-800-668-9938 Toll-free across Canada
1-800-268-7095 TTY Toll-free across Ontario

In person at [ServiceOntario Centres](#) located throughout the province or at any Ministry of Agriculture, Food and Rural Affairs Resource Centre. [OMAFRA office locations.](#)

Food Bulletin

Marketing Opportunity **An Olympic Marketing Opportunity**

The upcoming 2010 Olympic Games in Vancouver presents a unique and powerful opportunity to connect with thousands of potential new customers for your agri-food enterprise. The "best of Ontario" products and services will be featured at the Games' Ontario pavilion Feb. 12-28, enhanced by experiential programming, such as celebrity chef demonstrations and culinary wine or beer pairings and tastings.

This marketing venue offers exposure to an estimated 350,000 Canadian, American and international visitors, 10,000 media and thousands of potential investors.

For more information, contact the Ontario 2010 Olympic Secretariat at 416-327-8857 or by email at Kathy.Tangorra@ontario.ca.

Industry News

New Ontario-Quebec agreement to reduce trade barriers, boost economy

Making it easier to work and do business across the Ontario-Quebec border is the goal of a new trade agreement resulting from a joint meeting of the premiers and their cabinets on Sept. 11.

The Ontario-Quebec Trade and Cooperation Agreement will promote collaboration, reduce trade barriers and improve labour mobility to create a more robust, globally competitive trade environment.

The Agreement covers several sectors, including financial services, energy cooperation, economic cooperation and regulatory cooperation.

For example, business owners from both provinces will be able to access regulation changes under consideration by both jurisdictions, allowing them to participate in the consultation process and anticipate and adjust their practices accordingly. A third meeting is planned for 2010 as the Ontario and Quebec governments continue working together to strengthen the economy.

2009 Premier's Awards for Agri-Food Innovation Excellence

Calling all agri-food innovators!
It's time to apply for the 2010 Premier's Award for Agri-Food Innovation Excellence program.
The deadline is Nov. 16, 2009.

This program recognizes innovations that add value to existing products, create jobs and drive economic growth. Check out the [success stories](#) of past winners. Up to 55 regional awards, valued at \$5,000 each, are presented each year. Recipients of Minister's Award (up to \$50,000) and the Premier's Award (up to \$100,000) are selected from the regional winners.

Eligible applicants include individual farmers, primary producers, groups of farmers, a combination of agri-food businesses, or agri-food related organizations (a farmer must be one of the applicants in any group).

Additional information, guidelines and applications forms are available on the OMAFRA [website](#) or by calling the Agricultural Information Contact Centre at 1-877-424-1300.

Higher-education R&D spending up in Canada

Canada is number one in the G7 for higher-education research and development spending (as a percentage of gross domestic product), according to data recently released by Statistics Canada.

The national statistical agency announced that estimated spending on higher education R&D was \$10.2 billion in 2007–08, representing an increase of 5.8 per cent over 2006–07.

The federal government's investment was \$2.7 billion, up 9.4 per cent from the previous year, making it the second-largest contributor to higher-education R&D in the country. Higher-education institutions continued to be the largest contributors to their own R&D, spending an estimated \$4.6 billion in current dollars in 2007–08, an increase of 3.1 per cent over the previous year.

Higher-education institutions include universities, affiliated research hospitals, experimental stations and clinics. This increase is consistent with the government's commitment to develop a leading-edge economy and implement actions, as set out under its strategy, *Mobilizing Science and Technology to Canada's Advantage*.

Training

Searching for training providers? These two not-for-profit organizations can help:

Guelph Food Technology Centre (GFTC)

Broaden your skills and knowledge this fall with one or more of GFTC's innovative and comprehensive courses, which include the new "Pre- and Probiotics: Applications and Opportunities" (Oct. 8) and "Stepping into Green: Sustainable Packaging Design" (Oct. 21). Check out the complete line-up of training opportunities on the [GFTC website](#).

Excellence in Manufacturing Consortium (EMC)

Throughout the year, EMC hosts many training events on topics such as Lean best practices, health & safety, human capital and other enterprise-wide and advanced manufacturing issues. For a list of upcoming events, check out the [EMC events calendar](#).

Events

Growing Forward

The Growing Your Farm Profits (GYFP) workshop is the entry point to potential cost-share opportunities available through [Growing Forward Business Development for Farm Businesses](http://www.omafra.gov.on.ca/english/about/growingforward/busdev.htm) <http://www.omafra.gov.on.ca/english/about/growingforward/busdev.htm>

For a listing of GYFP workshops happening across the province in the coming months see: <http://www.ontariosoilcrop.org/en/programs/gyfp091.htm>
The deadline for this years round of funding is January 15th 2010. Funding is available on a first come first served basis.

29th Annual Guelph Organic Conference

Theme: Our Canadian Organic Identity
January 28-31, 2010, at University of Guelph see <http://www.guelphorganicconf.ca/>
for tentative details on speakers, workshops, Trade Show, etc.



EFAO Events - Organic No-till and Organic Vegetable Production - Guelph area

October 27th (Tuesday) - 9:30 am to 3:30 pm - Exact location TBA

Dr. Kathleen Delate from Iowa State University will be talking with EFAO on her organic research work and her extension experiences with organics. As an Extension Organic Horticulturalist, she holds the first faculty position in the U.S. to be designated specifically for organic agriculture. Cost \$35 for EFAO members and \$45 for non-members. Lunch is included. Please pre-register with the EFAO office.

EFAO Events - Western Regional Fall Seminar and Meeting - near Kitchener

November 7th (Saturday) - 9:30 am to 3:30 pm. at Bloomingdale Community Centre

The day will include a speaker on peak oil, a new farmers panel and a general farmers forum.

Links to Organic Agriculture Information

Organic Council of Ontario (OCO)
<http://www.organiccouncil.ca>

Canadian Organic Growers (COG)
<http://www.cog.ca>

OMAFRA Organic Agriculture
<http://www.ontario.ca/organic>

Ecological Farmers Association of Ontario (EFAO)
<http://www.efao.ca>

Organic Agricultural Centre of Canada (OACC)
<http://www.oacc.info>

Agricultural Information Contact Centre: 1-877-424-1300
E-mail: ag.info.omafra@ontario.ca
Northern Ontario Regional Office: 1-800-461-6132

www.ontario.ca/omafra