



Welcome to ON Organic

Evan Elford, New Crop Development Specialist, OMAFRA

Season's Greetings from ON Organic!

We hope you enjoy this month's edition of ON Organic with information about dairy herd selection and natural enemies in crop production.

Also, a reminder for students completing admissions applications for 2015 college and university programs that a list of diploma and degree programs in organic agriculture and horticulture are available on the Organic Agriculture Centre of Canada website. Please visit their website for more information at www.dal.ca/faculty/agriculture/oacc/en-home/education.html

As always, we want to hear from you! Are there livestock, crop or business management issues you are facing or would like to learn more about? Please let us know so we can address it for you (and others) in an upcoming newsletter!

Thank you once again to our contributing authors and to EFAO, OCO and others who pass along our newsletter on a regular basis.

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



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The ON Organic Team

Evan Elford – Editor, OMAFRA, New Crop Development Specialist

Jack Kyle – OMAFRA, Grazier Specialist

Hugh Berges - OMAFRA, Manager Horticultural Technology

Katie Meagher – OMAFRA, Marketing Specialist

Mario Mongeon – OMAFRA, Livestock Specialist

Melanie Filotas - OMAFRA, IPM Specialist for Specialty Crops

Jacquie De Fields – OMAFRA, Client Service Representative

Julie Desrosiers – OMAFRA, Client Service Representative

David Lauzon – OMAFRA, Client Service Representative

Pick of the Crop: Developing Your Selection Strategy

Mario Mongeon, OMAFRA Livestock Specialist, Alfred Resource Centre

When visiting dairy farms, I am often surprised to see the number of heifers raised. In many cases, pretty much all females born on the farm will be raised and eventually milked. I often ask why such and such animal was raised and the reason is often vague. It usually involves what I call the *insurance factor*. Examples of *insurance factors* have included: keeping everything in order to try them out; and, making sure that this potentially outstanding milker stays in the herd. Selecting based on actual results, not prediction is appealing to many. This can become very expensive. This *insurance factor* can involve more requirements in terms of labour, barn space, feed and so on. In the long run, the *insurance factor* becomes quite costly. What if only the best animals would be raised? What if the size of the replacement herd was reduced? What if the replacement rate was reduced? These three objectives could potentially be met if a plan was put in place and a selection strategy was implemented. The outcome would be substantial financial and labour savings and superior replacement animals.

Selection and culling is a balancing act between economics, milk production, and genetic progress. In order to implement the best strategy, one needs to identify goals. Genetic progress goals will determine selection intensity and vice-versa. In order to achieve a fast genetic gain, the selection needs to be more intense. As the selection intensity increases, only the best cows and superior heifers will be selected to give rise to replacement animals and only the best bulls will be used as sires for replacement heifers. Calves from the remaining animals in the herd will not be kept for replacement purposes.

The selection process can start by ranking animals based on a simple number: their Lifetime Profit Index or LPI. This index is a valuable overall genetic selection tool and considers factors such as: production; durability; health; and, fertility. LPI aims to identify animals that are expected to transmit superior genetics to their progeny, which makes them more profitable.

For heifers, the LPI value is based on parentage only as no specific data exists for a heifer which has not yet begun milking. There is a new tool that can be used to increase the accuracy of predicting the genetic potential of an animal used to make the selection decision: genomics. Genomic testing looks at specific DNA markers of genes that influence key production traits. These markers are distributed across the chromosomes that compose the genetic makeup of a specific animal. Genomic testing panels come in different sizes based on the number of markers analyzed. Using genomics to select heifers increases the rate

of LPI progress made versus traditional selection methods. Genomic testing can be done on dairy calves at an early age, giving valuable information on the genetic value of a potential dairy replacement heifer.

Once the cows and heifers are ranked from highest to poorest LPI value on a piece of paper, the breeder is better equipped to visualize the selection process. Three groups of animals should emerge from this list: the *Keepers*, the *Maybe's* and the *Goners*. Other factors might be used to move cows from one group to another such as temperament, or other characteristics not accounted for by the LPI index.

The *Keepers* group consists of cows and heifers with LPI values above the herd average. Replacement animals should mainly come from these dams. They should be bred with excellent sires in order to optimize genetic gain. Using sexed semen for this group can be beneficial since it can shift the sex ratio of live calves from the standard 50:50 to an average of 90% females and 10% males or 90:10 ratio. This can prove invaluable to optimize the number of females born from the best individuals of the herd. Since the fertility of sexed semen might be reduced, it is advisable to privilege its use on heifers.

The *Maybe's* group includes animals with average LPI values and may, if needed, give rise to some replacement animals. The number of replacements raised from this group should be kept to a minimum.

The *Goners* group is the tail group, LPI wise. Although you will want the milk from these animals, you do not want to keep any heifers as replacements. Since the decision to not keep the calf is already made, breeding should be made accordingly.

Once you know the composition of the *Keepers* group, it is important to define how many heifer calves will be kept annually for replacement purposes. A good starting point is to have a look at **Table 1**. This table gives the number of replacements to keep annually for a hundred milking cow herd, according to different replacement rates and age at

Age at first calving (Months)	Replacement rate (%)		
	25%	30%	35%
24	26	31	36
26	28	33	39
28	31	36	42

Pick of the Crop: Developing Your Selection Strategy (Cont'd)

- first calving. Find the situation that best describes your farm and look at the number of heifers you should have in your barn at any given time. How does that compare to your actual numbers?
- **Limit the number of heifers raised on your farm**
- **Raise only the best ones, it makes economic sense**
- **Define your objectives and develop a selection strategy**
- **Use new tools such as sexed semen and genomics wisely to improve your strategy**
- **Pay attention to calving dates in order to distribute replacements over the whole year**
- **Stick to your plan**

Natural Enemies 101

Melanie Filotas, OMAFRA IPM Specialist for Specialty Crops and Hannah Fraser, Entomology Program Lead, Horticulture, OMAFRA

Any creature that feeds on or otherwise reduces the numbers of another creature is its “natural enemy”. All crop pests have natural enemies, which are often referred to as beneficials, and the reduction of pest populations by these natural enemies is called biological control. Natural enemies provide an important free service to farmers - both organic and conventional – however they are often overlooked. Many farming practices (tilling, cover crops, choice and use of pesticides) can impact natural enemy populations. It is sometimes difficult to distinguish natural enemies from pests, as they can look very similar. However, taking the time to become familiar with the common natural enemies on your crops may help you assess and possibly adjust the impact of your farming practices to promote populations of natural enemies.

Natural enemies of insect pests are probably the easiest to recognize. Insect natural enemies can be predators, parasites or pathogens. Predatory insects kill and consume other (usually smaller) insects. They are generally larger than their prey, kill many prey during their lifetime and are most

commonly generalist feeders. Common predators and their prey found on Ontario farms include:



Photo above: Spined soldier beetle eating a caterpillar.

Predator	Description	Prey
Lady beetles and larvae	Eggs - small, ova, bright yellow and laid in clusters. Larvae – Black with yellow-orange patches, alligator shaped and covered in spines Adults – Broad, oval, convex, often with bright spots	aphids, mites, thrips, adelgids, mealybugs and other small insects and eggs
Ground beetles	Adults - Long, flat bodies, 0.3-8.5 cm long, often dark in colour. Prominent mandibles, long legs, threadline antennae	caterpillars and other immature insects, eggs, slugs, some weeds
Syrphid flies	Larvae – slug-lie, mottled brown to green semi-transparent body, no legs, 5-12 mm long Adults – resemble bees or wasps but with only one pair of wings	aphids and small caterpillars
Lacewing larvae	Eggs – laid singly on stalks (brown lacewing eggs not on stalks are harder to spot) Larvae - Long pointed, mottled body with long legs and sickle-shaped mandibles on head; may be covered with debris (ie dead and previously consumed prey)	aphids, insect eggs, thrips and other small insects and larvae

Natural Enemies 101 (Cont'd)

Melanie Filotas, OMAFRA IPM Specialist for Specialty Crops and Hannah Fraser, Entomology Program Lead, Horticulture, OMAFRA

Assassin bugs	Nymphs - light to black with wing pads, resemble adults but with wing pads Adults – dark, enlarged front legs, large beaks, elongated head	aphids, insect eggs, leafhoppers, flies, other small insects and caterpillars
Aphid midge	Only larvae is predatory – small, orange maggots	aphids, mites, other small insects
Flower/Pirate bugs	Nymphs – yellow-orange, teardrop shaped, wingless Adult - Small, dark, shiny and oval, fast moving	mites, thrips, aphids, scales, leafhoppers, caterpillars, psyllids, other insects/eggs
Predatory stink bugs	Eggs – barrel-shaped egg masses with circle of spines at one end Nymphs – red to orange with black borders Adults – brown, pointed shield on back	mites, thrips, aphids and other small insects and larvae, insect eggs and caterpillars
Predatory mites	Similar to pest mites but faster-moving, fewer hairs, often tear-drop shape	

Parasitic insects or parasitoids lay their eggs in or on the bodies of other insects. When these eggs hatch, the young parasitoids feed on the host insect, typically killing it. They are generally smaller than their host, have a narrow host range and each immature kills only one host during its development. Most parasitic insects are tiny wasps or flies. The most common include:

Photo on right: Hornworm covered in parasitoid eggs.



Parasitoid	Description	Prey
Chalcidoid wasps	Parasitized hosts – parasitized aphids are hardened, black, slightly swollen, sometimes with exit holes, parasitized eggs appear black Adults – small, yellow, brown or black, slightly smaller than host or small and metallic	Depending on the species: aphids, scale, whiteflies, leafminers, caterpillar eggs
Braconid wasps	Parasitized host: caterpillars surrounded by multiple small cocoons, or swollen, papery aphid mummies Adult: Dark, 2-15 mm, long antennae	caterpillars, flies, beetles, aphids, leafminers
Ichneumonid wasps	Adults: variable in colour, 5-40 mm long, long antennae, abdomen often long and narrow	caterpillars, flies, beetles, aphids, leafminers
Tachinid flies	Larvae – maggots found inside host Pupae – dead host with exit hole and brown ovoid pupa beside it Adults – medium to large, housefly-like, covered in bristles	caterpillars, beetles, bees, wasps, sawflies, stink bugs, grasshoppers

Pathogens are microorganisms that infect and kill other living creatures. While we are more familiar with the pathogens that attack our crops, insect pests are also susceptible to a wide variety of bacteria, fungi, viruses and other pathogens. The most famous example of an insect pathogen is Bt, an insect pathogenic bacteria which is the basis of many biopesticides widely used in organic agriculture. However, there are numerous other pathogens naturally present in the environment that play a very important role in regulating pest populations. They are often, but not always, specific to certain groups of insect pests, or even certain life stages. Entomopathogenic nematodes are not microbes but are often grouped with pathogens because they act in a similar way. Common hosts and symptoms of pathogens include:

Natural Enemies 101 (Cont'd)

Melanie Filotas, OMAFRA IPM Specialist for Specialty Crops and Hannah Fraser, Entomology Program Lead, Horticulture, OMAFRA

Pathogen	Symptoms in Host	Hosts
Bacteria	Initially hosts stop eating, cadavers are limp, dark, shrivelled bodies	caterpillars, beetles, flies, others
Viruses	Cadavers are limp, dark, oozing, appear “melted”. May be firmly attached to plant and arched backwards.	Caterpillars, beetles, others
Fungi	Cadaver swollen and covered in fungus. Fungus may be less prominent under dry conditions	Wide host range – caterpillars, beetles, aphids, flies, thrips, sucking insects, mites, others
Nematodes	Cadavers limp, dark or reddish, sometimes nematodes can be seen oozing out of cadaver	commonly soil dwelling beetles and other soil insects



Photo on right: Gypsy moth caterpillars killed by a virus. Photo: William M. Ciesla, Forest Health Management International, Bugwood.org.

For photos and other tips on identifying natural enemies check out the beneficials gallery in OMAFRA's Ontario CropIPM resource <http://www.omafra.gov.on.ca/IPM/english/apples/beneficials/index.html> or the Great Lakes Vegetable Working Group's video on natural enemies on at

<http://www.youtube.com/watch?v=r1EYCevAgnY>.

To see specimens of natural enemies in action and get more resources on natural enemies, visit the **Natural Enemies display** at the **OMAFRA booth** during the **Guelph Organic Conference** on Saturday Jan. 31 and Sunday, Feb 1.

Resources

New Transition Reports from the Organic Value Chain Roundtable: Organic Grain, Vegetable and Beef Production

Three new reports have been released from the Organic Value Chain Roundtable that provides a strong business case for going organic.

These commodity-specific guides targeted to conventional producers and lenders provide beef, grain, and vegetable producers with an overview of the market opportunities, economics, as well as government and industry support available to help guide new entrants towards a successful transition. The reports will also be useful to lenders and others with an interest in the economic viability of organic agriculture.

With phenomenal growth in the industry and shortfalls in domestic production, the reports provide timely information to producers wanting to diversify their operations and marketing options. According to a 2013 report by the Canada Organic Trade Association, Canadian sales of organic products have tripled since 2006 to reach \$3 billion. Exports of Canadian organic goods to other countries topped \$450 million in 2012.

The reports are available for download at: <ftp://ftp.agr.gc.ca/pub/outgoing/misb-eb/Organic%20-%20Produits%20Biologiques/>.

Organic Advantage: Vegetable Production

This guide paints a picture of strong demand filled largely by imported products from the US and Mexico. Less than 25% of the domestic demand for organic vegetables at retail is filled by Canadian producers. In fact, for vegetables such as organic cauliflower, beets and spinach, 100% of the domestic retail demand is met by imports. The guide shows the demand for the main organic vegetable types and retail price trends relative to conventional.

Organic Advantage: Grain Production

This guide provides details of the Canadian acreage devoted to organic cereal grains and oilseed production, prices, operating expenses, margins and yields, and points producers towards resources that can help them transition from conventional to organic.

Organic Advantage: Beef Production

The beef guide provides guidance and resources for producers who want to add value to their organic crops through livestock grazing.

Looking for Information on Cover Crops?

Cover crops have a lot of places where they can fit in horticultural crop rotations. Before late planted crops like pumpkins to provide weed suppression. After early harvested crops like peas or snap beans to cover and protect the soil while enhancing soil structure. After winter wheat to suppress resistant weeds in the rotation or as a part of the overall crop rotation to suppress nematodes in preparation for planting strawberries.



Looking for more details on how a cover crop can fit, herbicide concerns or the basics on a particular cover crop species? There is an improved version of the Purdue Midwest Cover Crop Field Guide available now. The pocket guide, released Monday (Sept. 22), is produced by Purdue University and the Midwest Cover Crops Council. The first cover crops guide was released in February 2012. The updated guide is in response to the increasing interest in cover crops in the Midwest and to requests for additional information.

"All this new information will help farmers better choose appropriate cover crops for their situation and better manage the cover crops they grow - all for greater potential benefit for their soils and cash crop growth," said Eileen Kladivko, Purdue professor of agronomy.

The updated guide features seven new topics:

- Getting started in cover crops.

- Rationale for fitting cover crops into different cropping systems.
- Suggested cover crops for common rotations.
- Cover crop effects on cash crop yields.
- Climate considerations including winter hardiness and water use.
- Adapting seeding rates and spring management based on weather.
- "Up and coming" cover crops.

There also is more information about herbicide carryover, manure and biosolids applications, and crop insurance issues (note: US crop insurance issues). There has been a significant contribution from Ontario research to the new material, particularly in the area of herbicide carryover (Dr. Darren Robinson, University of Guelph- Ridgetown campus)

The guide's second edition is available at Purdue Extension's The Education Store at www.the-education-store.com. Search by the name of the publication or product code ID-433.

A link to a video clip of Purdue University agronomy professor Eileen Kladivko explaining the benefits of cover crops is available at <http://youtu.be/2NIyQeZ8jxQ>

Learning Opportunities

Exploring Value Added Opportunities Course

Ever wondered about turning your fruit into jam? Ever dreamed about making gourmet ready-to-eat meals with your produce?

Take the free OMAFRA course, Exploring Value Added Opportunities, to learn whether adding value to your products and services is right for your business.

Course Description

Participants will learn how to generate ideas for value-added opportunities, assess an idea's business potential, identify and manage risk and develop a plan to execute their idea.

Course Dates and Times

The course is being delivered through three, one-hour

interactive webinars. These sessions are taking place on February 24, March 3, and March 10 (all Tuesdays) from 12-1pm. To participate in this free learning opportunity, you will need Internet and phone access. Pre-registration is also required.



Meet & Greet at the Guelph Organic Conference

If you'd like to learn more about the *Exploring Value Added Opportunities* training in person, join us for a Meet & Greet at

Learning Opportunities (Cont'd)

the Guelph Organic Conference on Sunday, February 1 from 12:30 to 1:30pm. Register by January 28 at ontario.ca/e996 to receive a complimentary light meal.

Course Testimonial

"Sessions were dynamic and engaging. We were also very impressed with the sheer quantity of good information offered to us. Thank you!" A past course participant.

Learn more at: ontario.ca/e996 or 1-877-424-1300

Register at: ontario.ca/by3z or 1-877-424-1300

Nutrient Management eLearning Courses

The Ontario Ministry of Agriculture, Food and Rural Affairs has online nutrient management courses!

Our training courses give learners the tools to safely manage nutrients while protecting the environment. Take our courses to become a government-certified Nutrient Management Planner or Consultant.

Our eLearning format allows you to learn on your own time and at your own pace. The newest eLearning course – Introduction to Nutrient Management – provides a basic understanding of nutrient management best management practices. This course will be of interest to a wider audience beyond those who require certification.

Visit the University of Guelph Ridgetown Campus website for more information on in-class and online nutrient management training options.

Contact the University of Guelph Ridgetown Campus for more information:

Toll Free: 1.855.648.1444

Email: mmcdonal@uoguelph.ca

Internships

Ecological Farming Internship Opportunities

Organization: C.R.A.F.T. South-West Ontario
(www.craftsouthwestontario.ca)

Location: Southwestern Ontario

Type: Full-time seasonal - for more details see the farm descriptions on the C.R.A.F.T. website.

If you're ready for a full, hands-on experience that will immerse you in ecological farming then you've come to the right place. C.R.A.F.T. Ontario is your gateway to a farming internship experience that will change your life. Whether your dream is to have your own organic farm one day or you just want to learn some food-growing and hands-on skills that can be applied in other parts of your life, a farming internship is a powerful experience that will equip you with the tools and insights to make a real difference in the world.

Each C.R.A.F.T. farm operates independently and offers its own internship with individualized agreements around such things as living and eating arrangements, stipends, work hours, and training methods.

What is C.R.A.F.T. Ontario?

C.R.A.F.T. (Collaborative Regional Alliance for Farmer Training) is a collaboration of organic and biodynamic farms whose aim is to provide opportunities for interns to learn more about sustainable small-scale agricultural production. The C.R.A.F.T. program offers on-farm training to the interns of all regional C.R.A.F.T. farms. Monthly C.R.A.F.T. field days include a potluck lunch, a group activity, a workshop, and a field tour.

For more information, visit: www.craftsouthwestontario.ca

To apply, please contact individual farms directly.

For more details see the farm descriptions on the website and contact individual farms directly to apply or ask further questions.

Conferences, Meetings and Tours

Sustainable Foods Summit

Date: January 21-22, 2015

Location: Hilton San Francisco, San Francisco, USA

For more information please visit the website at:

www.sustainablefoodssummit.com

Organic by Design

34th Annual Guelph Organic Conference

Date: January 29-February 1, 2015

Location: University of Guelph, Guelph, Ontario

For more information please visit the website at:

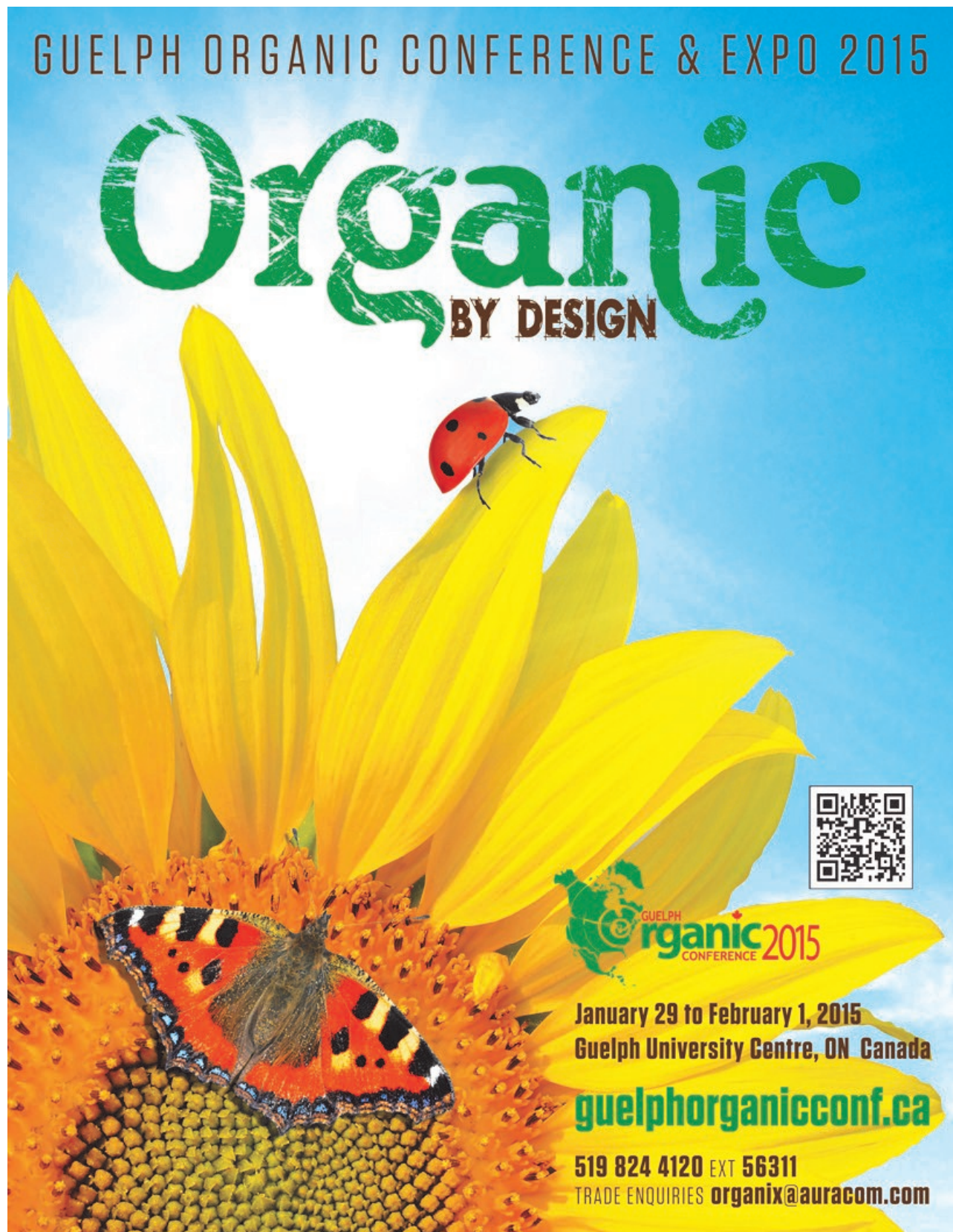
www.guelphorganicconf.ca/

**Conferences, Meetings and Tours
(Cont'd)**

GUELPH ORGANIC CONFERENCE & EXPO 2015

Organic

BY DESIGN



 **January 29 to February 1, 2015**
Guelph University Centre, ON Canada

guelphorganicconf.ca

519 824 4120 EXT 56311
TRADE ENQUIRIES **organix@auracom.com**

Conferences, Meetings and Tours (Cont'd)

The Society for Biodynamic Farming and Gardening in Ontario's

5th Annual Wine and Cheese Social

Date: Saturday, January 31st, 2015; Time: 5-8pm

Location: Best Western Brock Hotel, Pine Tree "A" Room, 716 Gordon Street (corner of Stone Rd E. and Gordon St.), Guelph, Ontario

Admission: \$20.00 for members and \$30.00 for non-members. Includes samplings from biodynamic wineries, and a smorgasbord of biodynamic and organic product nibbles.

Tickets are available at the door, the Society booth at the Guelph Organic Conference, or in advance by sending cheques made payable to The Society for Biodynamic Farming and Gardening in Ontario: The BD Society, 14 Simcoe Blvd, Simcoe, Ontario N3Y 3L5.

For further information: contact Laurie McGregor, Treasurer, at 519.426.

9021 or e-mail at lmcgregor@sympatico.ca.

3rd Annual Kawartha Farm Stewardship Workshop

Date: Saturday February 7, 2015; 9:00am-4:00pm

Location: Rolling Hills Public School, 694 Highway 7a, Bethany, ON (20 minutes west of Peterborough, corner of 35 & 7a).

Brought to you by the partners in the Kawartha Farm Stewardship Collaborative, this full day workshop will feature presentations by farmers and stewardship professionals on topics including:

- Innovative tile and land drainage solutions that include wetlands
- Interesting alternative watering solutions for livestock
- Greg Stewart from OMAFRA will explain where and when neonicotinoid pesticides are economically valuable and realistic options for reducing neonicotinoid use

- Further details available soon!

Early bird deadline: Register by January 19 to receive a complimentary satellite map of your farm property (1 per registration).

For more information visit:

www.kawarthafarmstewardship.org, or contact Holly Shipclark: 705.328.2271 x 240

Ontario Fruit and Vegetable Convention (OFVC)

Date: February 18-19, 2015

Location: Scotiabank Convention Centre, 6815 Stanley Ave, Niagara Falls, Ontario

More information: For more information, please visit the website at www.ofvc.ca

Getting to the Roots: Successful Organic Farming Eco Farm Day, 2015

Date: Saturday, February 21, 2015

Call for Volunteers: Volunteers are currently being invited to join the Eco Farm Day Organization Team to complete the plans and take on various essential roles to make this conference happen for organic farmers in Eastern Ontario and Western Quebec.

If you are interested in volunteering at Eco Farm Day 2015, please contact Coordinator of Volunteers, Johanna at cogoso.volunteers.jc@gmail.com and cc Gary Weinhold at weinhold_g@yahoo.ca.

For more information about Eco Farm Day 2015, please visit the COG website at: <http://cog.ca/ottawa/eco-farm-day/>

Links to ON Organic Information & Staff Contacts

OMAFRA Horticulture Staff

Horticulture Technology

Mike Celetti	Pathologist, Hort Crops Prgm Lead	519-824-4120, x58910
Jim Chaput	Minor Use Coordinator	519-826-3539
Hannah Fraser	Entomologist, Hort Crops Prgm Lead	905-562-1674
Kristen Obeid	Weed Mgt Hort Crops Prgm Lead	519-738-1232
Christoph Kessel	Nutrition, Hort Program Lead	519-824-4120, x52480
Deanna Németh	Nutrient Management Planning Spec.	905-562-1170
Anne Verhallen	Soil Management Specialist	519-674-1614
Vacant	Organic Crop Production	519-826-4587
Denise Beaton	Crop Protection Program Lead	519-826-6594
Jason Deveau	Application Technology Specialist	519-426-8934

Horticulture Crops

Marg Appleby	IPM Systems Specialist	613-475-5850
Eugenia Banks	Potato Specialist	519-826-3678
Wendy McFadden-Smith	Tender Fruit & Grape IPM Spec.	905-562-3833
Jennifer DeEll	Fresh Market Quality	519-426-1408
Pam Fisher	Berry Crop Specialist	519-426-2238
Janice LeBoeuf	Vegetable Crop Specialist	519-674-1699
Elaine Roddy	Vegetable Crop Specialist	519-674-1616
Kathryn Carter	Tender Fruit & Grape Specialist	905-562-1639
Leslie Huffman	Apple Specialist	519-738-1256
Kristy Grigg-McGuffin	Pome Fruit IPM Specialist	519-426-4322
Marion Paibomesai	Vegetable Crop Specialist	519-826-4963

Greenhouse, Agroforestry & Specialty Crops

Jim Todd	Transition Crops Specialist	519-426-3823
Melanie Filotas	Specialty Crops IPM Specialist	519-426-4434
Sean Westerveld	Ginseng & Medicinal Herbs Spec.	519-426-4323
Evan Elford	New Crop Development Specialist	519-426-4509
Wayne Brown	Greenhouse Floriculture Specialist	905-562-4141, x179
Graeme Murphy	Greenhouse Floriculture IPM Spec.	905-562-4141, x106
Shalin Khosla	Greenhouse Vegetable Specialist	519-738-1257
Gillian Ferguson	Greenhouse Vegetable IPM Spec.	519-738-1258
Pam Charbonneau	Turfgrass Specialist	519-824-4120, x52597
Jennifer Llewellyn	Nursery Crops Specialist	519-824-4120, x52671
Todd Leuty	Agroforestry Specialist	519-826-3215
Mahendra Thimmanagari	Crop Bioproducts Specialist	519-826-4593

OMAFRA Growing Forward2 Business Development

Anne Marie Diotte	Business Development Program Coordinator	519-826-3220
Adrienne De Schutter	Business Development Skills & Training Advisor	519-846-3404

OMAFRA Field Crop & Livestock Staff

Field Crops

Horst Bohner	Soybean Specialist	519-271-5858
Ian McDonald	Applied Research Coordinator	519-482-5129
Peter Johnson	Cereals Specialist	519-271-8180
Albert Tenuta	Pathologist, Field Crops Prgm Lead	519-674-1617
Tracey Baute	Entomologist, Field Crops Prgm Lead	519-674-1696
Scott Banks	Emerging Crops Specialist	613-258-8359
Gilles Quesnel	IPM Field Crop Program Lead (Bil)	613-258-8250
Bonnie Ball	Soil Fertility Specialist	519-271-9269
Adam Hayes	Soil Management Specialist	519-674-1621
Greg Stewart	Corn Industry Program Lead	519-824-4120 x54865
Michael Cowbrough	Weed Mgmt Field Crps Prgm Lead	519-824-4120 x52580
Joel Bagg	Forage Specialist	705-324-5856
Christine Brown	Nutrient Mgt Field Crops Prgm Lead	519-537-8305
Brian Hall	Canola & Edible Bean Specialist	519-271-0083

Livestock

Tom Wright	Dairy Cattle Nutritionist	519-824-4120 x56281
Jaydee Smith	Swine Prod Systems Program Lead	519-674-1542
Mario Mongeon	Livestock Specialist (Bil)	613-679-0937
Albert Dam	Poultry Specialist	519-824-4120 x54326
Brian Lang	Dairy Cattle Prod Systems	519-537-8786
Doug Richards	Swine Grower-Finisher Specialist	519-482-3133
Ron Lackey	Feed Ingredient & By-product Specialist	519-271-7407
Vacant	Sheep & Goat Specialist	613-258-8299
Brian Tapscott	Alternative Livestock Specialist	519-846-3400
Vacant	Beef Sheep & Goat Nutrition	519-824-4120 x53670
Brian Pogue	Beef Cattle Program Lead	519-826-5106
Nancy Noecker	Beef Cow/Calf Specialist	613-258-8476
Delma Kennedy	Sheep Specialist	519-846-3398
Steve Naylor	Aquaculture Specialist	519-826-3172
Tom Hamilton	Beef Cattle Production	705-647-2087
Jack Kyle	Grazier Specialist	705-324-5855
Marlene Paibomesai	Dairy Specialist	519-846-3401

OMAFRA Business Management

John Bancroft	Market Strategies Program Lead	519-271-6974
Jessica Kelly	Direct Farm Marketing	519-846-3404
John Molenhuis	Business Analysis & Cost of Prod.	613-475-9472
Paul Bowers	HR Management Program Lead	519-826-3254
Jennifer Stevenson	Business Finance Program Lead	519-826-4350

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 of Ontario (EFO)

<http://www.efao.ca>

Organic Agricultural Centre of Canada

<http://www.oacc.info>

FarmStart www.farmstart.ca

Agricultural Information

Contact Centre:

1-877-424-1300

E-mail: ag.info.omafra@ontario.ca

Northern Ontario

Regional Office:

1-877-424-1300

www.ontario.ca/omafra