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## Welcome to ON Organic

*Evan Elford, New Crop Development Specialist, OMAFRA*

We hope you enjoy this month's newsletter with information on temperature regulation for poultry in the summer, native pollinators in cucurbit crops, a Brown Marmorated Stink Bug update and a new tool for farm business management.

As always we welcome your comments and any suggestions for topics in the 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 free.

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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# How Can You ‘Beat the Heat’?

**Al Dam, Provincial Poultry Specialist and Sarah Buttle, Poultry Research Assistant, OMAFRA**

It was a long cold winter, but now we have switched from trying to keep the birds warm, to hoping we can keep them cool enough. We are bound to get multiple extreme hot weather events this summer. This is always a challenge if a flock is late in their production cycle, as they are less able to tolerate heat at this time. The following article will talk about the way birds lose heat, barn environment and practical flock management techniques.

All types of poultry possess five different methods with which they thermo regulate to stay cool:

- **Conduction** occurs when birds touch a cold surface, transferring heat from their body.
- **Convection** is when heat is pulled away from the bird using cool airflow and ventilation.
- **Radiation** occurs when the bird moves to expose less feathered areas of the body, releasing trapped heat and promoting water consumption.
- **Excretion** follows increased water consumption, where heat is released from the body via hot, wet feces and urine.
- **Evaporation** is the dissipation of heat through moisture into the air via guttural panting and increased respiration rate. Unfortunately, evaporation can have detrimental effects on blood pH, due to excess CO<sub>2</sub> loss.

When a flock is in an extreme environment, with high heat and humidity, their metabolic heat threshold can easily become overloaded, putting the birds in danger. To manage this we must do two things: provide maximum cooling potential within the environment and reduce excess metabolic heat output.

From an environmental management perspective, we need to consider many factors: ventilation, water based cooling systems, shelter, water accessibility and barn density. Ventilation management differs slightly depending on the type of system used in barn. Natural ventilation is the most common system in organic poultry; it is reliant on wind through sidewall openings for air exchange. These sidewall openings should be sized to equal 5% of the floor surface area. In hot weather, curtains and chimneys should be fully open. Circulation fans can be added to ensure there is air movement during times with little or no wind, particularly in a wide barn.

*Typically, as the humidity rises, the minimum ventilation recommendations also increase.*

Water based cooling systems such as high-pressure misters work to lower air temperature. The incoming air stream is passed through a saturated zone. Changing the state of water from a liquid to vapour requires heat energy, this lowers the temperature of the incoming air but it increases the relative humidity of this air. Although a less efficient method, running a soaker hose over the barn air intake can be used as a cost effective alternative to lower the incoming air temperature by a couple of degrees.

*Keep in mind, that adding extra moisture to the air can be detrimental in high humidity.*

Coarse spray sprinklers are another water based cooling system that can be used. When used intermittently they can help to cool the birds by prompting them to stand and fluff up their feathers. This will help to release heat that is trapped under their body and the litter and get them to go over to the drinkers. During the sprinkler off cycle, as the bird dries, water is evaporated from their feathers, further cooling the bird. Great care must be taken with setting the on/off cycle times for these systems to avoid over wetting the litter. An alternative method for outdoor flocks would be to directly mist the birds with a hose, encouraging them to respond in the same way, releasing trapped heat.

With any water based cooling system, the capacity of the farm water supply must be verified to ensure there is sufficient water available for the birds drinking requirements, (which can double in hot weather), as well as the cooling system. Fresh, cold water should be available to the flock at all times, ensuring proper distribution so that all birds may access the drinker as needed.

Supplying shelter is absolutely necessary to provide shade and protection from the sun and extreme weather when birds are outside. Shelters should be large enough to cover the entire flock and sturdy enough to withstand various weather events. This is especially important if it is the only shelter available. Whenever possible, farmers may choose to bring the birds into a barn for added safety during extreme weather event. Shade trees are another excellent option for sun shelter, but make sure that they are not a raccoon latrine. These sites pose a risk to your birds and yourself for raccoon roundworm.

# How Can You 'Beat the Heat'?

## Cont'd



The **Livestock Heat Stress App** is a free smart phone application developed to calculate the level of heat stress various production animals can experience. Based on factors such as temperature, relative humidity and species, it will calculate the Temperature Humidity Index (TMI), and provide realistic solutions for maintaining animal comfort and managing heat stress. (Available for Blackberry and Android devices in English, Spanish and French)

Small pullets are able to regulate heat better than large roasters or turkeys, and densities should be adjusted accordingly. It is also essential that the farmer ensure adequate drinker accessibility for all birds. You might even need to look at whether you have enough drinkers with enough flow. For more information about water consumption patterns, see additional resources.

If you have waterfowl, a pond or small pool for swimming/wading can help them expel excess heat through their feet and bills. \*Note\* Do NOT give cold water to ducklings that are overheated- this will kill them!

With extreme hot weather additional weather situations can potentially lead to power interruptions. Without power, in hot and humid weather, in a power-ventilated barn, farmers can experience bird loss in as little as 3 minutes if the fans shut off. It is key to ensure the on-site generator is large enough and in good repair to support the complete and maximum function of all critical systems within the barn. This has to include your water pump. Make sure all aspects of the generating system are set up and ready to run in case of emergency.

Managing the flock can be done before and throughout a heat wave using the following four recommendations:

1. **Pull Feed:** This should happen early in the morning before the birds get a chance to have their first feed. Once it eats, it produces metabolic heat from digestion 3-5 hours later. If you feed in the morning, this falls during the heat of the day. Feed can be put down again in the early evening.

2. **Add Electrolytes:** 1-2 days before an expected heat wave add electrolytes to feed or water, specifically potassium chloride which helps stabilize ion levels, restoring the loss from excretion and panting. To reduce blood alkalosis, reduce dietary salt and replace with sodium bicarbonate. Check with your certification body to make sure that any electrolytes you use will not affect your certification status.
3. **Walking the birds:** In place of a coarse spray sprinkler, 'walking the birds' stimulates movement, releasing trapped heat in addition to promoting water consumption.
4. **Flush and lower waterlines/bells /troughs:** To guarantee fresh cool water is available, flush the waterlines thoroughly. Furthermore, lowering the water nipples to the bird's eye level serves to promote water intake. Regularly clean bells and troughs to make sure the water is fresh to promote consumption. Remember that during hot weather water consumption for your birds can easily double.

You may be lucky enough to only face a heat wave when the birds are small, and encounter no complications during the summer crops. However, keep in mind that extreme hot weather can happen at any time from May to September and your luck may run out. There may also be challenges at the processing plant, even though conditions at the farm might be good for shipping. Work with your processor when this happens. Planning ahead this summer, including a contingency strategy, will be the smartest way to beat the heat.

*Special thanks to Dr. Lloyd Weber, Dr. Mike Joyce and Dan Marshall*

### Additional Resources:

OMAFRA Heat Stress Fact Sheet: <http://www.omafra.gov.on.ca/english/livestock/poultry/facts/88-111.htm>

Water Requirements of Livestock  
<http://www.omafra.gov.on.ca/english/engineer/facts/07-023.htm>

Heat Stress Livestock and Poultry Application: <http://www.omafra.gov.on.ca/english/engineer/facts/heat-app.htm>



# The Squash Bee, a Native Pollinator of Pumpkin, Squash and Zucchini

**Hannah Fraser, Entomology Program Lead – Horticulture,  
and Jim Chaput, Provincial Minor Use Coordinator, OMAFRA**

At the 20<sup>th</sup> Annual Diagnostic Day in Ridgetown last week (July 9<sup>th</sup> and 10<sup>th</sup>, 2014), we asked growers and consultants to guess what species is the most important pollinator of *Cucurbita pepo* (squash, pumpkin and zucchini) in North America. Almost everyone replied “honey bees”. A few mentioned “bumble bees” (a good guess as these are second on the list). Fewer still answered “squash bees”.

*Cucurbita pepo* produces both male and female flowers on the same plant. Male flowers produce both pollen and nectar, while the female flowers produce nectar. Each female flower has an ovary under the flower that resembles the fruit it will become following pollination. Poor pollination results in small, unmarketable fruit. And since these flowers bloom less than a day, there is only a small window in which pollination can occur.

The pollen of these crops is large, sticky and spiny – characteristics which make it relatively unattractive to honey bees. Surveys of farms where *C. pepo* are grown indicate the (hoary) squash bee, *Peponapis pruinosa*, outnumber honey bees, bumble bees and other pollinators by several orders of magnitude. Indeed, where squash bees are present and abundant, honey bees are essentially redundant, in terms of pollination requirements for these crops.

The squash bee is a highly-specialized native pollinator. It has co-evolved with squash and gourds to the point where its local success and survival depends on the presence of these crops: the female squash bee provisions her brood exclusively with the pollen collected from these plants.

Squash bees are ground nesters. The females excavate vertical tunnels up to 45 cm deep, with 3-5 lateral tunnels that end in a single brood cell (where the larva develop into new bees). Most cells are 12 cm or deeper. Each cell is provisioned with a pollen ball and a single egg is laid, before being capped off. A single female may construct more than one nest over the season, depending on resources, from July through August.

The females have hairy hind legs and bodies that are very effective at picking up the pollen from male flowers, and for transfer to female flowers (Figure 1). They are active early in the day, in synch with the opening of *Cucurbita spp.* flowers; by the time other

bees arrive, later in the morning, much of the pollination has already been accomplished!



**Figure 1:** Squash bees have hairy bodies and legs adapted for pollen transfer in squash, pumpkin, and zucchini.

A few other key facts about squash bees:

- they are solitary bees (no worker bees);
- nest entrances are about the width of a pencil (Figure 2), are typically in the crop or in uncultivated field margins and are often found in aggregations;
- one generation per year, overwinter in the soil as a pre-pupa



**Figure 2:** Nest entrances look like pencil-sized holes in the ground.

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## The Squash Bee, a Native Pollinator of Pumpkin, Squash and Zucchini Cont'd

One of the easiest ways to monitor for squash bees is to tear open the wilted flowers in the afternoon or early evening: males and unmated females will sleep in the flowers (*Figure 3*). Alternatively, one can hold the base of the wilted flowers between two fingers and see if the squash bees are buzzing inside. Don't worry about being stung, as these bees are stingless.



**Figure 3:** Squash bee males and unmated females sleep in wilted flowers all afternoon.

Honey bees and bumble bees are cavity nesting, social insects that forage on a wide variety of pollinating plants.

Because of their solitary nature, a dependence on a very limited number of crops for brood development and its ground nesting behaviour, the squash bee is particularly vulnerable to farm practices. Choice of pest control products and their time of application, soil cultivation and crop rotation can all influence squash bee populations on farms.

Using no-till, cultivating to depths of 10 cm or less, and / or leaving some nesting aggregations undisturbed will encourage local populations. While squash bees are extremely good at locating their host plants, keep the distance between field locations during crop rotation as small as possible.

For more information on this hard-working native pollinator in Ontario and for tips on encouraging populations on your farm, see the publication "The Pollination System of Pumpkin, Squash, Summer Squash, and Zucchini" by Susan Chan available for purchase at [www.farmsatwork.ca/library](http://www.farmsatwork.ca/library)

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## Brown Marmorated Stink Bug (BMSB) Update

*Hannah Fraser, Entomology Program Lead – Horticulture, OMAFRA*

Adults were collected this week at our pheromone traps at a mixed tree fruit farm near Beamsville, ON and at a mixed tree fruit / vegetable farm near Essex, ON. In addition, a BMSB nymph was collected on a *Catalpa* tree at a residential home in St. Catharines, ON (other nymphs were spotted in the same location but were too high in the canopy to collect). An established breeding population has been identified in the City of London, ON (See below for more information and locations.)

BMSB has not yet been detected in the crops themselves, but this pest can be tricky to spot at low densities. In addition, the adults are highly mobile. At this point in the season, all life stages of BMSB will be present (eggs, nymphs, adults). If the season is similar

to that experienced in 2013, we should see the first new adults (those originating from early egg masses laid by overwintering adults) in the next week or two. If you haven't started monitoring in your crops (peach is an early crop host) and in the landscape along crop borders, consider doing so now. Buckthorn, Catalpa, lilac, Manitoba maple, black walnut and Tree of Heaven are good early wild hosts, but there are many others.

Make sure to look for signs of stink bug injury, especially along crop borders near woodlots, hedgerows, the Escarpment, etc. Early injury in tree fruit ('catfacing') looks like water spots or small areas of bleeding, becoming depressed or sunken as fruit develops.

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## Brown Marmorated Stink Bug (BMSB) Update Cont'd

In apples, injury may take 2-3 weeks before it is obvious. Injury to tomatoes or peppers appears as discoloured spots, with light-coloured spongy tissues under the skin. More descriptions and pictures are available on our webpages at [www.ontario.ca/stinkbug](http://www.ontario.ca/stinkbug).

Thresholds and management programs are still being developed in the mid-Atlantic US, where BMSB is abundant. Scouting is always important, on the crop and landscape hosts. Finds of adults in traps are indicative that BMSB are established in the area but they do not always mean insecticide sprays are necessary. Pheromone traps are being recommended for use as early detection tools, to trigger intensive scouting in crops and insecticide applications. Traps are typically placed between crop borders and woody landscape hosts OR within the crop border. If adults or nymphs are found in traps outside of the crop, intensive monitoring is needed. If nymphs are found in traps placed within a crop border, sprays are triggered. In tree fruit, the presence of adults or nymphs in the crop itself is enough to trigger an insecticide spray.

Border sprays are sometimes sufficient for limiting damage, unless the pest has become established in the crop. Begin management with border sprays at first adult (in crop) find, or whole orchard sprays with first nymph find prior to 1 August. The majority of late season injury appears to occur within the first 30 m of wooded edge. Keep in mind that sprays will only control those BMSB that are present at the time of application, or shortly thereafter, and nymphs are easier to kill than adults. Residual activity is typically limited. New waves of adults can migrate into crops from adjacent areas through the season. Managing BMSB requires season-long attention.

There are no organic insecticides registered for management of BMSB in Canada. Research on strategies for organic producers, including barriers, biological control, trap crops and insecticides is ongoing in the US, where populations of BMSB are present in crop production areas.

Most BMSB in Ontario have been found by homeowners, and in some locations, multiple reports indicate that local populations have been established. To date, BMSB has been confirmed in:

- **Golden Horseshoe and GTA:** Hamilton (2010, established population), **Beamsville (2014, adult in a trap July 15th, 2014)**; Burlington (2012), Milton (2012), Toronto (2012), Vaughan (2013), Niagara-on-the Lake (September 2013), St. Catharines (April 2014, photo only; **nymph on landscape host July 15th, 2014**), Niagara Falls (winter 2014, photo only), Fort Erie (February 2014), Stoney Creek (February 2014); Waterdown (Adults collected in traps July 1<sup>st</sup> 2014), St. David's (Adults collected in traps July 8<sup>th</sup> 2014).
- **Western Ontario:** Cedar Springs (2013), **Essex (2014, adult in a trap July 17<sup>th</sup>, 2014)**, Windsor (2013, 2014), Kincardine (2013), **London (October 2013; established population July 18<sup>th</sup> 2014)**, Kincardine (November 2013), Paris (January 2014), Tecumseh, Maidstone (April / May 2014)
- **Eastern Ontario:** Newboro (2012, established population), Ottawa (March 2014); Newboro: Adults collected in traps first week of July 2014

If you think you may have found BMSB, please let us know! Confirmed reports help get track BMSB. Call or email the Agriculture information Contact Centre 1-9877-424-1300 or [ag.info.omafra@ontario.ca](mailto:ag.info.omafra@ontario.ca)

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## Are You Keeping Score for Your Farm Performance?

The AMI Business Score Card can help you measure your performance and management practices to plan for greater success. The Business Score Card is designed for a range of farm operations. It can accommodate farms of various scales and marketing systems, including supply managed, non-supply managed, and direct marketed.

After answering a series of questions, users are scored on ten areas including finances, information systems, risks, responsibilities and production. The outcome is an action plan that addresses any management gaps

that have been identified. It takes about 30 minutes to complete. Participants instantly receive a downloadable report detailing the assessment results, priority rankings, action plans and recommended resources based on the identified priorities and opportunities for your business.

By making this tool part of your on-going best management practices your business will benefit in the following ways:

- Gain a greater understanding of strengths and weaknesses



## Are You Keeping Score for Your Farm Performance? Cont'd

- Assess current systems, knowledge and skills
- Prioritize areas for improvement
- Develop an action plan to address gaps
- Identify resources to help meet goals
- Achieve better efficiency and profitability

The launch of the Business Score Card is part of AMI's work to support the unique business management needs of Ontario's farmers as well as agri-food and agri-product processors.

To use the Business Score Card, visit the AMI website at [www.takeanewapproach.ca](http://www.takeanewapproach.ca).

*The Agricultural Management Institute is funded by Growing Forward 2, a federal provincial-territorial initiative.*



Ontario

Canada

## “Think Before You Eat” Campaign

The Canada Organic Trade Association (COTA) has organized a new consumer awareness program called “Think Before You Eat, Think Canada Organic”.



The campaign is designed to increase consumer awareness around organically produced foods and provide more information on the ‘Who, What, Where, Why and How’ of organic food. For more information about the campaign, please visit the website at [www.ThinkCanadaOrganic.ca](http://www.ThinkCanadaOrganic.ca).

## Learning Opportunities

### Organic Seed Workshops, 2014 – Presented by Everdale

As part of their work for The Bauta Family Initiative on Canadian Seed Security, Everdale is offering a special series of organic seed production workshops in 2014 across Ontario.

|                         |                                                       |                                         |
|-------------------------|-------------------------------------------------------|-----------------------------------------|
| Wednesday, August 6     | Rogueing, Selection, and Disease Management           | Hawthorn Farm                           |
| Wednesday, August 27    | Integrating Seed Production into Market Gardens       | Matchbox Garden & Seed Co.              |
| Wednesday, August 27    | Build Your Own Small Seed Winnowing Equipment         | Farms at Work and The Cottage Gardener  |
| TBA                     | Growing and Selecting Seeds for World Crops           | TBA                                     |
| Wednesday, September 10 | Rogueing and Selection (CRAFT Interns Only)           | Whole Circle Farm                       |
| Thursday, September 11  | Integrating Seed Production into Market Gardens       | Fare Well Farm                          |
| TBA                     | Diversified Heritage Grain Production                 | Paul Spence                             |
| Wednesday, September 17 | Integrating Seed Production into Market Gardens       | Saugeen River CSA                       |
| Wednesday, September 17 | Harvesting, Cleaning, and Processing Wet and Dry Seed | Hawthorn Farm                           |
| Wednesday, September 24 | Fundamentals of Seed Production                       | Guelph Centre for Urban Organic Farming |
| Saturday, September 27  | Seed Production Trials and Selection                  | Everdale                                |
| November 7-9            | ECOSGN 2014: Seed Connections                         | Sainte-Anne-de Bellevue, Quebec         |

For more information on seed workshops near you, please visit the Everdale website at: <http://everdale.org/workshops/organicseed/> or contact Aabir Dey, Regional Coordinator for the Bauta Family Initiative on Canadian Seed Security for Ontario at 519.855.4859 ext.103; email: [aabir.dey@everdale.org](mailto:aabir.dey@everdale.org).

## Conferences, Meetings and Tours

### EFAO Organic Cash-Crop Tour

**Date:** July 21, 2014

**Location:** Three farms will be part of the Organic Cash-Crop Tour in 2014 including Daniel Konzelmann (Wyoming, Ontario); Ted Minten (Watford, Ontario); and Hank Veens (Arkona, Ontario).

### EFAO Eastern Region Farm Tour Series

**Multiple dates and locations:**

**July 24:** Crop Rotation & Cover Crops at Patchwork Gardens

**August 14:** Integrating Livestock into Your Farm at Wise Acres

**August 21:** The Multi-Generational CSA at Covenant Farm

For more information on these and other EFAO tours, please visit the website at [www.efao.ca/upcoming-events/](http://www.efao.ca/upcoming-events/).



## Conferences, Meetings and Tours Cont'd

### Organic Week, September 20-28, 2014



For more information about Organic Week 2014, please visit the website at [www.organicweek.ca](http://www.organicweek.ca).

### Canadian Greenhouse Conference

**Date:** October 8-9, 2014

**Location:** Scotiabank Convention Centre, Niagara Falls, Ontario

For more information please visit the website at: [www.canadiangreenhouseconference.com/](http://www.canadiangreenhouseconference.com/).

### Organic by Design

**34<sup>th</sup> Annual Guelph Organic Conference**

**Date:** January 29—February 1, 2015

**Location:** University of Guelph, Guelph, ON



For more information please visit the website at: <http://www.guelphorganicconf.ca/>

# 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 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        |
| Chisptoph Wand     | 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        |

## 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](http://www.farmstart.ca)

## Agricultural Information

### Contact Centre:

1-877-424-1300

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### Northern Ontario

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