



GRAPE GROWERS OF ONTARIO 65TH ANNUAL GENERAL MEETING

Wednesday, April 3, 2013 at 7 pm
Club Roma, 125 Vansickle Road, St. Catharines

IMPORTANT!
Voter Registration from 6:00—6:45 pm

Registration Requirements:

- **Photo ID and GGO Number**
- **Must have sold grapes in 2011 and/or 2012**
- **NOTE: If you are unable to attend the AGM but would like to vote, please ensure that your proxy presents written confirmation at the time of registration.**

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Ontario Fruit & Vegetable Convention

FEBRUARY 20 & 21, 2013

SCOTIABANK CONVENTION CENTRE, NIAGARA FALLS

Don't forget to visit the GGO Booth (#329)
to fill out an Irrigation Survey for a chance to
win an IPAD!

More info on Page 3





2013 Grape Growers of Ontario Annual General Meeting

Grape Growers of Ontario 65th Annual General Meeting Wednesday, April 3, 2013 at 7:00 pm Club Roma—125 Vansickle Road, St. Catharines **IMPORTANT: Voter Registration from 6:00—6:45 pm**

Staggered terms were implemented at the 2010 AGM to allow Board Directors the time to learn their roles and the workings of the Board. At the 2013 Annual General Meeting, the following Grower Committee positions are open for election with Directors to be elected at the first Growers Committee meeting following the AGM.

Upon successful election to the Growers Committee, members will be given a biographical template which must be filled in and submitted prior to the first Growers Committee meeting following the AGM. This information will be used by Committee members to help in their selection for open Board of Director positions.

District	Open Grower Committee Positions	Open Board of Directors Positions
1—Niagara on the Lake	6	1
2—St. Catharines	3	1
3—Lincoln	5	1
4—Grimsby	1	-
5—Southwestern Ontario	-	-
6—Prince Edward County	-	-
Director at Large	-	1
TOTAL OPEN POSITIONS	15	4

Current Grower Committee members:

District 1—*Matthias Oppenlaender and Kevin Watson (current Board terms ending);*

Steve Pohorly (1-yr remaining of Board term); Trevor Falk (2 yrs remaining of Board term);

Don Forrer; David Lambert; Albrecht Seeger; Erwin Wiens

District 2—*Bill Schenk (current Board term ending); George Wiley; Terry Yungblut*

District 3—*Bill George (current Board term ending); Jim Morrison (1-yr remaining of Board term);*

Ron Koop; Martin Schuele; Ed Hughes; Tom Wiley

District 4—*Brock Puddicombe (2-yrs remaining of Board term); Art Moyer*

District 5—*Bill Jansenberger (2-yrs remaining of Board term)*

District 6—*Debra Marshall (1-yr remaining of Board term)*

Irrigation Update

Growers have been experiencing more extremes in rainfall and temperature in the past few years and it has us talking about water. Using water efficiently and adapting to climate change are priorities of both the federal and provincial governments in their Growing Forward 2 initiatives.

An Irrigation Committee was formed last fall to explore opportunities for a pilot project to improve access to irrigation water. The Committee has decided that the first step is to better understand who needs water, where the vineyards are located, what existing sources of water and types of irrigation are being used, and what the limitations are.

To do this, we are conducting a grower survey beginning at the Ontario Fruit & Vegetable Convention on February 20th and 21st.



Stop by the Grape Growers of Ontario's booth (#329) to complete a short survey on your irrigation needs. Growers completing the survey will be entered into a draw for an IPAD courtesy of the Grape Growers of Ontario and Ontario Tender Fruit Producers.

Ontario Fruit & Vegetable Convention



FEBRUARY 20 & 21, 2013

SCOTIABANK CONVENTION CENTRE, NIAGARA FALLS

There are several sessions planned at this year's OFVC related to the grape growing and wine making industry. Dr. Joachim Schmid, Geisenheim Research Centre, Germany, is a guest speaker sponsored by the Grape Growers of Ontario through OVIP ISC funding provided by the Ontario Ministry of Agriculture and Food. For the full program and to register for the Convention, please visit www.ofvc.ca

Wednesday, February 20		
Room 203—9:30 am Chair: Dr. Erin Panek, OMAFRA 9:45 am—Elemental Sulfur Residues and Reduced Sulfur Off-Aromas in Wines 10:30 am—Can Ontario Sparkling Wine Sparkle More? 11:00 am—How Can Clones Have an Influence on Wine Characteristics?	Room 203—2:00 pm Chair: Laura Ruffolo, LCBO 2:00 pm—Local Hero or Global Nobody? 2:30 pm—Winery Overviews, Marketing Trends and Global Marketing Strategies 3:00 pm—Current Sales Trends and New Opportunities at the LCBO 3:30 pm—Is Our Vision 20:20?	Room 207 & 208 Chair: Ryan Brewster, KCMS 2:00 pm—Virginia's Wine Renaissance 2:30 pm—Elemental Sulfur Residues and Reduced Sulfur Off-Aromas in Wines 3:00 pm—New Agri-Chemicals for 2013 3:30 pm—Geisenheim Riesling Clones
Thursday, February 21		
Room 203—9:30 am Chair: Jason Deveau, OMAFRA 9:30 am—Airblast 101	Room 207 & 208—9:30 am Chair: Wendy McFadden-Smith, OMAFRA 9:30 am—Irrigation During a Drought 10:00 am—Can We Improve Potassium Recommendations for Ontario Grapes? 10:30 am—Sour Rot Management Strategies 11:00 am—German Viticulture, its Regional Distinctions and Difficulties	Room 207 & 208—2:00 pm Chair: Kathryn Carter, OMAFRA 2:00 pm—Introducing GGO's Mobile Map 2:30 pm—Defining and Attaining Vine Balance in a Humid Environment 3:00 pm—Growing Grapes on Long Island: Keys to Successful Viticulture 3:30 pm—Geisenheim Pinot Noir Clones



Niagara Region Greenbelt Review

The Niagara Region Integrated Community Planning Committee is undertaking a multi-faceted review of the Greenbelt Plan and the impact of its implementation on the Niagara Region. The project will gather feedback through extensive public consultation to determine how the Greenbelt has affected key stakeholder groups in Niagara. The following focus groups have been scheduled for agricultural stakeholders. Grape growers are encouraged to attend one of the sessions to provide input on the Impact of the Greenbelt on your farm.

Monday, February 25, 6:00—8:00 pm
Balls Falls Centre for Conservation, 3292 Sixth Avenue, Jordan
or
Wednesday, February 27, 9:00—11:00 am
Niagara Region Headquarters, 2201 St. David's Road, Thorold

Please confirm your attendance with Natasha Smagata at 905-685-4225 ext 3459 or by email at natasha.smagate@niagararegion.ca

GGO Congratulates New OF&VGA Chair, Ray Duc



**Ray Duc, Chair,
OF&VGA**

The former Vice Chair of the Ontario Fruit and Vegetable Growers' Association (OF&VGA) has been chosen by his peers to be the organization's new leader. Grape grower Ray Duc is the new Chair of the OF&VGA after being elected to the position at the organization's 154th annual meeting in January. He succeeds Mac James, who stepped down after serving one year as head of the OF&VGA.

OF&VGA's 2013 board also includes directors Brian Gilroy (apples), Norm Charbonneau (small fruit/berries), Jason Verkaik (fresh vegetables – muck), Mac James (potatoes), Jason Ryder (asparagus), Fred Meyers (tender fruit), Jan VanderHout (greenhouse vegetables), Don Taylor (greenhouse vegetables), Ken VanTorre (ginseng) and Mary Shabatura (fresh vegetables).

Sustainable Certification Module

The Grape Growers of Ontario is working with Wine Council of Ontario to develop a secure on-line Sustainability Data Collection Module. The questions have been developed based on existing Sustainability Certification programs, specifically from California, Oregon and British Columbia, and adapted to Ontario. The grape and wine industries in British Columbia, Oregon, California, New York, Australia, New Zealand and South Africa have certified sustainability programs. Chile is branding their wine as having the most ambitious and comprehensive sustainability code among wine producing nations.

Currently, a "certified sustainable" program is not available in Ontario and this project is being developed so that those growers and wineries who wish to become certified may do so to meet a specific niche in the marketplace. In order to have a recognized certification system, practices from the vineyard through to the wine need to be part of the program. The intent is to incorporate existing best management practices without being overly restrictive, while at the same time providing a certification system that is comparable to the other grape growing areas.

The sustainability certification is a voluntary program for growers.

Succession Planning

The GGO is pleased to offer **free** succession planning workshops to anyone looking to build a succession strategy for their business. A farm succession plan is the process of transferring management and ownership of a farm business from one party to the next. This process involves planning and documenting options for how the plan will unfold as the retiring generation works closely with the successor to develop a plan. The goal of the workshop will be to assist in implementing the steps required for a succession plan.

The workshops will include presentations by KPMG on tax and accounting obligations, and there will be legal advice and will planning presentations by legal professionals.



Dr. John Fast

There will also be *Communicating with Family* and *Role Confusion* sessions presented by Dr. John Fast. Dr. Fast is a sought after inspirational speaker on topics related to Family Business, Retirement, Work-Life Balance, Leadership, and Workplace Integrity. He is currently the founding partner and president of “*Family Enterprise Solutions*,” a management consulting and training organization through which he has emerged as one of Canada’s leading experts on family business. He has co-authored numerous books and curriculum used by professionals and family firms including the *Agri-Succession Case Study Commentary* published by the Canadian Farm Business Management Council. His books have received wide acclaim for their ability to communicate the deepest issues facing business families in a hopeful and constructive manner.

Pre-registration is required

To register for a session please contact Nick Lemieux at the Grape Growers of Ontario at 905-688-0990 ext. 228 or by email at nlemieux@grapegrowersofontario.com. Lunch will be provided at all sessions.

Succession Planning Workshop Locations:

Niagara Region	Prince Edward County	Southwestern Ontario
February 25, 10 am—3 pm	February 26, 10 am—3 pm	February 27, 10 am—3 pm
Rittenhouse Hall	Huff Estates Winery	Sprucewood Shores Winery
4890 Victoria Ave N	2274 County Road 1	7258 Country Road 50
Vineland, Ontario	Bloomfield, Ontario	Harrow, Ontario

Agricorp Upcoming Program Milestones

Farm Business Registration

Agricorp mailed Farm Business Registration packages to growers in January 2013. The package includes a covering letter, an insert from the CFFO and OFA, and an invoice. Farm Business Registration fees are due by **March 1, 2013**.

AgriStability

April 30—Deadline to pay fees for 2013

- Send 2013 New Participant Form to Agricorp (New participants only)
- Cancel Coverage

Production Insurance

May 1—Deadline to pay premiums for the 2013 crop season





CCOVI Lecture Series

Grape and Wine Lecture Series Back for Sixth Year

Source: Brock University, January 2013



Brock University

A host of Canada's grape and wine experts are set to share their knowledge as the 2013 CCOVI Lecture Series launched a new season on Jan. 30 at Brock University.

Taking timely research out of the lab and into the classroom is once again the goal as the nine-week series covers a range of subjects for grape growers and wine makers.

Topics include: addressing best practices for vine health; the opportunities and risks of climate change and understanding wine language from a taster's perspective.

All lectures take place at 2:30 p.m. in room H313 of the Mackenzie Chown complex at Brock University, and are free for anyone to attend.

Again this year the lectures will be available via live webcast, and will be archived. The success of last year's series didn't end with the final lecture. Archived online videos of the 2012 lectures have been viewed more than 1,500 times in more than 30 countries around the world. To watch the live webcasts or archived videos, go to brocku.ca/ccovi

Parking is available in Lot E at a rate of \$2.50 per hour.

Lineup and dates for the 2013 CCOVI Lecture Series:

* February 27: Daniel O'Gorman, CCOVI Professional Affiliate, Research Biologist, Agriculture and Agri-Food Canada, Pacific Agri-Food Research Centre (PARC), Summerland, B.C. *"Development of a DNA Macroarray for Detection of Young Vine Decline Pathogens"*

* March 6: Tony Shaw, CCOVI Fellow, Professor of Geography, Brock University *"Climate Change: Opportunities and Risks for Ontario's Established and Emerging Wine Regions"*

* March 13: Ronald Jackson, CCOVI Fellow, wine writer and author *"Wine Language: Insight into the Mind of the Taster"*

* March 20: Maxim Voronov, CCOVI Fellow, Associate Professor of Strategic Management, Brock University *"Legitimizing Ontario Fine Wine: Encountering Globalization, Managing History"*

* March 27: Debbie Inglis, CCOVI Director and Researcher, Associate Professor of Biological Sciences, Brock University *"Appassimento Wines: Developing a Signature Style for Ontario"*

* April 3: Jeffrey Stuart, CCOVI Fellow, Associate Professor of Biological Sciences, Brock University *"Bioactive Polyphenols from Wine Grapes"*

* April 10: Jim Willwerth, CCOVI Staff Scientist, Brock University *"Getting Through the Winter: Updates on Freeze Protection and Cold Hardiness Research"*

For more info: Kaitlyn Little, Marketing and Communications Officer, CCOVI, Brock University, 905-688-5550 x4471; klittle@brocku.ca



Operators plan now to attend: Airblast Sprayers 101

An interactive workshop with Dr. Jason Deveau, Application Technology Specialist from OMAFRA, that includes classroom demonstrations and dialogue with an experienced airblast technician.

Learn how to calibrate, maintain and adjust your sprayer to the crops you spray.

To register call (Nancy): **416.622.9771** ext **2221** or email: admin@croplife.ca

Brought to you by:



Workshop Date and Location

Feb 21, Niagara Falls 9:30 am-noon
Ontario Fruit and Vegetable Convention

March 7, Vineland: 8 am-noon
Lunch provided

March 12, Simcoe: 8 am-noon
Lunch provided

March 13, Leamington: 8 am-noon
Lunch provided

March 18, Georgian Bay: 8 am-noon
Lunch provided

\$25 Workshop Fee. Space is limited.

2013 Restaurant and Food Services Association Trade Show

Grow Guelph and OMAFRA are coordinating an "Innovation Exhibit" in the Ontario Pavillion at the 2013 Restaurant and Food Services Association trade show, and are looking for samples of Ontario products and/or promotional materials to display.

Please send samples (5 product samples and/or max. 50 pieces of literature) to:

David Doyle
Ontario Ministry of Agriculture, Food and Rural Affairs
1 Stone Road West, Main Floor
Guelph, ON N1G 4Y2

Other Upcoming Events:

Cuvée 2013
March 1
Fallsview Casino
www.cuvee.ca

CHC Annual General Meeting
March 11-15
Westin Ottawa
www.hortcouncil.ca

Classified

 -full listings are found at <http://www.grapegrowersofontario.com/buy-or-sell>

For Sale	Contact	Telephone
<ul style="list-style-type: none"> 2300 litres of VQA eligible 39.8 brix Vidal Ice Wine juice pressed Jan 28/13 from the Twenty Bench 	Laura	905-562-0151 or info@ragdolls.net
<ul style="list-style-type: none"> 1976 Chevrolet 1 ton dually with recent rebuilt 454, fifth wheel and vacuum system \$5000 20 ft fifth wheel flat bed \$2500 4000 L plastic water tank currently mounted to flat bed \$1500 200 gently used pressure treated 8ft end posts \$4 each ero leaf remover \$1000 	Mike	905 651-3006 or glenlake@hotmail.com
Wanted		
<ul style="list-style-type: none"> Experienced vineyard manager in Northern Cape of South Africa seeks a similar position in Canada. Experienced with wine grapes, table grapes and sun dried raisins. Current responsibilities include managing work team, planning and planting new vineyard, machinery maintenance, irrigation, pruning, harvesting, fertilizing and spraying. 	Gert Kruger	kruger.gf@gmail.com
<ul style="list-style-type: none"> A winery in Norfolk County is looking for used steel planting stakes, and vineyards with any of the following varieties for the 2013 harvest. <ul style="list-style-type: none"> Gelber Muskateller Alsace Muscat Villard Noir Muscat Ottonel Red Amurensis New York Muscat Couderc 29935 White Amurensis V65232 V63261 	Phil	519-443-8787 or vnefv@brant.net
Job Opportunities		
<ul style="list-style-type: none"> Full Time Position Vineyard Manager for 70 acre site Responsible for Labour/Equipment and overall Management 	Kathleen	905-984-2572 or kmoyer@xplornet.com

GGO Services

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> Grape Pricing & Promotion Grape Research Grape Inspection Government & Industry Relations | <ul style="list-style-type: none"> Government Lobbying Government Policies & Regulations Farm Labour Legislation & Program Chemical Registration | <ul style="list-style-type: none"> Nutrient Management Crop Insurance Requirements Business Risk Management Weather INnovations Incorporated (WIN) |
|--|--|--|

The Tender Fruit Grape Vine

VOLUME 17, ISSUE 3

JAN/FEB 2013

Fruit Tracker-A new record keeping tool to improve your organization

Margaret Appleby, IPM Systems Specialist, OMAFRA

Fruit Tracker is a new tool for tender fruit growers that can help you keep better records! Fruit Tracker is a record keeping, and orchard management system that helps growers keep accurate records for food & worker safety, pest management and production. By entering spray, fertilizer, harvest and other event data into the system, growers can track chemical usage, pre-harvest intervals, re-entry intervals, and generate reports on their orchards by the block.

This on-line tool has its roots in the Fruit Tracker project developed for apples by East Central Ontario Fruit & Vegetable Growers Association in the early 2000's. Fruit Tracker has evolved from the desktop version (called Fruit Tracker) to an on-line program that tracks all orchard management events year round, in one place, ready at your fingertips when you need them. That's being organized!

All members of the Ontario Tender Fruit Producers will be able to (OTFPB) have their own personal, private site for Fruit Tracker accessed with login and passcode. The first step to getting started is to sign up to have your orchards GPS mapped by Agricorp. If your orchards are not mapped, give Larissa Osborne at the Ontario Tender Fruit Producers a call at 905-688-0990 ext.235 to see about having this mapping done. If your orchards have been mapped you are already registered to have a FruitTracker account.

Like any other program, it takes a little time to get used to it but once you do, it is simple to use. If you need to make corrections there are lots of opportunities to edit your inputs. When logging on to your site, a "dashboard" will display a series of tabs - Growing, Harvest, Packing, Storage, Shipping, GAP/Audits and Reports. For pesticide applications (under Growing), there are lots of cool features. Each chemical listed is linked to the label. You can add new chemicals to the list. A drop-down list will show existing treatments from Publication 360, showing the name, formulation, rates and target pest. You add the - When, Why, Where and What for your spray event - and Fruit Tracker will record it and ask you to confirm. Fruit Tracker will be able to send you alerts by email when re-entry intervals have passed or when it is safe to harvest. An "All Events" tab gives a quick look of all the events that you have recorded from spray application, employee training, harvest, storage to building assessments. The system uses this information in completing your CanadaGap required reports. An exciting feature is the chemical inventory - you input your current inventory, record purchases and the program keeps track of what is in your spray shed.

More features are being developed. You will be able to produce cost of production reports by block, production practice modules, have WIN weather data integration and use new technology to input your packing and shipping events. We are excited to see the iPad scouting app being developed too!

A presentation on the benefits of FruitTracker will be made at the Ontario Fruit and Vegetable Convention on February 20 at 3 pm. Visit Booth #710 at the convention for a demonstration of the web site by the developer. Also, webinars will be available from the OTFPB in March to walk you through the program. Haven't thought about getting started on FruitTracker.com yet? Get Started today!



IN THIS ISSUE...

- OFVC
- Irrigation of wine grapes , Part 2
- Does yield impact wine quality?
- Grapevine pruning
- Update on grapevine cold hardiness

COMING EVENTS

The Tender Fruit Grape Vine is brought to you by the following staff of the Ontario Ministry of Agriculture, Food and Rural Affairs:

Kathryn Carter - Editor
Tender Fruit & Grape Specialist
905-562-1639

Wendy McFadden-Smith
Tender Fruit & Grape IPM Specialist
905-562-3833

Kristen Callow
Weed Management Program Lead (Hort)
519-738-1232

Dr. Jennifer DeEll
Fresh Market Quality Program Lead
519-426-1408

Hugh Fraser, Engineer
Horticultural Crop Structures & Equipment
905-562-1618

Rebecca Shortt, Engineer
Irrigation/Water Management
519-426-4920

ALL QUERIES, COMMENTS,
QUESTIONS AND REQUESTS CAN BE
DIRECTED TO THE ABOVE.

For a complete list of Crop Technology Staff
visit the OMAFRA web site at:
www.ontario.ca/crops

February 13-15, **Michigan Grape & Wine Conference**, Kellogg Hotel & Conference Center, East Lansing, Mich. Details: michiganwines.com

February 20, 21, **Ontario Fruit & Vegetable Convention**, Niagara Falls. For complete information visit www.ofvc.ca

February 23—March 1, **International Fruit Tree Association 56th Annual Conference**, Boston, MA. Details on the web: <http://www.ifruittree.org/?page=2013AnnualConference>

Plum Pox Update Meeting

February 22, 2013

Niagara-on-the-Lake Community Center

Agenda

- 9:00 am Welcome to Plum Pox Update 2013
Wendy McFadden Smith, OMAFRA
- 9:05 am What's going on now? The Canadian Food Inspection Agency Plum Pox Program
Eric Wierenga, CFLA
- 9:30 am Detection, Transmission and Management of PPV
Lorne Stobbs, AAFC
- 10:10 am Coffee
- 10:30 am Managing Plum Pox (Sharka) in France
Jean Amard, France
- 11:00 am Now What? How to Reduce the Risk and Impact of Plum Pox in Your Stone Fruit Production
Michael Celetti, OMAFRA

Please RSVP by February 18th to Sylvana at the Marketing board office 905-688-0990 ext 231

Subscribe on-line to view the full coloured newsletter (in pdf format) or to receive notice by email when a new issue of the Tender Fruit Grape Vine is posted. All you need to do is submit your email address at <http://www.omafra.gov.on.ca/english/subscribe/index.html>

Weather Information

Location	Maximum °C		Minimum °C		Precipitation (mm)	
	December	January	December	January	December	January
Vineland (85 yr ave)	17.9 4th	17.4 13th	-7.2 28th	-14.0 22nd	54.6 (64.9)	37.5 (62.1)
Harrow	14.7 4th	12.8 12th	-11.9 28th	-17.3 22nd		
Simcoe	15.8 4th	14.5 13th	-6.3 26th	-16.8 22nd	64.8	52.8

*We would like to thank the University of Guelph at Simcoe, Weather INnovations Incorporated, and AAFC Harrow for the weather data

Ontario Fruit and Vegetable Convention 2013

The Ontario Fruit and Vegetable Convention will be held on February 20 and 21, 2013 at the Scotiabank Convention Centre in Niagara Falls. The speaker program is excellent, with presentations from speakers from France, Germany, and California. The tentative schedule for the grape and tender fruit programs is as follows.

Grape Session

Wednesday February 20
Room 207+208

2:00 pm Virginia's Wine Renaissance

Dr. Tony Wolf, Virginia Tech University

2:30 pm Elemental Sulfur Residues and Reduced Sulfur Off-Aromas in Wines

Dr. Gavin Sacks, Cornell University

3:00 pm New Agri-Chemicals for 2013

Agri-Chemical Reps

3:30 pm Geisenheim Riesling Clones

Dr. Joachim Schmid, Geisenheim Research Centre

Thursday February 21
Room 207+208

9:00 am Can We Improve Potassium Recommendations for Ontario Grapes?

Christoph Kessel, OMAFRA

10:00 am Sour Rot Management Strategies

Dr. Wendy McFadden-Smith, OMAFRA

10:30 am Growing Grapes on Long Island: Keys to Successful Viticulture

Larry Perrine, Channing Daughters Winery

11:00 am German Viticulture, its Regional Distinctions and Difficulties

Dr. Joachim Schmid, Geisenheim Research Centre

2:00 pm Introducing GGO's Mobile Map

Emir Tabirovic, Kenna

2:15 p.m. Defining and Attaining Vine Balance in a Humid Environment

Dr. Tony Wolf, Virginia Tech University

3:00 pm Irrigation During a Drought: Find Out What Your Neighbour Did

Donna Speranzini and Andrew Jamieson, AAFC

3:30 pm Geisenheim Pinot Noir Clones

Dr. Joachim Schmid, Geisenheim Research Centre



Winery

Wednesday, February 20
Room 207+208

9:45 am Elemental Sulfur Residues and Reduced Sulfur Off-Aromas in Wines

Dr. Gavin Sacks, Cornell University

10:30 am Can Ontario Sparkling Wine Sparkle More?

Dr. George van der Merwe, University of Guelph

11:00 am How Can Clones Have an Influence on Wine Characteristics?

Dr. Joachim Schmid, Geisenheim Research Centre

Room 203

2:00 pm Local Hero or Global Nobody? Canadian Wine in the Global Marketplace

Dr. Janet Dorozynski, Dept. of Foreign Affairs and International Trade Canada

2:30 pm Using Personal Wine Passions to Enter Niche Premium Wine Markets in NYC and Beyond

Larry Perrine, Channing Daughters Winery

3:00 pm Current Sales Trends and New Opportunities at the LCBO

Tamara Jakes, LCBO

3:30 pm Is Our Vision 20:20? A Review of What Happened Over the Last 20 Years and Where the Next 20 Need to Go.

Sue-Ann Staff, Sue-Ann Staff Winery

The **Ontario Fruit and Vegetable Convention** is an annual gathering of horticultural crop producers, primarily involved in the production of fruits and vegetables, from across Ontario. The 2-day convention is located at the Scotiabank Convention Centre in Niagara Falls, Ontario, and features a great line-up of horticultural experts, topical sessions, trade show exhibitors and great networking opportunities. Now entering its 11th year, discover for yourself why it is called Canada's Premier Horticultural Event.

Online Registration now open: Save yourself some time and money and register for OFVC online. Online registration is quick, secure and easy to use. Visa and MasterCard accepted. Deadline for pre-registration is February 12th. For more information and registration details, visit the website at: <http://www.ofvc.ca>

Irrigation management of wine grapes in Ontario Part 2: Irrigation—when do I start to apply and how much is enough?

Andrew G. Reynolds, Cool Climate Oenology & Viticulture Institute

In the first part of this series I showed the benefits of deficit irrigation on grape yields, and quality. So for grape growers that have access to water, and are interested irrigating, where do they get started?

While it may be tempting to hook up the irrigation system and irrigate until there are a few inches of water on the soil it may not be the best option for the crop or for your pocket book. As mentioned in the first part of this series, over irrigating grapes can result in decreased wine quality and excessive vigour. So if possible it is best to monitor weather conditions and irrigate according to the crops needs. One method of adjusting irrigation application is regulated deficit irrigation (RDI) which involves withholding irrigation water during some periods of development and providing irrigation to maintain soil water level above the physiological wilting point at other times. RDI early in the season will reduce shoot growth and possibly reduce water demand later on due to a reduction in leaf area. RDI can be used most effectively when it is timed appropriately with the growth stages of the grape to optimize fruit quality while still saving water. Water is very important for cell division in grape berries right after flowering and fruit set. The vine is also simultaneously in a period of vegetative growth.

The most critical period for irrigation, therefore, is from berry set through veraison (the initiation of the ripening period indicated by berry softening and colour change). Deficit irrigation before veraison might decrease yield very slightly due to reduced cell number in berries, and will definitely reduce vegetative growth. RDI after veraison might also decrease yield slightly due to reduced berry size, but normally improves quality as a result of concentration.

So how do you determine how much water the grapes need?

The amount of moisture the grapes need will vary each year from site to site depending on the weather conditions (temperature, rainfall, snow, percolation in soil), and vine canopy. Crop water use can be calculated based on a measurement of evapotranspiration (ET) from a weather station. The crop's water use can be determined by multiplying the water loss through evaporation and transpiration from climatic conditions (reference E_{To} calculated from a weather station) by a crop coefficient (K_c) which is specific to the crop, and accounts for variation in vine canopy size.

$$ET_c = E_{To} \times K_c$$

ET_c = crop evapotranspiration or the amount of water the grapes will use

E_{To} = reference ET which is the water loss through evaporation and transpiration based on climatic conditions (temperature, solar radiation, etc.). E_{To} assumes the crop cover is grass.

K_c = crop co-efficient

Start by determining the **reference evapotranspiration (E_{To})**, which is the water loss through evaporation and transpiration of a grassed field. E_{To} is affected by weather conditions and expresses the evaporating power of the atmosphere at a specific location and time of the year and does not consider the crop characteristics and soil factors. E_{To} is expressed in terms of mm over a specific time period (usually per day). E_{To} is at its maximum in midsummer where daylength (sunshine hours) is at its maximum, relative humidity is low and temperatures are highest. The E_{To} is calculated by inputting climatic data (e.g. mean temperature, relative humidity, etc.) into a weather based models (Priestly-Taylor equation, Penman-Monteith equation). Average E_{To} values for Ontario can be found in the OMAFRA Irrigation BMP on page 45. Alternatively, Weather Innovations Network Inc. (WIN) provides weekly maps of E_{To} based on the Priestly-Taylor equation <http://www.vineinnovations.com/>. As is always the case the most accurate method of determining E_{To} is to use site specific or region-specific information.

So, for sake of argument, let's say you visited the WIN website one day and found that the peak E_{To} value for your region is 0.26 inches (6.6 mm) per day. We'll follow this value through our calculations and come up with how much water to apply to a vineyard.

Using a crop coefficient: Once you have determined the E_{To} you will need to calculate the crop co-efficient (K_c), which accounts for amount of soil covered by the crop. In the case of grapes, they are in rows that are ~2.5 m (8 feet) apart, and consequently much of the surface of the soil is not occupied by canopy. We need to account for the fact that grapes are trellised and may occupy up to 1.8 to 2 m (~6 feet) of trellis space, which if viewed from above would cover ~75 percent of the soil surface. This is the basis for use of a crop coefficient (K_c). If irrigation is being applied to a vineyard containing a full trellis, a K_c of 0.75 to 0.8 is usually appropriate. If irrigation is applied during canopy development, the volume of canopy would be less and must be estimated as accurately as possible. One method of doing so is to measure the length of the shadow cast by the vine canopy and divide this by row width (distance between rows).

So if the length of shadow cast by the vine canopy at solar noon was 1.88 and the row width was 2.5 m, the Kc would be as follows:

$$K_c = 1.88 \text{ m} / 2.5 \text{ m} \\ = 0.75$$

This is the value that we use to calculate replacement water volume. If you use our original ETo value of 6.6 mm and a 0.75 Kc, then our ETc would be 6.6 X 0.75 or 4.95 mm of replacement water daily (0.19”).

So in this case the ETc would be as follows:

$$ET_c = ETo \times K_c \\ ET_c = 6.6 \text{ mm} \times 0.75 \\ = 4.95 \text{ mm of replacement water daily (0.19”)} \\ = 0.0162 \text{ ft/day}$$

So how much water (volume) do I send out to my vines?

Multiply the depth of water needed per day (0.0162 ft/day) by the plant area (4 ft x 8 ft = 32 ft² for *vinifera* wine grapes).

$$V_d = ET_c \times \text{Plant Area} = 0.0162 \text{ ft/day} \times 32 \text{ ft}^2 = 0.5184 \text{ ft}^3 \\ V_d = 3.9 \text{ US gal} \quad (1 \text{ ft}^3 = 7.481 \text{ US gal})$$

So on a hot summer day in Ontario water use in this example is 3.9 US gal/vine/day. That's 27.3 US gal/vine/week

The final step involves conversion of volume to time in hours for a drip irrigation system. In this example the irrigation system delivers 0.53 GPH (gallons per hour) from drippers spaced 2 ft apart. Since the vines are spaced 4 ft apart this means there are 2 drippers per vine (0.53GPH x 2) = 1.06 GPH/vine.

Each week the system needs to run 27.3 US gal/vine ÷ 1.06 GPH/vine = 25.8 hours

This irrigation system run time would be reduced if there was rain during the week.

With a drip system this should be applied in 2 to 3 applications per week.

So 8.6 hrs, three times per week.

Voila! You have just calculated how much to irrigate!

Does yield impact wine quality?

Andrew Reynolds, CCOVI, Brock University

For those of us who read the back labels of wine bottles we often hear that high quality wines can only come from vines with low yields, but is this always the case? There is enough experience, both practical and research-based, to show that the effects of yield are very much site-based and therefore largely dependent upon vine vigor or balance. The most straightforward metric of balance is crop load (Ravaz Index), which is the ratio of yield per vine vs. vine size (weight of cane prunings). A Ravaz Index between 5 and 12 is normally accepted as balance, whereas numbers below this are considered too vigorous, while values > 12 are normally considered overcropped. Experience has shown that varieties such as Pinot noir tend to be very sensitive to overcropping and therefore Ravaz Indices closer to 5 are accepted as ideal, whereas aromatic white varieties such as Riesling can normally be cropped at Ravaz Indices around 10-12.

There have been dozens of crop thinning studies done worldwide on many varieties. Generally the detrimental effects of high yield are: 1) Most pronounced in cool climates, because of delayed maturity; 2) Vintage dependent; 3) Site and variety dependent. When I worked in BC, we did crop control studies on Riesling, Gewurztraminer, and Pinot noir. Lowering crop level in Pinot noir had consistent positive effects, but cluster thinning Riesling and Gewurztraminer gave ambiguous results. Our research group has done work in Ontario on cluster thinning in Chardonnay musqué, Merlot, Cabernet franc, and Cabernet Sauvignon. Reducing crop load in Bordeaux red varieties in Niagara enhanced color, phenols, and wine quality in one cool season but was less effective in warmer seasons. With Chardonnay musqué—lowering crop enhanced terpenes (compounds responsible for muscat flavor) and increased wine quality in cool seasons but had minimal effects in warm years.

Chapman et al. (2004) in California studied the role of yield in the sensory properties of Cabernet Sauvignon using pruning and cluster thinning to manipulate yield. Cabernet Sauvignon vines were subjected to six winter pruning treatments over two years and eight cluster-thinning treatments over one year, with thinning imposed at veraison. These treatments created yields

that varied from 4.3 to 22.2 t/ha. Wines made from vines pruned to low bud numbers (hence “low yield”) were higher in “veggie” aroma and flavour, bell pepper aroma, bitterness, and astringency than “high-yield” wines. Conversely, the wines made from vines pruned to high bud numbers were higher in red/black berry, jam and fresh fruit aromas, and fruity flavour than low-yield wines. In general, “veggie” attributes decreased in intensity and fruity attributes increased in intensity as node number and yield increased.

A recent study by Nick Dokoozlian at Gallo Wines in California looked at the effect of crop load treatments (undercropping, balanced, overcropping) on the relationship in Cabernet Sauvignon between harvest Brix and concentrations of methoxy-pyrazines, the compounds responsible for the veggie aroma. In both overcropped and undercropped vines, the fruit was at nearly 29 °Brix before it had dropped below the methoxy-pyrazine aroma threshold when it could be harvested, but in balanced vines, the threshold was reached at 24 °Brix. The conclusion was that fruit °Brix and flavor are much more “in synch” in vines that are balanced.

Recently our group investigated the impacts of naturally-varying yields on wine composition and sensory quality of Riesling and Cabernet franc. No cluster thinning was done. The sites were located in five of the 10 VQA sub-appellations. Cultural practices, including pruning and canopy management were consistent across each vineyard block. Vine yields were divided into equal-sized categories of “low”, “medium”, and “high” at harvest (with three replicates at each site). Since sites were different in terms of vigor, ranges in yields were also different; e.g. high and low Riesling yields (category averages) ranged from 6.7 to 3.7 kg/vine at the highest-yielding site to 5.0 to 3.0 kg/vine at the lowest-yielding site. Yield was largely influenced by number of clusters/vine, and was also associated with larger berries and higher Ravaz Indices. All resulting wines were analyzed for pH and titratable acidity (TA) and the Cabernet franc wines were also analyzed for color hue and intensity, anthocyanins, and total phenols. All replicate wines were successfully sorted by a sensory panel to confirm differences between wines produced from different yield categories and between different sites. All wines were thereafter subjected to descriptive analysis.

As a general rule we found that at some sites crop yields could reach as high as 7-8 tonnes/per acre before overcropping had an impact on wine quality. Low yield Cabernet franc wines had higher color, anthocyanins and total phenols but natural yield variance had no impact of yield on TA or pH in either variety. Increasing yield in Cabernet franc reduced concentration of sec-butyl methoxy-pyrazine and increased isobutylmethoxy-pyrazine (IBMP). IBMP increased with increased crop level in three vineyards (Beamsville Bench, Lincoln Lakeshore north, Lincoln Lakeshore south). Five aroma and eight flavor attributes for the Riesling and three aroma and six flavor attributes for the Cabernet franc differed amongst the different yield categories in the descriptive analysis. High yield Riesling wines at some sites were associated with lower intensity of fruit characteristics and higher mineral or floral attributes. Cabernet franc vines with higher yield, vine size, and clusters/vine often produced wines with higher bell pepper characteristics and less fruit characteristics.

Sub-appellations also had an effect on the wine sensory profile. The Lincoln Lakeshore (North) and Niagara Lakeshore Riesling vineyards were associated with higher mineral characteristics, the Four Mile Creek location had more apple/pear characteristics, and the St. Davids Bench, Beamsville Bench and Lincoln Lakeshore (South) vineyards were highest in fruit and citrus characteristics. Cabernet franc vineyards located on the Beamsville Bench and the Four Mile Creek sub-appellations were highest in bell pepper aroma, the Lincoln Lakeshore (north) vineyard was associated with more earthy character, and the Lincoln Lakeshore (south) sub-appellation was associated with more cooked fruit character.

What is the take-home message? Crop load effects differ from site to site, partly because of the variability in yield between sites, as well as the magnitude of variability at each site. Sites with low yield variability are less likely to display effects of yield. These data were based on one season—2010—which was quite warm. We plan to repeat this for the 2011 wines this upcoming spring.

Thanks to Lee Baker, who did all the sensory analysis, Mary Jasinski for geomatic analysis, and to Gary Pickering and Susanne Kogel for IBMP analysis

Grapevine pruning 2013

Kevin Ker^{1,2} and Jim Willwerth²

¹KCMS Applied Research and Consulting; ²CCOVI – Brock University

So far in 2013 we have experienced a reasonably good winter for grapevine survival. Current bud survival numbers are good and from upcoming forecasts and work by Brock University and KCMS (Ker, Willwerth and Brewster) show that vine hardiness levels are very good for the next while.

It is highly recommended that while you are doing pruning in 2013, you regularly check out the CCOVI website at <http://www.ccovi.ca/vine-alert/bud-survival> to see the latest status for bud survival in your area.

Some quick refresher points need to be made

- Prune vines according to hardiness – that is hardiest vines first with most sensitive vines at the end of the pruning season (labrusca then hybrids then vinifera)
- Generally, for vinifera vines most sensitive appear to be Merlot, Sauvignon Blanc, Pinot Noir and where possible should be the last pruned.
- Vines that are pruned earlier in winter often will break bud in the spring earlier than the same vines pruned later in the dormant period
- If pruning sensitive vines early, leave extra canes (“kicker canes”) to hedge your bet against late winter bud injury.
- Prune with an objective - and be aware that if you had issues the previous year (excess crop, excess wood or spindly growths, too dense a canopy, spray coverage issues, etc) you WILL need to modify your approach to pruning.

There are some fundamental rules followed around the world for vinifera grape production

- Balance – the amount of wood and buds you leave behind should match the training system used, and allow for the vine to properly mature the crop being carried
- 80 to 90 % of one year old wood is removed during the dormant pruning
- Prune to around 12 to 15 buds per meter of row length (5 buds per foot) to allow for proper shoot spacing. Again, this is dependent on vine vigour and capacity.
- If using pruning weight approach, this is about 5-10 kg of fruit per kg of pruning weights depending on vine capacity and cultivar or 0.2-0.5 kg of wood per meter of row length.
- Larger vines can have higher bud count numbers than smaller vines.
- Proper pruning early should allow for easiest manipulation of canopy later (especially crop load adjustment/thinning) including shoot positioning, hedging and fruit zone leaf removal where it is needed for premium grape production.
- When in doubt at pruning – leaving slightly more buds/nodes is better than not enough. (Ker’s Rule – it is easier to cut something off a vine than it is to try and glue it back on later!)

There is much debate about bud numbers and wine quality. There is a misconception that low yields always means high fruit quality. **THIS MYTH HAS BEEN DISPROVEN BY PUBLISHED RESEARCH AROUND THE WORLD!** Properly balanced vines always produce superior fruit to those with too little or too much crop. Crop load is regulated by **PRUNING** first and then by cluster thinning. Over-pruning (leaving too few buds/nodes) can be just as bad as under-pruning (too many buds/nodes) and lead to having to undertake very expensive time and labour to correct during the growing season.

The objective is have a balance of just enough vegetative growth to properly grow shoots and mature the fruit to optimum levels without having to undertake excessive amounts of in-season corrections (multiple times for crop thinning, hedging or leaf removal!).

Update on grapevine cold hardiness and bud survival for January 21, 2013

Dr. Jim Willwerth¹ and Dr. Kevin Ker^{1,2}

¹CCOVI – Brock University; ²KCMS Applied Research and Consulting

Grapevines are continuing to show high levels of cold hardiness at this period of time where vines are generally near their maximum cold tolerance levels for our region. So far in 2013 we have experienced a reasonably good winter for grapevine survival. Current bud survival numbers are good across all regions and varieties at this period of time. It is highly recommended that while you are doing pruning in 2013, you regularly check out CCOVI's VineAlert website at <http://www.ccovi.ca/vine-alert/bud-survival> to see the latest status for bud survival in your area.

The latest bud hardiness measurements indicate that all cultivars have LTE10 values below -17°C, the temperature at which 10% of buds can be injured. These data were taken after the 'January thaw' earlier this month where we experienced unseasonably warm temperatures. The forecasts are calling for colder (more normal) January temperatures so we can expect hardiness levels to remain the same. It may be possible that we see some slight increases in hardiness (reacclimation) later this month following these colder temperatures. Unfortunately, colder temperatures also bring the risk of freeze injury events, so it is important to continue to monitor the most recent data posted for bud hardiness through VineAlert and your vineyard temperatures.

The most recent data posted for bud hardiness can be viewed at <http://www.ccovi.ca/vine-alert/recent>

Start-up temperatures for wind machines should be adjusted to account for what we are seeing in vine cold hardiness. For optimal use of wind machines, it is suggested that the start-up temperatures be set at 2 to 3 degrees warmer than LTE10 values at which injury might occur.

Please note: Cold hardiness ratings are estimates only and the information provided are for general guidance. Cold hardiness ratings are site specific and may vary based on vine health, viticulture practices and site conditions, among other factors. Any decisions for protection strategies should be based on your own information and site conditions.

This initiative is supported by funding through Agriculture and Agri-Food Canada's (AAFC) Developing Innovative Agri-Products initiative and the Ontario Ministry of Economic Development and Innovation's (MEDI) Ontario Research Fund, which support industry-led research and innovation. This outreach project is a collaboration between AAFC, MEDI, the Grape Growers of Ontario and Brock's CCOVI and is part of CCOVI's heightened emphasis on outreach to the grape and wine industry.



Brock University



Agriculture and Agri-Food Canada



Agriculture et Agroalimentaire Canada

The following are cold hardiness ratings from January 8-17, 2013. It is **very important** that you monitor the **LATEST COLD HARDINESS DATA** at <http://www.ccovi.ca/vine-alert/recent>

Bud Hardiness for Chardonnay - JANUARY					
Sampling Date	Location	Variety	LTE10	LTE50	LTE90
January 15, 2013	Beamsville Bench	Chardonnay	-18.7 °C	-20.8 °C	-21.4 °C
January 15, 2013	St Davids Bench	Chardonnay	-20.1 °C	-22.1 °C	-23.3 °C
January 14, 2013	Short Hills Bench	Chardonnay	-19.6 °C	-22.1 °C	-23.2 °C
January 14, 2013	Creek Shores	Chardonnay	-20.8 °C	-22.9 °C	-23.8 °C
January 14, 2013	Lincoln Lakeshore	Chardonnay	-19.7 °C	-22.4 °C	-23.8 °C
January 10, 2013	Vinemount Ridge	Chardonnay	-21.4 °C	-23.5 °C	-24.7 °C
January 10, 2013	Twenty Mile Bench	Chardonnay	-20.6 °C	-22.9 °C	-25.2 °C
January 9, 2013	Niagara River	Chardonnay	-21.2 °C	-23.1 °C	-24.5 °C
January 8, 2013	Four Mile Creek	Chardonnay	-20.0 °C	-22.7 °C	-24.8 °C

Bud Hardiness for Cabernet Franc - JANUARY

Sampling Date	Location	Variety	LTE10	LTE50	LTE90
January 15, 2013	St Davids Bench	Cabernet franc	-20.2°C	-21.9°C	-22.9°C
January 15, 2013	Beamsville Bench	Cabernet franc	-19.8°C	-21.1°C	-22.7°C
January 14, 2013	Creek Shores	Cabernet franc	-19.4°C	-21.5°C	-23.4°C
January 14, 2013	Short Hills Bench	Cabernet franc	-21.0°C	-22.7°C	-24.4°C
January 14, 2013	Lincoln Lakeshore	Cabernet franc	-18.9°C	-21.9°C	-23.2°C
January 10, 2013	Vinemount Ridge	Cabernet franc	-19.7°C	-22.2°C	-24.6°C
January 10, 2013	Twenty Mile Bench	Cabernet franc	-19.5°C	-22.5°C	-24.2°C
January 9, 2013	Niagara River	Cabernet franc	-18.4°C	-21.2°C	-22.7°C
January 8, 2013	Four Mile Creek	Cabernet franc	-18.5°C	-21.3°C	-22.6°C

Bud Hardiness for Merlot - JANUARY

Sampling Date	Location	Variety	LTE10	LTE50	LTE90
January 15, 2013	Lincoln Lakeshore	Merlot	-17.5°C	-19.2°C	-21.3°C
January 8, 2013	Creek Shores	Merlot	-18.7°C	-20.5°C	-21.9°C
January 8, 2013	Four Mile Creek	Merlot	-17.7°C	-20.4°C	-22.9°C

Bud Hardiness for Pinot noir - JANUARY

Sampling Date	Location	Variety	LTE10	LTE50	LTE90
January 15, 2013	Lincoln Lakeshore	Pinot Noir	-17.3°C	-21.2°C	-22.8°C
January 8, 2013	Creek Shores	Pinot Noir	-20.3°C	-23.0°C	-24.8°C

Bud Hardiness for Riesling - JANUARY

Sampling Date	Location	Variety	LTE10	LTE50	LTE90
January 10, 2013	Vinemount Ridge	Riesling	-22.2°C	-24.6°C	-25.7°C
January 10, 2013	Creek Shores	Riesling	-22.5°C	-23.9°C	-25.1°C
January 9, 2013	Niagara River	Riesling	-21.1°C	-23.4°C	-24.6°C

Bud Hardiness for Sauvignon blanc - JANUARY

Sampling Date	Location	Variety	LTE10	LTE50	LTE90
January 15, 2013	St Davids Bench	Sauvignon blanc	-17.3°C	-20.7°C	-22.1°C
January 10, 2013	Twenty Mile Bench	Sauvignon blanc	-20.5°C	-22.4°C	-23.8°C
January 10, 2013	Short Hills Bench	Sauvignon blanc	-19.0°C	-21.4°C	-22.8°C

Bud Hardiness for Cabernet Sauvignon - JANUARY

Sampling Date	Location	Variety	LTE10	LTE50	LTE90
January 14, 2013	Creek Shores	Cabernet Sauvignon	-19.8°C	-22.2°C	-23.3°C

Bud Hardiness for Syrah - JANUARY

Sampling Date	Location	Variety	LTE10	LTE50	LTE90
January 17, 2013	St Davids Bench	Syrah	-20.2°C	-21.1°C	-22.5°C
January 8, 2013	Creek Shores	Syrah	-17.1°C	-22.0°C	-23.1°C

Ontario Vineyard Improvement Program

Intake 3 is now open and will be accepting applications for Year 3. Applications are accepted on a first-come, first-served basis until March 29th 2013. The Intake deadline may be shortened by OMAFRA if there is significant oversubscription to the program prior to March 29th. Once annual funds are allocated, the remaining applications in the same intake will be included in a priority queue for future intakes. Assessments of these applications will occur once the next intake opens. For this reason, there is no need to resubmit the same application.

OVIP Contact Information

Additional information and advice on how to complete the application form is available from OMAFRA toll free at 1-888-588-4111 or by email at OVIP@ontario.ca or on our website at www.ontario.ca/improvingvineyards. The [Grape Growers of Ontario](#) would also be pleased to provide advice and assistance at the following location: 1634 S. Service Road, St. Catharines, Ontario L2R 6P9 Phone: 905-688-0990 Fax: 905-688-3211 or email: nlemieux@grapegrowersofontario.com

OVIP Application Submissions

Completed applications may be submitted in one of four ways:

1. By email at ovip@ontario.ca
2. By fax (519) 826-3398
3. Regular mail or in person at OMAFRA, Rural Programs Branch, 1 Stone Rd. West, 4th Floor, Guelph, ON N1G 4Y2
4. In person at the following OMAFRA Regional Office locations: Vineland, Simcoe, Ridgeway, Brighton

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