

## THE STATE OF APPLE COUNTRY

# Breeding 'local' apples for multiple micro-climates



No one really knows how many acres of high-density apple orchards exist in Canada. A definition would be hard to pin down. Is it a thousand trees per acre? Fifteen hundred? Suffice to say that many orchardists are converting to high-density orchards with top-selling consumer favourites: Honeycrisp, Ambrosia and Gala. Those trends have been carefully tracked by Cathy McKay, vice-chair of the Ontario Apple Growers and a long-time participant in national research committees. Pictured here, she measures progress after petal fall in her Port Perry, Ontario orchard. Photos by Glenn Lawson.

KAREN DAVIDSON

One out of every 10 apples exported by Washington state gets crunched in Canada. That's a formidable competitor for a country whose tradition of apples harkens back to 1633 in Nova Scotia's Annapolis Valley. The French settlers called the original apple the Fameuse. The English called it Snow.

Centuries later, apple breeding continues its noble path in Canada. A new Canadian Apple Breeding Consortium is coalescing with \$4.2 million in federal funding. Rather than search for the next blockbuster to compete against Washington, Canadian researchers are pursuing several varieties that might work in different areas of the

country. Take note. There are many microclimates within six apple-growing provinces: British Columbia, Ontario, Quebec, New Brunswick, Nova Scotia and Prince Edward Island.

"It's still early days," says Dr. Daryl Somers, research director for applied genomics at Vineland Research and Innovation Centre, Ontario, putting into context the long haul of apple breeding. "2019 represents the eighth season of orchard work and tree evaluation at Vineland. We're getting a better understanding of the architecture of trees and yields."

Somers points to the input of apple grower Cathy McKay, vice-chair of the Ontario Apple Growers and chair of the research committee. "She's been a real champion of our work, keeping us

grounded from a grower's perspective."

For decades, McKay has nurtured her 27-acre orchard called Nature's Bounty near Port Perry, Ontario. She has also adapted in recent years with conversion to high-density orchards and varieties that will draw consumers to the rolling hills of her scenic farm.

Of all her talents, the one that's least known is her contribution to both provincial and national research groups. She's done a stint as a director on the Summerland Varieties Corporation (previously PICO) whose mission is to identify and commercialize new tree fruit varieties. Her eight years on that board have sharpened her awareness about the goals of a complex breeding program.

"This Canadian program gives

growers the opportunity to become connected on the numbered varieties that have potential for the future," says McKay. "Summerland has a variety that's been fast tracked in the release program because of its good flavour, texture and disease resistance. It can work in geographies where it rains a lot."

This multi-pronged approach is appreciated by Vineland's Dr. Somers who will be working closely with Dr. Amritpal Singh at Ag Canada's Summerland Research Centre in British Columbia as well as Dr. Sean Myles at Dalhousie University, Nova Scotia. Together, they are developing molecular techniques to identify traits of interest in young plants.

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What's new in insect traps PG 7

CPMA: innovation PG 8

Storage, containers & packaging PG 15



## AT PRESS TIME...

### Health Canada to restrict neonic uses

The crop protection arsenal is dwindling for crops ranging from tree fruits to berries to cucurbit vegetables. All uses of neonicotinoids for orchard trees, for example, have been cancelled as part of a comprehensive announcement made by Health Canada on April 11.

Phase-outs and new restrictions will happen in the next two to three years.

After extensive research and review, Health Canada has completed its re-evaluations of the neonicotinoid pesticides clothianidin (Clutch) imidacloprid (Admire) and thiamethoxam (Actara) in relation to their potential impact on bees and other pollinators. The scientific assessments show varying effects on bees and other pollinators from exposure to each of these pesticides.

To protect bees and other pollinators, Health Canada has announced that it will be cancelling some uses of these pesticides, and changing other conditions of use such as restricting the timing of application. Remaining uses (e.g., treatment on canola seeds and greenhouse vegetables) are not expected to pose unacceptable risks to bees and other pollinators.

In addition to the input received from the consultations, Health Canada says that the re-evaluations considered



hundreds of scientific studies, from both manufacturers and published literature.

The Department says it continues to evaluate the potential risks to aquatic insects from the use of neonicotinoids. Current research shows that these pesticides are detected frequently in water bodies at levels that could be harmful to certain aquatic organisms. Health Canada expects to report on its findings at the end of 2019.

*Source: Health Canada, April 11, 2019 news release*

### Takeaways from the Ontario 2019 budget

Ontario's agriculture, food and rural affairs ministry will lose millions in 2019-2020 funding, as part of the provincial government's efforts to balance the books. For the first time in recent years, the budget is less than a billion dollars.

Depending on whether 2017-2018 or 2018-2019 budgets are used, funding for the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) will

shrink by a rate of eight to 25 per cent.

The future of the Ontario Food Terminal continues to be profiled in government documents. The Ontario Food Terminal, currently located in Toronto, is utilized by farmers and other participants in the buying and selling of produce, some of whom truck their produce great distances in order to access the terminal.

"The province is committed to ensuring the Ontario Food Terminal is sustainable over the next five, 10 and 50 years. In line with this commitment, the province is exploring options to ensure the long-term success of the Ontario Food Terminal for farmers, businesses, and taxpayers. An advisory group with veteran agri-food industry leaders, in conjunction with an independent third-party report, will provide further insights and recommendations on the Ontario Food Terminal network to modernize the service and balance the needs of all users."

To access Ontario's 2019 budget, go to [budget.ontario.ca/2019/contents.html](http://budget.ontario.ca/2019/contents.html)

## NEWSMAKERS

Felicitations to **Bernadette Hamel** who has earned a well-deserved retirement from Metro Richelieu after successive promotions that led her to the top of produce procurement. During the years, she has also been a director of the Canadian Produce Marketing Association



(CPMA) and chaired the board in 2015. She gave a heartfelt address upon receiving the CPMA Lifetime Achievement Award at the 94th conference and trade show in Montreal.

Also in the spotlight at CPMA was **Les Mallard**, vice-president of sales for Fyffes North America. He won The Packer's Canadian Produce Person of the Year Award. Other awards included:

- Fresh Health Award – **EarthFresh**
- Mary Fitzgerald Award – **Ryan Goad**, Loblaw Companies

BC Tree Fruits Cooperative has appointed two new senior executives. On April 1, **Todd McMyn** joined as CEO with previous experience leading a manufacturing and trading corporation involved in high-tech products infrastructure. He brings a global perspective to the 400 members of the Kelowna-based cooperative. Joining him on April 8, was **Ross Dwhyte** as chief financial officer.

AgScape, the voice of agriculture in the classroom for Ontario, has hired **Glenna Banda** as its new executive director. A native of Saskatchewan, she has been executive director of The Children's Foundation of Guelph and Wellington for the past nine years, tripling fundraising revenue. Her start date is May 8.

**Albrecht Seeger** has been honoured with the Lifetime Achievement Award from the Niagara North Federation of Agriculture for his 41 years of grape growing in Canada. Along with his wife **Anja**, Seeger cultivates 150 acres of premium vinifera grapes, including the oldest plantings of Riesling and Chardonnay vines in Niagara-on-the-Lake.

Congratulations to Holland Marsh carrot and onion grower **Jason Verkaik** as he assumes the role of chair of the board of directors for Agricorp. He's weathered many storms as the owner and operator of Carron Farms Ltd. He is also a director involved with several industry associations including the Ontario Fruit and Vegetable Growers' Association where he is also the past chair, the Holland Marsh Growers' Association, and the Ontario Produce Marketing Association.

**Ken Forth** is the recipient of Grape Growers of Ontario 2019 Award of Merit. The broccoli grower is president of the Foreign Agricultural Resource Management Service (FARMS), and has dedicated his career to providing labour support for farmers and international agricultural workers.



L-R: Matthias Oppenlaender, Ken Forth and Bill Schenck

Best wishes to **Fred Meyers**, for a speedy recovery after an accident on his Niagara-on-the-Lake tender fruit farm on March 22. He caught his arm in a soil machine with a chain-driven conveyor. Despite a serious injury, he was airlifted to hospital in time for restorative vascular surgery. He was recently elected to the Ontario Fruit and Vegetable Growers' Association board of directors. His recovery looks promising.

Welcome to **Glen Gilvesy**, ginseng representative to the Ontario Fruit and Vegetable Growers' Association board of directors.

**Correction:** On page 26, the April 2019 feature "Crabapples, the forgotten fruit, get an untraditional makeover" contained an incorrect contact. Email: [alexsmth@appleflatsfoods.com](mailto:alexsmth@appleflatsfoods.com)

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COVER STORY

# Breeding 'local' apples for multiple micro-climates



Dr. Daryl Somers, research director for applied genomics at Vineland Research and Innovation Centre, is one of the participants in the Canadian Apple Breeding Consortium. Other members include Agriculture and Agri-Food Canada, Dalhousie University, Summerland Varieties Corporation, Réseau d'essais de cultivars et porte-greffes de pommiers du Québec, and the Canadian Horticultural Council. Also represented are a number of major grower associations, including the Ontario Apple Growers, the BC Fruit Growers Association, Les Producteurs de pommes du Québec and Scotian Gold Cooperative Ltd.

Continued from page 1

Imagine not needing years of breeding research because they can determine if an apple tree will produce crisp fruit before it is even old enough to flower.

Growers have an important role in the research continuum. A national grower testing program minimizes the risk to fellow growers by demonstrating that a new variety can be successfully

grown throughout the country. "It's important that the variety will retain premium quality throughout commercial storage, pack and retail display and that the variety has enough consumer appeal that people

will choose it over other commercial varieties," says Erin Wallich, research and development manager for Summerland Varieties Corporation.

On the face of it, a business strategy to use pan-Canadian resources to produce several local varieties sounds surprising. Dig deeper, and it's a very perceptive strategy in playing to strengths while countering global imports.

McKay points out that diverse micro-climates are a strength for the Canadian apple industry. If one area suffers a weather setback, then other areas can fill the production gap.

"A lot of investment is going into the apple industry," notes McKay. "It's in establishing new orchards, new trellis systems and new varieties. We have a very active group of young growers here in Ontario."

The local food movement has lifted the Ontario industry with about 45 per cent of apple production sold directly to consumers. Another strength is proximity to the large consumer market of the Greater Toronto

Area. Every province has its unique set of growing and marketing climates. But growers have proven to be resilient. The Canadian apple industry posted its first increase in acreage in decades -- in 2016. Apple breeding research is a cornerstone in keeping the storied history of Canadian apples alive.

The Grower goes "Behind the Scenes" of this cover story to speak with Cathy McKay, Nature's Bounty, Port Perry, Ontario. She talks about the Canadian Apple Breeding Consortium. To listen, visit [www.thegrower.org/podcasts](http://www.thegrower.org/podcasts).



## AT PRESS TIME...

### Ontario processing veg sector in turmoil

Ontario ag minister Ernie Hardeman is calling for direct contracting between processors and tomato growers in advance of 2020 crop negotiations. The 343 growers of the Ontario Processing Vegetable Growers are surprised.

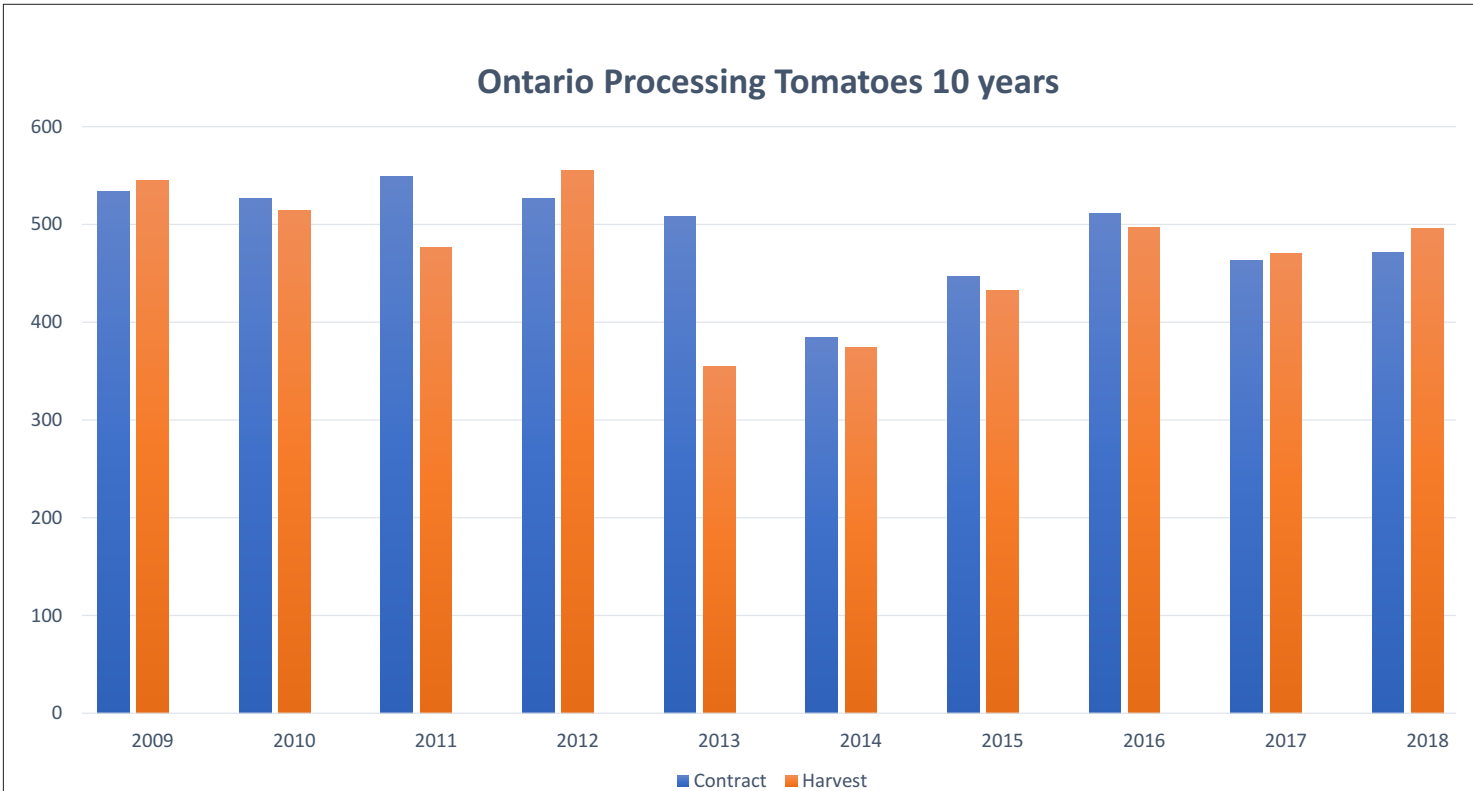
In an April 17 news release, Ontario processing vegetable growers said they were "dismayed" at the lack of consultation from the provincial government about its intent to overhaul the regulated marketing system.

There are 343 growers who produce a variety of processing vegetables for a farmgate value of just under \$100 million. They include: tomatoes, onions, sweet corn, carrots, cucumbers, green, wax and lima beans, green peas, squash and pumpkins. Tomato processing comprises about half of the dollar total. The minister cites 16 facilities in the province.

Hardeman wrote: "Despite a growing market, Ontario production growth has been flat, exports of Ontario tomato products have declined to a third of what they were 10 years ago, imports have increased dramatically, the sector has seen a lack of processing investment, and there has been an exit of key processors. In my consultations with growers and processors, everyone agrees that we need to reverse these trends."

The Ontario Farm Products Marketing Commission has been given a mandate to consult with the grower community.

The announcement is perplexing to Dave Hope, the government-appointed chair of the Ontario Processing Vegetable Growers (OPVG). He took up the position



Here is some context for the chart above which shows tons contracted and harvested over the last decade. 2013 was the last year that Heinz operated in Leamington, Ontario and in 2014, Highbury Canco Corporation came on the scene. 2016 was the last year that Thomas Canning operated in Maidstone.

"The fact that the industry has almost seamlessly picked up and carried on through those significant setbacks to achieve nearly 500,000 tons a year in processing tomatoes shows remarkable resilience, innovation and determination by growers and processors alike," says Cathy Lennon, general manager, Ontario Processing Vegetable Growers.

as recently as January 2019.

"The organization is unable to make further comments on the province's announcement until more information becomes available," says Hope. "Our board remains committed to representing the views of our grower members and helping them understand how these

changes have the potential to affect their farm businesses."

In an interview with *The Grower*, Hope said it was not valuable to speculate until the draft regulations are published. A comment period is expected. Hope anticipates that regulations would need to be in place by the end of the 2019 calendar

year in order for growers to make planting decisions for 2020.

Sources: OMAFRA April 16, 2019 open letter from Ernie Hardeman/Ontario Processing Vegetable April 17, 2019 news release



## CROSS COUNTRY DIGEST

## BRITISH COLUMBIA

## Imports, high costs impacting B.C. raspberry industry

High input costs and cheap imports from Chile and Mexico are making times tough for 90 B.C. raspberry growers. So tough that many are switching to other crops such as blueberries. A hardier raspberry variety with longer shelf life would make a huge difference to the industry. But that takes time, something many growers can't afford.

B.C. raspberries, known for their exceptional flavour, enjoyed an industry production peak in the late 1980s and early 1990s, when 42 million pounds per year were picked. Abbotsford, B.C. was known as

the 'raspberry capital of Canada.' But production has dropped dramatically, falling to less than 17 million pounds in 2018.

The number of growers has declined too — from 500 at the raspberry industry's peak to just 90 now.

James Bergen of the Raspberry Industry Development Council says that many of the B.C. growers are CanadaGAP certified, meaning that they're subject to yearly food safety audits, which ultimately benefit the consumer. Imported berries may not offer that level of security.



In February 2019, growers in the Fraser Valley were hit with a cold snap which caused damage that is yet to be determined. So, with all the challenges, many growers are switching to other crops that could be more profitable.

But there is hope on the horizon for a raspberry variety that would have a longer shelf life than the current five days.

According to Bergen, the industry has been working on a new variety with longer shelf life.

"To get an extra three or four days of shelf life would be absolutely huge," says Bergen. "Better hardiness against disease and changing growing conditions as well as increased yield would all be valuable traits for growers," he added.

But development of new

varieties takes many years, even with increasingly sophisticated genetic techniques.

In the meantime, consumers' buying choices can make a big difference for the viability of the industry, so they're being encouraged to choose locally grown B.C. raspberries.

*Source: CBC news, April 11, 2019 release*

## ALBERTA

## Promising year ahead for Alberta's potato sector

When Alberta voters went to the polls on April 16, pulling wild rose country back to its conservative roots, provincial agriculture and forestry minister Oneil Carlier lost his seat in the riding of Lac Ste Anne-Parkland. The vote reflected the economic woes of the oil-rich province.

On the same day, Michiel Buijsse was planting potatoes near Purple Springs,

Alberta. Potatoes are a bright spot in an agriculturally rich province that is now facing headwinds from China's refusal to take canola seed. 2019 promises to be a pivotal year with the new Cavendish processing plant coming on stream in Lethbridge.

"It's good for the local economy for jobs, directly and indirectly, but it has its challenges too," says Buijsse.



Photo by Michiel Buijsse

## QUEBEC

## Climate change challenges vegetable growers

KAREN DAVIDSON

Three Quebec vegetable growers pooled their resources for one display at the recent Canadian Produce Marketing Association event in Montreal. It's not the first time they have used this strategy. Because they each produce different commodities, there is no competition, and in fact, their offering is stronger from the same region.

## Potager Riendeau

Patrice Riendeau grows 800 acres of lettuce, onions and celery on the muck soils near St-Rémi Quebec. In early April, snow still covered the ground, so he was expecting a first planting about 10 days later than usual.

A key issue is access to workers. "There's a lot of paperwork," he says, commenting that Guatemalan workers are late arriving this year.

Riendeau worries about the effects of climate change.

"We use sprinklers almost every year, which is normal for the vegetables we are growing. However, 2018 was the first time we needed to use them so much that for the first time we ran out of sprinklers. Demand was so high almost every vendor in our region was sold out!"

## Les Fermes R. Pigeon &amp; Fils Inc.

Gilbert Jr. Pigeon manages a thousand acres, specializing in green and yellow wax beans in rotation with cash crops. His great-great-grandfather started the business which flourishes to this day with his sister and cousin joining the family operation this year. His aunt is company president. Quebec is the key market as well as the United States.

It's a 15-week growing season in the St-Rémi area. As Pigeon explains, the early beans from this area do not compete with two other major growers in the Quebec City area. "We are two or three weeks ahead of Quebec City," he says.



(Left to right) Patrice Riendeau, Gilbert Jr. Pigeon and Guillaume Henri work together in marketing an array of Quebec-grown vegetables.

Pigeon is slowly transitioning to organic sales, a three-year process. About 74 acres are now planted to organic beans.

"There's more to learn about weed control in organic beans," says Pigeon. "We are trying to reduce pesticide use with natural cultural control."

## Les Fermes GNC Inc

Guillaume Henri represents the family business that operates 1,200 acres, with half of that devoted to cabbage, squash and garlic on mineral soils. The remaining acres are in cash crops. Les Fermes GNC Inc is located in Saint-Lin-Laurentides, Quebec.

About eight years ago, he became vice-president sales and marketing for Henri et Cie. The

company ships to retailers in Montreal as well as buyers coast to coast. He's one of 400 members of the Quebec Produce Growers' Association, taking an active interest in showcasing the produce industry outside the province.

"We need to improve our efficiency," says Henri. "And we need to improve access to labour."



## MINOR USE UPDATE

## Report from the 17th Annual National Minor Use Priority Setting Workshop

JIM CHAPUT

Agriculture and Agri-Food Canada, Pest Management Centre (AAFC-PMC) hosted the 17th national minor use priority setting workshop in Ottawa during the third week of March, 2019.

This meeting brought together a wide range of participants from across Canada including university and federal researchers, crop extension specialists, provincial specialists, minor use coordinators, registrants, PMRA representatives, growers and grower organization representatives, processing companies and other stakeholders. In addition, several individuals from the U.S. IR-4 program, Brazil and Australia also attended the meeting.

The purpose of this meeting was to review the top minor use priorities identified by each of the provinces for all crops including ornamentals and to establish the top priority projects for Agriculture and Agri-Food Canada, Pest Management Centre (AAFC-PMC) for 2020.

The first full day of the minor use program covered pathology priorities, the second day covered entomology priorities and the third day covered weed science priorities.

For the conventional minor use needs for each of the three main pest management disciplines, up to eight top priorities (ranked as As) are chosen from a long list of identified crop protection product solutions. Additional secondary priorities (ranked as B+s and Bs) were also chosen for each discipline each day. There were several changes to the process this year. Biopesticides were incorporated into the general process for each discipline day and a biopesticide solution could be 'twinned' for up to two of the selected 'A' priority projects per discipline.

To make the process more flexible, AAFC-PMC implemented the selection of up to six 'flexx' or 'B+' or 'soft A' priorities on each discipline day. These remaining B+ priorities were then reviewed separately on the third day and up to six of these could be raised to an 'A' priority project level.

The provincial minor use coordinators could also add five regional upgrade projects at the end of the process and the organic industry could also add two priority projects to the list of chosen projects.

Additional top crop/pest issues that did not have any identifiable solutions were also

chosen to be part of minor use screening trials designed to find some useful solutions for growers. At this year's meeting the top priorities chosen for this group (called APWS) included balsam root aphid and *Sirococcus* shoot blight on Christmas trees, weeds on rice and weeds on ginseng.

The discussions, collaborations and decisions made at this meeting demonstrated the critical needs that producers have and how the system can work to address

them. Growers, researchers, registrants, provincial specialists and other stakeholders worked to reach consensus and negotiate needs. Overall the process was successful and now the next step is for AAFC-PMC to complete the minor use submissions that were agreed upon. Additionally, the provinces also must follow up on a number of potential submissions and rationales for minor use needs.

The table on page 6 summarizes the projects agreed

upon for each discipline. These projects will be submitted to the PMRA by AAFC-PMC, and the data requirements completed in 2021-2022.

Registration decisions for these will likely occur in late 2022 and 2023. A final version of the top projects will be available this summer on the AAFC-PMC website: [www.agr.gc.ca/env/pest/index\\_e.php](http://www.agr.gc.ca/env/pest/index_e.php)

*Jim Chaput is provincial minor use coordinator for OMAFRA, Guelph, Ontario.*



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## MINOR USE UPDATE

## Report from the 17th Annual National Minor Use Priority Setting Workshop

Crop/Crop Group	Pest(s)	Product Solution	Active Ingredient Solution	Registrant
<b>WEED SCIENCE PROJECTS</b>				
Celeriac	Weeds	Chateau	flumioxazin	Valent
		Suppress (Twinned biopesticide)	caprylic acid	Westbridge
Onion, dry		Prowl (to add a 3rd app)	pendimethalin	BASF
Cherries		Chikara	flazasulfuron	ISK
Peaches [raised from B+]		Chikara	flazasulfuron	ISK
Edible honeysuckle (haskaps)		Ignite	glufosinate ammonium	BASF
		Suppress (Twinned biopesticide)	caprylic acid	Westbridge
Buckwheat		Avadex	triallate	Gowan
Bromegrass		Cirpreme	halauxifen + florasulam + clopyrlaid	Corteva
Fescue		Cirpreme	halauxifen + florasulam + clopyrlaid	Corteva
Alfalfa		Conquer	pyraflufen + bromoxynil	Nufarm
<b>ENTOMOLOGY PROJECTS</b>				
Leeks	Thrips (new application method)	Delegate	spinetoram	Corteva
Spinach	Seed corn maggot	Lumiderm	cyantraniliprole	Corteva
Apples	Mullein bug	NoVil	Metarhizium robertsii	Crop Defenders
Cherries	Fruit flies (new application method)	Delegate	spinetoram	Corteva
Xmas trees	Balsam woolly adelgid (automatic A from previous APWS)	Altus	flupyradifurone	Bayer
Hemp	Corn borer	Rimon	novaluron	Arysta, Adama
		Nomu-Protec (Twinned biopesticide)	Metarhizium rileyi	Sylvar
Ornamentals, GH	Mealybug	Altus	flupyradifurone	Bayer
Ornamentals, GH [raised from B+]	Thrips	Proud 3	thyme oil	HumaGro
Ornamentals, outdoor	Broad mites	Magister	fenazaquin	Gowan
		BB-Protec (Twinned biopesticide)	Beauvaria bassiana strain R444	Sylvar
<b>PLANT PATHOLOGY PROJECTS</b>				
Radish	Downy mildew	Zampro	ametoctradin + dimethomorph	BASF
Rutabaga [raised from B+]	Downy mildew	Zampro	ametoctradin + dimethomorph	BASF
Ginseng	Alternaria	Tilt	Bumper	Adama
Onion, dry	Downy mildew	Picarbutrazox	picarbutrazox	Nisso
Spinach [raised from B+]	White mold	Intuity	mandestrobin	Valent
Cucumber, GH	Downy mildew	Picarbutrazox	picarbutrazox	Nisso
		Stargus (Twinned biopesticide)	Bacillus amyloliquefaciens	Marrone
Strawberry, field [raised from B+]	Anthrachnose	Dart	caprylic acid	Westbridge
Strawberry, GH	Botrytis	Luna Privilege GH	fluopyram	Bayer
Basil, field [raised from B+]	Leaf blights	Miravis Prime	pydiflumetofen + fludioxonil	Syngenta
Hops	Downy mildew	Picarbutrazox	picarbutrazox	Nisso
		Phostrol (Twinned biopesticide)	k salts of phosphorous acid	Belchim
Ornamentals, GH	Powdery mildew	Gatten flutianil	OAT	Agrio
Quinoa	Phoma stalk rot	Dyax	fluxapyroxad + pyraclostrobin	BASF
<b>REGIONAL UPGRADE PROJECTS</b>				
Strawberries (MARITIMES)	Botrytis	Serifel	Bacillus amyloliquefaciens	BASF
Asparagus (QC)	Purple spot	Fontelis	penthiopyrad	Corteva
Plums (ON)	Weeds	Chikara	flazasulfuron	ISK
Quinoa (PRAIRIES)	Downy mildew	Orondis Ultra	oxathiapiprolin + mandipropamid	Syngenta
Hazelnuts (BC)	Canker	Switch	cyprodinil + fludioxonil	Syngenta
<b>ORGANIC PRIORITIES</b>				
Apples	Plum curculio	Bio-ceres	Beauvaria bassiana	Anatis
Hops	Powdery mildew	Serifel	Bacillus amyloliquefaciens	BASF



## CROP PROTECTION

## Dry traps proving more effective than liquid insect traps

ERICA PATE AND  
HANNAH FRASER

New monitoring tools will be evaluated for spotted wing drosophila (SWD) in 2019. Since we began monitoring for SWD in Ontario we have been using liquid bait traps. These traps are effective tools, but they are also time-consuming and labour-intensive to process, and impractical for on-farm use. Recently, solid matrix baits have become available on the market. With these baits comes the potential to pair them with dry, solid traps, such as a sticky card or sticky sphere. These dry traps are easier to use and require less maintenance than the liquid traps we have been using.

The 2018 project compared yellow sticky traps, red sticky

traps, and liquid bait traps. We also used different lures in combination with these traps, using Scentry lures and Trécé lures.

We set these traps up at a blueberry farm and a raspberry farm and collected the traps weekly to identify and count SWD. With the sticky card traps only the adult males are easily identifiable by the spots on their wings.

From our monitoring it appears that the Scentry lure paired with the yellow sticky card is a good choice for a monitoring tool. We had more success with the Scentry lures than the Trécé lures, and the yellow sticky traps appear to have better results than the red traps. We also found these sticky cards much faster to use. SWD can be identified in the field, and the traps did not

require the same amount of labour and maintenance as the liquid traps. We are continuing our project in 2019 to further evaluate these different trap-lure combinations and gain experience with using different lures.

### 2019 grower participatory survey

Monitoring is important for growers to do on their own farm. Every year SWD emerges at a different time and emergence is very challenging to predict. By monitoring on their own farm, growers can identify SWD and begin a spray program before the population rises, or growers can hold off on spraying for one to two weeks and save these limited sprays for the end of the season.

This season we are hoping to

conduct a grower participatory SWD survey with growers across the province, using this lure + sticky card trapping system for early detection on their own farm.

We will work with growers to set up and manage traps. Hannah Fraser and I (Erica Pate) will be able to help confirm identification of SWD on the cards. If growers have a smartphone, they will be able to send pictures to help with identification in real time.

If you are interested in participating please contact me at Erica.pate@ontario.ca or Hannah Fraser at Hannah.fraser@ontario.ca. We don't yet know how many growers will be able to be a part of this project, but we will support other growers who are interested through confirmation of SWD identification.



Yellow sticky card after one week in a blueberry field.

Erica Pate is OMAFRA fruit specialist. Hannah Fraser is OMAFRA entomology program lead for horticulture.

## 68TH ANNUAL MUCK CONFERENCE

## Could biostimulants offer positive effects when combined with fungicides?

KAREN DAVIDSON

The concept of combining a biostimulant with a fungicide may seem counter-intuitive. But in a new era of fewer crop protection products, the practice may have merit.

That appeared to be the case when Dr. Mary Ruth McDonald presented research that evaluated products for control of leaf blight of carrots at the recent 68th Annual Conference of Muck Vegetable Growers. She is a professor in the University of Guelph's Department of Plant Agriculture and conducts research trials at the Muck Crops Research Station near Bradford, Ontario.

Muck vegetable research may not be a compelling story for those outside Ontario's Holland Marsh, but there are nuggets in her research which hold lessons for many horticultural growers. What her research team has demonstrated is that a biostimulant – used to promote plant health – has been teamed with a fungicide for less cost, equal efficacy and less pesticide load in the environment.

"I would caution that this is one year's research," said McDonald. "We will be repeating the trial in 2019."

The 2018 trial evaluated Stella Maris, an aquatic plant extract, for leaf blight control in carrots. Funding was provided by Acadian Seaplants Limited,

Dartmouth, Nova Scotia and the Plant Production Systems of the Ontario Agri-Food Innovation Alliance.

Treatments consisted of drench applications of Stella Maris followed by foliar applications of Stella Maris combined with low or high rates of Quadris Top or Fontelis applied at standard or extended interval timings. An untreated check was also included.

On October 17, 2018, carrots were pulled, topped and placed in cold storage for a yield sample. On January 17, 2019, yield samples were graded by quality and size into three categories: greater than 4.4 cm (Jumbo), 1.9 – 4.4 cm (packers) and culls (less than 1.9 cm including forked and split carrots).

Significant differences in leaf blight incidence, severity and percentage of dead leaves were found among the treatments. Carrots treated with Quadris Top alternated with Fontelis at the standard or reduced rate, on either a seven or 14-day interval, had less leaf blight, lower leaf blight severity and fewer dead leaves than carrots treated with Stella Maris every seven days or untreated carrots. Carrots treated with fungicides plus Stella Maris every 14 days (extended interval) had significantly fewer dead leaves than carrots treated with fungicides at the extended interval without Stella Maris.

In addition, McDonald noted

Table 1. Yield and size distribution of carrots, cv. Belgrado, treated with Stella Maris and grown near the Muck Crops Research Station, Holland Marsh, Ontario, 2018.

#	Treatment	Yield (t/ha)	% Jumbo (> 4.4 cm)	% Medium (2.0-4.4 cm)	% Cull <sup>1</sup>	Carrots/m <sup>2</sup>
1	Standard Fungicide	47.2 ns <sup>3</sup>	59.8 ab <sup>4</sup>	26.1 c	14.0 ns	28.4 ns
6	Extended Interval + STELLA MARIS	47.9	62.6 ab	24.8 c	12.6	28.0
5	Reduced Rate + STELLA MARIS	45.5	66.7 a	16.4 c	16.9	23.9
2	Reduced Rate Fungicide	49.2	68.6 a	19.3 c	12.1	26.8
4	Standard + STELLA MARIS	48.8	55.5 ab	32.5 bc	11.9	32.7
3	Extended Interval Fungicide	43.8	58.2 ab	29.1 bc	12.7	26.8
7	STELLA MARIS	37.0	49.8 bc	44.0 ab	6.3	27.5
8	check	40.5	35.6 c	55.6 a	8.8	33.4

<sup>1</sup> cull carrots include <2.0 cm, forked & split

<sup>2</sup> Includes marketable and cull carrots

<sup>3</sup> ns= no significant differences were found among the treatments

<sup>4</sup> Numbers in a column followed by the same letter are not significantly different at P = 0.05 Fisher's Protected LSD test.

that significant differences in the percentage of jumbo carrots were found among the treatments. See Table 1. Carrots treated with fungicides at both the standard or reduced rate on an extended interval timing had significantly more jumbo carrots than untreated carrots. However, the addition of Stella Maris to the standard or reduced rate fungicide treatments, or to fungicides applied at an extended interval timing, did not increase the percentage of jumbo carrots.

In 2018, Stella Maris used alone did not reduce leaf blight incidence or improve yield compared to the check. The addition of Stella Maris to Quadris or Fontelis applied at every 14 days reduced the number of dead leaves similar to standard fungicides applied every seven days.

The addition of Stella Maris

could reduce the use of fungicides to reduce leaf blight.

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CANADIAN PRODUCE MARKETING ASSOCIATION

# Nextgen leaders outline strategies to meet technological disruption

KAREN DAVIDSON

Say no to the status quo. That's the motto of Rebekka Bond, the opening speaker of the "Taste of Disruption" session at the Canadian Produce Marketing Association (CPMA) conference, April 2-4 in Montreal. She was part of a team of Deloitte nextgen leaders.

The innovation and change consultant for Deloitte Greenhouse says, "Our purpose is to see differently, think differently, do differently."

She suggests that business operators move from identifying operational goals and creating concepts to a different thinking process: understand clients, create concepts, build operational systems.

Here's a case study of how the Deloitte Greenhouse team changed behaviour at Carleton University's cafeteria. A food

waste diversion project was not tallying positive results with only 19 per cent waste diversion. Signage was not clear. The waste disposal holes were too small. Results were not posted. After reconfiguring the process, the new system earned a 95 per cent diversion rate.

### Doing digital

Jordan Murray, a consultant with Deloitte's Digital Practice, asked probing questions about what digital means in today's world.

"Digital transformation is more than just tech," she said. "It's a mobile workforce, phasing out legacy systems, flattening hierarchy. It's real time and on demand with geographically distributed teams."

What digital is not? It's not your mobile; it's not your website.

"Don't focus only on digital



The highly coveted Best Island Booth Award went to EarthFresh Foods, Burlington, Ontario for its airstream food truck selling Fresh Cut Fries. Best Inline Booth Award was won by Fresherized Foods (Wholly Guacamole) and Best First-Time Exhibitor was Greenhouse for its organic plant-based beverages. Photo courtesy Carlie Melara.

technologies -- trying to 'org design' your way to digital, and

hoping that mobile strategies will be all you need. You can't just tell people to be more agile and innovative. Isolated victory or bursts of activity aren't enough to declare digital success."

How digital are you today? How digital do you need to become? How do you get there? One trait of being in a digital workplace is democratizing information, making it accessible to all.

### Doing analytics

"With analytics, you can stay on top of trends in real time," says Morgan Nordstrom, a consultant in the Deloitte Technology Practice. "It's not enough to have the data – you need to glean insights from the data and discern meaningful patterns in data."

Artificial intelligence (AI) is helping with data. It's the theory and development of computer systems able to perform tasks that traditionally require human intelligence. AI will become very important in food safety in terms of following what consumers are purchasing. In the future, companies should be able to turn data into new revenue streams.

### The future in produce

The session at the 2019 conference coincides with CPMA launching a new innovation hub. Here's the backstory. CPMA commissioned Deloitte to do an environmental scan of the Canadian innovation landscape and ecosystem as it relates to the produce and supply chain. Their experts

analyzed social innovation in Canada, the Canadian AI ecosystem, innovation hubs relating to produce and engagement structures within the innovation ecosystem.

Deloitte's findings indicated disconnected silos of innovation doing work applicable to the produce industry across Canada.

"This confirmed our initial interpretation of the innovation landscape in Canada and validated the work we had been planning to undertake to create the virtual produce innovation hub," says Ron Lemaire, president, CPMA. "The hub was developed to bridge the gap between the innovators and the companies operating within our industry, to foster a collaborative setting which supports innovation and disruptive technologies for the long term viability of the sector."

This strategy for the produce industry works to connect new and emerging innovations to enable sector growth and new business opportunities. The hub was launched officially at the 2019 CPMA Convention and Trade Show and was featured at the CPMA booth.

"As we move forward, we will continue outreach to grow the content on the database, while promoting its value to our members and the global produce community," says Lemaire.

Go to: <https://produceinnovationhub.com/>

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## OFVGA ISSUES AND ACTIVITIES

## Provincial budget released



**GORDON STOCK**  
SENIOR POLICY ADVISOR &  
GOVERNMENT RELATIONS,  
OFVGA

This column is to keep you informed about the key issues that OFVGA is tackling on behalf of Ontario's fruit and vegetable farmers.

## Provincial budget

On April 11 the Progressive Conservative Ontario government released its first budget: "Protecting What Matters Most." I had the opportunity to attend budget lock-up to get a first-hand look at the budget before it was officially tabled in the Legislature - a unique experience reminiscent of university exams. The following is a brief summary of items in the budget that may affect the sector.

The Ontario Ministry of Agriculture, Food and Rural Affairs' budget has been cut substantially over its previous year's budget, although less substantial if the previous two years are used as comparators. Regardless, a lower budget is concerning.

The government as a whole has a goal of reducing red tape by 25 per cent, with a targeted savings of more than \$400 million. Effective January 1, 2019, employers will save on Workplace Safety and Insurance Board premium rates as the average is dropping from \$2.35 to \$1.65 on every \$100 of insurable payroll. The provincial government is also mirroring the federal government's changes to speed up capital depreciation allowances.

Along with increasing flexibility to the rules for alcohol consumption, including tailgate parties, the government has committed to giving wineries, cideries, breweries and distilleries greater flexibility to promote their products by removing the required serving sizes offered at manufacturing sites.

As previously known, the government is exploring options to enhance the Risk Management Program (RMP) (including the Self-Directed

Risk Management Program) in the future to better support farmers and producers in managing risks that are beyond their control, such as increasing costs and market prices. The budget made no mention of the government's previous commitment to increase RMP by \$50 million.

On the environment front, the budget references numerous intentions, including launching Ontario's first-ever climate change impact assessment, reducing waste, increasing conservation, and protecting the Great Lakes and species at risk.

Finally, the budget made reference to modernizing the Ontario Food Terminal, with a vision of ensuring it meets the industry's needs for the next half-century. The budget states that the Minister's advisory group, in conjunction with an independent third-party report, will provide further insights and recommendations.

## OFVGA Lobby Day

The provincial budget was hot on the heels of OFVGA's lobby day at Queen's Park on April 10. The day was filled with meetings with ministers, Members of Provincial Parliament, and political staff.

The day ended with a reception featuring brief remarks from the OFVGA chair Bill George, Minister Hardeman, and agriculture critic John Vanthof. Nearly 100 government representatives from all political stripes attended and had the chance to speak with OFVGA board and staff.

Although OFVGA took the opportunity to raise some specific policy issues, red tape ideas and to extend appreciation for some of the successes of the new government, such as pausing minimum wage, the main thrust of the event was to reinforce that the OFVGA is a trusted partner that can bring forward a grassroots perspective during policy development.

OFVGA believes the event was successful in raising awareness of the sector, the association, and strengthened our position with government representatives.

## Focus on red tape

Consistent with the messaging from the Ontario government since last June, nearly every meeting and discussion held with government during lobby day reinforced their vision of red tape reduction. This is also apparent in the budget released. Big or small, please keep

conveying your specific red tape ideas and the OFVGA will work towards having these issues addressed.

## Federal budget

The federal budget was released in March 2019 and included several positive announcements for horticulture, such as development of a National Food Policy. As well, agriculture and fisheries with sales to affiliated corporations will be able to regain access to the small business tax deduction. Regulatory modernization is also a theme within the federal budget.

OFVGA will be closely following the National Food Policy to see how the organization can contribute to and support its development. Opportunities to leverage regulatory modernization on key issues such as crop protection registrations will also be investigated.

For more information on any industry issues, please contact Gordon Stock, senior policy and government relations advisor, at




Bill George, (L), chair, OFVGA, listens to address by Hon. Ernie Hardeman, Ontario agriculture, food and rural affairs minister.




L-R: Alison Robertson, executive director, OFVGA; Mike Chromczak, OFVGA director; John Vanthoff, deputy leader, NDP Official Opposition; Bill George, chair, OFVGA; Gordon Stock, senior policy advisor, OFVGA.

gstock@ofvga.org or 519-763-6160, ext. 125. More detailed updates can also be found at

[www.ofvga.org/news](http://www.ofvga.org/news)



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## CHAIR'S PERSPECTIVE

## A day at Queen's Park



**BILL GEORGE JR.**  
CHAIR, OFVGA

Day? It's perhaps better described by calling it government relations day as that's what we were there to do – build relationships with Queen's Park politicians and their staff teams.

We regularly meet with ministers and government staff, but usually it is about a specific issue of concern to our sector that we would like them to help address in some way.

This time, it was different. We didn't go there with a specific ask; rather, our mission was to introduce the OFVGA and give them a flavour of the size and scope of our sector and our contribution to the provincial economy.

As fruit and vegetable farmers, we grow more than 125 different crops in our fields, orchards and greenhouses and generate more than \$4.2 billion in economic activity every year. Those are significant statistics, and we quickly learned that most of the representatives we met with had little or no idea of the size of our industry.

Needless to say, we were able to open some eyes and discussions flowed easily throughout the day.

We were fortunate to meet with three cabinet ministers: Todd Smith of Economic Development, Job Creation and Trade; Laurie Scott of Labour; and Ernie Hardman of Agriculture, Food and Rural Affairs. All ministers were very engaged and we had good discussions about edible horticulture and the nature of our industry.

It's also important to reach out to the staff that supports the ministers. They deal with many different files, making it hard to have a strong background in all the sectors and industries that touch their ministries. And yet they play a key role in advising ministers and supporting policy development, so engaging staff at all levels can also make a difference.

During our day at Queen's Park, we also had meetings with staff from the Ministry of Finance, Ministry of Northern

Development, Mines and Energy, and Ministry of Environment, Conservation and Parks. As well, we met with John Vanthof, Deputy Leader of the Official Opposition and Critic for Agriculture, Food and Rural Development, and with Michael Schreiner of the Green Party, the MPP for Guelph.

Our day ended with a reception at Queen's Park that attracted a large crowd including many MPPs – and our fruit and vegetable giveaways were popular with attendees.

A lot of work went into planning and executing this day, and in my opinion, it is effort well spent. There is incredible value in face-to-face meetings and in being able to spend some time with political representatives and staff without asking anything of them.

Key to our approach is starting to build some of those relationships with ministries that we don't normally have a lot of contact with. We value our ongoing collaboration with OMAFRA and with Minister

Hardeman, but there are many other ministries whose policies have direct impacts on what all of us do every day on our farms, from labour and finance to environment and economic development and more.

Our board is made up of growers who've been elected by their peers to represent them, giving us grassroots expertise and experience from the farm for policymakers to tap into. This is combined with a knowledgeable and skilled OFVGA staff team – together, we are available to serve as a resource or sounding board to government so that Ontario is governed by sound policy that both keeps our sector competitive and our province open for business.

As an organization, we want politicians and their staff to be familiar with OFVGA and our role as the voice of Ontario's fruit and vegetable growers so they can feel comfortable calling on us when they are considering policy that has impact on edible horticulture.

As the official voice of Ontario's fruit and vegetable growers, the OFVGA uses many different approaches to work with government and bring the concerns and issues of our industry forward to both elected officials and government staff.

And as I write this, we are 24 hours past the first-ever OFVGA lobby day at Queen's Park. It was a long day, but it was time well spent on behalf of our sector.

What exactly is a Lobby

## WEATHER VANE



The miracle of pollination plays out in the apple orchard of David Knight, Colborne, Ontario. Photo by Glenn Lawson.

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THE  
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## URBAN COWBOY

## Will divisive politics drive a stake through agriculture's heart -- again?



**OWEN ROBERTS**  
U OF GUELPH

The Canadian canola crisis with China serves as an important reminder about attitudes towards government involvement in agriculture.

Whatever the sector, in Canada, we look to governments for some level of support in good times – for the likes of market development and research -- and in bad times, to help farmers stay afloat.

In between those two extremes, we count on governments for sound legislation that make food production possible without too much encumbrance.

The agriculture and agri-food sector continually reminds all governments of its value. The sector repeatedly notes how the

value chain contributes \$110 billion towards Canada's gross domestic product every year. And, it adds, it needs a little elbow room -- and maybe a little support now and then -- to stay competitive.

Help is what canola farmers are asking for. At press time, they didn't think they were getting much. I'm sure Ottawa is frustrated with China and its officials' trumped-up, mean-spirited position against Canada.

But Ottawa is nowhere near as frustrated as the prairie farmers who, with planting season looming, see no resolution in sight.

Could there be a more volatile backdrop for a provincial election on the prairies?

The Alberta UCP victory shone more light on western Canada's anger. Of course, it's not just farmers who are fired up, it's the whole province, particularly the oil patch. But there's no question the inability to make progress on the canola crisis further fueled overall discontent and western alienation.

It's bubbling up everywhere. For example, in April, Ottawa announced it was providing \$2.2 million to Quebec maple syrup producers to help expand and

diversify exports, especially in the UK, Germany, Japan and China. That seems reasonable, doesn't it? Maple syrup is one of Canada's most identifiable consumer products abroad. And Quebec accounts for 90 per cent of Canada's maple syrup production.

When the feds made the funding announcement, I wrote a post pointing to the support, and published it through my twitter account, @TheUrbanCowboy.

And it wasn't long before a Saskatchewan farmer who follows me responded with the cringing emoji. "I wish canola was grown in Quebec," he wrote. The implication was obvious -- if the canola crisis was in eastern Canada, Ottawa would have already come to its rescue.

I hope we're not about to relive the 1980s' nasty agricultural trade wars between western and eastern Canada. I hoped those days were behind us, but it looks like whatever embers of dissension still exist are getting fanned by the canola crunch.

It's time to act fast before this



Photo by Glenn Lawson

situation turns into a full-fledged east vs. west fire. On social media, discussion has been raised recently about the need for an agricultural "manifesto," around which the entire ag sector can rally. Indeed, for years, ag leaders have advocated for a common voice for agriculture, one that is nationwide and leaves no doubt with governments and consumers that our country's ag sector speaks as one.

From an external perspective, all sectors -- fruit and vegetables included -- have much in common. When consumers say the rising cost of food is their biggest concern, they're not

singling out any particular commodity. They could gain from knowing how producers in all sectors work hard to bring the safest and most economically priced food to the marketplace.

Ottawa needs to get together with the canola industry to solve the current China situation. There's no question about that. But meanwhile, federal support for other sectors should not be held up as us versus them.

In the tumultuous times that lie ahead, agriculture may once again be the strongest pillar uniting our country. But that won't happen if farmers can't get along.

## LETTER TO THE EDITOR

## National local food day celebrates the harvest and so much more!

I wish to respond to an article published in the April issue of **The Grower** (Celebrate local food day in season, says founder) which suggests the date proposed by my Private Member's Bill C-281 for National Local Food Day is misguided.

Prior to selecting the date, efforts were made to look at celebrations across the country, including Food Day Canada. A date was picked that would not compete with other events, maximizes the end of harvest, is in the middle of hunting season and encourages people to celebrate local food on the Friday then eat it on Thanksgiving Sunday. With Bill C-281, I support a broad definition of local food that allows us to celebrate gardeners, farmers, ranchers, brewers, vintners, etc. and respects aboriginal hunting, fishing and gathering.

I appreciate this initiative in early August but view National Local Food Day as quite different. While the origin of Food Day Canada was "The

World's Longest Barbeque," the focus appears to have shifted. Food Day Canada is now trademarked and many of the restaurant partners are high end. We envision communities finding diverse ways to celebrate local food including through family-friendly activities such as farm visits, pumpkin picking, etc. We want the celebration of local food to be accessible for everyone!

We believe that choosing the same date as Food Day Canada would result in confusion and impact the visibility of that event. I'm sure you will agree that there is plenty of room to celebrate the diversity of food that Canada has to offer – and that more opportunities to recognize the hard work of producers and harvesters, food manufacturers, restaurateurs and others from coast to coast to coast can only be a good thing.

**Wayne Stetski**  
Member of Parliament Kootenay – Columbia

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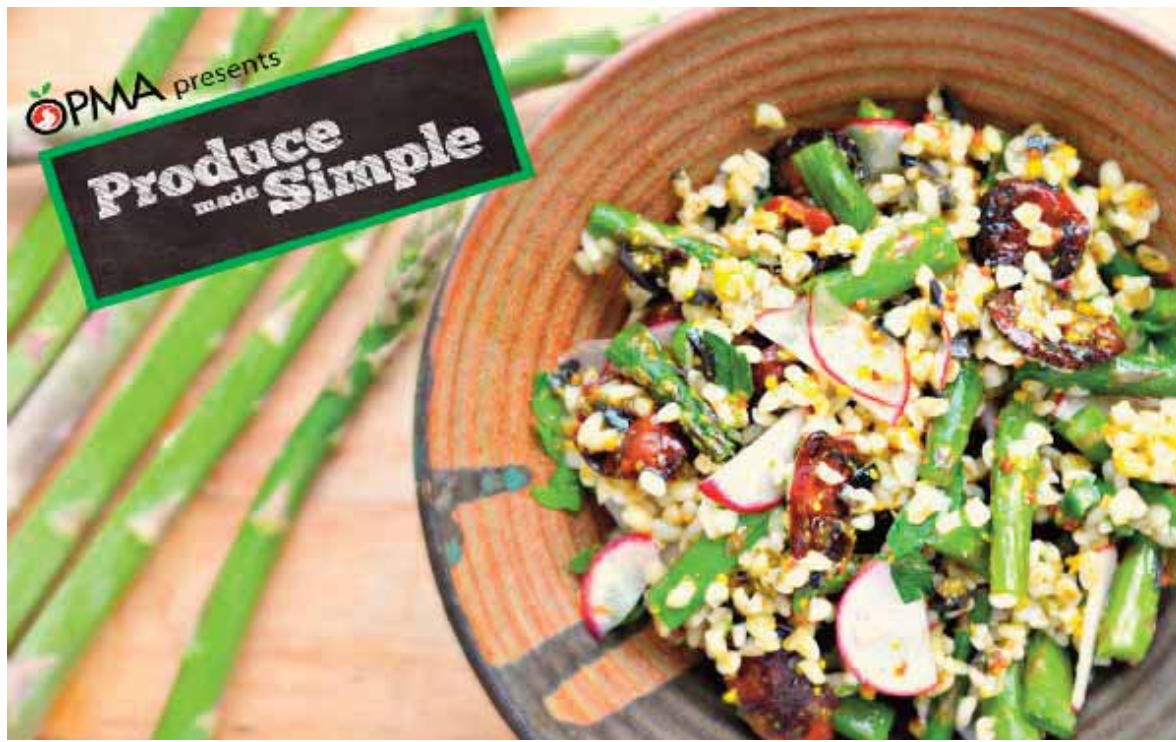
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## BITS AND BITES

## The Ontario Produce Marketing Association promotes local produce



Looking for someone to market your fresh produce? Odds are that if you are an Ontario grower, selling locally grown produce, the Ontario Produce Marketing Association (OPMA) is already doing it for you! Beginning in the early 1990s, the OPMA saw a gap in the marketing needs of smaller growers. From this need evolved the grower retailer program, designed by growers for growers as an outlet to market their locally grown produce. The program started off small and has since grown into a robust digital marketing platform called, “Produce Made Simple,” fondly known as “an encyclopedia of everything fruit and veg.”

Produce Made Simple’s website and its accompanying social media platforms feature recipes, videos and a selection of tips on how to select, store, prepare and get the most out of local Ontario produce. Highlighted from April to December, are the grower retailer commodities, beginning with apples and greenhouse vegetables, followed by asparagus, tender fruit, carrots, onions and mushrooms. Last year, the program saw tremendous growth with more than 2.8 million impressions and 14 unique collaborations with Canadian bloggers, chefs, dietitians and authors. Newsletter subscriptions featuring produce dense dishes were also up by 40 per cent, demonstrating that with the right inspiration and motivation, Ontario consumers are eager to make the most of their large selection of fresh fruits and vegetables.

Over the last several years, the OPMA has worked to strengthen its relationship with

growers and retailers to expand the program, reach more consumers and create the most value for both groups. Kelly Ciceran from Ontario Apple Growers expresses the value the campaign brings to her organization, “At Ontario Apple Growers, we love OPMA’s Produce Made Simple initiative! The partnership is beneficial because it helps people understand and know more about Ontario Grown Apples.”

The OPMA continues to meet with growers and retailers to understand their needs and collaborate with them by exchanging content, syncing current and future initiatives and brainstorming on new and exciting ideas.

In addition to making consumers mindful of the bountiful harvest available to them from April to December and the various ways to implement local foods into their every day menus, the OPMA wants to draw attention to the grower’s story. The rich and diverse growing areas in Ontario harbour generations of history and are home to people who love what they do and pour their lives into delivering high quality product to Ontarians. This is a story that needs to be told. The OPMA welcomes the opportunity to meet with growers and discuss what they want to see moving forward. They are determined to deliver on the original mandate to support a program designed by growers for growers.

If you would like more information on Produce Made Simple, please contact, Emilia De Sousa and for more information about the Grower Retailer Program please contact, Michelle Broom.

## Vineland’s first spin-off company specializes in genomics services

Vineland Research and Innovation Centre is spinning off its first company. Platform Genetics Inc., a trait development and genomics service company, addresses the needs of seed companies and public-sector plant breeding programs.

The company’s core service, Deep Variant Scanning (DVS), enables clients to harness the power of reverse genetics for trait development and crop improvement. The patent-protected technology is rapid, cost-effective, suited to any

crops and has no usability barriers. DVS is globally-recognized with minimal regulatory framework.

Platform Genetics can help design, build and characterize genetic variant populations in a broad set of crops including vegetables, ornamentals, protein, fibre and oilseeds. Population development services include:

- Variance dose optimization
- Seed multiplication
- Population creation
- Variation density estimation by DVS

For more information, contact: Michael Pautler, PhD, Head of Genomics Services  
905-562-0320 x670  
michael.pautler@platformgenetics.ca

## COMING EVENTS 2019

- |               |                                                                                                                    |
|---------------|--------------------------------------------------------------------------------------------------------------------|
| May 1         | Ontario Craft Wineries Conference & Trade Show, Beanfield Centre, Toronto, ON                                      |
| May 2         | AgScape Annual General Meeting, The Arboretum, University of Guelph, ON 9 am – 2 pm                                |
| May 7         | CHC/CPMA Farm to Plate Produce and Politics Spring Event, Ottawa, ON                                               |
| May 8         | Hazelnut Integrated Pest Management Training Workshop, OMAFRA Simcoe-Resource Center Auditorium, Simcoe, ON        |
| May 22        | Garlic and Vegetable IPM Workshop, Grenville Mutual Community Room, Kemptville, ON Pre-registration required.      |
| May 28        | Food and Beverage Ontario Annual Conference, Steam Whistle Brewery, Toronto, ON                                    |
| May 28        | Hazelnut Sprayer Optimization Workshop, OMAFRA Simcoe-Resource Center Auditorium, Simcoe, ON                       |
| June 3-7      | Ontario’s Local Food Week                                                                                          |
| June 8        | Garlic Growers of Ontario Field Day, Wroxeter, ON                                                                  |
| June 9        | Ontario Agricultural Hall of Fame Induction Event, Country Heritage Park, Milton, ON                               |
| June 10-12    | United Fresh Expo, McCormick Place Convention Center, Chicago, IL                                                  |
| June 21       | Ontario Produce Marketing Association Taste of Summer Event, Megalomaniac Winery, Lincoln, ON                      |
| June 22       | Farm & Food Care Ontario Breakfast on the Farm, Jobin Farm, Tecumseh, ON                                           |
| June 24-26    | International Blueberry Organization Summit 2019, Sheraton Vancouver Airport Hotel, Richmond, BC                   |
| July 18-19    | Annual Conference of Federal-Provincial-Territorial Ministers and Deputy Ministers of Agriculture, Quebec City, QC |
| July 21-24    | International Fruit Tree Association Summer Study Tour, Norfolk and Georgian Bay areas, ON                         |
| July 25       | Canadian Horticultural Council Apple Working Group, Sheraton Hotel, Hamilton, ON                                   |
| July 28-Aug 1 | 103rd Potato Association of America Annual General Meeting, Delta Winnipeg, Winnipeg, MB                           |
| August 1      | Nova Scotia Fruit Growers’ Association Summer Tour                                                                 |
| August 3      | Food Day Canada                                                                                                    |
| August 14     | Peak of the Market Annual Family Fun Day, Winnipeg, MB                                                             |
| Aug 14-15     | North American Strawberry Growers’ Association Summer Tour, Northern California                                    |
| Aug 16-17     | Carrotfest, Downtown Bradford, ON                                                                                  |
| August 21     | Ontario Potato Research Field Day, Elora Research Station, Elora, ON                                               |
| August 22     | U.S. Apple Association Crop Outlook and Marketing Conference, Chicago, IL                                          |
| Sept 14       | Farm & Food Care Ontario Breakfast on the Farm, Barrie, ON                                                         |



RETAIL NAVIGATOR

# Servicing northern communities with fresh produce



PETER CHAPMAN

For the past 10 months we have explored the different markets across Canada. We will finish our journey in the north – the most challenging market to service and supply for a number of reasons. Small populations spread across vast geography, with very complicated supply chain networks far from the product source and very little local supply make Canada’s northern territories a very challenging market to supply with fresh produce. These are difficult and expensive markets to maintain a consistent offering in different categories.

**It has to start with the consumer**

Consumers in Canada’s three northern territories are spread across an area equal to 40 per cent of the country’s total land-mass and less than .5 per cent of the total population. The following table illustrates the breakdown of population in the three territories (see chart 1).

Similar to other markets in Canada the urban centers are home to most of the people. The three largest cities make up more than 40 per cent of the population. Whitehorse is the largest city in the north, home to more than half of the residents of the Yukon Territory (see chart 2).

The challenges of servicing this market outlined earlier make it the most expensive market for food in Canada. As you can see from the following table, expenditures per household in the territories are very high relative to the rest of the country. The Nunavut government conducts a comparison of process across the territory compared to the rest of Canada (see chart 3).

In select markets, prices are subsidized to make the cost of living more affordable. Retailers and food service establishments apply for the subsidies and they must show details of the price reduction on the consumer’s receipt.

**Customers influence the buying decision**

Many of Canada’s major retailers operate in the northern territories.

Save On have expanded to open a store in Whitehorse. Save On stores offer a traditional supermarket format with more emphasis on local. On line shopping is available in this store, which is relatively new.

Arctic Cooperative operates 32 stores in the northern territories. These stores are spread across the region and they are locally owned and operated. The majority of the stores are in Nunavut with half of the stores in remote communities north of the Arctic Circle.

Loblaw operates one Real Canadian Superstore in Whitehorse and independent stores in Whitehorse and Yellowknife. The Yukon stores are serviced from Edmonton, as is the Yellowknife store.

Walmart has expanded into the Yukon and Northwest Territories with stores in the largest markets. These are not SuperCentres so they do not offer perishables and assortment of food is limited.

The Northwest Company services 18 communities in the Northwest Territories and 21 communities in Nunavut with their Northern Stores. They offer a full service grocery and fresh assortment with some prepared foods as well.

Sobeys, Metro and Costco do not operate stores in the northern territories.

As online shopping grows in Canada, this trend will have an impact on residents in the northern territories. We see the impact of Amazon Prime now where shipping costs are identical across the country for grocery products and other consumer goods. As the availability of fresh foods expands in the online offerings it could be very positive for residents in this market.

**Your competition**

The climate obviously makes production challenging for fresh produce. That being said there are some people growing horticulture crops in the Yukon and there is also a Yukon Gardens, greenhouse operation in Whitehorse. With more focus on controlled atmosphere agriculture in southern growing regions we could see more production to service the needs of the north with more fresh fruits and vegetables.

If you have any questions about selling your products or developing strategies for specific customers please give me a call at (902) 489-2900 or send me an email at peter@skufood.com.

**WHAT’S IN STORE?**

**Controlled atmosphere coming soon**

At the Canadian Produce Marketing Association annual convention in Montreal, Del Fresco showcased their new Living Cube. This is a great example of innovation being employed to produce fresh produce anywhere. They will be launching products soon in grocery stores. They are currently producing different lettuce products with plans to expand.

*Peter Chapman is a retail consultant, professional speaker and the author of A la Cart-A suppliers’ guide to retailer’s priorities. Peter is based in Halifax N.S. where he is the principal at GPS Business Solutions and a partner in SKUfood.com, an on line resource for food producers. Peter works with producers and processors to help them navigate through the retail environment with the ultimate goal to get more of their items in the shopping cart.*

Chart 1

	Q1 2019 Population	Land mass Km2
Nunavut	38,787	2,093,190
Northwest Territories	40,369	482,443
Yukon	44,598	1,246,106
Total	123,754	3,821,739

Chart 2

	2016 Population
Iqaluit	7,740
Yellowknife	19,569
Whitehorse	25,085
Total	52,394

Chart 3 - Nunavut Food Survey

	Size	Average for Nunavut	Average for rest of Canada	Multiple
Apples	Per kg	7.26	4.53	1.60
Bananas	Per kg	5.15	1.71	3.01
Oranges	Per kg	7.10	3.47	2.05
Carrots	Per kg	6.90	2.25	3.07
Celery	Per kg	12.44	3.38	3.68
Onions	Per kg	5.24	2.27	2.31
Potatoes	4.54kg	12.86	5.84	2.20

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## MAKING MOVES

## Electronic logging device update



JENNIFER MORRIS

address some potential challenges that have come to light since the implementation of the U.S. mandate in December 2017.

The biggest difference will be a requirement for the devices to go through a third-party certification process. This was a key point that was sought by industry groups due to the emergence of ELD cheat devices in the self-certification system of the U.S. The Canadian Trucking Alliance strongly supports third-party certified ELDs and removing the grandfathered device provisions.

The U.S. moved much quicker on implementing an ELD mandate but now this flaw in the system could cause the mandate to be much less effective than it was intended to be. In the U.S., the ELD manufacturers certify their own devices and as a result the market has seen devices that could possibly be tampered with or make the hours of



service editable. Insurance companies also voiced their concerns over scenarios where ELD devices could have hours of service information that could be manipulated. This issue is particularly sensitive in Canada since the tragic crash in Humboldt, Saskatchewan where the driver had multiple violations the day of the accident.

The Canadian Trucking Alliance believes that having a higher standard for the ELDs will benefit drivers and carrier fleets. However, depending on fleet sizes, transitioning to ELDs could take weeks or even

months, it is important that companies work ahead and have an implementation plan.

Luckily the implementation of the ELD mandate will be a bit of an easier transition as many carriers in Canada are required to have ELDs on any truck doing cross-border freight. It is important for shippers and receivers to be aware of the restrictions and how ELDs will make it harder for drivers to be as flexible as before. Wait times will have an even more dramatic effect on the industry. Shippers and receivers need to be working with carriers to ensure that time is communicated and

used sparingly to help the industry run as smoothly as possible.

*Jennifer Morris is president of Two Roads Logistics based in Toronto, Ontario. She is an international shipping and logistics consultant with 15 years of experience in produce transportation. Her passion for helping small and innovative businesses is a welcome addition to the Education Committee of the Canadian Produce Marketing Association. She holds a degree in psychology from the University of Windsor.*

The Canadian government plans to implement a mandate regarding electronic logging devices (ELDs) similar to the U.S. as soon as 2020 as final regulations are set to be released in June 2019.

Even though the mandate has been taking cues from the American version, the Canadian government is not looking to duplicate it. While working to make the two mandates work together, Canada is looking to

## OPINION EDITORIAL

## Ernie Hardeman: "It's important that we plan strategically now for the future of the Food Terminal"

The Ontario Food Terminal is one of the top wholesale produce markets in North America. Its success is a credit to the people who work there

and do a great job, often with limited resources.

The Food Terminal is a key part of our agri-food sector, which is an economic driver for

the province. Our recent provincial budget clarified the importance of the Food Terminal's success going forward - not just next year, but

for the next 50 years. I want the terminal to be not just the best in the country, but the best in the world.

A lot has changed since the Food Terminal was built in 1954. Think of how much technology alone has evolved over that time. We need to look at opportunities to modernize the systems to ensure future success.

As laid out in the budget, our government is working to ensure Ontario is 'Open for Business' by taking action to make Ontario a leading destination for investment and job creation.

As we work to grow our agriculture sector, we need to create more opportunities at the Food Terminal. Today, only 21 wholesalers are located inside the terminal. The Ontario Food Terminal Board notes that a number of these tenants have outgrown their operation and are renting space off-site. We need to look at possibilities for growth and ways to create more opportunities for farmers.

In the 69 years since the Ontario government introduced legislation to create the Ontario Food Terminal, the agriculture and retail sectors have evolved. We need to ensure the Food Terminal also continues to evolve to stay successful. The surrounding urban population has grown six-fold since then as

Toronto has developed and grown, making expansion a challenge. Over time, this challenge will become even greater - making it extremely important that we plan strategically now for the future of the Food Terminal.

That is why I've established an advisory group, made up of industry leaders, who will look at possibilities for the Food Terminal as well as ways to reduce red tape, encourage more youth to consider careers in our sector, and support more agriculture in northern Ontario. As well, I am commissioning an independent third-party report on both the challenges and opportunities for the Food Terminal. I will also be reaching out to the Ontario Food Terminal board, terminal management, farmers, wholesalers, as well as restaurants and stores to hear their thoughts on what works well and where there may be opportunities to improve.

The Ontario Food Terminal plays a key role in Ontario agriculture - and under our government it will continue to do so. I hope that everyone will work together to ensure our terminal is strong and successful both today and for decades to come.

- **Ernie Hardeman**, Ontario Minister of Agriculture, Food and Rural Affairs

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**FOCUS: STORAGE, CONTAINERS, & PACKAGING**

# Bins and danglers spur consumer sales of tender fruit

KAREN DAVIDSON

Fresh peaches are eye candy, but the Ontario Tender Fruit Growers (OTFG) aren't taking the consumer's sweet tooth for granted. The 2018 sales season was supported with corrugated bins, bilingual signage in Quebec and store-shelf danglers to encourage consumers to pick up fresh fruit.

"Net returns were up!" said Phil Tregunno, chair, Ontario Tender Fruit Growers, at the March 28, 2019 annual general meeting, pointing to almost \$61 million in farmgate sales last year. "Retail display bins were a core piece of our promotions."

There were 2,348 bilingual display bins at work in the province of Quebec, explained Sarah Marshall, general manager, OTFG. Each of those bins displayed two bilingual pads with tear-away recipes. A QR code directed the consumer to a micro video of a recipe. All collateral materials were printed with logos of social media channels which attracted additional consumer followers for ongoing messages. A follower of peaches in August, for example, could become a follower of pear recipes in September.

Another 4,500 generic bins were on display in conjunction with Foodland

Ontario. The metrics tell the story: peaches were on display in 90 per cent of Ontario retail stores at the season's peak.

The strategy – and execution -- of farm-to-retail store packaging and branding has been critical to boosting retail success. Back-of-house posters provided tips to produce staff on care and handling of tender fruit in storage and on the shelf.

Danglers, affixed to bins, were employed in September so that consumers could differentiate between local pears and imports. One tweet about a pear recipe garnered 4,400 media impressions. Consumer outreach on pears was well timed because pear imports were down in shelf space in 2018.

The packaging and branding campaign included many elements integrating all social media channels. This proved successful in reaching an increasingly fragmented consumer audience which receives messaging in different ways.

"Tender fruit is in stores for a limited time and with this prime shelf space holder these displays ensure local growers are front of mind when consumers enter the store," says Marshall. "And retailers benefit from increased sales!"



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**FOCUS: STORAGE, CONTAINERS, & PACKAGING**

# What does sustainability really mean?

KAREN DAVIDSON

Janis McIntosh is on a mission. A scant month ago, she was promoted to director, marketing innovation and sustainability for Naturipe Farms, one of the most recognizable brands in berries. The partnership consists of several berry entities in the northern and southern hemispheres: Hortifruit S.A. Chile, MBG Marketing (Michigan Blueberry Growers), Naturipe Berry Growers in Salinas, California and Munger Farms, blueberry growers in California's San Joaquin Valley.

I met her at the Canadian Produce Marketing Association trade show in Montreal, QC. And followed up with these questions.

*Q. You have been with Naturipe for about 14 years now. And you've just been promoted to director, marketing innovation and sustainability. What has been your best packaging innovation to date? Why has it worked in the value chain, from grower to retailer?*

**A.** Top Seal packaging that we launched in 2015. Top seal reduces the amount of plastic in the package by about 40 per cent. It also eliminates the paper label and adhesive residue which is problematic to the recycling stream. One of the key benefits of heat seal is the strength and durability of the package which all but eliminates the risk of berries accidentally spilling out onto the warehouse floor or in the store.

*Q. What are the greatest challenges in reducing plastic? Is it cost? Is it lack of "real estate" to communicate branding messages? Any other technological or systems barriers?*

**A.** Besides reducing plastic with our top seal technology, we are focused on making the needed modifications to our labels that will enable our clamshells to easily be recycled back into clamshells. Educating consumers on how to recycle is key to successfully reducing plastic waste.

*Q. You are also involved in nation-wide committees. Can you name the committee, its auspices,*

*and the objectives in moving forward?*

**A.** Consumer Goods Forum (International), PMA Sustainability Committee (Industry), Monterey County Sustainability Working Group (local). All areas of sustainability are being covered by all three organizations.

*Q. How soon do you think these packaging changes can be made?*

**A.** We hope to have some Wash Away labels in the market this year.

*Q. What's your philosophy in sustainability?*

**A.** "Cultivate with Care" is Naturipe's commitment to operating our business in a way that minimizes environmental impact and simultaneously supports our local and global communities. Sustainability is a priority in every aspect of our company and farming operations. Our growing partners and family farmers understand the role that sustainability must play in guiding their actions on important issues



such as environmental protection, resource conservation, ethical business practices, and the health and safety of their employees and community. At Naturipe, sustainability is part of every business activity and decision we make.

*Q. How realistic is plastic-free or should the industry be aiming for less plastic?*

**A.** Packaging reduction is a key part of our Cultivate with Care program. We have begun to use less and less material in our

clamshells. We also now offer compostable packaging for our organic products that can eliminate the plastic up to 80 per cent. But with that said, PET which is the primary plastic we use in our berry packaging, is very sustainable. PET can be recycled over and over again. In fact most of the clamshells you see today on the shelf are made with recycled content. Naturipe Farms is currently testing "Wash Away" labels which will dramatically improve the recyclability of our berry packaging.

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## FOCUS: STORAGE, CONTAINERS, &amp; PACKAGING

## Packaging is in transition

Environmentally-conscious packaging was a major theme at the Canadian Produce Marketing Association conference and trade show held April 2-4, 2019 in Montreal. Fastik, based in Langley, British Columbia, displayed its compostable pint with a lidding film.

The Grower asked two berry growers to see if this would be a solution on their farm.

**Kevin Howe, Howe Family Farms, Alymer, Ontario**

“We looked into a very similar pack prior to switching to the clamshell nearly 10 years ago. This pack required a

tray-sealing machine to affix the top film onto the biodegradable tray. We field pack all of our strawberries and ship the same day of harvest. This second process would be a bottleneck in production and would significantly slow down the time to market, and the capital cost of the tray sealer would be prohibitive for a six-week, June-bearing strawberry crop. I could see a fit for greenhouse-grown strawberries, as they have a longer harvest window, and could possibly spread the capital cost of the machine over other crops such as cherry tomatoes etc.

On hot days this pack would most definitely show staining,

but would not be visible until after purchase and after consumption. The lidding film would answer consumer concerns about food safety, but it wouldn't appeal to consumers who can't see right to the bottom of the container. This film would have more space for branding than our current label.

I believe there are better options to be looked at for field-grown strawberries.”

**Sam Connery-Nichol, board director, Prairie Fruit Growers' Association, Portage la Prairie, Manitoba**

“I believe this compostable pint would fit some niche

markets such as those growers who sell to environmentally-conscious consumers at farmers' markets. Growers could pass along the extra packaging costs because consumers value the benefits of a composting package. The pint would work for haskaps and saskatoons – firmer berries – but not strawberries. It might work for sour cherries.

The lidding film would need to leave as much space as possible for a picture window so that consumers can see the product. This leaves little room for a farm logo which might need to go on the package sides. All of these changes could be cost prohibitive. If it's an extra couple cents per unit,



then the change is doable. But if it's much more, then growers would not consider the option.

One benefit of the lidding film is that the pints become stackable, the same as clamshells.

## Fewer newspapers, but more packaging in Ontario households

JOHN MULLINDER

While the collective weight of Blue Box materials generated by Ontario households has not changed much over the last 15 years, the type of material that ends up there certainly has.

Far fewer newspapers, for starters. Almost 136,000 tonnes fewer, according to a PPEC comparison of Stewardship Ontario generation data between 2003 and 2017.

Magazines and catalogs have also taken a hit (41,000 tonnes less) together with printing and writing paper (down 13,000 tonnes). Telephone directories, not surprisingly, are on the way out. Overall, the generation of printed paper that ends up in Ontario homes has fallen some 35 per cent over the period.

Counterbalancing these losses are big tonnage gains in both plastic and paper packaging: some 99,000 more tonnes of plastic (mostly the grab-bag of

Net Change in Generated Tonnes (Ontario Households 2003 and 2017)				
	2003	2017	Difference in Tonnes	% change
<b>Printed Paper</b>				
Newspapers	401,200	265,599	-135,601	-33.8%
Magazines & Catalogs	95,100	54,392	-40,708	-42.8%
Telephone Books	15,000	2,357	-12,643	-84.3%
Other Printed Paper	127,800	91,851	-35,949	-28.1%
<b>Paper Packaging</b>				
Corrugated Boxes	140,000	183,477	43,477	31.1%
Boxboard Cartons	130,500	171,193	40,693	31.2%
Gable Top Cartons	12,800	14,062	1,262	9.9%
Aseptic Containers	2,800	6,103	3,303	118.0%
Paper Laminants	42,000	42,611	611	1.5%
<b>Plastic Packaging</b>				
PET Bottles	36,200	70,726	34,526	95.4%
HDPE Bottles	23,000	29,525	6,525	28.4%
Plastic Film	53,700	56,471	2,771	5.2%
Plastic Laminants	57,400	43,069	-14,331	-25.0%
Polystyrene	20,400	24,550	4,150	20.3%
Other Plastics	28,300	93,880	65,580	231.7%

“Other Plastics” and PET bottles); and 89,000 more tonnes of paper (mainly corrugated boxes and boxboard cartons). The spread of E-commerce delivery is expected to boost residential corrugated box tonnages even more in future years.

The table shows net changes

in tonnages of some of the materials generated by Ontario households between 2003 and 2017. The losing categories are highlighted in yellow.

*John Mullinder is executive director of the Paper and Paperboard Packaging Environmental Council.*



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FOCUS: STORAGE, CONTAINERS, & PACKAGING

# Development of internal browning in 'Gala' apples

DR. JENNIFER DeELL

Advancements in controlled atmosphere storage technology and the advent of postharvest treatments with 1-methylcyclopropene (1-MCP) have enabled apples to be stored longer than ever before. Unfortunately keeping apples longer has also allowed for certain storage disorders to become more problematic. Internal browning is one such problem for 'Gala.'

Radial flesh browning near the stem-end (shoulder) of the apple is usually the first sign of internal browning (Photo 1). This can progress towards the calyx end of the fruit, becoming the more common internal browning that can be found when cutting the apple horizontally across the equator (Photo 2).

Internal browning increases with longer storage durations, as well as increased time at room temperature following removal from storage. 'Gala' stored in air at 0.5°C had no internal browning after two months, whereas higher incidence was found after six months compared to four months (Table 1).

'Gala' held in standard controlled atmosphere (CA, 2.5% O<sub>2</sub> + 2.0% CO<sub>2</sub>) at ~1°C had little internal browning through five months of storage, but then this disorder increased significantly with storage time there-

after (Table 2). Furthermore, internal browning increased with subsequent holding at room temperature, with 20 days at ~20°C having the highest incidence.

1-MCP does not seem to have consistent effects on internal browning. 'Gala' stored in air had lower incidence with 1-MCP treatment than without in Table 1, but this is not always the case. Significant reduction in internal browning due to 1-MCP was only found in CA-stored 'Gala' after nine months of storage when incidence was extremely high (Table 2). In contrast, other research has shown significant increases in browning when 1-MCP was applied to 'Gala' (DeEll, unpublished data).

An interesting factor is that 'Gala' from the bottom of a notable hill (running throughout one orchard of various blocks) developed consistently more internal browning than similar fruit from the top of the hill (Table 2). Therefore, browning incidence can vary within an orchard or block when tree management and systems are all the same. In this case it may be related to varying orchard temperatures or nutrition due to the rolling hill.

Higher incidence of internal browning is generally found when apples are harvested late at advanced maturity stages. For example, some previous

research showed a main effect of harvest time, with four and 12% incidence in 'Gala' from Harvest 1 and 2, respectively (DeEll, unpublished data). Late harvesting in some seasons can be a very large contributor to high percentages of internal browning. 'Gala' strain further affects browning development, with some newer strains showing less susceptibility.

Previous research also showed that rapid cooling within 24 hours to 3°C resulted in more internal browning in 'Gala' apples, compared to slow cooling during 7 days (DeEll, *The Grower*, May 2017). 'Gala' that were cooled rapidly and stored in CA for eight months at 1°C had 23-32% and 52-59% browning incidence after one and seven days at room temperature, respectively, compared to 0-5% and 6-11% in fruit cooled slowly.

Low oxygen storage of 1-2% or dynamic CA with less than 1% oxygen can reduce the development of internal browning in 'Gala.' Past research found 17 and 6% incidence of stem-end browning in 'Gala' stored in standard CA (2.5% O<sub>2</sub> + 2% CO<sub>2</sub>) and low oxygen (1.5% O<sub>2</sub> + 1.1% CO<sub>2</sub>), respectively, while 'Gala' held in oxygen as low as 0.4% using SafePod technology to monitor fruit respiration (Storage Control Systems Inc., Michigan) had no internal or stem-end browning (DeEll, unpublished data).

Overall, there are many factors that influence the development of internal browning in apples. These can range from the orchard, fruit maturity at harvest, postharvest treatments, to storage conditions and duration.

The author wishes to thank the Ontario Apple Growers, Apple Marketers' Association of Ontario, Les producteurs de pommes du Québec, BC Fruit Growers' Association, AgroFresh Inc., and Storage Control Systems Inc. for their support; as well as Lorie Walker and Geoff Lum for their technical assistance; and Norfolk Fruit Growers' Association and Pommes Philip Cassidy Inc. for their direct collaboration.

This project was funded in part through Growing Forward 2, as part of the Canadian Agri-Science Cluster for Horticulture 2 and the Agri-Innovation in partnership with Agriculture and Agri-Food Canada and the Canadian Horticultural Council.

*Dr. Jennifer DeEll is fresh market quality specialist for horticultural crops, OMAFRA, Simcoe, ON*

Photo 1: Internal stem-end (shoulder) browning in 'Gala' apple.

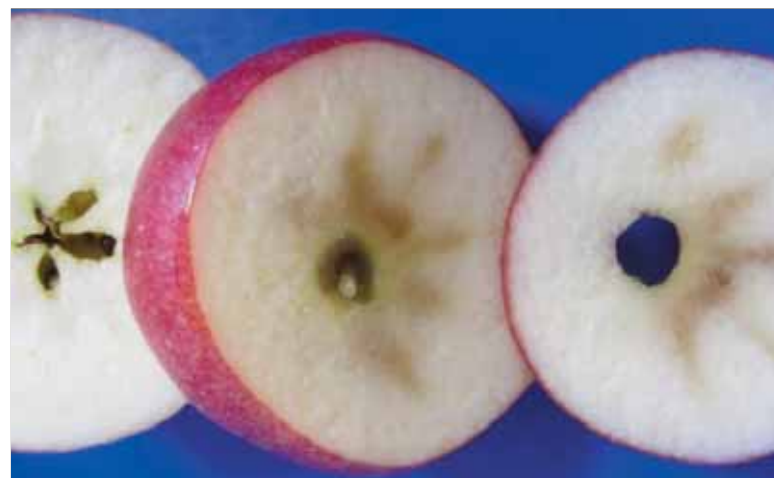


Photo 2: Internal browning in 'Gala' apple.



Table 1. Internal (and stem-end) browning in 'Gala' apples after 2, 4, and 6 months of air storage at 0.5°C plus the average of 1, 7 or 14 days at ~20°C.

Air storage at 0.5°C	Internal+ stem-end browning (%)
2 Months No 1-MCP + 1-MCP	0 C 0 C
4 Months No 1-MCP + 1-MCP	12 B 4 C
6 Months No 1-MCP + 1-MCP	18 A 3 C

Table 2. Internal (and stem-end) browning in 'Gala' apples after 5, 7, and 9 months of standard CA storage at ~1°C plus 20 days at ~20°C.

CA storage at ~1°C	Internal+ stem-end browning (%)	CA storage at ~1°C	Internal+ stem-end browning (%)
5 Months Bottom hill No 1-MCP + 1-MCP Top hill No 1-MCP + 1-MCP	2 F 5 EF 0.4 F 0 F	5 Months 1 day at RT 7 days 14 days 20 days	0 D 3 CD 3 CD 2 D
7 Months Bottom hill No 1-MCP + 1-MCP Top hill No 1-MCP + 1-MCP	22 C 17 CD 0.4 F 1 F	7 Months 1 day at RT 7 days 14 days 20 days	0 D 6 BCD 4 BCD 13 BC
9 Months Bottom hill No 1-MCP + 1-MCP Top hill No 1-MCP + 1-MCP	59 A 43 B 17 CD 11 DE	9 Months 1 day at RT 7 days 14 days 20 days	3 CD 9 BCD 18 B 43 A

Values with the same letters within a column are not significantly different at P<0.05

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### Order now, control later

Product	Group	Rate	Restricted Entry Interval	Preharvest Interval	Max applications
Agri-mek SC	6	225 mL/ha	12 hours	3 days	2
Vegol Crop Oil*	NC	2% v/v in 700-1900 L water/ha	12 hours	0 days	6 applications per year- no more than 2 dormant applications

\*Potentially organic. Check with certifying body

ERICA PATE

The best time to control cyclamen mites is when there is little leaf canopy. These mites are very small and usually protected in the crown or parts of the plant that are difficult to reach with a miticide. When there is little foliage it is easier for the miticides to reach down into the crown and achieve better control. The early spring before the strawberry canopy fills in, around the bud-green fruit stage, and after renovation are good opportunities to control cyclamen mite.

If you suspect you had cyclamen mite damage in your strawberries last year, or want to be prepared for this coming season, it is important to buy the insecticides earlier than later. Only two products are currently registered for cyclamen mite management- Agri-mek and Vegol Crop Oil. 2018 was a challenging year for cyclamen mite control and it is very important that you are prepared to apply a miticide soon after identifying mites or damage in your field. Populations can quickly grow, and damage can spread to different fields, so prepare now

to control these mites and protect your crop. Don't wait to buy these two products until your season is underway.

Apply Agri-mek with a 0.1-0.5% v/v non-ionic surfactant. Drive slowly and use a high water volume to ensure the product is reaching the mites in the crowns. Agri-mek is absorbed within the leaves so time applications for slow-drying conditions and when there is new growth present to take up the miticide for extended residual control. It is also important to wait five to seven days after applying Sinbar before applying Agri-mek.



Cyclamen mite damage on strawberries

Keep resistance management in mind when planning your control program. As growers are limited with the number of products for cyclamen mite management it is vital to maintain the efficacy of the products we do have- alternate between applications of Agri-mek and Vegol crop oil.

Vegol Crop Oil is registered for two dormant applications and four summer applications. Similar to Agri-mek drive slowly and use a high water volume to ensure thorough coverage. Do not apply during temperatures above 30°C or within two days of freezing. Do not use within 14 days of Captan, Maestro, Folpan, copper fungicides or within 30 days of sulphur.

Cyclamen mites can be difficult to identify, there are limited insecticides available, and populations can build quickly, spreading across the field or to new fields. Order

your insecticides now to limit the damage to your strawberries and protect your crop.

Aside from chemical control growers can also help manage cyclamen mites by reducing the spread of the mites from older, infested fields to new fields. Plan to work in new fields first to minimize the movement of workers and equipment from potentially infested to clean fields. Avoid planting new fields next to old ones if possible, and avoid using pyrethroid insecticides that are toxic to beneficial mites and could lead to a cyclamen mite outbreak.

For more information on monitoring cyclamen mites and identifying damage check out the July 9th, 2018 post on OnFruit.ca- 'Renovation good time to control cyclamen mite.'

*Erica Pate is OMAFRA fruit specialist.*

## Registrations for strawberry anthracnose fruit rot

Product*	Rate	Preharvest Interval	Restricted Entry Interval	Max # applications/year	Re-treatment interval	Comments
<b>Diplomat 5SC</b> Polyoxin D zine salt 5% Group 19 Reg. # 32918	463-926 mL/ha	0 days	When dry	2.77 L/ha	7-10 day	Use high rate under conditions of high disease pressure
<b>Pristine WG</b> Boscalid + pyraclostrobin Group 7 + 11 Reg. #27985	1.3-1.6 kg/ha	1 day	When dry (general re-entry)/24 hours (hand harvest)	5	7-14 day	Use higher rate and/or shorter intervals when disease pressure is high. Do not tank-mix or make sequential applications with Exirel.
<b>Switch 62.5 WG</b> Cyprodinil + fludioxonil Group 9+12 Reg. #28189	775-975 g/ha	1 day	12 hours	3	7-10 days	Maximum 2 sequential applications before rotating to a different fungicide group.
<b>Cabrio EG</b> Pyraclostrobin Group 11 Reg. #27323	1 kg/ha	1 day	12 hours	5	7-14 days	Use higher rate under conditions of high disease pressure. Do not tank-mix or make sequential applications with Exirel.
<b>Botector*</b> <i>Aureobasidium pullulans</i> Group NC Reg. #31248	1 kg/ha in 500-2000 L water/ha	0 days	4 hours	6	7-10 days	Suppression only.
<b>Actinovate SP*</b> <i>Streptomyces lydicus</i> Group NC Reg. #28672	425 g/ha	-	1 hour	-	7-14 days	May reduce symptoms but does not provide control or suppression. Do not combine with other pesticides (especially bactericides), adjuvants, surfactants or foliar fertilizers.

\*Potentially organic. Check with certifying body.

Please note: this is a reference sheet and does not replace the labels. Continue to check the product labels for more specific instructions and uses.

Resistance to Cabrio and Pristine has recently been confirmed in strawberry anthracnose fruit rot populations in Ontario.

Use once then rotate to a different fungicide group. See Managing Resistance to Fungicides, page 394 in Publication 360, Fruit Crop Protection Guide, for more information on managing resistance.



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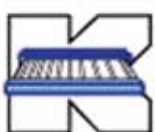
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## CROP PROTECTION

## Collecting crop protection use data helps farmers



**CHRIS DUYVELSHOFF**  
CROP PROTECTION ADVISOR,  
OFVGA

Like many businesses, farmers have seen a big increase in the amount of data collected around the farm in recent years. Information such as yield, crop quality, and localized weather data are available in much greater detail than ever before. In horticulture, increasing requirements from food safety programs have also added substantially to the amount of records collected including crop protection use. While seen as an added burden by some farmers, the collection of this data can actually be a major asset for the agriculture industry.

Government and public interest in how crop protection products are used in the field is not new by any means. In Ontario, surveys to track crop protection use have been conducted every five years since 1973. This information gets used by government, associations, and researchers to understand trends in use. This includes the type of crop, product applied, acres treated, and amount used. The closest personal information collected has been the county where the application takes place to understand usage in different parts of the province. The last survey even moved to an online platform in 2013/2014 to make completion easier. Even then, response rates have remained low and the data has not been robust enough to report use at the individual crop level for fruit and vegetables. It does however give a general indication of use trends over time.

The juggernaut that is agriculture in California has gone far beyond Ontario's level. Its

crop protection use reporting system is the most comprehensive in the world. In response to demands for more realistic data, a statutory reporting requirement was implemented in 1989. Beginning in 1990, California has required and collected full reporting of all crop protection use across the state.

Product use is reported monthly and is processed by the California Department of Pesticide Regulation.

Information reported includes application date, crop, acres treated, and identity and quantity of product applied. The amount of data in the initial years of collection overwhelmed the program, however, automation and computer applications now enable this system to handle about three million records per year. This now generates highly reliable crop protection use information on all crops grown in the state.

What benefits does this bring to California farmers and in fact the rest of the United States? The statewide system greatly increases the accuracy of assumptions used by the Environmental Protection Agency (EPA) in its regulatory decisions. One of the main challenges faced by the Pest Management Regulatory Agency (PMRA) is obtaining current and accurate use information in Canada. Without updated use information, PMRA assumes very conservative assumptions in its risk assessments – maximum number of applications X maximum potential risk. However, this is not accurate in the majority of situations. Products are rotated, pest pressure varies etc., and the maximum number of uses are rarely used year in and year out.

Instead, if accurate current use information is available – as is supplied to EPA by California – then PMRA risk assessments can be made with what growers are actually using in the field. Several digital systems now exist for collecting this type of information (e.g. Croptracker, SprayHub, Ginseng Manager, etc.) in support of food safety programs and to make data reporting easier. With these electronic databases already



Drones employed at the Holland Marsh are helping to diagnose agronomic problems in muck crops. Photo courtesy Kevin Vander Kooi.

existing, they could be utilized to generate accurate use information quickly. This only requires aggregate, non-personal data and would not need to link use to the specific farm level. Having an industry summary of this information would be a huge advantage for growers, as updated use patterns can make an active ingredient much more likely to successfully pass re-evaluation.

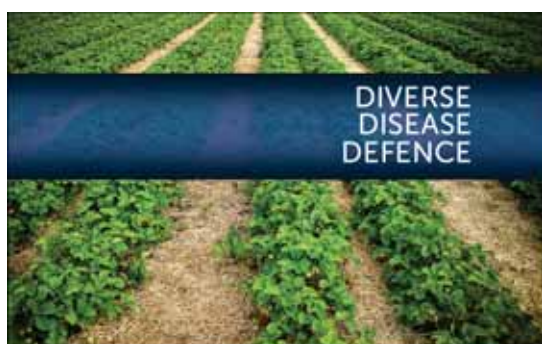
Another advantage of California's system is that summaries of these crop protection use records are openly accessible to the public. One can access for example, the average use of products on broccoli by

year – down to the county level if desired. This has huge benefits for transparency to the public. When articles and social media stories make claims such as “farmers douse their crops in Product X”, its actual use can easily be looked up. Pretty simple, and a major advantage in an era of disinformation.

While the collection of crop protection use data has historically been a controversial subject, it's time to recognize the benefits that this brings for farmers. We are better equipped than ever to create a system of central data collection via increasing electronic record keeping. The automation and

processing challenges that California had to overcome in the early 1990s should be much simpler now.

It would enable the Canadian public to see there's nothing to hide and go a long way in building public trust around crop protection. As a direct benefit to the farmer, PMRA will be able to make better informed decisions in its risk assessments. The good news is that practically all of this information is already being generated...it is just a matter of bringing it together.



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## MINOR USE

## Exirel insecticide label expanded

Crop(s)	Target	Rate (mL/ha)	Application Information	PHI (days)
Crop subgroup 1B* root vegetables except sugar beets	Carrot weevil	1,000 – 1,500	Begin applications at the 2-3 leaf stage or when scouting indicates the presence of weevils. Consult local agricultural authorities to determine appropriate threshold levels for carrot weevil in your area. Maximum of 4 applications per season at a 7-day interval	One (1)

\*beet, garden; burdock, edible; carrots; celeriac, root celery; chervil, chicory, ginseng, horseradish, radish, turnip, rutabaga, parsnip, salsify; cultivars, varieties and/or hybrids of these.

JIM CHAPUT

The Pest Management Regulatory Agency (PMRA) recently announced the approval of an URMULE registration for Exirel insecticide for control of carrot weevil on subgroup 1B, root vegetables in Canada. Exirel insecticide was already labeled for use on a number of crops in Canada for control of several pests.

This minor use project was submitted by MAPAQ (Quebec ag ministry) as a result of minor use priorities established by growers and extension personnel.

The following is provided as an abbreviated, general outline only. Users should be making pest management decisions within a robust integrated pest management program and should consult the complete label before using Exirel insecticide.

Exirel insecticide is toxic to aquatic organisms, bees and certain beneficial insects and non-target terrestrial plants. DO NOT apply this product to blooming crops or weeds while bees are actively visiting the treatment area. Apply early in the morning or late in the evening when bees are less active. Minimize spray drift to reduce harmful effects on bees in habitats close to the application site. Do not contaminate

aquatic habitats when spraying or when cleaning and rinsing spray equipment or containers.

Follow all other precautions and directions for use on the Exirel insecticide label carefully.

For a copy of the new minor use label contact your local crop specialist, regional supply outlet or visit the PMRA label site [www.canada.ca](http://www.canada.ca)



Carrot weevil damage

## Malathion 85E insecticide label expanded

The Pest Management Regulatory Agency (PMRA) recently announced the approval of an URMULE registration for Malathion 85E insecticide for suppression of spotted wing drosophila (SWD) on caneberries\* (subgroup 13-07A), bushberries\* (subgroup 13-07B), small fruit vine climbing\* (subgroup 13-07F), low growing berries\* (subgroup 13-07G) and stone fruit\* (crop group 12-09) in Canada.

Malathion 85E insecticide was already labeled for use on a number of crops in Canada for control of several pests and has been available as an emergency use for SWD for the past few years.

This minor use project was submitted by MAPAQ as a result of minor use priorities established by growers and extension personnel.

The following is provided as an abbreviated, general outline only. Users should be making pest management decisions within a robust integrated pest management program and should consult the complete label before using Malathion

85E Insecticide.

Malathion 85E insecticide is toxic to aquatic organisms, bees, birds and certain beneficial insects and non-target terrestrial plants. DO NOT apply this product to blooming crops or weeds while bees are actively visiting the treatment area. Apply early in the morning or late in the evening when bees are less active. Minimize spray drift to reduce harmful effects on bees in habitats close to the application site. The use of this chemical may result in contamination of groundwater particularly in areas where soils are permeable (for example, sandy soil) and/or the depth to the water table is shallow. Do not contaminate aquatic habitats when spraying or when cleaning and rinsing spray equipment or containers.

Follow all other precautions and directions for use on the Malathion 85E insecticide label carefully.

For a copy of the new minor use label contact your local crop specialist, regional supply outlet or visit the PMRA label site [www.canada.ca](http://www.canada.ca)

Crops (including cultivars, varieties, and hybrids of the listed crops)*	mL product per 1000 L	Maximum No. of Applications per crop/year	Days Before
Stone Fruits (CG 12-09): apricot, cherries, nectarine, peach, plums, plumcot	610-855	1, except 2 for apricots with a 10-day interval	7, except 3 for cherries and plums
Caneberries (CG13-07A): raspberries, blackberries, loganberries	975	2	1
Bushberries (CG13-07B): aronia berry, blueberry (highbush and low-bush), chilean guava, currants, elderberry, european barberry, gooseberry, highbush cranberry, honeysuckle (edible), huckleberry, Jostaberry, juneberry, lingonberry, salal, sea buckthorn	1000	3	1
Small Fruits Vine Climbing, except Fuzzy Kiwifruit (CG 13-07F): amur river grape, gooseberry, grape, kiwifruit (hardy), maypop, schisandra berry	880	1	3
Low Growing Berries (CG 13-07G): bearberry, bilberry, blueberry (lowbush), cloudberry, cranberry, lingonberry, muntries, partridgeberry, strawberry	1000	2, except 1 for cranberry	3
Use a maximum of 1000 L of water per hectare. Application Interval: 7-10 days for all crops (if applicable). Timing of applications should be based on the presence of adult flies of the pest, as determined by local monitoring.			

## Milstop foliar fungicide label expanded

JIM CHAPUT

The Pest Management Regulatory Agency (PMRA) recently announced the approval of an URMULE registration for Milstop foliar fungicide for suppression of powdery mildew on field and greenhouse mint and

suppression of powdery mildew on greenhouse-grown lettuce in Canada. Milstop foliar fungicide was already labeled for use on a number of crops in Canada for control / suppression of several diseases.

The mint minor use project was sponsored by OMAFRA and the GH lettuce project was sponsored by MAPAQ as a

result of minor use priorities established by growers and extension personnel.

The following is provided as an abbreviated, general outline only. Users should be making pest management decisions within a robust integrated disease management program and should consult the complete label before using

Milstop foliar fungicide.

Do not contaminate off-target areas or aquatic habitats when spraying or when cleaning and rinsing spray equipment or containers.

Follow all precautions and detailed directions for use on the Milstop Fungicide label carefully.

For a copy of the new minor

use label contact your local crop specialist, regional supply outlet or visit the PMRA label site [www.hc-sc.gc.ca/cps-spc/pest/registrant-titulaire/tools-outils/label-etiq-eng.php](http://www.hc-sc.gc.ca/cps-spc/pest/registrant-titulaire/tools-outils/label-etiq-eng.php)

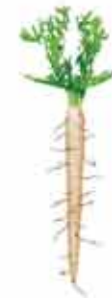


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they need to be protected.



Use Exirel® insecticide early in the season to give your vegetables the head-start they need during the most critical stage of development. Exirel® insecticide has fast acting, translaminar and xylem systemic movement, so you'll be protecting new growth from chewing and sucking pests, including thrips. Exirel® insecticide, powered by Cyazapyr®, is an important part of an integrated pest management program.

**BRASSICA | BULB | ROOT | & MORE**

Always read and follow label instructions. Member of CropLife Canada.

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