

RESEARCH

Intellectual property: unearthing the gold beneath your feet



Brothers Shawn (left) and Chris Brenn inspect progress of 35 to 40 potato varieties at their one-acre research plot near Waterdown, Ontario. After four years of trials, they have selected one variety that is now marketed under the name Goldenheart. This is one example of how research is transformed into profit. Photo by Glenn Lawson.

KAREN DAVIDSON

Without agronomy, we would all be naked, hungry and sober.

This memorable quote is making the rounds of winter meetings, a reminder of the enduring importance of research. On-farm research is nothing new, but for brothers Shawn and Chris Brenn, Waterdown, Ontario, the results of their methodical approach are proving to be a competitive edge when marketing to

big-name retailers.

"This is the third year (2018) that we've marketed a red-skinned, yellow-fleshed potato under the Goldenheart name," says Shawn Brenn. "In my view, it's the most flavourful potato you can put in your mouth."

Goldenheart, a numbered variety, is exclusive to Brenn-B Farms, part of a marketing strategy to differentiate their offering of fresh potatoes. Of their 850 potato acres, only a portion is devoted to this variety. It's packaged and marketed

in five-pound polybags throughout eastern Canada, from Thanksgiving through the holiday season.

The marketing plan for Goldenheart rises out of four years of research on two on-farm sites with different soil types ranging from stony sand to heavier loams. Thanks to a City of Hamilton weather monitoring station located on their farm, they can track rainfall and temperatures. Their acreages are not consolidated but spread over 25 to 30 locations. Although the Elora Research

Station, operated by the University of Guelph, has a robust potato testing program about 50 miles to the northwest, Brenn has observed differences in results when those same varieties are brought to the farm.

"The Elora site has heavier soils, cooler temperatures and sometimes more precipitation," says Brenn.

Continued on page 3

A promotional banner for the CPMA Convention + Trade Show. The banner features a red background with images of tomatoes and a shopping basket. On the left, it says 'CPMA CONVENTION + TRADE SHOW MONTRÉAL 2019' with the website 'convention.cpma.ca' and hashtag '#CPMA2019'. In the center, it says 'We are PRODUCE' in a stylized font, with '94TH ANNUAL CONVENTION & TRADE SHOW' below it. On the right, a red circle contains the text 'MONTRÉAL, QUÉBEC APRIL 2-4, 2019'.

BC's replant program PG 5

CHC's Heartbeat video PG 9

Crop protection/potatoes B Section

AT PRESS TIME...

Lives of international farm workers documented

The Canadian Horticultural Council will be hosting a reception and screening of its 30-minute documentary, entitled *Heartbeat – A celebration of international farm workers*. The event will be held in the Learning Centre of the Canada Agriculture and Food Museum in Ottawa on March 20, 2019 from 6 to 8 pm.

Opening remarks will be given by Jamaican High Commissioner to Canada, Ms. Janice Miller. To date, various clips have been released including women workers from Trinidad who relate their experiences working on Brett Schuyler's fruit farm near Simcoe, ON.

For the link, go here: <https://bit.ly/2D0RACc>

Vineland Growers' Co-op announces marketing agreement



Looking to build on more than 100 years of servicing its growers, Vineland Growers' Co-operative Limited, Canada's leading shippers of stone fruit, grapes and pears, has entered into a marketing agreement with The Norfolk Fruit Growers' Association, one of Ontario's premier apple packers.

Starting with the 2019 harvest, Vineland Growers' Co-operative Limited will become the exclusive marketer for The Norfolk Fruit Growers' Association's fresh apple program. This agreement makes Vineland Growers the most diverse supplier of freshly grown Ontario fruit through its marketing of peaches, nectarines, apricots, cherries, grapes, pears and apples.

"We are extremely excited to see two of the longest operating fruit organizations in Canada working together to better meet

the changing demands of our customers," said Mike Ecker, president, Vineland Growers' Co-operative Limited. "This is an agreement that just makes sense. The industry is becoming increasingly competitive and the need to create scale within the two businesses will help to service the needs of our growers, packers and customers."

"The members and staff at The Norfolk Fruit Growers' Association look forward to this new venture with Vineland Growers as an excellent method to continue the service to its members and customers as they enter their 113th apple crop," said Tom O'Neill, general manager, The Norfolk Fruit Growers' Association.

Apples grown and packed by Norfolk Fruit Growers' Association will continue to be marketed under the Norfolk brand.

NEWSMAKERS

Congratulations to **Ken Linington**, the 2019 winner of the annual OFVGA Award of merit. For many years, his sage counsel has been valued at the Labour Issues Coordinating Committee until his retirement in late 2018. For more details, go to page 6.

At the 160th annual general meeting of the Ontario Fruit and Vegetable Growers' Association grape grower **Bill George**, Beamsville, Ontario was elected to chair of the board.



Bill George

The Golden Apple Award was also presented at the OFVGA banquet. Apple grower **Tom Chudleigh** put Milton, Ontario on the map in 1967 with his agri-tourism destination and pick-your-own location that has been enjoyed by generations of consumers ever since.

The operation is best known for its signature apple blossom dessert sold to retailers across Canada. For more on his accomplishments, see page 6.

The new chair of the Ontario Food Terminal Board is **Ken Knox**, former deputy minister of the Ontario ministry of agriculture, food and rural affairs. Well-known to all agricultural sectors, he will serve a one-year term until January 16, 2020. He replaces **Alison Robertson** who completed her three-year term in mid-January. She is currently executive director of the Ontario Fruit and Vegetable Growers' Association.

Ontario's ag minister has appointed former livestock farmer and retired assistant deputy agriculture minister **Dave Hope** to be chair of the Ontario Processing Vegetable Growers. He replaces **Suzanne van Bommel** who tendered her resignation to take the role of regulated marketing advisor to the Ontario Farm Products Marketing Commission. Her two-year term would have ended in September 2019.

The board of the BC Tree Fruit Cooperative is rethinking its strategy going forward with major staff changes. The contract of CEO **Stan Swales** was not renewed. He had spent just two years in the role. However, he remains on staff assisting operations. CFO **Warren Everton** has left after six years. Five of the cooperative's support staff have been dismissed including: **Hank Markgraf**, field services manager; **Tony DiMaria**, field serviceman; **Duane Holder**, field serviceman; **Danielle Hirkala**, plant pathologist; **Lisa Hilbrecht**, lab technician. Interim CEO is **Bob Fisher-Fleming**, the human resources manager. **Jeet Duhkia**, cooperative president, says that the current restructuring could also include relocating the downtown business to cheaper real estate on the outskirts of Kelowna.

The Nova Scotia Fruit Growers' Association has re-elected **Larry Lutz**, Rockland, as president for 2019. He is joined by new directors: **Starr Best**, Waterville; **Rene Penner**, Welsford; **David Eisses**, Centreville.

Dr. Lorne Hepworth has been appointed chair of the Agricultural Research Institute of Ontario. His four-year term ends January 18, 2022. He reports directly to the Ontario minister of agriculture, food and rural affairs. He was formerly president of CropLife Canada from 1997 to 2014 and is an inductee into the Canadian Agricultural Hall of Fame.

The Ontario Young Apple Farmers have elected **Kyle Ardiel** as chair. He farms with his parents at Apple Springs Orchards, Thornbury, Ontario. **Brian Rideout** steps down after a two-year term. A farmer day will be held March 20 in the Thornbury area.



Kyle Ardiel

AgSafeBC welcomes **Kyle Hart** to the team of safety consultants and advisors. He will be dedicated to working with agricultural producers in the central Okanagan region. Most recently, he was the north regional health and safety advisor for BC Tree Fruits Cooperative and its sister companies, Cidery Co and Growers Supply.

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COVER STORY

Intellectual property: unearthing the gold beneath your feet

Continued from page 1

On an acre research plot close to home base, the Brenn brothers plant 45 to 50 varieties, recording a number of characteristics, including quality and size of seed pieces. They experiment with seed spacing, anywhere from eight inches to 13 inches, depending on the variety. They observe emergence rates, plant vigour and time to reach row closure. The quicker the time to row closure the better and thus less need for expensive weed control. Liquid seed piece treatments aren't recommended if wet and cold soil temperatures prevail.

At least three years of data are collected before planting a potato variety. First and foremost, the variety must meet yield expectations and be flavourful to be profitable.

"I'm confident that taste sells," says Brenn. "There is less food waste, when consumers have a good eating experience."

Taste is not the key characteristic that Darin Gibson is searching for in his potato trials. He and his wife Debbie Jones own Gaia Consulting which contracts with about 35 organizations every year to conduct basic agronomic research near Portage la Prairie, Manitoba. Low-profile, but high-impact proprietary research is conducted for companies that sell crop protection products to fertilizer to biopesticides. Almost all of the research is in potatoes, with some plots in carrots, onions, sweet potatoes, horseradish and red beets.

To support the intense workload, Gaia Consulting is

moving into a new 7,000-sq-foot purpose-built site in March 2019 in Newton, Manitoba. This building will comprise potato storage, chemical storage, equipment storage, laboratory space and offices. A full shop with hoist will service equipment.

"We are tripling our footprint," says Gibson.

While Gibson cannot speak specifically about the results of potato trials, he's a keen observer of the research under his care. Half of the trials are commissioned by crop protection companies for fungicides and insecticides. A growing area of business is from fertilizer companies trialling liquid and dry granular formulations, in-furrow and broadcast methods of application. Agriculture and Agri-Food Canada's Pest Management Centre conducts minor use trials at this location to see what's appropriate for the region.

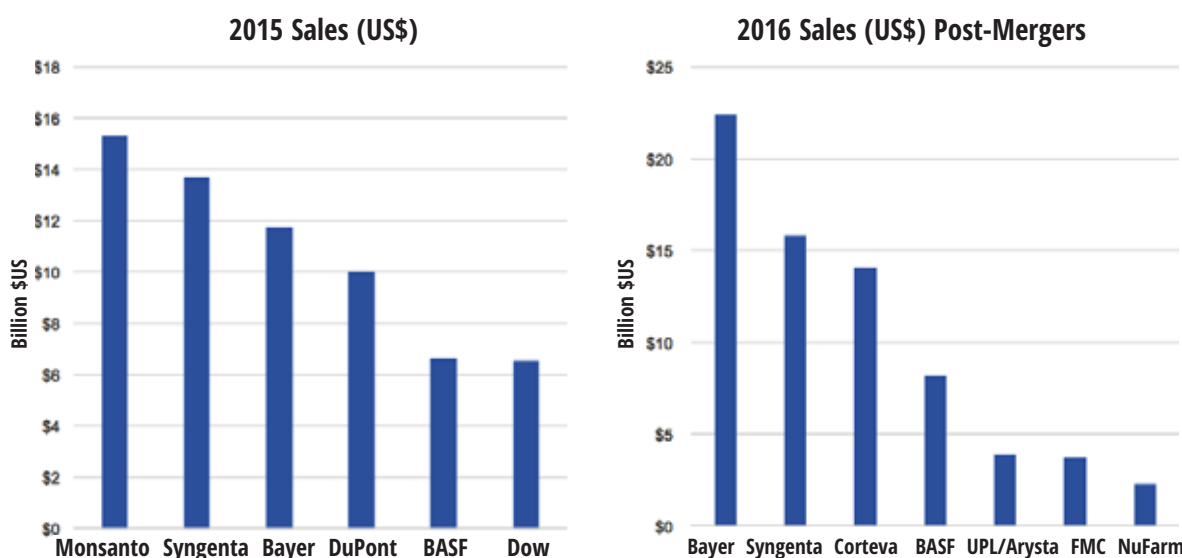
One observation of Gibson's bears repeating: "Biopesticides have carried some baggage in the past, however some products are working better with similar efficacy to conventional products."

As he relayed to the audience of the Manitoba Potato Production Days, biopesticides will become more important in the toolbox of the future.

In addition to this privately conducted research, provincial and national governments also play critical roles in the public sphere. All of these are examples of research in one commodity: potatoes. But the questions surrounding research are the same for all horticultural



Debbie Jones of Gaia Consulting proudly demonstrates plot results near Newton, Manitoba.



Who's who in the top seven crop protection companies, pre- and post-merger.

crops. Who has access to research results? When farmers share on-farm research, how will data be protected by supplier companies?

There are no immediate answers to these questions, but each farmer should be aware of how powerful the data becomes in aggregate. The impacts will be broadened as major agricultural chemical companies, post-merger, focus their efforts on research pipelines for the next decade. In turn, the questions at head office will be about the biggest pay-offs in major field crops.

Potatoes will take a place beside canola and soybeans. But other field vegetable crops will be... small potatoes.

The structural changes in the crop protection arena will have implications for horticulture that are not clearly evident now. Suffice to say, that the top seven players look different than just three short years ago. (see chart).

As much as aggregated data is powerful, so is local, down-home research. Just ask Shawn and Chris Brenn in these transformative times.

The Grower goes "Behind the Scenes" of this cover story and speaks with Shawn Brenn, Brenn-B Farms, Waterdown, Ontario. He shares his experience with on-farm research. To listen, visit www.thegrower.org/podcasts





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CROSS COUNTRY DIGEST

ALBERTA

The benefits of soil cover and cryoprotectants in overwintering insects



Western clouded grasshopper with egg pod.

Western Canada has been in the grips of record-breaking cold temperatures during February 2019. Entomologist Prof. Dan Johnson, University of Lethbridge, used the weather opportunity to test the survivability of grasshoppers. He took adult grasshoppers out of his laboratory's cold storage at different times to check for survival and successful hatching.

"They don't really begin to die off until their temperature is around -12°C , -15°C , ... and lower," says Johnson. "If they spend days below -10°C , they slowly die, and certainly if below -15°C . But the soil and snow protect them from that."

During the week of February 4, Johnson used temperature recorders to measure penetration of cold into the ground. When it was -21°C and -22°C in the air, it was -5.5°C and -6.7°C an inch in the soil under grass, and -10°C to -12°C in freshly tilled soil. It was about -9°C on the ground under an inch of snow. The tilled soil probably has air pockets and loose structure that allows cold to penetrate. So in other words, the insects are protected from a deep freeze if they are tucked into the soil for the winter. A cold spell cannot be expected to kill off grasshoppers or most overwintering pests.

"One winter, years ago, when



Clear-winged grasshopper hatches in late May. Photos by Dan Johnson.

it was colder than -30°C in the air, I was measuring -8°C in the soil," recalls Johnson. "The smoothed curves for one test -- not the raw data -- look like the chart below. In some other tests the -15°C resulted in faster die-off but you can see that -10°C is OK. Some insects are even fine to -20°C ."

Grasshopper eggs begin to die if they contact -15°C or -20°C , but in the soil they don't get that cold even when the air is -30°C .

The pest species of grasshoppers -- such as two-striped, migratory, and clear-winged -- that lay eggs in pods 2 to 3 cm in the soil -- are fairly well protected from a

week or two of severe cold, especially if snow insulated the surface above them.

No one should hope for cold to wipe out insects, anyway. It would also kill the beneficial species and the natural enemies of pests that help agriculture. Many spiders, which are helpful species, overwinter in the second-to-last stage, or even full grown, and can't take exposure to the coldest air. Some non-pest grasshoppers overwinter in active stages but they also dig in. Many beetles overwinter as

larvae in the soil. Some butterflies such as Mourning Cloak overwinter as a full-grown butterfly, and survive by finding shelter where the temperature does not go as low as in the exposed air above. Insects typically have cryoprotectant compounds such as glycerol or sugars in their tissues that allow them to drop their body temperature below -10°C and some even lower, and not freeze or die.

QUEBEC

CanadaGAP program training in Quebec City

A training opportunity for the CanadaGAP program will be offered in French only in Quebec City on March 12-13. The course is offered by le Bureau de normalisation du Québec (BNQ).

The course will take place at CRIQ, located at 333 Franquet Street in Quebec City in Room CO-801. Note that the course will run only if the minimum 15 participants sign up.

What does the course cover?

- Includes general information about the CanadaGAP program, certification and an overview of main technical requirements
- Understand how to become certified to the CanadaGAP program (i.e. how to enrol in the program, how to keep records, how to prepare for an audit, etc.)
- Understand basic food safety hazards in fresh produce operations
- Understand how to use and implement the CanadaGAP manual

Who should take this course?

- Program participants who want to further their understanding of CanadaGAP requirements
 - Agriculture sector professionals and consultants
 - Growers/producers, packers, repackers, wholesalers and brokers interested in becoming certified
 - Those responsible for the food safety program within the company
 - Buyers or other stakeholders
- How much does it cost?
- \$350 + tax (2 lunches included)

How to register?

- Register by emailing Secretariat.Certification@bnq.qc.ca, or by calling 1-800-386-5114, ext. 2418.
- If you need more information or have questions about the course, please contact Andréanne Bilodeau at andreanne.bilodeau@bnq.qc.ca or 418-652-2238, extension 2451.

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CROSS COUNTRY DIGEST

BRITISH COLUMBIA

An aggressive replant program depends on future water supplies

Editor's note: This is an excerpt from Pinder Dhalwal, president of the BC Fruit Growers' Association (BCFGA) and his report to the 130th annual general meeting, held in Penticton on February 12.

The role of the BCFGAs remains just as important today, as it was 129 years ago: to serve as the primary public policy advocate for fresh fruit growers of British Columbia. Each day, our industry is bombarded with challenges from the local, provincial and the federal government; from regulatory agencies, to misinformed citizens to self-interest groups whose actions affect negatively on our agricultural community . . .

The replant program continues to improve the productivity and transform the Okanagan/Similkameen Valley into a world-class fruit-growing region. The program is a seven-year program currently ending in 2021. During the year, BCFGAs presented to the Select Standing Committee on Finance and Government Services Budget 2019 Consultation and highlighted its history, economic impacts and the importance of having a long-term replant program because of the farming business planning in terms of obtaining nursery trees, poles, wires and financial managing. The program provides approximately 20-25 per cent of the roughly \$30,000 needed to replant an acre of apples. Lending institutions are more likely to fund orchard improvements with strong supported timelines. As of this writing, the replant deadline was extended to January 30, 2019 giving growers opportunity to apply because many were still harvesting during this past year's deadline.

The province provided our sector with a \$5 million Tree Fruit Competitiveness Fund which will encourage industry to take bold steps for infrastructure investments, research and develop strategic marketing of the tree fruit products. This investment will not only lead to growth and stability in our sector, both preserving and creating jobs, but also ensure that we continue to produce fresh, healthy, safe BC-grown tree fruits.

With \$5 million in total, \$3.5 million is allocated towards research, marketing and infrastructure and remaining for the replant program to cover the prescribed years.

We now find ourselves in the third year of a continuing drought. Conditions were such over the last summer months

that expectations were for 100°F temperatures on a daily basis. Some might even argue that the drought has been longer than three years. In the short term, growers continue to show their resiliency by producing consistently good quantities and excellent quality tree fruit. However, as we expand the horizon to look out at five, 10 or 15 years, we can see that we need to value our domestic

water supply and keep our finger on the pulse...the pulse of the Columbia River Treaty.

Any change or reduction due to the lack of availability of the essential resources of water as it relates to the implementation of the new Columbia River Treaty is very important to our industry if not B.C. as a whole. (The agreement to manage flows for flood control are due to expire in 2024.) We know it will



probably take many more years to negotiate the next version, but the importance of water can't be underrated as it will be the new 'gold.' BCFGAs continues to monitor and keep this

file updated because we understand that it takes water to grow the food that keeps our desert valley green and gives British Columbians and the world the best fruit we have to offer.

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HONOURING TRAILBLAZERS

OFVGA Award of Merit: Ken Linington

KAREN DAVIDSON

The Ontario Fruit and Vegetable Growers' Association celebrated one of the industry's leaders with its most prestigious award on February 19. The 2019 Award of Merit honours years of dedication by Ken Linington.

"The Labour Issues Coordinating Committee has been in place for 30 years," said Ken Forth, chair LICC. "Over the years, labour issues continued to build and become more complex. The team of Hector Delanghe, Anthony Cervini, Mark Wales and I made for a solid front to address the ongoing labour issues for the agriculture community. The addition of Ken Linington to the team 15 years ago was at a perfect time."

For a sense of Ken Linington, go no further than his selflessness and generosity

exhibited on the second last day of a multi-decade career. He was out speaking with growers, sharing his encyclopaedic knowledge at a labour resources workshop November 29, sponsored by the Agri-Food Management Institute (AMI) and Ontario Fruit and Vegetable Growers' Association.

Always prepared, he shared multiple hard-copy back-grounders on Ontario's Occupational Health & Safety Act, Agricultural Employees Protection Act, Workplace Safety Insurance Act, Employment Standards Act and Human Rights for Ontario Agriculture.

One of his key observations was the shift in attitude between recent provincial governments and what that means for growers.

"We have come from an environment of a left-leaning government," said Linington. "Now we have a government

that is centre right. Employers are identified as partners. That's an interesting shift to 'we need to grow our economy and how can we help employers do that.'

"Today, we need sustainable legislation – a balance between stakeholders. Not an attitude of who's on top, employers or employees."

The issue of minimum wage increases and how it affects sustainability of labour-dependent horticulture has been a weighty issue in the last decade.

Linington, for his part, has spent many hours educating government bureaucrats of the corporate history of labour legislation written in the 1960s, explaining to young staffers why rules were written the way they were.

Linington has been a key policy advisor behind the scenes, wordsmithing in precise language how agriculture works and the relationships between growers and their valued



Retiring Ken Linington (L) is congratulated by Ken Forth.

employees. His insights stem from past work in several Ontario counties, including Brant, Chatham-Kent and Norfolk. He has also participated, with stamina, the legal process of going to the Supreme Court of Canada on key labour issues.

"You don't go to the Labour Relations Board without \$100,000 in your pocket," says Linington. "We have a legal firm that has the capacity to go

to the Supreme Court of Canada. We've been there twice."

The horticultural industry owes a huge debt of thanks to this gentleman who has been deeply informed and measured in his counsel.

Until the last minute of the AMI program, he was taking notes. And that's a reflection of the dedication and passion Linington has always had for the horticultural industry.

Golden Apple Award: Tom Chudleigh

Innovative apple grower Tom Chudleigh, who was instrumental in establishing pick-your-own orchards as a popular agri-tourism activity in Ontario, is the winner of the 2019 Arysta Golden Apple Award.

Chudleigh and his wife Carol are apple growers in Halton Region and probably best known for their signature apple blossom dessert that is sold to retailers across Canada. In the Greater Toronto Area, Chudleigh's has been a leading agri-tourism destination and pick-your-own location for generations of consumers, first opening to the public in 1967.

Chudleigh was raised on an

apple farm in the Milton area and graduated from the University of Guelph's Ontario Agricultural College in 1963 with an agriculture degree. His father was an apple innovator who had been importing root-stock from Britain since the late 1930s, and Chudleigh built on his father's legacy, planting new varieties and always trying new apple growing methods.

In the early 1970s, the Chudleighs began selling donuts and cider to their farm visitors and when their donut supplier retired, they started baking and selling apple pies instead. After a devastating fire in 1990, they were able to relocate into a full-scale

commercial bakery in nearby Milton and now produce about one million of their popular apple blossom desserts every week.

"Tom Chudleigh is an innovator and a risk-taker who has built one of the largest apple pick-your-own operations in Canada. He understood what the market wanted and his marketing skills are superb," says Ontario Apple Growers' chair Charles Stevens. "Tom has always been positive about the industry and a willing teacher and mentor of pick-your-own for other growers, which has been instrumental in helping to build this aspect of our industry."



Tom Chudleigh, photo courtesy Toronto Star.

The Arysta Golden Apple Award is presented annually to a recipient who has made outstanding contributions to the Ontario apple industry. The Ontario Apple Growers

represents the province's commercial apple farmers. Visit www.onapples.com.

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Build a bridge for mental health

GERRY FRIESEN

How often have you heard the term “get over it?” I know I’ve used it occasionally and I suspect that, in a few of those instances, I’ve used the term inappropriately.

There are certainly times I need to be reminded to get over it. Like when I lose patience with the flow of traffic, or my food order takes a while to arrive, or it rains when I’d like to golf. However, if the phrase is used at times when people are dealing with overwhelming stress or mental health issues, it can be hurtful and counterproductive.

Recently, one of my kids said “get over it” to one of their siblings. Then, in the background, I heard someone else say, “build a bridge.” Excuse me, build a bridge?

“When you’re told to ‘get over it’ what do you need? You need a bridge,” the individual explained. That got me thinking. Instead of muddling our way through, fighting everything we’re trying to avoid, we need to build a bridge. Like a bridge that crosses a river, but, in this case, the river is a personal crisis.

Picture a river with a swift and turbulent current. As you start to cross

the river, the water gets deeper and colder. Mud is sucking at your feet. The flow is throwing you off balance while rocks are digging into your heels. Then, when the water gets too deep for walking, you start swimming. The current takes you downstream, and you end up in places you did not want to go. In a worst-case scenario, those unexpected places could lead you to drown.

The crux of the matter is that people who are experiencing debilitating stress or mental health issues often feel like they’re alone. I know first-hand that people dealing with mental pain wish they weren’t. They want to experience all that life has to offer. They want to have meaningful contributions to their local community. They view this river as being between themselves and the rest of the world. So imagine the possibilities if a bridge were built to help them “get over” that river.

With a bridge in place, it becomes possible to circumvent potentially harmful situations. That means being able to stay dry, on course, and safe while observing the river from afar.

There’s another side to this. Many often find it difficult to respond to those who are hurting. Perhaps it’s because of the feeling that responding means taking



responsibility for the problems of others. Maybe it’s about being unsure of what to say. But, for those who work to build a bridge, it provides a way for people to help them with crossing the river. There’s no question that building a bridge takes time and effort. But if the construction starts on both sides, it becomes an easier, more fulfilling task. What’s more, once that bridge is built, it can be used time and time again.

As mental health awareness increases, more people are talking about it and reaching out for help. That heightened awareness has also helped produce a higher level of comfort for others to help

those individuals who are hurting. The challenge is to become more proactive in building bridges, regardless of which side of the river you find yourself.

The best part is no one needs to build a bridge on their own. Find your supports. Your friends, family, and neighbours are all prepared to be on the “construction” crew.

So let’s build more bridges and “get over it” together.

Gerry Friesen is the founder of Signature Mediation. This editorial was written for Canadian Agricultural Safety Week.

Returning to work after an injury

Every day an agricultural worker is injured and many will miss time from work. Injuries can range from sprains and strains, to broken bones, to concussions, or worse. It is recognized that returning to work to recover from an injury is more beneficial than recovering at home because working is good for physical and mental health, and often helps speed healing.

The key is proactive management of both the injury recovery and the return to work processes. A well developed and thorough Return to Work (RTW) program will help both employer and worker manage this process in the short-term or over a long period of time.

Developing a return to work program

The priority at all times must be the health and safety of the injured worker. Following a collaborative approach involving the injured worker, the employer and health care providers facilitate a faster injury recovery, and a return to work and normal life sooner.

A RTW program begins with an injury assessment done by a first aid attendant at the time of the incident. This will determine if the worker is able to continue to work in their usual capacity or in a modified role, or if they need further medical treatment. If further treatment is required, the employer will give the worker a RTW package that includes

information for the physician and a return to work plan to be completed with the physician.

Follow up with the worker includes a review of this completed RTW plan by the worker and the employer together. Both will discuss and confirm any limitations to the worker’s functional ability to perform job duties and determine modified or alternative duties. Regular reviews will be scheduled and written records will be kept of any modifications and updates.

Focusing on what a worker can do rather than what they can’t do will help determine alternative or modified work duties, and will keep the worker active and contributing to overall operations.

Once a medical professional has determined the worker to be fully recovered, it is important to reinstate in writing the worker’s full return to pre-injury job duties and hours. This is the desired outcome of a fully implemented RTW program.

Why return to work programs are important

A RTW program demonstrates the employer’s care and value of the worker and a desire to retain a skilled and experienced asset. A RTW program also helps employers determine financial impact - expenses and savings, and how they can comply with workplace legislation.

For workers, a RTW program

means staying active to prevent other health complications; maintaining income and employment benefits; job security by staying in contact with the employer and being aware of workplace activities.

For agriculture-related employers in British Columbia, AgSafe BC has Return to Work

information, including “Ask The Expert,” on its website that is designed to help employers and workers understand that they have options and resources for taking a proactive approach to returning to work for recovering workers.

For more information about AgSafe services or agriculture-



related workplace safety call 1-877-533-1789 or visit www.AgSafeBC.ca.

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PERSPECTIVE

A moment of reflection



JAN VANDERHOUT
CHAIR, OFVGA

to the quality of people that I have had the pleasure of working with. The OFVGA board of directors is a great cross-section of strong leadership from across the horticulture sector. With the section chairs added we have a wonderful gathering of farm leaders who care enough about the industry to make the time to build up the sector even more.

The staff at OFVGA really does work with a tremendous amount of enthusiasm and caring for the sector. Alison Robertson has encouraged her staff to be all that they can be as they pursue solutions to the various challenges of the horticulture industry. I have often been impressed at their keen understanding of the intricacies of growers' needs as we converse with government in person or correspond through the writing of countless letters of request and letters of thanks. It would be utterly impossible

to interact at the level OFVGA does without the support of the men and women back in the office.

Working with professional lobby companies really helps organizations to hone their craft of dealing with government. They ensure that we are talking to the right people and we are getting the right message across helping the government and the people of Ontario by extension to better understand the needs of Ontario growers. It is interesting to meet and work with these people who are just a few steps away from the political power of Ontario.

A favourite type of meeting for me is a meeting with a minister or better yet with the premier. It is reassuring to see the dedication of these politicians. Even when our political perspectives vary, I still respect the dedication of these men and women who have given so much of themselves in public service. Politicians go

from meeting to meeting all day long and often deep into the evening and even the night. They spend hours and hours trying to stay knowledgeable on the plethora of information coming at them that will possibly change the way they think on a variety of issues. They sift through all the conflicting advice in order to take a stand on the right side.

I also have met many growers and heard first-hand their perspective and am now better able to understand the challenges that frustrate their way of life. Producing fruits and vegetables is often a challenge and growers are such hard-working people that it is easy to appreciate the work they do to feed us all.

OFVGA has led me in the direction of federal organizations as well. OFVGA works closely with the Canadian Produce Marketing Association, Dispute Resolution Corporation and most of all the Canadian

Horticultural Council (CHC). After joining the CHC board last March, I have gained a clearer understanding of the impacts of federal policy on not only Ontario growers but indeed growers across Canada. It is interesting to meet our counterparts from the other provinces of Canada and to work together to impact policy on the federal issues that affect the way we conduct business at home. I will not reflect too much on CHC because there is probably more to come than has passed.

Finally, I want to wish my successor as chair of the OFVGA all the best in the coming year. Not that we have been resting, but there is still much to be done at OFVGA so as a director I am looking forward to supporting the new chair as he meets the challenges of a new year head on. Thank you to all the people referenced in this column for making my term as chair a real pleasure.

It is amazing to think that it has already been two years since I began my term as chair of the Ontario Fruit and Vegetable Growers' Association (OFVGA) and exciting when I consider the adventure it has been. It has been a pleasure to experience the respect that the title gives or in my case more accurately that the title has given.

I have had a fine experience these past two years largely due

WEATHER VANE



Winter weather until now? Snow, rain, freeze, repeat. That's the experience of Tom and Karen Ferri, T & K Ferri Orchards and Apple Market, Clarksburg, Ontario. Photo by Karen Ferri.

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THE GROWER

URBAN COWBOY

Emotions surface when international workers and employers tell their stories



OWEN ROBERTS
U OF GUELPH

No one has to convince most fruit and vegetable producers of the value of international workers – also known as temporary foreign workers – to the agricultural labour scene.

These workers fill a chronic labour gap left by Canadians, making agriculture the largest sectorial employer under the temporary foreign worker program. About two-thirds of the people admitted into Canada each year under the program work in agriculture; about 75 per cent of them work under the auspices of the Seasonal Agricultural Worker Program.

Last month, Foreign Agricultural Resource Management Services (FARMS) released a custom report from the Conference Board of Canada showing that the seasonal agricultural worker

program contributes a whopping \$2.3 billion to Ontario's GDP, and accounts for 35,026 jobs in the province.

Those are huge numbers. But the program has its critics, too, who question employees' treatment, among other things.

Such criticism is said to be a reason behind a surge of on-farm inspections and paperwork related to international workers in 2017-18. Some producers say they were surprised at being put under the microscope for no apparent reason, and the investigation into their activities delayed the administrative approval required to hire seasonal international workers by weeks or even months.

These delays are said to have actually put some farm businesses in peril.

The Canadian Horticultural Council (CHC) understands the program is central to horticultural crop production.

"There would be no fruit and vegetable production in Canada without international farm workers," it says. "The impact on our food supply chain is immense, as is the impact on the families and communities of the workers who choose to take these jobs."

Now, the CHC is trying a different approach to promote a better understanding of the program, through a new seven-part video series in celebration of

international farm workers in Canada.

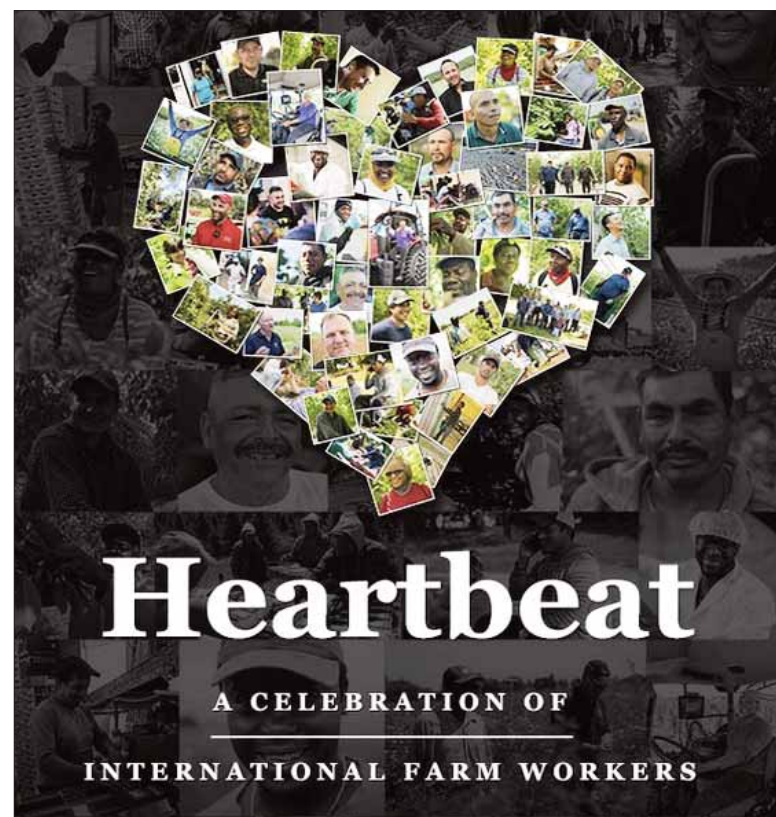
The council has told the international farm workers' story in a variety of ways. But like any approach to educating adults, a breadth of efforts is most effective, with constant stimulation. That's where video comes in, especially with a highly emotionally topic such as this.

Ken Forth of FARMS says many international workers become closely attached to the farms and families they work with, and vice versa. That's what the videos are trying to capture.

"It's dynamic, real-life stuff, a heartfelt thing," says Forth, who employs 18 international workers on his vegetable farm near Hamilton. "These videos let viewers put themselves in the shoes of the workers. We're trying to be as open as possible about international workers' experiences here. The true facts are what people will see in the videos."

I have the benefit of knowing some members of a farm family portrayed in one of the videos, La Ferme Quinn, in Quebec. I've seen from the sidelines how the farm has gone through succession and come out hugely successful.

I didn't know, however, the depth of feelings farm owner Phil Quinn had for his international workers, from Guatemala. In one of the most emotional videos in



the series, he explains the friendship:

"These people are family to us. They work next to us, they have the same values as us. At the end of the day, it's great to have a friend like that."

He breaks down emotionally when he talks about one of the workers using his wages, along with tools given to him by Quinn, to build the first high school in his county in Guatemala (where high school is not free)...and the workers' daughter being one of its first students.

Quinn concludes with an invitation. "Come see what's going on," he offers. "I guarantee there are only benefits." Via video, viewers can accept his

invitation.

Others are buying into this video approach, as well. Next month, the Jamaican High Commissioner is giving opening remarks at a reception and screening of the video series at the Learning Centre of the Canada Agriculture and Food Museum in Ottawa, sponsored by the CHC. Jamaican workers are among those profiled in the video series, which includes a glimpse of their life and work back home.

Determine for yourself how you think the videos measure up, by checking them out, here: www.hortcouncil.ca/en/projects-and-programs/awareness-campaign-on-international-farm-workers/videos/

Carbon tax relief grants for B.C. greenhouse growers



Applications for carbon tax relief grants for the 2019 production year for eligible commercial greenhouse operators will be accepted until March 29, 2019. Commercial producers of B.C. vegetables, ornamental flowers and plants, forest seedlings and nursery plants are eligible to apply for the grant, providing they:

- had sales exceeding \$20,000 in 2018;
- used natural gas or propane to heat their greenhouses or produce CO₂; and
- had a production area greater than 455 square metres.

Cannabis is not an eligible crop at any phase of production including propagation. The grant covers 80 per cent of the carbon

tax that commercial greenhouse growers of eligible crops paid on the natural gas and propane they used for greenhouse heating and CO₂ production in 2018.

The greenhouse sector supplies consumers with fresh vegetables for about 10 months of the year on about 300 hectares of land. More than 100,000 tonnes of greenhouse vegetables are grown per year, including tomatoes, peppers, cucumbers, eggplants, lettuce and others.

The B.C. ministry of agriculture expects the processing and completion of applications, and the grants to be issued by June 2019.

Source: B.C. Ministry of Agriculture February 9, 2019 news release






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OFVGA ISSUES AND ACTIVITIES

Preparing for the next provincial budget



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

The Ontario government will release its first budget later this winter. In preparation, the government held town hall-style consultation sessions and accepted written submissions on how it should be allocating its resources. OFVGA was represented at two in-person consultations and submitted written comments about issues important to fruit and vegetable growers, such as funding for the Ontario Ministry of Agriculture, Food and Rural Affairs including Foodland Ontario, the Edible Horticulture Support Program, increasing the Risk

Management Program cap, continuity of the northern fruit and vegetable program and exempting food from carbon pricing, among others.

Ontario Food Terminal

As first noted in its fall economic statement, the provincial government has set up a formal task force to discuss agriculture industry issues, including changes to the Ontario Food Terminal network. Members include MPP Randy Pettapiece, Keith Currie (Ontario Federation of Agriculture), Dave Bутtenham (Ontario Agri-Business Association) and Norm Beal (Food and Beverage Ontario). The OFVGA is monitoring the activities of the advisory group and any discussions regarding the food terminal. The goal is to ensure fulsome consultation takes place that includes the industry on any plans to alter the existing food terminal. The issue was also raised to government in the OFVGA budget submission this past month.

Foodland Ontario

One of the most recognizable brands in the province is that of Foodland Ontario. Supporting local food production and consumption, the 40-year old program encourages retailers to feature Ontario-grown produce when in season. Many of Ontario's fruit and vegetable

commodity organizations are small with very limited budgets and it's Foodland Ontario that fills a vitally important role in encouraging local food consumption that wouldn't otherwise be happening.

OFVGA welcomes ongoing discussion with the province to ensure its investment into the brand is effective, meeting intended goals, and helping Ontario growers maintain their market opportunities. Any sector with questions about Foodland Ontario is asked to contact me.

Modernization of provincial alcohol regulations

The provincial government has indicated its intention to modernize alcohol sales in Ontario, including expanding points of sale. OFVGA recently wrote to the provincial government in support of its intentions to make alcohol more accessible for consumers while creating economic opportunities for retailers, manufacturers of alcoholic beverages and local farmers that grow inputs for the alcohol sector. However, policy changes need to recognize and support the opportunities for the growth of wine and ciders containing 100 per cent Ontario-grown grapes, apples and tender fruit. Allowing these sectors to grow will maximize the ability of Ontario's farmers, wineries and cideries to provide economic benefit to their local communities.

Red tape

The Ontario government is continuing to demonstrate significant attention to identifying and addressing various red tape that results from government regulation. OFVGA has begun to raise red tape issues including the pesticide classification process, water taking permits and environmental compliance approvals. However, with the focus red tape is getting right now, we do not want to miss an opportunity to address specific regulatory issues that could benefit our sector.

If you have concerns about a specific regulatory requirement, permit, licensing or reporting process, etc. that challenges your farm, contact me with specifics. This will enable the organization to bring it forward for consideration by government.

Canadian Horticultural Council AGM

The beginning of March marks the Canadian Horticultural Council's annual general meeting being held in Halifax. OFVGA representatives will be hard at work representing Ontario's perspective. Federal issues including crop protection, labour, the Perishable Agricultural Commodities Act and food safety regulations will be important priorities at the national level as the federal election approaches in fall 2019.

For more information on any industry issues, please contact Gordon Stock, senior policy and government relations advisor, at gstock@ofvga.org or 519-763-6160, ext. 125. More detailed updates can also be found at www.ofvga.org/news

COMING EVENTS 2019

- Mar 1 FARMS Annual General Meeting, Delhi, ON
- Mar 4 Canadian Potato Council meeting, Halifax, NS
- Mar 5 Asparagus Farmers of Ontario Grower Information Day, German Hall, Delhi, ON
- Mar 5-7 Canadian Horticultural Council Annual General Meeting, Halifax, NS
- Mar 6 Ontario Potato Conference, Delta Conference Centre, Guelph, ON
- Mar 7 Tomato Day, Country View Golf Course, Dover Center, ON
- Mar 10-16 Canadian Agricultural Safety Week
- Mar 12 Garlic and Vegetable IPM Workshop, SPUD Unit, New Liskeard Agriculture Research Station, New Liskeard, ON Register: www.garlicgrowersofontario.com
- Mar 13 Garlic and Vegetable IPM Workshop, College Boreal, Sudbury, ON Register: www.garlicgrowersofontario.com
- Mar 14 Garlic and Vegetable IPM Workshop, Johnston Township Community Centre, Desbarats, ON Register: www.garlicgrowersofontario.com
- Mar 19 Airblast 101 Workshop, Harrow, ON To register: <https://bit.ly/2RLS59m>
- Mar 19-21 Minor Use Priority Setting Workshop, Gatineau, QC
- Mar 20 Ontario Young Apple Farmer Day, Grace United Church, Thornbury, ON
- Mar 20 - 21 Northeast Potato Technology Forum, Rodd Charlottetown Hotel, Charlottetown PE
- Mar 21 Airblast 101 Workshop, Clarksburg, ON To register: <https://bit.ly/2RLS59m>
- Mar 23 31st Cuvée Grand Tasting, Scotiabank Conference Centre, Niagara Falls, ON




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RETAIL NAVIGATOR

All about Alberta, fourth largest Canadian market for food



PETER CHAPMAN

As we continue to move across the country to explore the different markets of Canada, we arrive in Alberta. It's the largest, by population of the prairie provinces and a very important market for food production in Canada. With significant acreage devoted to wheat, grain, pulses and live-stock production the province produces a significant amount of food but not a lot of fruits and vegetables, aside from potatoes.

Alberta is the fourth largest province in terms of total population, therefore the fourth largest market for selling food. The interesting fact about Alberta population is the growth of the market. In the following table, provincial population growth in Alberta is highest among provinces and double the national average (see chart).

In most parts of Canada, growth is occurring more from immigration into the country from other parts of the world. This does happen in Alberta but there is also a significant segment of the growth happening due to inflows from other provinces. The economy has been the major influence with people moving to Alberta to find work or more lucrative work. Obviously the decrease in oil prices have slowed this inter-provincial migration in the last two years.

The Alberta government reported the total population to be 4,330,206 on October 1, 2018. The growth has slowed but it does continue to grow. During the decade from 2007 to 2017 the majority of the growth was in the suburbs of Calgary and Edmonton, not the central core. There is also growth in the entire stretch between Calgary and Edmonton. As in other Canadian provinces the population is concentrated in the urban areas with more than 50 per cent of Albertans living in Calgary or Edmonton.

The population growth presents interesting opportunities for food producers and retailers. Growth is great but you have to be able to keep up with it. Consumers have expectations and when they are not met,

they go elsewhere. Another challenge of the Alberta economy is there are more drastic swings in consumer discretionary spending. Perhaps not the boom or bust of previous generations but certainly the oil industry and the price of oil impact what many Albertans have to spend or want to spend.

This market also has a median total income that is higher than the Canadian average. In 2015 the median total income in Alberta was \$93,835 compared to \$70,336 for Canada. These consumers should have more disposable income for food purchases.

Customers influence the buying decision

All of the large food retailers have a presence in Alberta, except Metro.

Co-op stores continue to have a strong presence in Alberta where Calgary Co op operates and consumers have strong ties to this brand. A major investment in stores has positioned this retailer with some contemporary store designs in markets where consumers have the ability to spend more. Co-op continues to be locally owned and supports local products and initiatives.

Loblaw operates Real Canadian Superstores in Alberta and they also supply the Extra Foods and No Frills banners. Previously, Loblaw operated western Canada from Calgary but now it is all operated from the store support centre in Brampton, Ontario. The company does continue to operate warehouses in Alberta to service the market and adjoining provinces.

Sobeys have been restructuring their business nationally and Alberta has experienced changes as well. Sobeys and Safeway stores both operate in the province. The company also supplies some IGA stores and they have indicated plans to bring FreshCo to the western provinces to give them an option in the discount segment of the market. Sobeys operate large distribution centres in Alberta.

Walmart has continued to expand the number of Supercenters in the province. Walmart operates the Alberta stores from its national office in Mississauga, however as in many Walmart markets, stores do have some autonomy to ensure they meet the needs of consumers in the market.

Costco has 17 warehouses in Alberta. The seven stores in the Edmonton market and six stores in the Calgary market are

complemented by four stores in Lethbridge, Medicine Hat, Red Deer and Grand Prairie. All stores are operated out of the Burnaby, B.C. Costco office. These warehouses offer similar assortments to warehouses in other regions.

Overwaitea has a significant presence in Alberta with 38 Save-On stores. The stores are similar to the Save-On Foods stores in other markets. It is a conventional store offering with more focus on local. This is the only banner the company operates in Alberta. They continue to open new stores in the market.

Your competition

Percentage of Canadian acres planted	
Acres of field vegetables planted	3%
Acres if greenhouse production	4%
Acres of fruit planted	5%

Population growth by province-Statistics Canada			
	2007	2017	Growth(%)
Newfoundland and Labrador	509,039	528,817	3.9
Prince Edward Island	137,721	152,817	10.4
Nova Scotia	935,071	953,869	2.0
New Brunswick	745,407	759,655	1.9
Quebec	7,692,736	8,394,034	9.1
Ontario	12,764,195	14,193,384	11.2
Manitoba	1,189,366	1,338,109	12.5
Saskatchewan	1,002,048	1,163,925	16.2
Alberta	3,514,031	4,286,134	22.0
British Columbia	4,290,988	4,817,160	12.3
Yukon	32,557	38,459	18.1
Northwest Territories	43,374	44,520	2.6
Nunavut	31,395	37,996	21.0
Total Canada	32,887,928	36,708,083	11.6

As we discussed earlier, fruit and vegetable production in Alberta is limited. Consumers in this market want to buy local as much as any other.

Source: Agriculture Agri-food Canada statistical overview of Canadian Agriculture

Go to www.thegrower.org/ authors for the full story.

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. peter@skufood.com

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MAKING MOVES

The last mile - An old challenge being tackled with new ideas



JENNIFER MORRIS

Getting any product to the end of the supply chain is difficult with any item but when that product is perishable food, it makes a challenging situation even more complex. This is exactly the issue with tackling the last mile in the transportation of food items.

What is the last mile? Last mile refers to the end portion of supply-chain movements, whether it is from a distribution centre (DC) to a customer's home or to a restaurant or retail store. This part of the supply chain can be 25-50 per cent of the overall cost of transporting the item! Named last mile, it

can be just that but typically can be up to 100 miles depending on location of the DC and end users.

Why is this a hot topic right now? Well, with more and more suppliers skipping wholesalers or retail all together, there is a higher demand for smaller amounts of products to be delivered directly to restaurants and customers' homes. Now companies are trying to apply traditional transportation to an old challenge that has new technologies driving it. Now tech companies are looking to tackle this and change how we approach the last mile.

Are there specific challenges to look at? Definitely there are three main challenges: speed, cost and food safety. Speed is always a challenge with transport. Everyone wants everything yesterday and working with end consumers is no different -- possibly even more demanding. Also, working with perishable products means that speed is important to shelf life.

Everyone wants to ensure they are paying something fair. However, for the attention that last mile requires, "fair" may

come with some sticker shock. Of course when you start adding spots in the supply chain where the cold chain is broken, there will be a food safety concern. However, with new technologies and advancements should come updated science and policies. The amount of food waste due to inaccurate policies is quite concerning but that's another topic altogether.

Are there new technologies to help? Yes, but adoption can be slow and there are of course still issues that come up. A lot of the technologies think outside the box and encourage consumers to pick up product. Apps such as Ritual people can order lunch or dinner and pick up from restaurants and are rewarded with no line-ups and points to be redeemed on the app. Amazon Fresh, Walmart, and Loblaw have online ordering and people then pick up their groceries curbside or even at a transit station on their way home. Finally, there are apps such as Flashfood that give deep discounts on items that will expire soon, tackling both the last mile challenge and potential food waste.

There are a few companies

that are using technology or clever routing and schedules to get food to where it needs to be. Mama Earth's Organics, for example, is a food box subscription model that delivers to certain neighbourhoods in the Greater Toronto Area on specific days. This ensures they can maximize the number of orders on the trucks in the area. FreshSpoke makes local food more accessible by providing wholesale buyers with the ability to source directly from local food suppliers and delivering to the door using the excess capacity that already exists in the commercial delivery system via an app that connects all the parties.

Marcia Woods, CEO of FreshSpoke says, "Retailers and restaurants are eager to provide their customers with more local food options but conventional distribution doesn't work for local food because it's not designed for the size of these orders which is by the case, not the skid."

Companies such as Mama Earth's and FreshSpoke have looked at an old problem with new perspective and it has been successful as they are both



seeing growth in the marketplace. New ideas and fresh perspectives will be the only way that the last mile challenge is addressed in a sustainable and economical way. How does your company tackle this part of the supply chain?

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.

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Ministry of Agriculture,
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Re-evaluation decisions on thiram, ferbam, captan and chlorothalonil



Table 1. Ferbam, thiram and captan e-evaluation decisions

Product	Decision	Current Berry Crop and Use
Ferbam Product name: Ferbam 76 WDG PCP # 20136	Cancelling of all registered uses and revocation of all MRLs. Products will be phased out over a 3 year period. Phase out: - sale by registrant until December 2019 - sale by retailer until December 2020 - use by producers until December 2021.	Blueberry (Botrytis Grey mould) Currant and Gooseberry (Leaf Spot) Raspberry and Blackberry (Anthracnose spur blight)
Thiram Product name: Granuflo T PCP # 30548	Cancelling registration of all uses on strawberry and revocation of all MRLs of thiram. Products will be phased out over a 3 year period. Phase out: - sale by registrant until December 2019 - sale by retailer until December 2020 - use by producers until December 2021.	Strawberry (Botrytis grey mould)
Captan Product name: Supra Captan 80 WDG (PCP #24613)	Maestro 80 DF (PCP #26408) Continued registration when used with required label amendments. See Table 2. below. Label changes will take place by May, 2020.	Strawberry (Botrytis grey mould, common leaf spot) Raspberry and Blackberry (spur blight, Botrytis grey mould) Blueberry (mummy berry, Botrytis fruit rot)
Chlorothalonil Product name: Bravo (PCP # 28900) Echo (PCP # 29356)	Continued registration when used with required label amendments. See Table 3. below. Label changes will take place by May, 2020.	Strawberry (Botrytis grey mould) Blueberry (anthracnose fruit rot, phomopsis, alternaria fruit rot)

Table 2. Required label changes to captan label.

Crop	REI	Maximum Applications	Notes
Strawberry	9 days (hand set irrigation), 6 days (hand harvesting), 12 hours (all other activities)	6 applications, 7 day re-treatment interval	Apply maximum 2.8 kg/ active ingredient/ha = 3.5 kg/ha product (reduced from 4.25 kg/ha) based on products with 80% a.i. Apply preventatively, when conditions are favourable to disease development.
Raspberry	7 days (hand set irrigation), 6 days (hand harvesting), 12 hours (all other activities)	6 applications, 7 day re-treatment interval	Apply preventatively, when conditions are favourable to disease development.
Blueberry	6 days (hand set irrigation), 5 days (hand harvesting), 12 hours (all other activities)	6 applications, 7 day re-treatment interval	Apply preventatively, when conditions are favourable to disease development.

REI = Restricted-Entry Interval. REIs longer than 12 hours apply to hand labour tasks. If the REI for hand harvesting and the pre-harvest interval (PHI) are different, follow the longer of the two intervals. Mechanical harvesting could occur after the PHI provided there is no worker contact with treated foliage. If the REI is 12 hours and a PHI is not specified, entry is not permitted until after 12 hour

Table 3. Required label changes to chlorothalonil label.

Crop	REI	Maximum Applications	Notes
Blueberry	3 days (hand set irrigation), 12 hours (all other activities)	2 applications 7 day re-treatment interval	Max application rate: 3.6 kg a.i./ha (rates remain the same)
Strawberry	12 hours	2 (spring) + 1 (post-harvest) 10 day re-treatment interval	Max application rate: 1.8 kg a.i per hectare (rates remain the same). Do not apply within 30 days of harvest. Apply once in the fall and two pre-bloom sprays the following spring, one when new growth appears, and again 10 days later.

ERICA PATE

The Pest Management Regulatory Agency (PMRA) has recently announced the re-evaluation decisions for ferbam and thiram. The re-evaluation decisions for products containing captan and chlorothalonil were also released in May 2018.

The ferbam decision was released December 14, 2018. The decision was made to cancel all uses, including use on stone fruit, pome fruit, greenhouse vegetables, grapes, and berries. Products containing ferbam will be phased out over a three-year period.

The thiram decision was released December 14, 2018. While some uses continue to be registered (animal repellent uses, some seed treatments) with new mitigation measures, the decision was made to cancel all uses on apple, peach, plum, strawberry, and celery. Uses that are cancelled will be phased out over a three year period.

The captan decision was released May 10, 2018. The decision was made to continue registration of blackberry, blueberry, raspberry and strawberry uses when used with the required amendments to label directions. The registrant has 24 months to make the appropriate label changes. See Table 2. for a summary on the changes to the label regarding berry crops.

The chlorothalonil decision was released May 10, 2018. The decision was made to continue registration when used with the required amendments to label directions. Certain uses of chlorothalonil will be cancelled (greenhouse cut flowers, field grown roses). The registrants have 24 months to make the appropriate label changes. See Table 3. for a summary on the changes to the label regarding berry crops.

Captan re-evaluation risk mitigation measures include:
• Additional protective equipment and engineering controls when mixing and

applying to all crops, revised restricted-entry intervals (REI) for some crops, restrictions on the number and timing of applications allowed per season for some crops, and a reduced maximum rate for strawberries.

• All captan products registered as wettable powders and wettable granules must be reformulated in water soluble packaging. Buffer zones will also be included on the revised label.

Chlorothalonil re-evaluation risk mitigation measures include:

• Additional protective equipment, revised restricted-entry intervals (REI) for some crops, restrictions on the number of applications allowed per season, a requirement of vegetative filter strips and revised buffer zones must be observed.

• All chlorothalonil products currently registered as dry flowable and water dispersible granules must be packaged in water soluble packaging.

Vegetative filter strips

A Vegetative Filter Strip (VFS) of at least 10 metres wide must be constructed and maintained. The VFS is required between the field edge and adjacent, downhill aquatic habitats to reduce risk to aquatic organisms from run-off. Aquatic habitats include, but are not limited to: lakes, reservoirs, rivers, permanent streams, marshes or natural ponds and estuaries. The VFS is to be composed of grasses and may also include shrubs, trees, or other vegetation. Additional guidance can be found on the PMRA Environmental Risk Mitigation webpages. Both VFS and spray drift buffer zones must be observed.

Erica Pate is OMAFRA fruit crop specialist.

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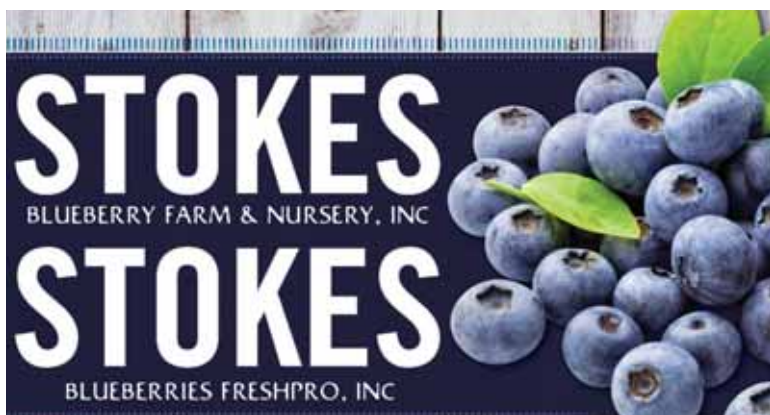
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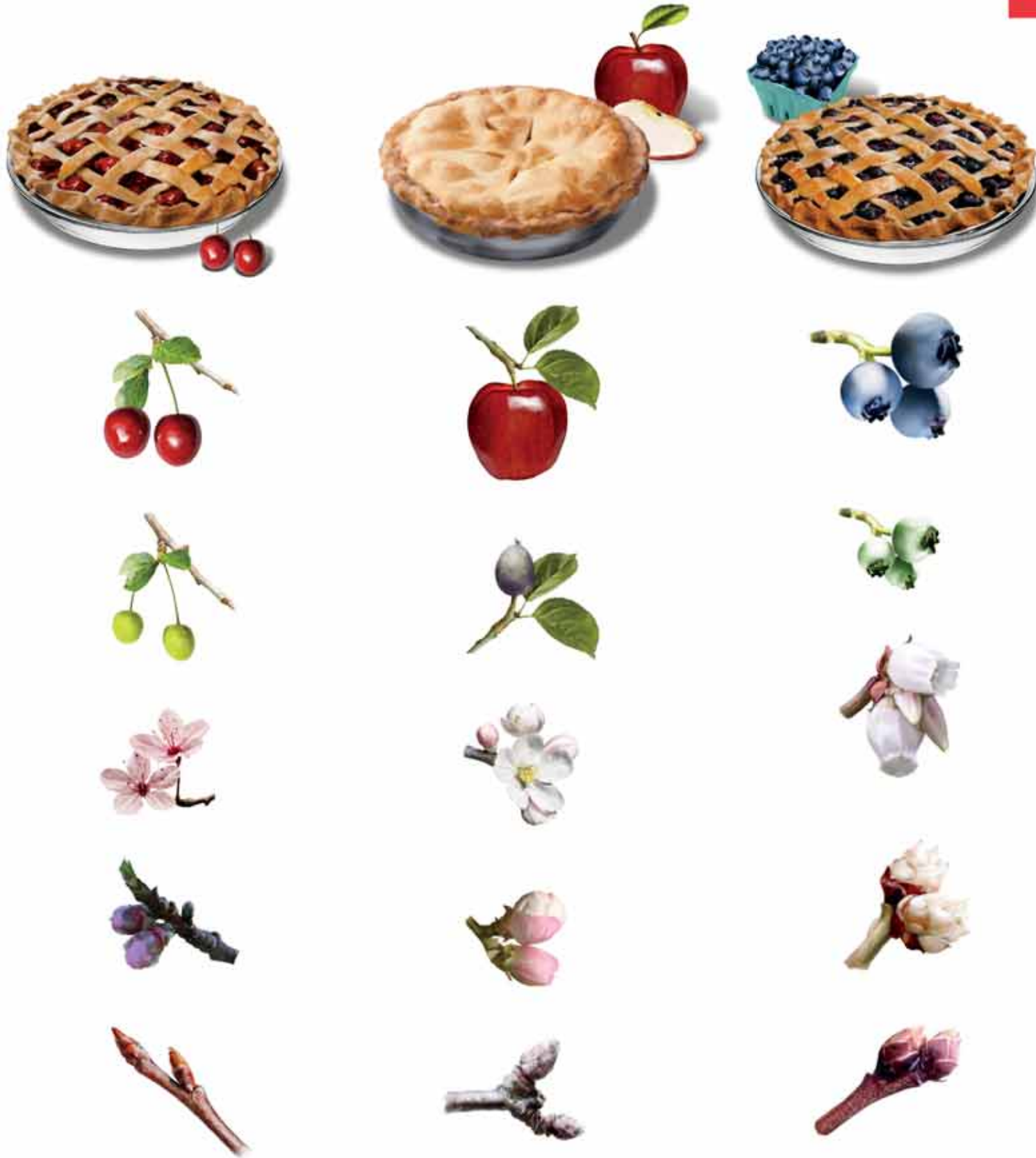
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CROP PROTECTION & SPRAYING

Tune into your local environment



David Knight manages close to 500 acres of apple orchards near Colborne, Ontario. He's been responsible for the post-harvest and marketing side of the operation. But three years ago, he took over crop protection decisions as well. That's when consultant Margaret Appleby brought him up to speed. Photos by Glenn Lowson.

KAREN DAVIDSON

Gambling with Mother Nature is a roller-coaster. But apple grower David Knight does his best to keep some aces up his sleeve.

"You can't go to the casino and bet everything on black," he says.

That's his quip after assuming crop protection decisions three years ago in addition to post-harvest and marketing for almost 500 acres of orchards near Colborne, Ontario. He reached out to crop consultant Margaret Appleby for help.

"She's been an excellent resource," says Knight of the former OMAFRA IPM specialist. "You can get a university degree but there's nothing that prepares you for hands-on experience. It's site-specific. You tend to learn when you mess up."

One of the first things to learn was the critical importance of scouting and timing. It sounds obvious but executing on daily observations is what demands management decisions. The spray rig may be directed to operate in only a

specific block. Every year's weather is different, so don't depend on last year's script. One example is that potato leafhopper damage was severe in 2017. When a neighbour's hay field was cut in mid-June, the insects migrated to the orchard. So developing an awareness of what's happening in your own local environment is key.

Integrated pest management is easier said than done -- spraying only when and where the insects are. It's done at economic thresholds. It's done without upsetting the balance with beneficial insects.

"From mid-April to end of June, it's very intense," says consultant Margaret Appleby. "Apple growers are attempting to head off disease and pests. After bloom, decisions are made on how to thin and what levels of nutrition to provide."

Phase-outs of some crop protection materials by the Pest Management Regulatory Agency (PMRA) are causing concern for growers. While de-regulation may not occur until 2020 in some instances, learning to cope with a limited toolbox will put stress on producing



apples in eastern Canada.

Mancozeb, for example, is cited by Knight as a mainstay of the crop protection program. Without this active ingredient, growers will need to employ single-site products that cost four times more.

"About 75 per cent of our crop protection program is to fight apple scab," says Knight. "It appears hypocritical of the government to consider banning mancozeb while still admitting apples from other countries

which allow this product use."

Appleby indicates that 2019 will be okay. "But growers need to learn how to manage early-season diseases such as apple scab and cedar apple rust," she says. "These cause direct damage to the fruit. The loss of broad-spectrum fungicides (i.e. EBDCs) means turning to single-site fungicides with different modes of action. The other question is how biopesticides can fit."

Continued on page 2

FOCUS: CROP PROTECTION & SPRAYING

Tune into your local environment



This HOL sprayer, designed for high-density apple orchards, is pictured at petal fall at Scarlett Acres, Colborne, Ontario.

It appears hypocritical of the government to consider banning mancozeb while still admitting apples from other countries which allow this product use.

Continued from page 2

One of the improvements that Appleby has seen in the last two years is a reduction of powdery mildew. Some apple varieties such as Honeycrisp and Gala are susceptible, but by changing fungicides, the incidence has been

reduced.

Appleby is supported by the Quinte Integrated Pest Management Group which has been in force since 1984. Orchardists, and more recently vineyards, have pooled money to hire a student to scout fruit crops. Once every week, a student scouts each grower's orchard to identify emerging diseases

and pests, qualifying severity according to pest traps and leaf samples. Appleby is hired to supervise the student and aggregate the raw data. In 2019, hops will be added to the mix.

For Knight, plans are already shaping up for the spring season. First, Knight will define a spray schedule with fungicides in the right rotational order. If his farm gets back-to-back rains, then he has a systemic product as a back-up plan.

Secondly, he will continue to refine his inputs to improve quality of fruit and finish. Some of those results harken back to thinning – how hard? how lenient? That's one of the toughest decisions for an apple grower, but Knight plans to be more aggressive in thinning. More chemical thinners will be part of the regime, because hand-thinning can't be done quickly enough.

Thirdly, he is purchasing an on-farm weather station made by Spectrum Technologies. "It's cell-based and has programs for disease monitoring," says Knight. The Cougar blight model for predicting fire blight is part of the package. The most critical time for detecting fire blight (*E. amylovora*) infection is four to six weeks after bloom. The biggest risk for infection is when temperatures reach 75°F to 93°F. So an on-farm station will offer not only temperatures, but through sensors, real-time measurements of soil moisture and leaf wetness. Together, these data points will offer insight to managing a range of pests and diseases.

With this action plan in place, David Knight in placing his bets on the apple crop of 2019.



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FOCUS: CROP PROTECTION & SPRAYING

More dialogue needed on crop protection issues

KAREN DAVIDSON

When the Pest Management Regulatory Agency (PMRA) set up a stakeholder engagement unit last summer, it was an acknowledgment that more dialogue is needed with growers in a time of unprecedented change. That dialogue must be two-way, with growers similarly tasked with providing more input on use patterns, use rates and personal protective equipment.

“No one can speak to your needs better than you!” said Dr. Maria Trainer, managing director, science and regulatory affairs, chemistry for CropLife Canada. She represents the manufacturers of crop protection products. “Help us identify the best mechanisms to collect and submit information to PMRA.”

The angst for growers is real with the proposed phase-out of the neonicotinoid class of products: clothianidin, thiamethoxam and imidacloprid. The use of other products such as mancozeb will be severely curtailed.

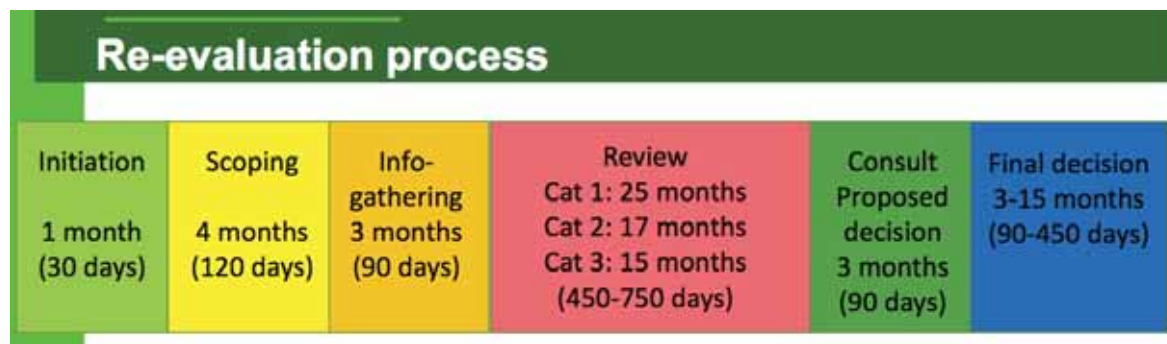
For the PMRA, the workload is piling up. According to Trainer, there are currently 74 active ingredients that are up for their cyclical review which is triggered every 15 years. There are another 369 to be initiated between 2019 and 2028. There are 23 active ingredients under special review. This process can be triggered when new information suggests that the health or environmental risks of a product, or its value, are no longer acceptable. Another trigger is if one of 34 member countries of the Organization for Economic Cooperation and Development (OECD) prohibits all uses of a pesticide for health or environmental reasons.

In figure 1, refer to the timeline of the PMRA re-evaluation process which can take up to 1,530 days or about four years. From CropLife Canada’s perspective, there is limited stakeholder engagement, no opportunity to refine assumptions and minimal alignment with global regulatory partners. Trainer suggests several ways to remove the logjam. Improve the 30-day scoping period. Increase consultation opportunities earlier in the process. Publish a draft risk assessment before the proposed decision. Pursue opportunities to collaborate with other respected regulators such as the U.S. Environmental Protection Agency. Explore use of emerging tools and technologies. Explore ways to improve

public consultations. Explore opportunities to improve regulatory efficiency.

These initiatives are important because growers are losing critical active ingredients in the toolbox. The pipeline for new active ingredients is limited. Development costs are rising to about \$286 million per active ingredient.

Thanks to Terri Stewart, head of PMRA’s Agricultural Stakeholder Engagement Unit, there is now a formal point of



contact for growers. (See page B6) In addition, Trainer suggests that growers become their own lobbyists, developing long-term relationships with local MPs. Many have no background in agriculture or the plant sciences. Politicians are paid to talk to constituents, so don’t be

afraid to call their office and schedule a meeting. Use email. Use social media. Introduce yourself at a public event. Share your gleanings with fellow advocates on what your MP is saying on these critical issues. Access to crop protection products is key to keep

agriculture in the forefront as an economic driver.

This is a new kind of ground game for growers. But a one-on-one dialogue with MPs is increasingly important for agriculture to be heard and understood.

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FOCUS: CROP PROTECTION & SPRAYING

Crop-adapted spraying in blueberries saves water and pesticide

JASON DEVEAU

In 2018, we worked with a new grower who bought a mature, highbush blueberry operation in southern Ontario a few years earlier. The seller -- a 30-year veteran -- advised spraying as much and as often as possible. The nouveau farmer did so, albeit with reservations about wielding chemistry like a sledgehammer rather than as a surgical part of integrated pest management (IPM). The result? Spotted-wing drosophila (SWD) still had significant impacts on the crop and no one was comfortable with the aggressive pesticide use in a U-pick operation.

The grower elected to make significant changes.

In 2016 the grower performed an aggressive pruning for the following benefits:

- Allow air to circulate and humidity to escape, reducing potential for disease
- Improve light penetration, which improves berry quality

- Clear alleys of overhang, allowing the tractor to pass without damaging berries or blocking spray nozzles
- Expose the lower-middle portion of the canopy, where SWD is known to reside when it is hot and dry

There are concerns with such a dramatic pruning. There's less potential for production per acre, and trellising the bushes may become necessary as berries weigh the smaller bush down. In 2017, the grower found that the quality of the remaining berries was greatly improved, and this meant fewer hours culling berries during packing. Financially, the grower felt he came out ahead. But pest control was still an issue.

In 2018 the grower changed the spray program. The exiting farmer left his Kinkelder air shear sprayer behind, however it was designed to reach the top of standard fruit trees. The >100 mph air and extremely fine spray droplets were excessive for highbush blueberries.

The grower considered a

cannon-style sprayer hoping to spray multiple rows in a single pass, but given his desire for improved coverage and reduced waste, he elected to drive every row using an axial sprayer. It then remained for us to use the crop-adapted process to calibrate the air volume, air direction and travel speed before settling on a nozzling solution. This process is covered in the Airblast101 book at www.

In April, May and June of 2018 we used water-sensitive paper to confirm coverage. We also performed weekly scouting. By matching the sprayer calibration to a well-managed canopy, the grower went from ~1,000 L/ha to ~400 L/ha, representing considerable savings in water and pesticide. Please note that our objective was not to reduce water or pesticide -- simply to spray the amount required. In this case, a reduction was warranted. Chemistry was rotated and applications were made according to IPM in early morning -- as long as there were no pollinators -- to avoid potential



If you can see light through a post petal-fall canopy at high noon, you have done a good job of pruning.



By matching the sprayer calibration to a well-managed canopy, the grower went from ~1,000 L/ha to ~400 L/ha, representing considerable savings in water and pesticide.



By early July, the berries looked great and spray coverage continued to meet threshold without excess.

drift due to thermal inversions.

Note how little spray escapes the target rows in the following video. https://sprayers101.com/cas_blueberry_1/ Bear in mind the wind was very high, but given that this was just water we saw it as an opportunity to test in a worst-case scenario (please don't spray in such high winds). We used air-induction hollow cones in the top nozzle position so droplets were large enough to fall back to ground when they vectored over the top of the canopy, or between the bushes. Further, we used gear-up, throttle down to moderate the air.

The grower was very happy with the reduction in noise and the greatly improved accuracy of the spray applications. By early July, the berries looked great and spray coverage continued to meet threshold without excess. Note that spray coverage can be variable. Occasionally there are drenches and misses. This is why it is important to assess coverage in multiple locations and not rely on a single target canopy.

Dr. Jason Deveau is application technology specialist for OMAFRA.



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FOCUS: CROP PROTECTION & SPRAYING

Managing emerging pest threats: lessons learned from pepper weevil

KAREN DAVIDSON

Three years ago, Ontario's greenhouse pepper sector lost a large amount of money to a little invasive insect. The pepper weevil damaged anywhere from \$60 to \$90 million worth of produce.

To put the problem in perspective, about one third of Ontario's 3,000 acres of greenhouse vegetables are planted to peppers. And all of the acreage is susceptible according to Niki Bennett, science coordinator for Ontario Greenhouse Vegetable Growers (OGVG) and Cara McCreary, greenhouse vegetable IPM specialist for the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA). They presented a case history of how the sector tackled the pest at the October 2018 Canadian Greenhouse Conference.

"2016 had a record-setting number of 30°C days," said Bennett. "Pepper weevil populations became unmanageable quickly and there were significant grower losses. Common agricultural practices exacerbated the outbreak and caught growers and their scouts flat-footed."

Not only were there produce losses but extraordinary costs were incurred for integrated pest management and clean-up. Due to the biology of the pest, pepper weevil is not simple to control with conventional strategies. Females can lay up to 600 eggs with an average of 341. The population doubles every five to seven days at 30°C. All immature stages – eggs, three larval instars, pupae – occur inside the pepper. Therefore, chemical strategies are only potentially effective against the adults.

Management is extremely labour intensive, demanding extensive scouting and removal of infected fruit. Proper disposal of plant material requires burying at least 30 cm underground, freezing and/or sending to a landfill in a covered container.

Pepper weevil is not regulated by the Canadian Food Inspection Agency (CFIA). In other words, first discoveries do not need to be reported and no quarantines are required.

"Pepper weevil can explode from a small problem to an unmanageable problem within two weeks," said Bennett.

This unprecedented pest outbreak was tackled with vigour by a task force that consisted of OGVG staff, commercial growers and IPM personnel, government

specialists and researchers. A subset technical working group was created. This group comprised commercial growers and IPM personnel, suppliers, scouting companies and OMAFRA staff as well as federal Agriculture and Agri-Food Canada researchers.

The first order of business was to identify the knowledge gaps and to prioritize what to tackle first. Experts in North America were consulted from both Mexico and the southern United States who were more familiar with the pest's life cycle. This whole-of-industry approach has served as an excellent template to wrestle with pepper weevil.

Equally important were the experiences of greenhouse growers themselves. As Cara McCreary explains, "Grower involvement was critical."


Grower innovations arose from the crisis, she said. One greenhouse trained an insect-sniffing dog to nose out pepper weevil. Another greenhouse put a bounty on pepper weevil, compensating workers for finding the pest.

On the government side, surveys were conducted using pheromone traps to map the occurrence of pepper weevil populations. A list of beneficial insects that could prey on pepper weevils was developed. The most promising parasitoid is *Jaliscoa hunteri* which has a track record as a biological control agent in Mexico.

Fortunately, an AAFC research station is located nearby in Harrow, Ontario. There, Dr. Rose Labbé and Cara McCreary evaluated how to mechanically prevent pepper weevil adults from entering greenhouses using exclusion screening. They evaluated screen sizes with a greenhouse-bred colony of pepper weevils and determined that 2.0 x 2.0 mm is large enough to let 100 per cent of pepper weevil adults through. A mesh size of 1.0 x 2.5 mm or smaller was required to exclude pepper weevil.

While some emergency registrations and priorities were achieved through the minor use program, researchers are looking at biopesticide solutions that are compatible with current biological control programs. It's worth noting that whether the active ingredient is an organic or conventional pesticide, it still has to go through the Pest Management Regulatory Agency for registration.





Other researchers such as Dr. Rebecca Hallett, University of Guelph, are currently looking at pheromones. Her M.Sc



Government Initiatives

Species	Family, subfamily	# individuals collected
<i>Bracon spp.</i>	Braconidae, Braconinae	6 ♀ 10 ♂
<i>Nealioilus species 1</i>	Braconidae, Brachistinae	4 ♀ 2 ♂
<i>Nealioilus species 2</i>	Braconidae, Brachistinae	2 ♀ 1 ♂
<i>Nealioilus species 3</i>	Braconidae, Brachistinae	1 ♀
<i>Pteromalus anthonomi</i>	Pteromalidae, Pteromalinae	8 ♀ 2 ♂
<i>Jaliscoa hunteri</i>	Pteromalidae, Pteromalinae	6 ♀
<i>Eupelmus pulchriceps</i>	Eupelmidae, Eupelminae	1 ♀

Source: Labbé R., Hilker R., Gagnier D., McCreary C., Gibson G., Fernández-Triana J., Mason P., and Garipey T. 2018. Natural enemies of *Anthonomus eugenii* (Coleoptera: Curculionidae) in Canada. *Can. Entomol.* 150: 404-411



Proper disposal of plant material requires sending to a landfill in a covered container as is seen here at Orangeline Farms, Leamington, Ontario. Photo by Glenn Lowson.

candidate Cassandra Russell is looking at how effective the existing pheromone traps are as a monitoring tool. They are also evaluating several trap designs to improve monitoring and potential use in mass-trapping or push-pull approaches.

In the last three growing seasons, considerable progress has been made. In 2017, a Best Management Practices toolkit was developed including infographics, posters and checklists. By 2018, losses were down significantly.

McCreary explained that a number of channels were used to communicate to the greenhouse sector. They included: existing working groups, grower-led meetings, IPM specialists who emphasized that pepper weevil was a community pest, emails, member portals, texts and phone calls.

At the Ontario Greenhouse Vegetable Growers, Bennett says, "Pepper weevil is here to stay. We have increased communication and have noticed an increased commitment to good biosecurity practices. This pest requires a true integrated pest management approach. It's not enough to register a chemical product. Screening and good biosecurity practices are important."

The sector has recognized that prevention is easier and

cheaper than cleanup. No individual greenhouse grower is going to solve the problem alone. With a concentrated effort at understanding the pest, growers are better at monitoring and have gained more confidence in management.

Planting for the 2019 season, growers have realized that biosecurity and sanitation are key. Many have installed screens – at great cost – and waste management plans are in place to prevent pest transmission.

With climate change and increasing global trade (i.e. CETA and TPP), new pests are

inevitable. Bennett predicts that tomato leafminer (*Tuta absoluta*) will be the most serious of the potential emerging pests. It's very damaging to tomato plants, making the fruit unmarketable.

Although the tropical pest is not expected to survive year-round in Canada, it is very likely that if a Canadian greenhouse were to become infested, it would successfully spread to surrounding greenhouse and field operations during the summer months.

Sound familiar? Ontario's greenhouse sector is armed and ready.

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FOCUS: CROP PROTECTION & SPRAYING

An update on controlling tree fruit insects in the Okanagan Valley

Editor's note: This is an excerpt from the Crop Protection Committee presented to the annual general meeting of the BC Fruit Growers' Association on February 12-13.

DAVID MACHIAL

The best news of the year is that, after detections of apple maggot in West Kelowna (2015) and Kelowna (2016), no apple maggot were detected in 2017 or 2018 at either site. The West Kelowna site is considered 'free of apple maggot' and the Kelowna site may achieve this status after the 2019 season. If that occurs, the current quarantine will continue as if no detections were made.

Brown Marmorated Stink Bug (BMSB) populations continue to grow in urban areas, but so far orchards have been relatively free of the pest. BMSB is not a quarantine pest, as its movement is virtually uncontrollable. A parasitic wasp from Asia has been discovered in the Lower Mainland and we are hoping that it will be introduced to the Okanagan.

The BC Plant Protection Advisory Committee (BCPPAC) is an inter-governmental group that looks at invasive pests and how to control them. The BCP-

PAC uses sub-committees to develop specific sector plans.

Relatedly, work continues on the Plant and Animal Health Strategy established in 2017, with a new group forming in support of the strategy called the Canadian Plant Health Council. The Canadian Plant Health Council is focusing three initiatives:

- biosecurity
- emergency response
- surveillance

The strategy and Council are relatively new, so this is a chance to improve invasive pest management to a more effective level of operation. The Canadian Horticultural Council is looking for people to volunteer to participate in the respective working groups of the Council.

The BCFGGA continues to nominate three producer-directors to the Sterile Insect Release (SIR) Board: David Dobernick, Amarjit Lalli, and Walter Makepeace. Glen Lucas, BCFGGA general manager, also attends Board meetings. SIR has several exciting projects underway. SIR is also seeking to improve performance in the areas where there are 'out-

breaks' to ensure that they can be better controlled in future. SIR also continues to consider the scope of the program, perhaps by adding other insect pests if growers agree.

Finally, the BCFGGA has completed the third year of a pilot project on Apple Clearwing Moth (ACM). BC Investment Agriculture Foundation provided funding for this project. The project is composed of three parts:

Zone 1, the South Okanagan and Similkameen will see pheromones deployed in areas that are as discrete from other areas as possible. Previous efforts at pheromone control were unsuccessful, but deployed in irregularly in an area. Pheromones will be provided to the selected areas to provide three years of coverage.

Zone 2, the Central Okanagan not including all of Winfield, will see pheromones deployed in all farms. About one-half of the farms received the pheromones in 2016 and 2017, and the final allotment will be this year.

Zone 3, the North Okanagan including part of Winfield, will



Apple clearwing moth adult. Photo by G. Judd, AAFC.

use a variety of measures to protect trees from ACM.

Bucket traps were deployed in all areas of the valley in 2018, following previous deployments in 2012, 2014 and 2016. The trap captures are being identified and counted by a contractor, with results to be mapped by SIR later this spring. It is important to note that areas where pheromone mating disruption is in place will not have meaningful trap results - trap counts will be "zero" as the traps are 'shut down' by the pheromone.

All areas are being monitored

with trunk surveys for larvae and this information will be cross-referenced with treatment types and also bucket trap results. Both the trap counts will be available in the next few weeks, while the trunk survey in the summer of 2019 will finalize the three-year pilot project and give us insight into the use of pheromones for control of ACM populations.

David Machial is co-chair, crop protection committee, BC Fruit Growers' Association.

Register now for Blueberry 1.0 Workshop

ERICA PATE

The Berry Growers of Ontario will be hosting a blueberry workshop April 2nd, in Simcoe, Ontario. This meeting will cover the essentials of blueberry production in Ontario from site selection and preparation to pest management and sprayer calibration. New and experienced growers are welcome.

Dr. Gary Pavlis will be attending from Rutgers University to cover site selection, fertilization, and blueberry pruning. Dr. Pavlis is an agricultural agent at Rutgers University at the Rutgers New Jersey Agricultural Experiment Station, and has years of experience covering blueberry and grape production. Jason

8:30	Welcome
9:00	Blueberry physiology 1.0
9:30	Blueberry site selection
10:00	Considerations for choosing a variety
10:15	Break
10:30	Weed management
11:00	Fertilizing tips for blueberries
11:30	Marketing your blueberry crop
12:00	Lunch
12:45	Key blueberry pests and how to manage them
1:30	In-field pruning and field visit
2:30	Sprayer calibration and crop-adapted spraying for blueberry growers
3:30	Discussion and adjourn

Deveau, application technology specialist, and Kristen Obeid, weed management specialist-horticulture, from OMAFRA

will also be joining for the program.

Pre-registration is required. Cost is \$75 for members.



Contact the Berry Growers of Ontario at info@ontarioberries.com or 905-735-5379 to register.

Erica Pate is fruit crop specialist for OMAFRA.

Photo by Glenn Lawson.



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FOCUS: CROP PROTECTION & SPRAYING

Can onion maggot be managed without insecticides?

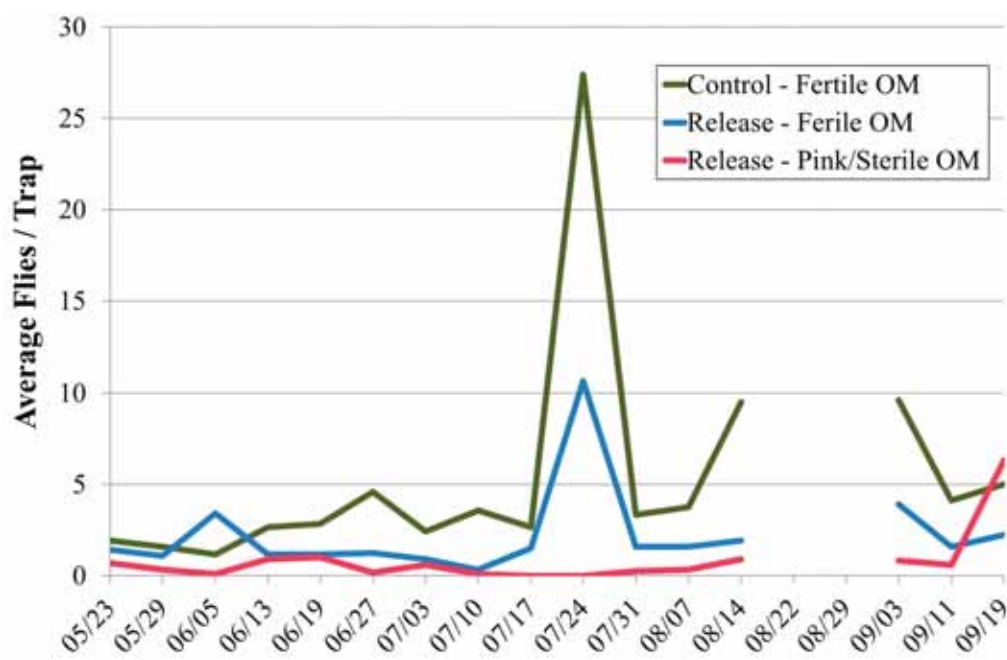


Figure 1. Average flies per sticky trap per week at both field sites. Fertile fly counts at the control field (green) were generally higher than counts at the release field (blue). Sterile flies were found in relatively low numbers at the release field (pink) while no sterile flies were found at the control field 4.3 km away.

TRAVIS CRANMER

The onion maggot (*Delia antiqua*) is the larvae stage of the onion maggot fly which can cause severe damage to onions but can also feed on other alliums including shallots, leeks, garlic and chives. The adult onion maggot is a fly that is about half the size of a house fly, has a body that is grey in colour and has reddish eyes.

The onion maggot fly overwinters as a pupae in the top 15 cm of soil. In the early spring, adult flies emerge and the females lay small, white eggs ~2–10 cm below the soil line around the base of the plant. Once the eggs hatch, the larvae start feeding off susceptible *Allium* species. Small plants are most susceptible, and in onion, one maggot can kill up to 20 plants. Cool, wet weather favours development and without control, *D. antiqua* can reduce plant stands by more than 50 per cent if crops are not protected. Even if the plant is not killed, wounds caused by the larvae can cause secondary rots in storage.

Onion maggot management relies heavily on seed treatments, or on group 1B organophosphates, specifically chlorpyrifos insecticides which have been identified as a major surface water contaminant in some vegetable growing areas. The prospect of insecticide resistance and potential restrictions of use illustrate the importance of alternative management strategies for this insect.

Sterile Insect Technology (SIT) in Quebec has proven to eliminate the application of soil and foliar chlorpyrifos insecticides in most fields while

maintaining onion yields comparable to pesticide-based programs.

The idea is that by releasing sterile male onion maggot flies on a weekly basis, these male flies will mate with the wild, fertile females and the eggs that they lay will not be fertile. These eggs would not hatch into larvae, there would be no larvae to cause damage to the onion, and the population of flies would decrease over time.

This strategy has proven to be successful in Quebec, and acreage using SIT has grown from 346 acres in 2011 to 1680 acres in 2017. Work in Quebec has shown that the release rates of sterile flies could be decreased by up to 90 per cent within five years of repeated use due to the reduction of wild populations while also decreasing the cost of the sterile fly program itself.

An Agriculture and Agri-Food Canada (AAFC) project to demonstrate the use of sterile fly release technology for onion maggot management in Ontario was conducted in 2018 in collaboration with Phytodata Inc. and OMAFRA. The trial was set up in two fields of onion sets approximately 4.3 km apart with no other major onion fields within a 20 km radius. Flies were sterilized and released according to the protocol developed by Phytodata in the 'release' field while no flies were released in the 'control' field. Sticky cards were used weekly to monitor natural onion maggot populations as well as the displacement of sterile flies throughout the growing season. Sterile flies were differentiated on sticky cards by their colour as these flies were dyed pink before they were released.

Sticky card counts through-

out the season indicate that the control field had a higher fertile fly pressure than the release field from June 13 until harvest. An average of 2.2 flies/trap/week were counted per trap in the release field compared to 5.4 flies/trap/week in the control (Figure 1). No pink flies were found on any of the sticky cards at the control field. Sticky cards were compromised by a weather event on August 22nd and therefore card counts were not quantified between August 15th and August 28th.

While this trial showed a



Figure 2. Wilted onion due to onion maggot damage.



Figure 3. Adult maggot fly on a yellow sticky card.

population reduction of more than 50 per cent of fertile onion maggot flies at the release field within a single year, it is unknown whether the wild onion maggot population was equal between the two sites. A continuation of this program would most likely reduce the need of chemical control options for onion maggot fly in

the area if continued. A full report of the trial is posted on ONvegetables.com. If you are interested in applying this management strategy on your farm, please contact Anne-Marie Fortier at afortier@phytodata.ca

Travis Cranmer is a vegetable crops specialist, OMAFRA.

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- Management, Green Tree Orchards, Michigan

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FOCUS: CROP PROTECTION & SPRAYING

Proposal for label summary sheet invites debate

JASON DEVEAU

The problem with having outdated or impractical information on labels is that it creates disrespect. Since labels are documents enforceable by federal law, applicators want to comply. At this time, they can't, and probably shouldn't, if they want to do the job right.

A vision for a good label should be one that respects the needs of the applicator. Such a label:

- places the information that applicators need at the top
- is updated regularly to reflect modern practice and useful advice
- helps a new applicator work out how to apply the product with any equipment
- identifies a spray quality that offers good coverage and low drift
- references research that supports variations in the application guidelines
- is available electronically, readable on a mobile device, i.e., not pdf.

To that end, we have worked with growers, university/government extension and industry to develop a prototype we're calling the "Label Summary Sheet" or LSS for short. It does not replace or interpret the current

label, which is a legal document. It is a summary intended to accompany it. Now remember: this is simply a proposal. These documents are not intended for use right now; we hope they will grow and change for the better as they stimulate discussion.





Some agrichemical companies recognize this need and have developed short documents to summarize key aspects of the label, but they are inconsistent and brand-specific marketing documents that do not always contain the information we are proposing.

Here is the Pristine LSS broken down by section to highlight the key features. (See charts)

Note that each LSS features the same section headings and a relatively consistent layout, no matter the manufacturer. Generic icons are used to illustrate content and make it easier for users to navigate without language barriers. The LSS are black and white to facilitate reproduction and refer back to their respective pesticide labels (i.e. the online PDF, not the booklets that come with the pesticides).

Continued on next page

PRISTINE
LABEL SUMMARY SHEET
 LABEL DATE: 2016-02-23
 BASF: 877.371.2273

TYPE	MODE OF ACTION/ACTIVE INGREDIENT	FORMULATION	PCP#
Fungicide	Group 7/boscalid (25.2%) and Group 11/pyraclostrobin (12.8%)	WG	27985

This document refers to Health Canada's online product labels: <http://pr-pr.hp-hc-sc.gc.ca/ls-re/index-eng.php>

RESISTANCE MANAGEMENT/ PLANTING RESTRICTIONS

- Boscalid is persistent and may carry over. It is not recommended that any products containing boscalid be used in the same area two seasons in a row.
- Label contains many crop-specific restrictions regarding maximum number of applications and sequential applications of this product and/or Group 11. Refer to target crop p 4-19.
- Plant back restriction of 14 d required for all crops not on label.

ENVIRONMENTAL CONDITIONS

- Do not apply during periods of dead calm or gusty conditions.
- Avoid application when heavy rain is forecast.
- Observe most restrictive buffer zone of tank-mix products.
- Drift-reducing technology may reduce buffer zone distances per Health Canada's buffer zone calculator.
- Downwind buffer zones (see p 3 for crop-specific distance):

Field sprayer Fresh water habitat:	Airblast sprayer Fresh water habitat:
◦ <1 m deep = 5-20 m	◦ <1 m deep = 35-45 m
◦ >1 m deep = 2-3 m	◦ >1 m deep = 15-30 m
Estuarine/Marine habitat:	Estuarine/Marine habitat:
◦ <1 m deep = 1-2 m	◦ <1 m deep = 5-20 m
◦ >1 m deep = 1 m	◦ >1 m deep = 5-20 m
Terrestrial habitat:	Terrestrial habitat:
◦ 1 m	◦ 1-2 m
- Hand-held, backpack and spot treatments do not require a buffer zone.

SPRAYER SETTINGS

CROP	SPRAY QUALITY	DISTANCE TO TARGET	TRAVEL SPEED	VOLUME	RATE
Field carrot, celeriac, grape, berry, bulb vegetable, strawberry, brassica, leafy vegetable, crabapple	not specified	<60 cm	Select a speed that allows productivity, but: does not require boom to be raised above 60 cm	≤250 L/ha for certain crops (see Rates and REI)	0.6-1.6 kg/ha (see Rates and REI)
Airblast stone fruit, berry, crabapple, hops, grapes, pome fruit	not specified	>50 cm	Select a speed that allows productivity, but: allows canopy penetration without excessive blow-through	not specified	0.6-1.6 kg/ha (see Rates and REI)

PRISTINE

HANDLING SAFETY (PERSONAL PROTECTIVE EQUIPMENT)

	GLOVES	HAT	APRON	COVERALLS	RESPIRATOR	PROTECTIVE EYEWEAR	FOOTWEAR
MIXING/ LOADING	chemical resistant	no	no	yes + long-sleeved shirt/ long pants	no	no	shoes + socks
ENCLOSED CAB	no	no	no	no	no	no	shoes + socks
OPEN OR NO CAB	chemical resistant	no	no	yes + long-sleeved shirt/ long pants	no	no	shoes + socks
CLEANOUT	chemical resistant	no	no	yes + long-sleeved shirt/ long pants	no	no	shoes + socks

MIXING

- Ensure sprayer is clean per label recommendations of previously used product.
- Fill tank ½ full and start agitation.
- Add required amount of fungicide to tank.
- Continue agitation filling remainder of tank.

RATES AND RESTRICTED ENTRY INTERVAL (REI)

CROP (AND STAGING)	VOLUME	RATE	REI
berries		1.3-1.6 kg/ha p 4 for details	Hand harvest, thinning hand pruning, training, tying = 24 h, else when dry Note: currant, gooseberry and saskatoons = 29 d for hand harvest
hops		1.6 kg/ha ≤0.105 kg/L p 6 for details	Harvest = 46 d, hand set irrigation = 8 d, else 12 h
brassica		1.0 kg/ha	4 d
bulb vegetables		1.0-1.3 kg/ha	Thinning = 3 d, else when dry
cucurbit (field)		0.9-1.3 kg/ha p 9 for details	Harvest, thinning, pruning, tying = 3 d, else when dry
root vegetables		0.58-0.735 kg/ha p 10 for details	Hand harvest = 3 d, else when dry
grape	≥250 L/ha	0.42-0.735 kg/ha p 10 for details	Hand harvest, thinning, tying, leaf pulling, hand pruning = 21 d, else when dry
cucumber (greenhouse)	≥250 L/ha	*1.3 kg/ha	When dry
bedding plants (greenhouse)		73.5-120 g/100L	12 h
lettuce (greenhouse)	≥250 L/ha	*1.3-1.6 kg/ha	12 h
peppers (greenhouse)	≥250 L/ha	*1.2 kg/ha	12 h

PRISTINE

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FOCUS: CROP PROTECTION & SPRAYING

Proposal for label summary sheet invites debate



Continued from last page

The status quo or a way forward?

As of December, 2018 this proposal has been made to Croplife Canada, The American Association of Pesticide Safety Educators (AAPSE), The Pesticide Stewardship Alliance (TPSA), the American Society of Agricultural and Biological Engineers (ASABE), our federal Pesticide Compliance and Enforcement team, an International Organization for Standardization (ISO) mirror committee (Equipment for crop protection) and more than 1,400 growers and stakeholders across Canada. We are also working with Purdue University to trial their use in the turfgrass industry.

Label Summary Sheet

Our suggestion for adoption of the LSS (in its current form or something similar) is that regulatory agencies commission a working group comprised of representatives from grower groups, industry and government to oversee the process. The working group would support registrants as they populate (or update) the LSS template when a new product is submitted for registration, or as part of the natural review cycle.

Should the registrant encounter duplicate, missing or contradictory information while completing the LSS, it should be considered an opportunity to remedy the problem on the pesticide label. This will clarify the safest and most effective use of the pesticide for the applicator, who is currently forced to selectively ignore or interpret such errors. To our minds, this was the intent of the original labelling system, and the inclusion of the LSS is a simple and effective way to achieve that goal.

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FOCUS: POTATO PRODUCTION

Foliar fungicide programs are expected to cost more by 2021

Current Program All Air					New Program?					
1		0.9 kg		253 ml	\$29		0.9 kg		253 ml	\$29
2		0.9 kg		2 L	\$21		0.9 kg		2 L	\$21
3		0.9 kg			\$7		0.8 L			\$15
4		0.9 kg		2 L	\$21		0.16 L		2 L	\$32
5		0.9 kg		245 ml	\$31		0.56 L		245 ml	\$37
6		0.9 kg		2 L	\$21		0.7 kg		2 L	\$22
7		0.9 kg			\$7		0.56 L		0.3 L	\$35
8		0.9 kg			\$7		0.7 kg		2 L	\$22
9		0.9 kg		2 L	\$21		0.9 kg			\$7
10		0.9 kg			\$7		0.7 kg			\$8
11		0.9 kg			\$7		0.16 L			\$17
12		0.9 kg			\$7		40 mL			\$12
13		0.9 kg			\$7		0.16 L			\$17
\$195					40% Increase					\$274



Aerial spraying is an important delivery system for fungicides in western Canada. Photo courtesy of Jonair Ltd.

Darin Gibson is anticipating one additional application for early blight will be required (Scala in this case) as the late blight only products such as Revus, Ranman and Allegro will not protect against early blight. All rates are per acre.

KAREN DAVIDSON

An industry veteran predicts that foliar fungicide costs for potato crop protection could

increase by 40 per cent for the 2021 growing season. That estimate is based on the predicted restriction of most uses of metiram (Polyram) by the Pest Management

Regulatory Agency (PMRA) and a similar fate for chorothalonil (Bravo, Echo). The re-evaluation outcome for mancozeb (Penncozeb, Manzate and Dithane) is expected later

in 2019.

Darin Gibson shared detailed numbers with the 400-member audience at the Manitoba Potato Production Days held in late January 2019 in Brandon. His analysis is based on years of experience that he and wife Debbie Jones have gained since 2003 and after the acquisition of Gaia Consulting in 2013. They provide research services to a variety of agricultural clients on a farm south of Portage la Prairie. With half of their business derived from crop protection companies, they are on the leading edge of active ingredients in the pipeline.

“We will have to depend on other modes of action, mostly single-site products with a higher risk of developing resistance,” concludes Gibson. “Although products may be tank mixed, control for late blight and early blight are becoming two different programs. When I estimate the costs for a management program today – about \$195 per acre – and calculate what it could cost in 2021 with key PMRA decisions on metiram, mancozeb and chorothalonil, I figure on \$274 per acre.” (See above chart).

Other factors will affect traditional foliar programs. Gibson points out in-furrow fungicides such as Velum Prime and Orondis Gold. The outstanding question is whether Orondis Gold – targeted towards control of pink rot and *Pythium* leak—could potentially replace phosphorous acid applications for storage diseases. Data is yet to be collected on this issue. New foliar products such as Orondis Ultra may allow for fewer sprays, especially at the end of the season.

Biofungicides have carried some negative baggage on

efficacy levels in the past, but Gibson observes that more recent products are showing equal efficacy and could play a very useful role in the future. While he’s not at liberty to share proprietary information, his advice is to look at these options more closely.

Important considerations for the future:

- Rotate modes of action for early blight and late blight fungicides
- Plan to use more single-site fungicides
- In addition to fewer applications of the multi-site fungicides, known as Group M, note changes to re-entry intervals, pre-harvest intervals and personal protection equipment
- Follow the new labels once published
- If you use Velum Prime, do not use foliar group 7
- If you use Orondis Gold in-furrow, you may not need other foliar products to control pink rot and *Pythium* leak.
- Note special requirements for Aprovia Top. It will be labelled for aerial use or ground use, but not both

Analyzing current products, their strengths and weaknesses, Gibson suggests that a foliar fungicide program in 2021 could look like this:

- Three applications of chorothalonil
- Three applications of mancozeb – hopefully more but could be fewer
- Three applications of metiram with a new delivery system

That adds up to nine Group M foliar applications with an outstanding question of how many could be aerially applied.

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FOCUS: POTATO PRODUCTION

Manage storage diseases -- pink rot and *Pythium* leak – before planting

KAREN DAVIDSON

Harvest when it's dry. That's advice for a perfect season, but perfection was in short supply for the potato harvest of 2018 across many parts of Canada. Unrelenting rain and cold delayed harvest resulting in conditions conducive for diseases of pink rot and *Pythium* leak in storage.

The news that Syngenta is launching Orondis Gold Potato, a co-pack containing Orondis and Ridomil, is welcomed for the 2019 season for suppression of pink rot and *Pythium* leak. The registration is for in-furrow application. A YouTube video featuring Syngenta field biologist Katie Goldenhar can be found at this link:

<https://bit.ly/2Gw5Kyo>

"But pink rot usually develops at the end of the season," notes Eugenia Banks, consultant to the Ontario Potato Board. "I wonder if Orondis applied in the middle of May will still be active in September?"

The fungicides have been evaluated by two American researchers: Neil Gudmestad, North Dakota State University and Jeff Miller, Miller Research, based in Idaho. Both agree that the Orondis Gold Potato co-pack is very effective applied in-furrow in the spring.

There is one caveat to the product: if it is used as a co-pack in-furrow, Orondis cannot be used as a foliar spray against late blight. This is a resistance management strategy to keep single-site fungicides such as Orondis effective for an extended period of time.

Jeff Miller shared his recommendations with attendees of the Ontario Potato Conference, March 6, 2019. Avoiding these diseases starts at first of the season.

1) Rotate crops. "We have found serious pink rot in tight rotations where potatoes are planted back to back or every other year. If the field has a previous infestation of pink rot, then there's a chance of continuing contamination. Push back to a three-year rotation or longer."

2) Adjust soil pH with lime in low pH soils. "We have observed that acidity favours pink rot infections. If pH drops below 7.0, then infection rates go up. More acidic soils also bind up calcium. The more basic the soil, the more calcium is available."

3) Plant varieties less susceptible to pink rot.

4) Manage irrigation aiming for

less water more frequently.

There is less disease when water is applied in smaller amounts.

5) Use appropriate fungicides.

Mefenoxam-based fungicides are considered the first line of defense. Phosphites are also effective but may burn the potato leaves. If pink rot is very severe, it may be more effective to use Orondis Gold fungicide for a pink rot tool and use other

types of fungicides to manage late blight.

6) Avoid unfavourable harvest conditions. Pink rot requires moisture to thrive.

7) Plan post-harvest sprays.

Phosphite-based fungicides are effective as treatments on the conveyor line as potatoes go into storage. One-half gallon of water plus product on a ton of potatoes will suffice. This is effective for pink rot but not for



Pink Rot



Pythium Leak

Pythium leak.

8) Reduce pulp temperatures as quickly as possible. Lowering storage temperatures from 70°F to 55°F is the best, although ideal temperatures are different

for some varieties.

9) Grade out infected tubers on conveyor line. Tubers with pink rot can develop a more devastating secondary soft rot.

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FOCUS: POTATO PRODUCTION

Seed supplies: adequate for table potatoes, sold out for processing potatoes



“The seed crop fared better than the processing crop last fall because it’s usually harvested earlier.”

”

KAREN DAVIDSON

Last fall’s unprecedented rainy and muddy harvest across many potato-growing regions of Canada has led to worries that seed supplies will be tight. Here’s what growers had to say in this phone survey finished the second week of February 2019.

British Columbia

Bill Zylmans grows 150 acres of seed potatoes near Delta, B.C. as well as many other field vegetables. Unlike other provinces, fall 2018 was blessed with good weather and every acre was harvested. In total, about 1,200 acres of seed potatoes are grown in the province, primarily for the fresh market. A good supply is in storage.

However Zylman’s reconnaissance at the recent Potato Expo in Austin, Texas revealed a huge demand for seed processing potatoes, particularly Russets.

“In the U.S., they still like their French fries and hash browns,” he says. “Near the J.R. Simplot processing plant in Pasco, Washington, the need is for another 15,000 acres of potatoes to meet customer demand. Growers are paying \$1,000 per acre in rent for irrigated land.”

Those are big numbers. Are they sustainable numbers? As Zylmans wisely points out, dive deeper on what type of seed potatoes and what varieties are truly in demand. There is no blanket statement for the potato industry.

Alberta

Jeff Ekkel, chair of the seed committee for Potato Growers of Alberta, agrees that 2018 was a tough harvest with average

yields. “Our industry will be able to supply all customers. Demand is strong.”

For Alberta, many of those customers are in the Columbia Basin. This year, some supplies may go to eastern Canada. Seed acreage in Alberta is stable at about 10,000 acres. Despite new processing facilities coming on stream in western Canada in 2019, Ekkel is firm on the decision not to grow more until clients demand more. “I’m not going to grow more to hit a market that may not exist,” he says.

Manitoba

Russell Jonk, president of the Seed Potato Growers of Manitoba, grows a thousand acres for the processing market: Russet, Ranger Russet, Umatilla and Innovator.

“The seed crop fared better than the processing crop last fall because it’s usually harvested earlier,” says Jonk. “At this point, we are sold out.”


Given that processors are investing in plant upgrades in Manitoba, the seed industry is working with the Keystone Potato Producers to formalize a contract process for seed potatoes.

“We want to bring some stability to the marketplace,” says Jonk. “Once the market is secure, there will be more appetite to increase acreage.” There were 5,075 seed acres in Manitoba in 2018.

Ontario


Glen Squirrell, a seed producer for 20 years near Melancthon, Ontario, explains that the province’s seed industry is declining as seed growers retire or grow fewer acres.

Continued on next page



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FOCUS: POTATO PRODUCTION

Seed supplies: adequate for table potatoes, sold out for processing potatoes

Continued from last page

Squirrell himself is almost sold out. About 700 acres are in certified seed production. That has made an opportunity for Quebec seed producers and others in eastern Canada.

Quebec

Fred Tremblay, business development manager for La Patate Lac Saint-Jean, says that his company grows 2,500 acres of seed potatoes, about half of what is grown in Quebec. Last year's droughty summer turned into a rainy fall, resulting in the loss of 100 acres. Overall, other seed growers lost more and about 1,200 to 1,300 acres were abandoned in the field.

Specializing most in seed potatoes for the fresh market, La Patate Lac Saint-Jean did a brisk sale in the Envol variety. The Goldrush variety was also popular. Many customers are in Quebec, but also Ontario, eastern provinces and into the northeastern U.S.

"Seed supplies are tight," says Tremblay. "We sold our last load the week of February 11. That's two weeks earlier than usual. Quality also helps -- almost all our seed lots are virus free."

New Brunswick

Matt Hemphill, executive director, Potatoes New Brunswick, indicates that seed acreage is declining in the province due to attrition of growers in the last five to seven years. Growers planted 9052 acres to seed in 2018, which represented 16.5 per cent of the seed planted in Canada.

"Lots of seed acres are being picked up for processing potatoes due to the demand in New Brunswick as well as Quebec and Prince Edward Island," says Hemphill. "That means that our export business to the United States as far as Florida, has decreased. The good news is that our remaining growers are doing a great job. We have the lowest virus level for PYN ever."

Enough seed is available for spring planting in New Brunswick.

Prince Edward Island

Mary Kay Sonier, PEI Potato Board says that grower reports to the board are that there will be adequate supplies for 2019 planting.

"We received good post-harvest test results in Prince Edward Island for seed from the 2018 crop and we always


grow a little more seed than gets utilized as seed potatoes," says Sonier. "There is always some seed that moves to table or processing markets however that may not happen as much this year."


With reduced yield in the western end of the Island and some seed left in the field province-wide, she expects growers may have to juggle with regard to varieties that are available. The majority of seed

produced on the Island is used in the local market, but PEI also regularly ships seed within the Maritimes, to Ontario, Quebec, the eastern United States and off shore markets.


The advice is to book early, by mid to late February if not before. Lots still available for sale may be posted on the PEI Potato Board's website at: <https://www.peipotato.org/pei-potato-industry/seed/seed-availability-listing>







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FOCUS: POTATO PRODUCTION

Agriculture and Agri-Food Canada to focus on early stages of potato breeding

Agriculture and Agri-Food Canada's (AAFC) potato breeding program has had a successful history, releasing more than 130 varieties over the last 90 years.

Now, to maintain that success against a backdrop of changes in consumer demand, technologies, markets and growing conditions, the department is working with the potato industry to renew the program with an emphasis on the earliest stages of potato breeding.

Beginning in 2019, the Canadian Potato Gene Resources collection, using powerful new technologies to identify plant traits, will have an even bigger role to play in the way AAFC works with the Canadian potato industry to develop potato varieties in the future.

"After reviewing our program and consulting with the potato industry, we are taking steps to better coordinate the resources

we have, including the Canadian Potato Gene Resources collection," says Dr. Benoit Girard, director general for the department's research centres on the eastern and western coasts.

"Our goal is to not only improve the quality of the potato selections that we can provide to industry and private breeders, but to do it quickly enough to allow them to take full advantage of market opportunities and to respond to the needs of potato growers."

As part of the re-vamped program, Dr. David De Koeber has been named the department's potato breeder. The geneticist, who has been combining biotechnology and potato breeding for nearly 20 years, will use the latest technologies to explore the genetic potential of the gene bank.

"Our team will use up-to-date equipment, technologies

and data management to rapidly identify the plants in the collection that have potential," says Dr. De Koeber. "From here, we will get those traits quickly and efficiently into our breeding program."

Dr. Benoit Bizimungu will lead and manage the Canadian Potato Gene Resources collection. The collection holds potato resources suited to Canada's northern climate, including domestic and international varieties, heritage varieties and wild plants.

Dr. Bizimungu says one of his goals is to more fully understand the genetic potential in the collection.

"The collection is a tremendous source of genetic diversity and traits that my team and I will be studying and characterizing in more detail. This will help bring novel traits and material into our potato breeding program."

Dr. Girard says the



Dr. David De Koeber

department is also taking a fresh look at how it works with industry, including the way breeding material developed by AAFC is used by industry to develop new commercial potato varieties.

"A key element in modernizing our national potato breeding program is to ensure that we align our objectives with the needs of stakeholders and industry across the country," says Virginia Dickison, a

biologist and new liaison officer for the breeding program. "Our goal is to provide an effective national breeding program that delivers the type of potato varieties that consumers and industry want and need."

Dickison welcomes input from the industry on AAFC's potato breeding program. She can be contacted by email at virginia.dickison@canada.ca or by phone (506) 460-4529.

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UPL Ltd. acquires Arysta LifeScience



UPL Ltd. has purchased Arysta LifeScience from its parent company Platform Specialty Products, and launched its new purpose called OpenAg, in support of the company's long-term vision.

UPL Ltd. is now one of the top five agricultural solutions companies worldwide, according to a recent news release issued by the company. In a \$4.2B deal, the company has acquired Arysta LifeScience from its parent and launched OpenAg.

UPL aims "to transform agriculture by creating an open agricultural network that feeds sustainable growth for all," said Jai Shroff, global CEO. "UPL will offer broader choice, greater value and increased sustainability to secure the world's food supply," he added.

In light of climate change and sophisticated food systems, Shroff says UPL's biosolutions pipeline signals the dawn of a new era in sustainable agriculture, as a part of integrated pest and nutrition management programs.

UPL is present in 76 countries with sales of agricultural solutions, biosolutions and seed treatments in 130-plus countries around the world.

Source: UPL February 1, 2019 news release

CROP PROTECTION

Canada's general MRL – our unusual disadvantage



CHRIS DUVELSHOFF
CROP PROTECTION ADVISOR,
OFVGA

PMRA sets science-based MRLs at levels well below the amount that could pose a health concern to ensure the food that Canadians eat is safe. An established MRL applies to the raw food commodity as well as to any processed food made from that commodity, unless separate MRLs have been developed. Across the world, MRLs can be set by individual countries, established across regions such as the European Union, or even developed globally through Codex Alimentarius – a Food and Agriculture Organization of the United Nations initiative.

What is a GMRL?

Though Canada is not unique in having MRLs, we have retained an archaic policy for cases where the PMRA has not previously established or has subsequently revoked a specific MRL for Canada. This policy is referred to as the general maximum residue limit (GMRL) or default MRL. The GMRL applies where no Canadian MRL exists and allows the sale of foods with residues of any crop protection material up to 0.1 ppm.

When the GMRL was established in the 1970s, the analytical methods at the time were not sensitive enough to accurately detect most residues below 0.1 ppm. Therefore, 0.1 ppm was a practical limit based on the capabilities of the day. Technology has since sufficiently advanced that residues can often be reliably detected below 0.01 ppm. Nearly all countries that still do employ a GMRL have now set a limit of 0.01 ppm or 10 per cent of the Canadian limit. Only New Zealand still retains a GMRL of 0.1 ppm. Many other



countries also simply avoid having a GMRL altogether, including Australia and the United States, and choose instead to establish their own specific MRLs for all approved active ingredients.

Why should a GMRL that is ten times the global standard matter to Canadians? Firstly, it means that for crop protection products never before registered in Canada, foreign producers using these products simply have an easier bar to meet for Canadian market access compared to many other countries. Secondly, when an active ingredient that was registered for use in Canada is cancelled by PMRA, often so are any specific Canadian MRLs, and it returns by default to the GMRL value. At a level of 0.1 ppm, it can often allow foreign producers to continue some use of a product prohibited in Canada by PMRA and still meet the MRL requirements for import. This applies no matter if a product is cancelled in Canada for human health or environmental reasons.

For example, if mancozeb – currently under review by PMRA – was to be completely cancelled in Canada, PMRA would also likely cancel all established Canadian MRLs.

Any imported food products could then still legally contain mancozeb residues as long as it did not exceed 0.1 ppm.

A quick scan of the most recently published Canadian Food Inspection Agency's (CFIA) National Chemical Residue Monitoring Program (NCRMP), which tests domestic and foreign food sources for crop protection residues, found that in 2014-2015, there were multiple imported sources of apple, apricot, artichoke, asparagus, and avocado with positive mancozeb residues that did not exceed 0.1 ppm and thus would be legally allowable in Canada under the GMRL. And that's just the foods starting with 'A'!

Therefore, if PMRA banned mancozeb use in Canada, foreign growers would certainly be able to continue some use on their export crops to Canada yet the same product would not be allowable for Canadian growers. This is not in our best interest!

The flaws in Canada's GMRL policy were identified by PMRA in two documents published by the agency in 2003

and 2006. It was recognized that the default level of 0.1 ppm was not only highly unusual in the global context but also allows higher residues than necessary in some cases, permits importation of foods containing certain residues which PMRA has not reviewed for safety, and also could lead to overestimates of dietary exposure to crop protection products.

It was proposed in these documents that the GMRL be revoked and replaced with specific MRLs for each food and active ingredient combination, as is the case with many other countries around the world. Yet despite progress on setting specific MRLs, more than a decade later we still have the 0.1 ppm GMRL policy in place.

It's time for Canada to catch up with the world and end this very unusual policy, eliminate this unfair advantage for foreign competitors, and level the playing field for Canadian growers!

Guide to Weed Control for Horticultural Crops now available

Updates to OMAFRA Publication 75B – Guide to Weed Control Hort Crops 2019 are now available in both English and French.

"In this version all of the changes are highlighted in red," says Kristen Obeid, OMAFRA weed

management specialist. "Select page two to see all of the information."

These documents are accessible on the OMAFRA website. Print copies will be available soon from Service Ontario.



GUIDE TO WEED CONTROL
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Publication 75B



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