THE GROWER

AUGUST 2020 CELEBRATING 141 YEARS AS CANADA'S PREMIER HORTICULTURAL PUBLICATION THEGROWER.ORG

HORIZONTAL SUPPLY CHAINS

Big data drives the vegetable belt

Field cucumbers are the second most valuable processing crop in Ontario with a farmgate value topping $11 million. Farming near Chatham, Ontario, Krystle VanRoboys takes a moment from her mechanical harvester to examine the size and quality of the cukes destined for pickles. Oversized or off-sized cucumbers – known as the nubs and crooks –are ideal for relish. No waste here. Photo by Krystle VanRoboys.

KAREN DAVIDSON

Krystle VanRoboy's dangling string of cucumbers is symbolic of the data points twinkling like stars all along the grower-processor value chain. Green shipper, Hartung Brothers, transports the final product to processors all over the United States. Like other global processors, the company has begun to collect and analyse data from the field that influences real-time decisions being made at the processing facility.

Insect infestation in a field of sweet corn? Drought-reducing yield in a field of peas? Bonduelle, for example, aims to be on top of these conditions well in advance of the vegetables ever reaching processing plants in Tecumseh, Ingersoll and Strathroy Ontario, three of its eight plants in Canada. How? By upgrading its ability to mine big data.

Jennifer Thompson, agriculture manager for Bonduelle's plant in Ingersoll, Ontario recalls that in the past, analysis of data gathered from various systems was hampered by inputs that didn't fit well when consolidated into a single repository. The solution was to upgrade the company's AgPOD program for 2020.

"Interconnectivity is the current theme in precision agriculture, so if we can open some pathways to other systems, that will make growers' lives easier," says Thompson.

This system can trace a processed product right back to the field. Contract to crop history, the system traces product through planting, scouting, spraying, and nutrient application right up to record verification.

For growers, this eliminates duplicate record keeping and via the cloud delivers accurate information on a timely basis for Bonduelle to analyse before decisions are made, not after. It's an industry-leading effort in North America that's well-timed in the age of COVID-19.

As Ron Van Damme points out, "It all starts with the smartphone. We're able to input data in real time and there's an instant payback to that."

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AT PRESS TIME...

AgriInsurance to be enhanced in Ontario

The Canadian and Ontario governments are enhancing AgriInsurance coverage for the 2020 growing season to include labour shortages due to COVID-19. Ontario is the first to provide this coverage. Ontario growers already enrolled in an eligible production insurance plan who suffer from crop losses due to labour disruptions during the 2020 growing season will have access to further AgriInsurance coverage through Agricorp. The added insurance coverage will include:

- Inability to attract sufficient on-farm labour due to COVID-19; and
- Illness or quarantine of on-farm labour and the producer due to COVID-19.

Farmers will be expected to notify Agricorp as soon as possible if they experience COVID-19 related labour disruptions that are having an impact on their crops.

"This announcement is an important first step towards giving growers assurances that their government will have their backs during the pandemic," said Bill George, chair of the Ontario Fruit and Vegetable Growers' Association (OFVGA). "We thank Minister Bibeau for making this enhanced coverage possible, and we thank Minister Hardeman and the Ford government for its leadership, and for being the first province in Canada to take this step."

In a OFVGA note to members, growers enrolled in crop insurance who are experiencing labour shortages should ensure they are documenting the shortage, mitigation measures taken, and the associated impacts as best as possible to support potential crop insurance claims for this season.

Risk Management Program boosted

Ontario Premier Doug Ford and Ontario agriculture minister Ernie Hardeman teamed up on a July 16 visit to southwestern Ontario to announce increased funding for the Risk Management Program. This includes the Self-Directed Risk Management (SDRM) program for edible horticulture farms.

In concrete terms, growers will see a substantial increase in their SDRM benefits for the program this year, one year ahead of original timelines. Applications for the Risk Management Program will reopen July 16 to allow eligible farmers to apply to the program. The deadline to apply closes at midnight on July 30th, 2020. Producers should contact Agricorp to enroll in the Risk Management Program and AgriStability or to discuss their individual files.

"We recognize that this government's platform commitment was for the third year of their mandate, but given how dramatically our world has changed under COVID-19 and how much greater the risks are that farmers face as a result, we are strongly supportive and appreciative of accelerating implementation," says Bill George, chair of the Ontario Fruit and Vegetable Growers' Association (OFVGA). He was present at the Chatham event along with other agricultural leaders.

"We believe that this action will be significant and meaningful in addressing the additional risks, increased costs and market instability growers have been facing during the 2020 growing season."

Growers continue to have access to other existing programs, including federal programs such as AgriStability and AgriInvest, and OFVGA continues to advocate for changes to those programs that would improve supports for growers. In the question and answer period with media, Minister Hardeman said that this moment represents a "restart to negotiations" with the federal government.

"We would like to take this opportunity to thank Minister Hardeman and Premier Ford for their leadership at the national level to advocate for meaningful improvements to the AgriStability program," George states. "We are hopeful that federal and other provincial and territorial partners at the table will follow Ontario's leadership in supporting growers."

NEWSMAKERS

Ontario agriculture minister Ernie Hardeman personally delivered 16,000 dust masks to the Ontario Fruit and Vegetable Growers' Association headquartered in Guelph, Ontario. Chair of the board, Bill George and executive director Alison Robertson were on hand for the shipment.

Ernie Hardeman (L) and Bill George.

Andrew Peller Limited has announced that **Randy Powell,** president of the company, has resigned to pursue other interests, effective July 8, 2020. **John Peller**, CEO, will resume his responsibilities on an interim basis. Powell had been a former board member and more recently president over the past decade.

Greg Meredith, Ontario's deputy minister of agriculture, food and rural affairs since January 2017, is moving to the ministry of labour, training and skills development on August 10, 2020.

Farm & Food Care Ontario has elected a new chair for the farm environment advisory council. **Gordon Stock**, senior policy advisor and government relations for the Ontario Fruit and Vegetable Growers' Association, has accepted the nomination.

TIME Winery, Evolve Cellars and McWatters Collection have been sold to Five Vines Cellars, the private family-owned business of **Ron and Shelley Mayert**. Completed July 1, 2020, the sale follows the unexpected passing of industry pioneer Harry McWatters in 2019. The McWatters family siblings, Christa-Lee and Darrien, stay on as general manager and operations manager, respectively for TIME Winery and Kitchen, Penticton, BC.

Ron and Shelley Mayert

Peter Burgess is the new executive director of the Wild Blueberry Producers Association of Nova Scotia. Prior to joining in May 2020, he was the wild blueberry specialist for Perennia for 18 years.

Congratulations to **Karnail Sidhu**, owner of Kalala Organic Estate Winery, a 70-acre vineyard in West Kelowna, British Columbia. The BC Grapegrowers Association has awarded him viticulturist of the year. It's the first such award for the association to honour the growers behind the wines.

After leading the team at the Canadian Agricultural Safety Association (CASA) for the past 16 years, **Marcel Hacault** has announced his retirement in March 2021. As executive director, he has spearheaded the organization's transformation from a safety grant administrator to an organization that leads national efforts to improve agricultural safety across Canada.

THE GROWER DELIVERS EVERY DAY

At **The Grower**, production deadlines remain the same, but we have observed that Canada Post is taking five to seven days longer to deliver.

For a faster preview of the paper, go to our website at www.thegrower.org. Go to the upper right-hand corner. Click PRINT ISSUE. The current issue is posted here about 10 days prior to postal delivery. Archived issues are also stored here for two years.

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Thanks for your loyalty!

COVER STORY

Jennifer Thompson, agriculture manager for the Bonduelle plant, Ingersoll, Ontario, inspects pea harvest with Russ Woolley. Peas are the third most valuable processing crop in Ontario after tomatoes and cucumbers. Photos by Glenn Lowson.

Big data drives the vegetable belt

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The processing tomato and field cucumber grower at Port Lambton, Ontario explains that "there's a big safety factor to this." The grower can permit data access to a circle of key people: the processor's scout, a private field consultant, a grader, farm personnel. All of them have access to spray records and can determine when it's safe to enter a field according to re-entry intervals and pre-harvest intervals.

The data exchange is crucial for measuring up to processor needs for crop safety and transparency about the end product to consumers. Those pressures will continue unabated with the sudden attention to the center aisle.

As Keith Robbins, general manager, OPVG reports, "Canned and frozen vegetables were literally flying off the shelves in the first stages of dealing with COVID-19. Our processors have been working at capacity in a mature market."

In pivot-turning times, it's too early to predict what vegetable volumes might be required for 2021. Negotiations for the 2020 crop, with a mere one per cent increase in prices, were completed before the panic buying by consumers. It is expected that processors, armed with up-to-the-minute data, will be better positioned to evaluate inventories, assess consumer demand and accordingly recalibrate volume needs for 2021 contracts.

Canadian Grocer magazine recently reported on "Three shifts that will shape the future of grocery retail." In its July 16 article, CG advised to watch the buying behaviours of generation Zers, work-at-home consumers and the efforts grocers expend on online product discovery. Surveys find that the majority of gen Z consumers (68%) expect online grocery delivery within 24 hours compared to their more lenient baby boomer counterparts (35%). Such consumer demands will increasingly impact supply chains in terms of both more responsive inventory management and fulfillment capabilities.

Nielsen, a global measurement and data analytics company, provides additional insight with a statistic that 19 per cent of millennials are vegetarian while 11 per cent are fully vegan. The growing influence of this growing demographic presents an important opportunity. Bonduelle's recent investments in packaging formats, for instance, along with its stable of trusted brands such as Arctic Gardens should prove valuable in an increasingly online shopping world.

All of these new trends are on the radar screen of Rob Bailey, founder of data-automation startup, BackboneAI. Based in New York, he has caught the ear of American producers for his comments on horizontal supply chains.

"Horizontal expansion/integration means consolidation at a stage of the supply chain," he told **The Grower**. "A great example of this are regional consolidations and/or cooperatives of farmers which provide more buying and selling power on price. The biggest challenge is properly aligning incentives since it means convincing previous competitors to work together."

To increase the speed and responsiveness of supply chains, Bailey says that more transparency and the continuing adoption of Application Programming Interfaces (APIs) generating big data are needed.

In the crunch of harvest season, these are issues far from the immediate mind of Krystle VanRoboys, one of 325 growers holding processing contracts in Ontario. As field manager of her farm operation, she is fulfilling contracts for cucumbers, sweet corn and soon, tomatoes.

"With the longer than normal season, the more overlap will have to be managed from cucumbers into tomatoes," she says.

These dawn-to-dusk issues will soon fade as VanRoboys evaluates harvest data this fall. She's confident that every minute of every day, field data are being collected that will point to sharper decisions next year.

Sweet corn had a 2019 farmgate value of more than $8 million. It's grown in southwestern Ontario's vegetable belt, contributing towards the almost $100 million in processing vegetables.

Overview of Ontario Processing Vegetables 2020 and Farmgate Value (listed in order of 2019 farmgate value)

CROP	# OF CONTRACTS	TONS CONTRACTED FOR 2020	2019 GROSS FARM VALUE (.000)
Tomatoes	66	474,880	$52,745
Cucumbers	79	40,936	$11,171
Green peas	159	14,700	$8,721
Sweet corn	119	10,196	$8,017
Carrots	10	47,900	$6,499
Green beans	67	5,020	$5,898
Lima beans	34	3,807	$3,066
Squash	5	5,550	$810
Onions	Not available – fewer than 3 processors		
TOTAL			$96,927

The Grower goes "Behind the Scenes" with Ron Van Damme. He's a processing tomato and field cucumber grower near Port Lambton, Ontario. He explains how big data is used in the vegetable processing sector. This series is sponsored by BASF Agricultural Solutions.

CROSS COUNTRY DIGEST

BRITISH COLUMBIA

New cherry packing facility in full swing

Jealous Fruits has opened its state-of-the-art Duck Lake cherry facility for the 2020 harvest. Located five minutes north of the Kelowna airport with direct highway access, the 140,000 square-foot plant is central to the company's many orchard sites.

Julie McLachlan, general sales manager since 2008, shares the following features:

• 28 lanes of UNITEC optical sorting equipment, with Cherry Vision 3.
• Automated infeed
• 30 drops allowing for a variety of packaging including: 2.5 kg, 5kg, 9kg, clamshells and pouch bags; to be packed simultaneously.
• 18 tons per hour capacity.
• Automated box fillers
• UNITEC traceability, and Famous inventory software
• The first UNITEC automatic palletizers in North America – very gentle handling
• In line hydrocooling
• Built-in forced air cooling rooms
• Three cold storage rooms, with 550 tons capacity
• Retail shop for direct-to-consumer sales
• Our administrative headquarters
• Adjoining dorms to house 130 staff

BRITISH COLUMBIA

BC ag critic advocates for food security

Ian Paton, MLA for Delta South in British Columbia is not a household name across Canada. He's the official opposition co-critic for BC agriculture, and a rare politician who still lives on a family farm.

Because he's so well informed about agriculture, he brings a critical perspective to the opportunities and challenges during the COVID-19 virus crisis. He articulated some of those thoughts in a virtual government meeting on July 6.

"What many do not realize is the dramatic impact that COVID-19 is having on agriculture here in B.C.," said Paton. "Farmers are experiencing unprecedented labour shortages, disruptions in the packing, processing and t ransportation sectors, and increasing domestic and international market uncertainty. These fears are resulting in difficult decisions about which crops to grow and whether or not to leave fields fallow for the season."

Paton is advocating for more self-sufficiency by utilizing more of British Columbia's crown Agricultural Land Reserve and growing more vegetables under glass.

"Food security in this province should also mean farm family security and farm financial security," he said.

Paton was firmly against B.C.'s Food Security Taskforce recommendation that 28,500 acres of Agricultural Land Reserves be set aside for agricultural-industrial use. He does not back the notion that further industrialization and globalization are a panacea.

"Agri-tourism is essential in this province," said Paton. "These activities should be encouraged, not regulated into oblivion."

Lastly, to preserve the local food system, Paton favours heavy investment in education programs. "Let's re-establish farming as a subject of inquiry in our schools and expand the offering of post-secondary programs in agriculture, horticulture and agronomy."

ALBERTA

Wendy's Canada sources greenhouse-grown lettuce for its 384 restaurants

Whole Leaf, the grower of Inspired Leaves, has demonstrated a great story and the capacity to supply greenhouse-grown lettuce to Wendy's Canada from its Coaldale, Alberta location.

"We are proud to partner with Wendy's Canada on its initiative to supply zero-pesticide lettuce," says Rindi Bristol, senior director, sales, Whole Leaf. "With more Canadians looking for sustainable products, this strategic partnership allows us to reach Wendy's customers all-year round with high-quality fresh produce alongside a brand that – like Inspired Leaves – is committed to quality and sustainability."

Its greenhouses capture and reduce water consumption by more than 90 per cent compared to field-grown lettuce. Whole Leaf also has an onsite process that captures waste heat and CO2 at the same time, reducing greenhouse gas emissions and allowing it to be completely self-sufficient for electricity and heating.

This back story aligns with Wendy's Canada vision to use fresh ingredients from local sources for its salads and sandwiches. Like the greenhouse-grown tomatoes launched in 2018, Wendy's will be the first national brand in the Canadian Quick Service Restaurant (QSR) industry to serve crunchy, greenhouse-grown lettuce in all 384 of its restaurants across the country. All lettuce served will be grown in Canadian-sourced peat with zero pesticides.

"The move to greenhouse-grown lettuce is part of our ongoing commitment to offer Canadians the highest quality, best-tasting ingredients," says Lisa Deletroz, senior director, marketing, Wendy's Canada. "We know that greenhouse farms grow produce that hits the mark for freshness and delicious flavour every time. What's more, this transition will enable Wendy's to further support Canadian producers and the Canadian economy, while offering supply predictability and consistency.'

Source: Wendy's July 14, 2020 news release

CROSS COUNTRY DIGEST

CANADA

Potato plantings are up marginally over 2019

In a year with difficult circumstances to gather data as a result of COVID-19, the diligence of both Statistics Canada to conduct the survey, and growers who took the time to respond, is very much appreciated.

~ KEVIN MACISAAC


Photo courtesy of Nick Ploeg.

Expectations were for a decrease in potato acres, but Statistics Canada reported on July 16 that plantings are up marginally by 1,375 acres over 2019.

In releasing its first 2020 estimate of nation-wide potato acreage, Statistics Canada says that 363,470 acres are about the same as last year, up by 0.38 per cent. Due to cuts in processing volume just before planting, industry observers expected decreased acreage.

Although Quebec data was not available, the estimates will be adjusted in future.

Kevin MacIsacc, general manager, United Potato Growers of Canada, breaks down the numbers by province. The survey indicates decreases of 3,900 acres in New Brunswick, 2,145 acres in Alberta, 1,000 acres in Prince Edward Island, 300 acres in Saskatchewan and 100 acres in British Columbia.

Provinces with acreage increases include Quebec with 4,297 acres, Ontario with 2,473 acres, Manitoba with 2,000 acres and Nova Scotia with 50 acres.

MacIsaac said, "In a year with difficult circumstances to gather data as a result of COVID-19, the diligence of both Statistics Canada to conduct the survey, and growers who took the time to respond, is very much appreciated.

For more information, contact Kevin@unitedpotatocanada.com

Source: United Potato Growers of Canada July 16, 2020 news release

2020 Canadian Potato Plantings (Acres)

PROVINCE	2015	2016	2017	2018	2019	2020	CHANGE
Newfound land	400	350	350	350	325	325	0.0%
Prince Edward Is.	85,800	87,000	84,200	86,000	85,500	84,500	-1.2%
Nova Scotia	1,624	1,774	1,700	1,600	1,600	1,650	+3.1%
New Brunswick	47,700	47,630	51,700	52,000	52,900	49,000	-7.4%
Quebec	41,761	41,761	42,255	41,956	43,508 *	47,805 *	+9.9% *
Ontario	34,750	34,800	35,400	34,000	34,027	36,500	+7.3%
Manitoba	67,300	65,914	62,900	64,100	70,000	72,000	+2.9%
Saskatchewan	6,700	6,900	6,500	6,300	6,300	6,000	-4.8%
Alberta	53,128	52,986	52,483	55,645	61,235	59,090	-3.5%
British Columbia	6,100	7,250	6,500	6,600	6,700	6,600	-1.5%
Total Canada	345,263	346,415	343,988	348,551	362,095	363,470	+0.4%

Source: Statistics Canada Table 32-10-0358-01 Acreage of Potatoes July 16, 2020 (may be adjusted)*

NEW BRUNSWICK

McCain Foods to build Farm of the Future

McCain Foods Ltd is building three Farms of the Future to showcase how regenerative farming practices and the latest agricultural technology and innovations, can be implemented at scale. They will be built in three different countries with three different climates around the world. One of those will be in New Brunswick, Canada.

The land purchase is underway with a deal expected to close around November.

In partnership with leading academics and suppliers, each will focus on demonstrating that more sustainable practices can also create a more financially viable future for farming, while at the same time increasing food production.

"The global demand for food has never been greater, and farmers are being challenged with producing more with less, while facing increasingly challenging weather patterns due to climate change, and growing food in soil that is deteriorating." says Max Koeune, president and CEO of McCain Foods Ltd. "Farmers are at the heart of our country and food system, and the food challenges we've experienced during COVID-19 could only get worse if we don't start taking action."

Other key tenets include an environmental commitment to produce zero waste to landfill, use 100 per cent renewable energy and to reduce CO2 emissions by 50 per cent by 2030. The company plans to reduce sodium content in products by 15 per cent by 2025, providing clear and transparent nutritional information, and removing artificial ingredients.

Source: McCain Foods Ltd July 16, 2020 news release

CROSS COUNTRY DIGEST

PRINCE EDWARD ISLAND

The sea and the soil fortify wild blueberry crop in a dry year

“We gather seaweed on the shores of the Gulf of St. Lawrence which we spread on the blueberry fields after they are picked. Then we mulch the seaweed and incorporate it into the field so it can be better utilized by the soil.

~ BRIAN MCINNIS,
WEST PRINCE BERRY COOPERATIVE LIMITED”

2020 is shaping up to be a real challenge for the West Prince Berry Cooperative Limited based in Prince Edward Island. Wild blueberry harvest is expected to start about August 24 and continue until mid-September, with the need to adapt to COVID-19 distancing routines at the receiving station at Montrose. Beyond that, the 30 cooperative members are coping with upside-down weather.

On June 9, a frost killed half of the blooms during pollination. Two days after, sweltering weather of 35°C temperatures further stressed the plants. And since then, the rural area has been in a dry spell.

“Volumes will be down, but better prices are expected,” reports Brian McInnis, chair of the cooperative, who farms at Tignish. Prices usually don’t get negotiated with processor Jasper Wyman and Son until harvest time.

Since a record crop of almost 1.1 million pounds in 2013, prices have been erratic. And in recent years, prices as low as 30 cents per pound don’t cover input costs. As McInnis explains, wild blueberries are harvested every second year, after a “sprout field” is nurtured with fertilizer and herbicides to knock back competitive weeds. The hope is to recover the investment of fertilizer and herbicides for two years of production.

Established by producers in 1964, the West Prince Berry Co-op currently owns 180 acres of wild blueberry land. It’s an interesting business model. The income from this operation funds the purchase of equipment that provides service for the farm and member farms, which total a thousand acres in the local area. While the organization is incorporated as a co-op, it has been governed by a nine-member board similar to a non-profit organization.

The second revenue stream comes from custom work for members and non-members alike to develop and manage their land. The co-op has gradually acquired specialized cultivation and harvesting equipment from the revenues of the jointly held land. The exception is the rental of fertilizer spreaders. Currently, the co-op owns five tractors, five Bragg mechanical harvesters, an Acadian walk-behind harvester, sprayers and various pruning equipment and other support equipment. These services are provided to members and non-members at the same rates, on a non-profit basis.

Thirdly, the last function of the co-op is to provide services to members that do not fall into the custom work category: distribution of information, accounting, a collective point of shipment, and the contact with the PEI Blueberry Marketing Co-op.

As McInnis explains, the West Prince Berry Co-op offers seasonal employment for a manager, bookkeeper and equipment operators from April to December. It’s all hands on deck for the harvest season during late August and early September when up to 50 people are needed as well as a local trucking firm.

This year, co-op members are exploring diversifying the buyer base with U.S. customers. The health halo of wild blueberries is a characteristic that the cooperative is promoting. In recent years, growers have been harvesting local seaweed to mulch on their fields and to add micronutrients such as boron, calcium and magnesium to the soil.

“We are not organic growers, but we are organically enhancing our wild blueberries,” says McInnis. It’s this stewardship story that is part of the sales pitch to potential customers.

LETTER TO THE EDITOR

Bigger may not always be better

Re: Sustainable organic world . . . well-intentioned but luxurious fallacy.

I am a small-scale blueberry grower, and use organic/natural methods (not certified). It is more labour intensive, and I agree that organic growing of fruits and veggies on large scale may be challenging.

However, after spending 30 years in the environmental clean-up business, wearing white suits and respirators to protect myself from industrial chemicals spilled decades ago, I did not want to put on a white suit and respirator again while growing food. I did not do this to get a pat on the back, just peace of mind that I am not spreading more chemicals into the environment. Nobody is arguing agriculture does not impact the environment – the question is how do we do this in a manner that goes beyond simply sustaining the current impacts, and actually helping to improve the balance between our footprint and the environment (i.e. regenerative techniques).

There are two significant issues that the author did not touch on. First, assessing health benefits from chemical-free food is more complicated than one nutritional study – it should also take into account soil, run-off and groundwater quality, and long-term effects associated with worker and consumer exposure to these chemicals. This may require multi-generational studies to evaluate not only cancer but other impacts on the human body such as immune deficiency and watershed health.

Second, the author ignores the tremendous value of small-scale growers using innovative and eco-friendly agricultural practices. There is a new generation of people who see growing food as a career that can improve the local community with employment,


Photo by Glenn Lowson

healthy food and environmental improvements, and they are using ingenuity and collaboration to succeed with minimal or no use of chemicals – usually without the kind of supports and incentives large growers receive.

The challenge of "feeding the world" seems like an emotional sell to use more chemicals. Instead, we should use science to evaluate the appropriate use of chemicals and technology on both production yield and long-term health, and be careful about exporting technologies based on chemicals. Let's also look at the growing evidence of natural-based growing systems and not ignore the downsides of the "industrial" approach to agriculture. Bigger may not always be better.

Phil Moddle, Co-Owner
Arrowwood Farm
Melbourne ON

PUBLISHERS NOTE:

I would like to thank Mr. Moddle for his thoughtful letter. After reading the letter, I felt that it was important to comment on a couple of his points. The OFVGA works on behalf of all fruit and vegetable growers, regardless of commodity, production methods or size. As programs and policies are developed, there is just as much awareness of the needs and challenges of small to mid-size growers by the OFVGA and our government partners, as there is for large operations.

Mr. Moddle also stated that science should be used to evaluate active ingredients with a lens on long-term health. I am pleased to say that this is exactly the role of the Pest Management Regulatory Agency (PMRA). The regulatory process includes evaluating impacts on human health, both to consumers and workers, as well as specific subpopulations such as children and pregnant and nursing women. Environmental factors such as water quality and the risks to both terrestrial and aquatic organisms are also considered. These extensive reviews are posted publicly and include consultations where any stakeholders are invited to submit comments. Both conventional and organic products are subject to the same risk assessment process.

Once again, I would like to thank Mr. Moddle for his letter. The staff and board welcome a diversity of ideas as this only helps us represent all our members effectively.

Respectfully,
Alison Robertson, Executive Director, OFVGA

CHAIR'S PERSPECTIVE

The other side of the story

BILL GEORGE JR.
CHAIR, OFVGA

The last couple of months have been a tough time for many in our sector as some of our worst pandemic fears became a reality. Growers in various parts of the province have been hit with outbreaks of COVID-19 among their workers, outbreaks that have resulted in quarantines, illness, lost crops, business shutdowns and tragically, even death at affected farms.

Seasonal farm workers are a critical part of our farms and we took steps early on to help keep those workers safe. That included a wide range of actions, such as mandatory quarantine periods, providing PPE, ensuring distancing wherever possible and minimizing worker interaction with the community.

Our farms and employee living and working conditions are inspected by multiple agencies and levels of government. Many of us have been welcoming the same international workers for years and we care about their safety.

And for the most part, what we've been doing has been working - there are 3,500 fruit and vegetable farms in Ontario and fewer than 20 have seen outbreaks as I'm writing this editorial.

What the world knows about COVID-19 and how it behaves keeps evolving as the pandemic progresses. COVID-19 is rapidly changing how all of us live and work, and like many Canadians, we're learning on the go and adapting as quickly as we can to this new reality.

We've learned, for example, that this virus is indiscriminate. It can spread quickly where many people live or work together, such as cruise ships, long-term care homes, processing facilities and even sports teams. And as the economy continues to re-open, we know that risk will increase.

Our sector as a whole has faced unusual media and government scrutiny as part of the reaction to the outbreaks on-farm -- some of it warranted and fair, some of it not so much. Activist groups in particular have used this unfortunate opportunity to push their agenda, which has influenced some of the coverage and discussion around what is happening on our farms.

As an organization, we've been working closely with government and other agencies to make sure growers are represented and that our voice is heard and I've done countless media interviews in recent weeks.

Often, though, the public narrative of our seasonal workers doesn't tell our side of the story or reflect the hard work that goes on behind the scenes on our farms to keep workers safe as growers struggle to produce food in a year that is undeniably tougher than any in recent memory.

So, the OFVGA has taken action. We ran a full-page ad in the *Globe and Mail* on July 10 and in the *Hill Times* on July 13 featuring a letter from Ontario growers. You can read that letter to the right or on our website: www.ofvga.org/article/a-letter-from-ontario-farmers.

That same letter has been sent to MPPs and Ontario MPs and was subsequently turned into a series of local letters featuring different growers that were placed as ads in regional papers across Ontario's major horticultural growing areas.

To those of you who agreed to be profiled, thank you for taking time to speak up and tell your story. And thank you to the OFVGA staff who are helping this organization navigate the myriad of meetings, issues and developments related to this ongoing crisis.

As the pandemic progresses, we will continue our efforts to represent you, our members, to the best of our ability and speak out on behalf of growers on the issues that matter to our sector.

We all have a responsibility to keep people safe and it's important that we all work together to ensure the health and safety of growers and farm workers.

A LETTER FROM ONTARIO FARMERS

IN PARTNERSHIP WITH

ONTARIO FRUIT & VEGETABLE GROWERS' ASSOCIATION

COVID-19 has changed all of our lives. And although Canada continues down the path of re-opening, the pandemic remains an ever-present threat to our health, our livelihoods, our communities and our domestic food supply.

As fruit and vegetable farmers, we are devastated by the recent deaths of three Ontario farm workers from COVID-19 and we are very concerned about the recent outbreaks that have affected our farms, our dedicated employees and our ability to produce food for you.

Seasonal farm workers play an essential role on our fruit and vegetable farms. The federal government created the seasonal agricultural worker program (SAWP) in 1966 and many of us have been welcoming the same international workers for years (even generations). We care about their health and well-being and we are committed to doing everything possible to protect the health and safety of our employees.

Part of this is ensuring that farm workers are treated with respect and dignity, are paid fairly, have access to health care and benefits, and importantly, are safely housed. Our farms, and employee living and working conditions, continue to be regularly inspected by multiple agencies and government. Seasonal agricultural workers have the same labour, human rights and social protections as all other Canadian workers.

As we learn more about recent outbreaks on local farms, our farmers and our sector are working to quickly remedy issues and prevent them from happening elsewhere. While we don't have all the answers and know there might be more challenges ahead, what we have learned is that some recent outbreaks were associated with the use of unregulated local recruitment agencies whose contract workers moved from farm to farm.

So, we are taking action.

- We are calling on all fruit and vegetable farmers to limit the movement of local temporary contract workers from one farm to another to reduce the risk of community spread. This also means separating local and international guest workers to decrease the risk of infection.
- We are helping to inform workers about available testing, and doing our part to make sure workers' legal rights for job protection and income protection (e.g. WSIB) are respected if they have to go into isolation.
- We continue to work with all levels of government to provide COVID-19 health and safety training guidelines for farmers.

We look forward to working with government to ensure these unregulated agencies are held to the same ethical and legal standards as the federal regulated seasonal agricultural worker program.

We all have a responsibility to do the best that we can to keep people safe during this pandemic and there is no tolerance for employers who don't follow the rules when it comes to public health and worker safety.

During these challenging times we must all work together to ensure the health and safety of our farmers and agricultural employees so that we can continue to ensure that locally grown fruits and vegetables are available to you, our customers, year round.

We are proud of farm workers, we are proud to be Canadian farmers and we are proud to grow the food you eat.

Sincerely,
Ontario's 3,500 farm families who grow your fruits and vegetables

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THE GROWER

URBAN COWBOY

Managing Canadian agriculture with 3,800 fewer skilled workers

OWEN ROBERTS
U OF GUELPH

Hi-Berry Farm, a family operation located between Port Elgin and Southampton, welcomed 35 Mexican workers last year through the Temporary Foreign Worker program, to help plant, maintain and harvest nearly three dozen commodities on the 150-acre fruit and vegetable operation.

This year, the 20th anniversary of the Hi-Berry's participation in the program, that number dropped to 20.

All but one worker were returnees from previous years. And many of them had called the farm from Mexico in early April in the hope that there would still be work for them, despite the pandemic.

"They want to come back and work here," says co-owner Luke Charbonneau, "and we really needed them for the berry harvest. We couldn't get it done with Canadians."

Hi-Berry tried. This year, Charbonneau hired more than 30 Canadians between April and June to help get the operation going. By the end of July, that number had dwindled to four.

Fortunately for Hi-Berry, as spring wore on, the Mexican workers started arriving to assume their traditional roles on the farm. But housing restrictions caused by the pandemic limited the number of workers they could accommodate.

So how does the farm manage with such a cut to its field staff?

"We're trying to be more efficient and streamline the work as much as we can," says Charbonneau. "We'll have to adjust how we do things. So far, we haven't had to walk away from anything we planted, but something will have to give."

To reduce the field work, Hi-Berry has reduced its overall acreage and eliminated at least one low-volume planting, chrysanthemums. That's saving a bit on labour. But on the other hand, it's had to double staff in its popular fresh produce store -- once again to accommodate regulations arising from the pandemic.

"Our sales are good, similar to other years, but it costs us more to make the product available to our customers," says Charbonneau.

Hi-Berry's experience reflects the overall challenges facing growers trying to cope with Canada's shortfall in international seasonal farm workers.

In total, compared to 2019, Canada has experienced a 14 per cent drop in workers. As a percentage, that figure doesn't seem outrageous. But in sheer numbers, it's 3,800 fewer workers than last year.

And like the Charbonneaus discovered, Canadians just aren't interested in filling agricultural job vacancies involving manual labour.

The situation is getting wide attention across the country. In July, a study authored by University of Calgary School of Public Policy researcher Robert Falconer, underlined that we'd better treat this shortfall with the gravity it deserves.

Falconer's study, called "Grown locally, harvested globally: The role of temporary foreign workers in Canadians agriculture," calls on policy makers to consider ways these workers can come to Canada safely and work in safe environments.

"Federal and provincial governments may wish to consider steps to secure the safety of [temporary foreign workers] as one way to address concerns regarding our food supply chain," he says.

Falconer highlights the trend in the secondary agricultural sector, such as meat-processing facilities, towards using more and more international workers. This sector had been experiencing the fastest growth in the use of foreign workers. But it also got walloped by the pandemic.

So now, besides having fewer seasonal workers on farms themselves, we also have fewer in farm-related jobs.

Other experts, including researchers at the University of Guelph, have also identified how the COVID-19 pandemic has revealed the risk to the labour supply of Canada's agricultural sector. Falconer's not alone.

He repeats a familiar refrain: that is, policy makers must understand the role of international labour to reduce the short- and long-term risks to Canadian agricultural production.

That, he says, is key to ensuring that harvests continue to be planted, picked and processed, that grocery stores remain stocked and that Canadians enjoy reasonable prices for what they eat.

He also says the decline in available workers is likely to make the 2020 agricultural season "a more difficult one for producers."

On many farms that rely on seasonal workers, crops didn't get planted. Some were left to rot in the field. And that's even before the labour-intensive fruit harvest had started.

That's worse than "difficult."

Distribution of temporary foreign workers across sectors and provinces, 2019

Province/ Industry	Transportation	Farm Labour	Fishing	Processing (Meat)	Processing (Seafood)	Processing (Other)	Total
NL	115	55	0	0	60	0	230
PE	85	370	0	0	535	0	990
NS	125	1,435	0	0	355	5	1,920
NB	230	235	0	10	1,020	0	1,495
QC	475	15,340	0	50	120	945	16,935
ON	210	23,920	0	155	0	555	24,845
MB	195	670	0	0	0	0	865
SK	35	485	0	0	0	0	520
AB	610	2,195	0	270	0	15	3,095
BC	1,375	11,395	5	50	20	80	12,930
Canada	3,450	56,110	5	540	2,100	1,610	63,830

Chart source: Robert Falconer, University of Calgary School of Public Policy

Atilano Soberano-Cruz harvests radishes at Hi-Berry Farm. Photo by Glenn Lowson.

RETAIL NAVIGATOR

The new reality does bring opportunity

PETER CHAPMAN

As challenging as the food production and processing sector has been, we do see some opportunities in the new COVID-19 reality. It does appear this is how we will be living and working for a while so we need to find the positives and capitalize on them. One of the benefits of change, even when it is forced, is that we have to find new solutions and sometimes they can be an improvement.

There have been so many changes to the production, processing and selling of food since March. The speed with which our industry has responded and the selection available to consumers in store really have been impressive. The average consumer has no idea about the complexity of producing, processing, packing and distributing a product. There has been more interest in food as well as awareness and appreciation for what producers and processors do.

Relationships with customers

Many retailers have their employees working remotely. They are more focused on their categories and priorities such as in-stock position. Prior to the pandemic, it was difficult to get their attention and they would spend a lot of time in meetings. In my conversations with some of the retailers they see their people much more focused now and they realize some of the long meetings might not have been that productive.

It is also easier to get their attention as they are focused on issues more aligned with suppliers. If they needed inventory and you had it, they wanted to talk to you.

In the past, setting up meetings could be a challenge and also time consuming. Depending on your location and your customer's office it could be hours to days to get in front of them. Now meetings are being conducted online and they can be 30 minutes. If you incurred travel expenses, you wanted to make the most of the time. An online meeting does not have the same cost and they seem to be more productive and focused.

The new reality has brought new opportunities for you to forge prosperous relationships with your customers.

Consumer's decision to buy

Consumer behavior has changed a lot since March. We have experienced the pantry loading, shift from food service to retail, fewer trips to stores for bigger orders and the increase in online shopping. All of these factors have changed how consumers shop for food.

The most important takeaway for producers and processors is that consumers are deciding what to buy before they get to the shelf. People make their list before they go to the store or when they complete their online order.

Social media, influencers and communicating with your community of consumers bring more opportunities. Producers and processors who have invested in these areas are communicating with consumers to get their products on the list. Prior to March the store was a much more important factor in the decision-making and it sometimes was only available to those who had deep pockets.

The new reality has made it more of a level playing field and you have to find different methods to communicate your awesome quality or limited availability products.

In store demos are on hold

One tactic that was a component of many sales and marketing strategies was in-store demos. Almost every retailer has stopped in-store demos to reduce contact with employees and consumers. Demos can be effective but they are also very expensive and the industry average would be one per cent conversion to a loyal consumer. In other words if you invest in an-in store demo where you sample your product to 200 people, you only convert two of them to long-term customers. Yes you will sell more that one time, but the average is still one per cent so when you consider the cost it can be very expensive.

Recently I learned about a Canadian company called Sampler. The business was started prior to the pandemic but has certainly experienced significant growth since March. The concept is a consumer registers with Sampler to receive samples from consumer packaged goods companies. They create a profile so that the samples they receive are only for products they would be likely to buy. Food companies can focus their investment on their target market as opposed to anyone in a given store on a night when you are doing a demo. They claim their conversion rates are significantly higher than traditional in-store demos.

For many food producers and processors the elimination of demos was a real blow to their strategy. This option might be a better and more effective solution.

Virtual trade shows are happening

The food and beverage industry is famous for the elaborate trade shows and events where suppliers would meet with buyers. These events do generate sales but they are also very expensive and take considerable resources.

We see more virtual trade shows happening now where buyers and sellers can meet online. It is a different experience for sure but there are advantages. Feedback I have received from people participating in the shows has been that they miss the personal interaction but they like doing it from home and the investment is much lower.

It is worthwhile to participate in these events and learn the differences and how to ensure your offering is effective. You might have two to three key events per year for your business and it is beneficial to learn the new environment before the key events so you are ready and able to capitalize on them when they happen.

If you see other opportunities about the new environment and please give me a call at (902) 489-2900 or send me an email at peter@skufood.com.

WHAT'S IN STORE?

Protein is changing

Most often when we think of protein we think of the source being one or another. There are examples where items such as sausages might be in the mix but most often it is just beef or just poultry. Recently, plant-based protein items have captured a significant amount of space and attention in food stores.

Now we see a new option for consumers looking to reduce their animal protein but still get the level of protein they need. Items that are 50/50 animal/plant-based protein are appearing in a lot of stores.

Consumers are changing and food processors are working to meet these new demands. It will be interesting to see who wins the battle for shelf space; the hybrid items are certainly taking space from the single-source items right now.

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.

VEGETABLE PRODUCTION

Ontario: a place to grow a $30 million garlic business

Imports of garlic, average prices and import by major supplier, crop year 2018/19

Country	Price ($/lb.)	Imports (tonnes)	Share of Imports (%)
China	$0.84	4,098	72%
United States	$2.90	639	11%
Spain	$1.37	538	9%
Mexico	$1.96	264	5%
Argentina	$3.31	59	1%
Egypt	$1.34	65	1%
Ukraine	$2.14	5	0%
All Imports	**$1.21**	**5,671**	**100%**

KAREN DAVIDSON

How many cloves in a bulb of garlic? If you can imagine five fat cloves -- the average for hardneck varieties -- and each one representing a major global grower, then you would have China, United States, Mexico and Spain. Add Canada for the sake of local loyalty.

That's a new way of looking at garlic production, but it's certainly not equally divided. China represents 72 per cent of imports to Ontario, for example, at a rock-bottom price of $0.90 per pound. That price was recorded as recently as February 2019 at the Ontario Food Terminal. This compares to $2.90 per pound from the United States and $1.37 per pound from Spain. What chance do any of the 75 Ontario growers have with a breakeven of $4.54 per pound?

That question was one of many for the investigators of a Greenbelt Foundation report: Opportunities for Expansion of Fruit and Vegetable Production in Southern Ontario. Consultant John Groenewegen concluded that the opportunity is for another thousand acres of garlic assuming marketed yields of 1.6 tonnes (3,520 pounds) per acre. That's on top of the 400 to 500 acres expected to be harvested this year.

The winning condition for this potential expansion, valued at $10 to $15 million, is to differentiate from low-cost Chinese garlic. That will require boosting higher yields of 2.7 tonnes (5,940 pounds) per acre, providing consistent volumes to major retail accounts, building controlled atmosphere storage programs that lengthen the marketing season and promoting fresh local garlic.

> **There's a big demand for Ontario garlic, but there's also a big commitment for growers.**
>
> ~ JACKIE ROWE, OWNER & PRESIDENT, THE GARLIC BOX

It's a tall order but one that's in the sights of Jackie Rowe, owner and president, The Garlic Box, Hensall, Ontario.

"What a difference a pandemic makes!" Rowe says enthusiastically, reporting that major retailers phoned in early spring to secure local garlic supply. "It's a commitment that we've made with Metro, Sobeys and Longo's."

The Garlic Box had strategized for growth over the years with the expansion to 95 acres, increased yields of 6,000 pounds per acre and access to controlled atmosphere storage at the nearby farm of the Van Raay family. The ability to store quality garlic into the months of January, February and March is part of meeting retailer demands for consistent supplies. The other key factor is sizing – whether that's bulk loose garlic, jumbo-sized garlic or pre-packaged 115-gram pouches. When the marketplace changed so suddenly in spring 2020, Jackie and her husband Jim, field operations manager, were ready.

Management of inventory has been improved by sizing garlic at harvest before it goes into storage. Now there's a system to track exactly what sizes and volumes are available. Garlic that doesn't meet premium sizes is now directed to vacuum-packed bags of peeled garlic – a strategy that reduces food waste.

"There's a big demand for Ontario garlic," says Rowe, "but there's also a big commitment for growers. The crop goes through a four-year rotation and growers must hold back some seed to expand acreage."

COVID-19 presents unique challenges in that many garlic growers will not have access to traditional sales outlets. Many farmers' markets and garlic festivals are cancelled – outlets that offer the most profit potential at $10.00 per pound. These growers have been forced to pivot to online sales where fresh garlic will be packed in food boxes with other locally sourced fare.

"It's a very different market landscape," says Rowe. "It's an ambitious number to expand Ontario's garlic sector by another thousand acres and to maintain sustainability and grow market share."

The Rowe's and their growers' group have invested heavily into new equipment allowing increased planting through heavier inputs and tighter rows. Collective investment helps to manage the risks associated with garlic as well as support new growers for future expansion.

To put it into perspective, Rowe adds, "It's our plan to add another 15 acres for 2021. We've been preparing for this moment for 22 years. We can react and execute."

VEGETABLE PRODUCTION

Garlic growers launch new clean seed program

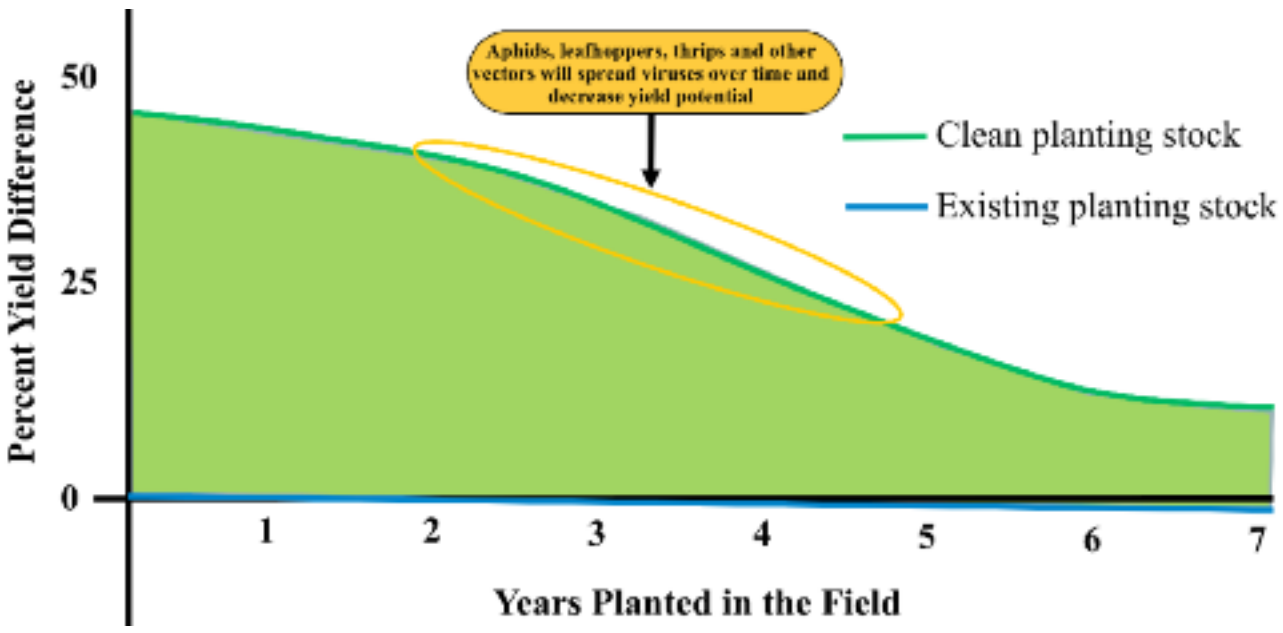

Figure 1 – Hypothetical yield improvement curve from clean planting stock. The initial increased yield difference is thought to be between 25-50%. How quickly insects spread viruses and decrease the potential yield over time will vary from field to field.

Figure 2 – Garlic shoot tips being tested for pathogens in tissue culture.

Figure 3 – Virus-freed microplant being divided into multiple plants.

Figure 4 – Roundels, small, single-cloved bulbs, ready to be shipped from the SPUD unit.

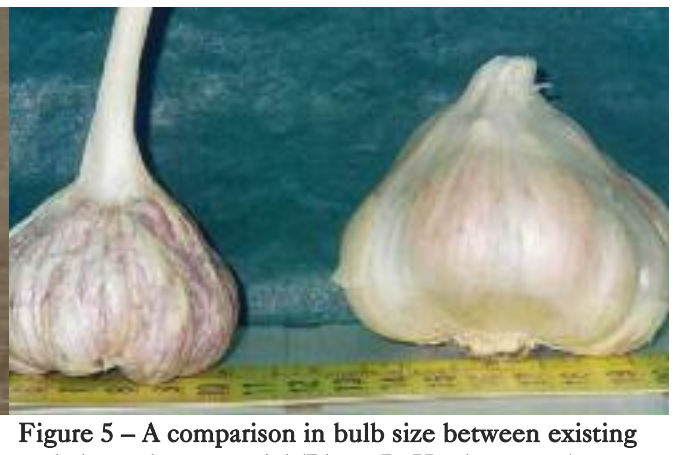

Figure 5 – A comparison in bulb size between existing and clean plant material (Photo B. Hughes, 2008).

TRAVIS CRANMER

The Garlic Growers Association of Ontario has just announced that it is taking orders from members for clean planting material from the SPUD unit at the New Liskeard Agricultural Research Station, University of Guelph. This is a big milestone that will allow growers to order clean material for fall 2020.

Garlic is a vegetatively grown crop, just like potatoes or strawberries, that is amplified not by seed, but asexually by clones, daughter tubers or cuttings. Unlike true seed production, the offspring of clones accumulate viruses and other pathogens in each progressive generation which results in a yield drag. In garlic, that yield drag has been estimated to be anywhere from 25–50 per cent. By propagating material that has been 'freed' of viruses through tissue culture, growers are able to take advantage of that yield boost until viruses and other pathogens build up in the crop over time. (Fig. 1).

Virus infection is generally transmitted by sap-sucking insects such as aphids, thrips or leafhoppers. These insects have a stylet that pierces the plant's cells and if a virus is present, the virus can enter the insect's foregut and salivary glands. As the insect moves to a new plant and pierces it, some virus-infected saliva may be left behind from the previously visited plant.

Viruses can accumulate in clones after years of production while not causing any visible symptoms. They can slow the plant down by causing a yield drag or making the plant more susceptible to other stressors. Since the cause is viral, it cannot be 'cured' with a pesticide application. Some crops, such as potatoes, have a certified seed program which is federally regulated and has set limits on how much disease and virus can be tolerated. There are also seed classes based on age and disease/virus levels.

Other small-acreage crops, such as garlic, do not have the same regulations; so seed is often reused indefinitely. In garlic, there is the option of growing out bulbils, the seed-like structure that is found in the scape in hardneck varieties. Growing the bulbils can clean the seed of nematodes, bulb mites, fungi and bacteria, but viruses are still found in this part of the plant.

In the early 2000s, a project to develop clean seed was undertaken by the New Liskeard Agricultural Research Station (NLARS) SPUD Unit, University of Guelph, CORD, FedNor as well as the Garlic Growers Association of Ontario (GGAO). The project goals were to develop an efficient/economical system to micro-propagate a cultivar of garlic called 'Music' to be free of viruses. The project produced virus-freed planting stock, developed a greenhouse production system as well as developed guidelines for clean seed production. The NLARS SPUD unit determined the best type of plant tissue to use, the best media to promote plant development as well as established methods to detect bacterial and fungal contamination. (Fig. 2).

In garlic, the cells of the meristem/shoot tip of a scape can grow faster than the virus can infect the cells. Meristem tips are cut and placed on a media, and under lights and ideal conditions they grow without the rest of the plant present. A mass of cells, known as a differentiated callus, develops and root and shoot hormones are used to produce, you guessed it, roots and shoots. This plant tissue is then tested for viruses multiple times and if clean, these plants are then multiplied (Fig. 3) and used to create bulbs, called roundels, for field production (Fig. 4).

Over the next few years, growers will see new garlic cultivars added to the public germplasm besides 'Music' and work will be conducted to increase the multiplication rate of the micropropagation process for all cultivars. This is a huge step forward for the garlic industry. Implementation of this clean seed will see increases in bulb size, yields, storage life as well as reduce the presence of storage rots, bulb and stem nematode, bacteria, fungi and viruses. Even just the ability to store and sell the crop into January will allow growers to fetch a premium.

France and other countries have had a clean seed system in place for a while. The vigour and size of the bulbs are impressive; however, these cultivars do not always perform well in Canadian conditions, may take a couple years to acclimatize and the material is often difficult to import in time for planting. The SPUD unit offers a more local source of planting material that does well in our climate and has cultivars that already perform well in our growing conditions.

The hardest part of implementing clean seed into a current program will be growing out the roundels into marketable bulbs quickly while keeping them relatively separate from the existing field. Propagating roundels can be done many ways and it is still uncertain as to what the most efficient method of propagation would be. The roundels could be started the same way that you would start onion transplants and then planted in a secluded field or grown in a greenhouse with insect screens.

The roundels leave the SPUD unit about the size of a dime. After a few months of growth, a round (single clove bulb) the size of a toonie, or a small, double clove bulb is harvested. Planting this material yields a small to medium-sized bulb and then the following year is when a large increase in size and yield is typically seen (Fig. 5). During this process scapes could be harvested and those bulbils could be planted as virus-freed planting stock as well.

This process of growing out clean planting stock will not be for everyone, and similar to potatoes, there may be growers who focus on seed or multiplication of seed during the forth and fifth generation. If growers continually choose to use virus-freed planting stock, over time the amount of disease will be pushed out of the production system. While clean planting stock may have a greater upfront cost, the benefits and yield bumps in the future greatly outweigh the initial costs.

Membership is open to growers in Ontario and there is still time to become a member and order roundels for the fall of 2020. Visit www.garlicgrowers-ofontario.com for more information.

Travis Cranmer is an OMAFRA vegetable crops specialist.

VEGETABLE PRODUCTION

New app helps demystify soil test reports

There's a new tool to help farmers interpret their soil test reports more quickly and easily. Soil Test Manager is an app newly launched by Ontario Soil and Crop Improvement Association (OSCIA) that brings fertility recommendations from three different provincial government handbooks into a single, electronic location.

Users simply manually enter soil test results for a given field and with a single click, receive the information they would normally have to look up in the Ontario Field Vegetable Guide, Soil Fertility Handbook or Agronomy Guide for Field Crops, all publications of the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA).

"The app provides Ontario fertility recommendations for all horticulture and field crops in one location that's easy to use," explains Jake Munroe, OMAFRA soil management specialist for field crops. "The publications aren't going anywhere, but it can be cumbersome and time-consuming to look up a full suite of recommendations."

The app includes basic explanations throughout for users to understand what they're seeing, although the information is not as detailed as it is in the full publications, Munroe adds.

"This was designed with farmers in mind from start to finish, from its functionality to its interpretive aspects," he says.

Ontario fertilizer recommendations are evidence-based and vetted by researchers, OMAFRA staff and industry representatives. They also follow a sufficiency approach, which means they're based on the most economic annual application rate for a specific crop.

The full suite of recommendations in the app for Ontario accredited soil tests includes potassium, phosphorus, magnesium, manganese, zinc and lime, as well as nitrogen, although that one is available only for horticulture and not field crops.

"This provides an opportunity to get a second opinion on fertilizer recommendations. If a retailer is recommending a certain application, you can use this tool as a free second opinion for Ontario recommendations and interpretive information – that's the number one benefit," Munroe says.

Kyle Horlings pays close attention to soil health when growing onions in the Holland Marsh. Photo by Glenn Lowson.

The app also includes a 4R phosphorus and nitrogen calculator the provides growers with a 4R rating that reflects if they're applying fertilizer efficiently for crop uptake and minimizing loss or waste.

The 4Rs of nutrient stewardship – applying the right product at the right rate at the right time in the right place – are key principles of efficient fertilizer use.

Soil Test Manager was the vision of now-retired OMAFRA soil fertility specialist for horticulture, Christoph Kessel, who worked closely with Munroe and the app developer to bring the tool to life. Other OMAFRA staff and specialists and the OSCIA executive also provided input and feedback into the app's development.

The free app is available at www.soiltestmanager.ca and is compatible for use on a range of devices, including computers, tablets and smartphones.

"It's an excellent tool to empower growers to better understand their soil test and fertilizer recommendations on their farm. I would recommend using it as an additional check on their recommendations if they're looking to have a bit more understanding on what their soil test means and what they want to do," Munroe says.

The Canadian Agricultural Partnership (CAP) is a five-year commitment by Canada's federal, provincial and territorial governments to encourage innovation, competitiveness and sustainability in Canada's agriculture industry.

Cucurbit downy mildew is here, despite hot weather

KATIE GOLDENHAR

An extended period of hot and dry weather has not stopped cucurbit downy mildew, a devastating disease which has been confirmed in the main cucurbit-growing regions of Ontario. The first report of the disease in the Great Lakes region was on June 22nd in Michigan. On July 6th, the disease was reported in Kent county and reports from Norfolk and Elgin counties followed the next day. This is the earliest the disease has occurred in the region since 2017.

Cucurbit downy mildew is economically the most important disease in cucumbers and can be impactful to other cucurbit crops. In Ontario, this disease can be especially damaging to the nearly 4000 acres of field cucumbers that are grown annually. Other hosts of cucurbit downy mildew include cantaloupe, pumpkin, watermelon and squash. Since 2005, downy mildew has occurred annually in the region.

Cucurbit downy mildew is caused by the oomycete, *Pseudoperonospora cubensis*, that can only survive on living cucurbit plants. During the winter months, it is confined to frost- free areas such as the southern U.S. and Mexico, or in greenhouses that have cucurbit crops planted throughout the winter months. Each year, downy mildew begins to infect field crops as they are planted by movement of sporangia in the wind.

Only foliage is infected by this pathogen. Uncontrolled infections can lead to foliar death within 14 days, significantly reducing crop yield and quality. When looking for downy mildew, it will vary based on the cucurbit host. In cucumbers, lesions are restricted by the veins and will look angular. In other cucurbits, the lesions are round to irregular in shape. Lesions start by turning darker green, known as water soaking, then they become yellow (chlorotic) and eventually tan-brown (necrotic). Lesions can coalesce and cause complete plant death. In the early stages of infection, there will be a black growth on the underside of the leaf, which are the sporangia of the pathogen.

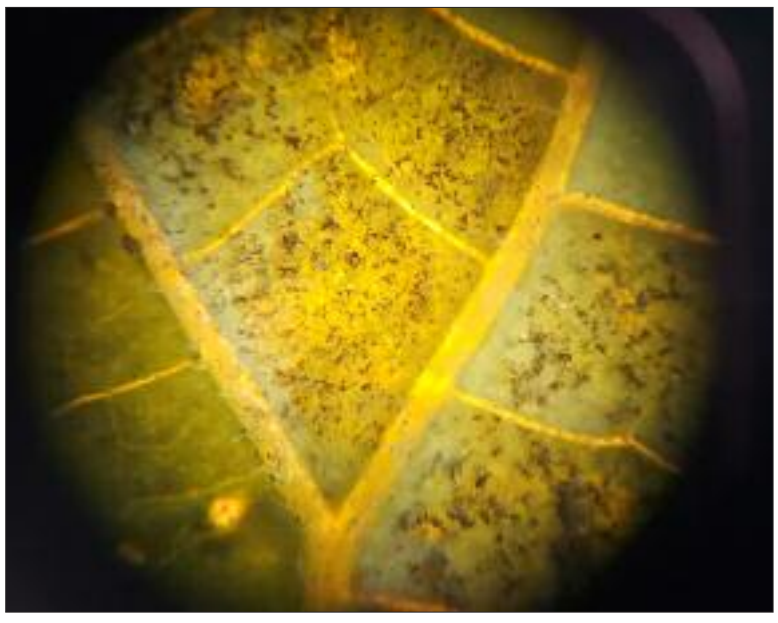

Figure 3. a) The black growth on the underside of cucumber leaf and b) close up of the black growth, showing the sporangia

With the extended hot, dry weather through July, the mindset that "it is too hot for disease" has allowed us all to be caught off guard when downy mildew arrived. Studies have shown that *P. cubensis* germinates, infects, and produces sporangia the quickest at 15 to 20°C, which have been the average overnight temperatures. Additionally, with extended leaf wetness from heavy dew, high humidity, overhead irrigation (and rain for the lucky few), the pathogen can infect at temperatures up to 30°C. At higher temperatures, all the sporangia are not killed. They are often hiding in the cooler canopy of the cucurbit crop, waiting until nighttime where temperatures often reach around 20°C.

Now that this pathogen is here to stay, growers should be following a weekly fungicide application. In Ontario, there are three targeted fungicides that are registered and effective, according to efficacy studies in Michigan and Ontario. *Pseudoperonospora cubensis* has developed resistance to multiple fungicides since 2005 when the disease re-emerged. The high reproduction frequency of *P. cubensis* means there is an inherent risk when using fungicides to manage this disease. During reproduction, genetic mutations naturally occur at very low rates. When a pathogen such as *P. cubensis* produces so many spores in a short period of time, there is a higher probability that a spore will receive a mutation that confers resistance to a specific fungicide. If that fungicide is continually sprayed, that resistance mutation will be selected for and these mutants can then make up the predominant population that causes downy mildew. So, it is important to follow resistance management strategies when using fungicides for downy mildew to keep these products effective for seasons to come.

The main tactics growers can use to reduce resistance

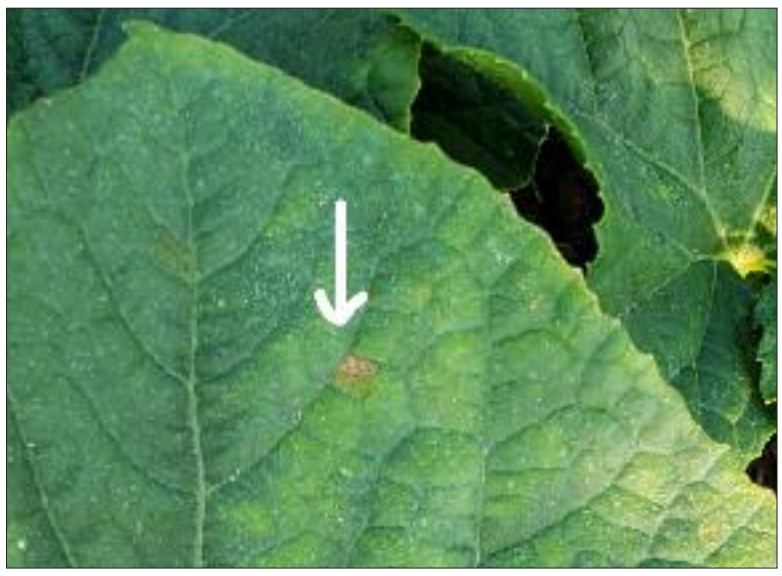

Figure 1. Early infection of downy mildew in a pickling cucumber crop

Figure 2. Characteristic angular lesions in cucumber from downy mildew

development once the disease is established in the region, is to rotate effective targeted products and tank mix these with multisite fungicides that are active on downy mildew. The effective multisite fungicides are mancozeb and chlorothalonil.

This year, cucurbit growers are in a pickle when it comes to tank mixing with these multisite fungicides. The recent re-evaluation of chlorothalonil means that as of May 10, 2020 cucurbit growers can only use two applications of chlorothalonil per year.

Mancozeb is another option to tank mix, but it has a 14-day pre-harvest interval, making it very challenging to be used when fruit are continuously hand-harvested. Growers should tank mix with mancozeb until they are within the 14-day pre-harvest interval and then use chlorothalonil to tank mix for two applications. Ontario growers still have a significant season ahead of them and cucurbit downy mildew threatens their yields.

For Ontario-specific reports and management recommendations, refer to onvegetables.com. For identification, questions or more information, contact me at katie.goldenhar@ontario.ca

Katie Goldenhar is OMAFRA pathologist – horticulture.

BITS AND BITES

Apple extension continues online

KAREN DAVIDSON

Although the Ontario and Nova Scotia apple tours are cancelled for August, provincial extension specialists continue their outreach in creative ways. Kristy Grigg McGuffin, for example, has been tweeting about apple diseases.

A photo, as they say, is worth a thousand words. She is Ontario's horticultural IPM specialist based in Simcoe, Ontario. Follow her on Twitter @AppleOfMyIPM.

Michelle Cortens, tree fruit specialist with Perennia in Nova Scotia, is promoting a series of videos for early August. Follow her on Twitter @NSTreeFruit.

COMING EVENTS 2020

August 1	Food Day Canada
August 6	Nova Scotia Fruit Growers' Association Annual Summer Tour CANCELLED
August 8-9	Perth Lions Garlic Festival, Perth, ON CANCELLED
August 8-9	Ottawa Carp Farmers' Market Garlic Festival, Ottawa, ON CHECK WEBSITE
Aug 10-12	International Blueberry Organization Summit, Trujillo, Peru RESCHEDULED TO AUGUST 22-25, 2021
August 12	Ontario Apple Summer Tour, Newcastle, ON CANCELLED
Aug 13-15	73rd annual Quebec Produce Marketing Association Convention, Fairmont Queen Elizabeth Hotel, Montreal, QC CANCELLED
August 30	Eastern Ontario Garlic Festival, Cornwall, ON CHECK WEBSITE
Sept 2	Ontario Produce Marketing Association Annual General Meeting VIRTUAL EVENT
Sept 5	Verona Lions Garlic Festival, Kingston, ON CHECK WEBSITE
Sept 8-10	International Strawberry Symposium, Rimini, Italy (originally 5-7 May) CHECK WEBSITE
Sept 12-13	Stratford Kiwanis Garlic Festival, Stratford, ON CANCELLED
Sept 15-18	Canada's Digital Farm Show, Woodstock, ON
Sept 16-18	Asia Fruit Logistica, Singapore RESCHEDULED TO NOVEMBER 18-20
Sept 20	10th Annual Toronto Garlic Festival, Artscape Wychwood Barns, Toronto, ON CHECK WEBSITE
Sept 21-25	United Fresh Washington Conference, Grand Hyatt, Washington, DC VIRTUAL EVENT
Sept 23	Ontario Produce Marketing Association Golf Tournament, TBA
Oct 5 – 8	International Plant Health Conference, Helsinki, Finland
Oct 7-8	Canadian Greenhouse Conference, Scotiabank Conference Centre, Niagara Falls, ON VIRTUAL SPEAKERS
Oct 14-17	International Plowing Match, Lindsay ON CANCELLED (Oct 13-16, 2021, Lindsay, ON
Oct 15-17	Produce Marketing Association Fresh Summit, Dallas, TX VIRTUAL
Oct 29	Food & Beverage Ontario 2020 Conference, Steam Whistle Brewery, Toronto, ON
Nov 2-4	Fall Harvest Meetings on Parliament Hill, Ottawa, ON
Nov 6-15	Royal Agricultural Winter Fair, Toronto, ON CANCELLED
Nov 13	Ontario Produce Marketing Association Annual Gala, Universal Event Space, Vaughan, ON
Nov 17-19	Alberta Potato Conference and Trade Show, Cambridge Hotel and Conference Centre Red Deer, ABGlengarry Hotel and Convention Centre, Truro, NS

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CROP PROTECTION

How crop protection products are assessed for safety

CHRIS DUYVELSHOFF
CROP PROTECTION ADVISOR, OFVGA

Pests such as insects, diseases, and weeds can affect our quality of life in many different ways. Pests can represent a threat to public health and the environment as well as create substantial negative impacts to the economy if they are not sufficiently managed.

Crop protection products or pesticides play an important role in agriculture and other sectors in managing pests. These products can be very broad in scope; they include, as defined by the federal government:

a product, an organism or a substance, including a product, an organism or a substance derived through biotechnology, that consists of its active ingredient, formulants and contaminants, and that is manufactured, represented, distributed or used as a means for directly or indirectly controlling, destroying, attracting or repelling a pest or for mitigating or preventing its injurious, noxious or troublesome effects.

While dealing with pests is an important aspect of society, crop protection products can also represent a hazard. If not properly managed, their use has the potential to pose risks to the health and well-being of Canadians and to our environment. As such, crop protection products are highly regulated. So how do we ensure the safety of these products in Canada?

The federal government has the responsibility of reviewing and registering pest management products before they can be sold or used in Canada. This is covered by the Pest Control Products Act (PCPA). The primary objective of the PCPA is the prevention of unacceptable risks to human health and the environment resulting from the use of these products. The PCPA also recognizes that pest management is an important factor to both the economy and quality of life in Canada; however, these are considered secondary objectives to health and the environment.

It is the mission of the Pest Management Regulatory Agency (PMRA) based in Ottawa to execute the implementation of the PCPA and its objectives. Of the 450 employees at PMRA, 73 per cent are scientists, including biologists, toxicologists, epidemiologists, and chemists. Evaluations of products by PMRA are extensive and use a weight-of-evidence approach that considers the nature and quality of scientific sources in their decision making.

Before the PMRA approves any product for use, regardless of origin, it must undergo a thorough science-based risk assessment and meet strict health and environmental standards. If the proposed use of a product poses unacceptable risks to human health or the environment, it is not registered for use in Canada. It is the responsibility of the company or individual seeking registration to prove their product does not pose unacceptable risks through scientific studies.

During evaluation or re-evaluation of a product, PMRA considers a comprehensive toxicology database to assess potential health effects. Both shorter term and longer-term effects are considered. These include, but are not limited to, studies to characterize acute and chronic toxicity, carcinogenic potential, reproductive and developmental toxicity, immunotoxicty, neurotoxicty, genotoxicity, and endocrine disruption potential. The PMRA assessments are also informed by epidemiological evidence, general scientific knowledge, and published scientific information.

Crop protection products for control of insects such as Japanese beetle are key for all growers. Photo by Glenn Lowson.

In exposure assessments, sensitive populations and life stages are specifically addressed, including infants, children, and women of childbearing age. Consideration is given to different activities, dietary habits, food intake, and body weight of children versus adults. A product will only be registered if this estimated exposure raises no concerns. Once this is determined, the PMRA will ensure the label directions indicate the appropriate use instructions to best minimize exposure.

Exposure to a product may occur through different routes (oral, dermal, and inhalation) and pathways (dietary, drinking water, and non-commercial uses). In order to fully assess potential risks, the PMRA conducts aggregate assessments which consider these different pathways and routes. Where it has been demonstrated that a group of pesticides share a common mechanism of toxicity, they are subject to a cumulative risk assessment in which the combined aggregate risks are assessed. In occupational settings such as agriculture and forestry, exposure may occur while handling or applying pesticides. As well, workers re-entering treated areas may be exposed to pesticide residues. These occupational risks are also assessed during the PMRA review.

The PMRA also sets science-based maximum residue limits (MRLs) on food commodities to ensure the food Canadians eat is safe. These limits are enforced by the Canadian Food Inspection Agency. The MRLs established for each crop are set at levels well below the amount that could pose a health concern.

Environmental risk assessment integrates the environmental exposure and ecotoxicity information to evaluate the potential for adverse effects on non-target species. This integration is achieved by comparing estimated environmental concentrations (EECs) with concentrations at which adverse effects may occur. The EECs are concentrations of product in various environments, such as in food, water, soil, and air. The EECs can be estimated using standard models, which take into consideration the application rate(s), chemical properties, and environmental fate properties, including the dissipation of the product between applications. In re-evaluations of registered products, EECs can be taken from empirical data.

Ecotoxicity information includes acute and chronic toxicity data for various organisms or groups of organisms from both terrestrial and aquatic habitats including invertebrates, vertebrates, and plants. Toxicity endpoints used in risk assessments may be adjusted to account for potential differences in species sensitivity as well as varying protection goals such as protection at the community, population, or individual level.

A vast amount of scientific data is reviewed when evaluating the safety of crop protection products in Canada. These extensive reviews are posted publicly and include consultations where any stakeholders are invited to submit comments. There is good reason to have high confidence that crop protection products are safe for Canadians and the environment under the conditions of registration.

CROP PROTECTION

Bioceres WP mycoinsecticide registered for additional greenhouse crops

Photo courtesy of Doef's Greenhouse

JIM CHAPUT

The Pest Management Regulatory Agency (PMRA) recently announced the approval of a minor use label expansion registration for Bioceres WP biological mycoinsecticide for reduction in numbers of whiteflies, aphids and thrips on greenhouse-grown eggplant, lettuce, mint, onion and Brassica transplants, Asian water spinach and greenhouse-grown strawberries in Canada. Bioceres WP biological mycoinsecticide was already labeled for use on a variety of crops in Canada for management of these pests.

These minor use projects were submitted by Ontario and Quebec as a result of minor use priorities established by growers and extension personnel.

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

Do not apply or allow drift of Bioceres WP biological mycoinsecticide to other crops or non-target areas. Bioceres WP biological mycoinsecticide is toxic to bees exposed to direct treatment or drift and may be toxic to some beneficial insects. Do not contaminate off-target areas or aquatic habitats when spraying or when cleaning and rinsing spray equipment or containers.

Follow all other precautions, restrictions and directions for use on the Bioceres WP biological mycoinsecticide label carefully.

For a copy of the new minor use label contact your local crop specialist, regional supply outlet or visit the PMRA label site.

Jim Chaput is minor use coordinator, OMAFRA.

Crop(s)	Target	Rate	Application Information
GH lettuce, GH eggplant, GH mint, GH onion transplants, GH Brassica transplants, GH Asian water spinach, GH Strawberries	Reduction in numbers of whiteflies, aphids and thrips	Apply at a concentration of 2-4 g BIOCERES G WP/L water depending on insect population density.	Use spray volume sufficient to cover foliage infested with insect pests. Crop size and spray equipment will determine spray volume needed. Depending on crop treated 500 to 1000 L of spray volume will typically be required for 1 ha. Reapply at 7 day intervals or at 3 – 5 day intervals if pest pressure is high. Pre-harvest interval is 0 days.

Pylon miticide-insecticide has an expanded label for greenhouse use

Photo by Glenn Lowson

Crop	Insect	Application Rate (mL/100 L)*	Maximum number of applications per crop cycle	Pre-harvest interval (days)
Greenhouse cucumber	Spider mites (*Tetrancychus spp.*, including two-spotted spider mite, *T. urticae*) Broad mite (*Polyphagotarsonemus latus*)	20 - 30	1	0

Crop	Pest	Application Rate (mL/100 L)*	Maximum number of applications per crop cycle	Pre-harvest interval (days)
Tomato Tomatillo Ground cherry Pepper Eggplant Pepino	Tomato hornworm (*Manduca quinquemaculata*) Tobacco budworm (*Heliothis virenscens*) Cabbage looper (*Trichoplusia ni*) Alfalfa looper (*Autographa californica*)	30	1	0
		20 - 20	1	0

Pylon miticide-insecticide is now available for use on an increased variety of pests in greenhouse ornamental crops, greenhouse fruiting vegetables and greenhouse cucumbers, says Bradley Hayhoe, professional and specialty solutions, BASF Canada. The Pesticide Management Regulatory Agency has granted registration of two important pests chili and onion thrips on the Pylon miticide-insecticide label for use in greenhouse ornamentals.

This product is a group 13 insecticide, a member of the pyrrole class of chemistry, with the active ingredient chlorfenapyr. It also suppresses listed pests in greenhouse fruiting vegetables such as eggplant, ground cherry, pepino, pepper, tomatillo and tomato. Use lower rates when populations are at action thresholds, i.e. prior to infestations causing economic injury. Use higher rates when populations have reached economic injury levels for yield or quality.

In greenhouse cucumbers, Pylon can be used to suppress spider mites and broad mites, while in greenhouse ornamentals it controls spider mites, two species of looper, foliar nematodes and now three species of thrips. The maximum number of applications per crop cycle is one. The pre-harvest interval is zero.

For resistance management recommendations and general information, consult the label.

Source: BASF Canada July 6, 2020 email and Pylon miticide-insecticide label.

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