THE GROWER

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ARTIFICIAL INTELLIGENCE

AI weeds in the blink of an eye

This AI-enhanced sprayer was first used in the field in spring 2025 to spot-spray carrots. The nozzles are programmed to spray only identifiable weeds of up to 16 inches in height. Thanks to input cost reductions, a 100 per cent return on investment is expected in two years. Isaiah Galbraith is in the driver's seat as Alexa Hambly-Galbraith, business operations manager for Gwillimdale Farms, Bradford, Ontario, highlights some of the equipment's benefits to fellow grower Brandon Scholten, Korag Farms. Photos by Paul Novosad.

KAREN DAVIDSON

From geek toy to game-changer in less than a decade, artificial intelligence (AI) is ditching its ivory tower offices for farmers' fields. And Canadian vegetable growers are seeing green, thanks to reduced crop protection and labour input costs.

The Ecorobotix sprayer, developed in Yverdon-les-Bains, Switzerland by engineer Steve Tanner and business partner Aurélien Demaurex, is a prime example. From the start in 2011, their concept was to meet European environmental and sustainability standards while also delivering spraying efficiency for farmers around the globe. Their undertaking was comparable in scope to John Deere's development in the U.S. of See and Spray technology for corn, soybeans and cotton.

To attain acceptable performance through emerging "see and act" technology, the Swiss team developed dependable large-language-format algorithms. Volumes of accurately labelled images covering a diverse cross-section of growing environments were needed to model their AI algorithms. This time-consuming process continues today as evidenced by the spring 2025 release of their operational algorithm for carrots.

The value of such painstaking diligence was not lost on Gwillimdale Farms. They purchased the $235,000 USD sprayer for 2,000 acres of carrots, onions, potatoes, parsnips and beets grown near Bradford and New Liskeard, Ontario. In their experience, emerging farm technology is often identified by attending agricultural events such as Agritechnica in Hanover, Germany.

Signalling post-purchase satisfaction, Gwillimdale's business operations manager Alexa Hambly-Galbraith states, "The machine has performed well in its first season. We completed three passes on onion transplants, two passes on seed onions and carrots and one pass on beets."

"It represents a significant step forward in smart farming in reducing chemical usage, improving cost efficiency and minimizing environmental impact, all while increasing operational precision."

How it works

Five years into development, the company concluded that user resistance to autonomous sprayers was an obstacle due to both regulatory barriers and lack of trust.

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AT PRESS TIME...

Watch for the potato pile to come

KAREN DAVIDSON

While Statistics Canada reported 394,215 seeded acres of potatoes on July 18 with virtually no change from 2024 (down 0.1%), United Potato Growers of Canada general manager Victoria Stamper is warning about the pile of potatoes to come from the U.S.

"With processing cuts coming so late in the season and no good alternative crops, not everyone reacted in the same way," says Stamper. "The state of Washington cut close to 15,000 acres and the state of Idaho planted more fresh varieties instead."

2025 Idaho plantings are estimated at 313,000 acres, almost the same as 315,000 acres a year ago. The more salient point is that Idaho growers average 430 cwt/acre.

"In a global context, there's a lot of turbulence in the processing sector," Stamper explains. "Two years ago, experts predicted growth of 3-5 per cent annually, but that has slowed. Now the expectation is for 1-1.5 per cent. French fries aren't going anywhere – but who makes them, where and at what cost is changing quickly."

Stamper pointed to the recent announcement that J.R. Simplot plans to acquire Clarebout Potatoes in Nieuwkerke, Belgium. European processors are making headway selling yellow fries to the eastern coast of the U.S. Even farther afield, China and India are disrupting the market in Asia with increased production at lower prices. In addition, she spotlighted the various processing expansions: McCains in Coaldale, Alberta; J.R. Simplot in Moses Lake, Washington; and Agristo in Grand Forks, North Dakota.

With these developments in mind, Stamper pivots to the internal trends in Canada. Of all the provinces, Manitoba took the biggest hit this year on processing volume cuts, with acres at 68,000. Prince Edward Island continues to report the largest seeded area in Canada at 87,300 acres followed closely by Alberta at 80,000 acres. Ontario is humming along with stable contracts for chipping potatoes.

Weather-wise? "Many areas in Canada are getting dry as we move through the month of July," Stamper observes. "Overall, the potato crop is developing well but we still need to get through July and August."

Ag ministers agree to boost AgriStability

Due to the uncertain trade environment and unfavourable climate conditions in parts of Canada, ag ministers are enhancing the AgriStability program. They met virtually when Manitoba wildfires forced the cancellation of in-person meetings in Winnipeg in mid-July.

For the 2025 program year only, the compensation rate will be increased from 80 per cent to 90 per cent and the maximum payment limit will be increased from $3 million to $6 million.In addition, for AgriStability, starting in the 2026 program year, provinces and territories will have the option to use a new inventory valuation method for inventories destined to be used on-farm.

Federal-provincial-territorial ministers are working together to increase interprovincial trade of food. Ministers discussed a variety of options, including ways to remove barriers to internal food trade and identify new trade opportunities.

FPT Ministers highlighted the critical importance of joint efforts across governments to maintain, expand and diversify international market access. In support of this work, Ministers discussed the federal Indo-Pacific Agriculture and Agri-Food Office and other resources in the region.

The annual conference of FPT Ministers of Agriculture will take place in-person in Winnipeg, Manitoba September 7-9, 2025.

NEWSMAKERS


Dr. Rene Van Acker

Congratulations to **Dr. Rene Van Acker!** He started a five-year term as the University of Guelph's 10th president and vice-chancellor on July 2, 2025. With nearly 30 years in academia — including in senior leadership roles as chair of the Department of Plant Agriculture, dean of the Ontario Agricultural College (OAC) and vice-president (research and innovation), Van Acker is widely known for fostering trust and building high-performing teams across the institution. He's assuming the role at a time when the university is on a "pathway to becoming a top-tier university, not just in Canada but around the world."

The World Potato Congress has appointed **Krista Shaw** as international advisor. A distinguished leader with more than 22 years of leadership experience, she has held key roles including Assistant Deputy Minister, executive director, and director in both government and non-governmental organizations. Currently serving as the director of stakeholder relations at the Prince Edward Island Potato Board, Shaw is deeply rooted in the agriculture industry. She grew up around family farm operations and married into Shaw Brothers Farm—PEI's oldest family farm with an impressive 252-year legacy.

The federal Liberal government has chosen an urban man – **Michael Coteau** (Scarborough-Woburn) – to be chair of the House of Commons Agriculture Committee. The vice-chairs remain the same as before the election – **John Barlow** and **Yves Perron**. The committee includes five Liberals including Coteau: **Sophie Chatel**, **Paul Connors**, **Emma Harrison Hill** and **Marianne Dandurand**. Four Conservatives include Barlow, **Richard Bragdon**, **David Epp** and **Jacques Gourde**. Yves Perron represents the Bloc Quebecois. Epp, Gourde, Hill and Perron have agricultural or farming backgrounds while Dandurand was chief of staff to former ag minister **Marie-Claude Bibeau**.

The Canadian Potato Council held meetings in Ottawa in June 2025. Pictured L-R: **John Visser**, director; **Dave Epp**, MP Chatham-Kent-Leamington; **Bill Zylmans**, chair; and **Caleigh Hallink-Irwin**, general manager.

Karen Proud, president and adjudicator of the Office of the Grocery Sector Code of Conduct, has announced the first members. They are Lactalis Canada, the first supplier company and Empire Company Limited as the first retailer member.


Cesar Cappa

Welcome to **Cesar Cappa**, weed management specialist for horticulture, Ontario Ministry of Agriculture, Food and Agribusiness. He brings a decade of experience in agriculture and horticulture, including weed and pest management, applied research and program development through various roles in Argentina and Canada.

Dr. Hayley Wickenheiser, the four-time Olympic gold medalist, Hall of Fame inductee and philanthropist will be the inspirational speaker at the Grape Growers of Ontario 40th celebrity luncheon on September 17. Tickets are available for the St. Catharines event through Grape Growers of Ontario.

Shannon Sommerauer is starting a new position at the Canadian Produce Marketing Association: senior director, government relations and industry technology. Since June 2019, she's taken on increasingly more demanding roles.

COVER STORY

AI weeds in the blink of an eye

Continued from page 1

Working closely with growers, the team pivoted to a traditional tractor-sprayer model that harnessed the power of AI learning to develop algorithms for plant identification.

And today? In less than 250 milliseconds, the sprayer "scans" the field, captures real-time imagery, identifies the designated crops and/or weeds, and executes a precise spray of 2.4 by 2.4 inches, all while minimizing drift. The sprayer spots plants as small as 0.08 inches and as lanky as 15.7 inches, currently recognizing more than 50 weed species.

The sprayer can be pulled at speeds of up to 7.2 km/hour, has 156 high-precision spray nozzles spaced at 1.5 inches apart and carries a 600L water tank and a 300L mixture tank.

"The Ecorobotix has flexibility in its applications," explains Olivia Soares De Camargo, business development project manager from the company's Swiss headquarters. "It can spray fertilizer on only the crop or it can spray pre-and post-emergent herbicides on everything except the crop. It also has capability to spray volunteer potatoes, a potential reservoir for late blight inoculum."

First introduced to North America in 2023 at the Farm Tech Days in Wisconsin, and subsequently at an ag robotics/autonomous solutions trade show in Salinas, California, the AI-enhanced sprayer has had quick uptake. The company decided on Pasco, Washington for its North American head-quarters, placing it in the heart of 20.000 acres of onions. Interestingly, for its operations north of the border, the company formed a Canadian partnership with Napierville, Québec-based Univerco.

Starting with two Québec vegetable growers in 2023, Univerco today supports dozens of machines with the addition of field support in Newmarket, Ontario. Almost all service can be done remotely via the internet directly from the farm. In rare cases of complex failure, a data log file dump from memory is forwarded to engineers in Switzerland for debugging.

There are 156 high-precision spray nozzles spaced for a four-centimetre spray pattern.

What is the ROI?

Chrissy Wozniak, U.S. marketing and communications manager for Ecorobotix, oversees the North American rollout from her base in Florida. Having extensive agricultural experience, she takes a broader view on the adoption of AI beyond the obvious reduction of crop protection inputs.

"This equipment also offers labour savings in that it eliminates hand-weeding crews," she explains. "How much better is it to take a hand weeder and train that person for the tractor cab. Or reduce the labour required for thinning lettuce."

Currently, the machine's primary usage focuses on targeted herbicide treatments in vegetable fields to reduce phytotoxicity and enhance overall crop yields. Beyond herbicides, its features extend to the application of liquid fertilizers, growth treatments, insecticides and fungicides. This versatility supports units that are sold for broccoli, cabbage, sweet corn, carrots, cauliflower, leeks, lettuce and spinach.

Under-30 farmers are enthusiastic about the rapid trajectory of labour-saving equipment. Third-generation carrot and onion grower Brandon Scholten, Korag Farms, in Ontario's Holland Marsh, acknowledges that rising input costs, especially labour, are making AI-enhanced equipment ever more attractive.

"Although it has been a learning curve, I have found the machine easy to operate. It applies fewer chemicals and is very precise where it sprays. I'm sure next year will be even better with practice and learning more about the technology."

~ ISAIAH GALBRAITH

"I'm still researching the pros and cons of this sprayer," says Scholten who manages 140 acres. "It might be feasible if we split it with a neighbouring farm."

Though the benefits of using AI-targeted crop protection are clear, the sprayer reduces but does not eliminate hand-weeding. As Hambly-Galbraith explains, "Even in cases where weeds were too mature to be fully eliminated, the sprayer was able to suppress their growth, buying us valuable time before manual intervention was needed."

Looking ahead to 2026, the Gwillimdale team is anticipating that after just two full seasons, the investment will have paid for itself through directly attributable cost savings.

"It's been a valuable learning experience and while not perfect, the machine is operating effec-tively," says Hambly-Galbraith. "For next season, we plan to spray earlier and adjust the safety zones to optimize performance. Our vegetables are grown on mineral soils as well as muck soils, which continues to influence our approach and results. The machine has operated and performed well in both soil types."

The Ecorobotix story runs contrary to today's media headlines warning that jobs will continue to be lost to artificial intelligence. On the farm, it seems jobs are not being lost – they are being upgraded. AI is taking "manual" out of manual labour. In the case of Gwillimdale Farms, improving their return on labour is driving them to explore other AI options. From weeding to grading to packing, for AI, it's just logical.

The Grower is "Digging Deeper" with Chrissy Wozniak, U.S. marketing and communications manager for Ecorobotix which has North American headquarters in Pasco, Washington. She understands that, for farmers, innovation must be both prac-tical and profitable. By this metric, AI-driven technologies are proving their worth in vegetable fields. The latest launch is for lettuce thinning. This podcast is sponsored by Cohort Wholesale.

CROSS COUNTRY DIGEST

BRITISH COLUMBIA

Friend or foe: how genomics can tell if there's trouble in your field

Wireworms are a notorious pest in British Columbia that pose a big risk to sweet corn, potato and cereal crops, industries that are worth multi-millions annually. With warm summers and soil, combined with changing growing practices and ineffective insecticides, the province has inadvertently cultivated favourable conditions for the wireworm.

Of the approximately 200 species in BC, only about 10 are pests. The others are harmless, or even beneficial to BC ecosystems.

Smooth criminals

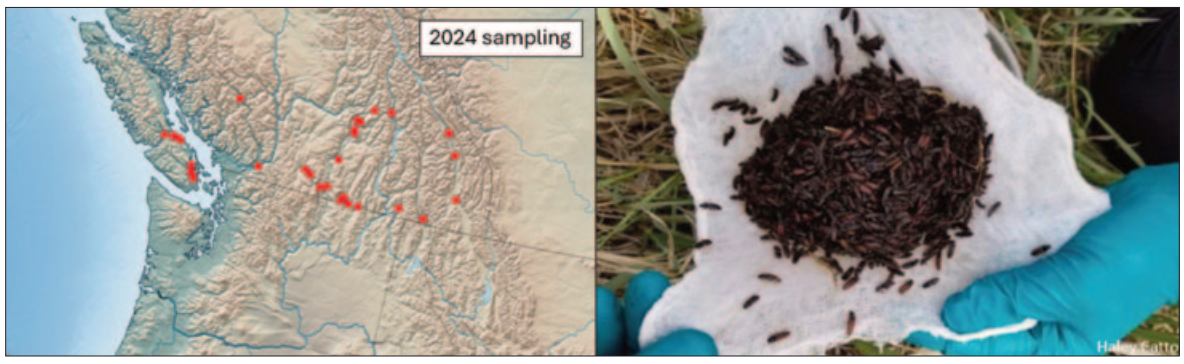
Despite their name and appearance, wireworms aren't worms. They are insects; the larval stage of click beetles. Mature click beetles aren't an issue but as larvae, they feed on roots, seeds, stems and tubers. This behaviour results in crop loss at multiple levels, from wireworms snacking on seeds before they can grow, to harvested produce being severely damaged and filled with holes created by tunneling wireworms.

There are a few common ways to address a wireworm problem. Insecticides are the most popular way to manage them, but they come with environmental drawbacks. Pheromone traps and soil baits can help to determine if wireworms exist in a field. These are not always reliable, however, because the pests can be notoriously hard to identify.

Spotting the difference

There are a few factors that help wireworms remain hidden. Firstly, they are tough creatures. Wireworms live in the soil for several years and can go for long periods without food. In thriving populations, multiple generations live in the same field together.

Multiple species are also be found together in fields, with some causing more damage than others, so mistakes can be made in any catch-all containment method. Identifying a pest species takes a lot of time and expertise that many people do not have.



Genomics unearths a solution

Dr. Michelle Franklin from Agriculture and Agri-Food Canada (AAFC) and Dr. Richard Hamelin from the University of British Columbia (UBC) Department of Forest & Conservation Sciences are leading a project to quickly and effectively determine if an insect is one of the top five species of wireworm that pose the greatest threat to BC growers.

The researchers are developing DNA detection tools to determine if pest wireworms are in a field prior to planting. Their work involves collecting samples of the five most common pest wireworms, sequencing their genomes, and combining these results with the understanding of the different physical traits to develop a "database" with genetic information for each unique species.

These databases contain DNA sequences of genes, such as cytochrome c oxidase subunit I (COI), that serve as barcode libraries to help identify different animal species. COI barcode libraries for wireworms already exist and have proven to be useful for identification in other parts of the world. The researchers also want to develop field-ready tests that use portable DNA extraction methods.

Ultimately, a soil test can reveal if a field is at risk and inform growers whether pesticides will be needed as a preventative measure. Confirming what's in a field can help BC growers make quicker, more targeted decisions, save money and avoid environmental contamination.

The researchers also see this as a first step in helping growers across Canada understand if pesticides are necessary based on their situations. This is just the beginning of the potential BC researchers have to offer in addressing the nationwide wireworm problem in a safe, sustainable way.

PRINCE EDWARD ISLAND

Neo-P causes PEI strawberry grower to close U-pick patch

A relatively new disease, neopestalotiopsis, or Neo-P, is causing economic damage to strawberry growers. The fungal pathogen was first reported in Ontario in 2020, but it is now threatening growers as far afield as Prince Edward Island.

According to a CBC News report, Compton's Farm Market and Berry Patch has shut down its strawberry U-pick operations for the season. Owner Matthew Compton says that a four-acre field has experienced a major loss in yield. He first noticed problems in 2024 and doubled strawberry plantings to 60,000 plants to compensate.

Neo-P is a fungal pathogen that affects both the leaves and fruit of strawberries, causing leaf spots, rot and stunted growth. Berries are still edible. As Compton says, the disease does not affect flavour or taste. It causes no harm to human health. It's a plant disease.

Growers are looking to researchers and government officials for a long-term solution. In the meantime, the Pest Management Regulatory Agency recently approved an Emergency Use Registration request effective June 2, 2025, until June 1, 2026 for suppression of Neopestalotiopsis leaf blight and fruit rot in Ontario, British Columbia, Alberta, Québec, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador. The product is called Allegro® 500F agricultural fungicide.

Source: CBC News July 4, 2025

PRINCE EDWARD ISLAND

New website supports PEI producers

A new website developed by the provincial Department of Agriculture is now available to help Prince Edward Island's agriculture industry better understand and access programs available through the Sustainable Canadian Agricultural Partnership (Sustainable CAP).

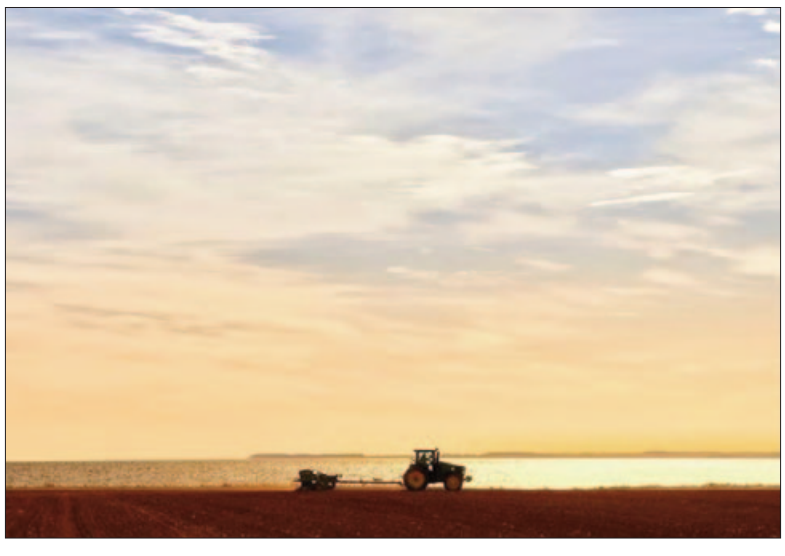
Sustainable CAP is a five-year, $3.5-billion investment by the federal, provincial and territorial governments to strengthen the competitiveness, innovation, and resiliency of Canada's agriculture, agri food, and agri based products sector. This agreement includes $1 billion in federal programs and activities and a $2.5 billion commitment that is cost-shared 60 per cent federally and 40 per cent provincially/territorially for programs that are designed and delivered by provinces and territories.

The dedicated website acts as a one-stop hub for key information, tools, and updates related to Sustainable CAP, making it easier for Island producers to explore funding opportunities, review program guidelines, and find contact information to receive application support.

"Farmers across the Island have enough on their plates, so it's important that online resources for finding funding are straightforward and easy to use," says Hon. Heath MacDonald, federal minister of agriculture and agri-food. "The new Sustainable Canadian Agricultural Partnership website will help provide farmers with tools to succeed right at their fingertips."

"We're always working to make agricultural programming more accessible and easier to navigate for producers. By launching this website, we're giving farmers on Prince Edward Island a gateway to explore funding opportunities and receive the support they need to strengthen and grow their unique operations," says Hon. Bloyce Thompson. PEI deputy premier and minister of agriculture. "This first-of-its-kind tool is designed to reduce barriers and help producers make the most of what Sustainable CAP has to offer."

Link to website: scappei.princeedwardisland.ca/



Source: Prince Edward Island Government June 26, 2025 news release

Photo: Photo courtesy of Bryan Maynard

CROSS COUNTRY DIGEST

NOVA SCOTIA

How salicylic acid cuts down on fungicide use in Honeycrisp apples

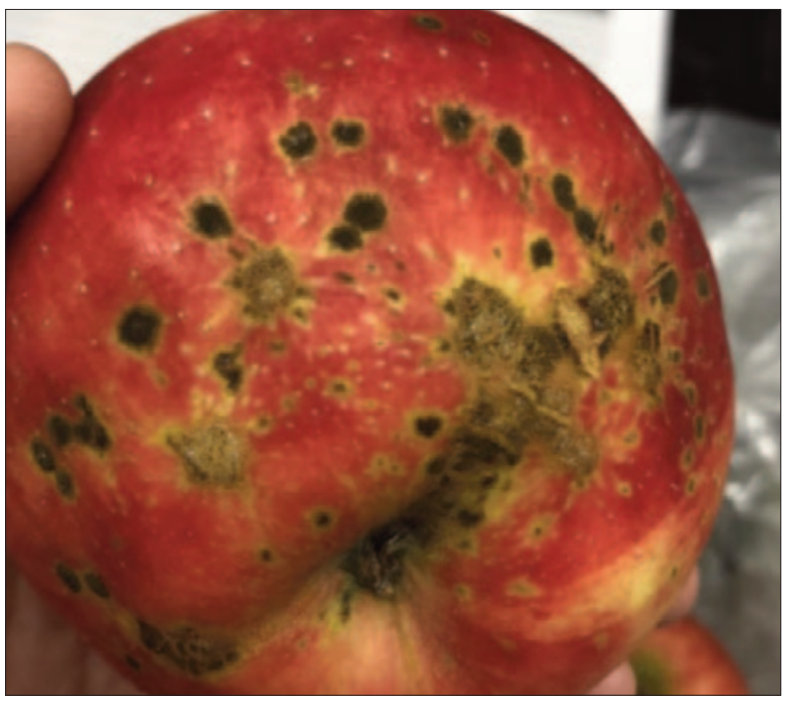
For decades, growers have relied on fungicides and antibiotics to prevent crop diseases. However, research has shown now that extensive use of these products can lead to pathogens (microorganisms and viruses that can cause diseases within the plant) developing resistance to the product, making it ineffective against diseases. Additionally, these chemicals can kill both beneficial and harmful microorganisms without distinguishing between them. Preventing diseases is crucial for the success of the crop, which is why research scientists Dr. Shawkat Ali and Dr. Pervaiz Abbasi (retired) at Agriculture and Agri-Food Canada (AAFC)'s Kentville Research and Development Centre (RDC) in Nova Scotia initiated studies to explore alternative sustainable disease management solutions.

Most recently, Dr. Ali, Dr. Abbasi and graduate student, Shayne McLaughlin (Dalhousie University) were researching how to reduce the amount of fungicide treatment applied to apples, by using a sustainable alternative product, salicylic acid. Salicylic acid is a plant hormone that activates a plant's natural defense mechanisms, so the plants' immune system can fight off harmful pathogens. Dr. Ali and his team were curious to see if salicylic acid could be applied to apples as an alternative to chemical fungicides, particularly Honeycrisp, as it is the most common cultivar grown in the province. Dr. Ali and Dr. Abbasi partnered with the Nova Scotia Fruit Growers' Association in 2019 to put their theory to the test. Since growers generally apply fungicide sprays 12-14 times over the growing season, Dr. Ali wanted to see if incorporating salicylic acid into the farmers' disease prevention rotation could significantly prevent apple scab, bitter rot/frogeye leaf spot and black rot diseases as well as reduce the amount of the standard fungicide applications in the field.

In the Kentville RDC apple orchard, Dr. Ali and the team selected two plots. On one plot, they reduced the fungicide application and incorporated the salicylic acid treatment. On the second plot, the normal fungicide application was applied to the apples. Over four growing seasons, the Honeycrisp apples were sprayed, harvested, and examined. Following four months of storage, the apples were examined again for post-harvest diseases. Dr. Ali and the team also examined the apples' characteristics for fruit quality, including average weight, total sugars, firmness, titratable acidity and maturity.

A few apple growers in Nova Scotia, Prince Edward Island and New Brunswick also tested this practice on their farms. Salicylic acid was sent to the volunteers, and the growers were instructed to replace four of their conventional fungicide sprays with the salicylic acid. Once the season was over, the growers sent apple samples from these trials to Dr. Ali for harvest and post-harvest examination and disease assessment.

After examining the apples, the team found that salicylic acid had no negative impacts on the quality of the fruit at harvest and after post-harvest storage. He also found that growers could reduce their conventional fungicides application over the course of the growing season by 29-33 per cent by using this method. Although this treatment did not eliminate the need for fungicides completely, Dr. Ali says that incorporating salicylic acid can reduce the number of fungicide applications while still providing the same amount of disease control.



Apple scab on Honeycrisp apple

Since salicylic acid has shown positive results in preventing diseases and reducing fungicide applications in Honeycrisp apples, Dr. Ali hopes to expand this research in the future by testing this method on different apple cultivars. He hopes that if the results continue to be positive, a commercial product could potentially be developed providing growers with an alternative to reduce conventional fungicide treatments.

Source: Agriculture and Agri-Food Canada

Lighting strategies that promote strawberry plant growth while not interfering with aphid predators

Editor's note: Research Tokking is a new series that spotlights the personalities who are driving horticultural research across Canada. The series starts at Agriculture and Agri-Food Canada's station in Harrow, Ontario, the largest greenhouse research complex in North America.

KARLI BARTON

Controlled-environment strawberry production is rapidly expanding in Canada, increasing from 303,000 m^2 in 2020 to 840,000 m^2 in 2024. This growth is driven by the ability to extend growing seasons and optimize environmental conditions. Research has shown that strawberry crops benefit from artificial lighting and dropped nighttime temperatures, which increase berry sweetness. While these conditions have been extensively studied for their effects on plant growth, their impact on biological control agents remains largely unexplored.

Aphids, including the green peach aphid (*Myzus persicae*) and the strawberry aphid (*Chaetosiphon fragaefolii)*, pose significant threats to strawberry crops. As a result, some growers rely on natural enemies such as *Aphidoletes aphidimyza* (aphid midges) and *Chrysoperla carnea* (green lacewings) for sustainable aphid control. However, artificial lighting and low nighttime temperatures may influence the behaviour, reproduction and overall effectiveness of these predators

In order to effectively use natural enemies, biological control strategies must be tailored to the specific conditions of strawberry production to achieve success. Inoculative releases, where a population of biological control agents is established in the crop to offer long-term and preventative pest control, require environmental conditions that support reproduction and survival. Biological control agents are highly sensitive to their surroundings, so conditions that deviate from their optimal range can significantly reduce their efficacy.

Controlled-environment agriculture often uses supplemental lighting which does not always replicate natural lighting conditions. In recent years, LED lighting systems are gaining popularity for their energy efficiency and precise light spectra, which research has shown significantly influence plant development, flowering, and fruit production. But what about their effects on beneficial insects? And do low temperatures impact the strength of these effects?

Light exposure influences insect circadian rhythms, dispersal, and reproduction. For example, *Aphidoletes aphidimyza* midges are most active at dusk and require specific light-dark cycles for mating and egg-laying. Sudden light shifts or excessive illumination may disrupt these behaviours, reducing their ability to control aphid populations. Similarly, while *Chrysoperla carnea* are effective aphid predators, their predation and reproductive success may be altered by unnatural lighting conditions.

Studies have shown that some insects experience changes in development, egg fertility, or predation behaviour under artificial lighting. However, responses vary widely between species, emphasizing the need for crop-specific and insect-specific research.

My study will examine how different programmable LED lighting regimes and low nighttime temperatures affect the performance of two aphid predators: *Aphidoletes aphidimyza* and *Chrysoperla carnea*. I am examining two promising lighting strategies for indoor strawberry production:

- Low-intensity, long-photoperiod lighting: This regime has no dark period, with lights always remaining on at low levels. This strategy ensures plants receive adequate light while reducing energy costs.
- Blue LED nighttime interruptions: These lights break up dark periods, mimicking long-day conditions to promote flowering and plant growth.

I am currently running trials to assess how altered lighting intensity, spectrum, and photoperiod influence predation rates, reproduction, and development of these predators. Trials are being conducted in controlled environment cabinets with two programmable LED lights (Sollum Technologies) installed in each chamber, separated by a light-excluding wall. The wall divides the cabinet into two sides, allowing two distinct lighting regimes to be executed simultaneously.

Larval predators are placed in Petri dishes provisioned with 10 aphids. Petri dishes are examined daily for predation, quantified by counting dead aphids. Both developmental stage and survival are checked daily until the mature larvae stop predation and leave the leaf section to undergo pupation. When a larva leaves the leaf section, it is placed on sand moistened with distilled water. Adult emergence from the pupa is then checked every day, at which point the emerged adult is sexed.

Next, the study will explore the potential of *Aphidius gifuensis* as a novel biocontrol agent against strawberry aphid. Using choice and no-choice experiments, we will assess parasitoid host preference when multiple aphid species are present and measure parasitism rates across hosts. This work will determine whether *A. gifuensis* can overcome the limitations of current parasitoids.

Ultimately, my research addresses two major challenges to effective aphid control in controlled-environment agriculture (CEA) strawberry production: suboptimal conditions for predators and the absence of reliable parasitoids for strawberry aphids. While biological control agents offer a sustainable alternative to pesticides in these systems, precise environmental manipulation (e.g., lighting, temperature, etc.) can disrupt the success of natural predators and parasitoids. As greenhouse and vertical farming techniques continue to be adopted on larger scales, addressing these challenges is essential for achieving sustainable pest control.

My work examines how these factors impact biological control and aims to develop tailored lighting strategies to maximize predator efficacy and plant productivity. So, by providing practical data on optimizing biocontrol in real-world greenhouse conditions, this research supports industry needs by reducing pesticide reliance, minimizing crop losses, and enhancing the sustainability and profitability of CEA strawberry production in Canada and beyond.

This research is an Agri-Science Project under the Sustainable Agriculture Partnership. (SCAP-ASP-085 Berry Growers ON – Activity #2: Managing Pests on Greenhouse and Vertically Farmed Strawberries). It would not be possible without our partners.

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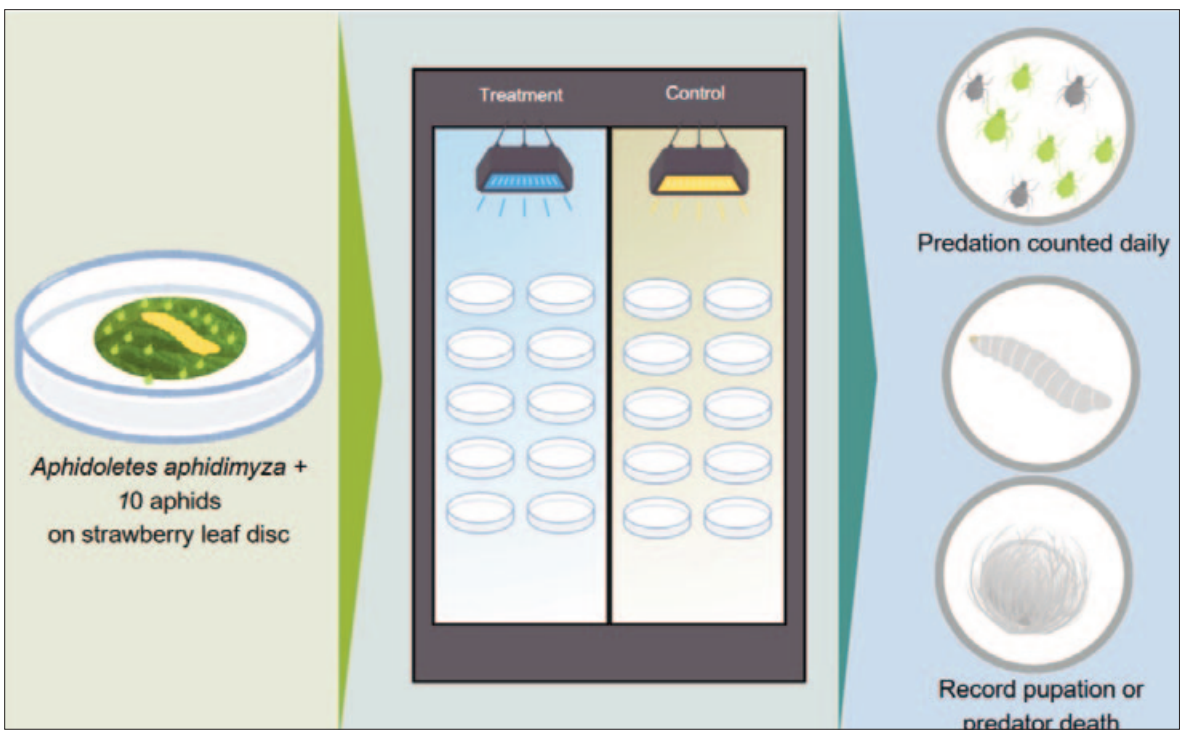


Lighting strategies that promote strawberry plant growth

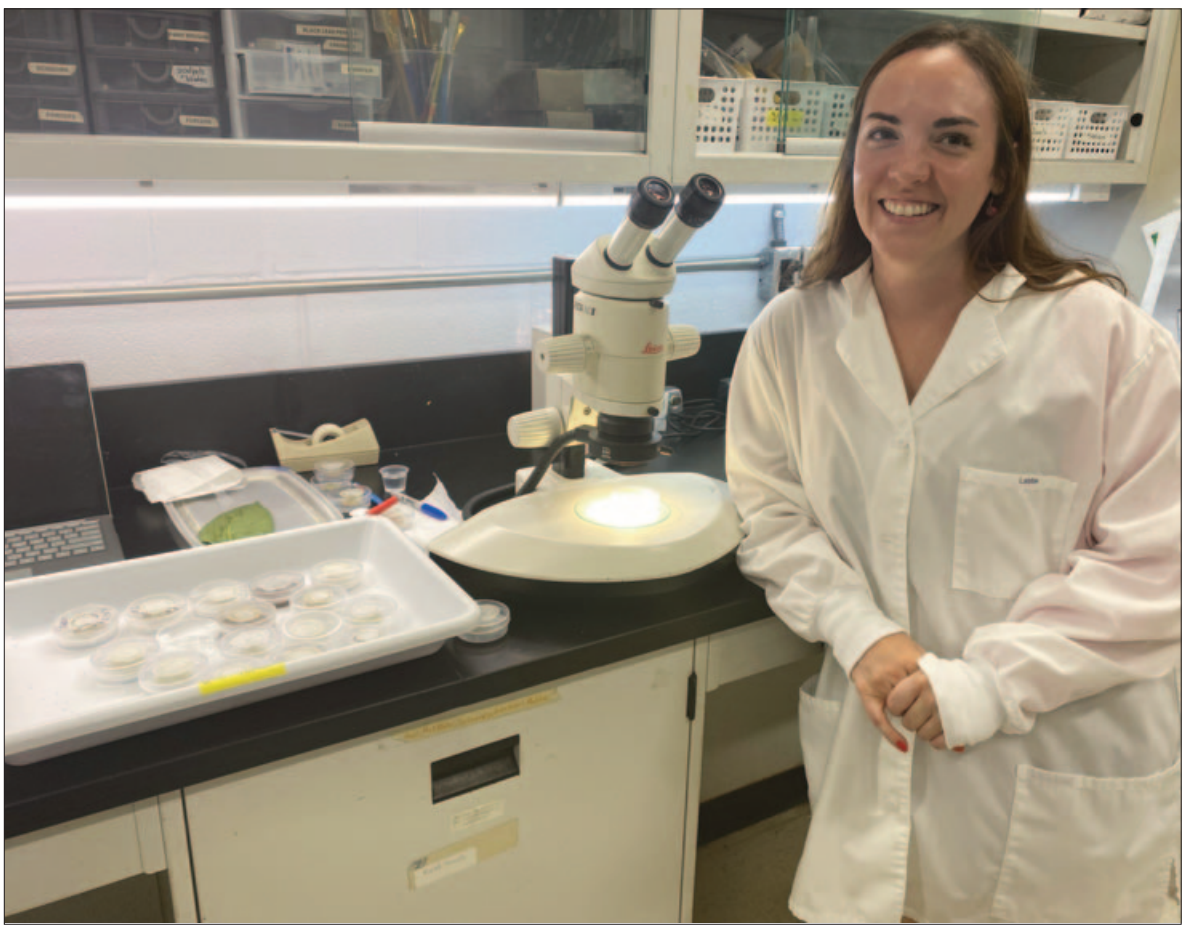
Continued from page 6

Thank you to Berry Growers of Ontario and Koppert for providing funding for the project. Also, thank you Koppert for providing the biological control agents, Sollum Technologies for providing the programmable LED lights, and SEF Centre for Horticultural Innovation for allowing access to its research facility.

Her career path

KAREN DAVIDSON

Karli Barton is a University of Guelph Master's student at the Agriculture and Agri-Food Canada research and development centre in Harrow, Ontario. She's already enjoyed a significant career path in entomology, first starting in environmental sciences at McMaster's University. A summer contract position over two summers with the Ontario Ministry of Agriculture, Food and Agribusiness focused on the introduction of beneficial insects in corn and soybean fields. Her next move was to British Columbia, working on integrated pest management in cranberry bogs. A return to Ontario's University of Guelph-Ridgetown campus was marked by field entomology work as a research technician. For the next six years, she worked as a biocontrol consultant in vegetable, floral and cannabis greenhouses. While customer service was rewarding, Barton realized that she had more to give behind the scenes, hoping to develop the biocontrols needed in greenhouse environments. As a "mature" student, she's pursuing her dreams as a Master's student under the supervision of Dr. Rose Labbé.



Karli Barton is a University of Guelph Master's student pictured at her work bench at the Agriculture and Agri-Food Canada Research & Development Centre, Harrow, Ontario. Photo courtesy of AAFC.

Biobest acquires Ecoation technology

Westerlo, Belgium -- Biobest, a division of the BioFirst Group specializing in biocontrol and natural pollination for horticulture, has acquired key technology and personnel of its external technology partner Ecoation Innovative Solutions Inc. (Ecoation). The acquired technology, products and expert staff become part of Biobest's global High-Tech Development and Customer Success Center, reinforcing its strategic leadership in IPM automation tools.

Saber Miresmailli, co-founder of Ecoation, will be continuing at Biobest as leader of the High-Tech Development and Customer Success Center.

The Biobest technology acquisition agreement includes the Crop-ScannerTM monitoring and scouting tool as well as the OKO 2 IPM and yield prediction solution and associated intellectual properties. Next to this, the expert staff experienced in developing and maintaining these products will also be taken over as part of the arrangement.

"This acquisition will not only ensure the uninterrupted access for all customers to these automated monitoring and scouting products but also strengthen our portfolio and bring its future development roadmap under our direct control", says Jean-Marc Vandoorne, CEO BioFirst Group. "It also demonstrates our strategic commitment to high-tech tools as cornerstones for providing total IPM solutions."

"We believe this technology acquisition will enhance our capability and capacity to provide even better, more integrated automation solutions to growers in future in collaboration with other external technology partners such as PATS", adds Hanne Steel, Biobest global director product management & high-tech.

Source: Biobest July 17, 2025 news release

BITS AND BITES

BERRI Lab monitors for invasive leafhoppers

A wave of plant-eating insects is slowly but steadily making its way north. With climate change lengthening their migration window, it's not a matter of if, but when leafhoppers arrive. The University of Fraser Valley's (UFV) Berry Environmental Resilience Research & Innovation (BERRI) Lab, led by Dr. Lauren Erland, is co-leading Project Leaf Hope, a national effort that aims to make sure the berry sector is ready.

"Leafhoppers are an agricultural pest similar to aphids," explains Erland, who holds UFV's Canada Research Chair in Berry Horticulture. "They extract the inside content out of plant cells, which makes them disease spreaders for plants in the same way mosquitoes are for humans."

The pan-Canadian study is led by Université Laval in Québec City. There are research groups in Québec, Ontario, Nova Scotia, Alberta, Manitoba, Saskatchewan, and British Columbia, with UFV serving as the academic lead for BC.

Project Leaf Hope is funded by a Natural Sciences and Engineering Research Council of Canada (NSERC) Alliance Grant in sustainable agriculture.

Leafhoppers are not yet a major problem in BC, although Erland says grape and blackberry growers have been affected by the pests. The BERRI lab's work will focus on blueberry and strawberry crops, anticipating leafhoppers becoming an issue.

"Most of our other crops don't have leafhoppers right now, but what we're seeing is that leafhoppers that used to be restricted to the U.S. and further south are starting to show up in Ontario and Québec, and even Nunavik," she notes. "With that comes the risk of additional plant diseases."

Cranberry plants can be impacted by false blossom disease, causing them to grow abnormal flowers that don't produce fruit. Erland says it's a big issue in the eastern provinces, but not in the west. Similarly, a disease called blueberry stunt is not yet an issue in BC but could be carried by leafhoppers.

"Our goal is to monitor for leafhoppers and these types of diseases," Erland says. "As we have warmer summers and warmer winters, pests migrate further and further north, and we want to know the minute they show up."

Erland and her team will be working with 15 blueberry growers and nine strawberry growers this summer. Ideally, they wouldn't see a single leafhopper, but that's unlikely, she notes. When they do appear, they'll be screened for phytoplasmas (disease-causing microorganisms).

"From a big picture point of view, we'd like to develop the use of smart climate stations and traps that can capture these insects without needing a human pest scout out in the field," Erland suggests. "That also allows growers to finely tune insecticide use because the cost of doing that is high and there are environmental consequences that go with it.

"You can be a lot more targeted with insecticide use in your field if you know what's in your field."

The BERRI Lab's mandate is to enhance horticultural sustainability and create resilience in berry-growing systems. Part of that is looking at pests and pathogens, and UFV

Emily Foster, BERRI Lab

student Emily Foster will gain valuable experience as she works on the project full-time through the summer and into the fall.

"This will be a great opportunity for her to get in-field experience, and because this is a pan-Canadian project there are lots of opportunities to network with other researchers and present at conferences and joint meetings," Erland says. "It is a four-year project, so we'll have at least one student engaged full-time from April to October for the next four years."

Source: University of Fraser Valley July 10, 2025 news release

New Environmental Farm Plans available for Ontario farmers

A new 5th edition Environmental Farm Plan (EFP) is now available to Ontario farmers. The updated edition reflects current regulatory requirements and latest science on best management practices, includes links to new tools and new areas of focus such as biodiversity and farming in a changing climate.

The EFP is a confidential and voluntary environmental risk assessment tool that helps the owners of all types of farms—large or small—take a whole-farm view and identify incremental improvements that support long-term sustainability, profitability and productivity. There is no cost to farmers to participate. Since its first edition was published in 1993, the EFP program has helped farmers develop comprehensive plans for their lands to help them achieve their goals as good stewards of the land.

Development of the 5th edition relied on technical expertise from staff at the Ontario Ministry of Agriculture, Food and Agribusiness (OMAFA) and other provincial ministries and federal departments and has been supported by the farm organizations that originally launched EFP as co-chairs of the former Ontario Farm Environmental Coalition (OFEC). These founding leaders — Ontario Ministry of Agriculture, Food and Agribusiness, Agriculture and Agri-Food Canada, the Ontario Federation of Agriculture, Christian Farmers Federation of Ontario, Farm & Food Care Ontario, and the Ontario Soil and Crop Improvement Association — remain committed to the EFP's fundamental principle of helping farmers adopt innovative and sustainable best management practices.

"We encourage all farmers to complete the updated edition. An EFP provides farmers with the opportunity to assess their farm's environmental impact using new tools that ultimately improve long-term productivity, profitability and sustainability," says Melanie Hunter, field services manager, OSCIA. "Even if a farmer has completed an EFP before, updating it ensures decisions are based on current operations and environmental conditions."

The EFP consists of two parts: a confidential self-assessment of the farm operation and a farm-specific action plan. Through this process, farmers highlight their farm's environmental strengths, identify areas of concern, and develop realistic action plans with timelines to improve environmental conditions. Funding programs may be available to assist farmers in implementing improvements identified in their EFP action plan.

Farmers can complete an EFP, using the new 5th edition workbook, in one of three ways:

- In-person: Attend a two-day workshop led by knowledgeable OSCIA staff, with opportunities to network with fellow farmers.
- Virtual sessions: Participate in two, two-hour online interactive webinars delivered by OSCIA staff.
- Electronic EFP (eEFP): Renew a previously-verified 4th edition EFP independently online.

For more information on the 5th edition of the EFP, or to find available workshops and webinars, visit the EFP webpage. A frequently-asked-questions resource is also available outlining the key updates, cost-share eligibility and more.

Source: Ontario Soil & Crop Improvement Association July 2, 2025 news release

CHAIR'S AND EXECUTIVE DIRECTOR'S PERSPECTIVE

Container licence fees power OFVGA's work — and every grower benefits

SHAWN BRENN

ALISON ROBERTSON

In Ontario, fruit and vegetable growers are fortunate to have a strong, unified voice in the Ontario Fruit and Vegetable Growers' Association (OFVGA). Through decades of work, OFVGA has become a powerful advocate for our sector, bringing grower concerns on labour, crop protection, safety nets, environment and property issues to decision-makers – and getting that voice heard.

As the industry grows, the complexity of our issues grows with it — and so does the need for strong, sustained advocacy for growers.

We're very proud of the work we do on behalf of growers and the successes we've achieved in recent years, and none of it would be possible without a stable funding mechanism for the OFVGA.

We have that in the form of the Ontario Farm Products Containers Act (FPCA), and the container licence fee growers pay through that legislation to support the activities of our organization, which directly benefit the entire sector. This licence fee – also often referred to as a container toll, although this is misleading – is tied to packaging for fresh produce and is collected under the authority of the FPCA. Fruit and vegetable growers, packers, wholesalers and packaging suppliers have a responsibility to ensure the fee is paid.

OFVGA conducts routine audits to ensure that container licence fees are being applied fairly and correctly. These audits aren't punitive; in fact, sometimes we've even refunded growers who were found to be paying fees on non-applicable packaging. The audits are part of ensuring a level playing field — that everyone is contributing to the system that benefits us all. After all, the outcomes and benefits of OFVGA lobbying, advocacy and outreach activities benefit all growers, not just those who remit their licence fees.

Simply put, these funds allow us to build — and maintain — the people and resources we need to protect and advance Ontario horticulture. Whether you grow one acre or one thousand, your operation benefits from OFVGA's work.

So where do those fees go?

The container licence fee supports OFVGA's operations. We've significantly expanded our capacity over the last decade because we've had to. Government has become more complex. Issues move faster. And more ministries than ever have a say in how we farm.

We've built a talented policy team with expertise in government relations, labour, safety nets, crop protection, and municipal issues. This team supports the board in all our lobbying activities, letting us effectively analyze and respond quickly to emerging issues and be the voice of growers with provincial, federal and even at times municipal governments.

We work directly with many different provincial ministries, from agriculture to labour, environment, municipal affairs and housing and more. OFVGA is also active on many federal files, engaging directly or working together with Fruit and Vegetable Growers of Canada or the Canadian Federation of Agriculture, for example, on issues such as trade, business risk management, crop protection, and labour.

We've also expanded our communications activities significantly, adding consumer-facing messaging, campaigns and projects to our work. Our most impactful initiative to date has been the highly successful More than a Migrant Worker (MTAMW) project, which we work on in partnership with Farm and Food Care Ontario, Ontario Greenhouse Vegetable Growers, and Ontario Apple Growers.

MTAMW has grabbed the attention of provincial ministries, federal departments, consumers, media and even governments from workers' home countries for the innovative work it does to tell the worker and grower side of Canada's foreign labour programs for agriculture.

We also run digital marketing campaigns, post ads on GO trains, and place articles with major news outlets such as Postmedia in support of the fruit and vegetable sector – in addition to longstanding activities such as engaging consumers at shows like the Royal Agricultural Winter Fair or Breakfast on the Farm events.

The container licence fee matters: it's an investment into having someone in your corner and being your voice when the sector needs to speak up. As your advocacy organization, OFVGA is in the room — often the only farm voice in the room — making sure edible horticulture is heard.

When OFVGA wins, we all do.

For more information on the container fees, visit ofvga.org/container-act-and-tolls or contact Dan Tukendorf at dtukendorf@ofvga.org or 519-763-6160, ext 121.

Shawn Brenn is chair, Ontario Fruit & Vegetable Growers' Association. Alison Robertson is executive director.

WEATHER VANE

Machine harvesting of beans is well underway in Ontario. Nortera contracted 3,273 acres for 2025, down from 4,418 acres in 2024. Last year's crop had a farmgate value of just over $7 million. Photo by Glenn Lowson.

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URBAN COWBOY

Engaging with influencers, connecting with consumers

OWEN ROBERTS

The battle against wrong or misleading information about farming and food is taking an encouraging step forward. Although the communication war continues, better-equipped influencers and industry supporters are starting to give allies a leg up.

The summer is traditionally prime time for agriculture and food awareness. Promotional activities such as farm visits and seasonal fresh food campaigns highlighting the likes of fruit, vegetables and backyard barbecues, shift into high gear.

The same goes for this year. But there's more.

Farming and food awareness are experiencing extra, unprecedented momentum from the "elbows up" Canadiana movement. It emerged early in the New Year and has skyrocketed since, thanks to menacing 51st-state comments from U.S. President Donald Trump.

That's led to public interest like never before. Take Canadian Food Focus (CFF) for example. It's the only national organization dedicated to improved food literacy from farm to plate for all commodities. Most lately, it's experiencing a whopping one million engagements a month on its website, canadianfoodfocus.org, up from about 760,000 monthly engagements in 2024.

Dorothy Long, the organization's managing director, says the U.S. tariff issue sparked increased interest from Canadians about local ingredients and exploring our national culinary identity.

"Canadian Food Focus was able to respond in real time, highlighting seasonal content, classic Canadian dishes, and information on labeling distinctions," she says. "Consumers are coming to us because we offer the practical, actionable information they are looking for."

The agri-food sector was more ready than ever for this year's onslaught. A few years earlier, it experienced a similar spike in homegrown product interest when the threat of food shortages during COVID loomed. Consumers scrambled for credible sources and solid information about the supply chain. That intensified the resolve of Canada's agri-food sector to explain production here and set the stage for the current surge in interest.

Today, public engagement efforts such as Canadian Food Focus, Farm & Food Care, the Canadian Centre for Food Integrity, Agriculture in the Classroom and provincial and commodity organizations, are working together and in their respective areas of expertise to inspire public confidence in the agri-food sector.

For its part, the produce sector is happy to have established resources in place, says Susan Lewis, vice-president of marketing and events for the Canadian Produce and Marketing Association. She says a well-developed, one-stop operation such as Canadian Food Focus gives consumers opportunities to get answers to specific questions about their food choices and information across the entire agriculture sector.

"This breadth provides a fuller picture for consumers and showcases the ways the agriculture sector is working together on issues such as sustainable agricultural practices, research and innovations and food safety," Lewis says. "We value Canadian Food Focus as a third-party validator and amplifier, where Canadians can access information, fruit and vegetable recipes and money-saving tips."

Opinion leaders have long been a part of the communications continuum. But with the arrival of social media, bringing the world and its complexities and mysteries closer to us all, influencers have emerged as key players in informing the public about almost everything, including agriculture and food.

However, many of the influencers that people follow for advice about food, such as dietitians and food bloggers, have very little agriculture experience. The same goes for government officials making policy decisions about farming. That creates problems when questions arise about modern technology or emerging farm practices, or when debates are being held about farm-related legislation for difficult issues such as carbon sequestration and trade.

Through farm visits and discussions with producers, public engagement organizations aim to broaden influencers' scope. Last month, at a three-day workshop in Saskatchewan hosted by Canadian Food Focus, a group of 20 influencers from across Canada and the U.S. visited commercial farms, food processors, on-farm sales outlets and restaurants.

Saskatchewan farmer and CFF advisor Clinton Monchuk put modern food production in perspective for workshop participants. "Farmers have to respect the environment, grow things people want, and be profitable," he said. "If we don't do all that, we won't be in business."

Owen Roberts is a Guelph-based agricultural journalist and a past-president of the International Federation of Agricultural Journalists.

BITS & BITES

Mental Health First Aid event slated for September 4

Let's be honest – mental health is an issue that's relevant for more than the planting and harvesting season. For the entire year, it's vital to raise awareness, reduce stigma and encourage open conversations around mental well-being.

The Do More Agriculture Foundation has resources and tools to support yourself and others at www.domore.ag. Click on the "EVENTS" tab to find what's happening in your province.

In Ontario, note that an event is scheduled for September 4, 2025 at Country Heritage Park in Milton from 7 am – 3 pm. Lunch is provided.

The workshop is for eight hours, in person plus a one-hour prerequisite, online, pre-work done virtually prior to in-class learning. This pre-work must be completed prior to the workshop. It is sent out one week prior.

Mental Health First Aid (MHFA), developed by the Mental Health Commission of Canada and facilitated by a Certified Instructor, is the help provided to a person developing a mental health problem or experiencing a mental health crisis. Just as physical first aid is administered to an injured person before medical treatment can be obtained, MHFA is given until appropriate treatment is found or until the crisis is resolved.

The MHFA Canada program aims to improve mental health literacy and provide the skills and knowledge to help people better manage potential or developing mental health problems in themselves and others.
Any questions, contact hello@domore.ag.

Source: Agricultural Adaptation Council June 27, 2025 newsletter

The Royal issues call for vegetable entries

Each November, The Royal Agricultural Winter Fair transforms Toronto's Exhibition Place into a vibrant celebration of Canada's finest in food and farming. For more than 100 years, it has provided a stage for growers, producers, and agricultural innovators to showcase their passion and expertise.

As the Road To The Royal begins for this year's fair, November 7-16, 2025, the call is out for entries in the best-of-the-best horticulture and agriculture competitions. Whether you're a seasoned exhibitor or considering participating for the first time, The Royal offers an unparalleled opportunity to have your work recognized at the highest level, with the chance to be crowned a Royal Champion. In these competitions, producers are invited to showcase everything from giant vegetables to more niche categories that span classes such as cabbage, potatoes, carrots, kale, and so much more.

Not only does this offer the chance for individual accolades, but it also raises the profile of regional growing practices and highlights excellence in crop management and innovation. Judging panels comprise industry experts who evaluate entries with the utmost care, using up-to-date criteria and standards. Beyond the ribbons and awards, participating in The Royal is a chance to connect with peers, celebrate agricultural heritage, and engage in friendly competition.

Many exhibitors return year after year, building lasting relationships and sharing knowledge that continues to strengthen Canada's growing communities.

How To enter: If you've never entered before, don't be intimidated. The Royal's entry system is clear and user-friendly. Detailed competition guides and class descriptions are available at www.royalfair.org

Entries open: September 6, 2025

Entries close: October 31, 2025

Judging: November 5, 2025

Questions: Email entry@royal-fair.org

Tips for a Strong Entry:
• Read the rules: Each category has specific guidelines regarding size, presentation, and judging criteria. Make sure your entry complies to avoid disqualification
• **Document your #RoadToTheRoyal:** Many exhibitors love documenting their growing journey, especially on social media. Not only does it highlight the hard work behind your entry, but it also helps build excitement and inspire others to get involved!
• **Pack carefully:** If you're transporting produce, proper packaging is essential to ensure everything arrives in peak condition.
• **Engage with the experience:** If possible, attend the fair and see some of the horticultural displays. It's an inspiring atmosphere that celebrates agriculture in all its forms.

By entering, you help carry forward a legacy that's more than 100 years strong. Your participation brings new energy and excitement to the competitions, inspires future growers, and helps The Royal remain the pinnacle of Canadian agricultural achievement. So whether you grow for fun, for food, or for fame, consider submitting your best this year. Join us at the Fair, November 7–16, 2025, as we celebrate another year of agricultural excellence.

Link here for competition details, including entry fees and prize money: www.royalfair.org/compete/horticulture-competition/

COMING EVENTS 2025

Aug 2	Food Day Canada
Aug 6	Nova Scotia Fruit Growers' Association Summer Orchard Tour, eastern end of Annapolis Valley, NS
Aug 12-13	North American Strawberry Growers' Association Summer Tour, Nova Scotia
Aug 13-15	US Apple Outlook, Chicago, IL
Aug 15-16	Carrot Fest, Bradford & District Memorial Community Centre, Bradford,ON
Aug 20	Potato Research Open Field Day, Elora Research Station, Elora, ON
Aug 21	Ontario Potato Field Day, HJV Equipment, Alliston, ON
Aug 23	Breakfast on the Farm, co-hosted by Norfolk Agricultural Society and Apple Hill Lavender and Apple Farm, Windham Centre, ON
Aug 27	Grape Research Tailgate Tour, Niagara, ON
Sept 3	High Tunnel Berry Grower Day, EZ Grow Farms, Langton, ON
Sept 4	Berry Growers of Ontario Twilight Meeting, Howe Family Farms, Aylmer, ON
Sept 9-11	Canada's Outdoor Farm Show, Woodstock, ON
Sept 16-20	International Plowing Match & Rural Expo, West Niagara Fairgrounds, Grassie, ON
Sept 17	Grape Growers of Ontario 40th Celebrity Luncheon, Club Roma, St. Catharines, ON
Sept 24	Ontario Produce Marketing Association Golf Tournament, Lionhead Golf and Country Club, Brampton, ON
Sept 30-Oct 2	Fruit Attraction, Madrid, Spain
Oct 8-9	Canadian Greenhouse Conference, Niagara Falls, ON
Oct 16-18	Global Produce & Floral Show, Anaheim, CA
Oct 21-23	FIRA 4th edition of ag robotics and autonomous solutions, Woodland/Sacramento, CA
Oct 24	Ontario Pest Management Conference, Royal Botanical Gardens, Burlington, ON
Oct 28-29	Canadian Centre for Food Integrity Public Trust Symposium, Westin Toronto Airport Hotel, Toronto, ON
Nov 7-16	Royal Agricultural Winter Fair, Toronto, ON
Nov 18-20	Potato Growers of Alberta Annual General Meeting, Red Deer, AB
Nov 23-25	Advancing Women Conference East, Sheraton Fallsview, Niagara Falls, ON
Nov 27	Farm & Food Care Ontario Harvest Gala, Delta Hotel, Guelph, ON
Nov 27-30	Outstanding Young Farmers National Event, Toronto, ON
Dec 3	CanAgPlus Annual General Meeting, Westin Hotel, Calgary, AB
Dec 9-11	Great Lakes Fruit, Vegetable and Farm Market Expo, Grand Rapids, MI

RETAIL NAVIGATOR

Compliance strengthens relationships

PETER CHAPMAN

The relationship between suppliers and retailers is a complicated one. There are considerable challenges from the field, orchard or greenhouse to the point of retail sale. Retailers also have logistical challenges to source produce supplies domestically and globally, to merchandize at stores and keep consumers happy. Many factors must click for the product to get to the store, on time, at a fair price and for consumers to be satisfied with their purchases – in taste and value.

Many retailers define their expectations of the relationship in supplier agreements and other documents. Produce is especially complicated, because there can be variability in quality and/or size of products. Over time, the industry has shifted from one where relationships were more personal to one where compliance is defined and expected. Retailers have imposed fines when suppliers are not compliant. These compliance fines imposed by retailers have been a source of tension in our industry for some time.

As we move through 2025, the Canadian Grocery Code of Conduct is becoming a reality. Retailers and suppliers are beginning to join this entity as the staff is in place and they begin to become a factor in the food and beverage value chain. The Code will be officially implemented on January 1, 2026 at which time the formal dispute resolution process will be activated. Compliance fines and the arbitrary actions of retailers are certainly one reason we have a Grocery Code of Conduct in place.

Understand your customer's expectations

Suppliers should ensure they understand how the retailer wants to interact and how they want to do business. When a retailer enters a business relationship with a supplier, they are paying for more than just the product. Retailers expect the product to be delivered on time, with the correct packaging and labelling and the agreed upon configuration for supply chain. In produce, there should also be a published product specification that both parties are aware of.

The two biggest reasons retailers have these expectations is to allow them to deliver sales and be efficient. If suppliers are not able to get products to them on time, when ordered with the agreed upon lead times, the retailer will have empty shelves. When product is not available for sale, retailers miss revenue and risk losing consumers to the competition. If product arrives without the proper pallet configuration or other issues, the retailer will incur incremental costs to get the product through the system.

Quality and size issues in produce can be complex. There are qualitative measurements and there is also some room for interpretation. If you have any doubts or grey areas, have the conversation before the season or before the product ships.

Do more than skim these expectations. Retailers will enforce them, so you need to understand them. Recently, I was having a conversation with a supplier about retailer relationships. They have established a good volume with national retailers, even though they are based a plane trip away from major retailers' offices. I asked how they have been able to build solid relationships with all of the major retailers. It was a one-word answer: compliance. They believe if they are compliant with expectations, then they can have solid relationships. If they are not compliant, it does not matter what else they do.

If you are not clear about some of these expectations, ask questions and get answers. This can be an opportunity for you to interact with different people in a retailer's organization. Ask to visit the warehouse and talk to receiving people about pallet configuration or quality assurance people about product specifications. These personal relationships can be invaluable.

At a Sobey's distribution centre, the quality control team conducts a probe of fresh broccoli. One of the tests is to ensure there is no hollow heart, a physiological disorder where the stem develops internal cavities not visible from the outside.

Make sure your business understands

Once you understand all of the expectations, you should cover this within your business. Your shipping people need to know what is expected. Usually, it helps when they understand why as well. Explain that your customer receives thousands of pallets every day. When the shipping notice is on the same place on every pallet, it saves them hours of searching and makes them more efficient.

Your quality assurance people need to have the same interpretation of the specifications and standards that your customers do. This can be very detailed when it comes to some items. It is much better to have the conversation prior to the season, as opposed to the heat of the moment, when they have a trailer load of product they want to reject.

Make sure your business executes

It is great to understand the expectations and share them with your employees. It is another thing to execute every day. Track these results and share the performance with your people. Metrics such as on-time deliveries or pallets configured properly should be tracked. Make sure your people know how they are doing. Celebrate the wins!

Compliance should be part of the conversation

Retailers focus on the exceptions or the problems. When you have your season wrap-up call or are planning for the next season, let them know how you are doing. It is a great accomplishment to be compliant and you should let them know you are working hard to make this happen. You can also update them throughout your season with a few stats. You might not get a response, but they do understand this is important to you and they will appreciate knowing you are doing your part.

Good relationships with customers are developed over time. Meeting or exceeding their expectations for doing business will go a long way to developing solid relationships. Some suppliers focus on the frustration of the fines and others figure out how to do business. When you meet or exceed expectations the fines are not an issue or if they are an issue, they have a relationship to help resolve the situation.

The Grocery Code of Conduct is in place to arbitrate issues and keep the playing field more level. Let's hope you don't need to resort to this forum and can have good prosperous working relationships with your customers.

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 SKUFood. Peter works with producers and processors to help them get their products on the shelf and into the shopping cart.

FOCUS: FARM EQUIPMENT & MACHINERY

HJV Equipment becomes full-line PTx Dealer

Alliston, ON — HJV Equipment has been named a full-line PTx Trimble dealer, marking a significant expansion of its precision agriculture offering and strengthening its ability to support growers with advanced ag technology solutions.

As part of this growth, HJV Equipment welcomes three new Precision Agriculture team members: Alfredo Rodriguez in Ontario, and Will MacNeill and Nathan Smallman in Prince Edward Island. With extensive experience in agriculture and PTx Trimble systems, these specialists will provide customers with integrated hardware, software guidance and responsive service.

"This is a key step forward in our mission to be the premier specialized agricultural equipment distributor in the world," said Dave Vander Zaag, president of HJV Equipment. "By investing in experienced people and proven technology, we're helping growers to improve efficiency and maximize results."

HJV Equipment operates locations in Alliston, Exeter and Norwich, ON, as well as Charlottetown, P.E.I., and Grand Falls, N.B. The company's mission is to be the premier specialized agricultural equipment distributor in the world, delivering industry-leading solutions through expert support and innovation.

FOCUS: FARM EQUIPMENT & MACHINERY

Build once, build right – and always build bigger

Delbert Vossebelt, Chin Coulee Spud Farms, walks through the cavernous workshop near Coaldale, Alberta. Photos by Glenn Lowson.

Delbert Vossebelt operates 2,500 acres of potatoes destined for three nearby processors.

KAREN DAVIDSON

With steely determination, Delbert Vossebelt signed for a $3 million state-of-the-art equipment building in 2020,because the Coaldale, Alberta farm had outgrown a wood-frame Quonset that had numerous additions and renovations. It's now the pulsing heart of his Chin Coulee Spud Farms.

On any given day, six workshop mechanics and tradesmen are servicing multiple machines that range from planters to semi trucks to six-row, pull-type "Dirty Diggers." It's all in support of 2,500 acres of potatoes that are contracted to processors Lamb Weston, Cavendish Farms and McCain Foods.

"If I had it to do over again, I'd put in a second $250,000 overhead crane," vows Vossebelt. "There's a safety benefit."

The statement surprises Vossebelt who was initially lukewarm to Westco Construction Limited's suggestion for a five-ton overhead crane. The Lethbridge, Alberta-based company was involved from the foundation design and engineering to the installation.

"We use it every single day," says Vossebelt, who has watched the work flow evolve over the years in the 150' x 150' x 34' metal building structure. The modern facility boasts two meticulously designed mezzanines, providing ample workspace and storage spanning 120 x 20 and 90 x 30'.

The building speaks to the trend of moving from labour-intensive to capital-intensive agriculture. If there was an equipment breakdown in the field – no surprise with 22 potato trucks -- it was more than likely during a narrow window of planting or harvesting. Parts could be ordered from a dealership, but even 24 hours of delivery time is precious if rain or snow is in the forecast.

What was on Vossebelt's wish list?

"I wanted enough space to perform multiple projects at the same time," he recalls. "We needed space for semi-trailers and planters. And we needed storage for parts. We also needed room for washing equipment."

What did he get?

The insulated metal panels in the wall envelope and Durolast roof system guarantees superior insulation and weather protection. Coaldale gets very cold in the winter (-10°C) and very hot in the summer (33°C) and Vossebelt wanted year-round comfort to retain employees. LED lighting and better ventilation also make the workplace environment more inviting as does floor heating. A staff room and office with glass windows are a welcome feature.

Each of the mezzanines are 10 feet off the ground and 20 feet wide to accommodate many parts for various machines. Under the mezzanines, there's ample room for more storage for more commonly used materials.

This idea came from visiting other farm shops.

Upon review of the 3-D plans, Vossebelt decided to add living quarters for foreign workers. Five bedrooms, two bathrooms and a massive kitchen totalling 2,500 square feet welcome Mexican Mennonites to his farm every year.

An often-forgotten aspect of equipment bays is the storage of tools. In such a large area, more akin to an airplane hanger, it's important to reduce the number of steps to tools. Vossebelt has ensured that each mechanic has his own work bench and chest with appropriate tools for his specialty. One mechanic has an affinity for semi-trucks and potato trailers. Another works on GPS-guided tractors. Another works on electronics and hydraulics.

Altogether, the farm has the capacity to modify machinery for specific soils that range from clay to sand. There's close communication between operators and the shop in terms of how equipment performs in different situations.

The operation carries an inventory of $1 million in tools and materials, everything from filters to power tools to plasma cutters. Plasma cutting is a process used to cut steel, stainless steel, and aluminum using a plasma torch. Gas is blown at a high speed from a nozzle while an electrical arc melts the metal and compressed air to blow away the molten metal. This leaves a cleaner cut than oxygen-acetylene torch cutting.

"This is not the cheapest build," says Vossebelt, "but as they saying goes, 'build once, build right.'"

FOCUS: FARM EQUIPMENT & MACHINERY

Why fruit thinning robots market is set to surpass USD 1.76 trillion by 2032

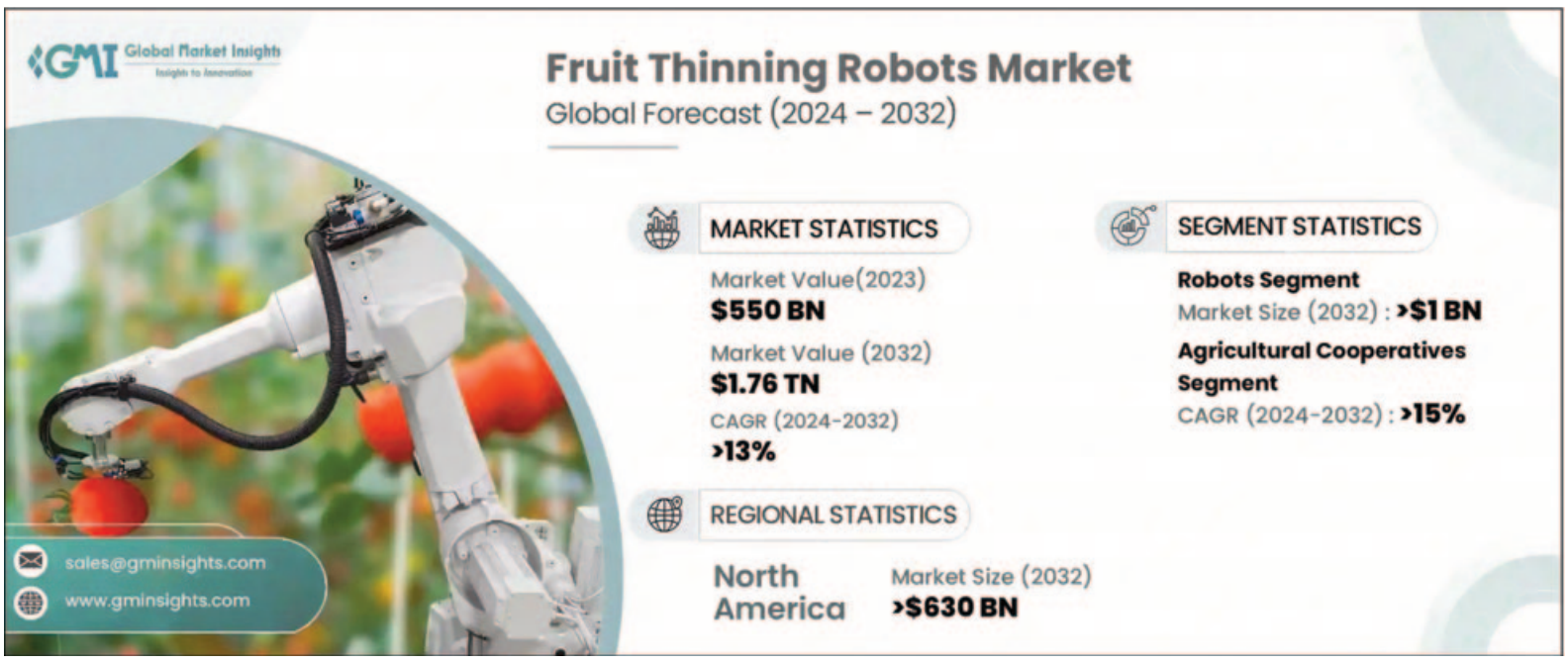

Photo courtesy of Vivid Machines

In the ever-evolving landscape of agricultural technology, the rise of fruit thinning robots marks a pivotal advancement in precision farming. With the global Fruit Thinning Robots Market projected to exceed USD 1.76 trillion by 2032, this growth not only represents technological innovation but also a significant transformation in how growers manage and optimize food production.

Understanding fruit thinning and its importance

Fruit thinning is the process of removing excess or under-developed fruits from trees to ensure that the remaining fruits grow to their full potential. Traditionally done manually, thinning is a labour-intensive task that requires both skill and time. However, without it, fruit size and quality diminish, and trees can become stressed, negatively impacting future harvests.

In large-scale orchards, especially in countries with declining agricultural labour forces, fruit thinning has become a bottleneck in productivity. Enter fruit thinning robots—a technology-driven solution to an age-old problem.

What are fruit thinning robots?

Fruit thinning robots are autonomous or semi-autonomous machines equipped with:

- Computer vision and AI to detect fruits and assess growth stages
- Robotic arms or manipulators to delicately remove targeted fruits
- Data analytics capabilities to monitor plant health and optimize crop yield

These machines combine mechanical precision with artificial intelligence, enabling consistent and optimized thinning operations without the fatigue and inconsistency of human labour.

Market segmentation and key applications

The fruit thinning robots market can be segmented:
By crop type

- Apples
- Peaches
- Plums
- Citrus fruits
- Others

Apples represent a dominant segment due to their high cultivation volume globally and the economic importance attached to quality grading.

By technology:

- Vision-guided systems
- GPS and LIDAR-based systems
- AI-integrated robotic arms

Vision-guided systems are gaining the most traction due to their efficiency in identifying and evaluating fruit load and quality in real time.
By end-user:

- Commercial orchards
- Research institutes
- Agri-tech startups
- Government-supported agricultural projects

Regional insights: who's leading the charge?

North America

The U.S. leads in fruit thinning robot adoption, driven by large-scale orchards and persistent labour shortages. Government grants and investments in agri-tech have further spurred innovation in this space.

In Canada, Vivid Machines is working in this space, providing real-time AI vision technology for crop and crew management and sales forecasting. In 2025, the company launched real-time, per-plant tasks maps for integration into sprayers. Vivid has a partnership with Hol Spraying Systems (H.S.S.) and provides data in various formats to support any GPS-enabled sprayer.

Europe

Countries such as the Netherlands, Germany, and France are exploring high-tech agricultural solutions as part of their sustainability commitments. Europe's strong focus on precision farming and green technology gives it a vital share in this market.

Asia-Pacific

With countries such as Japan and China investing heavily in smart agriculture, the Asia-Pacific region is expected to witness the fastest growth. Japan, in particular, has been at the forefront of robotic agriculture due to its aging population.

Challenges ahead

While the future looks promising, a few challenges still need to be addressed:

- High initial costs: Advanced robotic systems remain expensive for small-scale farmers, although prices are expected to fall with increased adoption.
- Lack of technical know-how: Many farmers lack the skills to operate or maintain these machines.
- Regulatory barriers: Differences in agricultural policies and robot usage regulations across countries can hinder uniform growth.

Nonetheless, industry players are addressing these issues through training programs, leasing models, and public-private partnerships.

The road to 2032 and beyond

As climate change, labour dynamics, and population growth continue to challenge global food systems, automation in agriculture is not just inevitable—it's vital. The exponential growth projected in the fruit thinning robots market—USD 1.76 trillion by 2032—is both a response and a roadmap to a smarter, more sustainable agricultural future.

Source: gminsights.com/industry-analysis/fruit-thinning-robots-market

Planting garlic early shows no downside

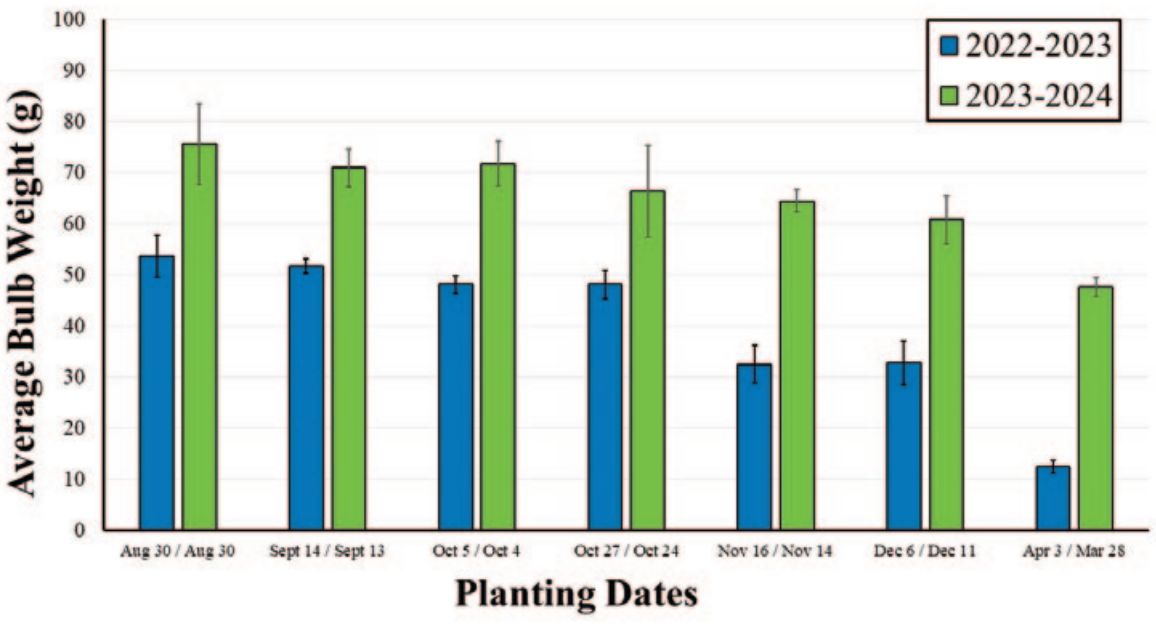

Figure 3 – Average bulb weight at harvest from cloves planted at various planting dates in 2022-2023 and 2023-2024. Results form 2024-2025 will be posted on the www.ONvegetables.com in the upcoming months.

TRAVIS CRANMER

How early is too early to plant garlic? Why is October the most popular time to plant hardneck garlic in Ontario?

In 2022 we set out to determine when the best time to plant garlic is and over the past three winters, the results seem to indicate that the later garlic is planted, the greater the amount of risk there is to losing yields at harvest the following July.

Fall root establishment before winter is important to anchor the clove and protect against frost heaving that can result in winterkill. Planting around the date of the first fall frost seems to give plants enough time to establish roots, but not enough time to send up above ground leaves known as 'bolting' (Figure 1). When cloves are planted over a month before the fall frost, there is a good chance that there will be several leaves that emerge prior to the deep freeze of winter. Bolting is why many choose not to plant early, fearing that the plant is using up valuable energy in growing leaves that may not survive the winter.

To determine if planting earlier would result in winterkill or have negative impacts on yield, a planting date trial was set up in Dashwood, ON in 2022 with seven planting dates starting August 30th and continuing roughly every three weeks until December 6th, along with a single planting date in April 2023. Cloves were planted on similar dates in 2023-2024 and again in the past year (Figure 2).

In all three years, this early planting date had best winter survival and the most leaves emerged prior to snow cover / the ground freezing. In the first two years the earliest dates also had the highest yields (Figure 3). (The 2024-2025 trial has yet to be harvested as of publication).

The average date of the first fall frost in Dashwood is October 13th based on the Average Frost-Free Period in Climatic Zones of Ontario publication (1975-2005). Planting August 30th would be almost six weeks before what is considered to be the 'ideal' time to plant. Planting this early gives a much larger window of opportunity to get the crop planted, especially in heavier soils that take more time to dry out and results in higher yields.

For those who have planted garlic earlier in the past and experienced winterkill, was the planting stock compromised or weakened in any way? Were there stem and bulb nematodes present? Were the bulbs cracked greater than seven days prior to planting? Consider planting 100 cloves in early September, or even August, and see how they compare to the rest of the field.

The full results of this trial will be posted on the www.ONvegetables.com blog and discussed during the garlic session at the Ontario Fruit and Vegetable Convention in February 2026.

Travis Cranmer is a vegetable crop specialist, Ontario Ministry of Agriculture, Food and Agribusiness.

Figure 1 – Garlic plants 'bolting' where multiple leaves emerge prior to winter. These cloves were planted August 30th, 2023, and the photo was taken December 14th, 2023.

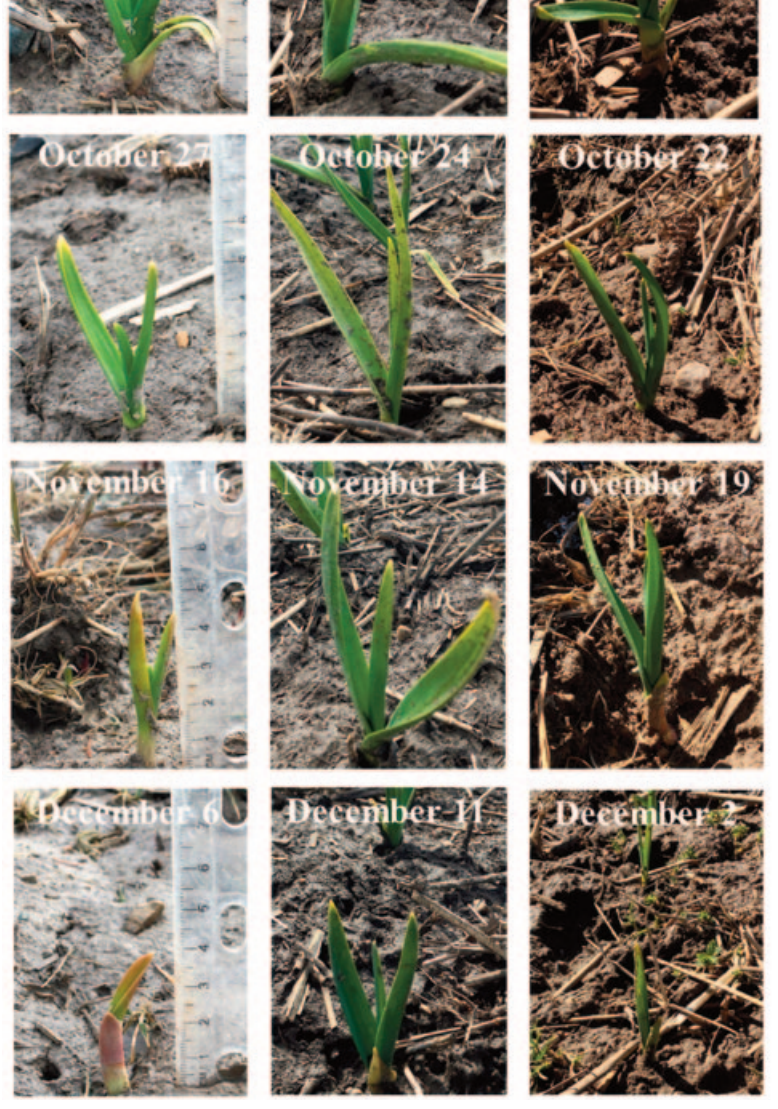

Figure 2 – Spring plant emergence from various planting dates with earlier planting dates showing more advanced growth early in the spring. Left column 2022-2023; middle column 2023-2024; and right column 2024-2025.

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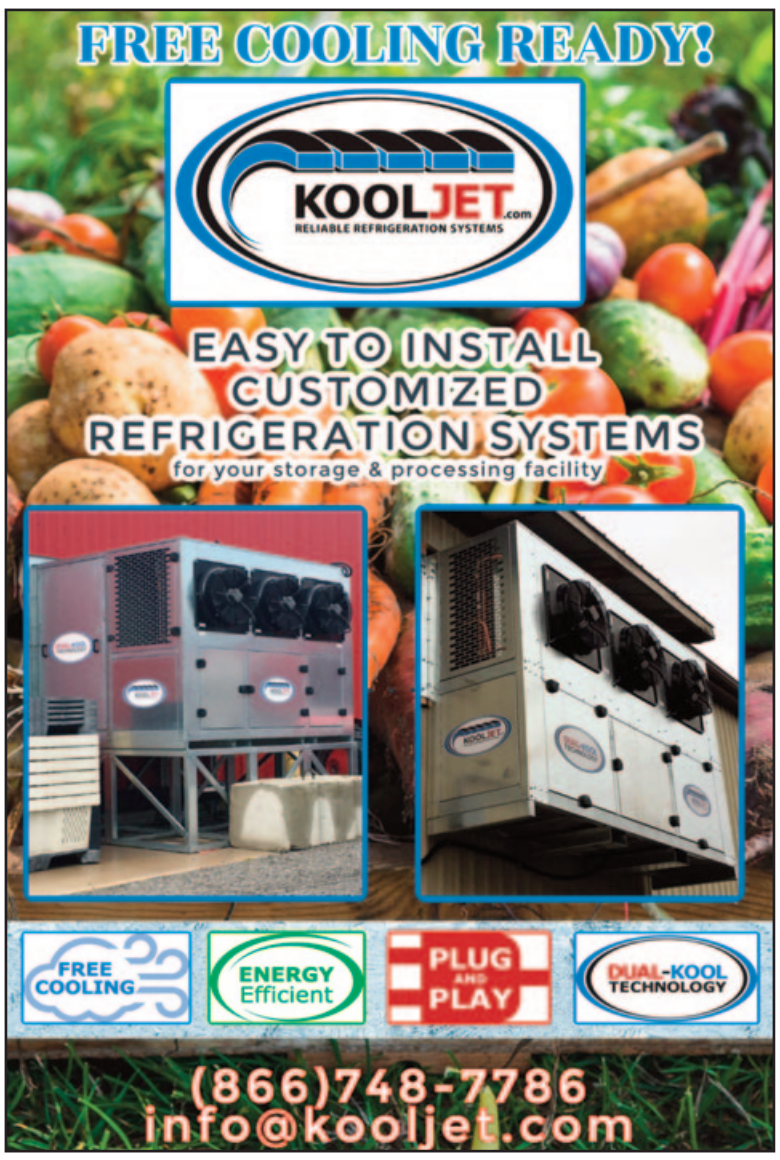

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CROP PROTECTION

Minor use investment a no-brainer

CHRIS DUYVELSHOFF

With the federal government embarking on an ambitious savings program, public spending will increasingly be under the microscope. One program that certainly deserves scrutiny is the federal minor use program. Not for careless spending, rather the opposite.

Government is not investing enough – and the business case for it couldn't be stronger.
For field crops, the responsibility for bringing new crop protection technology to market is borne by the manufacturers who will be selling the final products. Manufacturers can recover the development and regulatory costs by product sales. However, for most edible horticulture crops, manufacturers find the sales potential is not sufficient to justify costs required to develop and register uses on these crops in Canada due to low crop acreages. This is referred to as the "minor use problem"; it is the agricultural equivalent of an orphan drug in human medicine.

The need for public assistance to help support minor use crop protection was first recognized in the United States which developed the IR-4 project in 1963. As Canada faced similar, if not worse, challenges with our minor use registrations due to our comparably smaller horticulture industry, we were falling behind our U.S. counterparts. Finally, in 2003, a group of growers succeeded in convincing the federal government to support a minor use program.

The minor use program assists growers with access to crop protection technology for smaller acreage crops where manufacturers are reluctant to obtain registration themselves. The responsibility of undertaking the necessary scientific research is conducted by Agriculture and Agri-Food Canada's (AAFC) Pest Management Centre (PMC) and the Pest Management Regulatory Agency (PMRA) completes the required regulatory reviews. This joint initiative has been ongoing ever since.

Despite its tremendous success and critical importance to food security and affordability, the current program is facing major headwinds. The program's budget has been frozen for more than a decade and consequently its output has declined drastically. Annual project levels are now approximately half of what they were under the Growing Forward framework period in 2008-2013.

Yet the need for new crop protection tools keeps growing. The accelerating rate of removal of older crop protection products from the market and the emergence of new pests has led to great demand for new tools. The urgency for new products is emphasized by the current unprecedented demand for the emergency use registration program – a program that was designed to address crisis pest outbreaks when existing tools are insufficient. Not only does this reduce the ability for Canada to produce fresh, nutritious, and affordable food, it is terrible economic policy. Let's let the numbers speak for themselves.

In 2016, AAFC completed a study of the economic impact of the minor use program in Canada from 2003-2013. The study looked at potential crop losses that were likely to have been avoided by the availability of crop protection tools provided through minor use. It also compared the value of the benefits to society from government investment in the program and estimated impact to Canada's GDP from minor use activities. Though it is now dated, the results were staggering.

During the period of the study, access to crop protection tools through the minor use program was estimated to contribute to the prevention of $653 million to $998 million in crop losses annually – or approximately $9 billion in total. Following the same methodology as the original study, in 2024 alone, crop losses of $1.65 billion may be attributed to pest management achieved via minor use!

Looking further into economic analysis, the 2016 study also compared the level of government investment to the expected benefits and concluded that for every $1 of government cost into the program, $42 of benefit are accrued to society. Finally, using multipliers available from Statistics Canada related to economic impacts and employment, the minor use program contributed to the additional annual employment of more than 12,000 persons annually.

It is hard to imagine a more impactful program of similar magnitude within government. While the direct economic impact from the lost capacity of the minor use program over the last decade is not easily obtained, based on the reality that the program output has been reduced by approximately half, it can be concluded that the economic impact to Canada's farmers from lack of potential pest control is in the range of hundreds of millions of dollars annually. It is a huge opportunity that is being lost.

The recent AAFC's audit of the minor use program reiterates the critical role this program serves and recent calls for resourcing have come forward from the FPT Working Group on Pesticides Management and the House of Common's Standing Committee on Agriculture and Agri-Food.

Fortunately, we are not talking about huge investment on government scales to turn the ship around. Based on inflationary changes over the last decade, an annual additional investment of approximately $7 million would return the level of program funding to comparable under that of the Growing Forward program. Even at this level of enhanced funding, the PMC's minor use program would still account for less than one percent of AAFC's annual departmental budget.

I challenge government to find a better return on investment.

Chris Duyvelshoff is crop protection advisor, OFVGA.

Japanese beetle, blamed for skeletonizing leaves of plants, has become a voracious invasive pest of many horticultural crops in recent years.

Neopestalotiopsis (Neo-P) is a fungal disease affecting strawberry plants, causing leaf spots, fruit rot, and crown rot. It's a significant concern for strawberry production due to its ability to spread rapidly and affect all parts of the plant. In greenhouses, Neo-P can be particularly problematic due to the favorable conditions of high humidity.

CROP PROTECTION

2025 Strawberry Disease Decision Support System now available

Figure 1. Anthracnose fruit rot

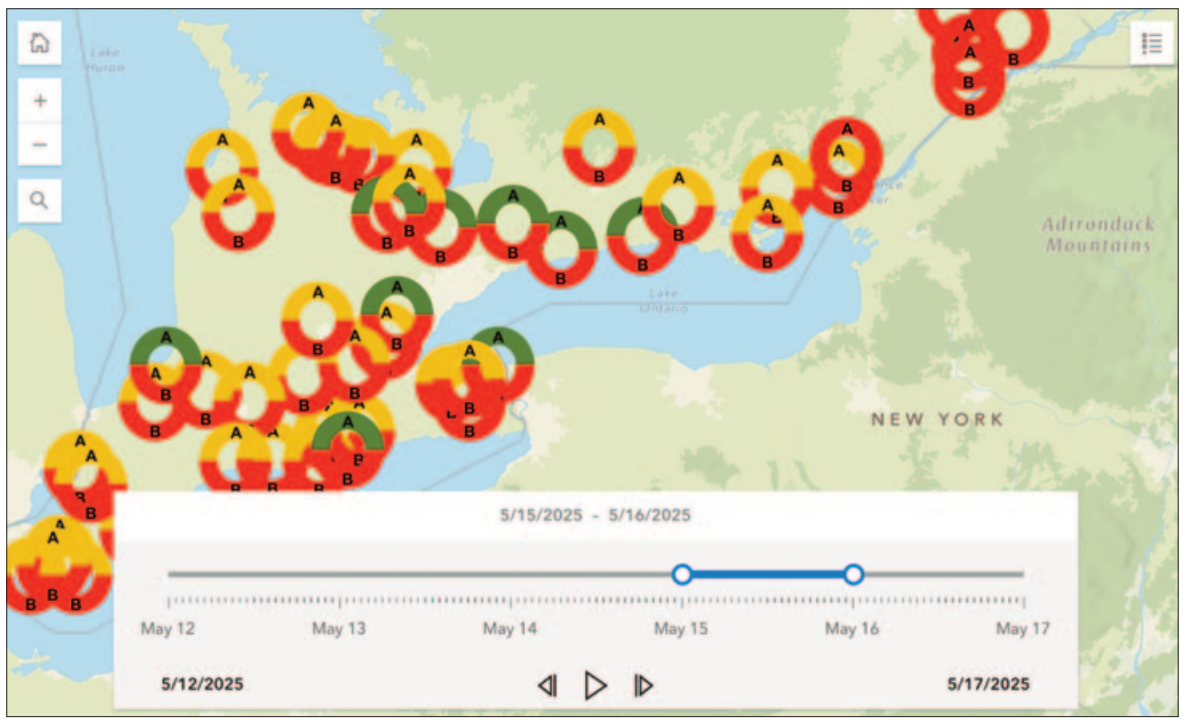

Figure 2. Example of the map indicating anthracnose (A) and botrytis (B) risk.

ERICA PATE

The fungal diseases anthracnose (caused by *Colletotrichum spp.*) (Fig. 1) and botrytis grey mould (caused by B*otrytis cinerea*) are the major fruit diseases in Ontario strawberries. By integrating a disease prediction model into management, growers can use fungicides more effectively to protect their crops through the season. In 2025, a map indicating anthracnose fruit rot and botrytis risk is available for growers to use to help assess the risk of disease epidemics from bloom to harvest (Fig. 1).

OMAFA has partnered with Weather Source to provide OnPoint Weather. The locations on the map are based on agricultural production and use all nearby weather data and geography to provide accurate forecasting data.

The disease model used is based on the Florida Strawberry Advisory System (FLSAS) developed by W. Pavan et al..

This risk modelling tool is used to identify anthracnose fruit rot and botrytis fruit rot risk based on leaf wetness and temperature data. For our calculations, leaf wetness is predicted based on relative humidity that is adjusted to account for crop canopy. If the adjusted relative humidity is over 90% for the hour, it is considered as 1 hour of leaf wetness. The average temperature is calculated over the leaf wetness period, and this is used in the equations to calculate the infection risk index, from 0-1.

The Strawberry Diseases Decision Support System can be found on the ONfruit.ca blog under the 'Berries' tab. The Strawberry Diseases Decision Support System includes a map indicating fruit infection risk across the province and a graph tracking risk through the season.

The Suggestions for Anthracnose Management in Strawberries, 2025 are also available on the Onfruit blog.

Erica Pate is fruit crop specialist, OMAFA

Molecular herbicide resistance testing available at no cost for Ontario growers

CESAR CAPPA

As spring settles in across Ontario and growers prepare for planting, a persistent challenge continues to emerge: herbicide-resistant weeds. These tough-to-control species are showing up in more fields each year, threatening crop productivity and complicating weed management efforts.

To help growers stay ahead, free molecular herbicide resistance testing is once again available in 2025, thanks to support from industry partners and agricultural organizations. This service allows Ontario farmers to submit leaf tissue samples and receive quick, accurate confirmation of herbicide resistance, often within 10 business days.

Why test for herbicide resistance?

Herbicide resistance occurs when weeds survive herbicide applications that once worked effectively. When standard treatments start to fail, it's easy to suspect resistance, but visual inspections alone often aren't enough to be sure. Adding to the complexity, some species like waterhemp can develop resistance to multiple herbicide groups simultaneously. These stacked resistances are really challenging to detect without lab testing.

Molecular testing offers critical confirmation quickly, that will allow to adjust the weed control program.

The advantages of molecular testing

Molecular testing offers several key benefits:

- Highly accurate detection of known resistance mutations.
- Faster results than traditional greenhouse bioassays (approx. 10 business days). There's no need to wait for the plants to go to seed.
- Species differentiation, including hard-to-tell members of the Amaranthus and Brassica family.

Frequently asked questions

Can I test any weed species for any herbicide?

Not every combination is available. However, the list of tests is extensive and growing. View the current options available in the submission form available at: turnkeygenomics.ca/sample-submission-forms/

Can the test help identify plant species?

Yes. The testing can help distinguish between similar species. Currently, testing is available to distinguish Brassica species (mustard, canola) and Amaranthus species (amaranth, pigweeds and waterhemp).

It's important to understand that herbicide resistance tests are species-specific. If the wrong species is selected when submitting samples, the results will not be valid. If you're unsure which weed species you're testing, request species identification along with the herbicide resistance test. This is especially important for pigweeds, which are often difficult to distinguish from one another.

Can one sample be tested for resistance to multiple herbicides?

Yes, a single sample can be tested for resistance to multiple herbicide groups at once and can also be used to confirm the weed species, if applicable. It's recommended to request all available tests for the species in question. It's not uncommon to detect resistance to multiple groups in single plants.

How much does it cost?

The testing cost is $15 to 40 per individual sample and test. Thanks to funding from industry partners, the testing fee is fully covered for Ontario growers.

Just make sure to check "Yes" under the section "Samples to be Billed to OMAFA Survey Program" on the submission form.

Where can I see herbicide resistance trends in Ontario?

An interactive database summarizing resistance by region is coming soon. Stay tuned for updates from OMAFA.

How to submit a sample

Submitting samples correctly is essential for accurate results. Samples must be dried in silica gel and stored in special envelopes included in the testing kits. You can order kits and find detailed protocols here: turnkeygenomics.ca/sample-submission-forms/

How many samples should I submit?

There are two possible approaches when sampling: A sampling kit and a strict protocol should be followed to submit samples. For more details visit the Turnkey Genomics webpage

Large sample: multiple plants
If you're unsure how widespread herbicide resistance is in a field, collecting multiple samples, ideally 10 or more, of the same weed species can make a big difference.

This is especially important for genetically diverse weeds like waterhemp. Testing several plants helps estimate how many carry one or more resistance traits. Relying on just one or two samples could miss the trouble-makers entirely, underestimating the real resistance challenge.

Small sample: fewer plants
If sampling multiple plants isn't practical, or resistance is clearly widespread, a single or small number of samples can still offer valuable insights. Just keep in mind: fewer samples mean a higher risk of missing the full picture if resistance isn't dominant in the population.

Will my farm data be made public?

No. Individual farm information will not be published or shared. Regional summaries (no finer than the county level) may be used to support province-wide reporting and research.

Cesar Cappa is weed management specialist, horticulture, OMAFA

Optimize Fruit Bulking with "Science Driven Nutrition"™

Growers have four main windows of opportunity to maximize their harvest as the apple crop's nutritional needs change through the season. Apple bulking, when fruit cells expand and the apple increases in size and weight, is an important opportunity to impact fruit development. Growers who use Science-Driven Nutrition™ to better understand their apple crop can support optimal growth and an enhanced marketable yield.

A proper nutrition plan ensures cohesiveness throughout the growing season. Bulking is the period of time when growers must focus on facilitating the production and movement of sugars into the cell structures. During cell division, the crop timing prior to the fruit bulking window, growers increased calcium applications to support fruit cell development and fruit firmness. When this opportunity to introduce calcium into the fruit ends four-to-six weeks post petal fall, maintenance applications using products like Agro-K's **Vigor Cal™** or **Calcium 7%**, are required to support tree growth and fruit firmness.

In addition to supplemental calcium, the apple tree requires an increased amount of energy to support the rapid leaf expansion and shoot growth that occurs at this time. Agro-K's **AgroBest 9-24-3** is an excellent source of phosphorous, which is a key nutrient behind the energy driving healthy cell development. Zinc assists with the leaf and vascular tissue development on the new growth, while magnesium, manganese, sulfur and iron synergize to maximize chlorophyll production and photosynthesis. Agro-K's **Zinc Plus +5** is a great example of foliar products containing multiple micro nutrients designed to support leaf development and function during fruit bulking.

Potassium, which helps to move sugars throughout the plant and regulates plant moisture through the opening and closing of the stomata, is one of the most important nutrients during this time. The apple crop's potassium needs increase exponentially during the summer months. Fruit color, weight and uniform maturity at harvest all hinge on maintaining proper potassium levels during cell bulking with products like Agro-K's **KDL** and **Potassium 0-0-6**. Excessive nitrogen, an inhibitor to fruit color, must also be avoided during this crop window.

Science-Driven Nutrition™

Science-Driven Nutrition™ was developed to help growers manage the apple's diverse and complex nutritional needs by following the **Agro-K's Five R's**: The Right nutrient applied at the Right time in the Right form in the Right mix targeting the Right location in the plant. This approach maximizes effectiveness and minimizes fertilizer waste.

During apple bulking, Agro-K's soft foliar products ensure producers don't inadvertently create fruit lenticel cell damage, a problem that inevitably worsens over time. Agro-K's **Vigor** and **Dextro-Lac** product lines are designed to safely improve crop performance by enhancing nutrient uptake and utilization. Using soil testing, sap analysis, fruit sampling and other tools, growers determine which products will be most helpful for their unique orchard.

For more information on using Science-Driven Nutrition™ to help your crop flourish throughout the season, visit www.agro-k.com.

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