

## NAKED PRODUCE

# Peeling off the plastic from English cucumbers



The Canadian Produce Marketing Association's conference and trade show in Montreal zeroed in on sustainable packaging. One example is plastic-free English cucumbers about to be launched by Westmoreland Topline Farms in mid-June. Dino DiLaudo, vice-president of sales and marketing, is shown overseeing the installation and trialling of the technology in Leamington, Ontario. Photos by Reece Early.

### KAREN DAVIDSON

No one is more excited than Dino DiLaudo to be pitching cucumbers free from plastic wrap to retail clients. Based in Leamington, Ontario, Westmoreland Topline Farms is the first in Canada to launch greenhouse-grown cucumbers sprayed with an edible, tasteless protective coating derived from plant material.

It's all thanks to the technology of Apeel Sciences, headquartered in Goletta, California. Westmoreland Topline Farms has partnered with them for a commercial launch with a major Canadian grocer on June 13. It's been a five-year journey, partly because of delays from the pandemic, but also due to modifying how the product is applied on greenhouse cucumbers.

"The innovation curve takes time," explains DiLaudo, vice-president of sales and marketing for Westmoreland Topline Farms. "I first saw the Apeel technology in a

trade show booth in Chicago. At that time, the benefit was extended shelf life. But today the benefit is the story about sustainability. It's about taking millions of pounds of plastic out of the packaging system."

Privately held, Apeel Sciences has enjoyed a fast track since its proof of concept in 2012. Early on, the company's researchers identified the lipids and glycerolipids in the peels, seeds and pulp of fruits and vegetables that can keep moisture in and oxygen out. When transformed into a slurry and applied as a thin film, the Apeel coating delays the onset of rot and maintains the cucumber's firmness and colour.

Because these natural ingredients are lipid-based, not protein-based, there is no threat of allergenicity. These ingredients are readily available, but the genius is in the proprietary process, the application of the solution in amounts specific to various fruits and vegetables. Once applied, the solution must be invisible and tasteless.

In the case of the English cucumber, the more natural,

darker green colour distinguishes it from its plastic-covered peers. But that's not the only characteristic that consumers notice. Independent research conducted in May 2021 reveals that consumers associate firmness of English cucumbers directly with freshness. That means no soft spots, no "bendy" cucumbers. Through in-store pilots, their research also showed that eight days after treatment, Apeel-protected cucumbers have no visible defects. Simply put, they are just as fresh as plastic-wrapped cucumbers.

For Westmoreland Topline Farms, although the American experience looked intriguing, the question to be answered was whether the technology was scalable. At peak production, the Leamington greenhouses are capable of up to 100,000 12-count cases of cucumbers per week. The fortunate intersect was that another Canadian-owned company, Houweling's, had tested the Apeel process on cucumbers in its California greenhouses.

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## AT PRESS TIME...

### Census of Agriculture identifies greenhouse sector as major trend



Statistics Canada has released the first tranche of data from the 2021 Census of Agriculture, noting the transformation and resilience of Canadian farmers. Trends identified in previous census cycles, such as industry consolidation and aging of farm operators, have continued in 2021. At the same time, the agriculture industry is adapting and modernizing with higher rates of technology adoption, renewable energy production, use of direct marketing solutions and sustainable farming practices.

According to the Statistics Canada chart showing the breakdown of various agricultural activities, horticulture represents about 9.2 per cent of the total number of farms. This number includes vegetable and melon farming, fruits and nuts as well as greenhouse production. Note that this number includes the floral sector.

The report notes that the greenhouse sector is emerging as a key industry in Canadian agriculture. Farms in Canada reported a 23.2 per cent increase in total greenhouse area from the

previous census, to 330.5 million square feet in 2021. Meanwhile, the total greenhouse area for fruit and vegetables was 219.7 million square feet in 2021, which accounted for around two-thirds (66.5%) of Canada's total greenhouse area.

Meanwhile, the total area of fruits, berries and nuts increased 0.4 per cent, from 332,812 acres in 2016 to 334,182 acres in 2021. Conversely, the total area of field vegetables decreased slightly to 260,757 acres, down from 270,294 acres in 2016.

For complete details, link here: [www.statcan.gc.ca/en/census-agriculture](http://www.statcan.gc.ca/en/census-agriculture)

Photo by Denis Cabill

Source: Statistics Canada May 11, 2022 news release

### Supply chain resilience dominated joint advocacy event

On May 10, the Canadian Produce Marketing Association (CPMA) and Fruit and Vegetable Growers of Canada (FVGC) held a successful advocacy event, Farm to Plate 2022, in Ottawa.

This year, 27 produce industry representatives from across Canada met with decision-makers in Ottawa to discuss key areas of concern, including:

- Establishing a financial protection mechanism for produce growers and sellers;
- Prioritizing access to food;
- Promoting supply chain resiliency and competitiveness;
- Supporting a sustainable fresh produce sector

"We were pleased to have the

opportunity to return to Parliament Hill to share our industry's priorities with federal leaders," says Mario Masellis, CPMA chair. "The produce industry plays a critical role in driving the Canadian economy and providing Canadians with a steady supply of healthy fresh fruits and vegetables. The challenges we have recently experienced have shown consumers both the resiliency and the fragility of their produce supply chain. We are looking forward to working with government officials to address issues that impact our industry and threaten food security in Canada."

"On behalf of Fruit and Vegetable Growers of Canada, I want to thank our industry representatives, the parliamentarians and government officials who participated in Farm to Plate 2022, for collaboratively addressing the issues facing not only our sector but our national food supply," says Jan VanderHout, FVGC president. "Farm to Plate demonstrates the importance of industry and government working together. We are encouraged by our discussions and the ideas shared at the event."

Event participants met with 28 Parliamentarians and officials from all four major political parties, including the Honourable Marie-Claude Bibeau, Minister of Agriculture and Agri-Food; the Honourable Senator Rob Black, CPMA 2021 Produce Champion and Chair of the Senate Standing Committee on Agriculture and Forestry; and Kody Blois, Member of Parliament and Chair of the House of Commons Standing Committee on Agriculture and Agri-food.

## NEWSMAKERS

The Ontario Fruit & Vegetable Convention has announced that **Kelly Ciceran** is elected president, replacing **Matt Peters** who had served for nine years. She is the general manager of the Ontario Apple Growers, based in St. Catharines. She is joined by new vice-president **Doug Darling**, farm manager of Sunnydale Farms. Next year's convention is slated for February 22-23, 2023.



**Bill George** has accepted a two-year appointment to the Ontario Farm Products Marketing Commission. A grape grower from Beamsville, Ontario, he has most recently chaired the Ontario Fruit & Vegetable Growers' Association for three years and previously served for nine years as chair of the Grape Growers of Ontario.

**Fred Koornneef** has been appointed to the Ontario Food Terminal Board for a three-year term to April 2025. He and his family are fruit and vegetable wholesalers from Grimsby and operate a commission house at the Ontario Food Terminal.

Congratulations to **Ryan Barrett**, Kensington, PEI. He's been honoured with the Farm & Food Care Prince Edward Island Champion award for his work with the PEI Potato Board as research and agronomy specialist. A respected communicator of new research, technology and sustainability methods, he's also the founder of the PEI Farm Tours.



Of seven women recognized as 2022 Influential Women in Canadian agriculture, two are well known in horticulture. Congratulations to **Christine Noronha**, research scientist, Agriculture and Agri-Food Canada, Prince Edward Island. She has contributed to the understanding of key potato pests such as Colorado potato beetle, the European corn borer, wireworms and tuber flea beetle.

**Dr. Mary Ruth McDonald** is also named. She's been a professor of plant agriculture at the University of Guelph since 1997, lecturing, mentoring post-graduate students and guiding research at the Ontario Crops Research Centre-Bradford.

**Hon. Marie-Claude Bibeau** attended the G7 Agriculture Ministers' Meeting in Stuttgart Germany in mid-May. She met with:

- **Cem Özdemir**, host of the Agriculture Ministers Meeting and Minister of Food and Agriculture of Germany;
- **Stefano Patuanelli**, Italy's Minister of Agricultural, Food and Forestry;
- **Arata Takebe**, Japan's State Minister of Agriculture, Forestry and Fisheries;
- **Tom Vilsack**, the United States' Secretary of Agriculture;
- **Victoria Prentis**, United Kingdom's Minister of State for Farming, Fisheries and Food;
- **Janusz Wojciechowski**, European Union Commissioner for Agriculture;
- **Julien Denormandie**, France's Minister of Agriculture and Food;
- **Mykola Solskyi**, Ukrainian Minister of Agrarian Policy and Food

## Clarification: federal price on carbon

In the May edition of *The Grower*, the front page feature on the federal price on carbon outlined the impact of the tax on growers without expressing that there is relief available for certain fuel uses. For example, if the appropriate Fuel Charge Exemption Certificate is completed and filed with the fuel supplier, fuels used in machinery (such as a tractor) used for the purposes of farming is fully exempt from the carbon tax.

Furthermore, fuel used for heating greenhouses is eligible for 80 per cent relief, meaning 20 per cent of the carbon tax is applied rather than the full amount. The federal government has also committed to returning some carbon tax funds back to farmers through a refundable tax credit, if the grower completes tax form T2043. Although the price on carbon does create significant input cost pressures for the entire value chain, including for farmers, it is important to acknowledge the current relief measures in place.

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COVER STORY

# Peeling off the plastic from English cucumbers

“

The innovation curve takes time.

~ DINO DiLAUDO

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Continued from page 1

In 2021, DiLaudo evaluated the application process in California, requested a few tweaks, then signed a letter of agreement. As it subsequently turned out, Westmoreland was able to acquire and refurbish the Houweling’s equipment for its own use.

An Apeel team is currently in Leamington installing equipment and supervising trial applications. As DiLaudo explains, “The proprietary powder is reconstituted with water, mixed in stainless steel vats under temperature control and then sprayed and dried on a conveyor line.”

Once the Apeel-protected cucumber leaves the greenhouse, the journey to market is really only half-complete. There’s a possibility that consumers may question the food safety of supermarket cucumbers that are not wrapped in a plastic sleeve. That’s where Apeel provides its expertise gained with American consumers.

“We have conducted quantitative research and in-home user testing with consumers in the United States and Canada to understand consumer sentiment and acceptability towards a plastic-free cucumber,” says Ravi Jolly, vice-president of new products at Apeel.

He says that more than 80 per cent of 800 American and Canadian surveyed consumers stated a preference for purchasing an English cucumber without plastic wrap in lieu of a cucumber wrapped in plastic. Furthermore, he says that educating consumers on the benefits of a plastic-free cucumber is critical to increasing not only comfort, but interest.

“When we exposed consumers to multiple messages in testing, we found that 75 per cent of consumers stated a likelihood to purchase after learning more about the benefits of a plastic-free cucumber.”

Walmart, for example, launched its plastic-free cucumbers two years ago. So Apeel provides its consumer-smart messaging “protected by nature” and a social media campaign. A QR code on the package directs consumers to a website dedicated to most frequently asked questions.

“Is Apeel a chemical? Yes!

Everything you eat and drink is made of chemicals, from caffeine (C<sub>8</sub>H<sub>10</sub>N<sub>4</sub>O<sub>2</sub>) to water (H<sub>2</sub>O) to the beta carotene found in fruits and vegetables (C<sub>40</sub>H<sub>56</sub>). At Apeel, we take chemicals that exist in nature and turn them into a biotechnology that keeps produce fresh.”

This is messaging for consumers, but is it messaging for the produce manager, the touchpoint for consumers when they’re shopping?

Apeel’s Ravi Jolly says that education, using existing training platforms, hosting webinars and even in-store events, is a must to ensure store teams support the product.

“We agree that it’s critical for the store team and consumers to understand the benefits of cucumbers that are protected by plants instead of plastic,” says Jolly. “That’s why we recommend to our retailers that we also communicate directly with consumers at shelf and through their communications channels.”

The timing of the Westmoreland Topline Farms’ launch comes at a most interesting intersect, coming out of the pandemic. The question is whether consumers are willing to put aside their food safety concerns in favour of an environmentally-friendly sleeveless cucumber. Or do they have further questions, such as what exactly is in the spray?

Plenty of fruits and vegetables get sold without plastic, answers Jolly. “The use of plastic for cucumbers is to maintain shelf life, not as a safety precaution,” he says. Apeel plays the same role of maintaining shelf life. “We did consumer research around plastic usage and preference throughout the early days of the pandemic,” says Jolly. “We saw a preference for packaged produce drop down after initial spikes, and more than 60 per cent of consumers expressed their frustration by the overuse of plastic wrap and packaging on produce.”

The Canadian Produce Marketing Association (CPMA) has taken a lead role on the plastics file. “Innovation is fundamental in our work to reduce problematic materials in our packaging for fresh produce,” says Ron Lemaire, president, CPMA. “To meet the targets of the



Samantha Guerra, Apeel Sciences, shows the liquid that’s sprayed onto the cucumbers. Behind her are the steel vats.



Ricardo Rivera, Apeel Sciences, demonstrates where the cucumbers are sprayed on the conveyor belt before entering the drying chamber.



Sleeveless cucumbers have a compostable cardboard wrap that explains the food safety of the Apeel-sprayed process.

government and the Canada Plastics Pact, our sector will need to embrace a range of tools and strategies that support the reduction of plastics and new systems to manage circularity.”

Westmoreland Topline’s sleeveless English cucumber is completely undressed for the salad days ahead and their process is ready to meet the demand with capacity for 20,000 12-count cases of Apeel-protected cucumbers per week.

The Grower is “Digging Deeper” with Dino DiLaudo, vice-president sales and marketing, Westmoreland Topline Farms, Leamington, Ontario. He tracks the discovery of Apeel edible coatings on fruit and vegetables at a trade show and why his company is launching plastic-free cucumbers through a major Canadian retailer in June 2022. This podcast is sponsored by UPL.



**Digging Deeper**  
A GROWER PODCAST FEATURING DINO DILAUDO  
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## CROSS COUNTRY DIGEST

## ALBERTA

## Super-Pufft opens \$50 million processing facility in Airdrie

Alberta potato processing growers are pleased to see Super-Pufft Snacks Corporation open its new facility in Airdrie, a 30-minute drive north of Calgary.

"I'm most excited because it shows that Alberta has a bright future in the global arena of food production and processing," said Nate Horner, Alberta minister of agriculture, forestry and rural economic development. "Alberta's government has been focused on creating a business environment that attracts new investments and reignites Alberta's economy."

Headquartered in Mississauga, Ontario,

Super-Pufft produces potato chips, kettle chips, popcorn and other snacks. Yousif Al-Ali, president and CEO anticipates that the facility will be operational in about two months. That's timed for the 2022 potato harvest.

The Canadian Agricultural Partnership provided \$250,000 for the new facility.

**Photo right: L-R: Nate Horner, Alberta Minister of Agriculture, Forestry and Rural Economic Development, Yousif Al-Ali, President and CEO, Super-Pufft Snacks Corp and Airdrie Mayor Peter Brown.**



## MANITOBA

## Potato and vegetable planting are well behind schedule

At press time, May 18, the Keystone Potato Producers' Association estimated approximately seven per cent of the processing potato crop was planted. This acreage is mainly in the Shilo/ Douglas region with a few additional acres around Carberry.

Conditions were too wet to see widespread planting. More rain was forecast for Wednesday May 18. Acreage is expected to remain similar to last year, perhaps up slightly.

Fresh planting though had ramped up with expectations of approximately 15 per

cent of fresh acres completed. Fresh potato planting intentions are expected to be similar to last year or up slightly on yellows.

Although the national news has reported extensively on the flooding in Manitoba, the flooding has not impacted the sectors for potato planting as much as other areas. However, the overall increased rainfall and colder temperatures have certainly delayed the planting schedule compared to other years.

"It's amazing how weather can change quickly and dramatically from season to

season, week to week," says Tracy Shinnars-Carnelley, vice president, research, quality and sustainability for Peak of the Market Ltd. "The moisture is a refresher for Manitoba which has been dry the last two years. But patience is waning for planting this spring."

On the vegetable side, some transplanting of Brassica vegetables was accomplished before the Victoria Day weekend. Shinnars-Carnelley explains that it's not helpful to compare this year's weather with the previous year. The norms aren't there anymore.



## QUÉBEC

## A new strawberry greenhouse project starts in Saint-Hyacinthe

Wanting to waste no time outfitting her new strawberry greenhouse with the most

advanced technology, Magalie Rajotte, owner of Les Serres de la Vallière in Saint-Hyacinthe,

Québec, has invested in Sollum Technologies' smart LED grow light solution.

"Strawberries are very rewarding crops to grow but they also offer a suite of unique challenges", says Magalie Rajotte. "I wanted to make sure that my greenhouse had every possible advantage from the beginning, and for me that means investing in precision technology like Sollum's smart LED lighting solution."

In addition to optimizing her greenhouse production, Rajotte sees choosing new technology solutions as a way of benefiting from exciting opportunities in the future. With Sollum's adaptable dynamic LED lights, it is easy to try out new varieties and growing strategies and scale up as a business evolves.

"We are ecstatic to be the first choice of growers starting new business ventures" says Kassim Tremblay, vice president, Business Development at Sollum Technologies. "Greenhouse operators want to invest in lasting technology that meets their needs well into the future, regardless of how their business changes over time. Our unique solution allows them to do just that."

Les Serres de la Vallière is a company established by a young entrepreneur, Magalie Rajotte. Her parents came from a farming background and built a field crop business that stood out in the industry and inspired their



daughter's entrepreneurial spirit. When Magalie decided to take a course in Agricultural Business Management and Technology at the Institut de technologie agroalimentaire in Saint-Hyacinthe, Québec, she intended to take over the family farm and leave a mark as distinctive as her parents'.

To support the growth of the business, she decided to diversify into greenhouse cultivation, based on a previous experience. She sought the advice of experts to make her project a reality, including the team at Sollum Technologies, which will provide the smart lighting solution for her greenhouse. Her winter strawberry production will begin in the fall of 2022.

Source: Sollum Technologies May 3, 2022 news release

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CROSS COUNTRY DIGEST

CANADA

# Brock launches national facility for virus-free grapevine plant material

A facility that maintains high-quality, virus-free plant materials and eliminates viruses and other pathogens of concern in grapevines is up and running at Brock University as of May 2022.

The national grapevine germplasm repository project, led by Sudarsana Poojari, senior staff scientist at Brock University's Cool Climate Oenology and Viticulture Institute (CCOVI), is funded by the Ontario Grape and Wine Research Inc. (OGWRI), Canadian Grapevine Certification Network (CGCN-RCCV) and Brock University.

"With changing climatic conditions and the need for new and agronomically improved grapevine varieties that suit local climatic conditions, it is critical for Ontario's grape and wine industry to have access to virus-free grapevine material of varieties that are both popular and of regional importance," says Poojari.

Grapevines are vulnerable to infection from many different types of plant viruses, which are commonly spread in vineyards by planting new vines that have been propagated from infected grapevine material. Some viruses can be spread by certain species of insects in vineyards.

Once a plant virus infects a grapevine, there is no cure, says Poojari. Some plant viruses negatively impact vine performance, reducing yield, fruit quality and over wintering success of the vine.

"It's important to start with virus-free vines and to maintain them by following the best pest management practices," he says. "We don't want to start with virus-infected vines and assume that they will do well in field conditions."

Poojari's lab uses a combination of virus detection and elimination methods on grapevines, including, but not limited to, heat therapy, microshoot tip tissue culture therapy and high throughput sequencing (HTS). "This process is proven successful in the certification program and meets the long-term certification standards set by CGCN-RCCV," he says.

Microshoot tip tissue culture is a virus elimination technique where a tiny part of an apical shoot tip of a vine is cut off and grown under controlled conditions.

HTS is a genomics-based test with the ability to detect all known and unknown viruses in grapevines with high accuracy and reliability. This genomic-based solution would replace more than 30 tests currently being performed on grapevines to look for diseases.

Poojari's lab adopts the combination of microshoot tip

tissue culture therapy and HTS to shorten the time required to generate virus-free grapevine material from about three years to 12 months or less, providing rapid access to valuable new varieties.

In addition, Poojari also collaborates with Professor of Biological Sciences Ping Liang, who is developing a new grapevine genetic test to provide the "true-to-type" of grapevine material, also funded by OGWRI.

Nurseries, wineries or growers seeking to test and certify their new grapevine varieties or clones can submit a request to CGCN-RCCV.

This initiative has provided a tremendous opportunity for CCOVI and Brock University to serve as a backup facility to maintain the National Grapevine Germplasm Repository at the

Canadian Food Inspection's Plant Virus Diagnostic Facility in Saanich, B.C., says Poojari.

Having a ready supply of virus-free material "creates opportunities in domestic and global trading for Canada, benefiting growers, nursery owners, custom propagators and academic researchers in viticultural and breeding programs," he says.

"Ontario Grape and Wine Research Inc. is pleased to partner with Brock, CCOVI and CGCN-RCCV on this important new facility," says OGWRI chair Matthias Oppenlaender. "Having access to certified virus-free grapevine material is essential for the sustainability of our grape and wine industry."

Source: Brock University May 2, 2022 news release



Sudarsana Poojari (left), senior staff scientist at the Cool Climate Oenology and Viticulture Institute (CCOVI), and Linxue Zhang, CCOVI research assistant, examine plants in Brock University's new national grapevine germplasm repository facility.

  
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## BERRY BOOM

# Five innovations that have changed Canada's strawberry industry

## Controlled environment production



Canada's greenhouse heavyweights are leveraging their success with vegetables and answering the call for all-season local produce. Photo by Glenn Lawson.

ELISE JOHNSON

The last decade has seen Canada's strawberry sector change a lot. Field growers are bringing plants out of the soil and onto tabletop systems. New substrates and containers have been introduced that specifically support the North American market and context. High-tech greenhouse growers are entering the market in a big way, delivering fresh berries to retailers across North America, all season long.

So what's behind Canada's berry boom? A lot of things, says

Kevin Schooley, executive director of the North American Strawberry Growers' Association. Having spent nearly two decades in his previous role as the executive director of Berry Growers of Ontario, a provincial organization representing blueberry, raspberry and strawberry growers, Schooley has had a front row seat to the evolution and innovation taking place.

"Up until recently, it was all field-grown, bare soil, rain beds – traditional berry-growing techniques. Today, we're looking at a completely different market."

## Growing demand for local freshness and flavour

Like most commodities, the berry market is retail-driven. Demand for fresh, local produce is at an all-time high and the pandemic has only added to that.

"Grocery chains are calling for year-round production and Canada's greenhouse industry is answering," explains Schooley. "Growers are drawing on their experience and success in vegetable production and quickly adapting greenhouse space for strawberry production, which helps expand their retail offering."

While Canada may not be

ready to compete with the volumes coming out of California and other areas of the U.S., growers are carving out a niche offering local freshness and quality flavour.

"Anything that can be on stores shelves within 24 hours qualifies as local," Schooley explains. "From Ontario, for example, growers can pretty well reach anywhere in North America within that time frame and that gives us a competitive advantage."

Experimentation in berry variety is also giving growers an edge. "At first, greenhouses were using field varieties – mainly Albion – but now we're seeing new varieties that are specifically suited for greenhouse production, and it's making a difference not only in terms of yield but also in terms of quality and flavour."

Canadians are welcoming the change too. While the price tag for Canadian greenhouse-grown berries is higher on average, Canadian consumers seem ready to open their wallets.

## Tabletop and tray plants improving efficiencies

Innovation is underway on the field grower side, too, with an increasing interest in tabletop systems that bring plants out of the soil and into substrate. For many, the upfront cost is worth the return, which can include higher yields, less shrink and fewer staff required during harvest.

"Some field growers have told us that they're saving up to 40 per cent of their labour costs just by getting plants off the ground," says Shawn Mallen, A.M.A. Horticulture's berry expert and managing director of hydroponics and manufacturing. "On top of that, this kind of growing method can make the labour you do need, more efficient overall."

Adding to that efficiency is

## Tabletop systems



Field growers are getting plants off the ground, reducing labour costs and stretching the growing seasons.

the introduction of tray plants, an innovation driven by the greenhouse sector which is now taking root with field growers. Tray plants have raised legs, bigger cells and hold plants for longer periods of time, resulting in larger plants with more crowns and a higher potential to fruit right away. Designed for a bench or tabletop, tray plants can be planted and in production in as little as six to eight weeks.

"Even with no environmental controls, field growers can extend the season on either end by adding tray plants, tabletop systems and substrate to their strategy," says Mallen. "If they're under high or low tunnels, even better."

## The right substrate for the right plant for the right context

The introduction of European substrate has been a game changer for field and greenhouse berry growers alike.

"Before we brought European peat into the market, greenhouse growers were relying on the same substrates used for their veggie crops," says Mallen. "Now, growers have options."

The best options, according to Mallen, are those which have been specifically adapted for the North American climate, such as BC5++. It's comprised of European peat blocks available in different sized fractions, combined with coco fibre and perlite.

The innovation isn't just in the mix. It's in ensuring the right substrate for the right plant in the right context," says Mallen. "Right now, with its complex fibre structure, European peat is the best solution for berries, specifically raspberries and strawberries."

Continued on next page



Pieces include wet hopper, polisher, length sizer, lift roll sizer, destoner, hydro cooler, various conveyors, catwalks and control panels.

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**BERRY BOOM**

# Five innovations that have changed Canada's strawberry industry

Custom substrates



Growers are using European peat mixes that have been custom made for the Canadian berry market.

New varieties



Veestar used to make up 80% of Ontario's acreage. Today, berry varieties are being introduced from Europe better suited to controlled environment agriculture.

Tray plants



Growers are using tray plants to improve uniformity and consistency in yield, and more Canadian propagators are entering the market to supply demand.

Continued from last page

**Next generation, future innovation**

Whether it's innovation that's attracting the next generation, or the next generation helping to drive innovation, one thing's for sure: there's renewed energy within Canada's berry industry.

"We're seeing the next generation deciding to stay or return to the family farm and they see the potential for economic success," says Schooley. "Many young farmers are more willing to change things up, embracing technology and increasing potential for income by adding acreage, increasing yields or looking at new revenue streams."

Robotic harvesting systems are already being trialed in the Netherlands and the U.S. on the research side, though it's the robotics industry driving the work. "When this will actually translate over to growers is an open question," says Mallen, "but it's safe to say that we'll see robotics in greenhouses in the future."

Growers can also expect artificial intelligence to play an increasing role. "AI is already being used for packaging greenhouse-grown vegetables, sorting fruit by size, colour, weight and dimension," says Mallen. "These things tend to start on the marketing side and work their way back into production."

When it comes to increasing efficiency and reducing labour, automation will continue to be king. "Automation depends on uniformity, so any innovation that can deliver on that front will be in demand."

*Elise Johnson is communications and marketing manager for A.M.A. Horticulture Inc.*

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## SECTION CHAIR'S PERSPECTIVE

## Partnership and collaboration needed on climate change



JAN VANDERHOUT

Canadians across the country – and indeed people around the world – directly feel the impacts of the changing climate when temperatures become hotter and weather extremes become more pronounced.

Growers are not exempt from these impacts. In fact, you could argue that we are on the front-lines of climate change since the weather directly affects our ability to grow crops, and we are among the first to deal directly with prolonged drought, extreme heat, dramatic temperature swings or excessive moisture.

We recognize that growers have a role to play in emissions reduction and climate change mitigation where possible. However, there is a real need to balance the global move to

net-zero emissions with the realities of food production.

Agriculture is complex because although the sector is an emitter, there are also opportunities for mitigation and reduction through carbon recapture and carbon sequestration, for example, which should be recognized and considered when looking at long-term climate change solutions.

I'm a greenhouse cucumber grower and I know first-hand the many advances the greenhouse industry has made to become more efficient in how we use energy. We generate carbon dioxide because we use natural gas (methane) to heat our greenhouses; crops need a consistent, warm environment in which to thrive.

Plants need carbon dioxide (CO<sup>2</sup>) for photosynthesis, the process through which they use sunlight to make their own food. They react positively to higher levels of CO<sup>2</sup> and negatively to lower levels, which can diminish to as low as 125 parts per million (ppm) in a closed greenhouse. This means growers have to actually supplement their greenhouses with additional CO<sup>2</sup> to ensure their plants reach the highest level of food production. CO<sup>2</sup> is drawn directly off the chimney and distributed through the greenhouse, actually using the CO<sup>2</sup> from the building's natural

gas boilers, instead of that CO<sup>2</sup> being released into the atmosphere.

That's how efficient greenhouse vegetable growing has become – and growers are continuing to explore options for new ways to produce clean energy efficiently and in a cost-effective way. One such example is cogeneration units, which some farms are already using to produce their own clean electricity, heat and carbon dioxide.

Research has also shown, for example, that the environmental footprint of an apple orchard is both positive and negative. Yes, carbon dioxide is released to the atmosphere through the use of fuel, fertilizers and crop science tools in the actual growing of the apples.

However, it's estimated that a single acre of orchard every year fixes about 20 tons of CO<sup>2</sup> from the atmosphere, releases 15 tons of oxygen and provides more than five billion BTUs of cooling power. As well, the trees themselves sequester carbon in their trunks, branches and roots. Combined, this works out to a significant offset.

That's why our sector believes strongly that governments need to recognize the significant efforts and investments growers have made in recent years to improve environmental performance,

become more efficient, and reduce emissions where possible.

At the same time, our sector needs to do a better job of identifying the many positive things we are already doing to support government climate change targets and making sure all levels of government and Canadians know what we're doing.

We also know that currently available technologies, although continually evolving, limit our ability to achieve target reductions in carbon output. Any meaningful action on climate change mitigation must include support for innovation as well as ensure that regulatory frameworks and public infrastructure support new technologies and approaches. We cannot implement technology that does not exist.

So far, the government has taken some steps to help reduce the burden of carbon pricing on food production. Although imperfect, we appreciate steps the federal government has taken to mitigate some of the impacts of its carbon pricing policies.

This includes offering exemptions on some types of fuel and 80 per cent relief for greenhouse heating and returning some of the funds collected through the price of carbon back to farms. The Ontario Fruit and Vegetable Growers' Association supports

Bill C-234, An Act to amend the Greenhouse Gas Pollution Pricing Act, which would broaden the eligibility of fuel uses that receive carbon pricing relief.

Going forward, however, government needs to find ways to strengthen the funding programs available that support growers as they implement carbon output reduction or carbon sequestration technologies. And to be truly effective, those funding programs must be administered in a way that matches the speed at which businesses operate.

As a country we need to recognize that consumers also bear responsibility for the carbon generated in food production, processing, packaging, and transportation – and that covering the cost of net-zero carbon targets must be shared by everyone, not just borne by producers and processors.

As growers, we believe the best path forward is for government to partner and engage with stakeholders rather than take a prescriptive, top-down approach. Collaboration and partnership are a powerful way to enact meaningful change.

*Jan Vanderhout is OFVGA section chair, environment & conservation.*

## WEATHER VANE



"Storm coming in over the orchard. It's a race to get everyone out safe and sound. No matter the weather, it's still my happy place." Thanks to orchardist Brian Rideout who captured this eerie photo at Blenheim, Ontario on May 16, 2022.

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# Show consumers how traditional values and modern technology meet



OWEN ROBERTS

it can work profitably and sustainably.

People, though, have a much more traditional view of producers, says Crowley-Arklie. So she says a marketing strategy is needed to bring the reality and the vision together – not to change people’s minds, but rather, to make them aware that modern agriculture is already immersed in the technology of food production. In that way, the sector can be regarded as a learned and logical opinion leader on matters consumers wonder about, such as robotics, artificial intelligence and lab-grown protein.

A strategy is also needed to influence policy, she says. A challenge truly exists when decision makers have little understanding of agriculture – especially decision makers whose



portfolios concern agriculture.

That situation exists, and it’s not going to fix itself. It needs a combination of sustained, coordinated lobbying inside government at all levels, and public education to maintain growers’ trust status. Decision makers, especially those who are

voted into office, listen to the public (don’t they?). And the public has thrown its trust behind farmers.

“I’d like us, as the agri-food sector, to be driving marketing and policy, not the other way around, where we’re reacting instead of taking the lead,” says Crowley-Arklie.

And trust leads to her final point about the need for a strategy to address the sector’s identity. Should we wring our hands that the public wants to think of farmers as traditionalists? I don’t think so. I believe most people are focussed on farmers’ traditional values rather than traditional approaches to farming. That’s particularly true when they see that growers, with their traditional values, are producing food in modern ways -- such as hydroponics or robotics -- that

help address concerns about price and supply.

So she’s looking to the future, urging the sector to come together with an accessible strategy that stresses leadership and communications, so no Canadian has to wonder about food produced in their own country.

“I’m focussed on the office mom sitting at her desk at 3:30 in the afternoon trying to figure out what’s she’s going to serve for dinner,” says Crowley-Arklie, “With everything she has to deal with, how do we also get her to think Ontario-grown products first, grown by Ontario farmers?”

*Owen Roberts is a past-president of the International Federation of Agricultural Journalists and a communications instructor at the University of Illinois. Photo by Reece Early.*

Most growers, producers and others believe that agriculture is the sector of the future. After all, where will humanity get the food it needs, if not from farms?

Well, asks agri-food strategist Christina Crowley-Arklie, founder of Crowley + Arklie Strategy & Co., how about getting food from a lab? Or from a pill? Or from another country?

These are cringe-worthy options for her and for most others in the sector. After all, Crowley-Arklie who now lives in Guelph with her husband and children, was raised on a family dairy farm near Peterborough, Ontario. She, as much as anyone, wants such operations to survive with more than a semblance of familiarity in the future.

But she’s concerned that the agri-food sector is not taking a lead role in setting the agenda for modern agriculture. Despite having such great stories to tell about food security, food safety and food production, she thinks the sector has yet to break away from the passive, reactive approach that made it nearly invisible for so many years. And that could jeopardize its advancement, as the public ponders the future of food.

She said so in a webinar she hosted last month, titled “Our Greatest Challenge Ahead in Canadian Agriculture and Food.” To Crowley-Arklie, former communications advisor to Jeff Leal, former Ontario minister of agriculture, food and rural affairs, confusion over the confluence of marketing, policy and identity is the sector’s greatest challenge.

Here’s what that means.

We know from research by the Canadian Centre for Food Integrity that people have loads of trust in farmers, right up there with medical professionals and first responders. That’s kind of surprising, considering so few people actually know a farmer, and that farmers haven’t engaged in a concerted public relations blitz.

But that lofty vision of producers is a huge opportunity to reach the public and explain what the agri-food sector is doing to address hot-button issues. Growers are among the first to adopt technology and to see how

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## ALTERNATIVE LAND USE SERVICES

## Local destination: a turtle pond to slow down and reflect



KAREN DAVIDSON

Amanda Dooney is a believer in habitat restoration. Years ago, when she was working for Ontario's Norfolk County forestry division, she rubbed shoulders with coordinators of the Alternative Land Use Services (ALUS) program. At the time, she thought they were good ambassadors for a program that

didn't impede good agricultural practices but rather planted non-productive land with species native to the area.

In 2020, Amanda and her husband Hayden Dooney got their chance to work with ALUS, restoring an old irrigation pond at Suncrest Orchards, Simcoe, Ontario. The first step was to invite an ALUS coordinator to visit the half-acre site. His recommendation was to dig a

deeper pond for a year-round water supply and to slope the sides for easier turtle access.

While the two-day excavation was relatively easy, the best moment was placing a dead tree in the pond at just the right angle for a turtle sunning spot. ALUS provided the plugs for aquatic vegetables for the pond as well as seeds for mullein and black-eyed susans to multiply around the pond.

"You need to be patient for these plants to establish," says Dooney. "It's taken two years, but now it's one of our favourite places to be on the farm. It's a quiet place for reflection. And the reward is to see rarer species such as the green heron."

The turtles have come too. As have deer and wild turkeys.

"I take pride in being a steward of the land," says Dooney. "We have changed the landscape so that it's a wildlife corridor, a pocket of biodiversity that attracts more wild pollinators to our apple orchards."

The success of the Dooney project is one more reason for Sustainable Development Technology Canada (SDTC) to

invest \$5 million to support the scale-up of ALUS which promotes on-farm, nature-based solutions. The program helps Canadian farmers to be more resilient in the face of climate change.

ALUS will be bringing farmers, municipalities and stakeholders together to propose projects that will help restore wetlands, improve soil health and enhance biodiversity. The six new communities haven't been identified yet. They are to be determined based on greatest need, as new ALUS communities emerge in Alberta, Saskatchewan, Manitoba, Ontario, Québec, Prince Edward Island, and possibly other provinces. That

said, all 35 existing ALUS communities will benefit from this investment, continuing to establish new projects and welcome new participants.

With this additional funding, ALUS will work towards building out their ecosystem services quantification models with world-leading experts and researchers.

This work has the potential to benefit the broader dialogue around sustainability impact measurement and is expected to lead to a network of demonstration sites where innovative technologies in regenerative agriculture and nature-based solutions can be tested.

## COMING EVENTS 2022

- |               |   |
|---------------|---|
| June 2        | Dispute Resolution Corporation AGM  |
| June 4        | Farm & Food Care Ontario Breakfast from the Farm, Paris Fairgrounds, Paris, ON  |
| June 12       | Ontario Agricultural Hall of Fame Induction Ceremony, Grand River Raceway, Elora, ON  |
| June 10       | United Potato Growers of America Crop Transition Conference, Minneapolis, MN  |
| June 15       | Ontario Produce Marketing Association Industry Connect & Annual General Meeting, Hilton Garden Inn, Niagara-on-the-Lake, ON |
| June 21-22    | Advancing Women Conference West, Hyatt Regency, Calgary, AB   |
| July 7        | Potato Growers of Alberta Golf Tournament, Taber, AB  |
| July 17-20    | International Fruit Tree Association 2022 Summer Tour, Richland, WA   |
| July 17-21    | Potato Association of America, Holiday Inn Downtown, Missoula, MT   |
| July 17-21    | International Cool Climate Wine Symposium, St. Catharines, ON   |
| Aug 11        | Farm & Food Care Ontario Member Anniversary BBQ   |
| Aug 16, 17    | North American Strawberry Growers Association Summer Tour, Southwestern Ontario   |
| Aug 18        | Ontario Potato Field Day, HJV Equipment, Alliston, ON   |
| Sept 13-15    | Canada's Outdoor Farm Show, Woodstock, ON   |
| Sept 29-Oct 1 | Canadian Farm Writers Federation Conference, Saskatoon, SK  |
| Oct 3-9       | Ontario Agriculture Week  |
| Oct 5-6       | Canadian Greenhouse Conference, Niagara Falls, ON   |
| Oct 18-20     | World Ag Robotics Forum, Fresno, CA   |
| Oct 25-26     | Canadian Centre for Food Integrity Public Trust Summit, Toronto Public Library, Toronto, ON                                 |
| Nov 2-4       | Grow Our People Summit, Sheraton Fallsview, Niagara Falls, ON   |

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## RETAIL NAVIGATOR

## Auto replenishment needs to be monitored



PETER CHAPMAN

We know in-stock position is a big issue right now in the food and beverage industry. Many large retailers use sophisticated systems such as auto replenishment to ensure their stores are stocked with the right amount of inventory.

Auto replenishment is a component within a retailer's information technology that automatically re-orders product for a store, when inventory goes below a predetermined level, on the shelf. The re-order points are set in advance, based on sales estimates and holding capacity on the shelf. The system will order the amount of product required to fill the shelf and meet the sales estimates.

There are many challenges associated with producing, packing and selling fresh products to retailers. The job is only done when the product makes it into the consumer's shopping cart. Although it is the retailers' job to get the product through their distribution networks, there's a huge impact on suppliers when this doesn't happen. Future orders are impacted and in short seasons, this really can cause problems. It is important to check stores during the season to ensure products are being re-ordered properly.

**Auto replenishment is great, when it works**

As we read about self-driving cars and other marvels of technology, we realize more and more decisions are being made by

systems. Auto replenishment is one concept that can save labour.

Unfortunately, consumers can throw a curve ball at auto replenishment. They do not always behave the way we expect them to. Most auto replenishment relies on history to develop the sales estimates. It starts with a number created by a person, but the sales history is then used to 'improve' the sales estimate. Events such as snowstorms or shifting holiday dates can cause sales history to be inaccurate as a tool to predict the future. Panic buying during the pandemic was a huge issue for retailers because the sales history was no longer realistic. It caused a lot of challenges for them to figure out what and when to buy.

Recently, there was a shortage of baby formula in the U.S. market. There were several factors that led to the shortage, auto replenishment being one of them. In 2020, when consumers were panic buying, the sales of baby formula went up artificially. The following year sales declined as consumers used up the product they had in their cupboard. This reduced demand resulted in lower sales forecasts and lower production. When you layer on several recalled SKUs from one of the market leaders and a modest baby boom from the pandemic, we see out of stocks as high as 40 per cent in the U.S. market.

We know the food and beverage industry sales can be driven by temporary price reductions (TPRs). If these fluctuations are not flagged in the system, they will have a significant impact on sales projections. Most retailers' systems allow them to eliminate promotion sales from the estimates. But they really need to develop an accurate baseline sales number.

Errors at the front end can impact auto replenishment. If an item does not scan properly, it will not get captured in the system. The auto replenishment has no idea the item was purchased so it does not count that unit into the equation of when to re-order. This is one



important reason for reason for items to scan properly. When cluster tomatoes are entered as beefsteak, the system will re-order more beef steak and no cluster tomatoes will be ordered. This will result in over-stocks of beef steak and out-of-stocks on cluster tomatoes.

**Where is auto replenishment used?**

It is most common to find this in place in the grocery department. Shelf life is longer and most stores use plan o grams so they know the amount of product required to fill the shelf.

Some fresh departments will use this, often in stores with more sophisticated buying systems. Walmart would be an example where their systems do a lot of the ordering for stores.

Store employees do have the ability to override the system but it usually only happens once the product is out of stock. They are not able to really react when the system orders two cases and should have ordered four.

**What suppliers need to do about auto replenishment**

It is always a good question to ask your customers: "How will stores replenish our products from the warehouse?"

If the answer is your product is on auto replenishment or auto re-order, then you know the system will be ordering the

inventory. There is a huge focus on in-stock position right now as suppliers and retailers struggle to get inventory and keep shelves full. There are many reasons for out-of-stocks. Given all the challenges it does not make sense to be out-of-stock and lose sales, because the system did not order properly.

Suppliers need to visit stores and check for in-stock position. If you see holes on the shelf where your product should be, there is a problem. The first thing is to check with your own business to ensure you did not short orders into the warehouse. Once you are satisfied you have fulfilled orders it is time to figure out what is happening.

Most stores have a person responsible for the inventory management in the store. They are the person with the ability to override the system to order product. It is beneficial to talk to them and see what is happening. They can usually tell you the re-order point and the sales estimates. Check to see if these make sense to you. If they do not, then try to understand how they got to these numbers and see if you can get them to change them. Too much inventory is not good for anyone so retailers will always try to be as close to just in time as possible.

If they are ordering and your product is not getting to the store there could be an issue somewhere in the supply chain. For this issue you will have to go back

to your contacts in the merchandising department. Assistant category managers are usually the best people for these types of issues. There are many reasons for a problem but they can usually get the solution for you.

**In-stock position is everyone's responsibility**

It is true retailers take possession of your product when they receive it in their warehouse. My advice would be to follow it right through to the front end. You and your customers need sales and this is only recorded in their mind when it scans correctly. Check your in-stock position regularly in a variety of stores. If there is a hole where your product should be, there is a reason. Do everything you can to figure out why and get the product back on the shelf. It is tough enough to deliver sales, but when the system is not re-ordering properly, you will never get there.

*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.*

*Photo by Glenn Lowson.*

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# ONvegetables

Ontario Ministry of Agriculture, Food and Rural Affairs

## Six tips for improving control of buckeye rot caused by *Phytophthora capsici* in tomatoes

**Table 1.** Yield (tons/acre) of tomatoes treated with different fungicides for management of *Phytophthora* fruit rot – Essex County, 2019.

| Program (product rate per Ha (ABCDE)) <sup>a</sup> | Yield (tons/acre) <sup>b</sup> |        |       | Total  |
|--|--------------------------------|--------|-------|--------|
|  | Reds                           | Greens | Rots  |        |
| Control  | 33.8 a <sup>c</sup>            | 2.0 a  | 2.5 a | 38.4 a |
| Orondis Ultra @ 600 mL + Phostrol 2.9 L (A)        | 38.8 a                         | 2.7 a  | 0.6 b | 42.1 a |
| Zampro @ 1 L + Phostrol @ 2.9 L (B)                |                                |        |       |        |
| Torrent @ 200 mL + Phostrol @ 2.9 L (C)            |                                |        |       |        |
| Orondis Ultra @ 600 mL (D)                         |                                |        |       |        |
| Zampro @ 1 L (E)                                   |                                |        |       |        |
| Orondis Ultra @ 600 mL + Phostrol 2.9 L (A)        | 41.0 a                         | 2.0 a  | 0.5 b | 43.5 a |
| Zampro @ 1 L + Phostrol @ 2.9 L (B)                |                                |        |       |        |
| Torrent @ 200 mL + Phostrol @ 2.9 L (C)            |                                |        |       |        |

<sup>a</sup> All treatments received the standard grower program which did not include fungicides with activity against *P. capsici*. Application timings: A = June 29, B = July 9, C = July 19, D = July 29, E = Aug 10.

<sup>b</sup> Two 2 m sections per plot were harvested.

<sup>c</sup> Numbers in a column followed by the same letter are not significantly different at  $P \leq 0.05$ , Tukey's HSD.

Applications started at fruit set (BEFORE symptoms observed)

Three or five fungicide apps targeting *P. capsici*, applied ~10 days apart, reduced rots by 78%



**Figure 1.** Various degrees of buckeye rot severity on green tomatoes



**Figure 2.** Buckeye rot (A) and stem lesions (B) caused by *Phytophthora capsici*.

AMANDA TRACEY,  
DR. CHERYL TRUEMAN

Buckeye rot in tomatoes is caused by several *Phytophthora* spp., which belong to the Oomycete pathogen group (water molds) (Fig. 1). Severe outbreaks of buckeye rot in some tomato fields in recent years are largely attributed to *Phytophthora capsici* (Fig. 2).

Here are six tips to manage buckeye rot in 2022:

### 1. Apply fungicides preventatively at early fruit set

In strip trials conducted in commercial fields in 2018 and 2019, targeted fungicide applications began at early fruit set. This was around the last week of June or first week of July. Since it is unclear when infections are beginning, the strategy was to

protect fruit early to delay infections as long as possible. In 2019, we compared 5 targeted applications vs. 3 targeted applications, and both strategies reduced buckeye rot to similar levels (Table 1). These trials were harvested in mid-September so even with this number of applications, and ending several weeks before harvest, there was still a difference in yield. It is unlikely that waiting until symptoms appear in the field, often mid-August, will result in good control.

### 2. Use a 10-day application interval

A 10-day interval resulted in a reasonable level of control in commercial strip trials in 2018 and 2019.

### 3. Use fungicides with activity against *Phytophthora capsici*

The fungicides used in our research (Table 1) were applied in addition to a standard program targeting diseases caused by fungi (like early blight, anthracnose, septoria), so the 'control' treatment in this case is just the regular spray program. The products for buckeye rot will not control fungal diseases, but they will provide protection against late blight (*Phytophthora infestans*). Resistance management is extremely important when it comes to products targeting buckeye rot. Rotating chemical families is imperative to extend the life of the products currently available.

### 4. Review your irrigation management

Growers should ensure their irrigation water is not a source of inoculum. Surface water, such as ponds and streams, can be tested

for this. This can be an added cost, but it is always beneficial to know what you are putting on your crop. For information or assistance with water testing, please contact Amanda Tracey (OMAFRA Vegetable Specialist) at amanda.tracey@ontario.ca or 519-350-7134.

Method of irrigation is also an important factor. *Phytophthora capsici* can spread through splashing water from rain or overhead irrigation. When irrigating a susceptible crop, it is better to use drip irrigation to minimize the spread of disease.

### 5. Use a long crop rotation

Longer rotations will help reduce inoculum load. 'Longer' in this case means 4 to 5 years with nonhost crops (including but not

limited to other Solanaceae and cucurbits). This can be difficult for many growers, but the viability of *P. capsici* resting spores (oospores) declines dramatically after this period.

### 6. Maximize drainage

*Phytophthora capsici* produces a mobile spore called a zoospore. These swim in water, including saturated soils. Improving drainage through tiling and/or growing in raised beds will remove excess water quickly and minimize disease movement through the field.

Amanda Tracey, vegetable crops specialist, OMAFRA and Dr. Cheryl Trueman, associate professor, University of Guelph – Ridgetown Campus

## FOCUS: LOGISTICS AND TRANSPORT TECHNOLOGY

### Insulated reflective covers for harvest bins keep produce cool

Frosty Binz, a Colorado-based company, has launched its reflective covers for bulk containers and harvest bins.

The lightweight reusable cover reflects the sun's solar radiation while keeping the produce cool and moisture loss to a minimum. The cover consists of an outer layer of metalized film that reflects up to 95 per cent of radiant heat.

An inner layer of insulating bubbles resists conductive heat

flow and helps to keep fruit from being bruised. The last layer is composed of a sheet of clear polyethylene for added strength. The cover is made with FDA approved packaging materials.

The Frosty Binz reusable covers are available in two sizes to fit most bulk pallet containers and agriculture harvest bins. The covers can be purchased online at www.frostybinz.com and through authorized resellers. The reusable covers start at \$75.95 USD

depending on size.

Timothy OBrien, owner of Frosty Binz says, "The insulated cover is ideal for transporting temperature-sensitive agricultural produce and frozen foods to help meet cold chain requirement."

- Frosty Binz covers provide thermal protection for produce after harvest and during shipping.
- The insulated covers are reusable, lightweight, puncture resistant and water repellent.
- Helps keep freshly harvested



produce cool in the field.

- Covers are made with FDA approved packaging material

Frosty Binz LLC is located in Fort Collins, Colorado, specializing in reusable insulated reflective covers for harvest bins,

bulk containers, harvest lugs and intermediate bulk container (IBC) totes.

For more information and YouTube video, go to: www.frostybinz.com

FOCUS: LOGISTICS AND TRANSPORT TECHNOLOGY

# Northern communities challenge the best logistics teams

KAREN DAVIDSON

Where have all the people gone? It's a question that Dan Tukendorf contemplates as he magically coordinates weekly delivery of 15,000 pounds of fresh fruits and vegetables to Ontario's northernmost communities.

"The pandemic has exaggerated pre-existing issues," explains Tukendorf, program manager for the Ontario Fruit & Vegetable Growers' Association (OFVGA). "Northern Ontario has a smaller population to begin with so there's a smaller pool of people to attract to positions which have become more precarious during the pandemic. Business shutdowns resulted in truck drivers and warehouse staff in the food distribution industry finding more reliable work elsewhere. This had added to the shortage of truck drivers, a problem which existed before the pandemic due to the profession not attracting enough people to offset departures or retirements."

Supply chains have been stressed trying to navigate the ups and downs of school closures. At full throttle, the Northern Fruit and Vegetable Program serves 80,000 students at 500 schools ranging from North Bay and Parry Sound up to the Hudson Bay coast and west to the Manitoba border.

Some trucking companies have shifted from foodservice deliveries – a low-margin business at the best of times – to other industries. At times, warehouses have had to operate at reduced capacity for lack of staff. In one isolated case, complaints of sub-par product were traced back to a sub-contractor who used "dry vans" instead of refrigerated trucks for delivery – all due to a driver shortage.

As Tukendorf explains, some of the fresh-cut produce they supply has a five-to-seven-day shelf life, requiring strict cold chain adherence. Whole apples and carrots can handle more variability but they still need to be handled well so that quality is not affected.

Since 2018, funding from Ontario's Ministry of Health has allowed the program to expand from northeastern to northwestern Ontario. Value of product is now \$2.3 million over the six months of operation. So it's been no small task to juggle logistics and transportation every week. Tukendorf works closely with OFVGA program coordinator Ben Murray to ensure there is real-time communication with all program stakeholders regarding delivery delays, menu changes or product shortages.

"We're used to the challenges of weather events or marketing

conditions, but the pandemic has created other problems," says Tukendorf. "At one point, the shortage of consumer goods meant a two-to-three month wait list for refrigerators to be delivered to participating schools.

Going forward, there's no quick fix for the Northern Fruit and Vegetable Program that runs January to June. Tukendorf will be exploring new logistics and distributor partners in Winnipeg that might deliver to

northwestern Ontario using existing trade routes. Fort Frances, Kenora and Dryden continue to be challenging destinations.

In northern communities, product shortages and distribution challenges are a way of life. Tukendorf, a parent himself, would like to change the story, just a little, with fresh fruits and vegetables for school kids.



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## GREENHOUSE GROWER

## Automated smart system lessens grower workload in the greenhouse



On May 11, Blue Radix executives visited Vine Fresh Acres, Leamington Ontario. L-R: Rudolf de Vetten, chief product officer; Jake Neufeld, owner, Vine Fresh Acres Ltd.; Ronald Hoek, CEO; Karen Davidson, editor, The Grower.



Rudolf de Vetten, chief product officer, Blue Radix, is based in Rotterdam, Netherlands. Photos by Reece Early.

As the labour shortage intensifies, greenhouse growers are increasingly looking for alternatives to help fill critical positions. This issue prompted the Ontario Greenhouse Vegetable Growers (OGVG) to partner with Blue Radix, a Dutch company that has developed an

autonomous growing program called Crop Controller to automate many management tasks in the greenhouse.

With support from the Greenhouse Competitiveness and Innovation Initiative (GCII), the partners are evaluating how the Blue Radix system could be

adapted and implemented in Canadian greenhouses.

“We’ve been getting a lot of interest from our members about how automation and artificial intelligence can help address the labour shortage, particularly in critical, skilled positions, like growing,” says OGVG

innovation, adaptation & plant protection lead Niki Bennett. “It takes a long time to become a really good grower, and this system gives a grower the information they need to help make decisions without having to be physically in the greenhouse.”

Three Ontario greenhouse vegetable growers have participated in the environmental crop monitoring project. One of the initial steps involved analyzing historical data for each greenhouse, then integrating Crop Controller into their existing digital management systems. Crop Controller uses internal and external climate data, the growth phase of the crop, the irrigation strategy and other information to automate decisions related to managing crop growth.

According to Bennett, all growers need to do is monitor and verify, freeing up their time to concentrate on other tasks. As well, Crop Controller documents its activities and learns on the go, adapting to grower feedback to refine the accuracy of its decisions.

“Part of the project was also to discover what the learning curve is for growers with this type of system and whether it actually helps them the way we think it could,” she adds. “As an organization, we are interested in knowing how OGVG can best support growers transitioning to an autonomous system, such as partnerships like this where they can learn and practice in a de-risked environment.”

Although labour has long been a critical pain point for the greenhouse industry, COVID-19 has put heightened urgency on finding affordable, effective, and efficient solutions; they’re considered vital to post-pandemic recovery.

“Automation is a rapidly evolving field and to remain competitive, growers are often expected to make increasingly complex decisions without a lot of

validation that these technologies work,” says Doug Alexander, chair of the Agricultural Adaptation Council which delivers the GCII. “This project is a great example of a successful public-private partnership that is helping the greenhouse industry adapt to a new technology that will enable sustainable growth and long-term resilience.”

Automating many of the critical decisions related to growing a crop can be a way to attract young people into the industry, for example. It also means a farm business can continue operating even if key employees are absent or leave the company.

“Labour shortages are tough to manage, and automation is a solution that growers have told us is important,” adds Bennett. “Without the GCII funding, we wouldn’t have been able to undertake this project and show companies like Blue Radix that they can partner successfully with OGVG for positive outcomes. We are able to do more together than either of us on our own.”

“Automation and artificial intelligence projects are the kinds of innovative solutions that will generate efficiencies and make our sector more competitive into the future,” says Lisa Thompson, Minister of Agriculture, Food and Rural Affairs. “Ensuring our greenhouse growers have access to new technologies and strategic solutions is the reason behind cost-share initiatives like this.”

This project is supported through the Greenhouse Competitiveness and Innovation Initiative, a cost-share program funded by the Ontario Government and delivered by the Agricultural Adaptation Council, on behalf of the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA).



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GREENHOUSE GROWER

## First greenhouse-grown melon is launched

Here's a first. A personal-sized, greenhouse melon is being launched by Leamington-based Pure Flavor. The personal-sized, green-fleshed melon is named Solara – for the tropical sun.

“After many years of research and development, we are excited to bring the first commercially available greenhouse-grown melons to market,” said Jamie Moracci, president. “While many varieties had been put through rigorous product testing since the development process began in 2014, the company has homed in on an exclusive variety that is scalable and checks all the boxes to meet product, brand, retail, foodservice, and consumer expectations.”

Partnering with Cornell University during the product development process, Pure Flavor's R&D team was able to gain valuable insights on both product and plant health to help maximize yield and most importantly, flavour.

Mildly cool, sweet, and juicy, Solara's are the first personal-sized, sustainably grown melons from greenhouses that use

just the right amount of light, nutrition, and water to deliver the same sweet tastefully tropical flavour, regardless of the season.

“It's paradise in the palm of your hand!” said Matt Mastronardi, executive vice-president. “Roughly 500g in weight, the sweetness and personal size of the Solara melon partners with foods such as prosciutto, shrimp, basil, mint, pistachios. Reducing food waste is a key product trait of the Solara melon as a single-serve opportunity; slice in half, easily

scoop out the small seed cavity and enjoy! The new personal-sized melons are available in both single and multi-pack formats.”

The launch will be supported with digital content that includes a wide variety of recipes.

For more detail, visit: [www.pure-flavor.com/Solara/](http://www.pure-flavor.com/Solara/)

Source: *Pure Flavor May 10, 2022 news release*



Chris Veillon, chief marketing officer, showcases North America's first greenhouse-grown melon in his new Pure Flavor office/kitchen in Leamington, Ontario. Photo by Reece Early.

## Greenhouse vegetable and fruit sales hit \$2 billion

Sales in the greenhouse vegetable and fruit sector were up 9.3 per cent to top \$2 billion, reports Statistics Canada in its first reporting of the 2021 landscape.

This increase in sales is mainly attributed to higher production of peppers (+16.1%) and tomatoes (+8.5%). Sales of cucumbers also increased by 12 per cent despite a decline in production.

Greenhouse operations supply more than domestic markets. In 2021, total exports of greenhouse tomatoes, peppers and cucumbers reached 489.9 million kg – an increase of 12.3 per cent over 2020.

Sales of greenhouse strawberries, only recently introduced to North American greenhouses, increased 19.1 per cent to \$18.5 million in 2021 due to higher prices (+11.4%) and production (+6.9%). Ontario is the largest producer of greenhouse strawberries with a total of 2.2 million kilograms produced in 2021.

For more in-depth information on employment and expenses, link here: <https://bit.ly/3LnkyOl>

Source: *Statistics Canada April 26, 2022 news release*



## Keep road safety at the top of your growing season checklist

As you prepare for another busy planting, growing and harvest season, it's important to put safety on the top of your checklist.

Here are some factors to keep in mind to ensure you and your farm team are safe this season:



When on the road with equipment, stay alert, stay on the paved portion of the road and stay off your smartphone.



Keep your speed at a maximum of 40km/h and signal well in advance when turning on and off busy roadways.



To guarantee you are visible to drivers, keep the lights on your farm equipment running from 30 minutes before sunset to 30 minutes after sunrise.



Be sure your slow-moving vehicle (SMV) sign is visible and present on all machinery travelling roadways. This includes tractors, combines, self-propelled vehicles, sprayers and any implement being towed.



Remember to stay hydrated, get adequate sleep, prepare for the weather conditions and take breaks to avoid heat stress, burnout and accidents.



Looking for more information?

Check out [ofa.on.ca/roadsafety](http://ofa.on.ca/roadsafety) for a list of tips and resources.

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## BITS & BITES

### Support for PEI potato seed growers



The Prince Edward Island government has announced new funding valued at \$3 million to support potato seed growers affected by ongoing trade suspensions. The Soil Building for Seed Producers project will focus on Best Management Practices (BMPs) on fields currently used for seed potato production.

“In our meetings with industry and the PEI Potato Board, the need for additional supports for our seed sector were identified, specifically so that those growers can assess and address alternative crops as they deal with ongoing

trade suspensions,” said Bloyce Thompson, minister of agriculture and land.

The project, developed with the PEI Potato Board, will focus on BMPs such as: incorporating new soil-building crops into rotations, extending rotations with soil-building perennial crops to increase carbon sequestration and to contribute to reducing net carbon emissions in the province.

“The board is very pleased to work with the province on the development of this project, as our seed growers still face a lot of uncertainty and challenges for 2022 and beyond,” said John

Visser, chair of the PEI Potato Board. “This project will help those most affected by the restrictions on seed movement to cover fixed costs while gaining some time to assess how they move ahead, and it is very positive that they will be able to take advantage of this support while benefitting the environment and soil health.”

The deadline to apply for the Soil Building for Seed Producers Project is June 30, 2022.

*Source: PEI Department of Agriculture & Land May 12, 2022 news release*

### Syngenta Canada bringing Envita nitrogen-fixing bacteria product to Canada for 2023

Syngenta Canada Inc. has secured exclusive rights to distribute Azotic Technologies’ nitrogen-fixing biological, Envita, in Canada. Providing a continuous source of nitrogen where and when plants need it, the product is registered for a broad range of row and specialty crops including potatoes.

Envita is a liquid nitrogen-fixing biofertility product featuring a food-grade strain of the bacteria *Gluconacetobacter diazotrophicus*. When Envita is applied in-furrow or as a foliar treatment, the bacteria form a symbiotic relationship with the plant and ultimately grow with it over time. The bacteria begin fixing nitrogen from the air soon after an Envita application – a process that occurs within cells of the plant’s leaves and roots and continues throughout the season. This provides plants with an additional source of nitrogen where and when it’s needed the most for yield, supplementing the supply of nitrogen available from fertilizer treatments.

Envita is registered for use on a wide range of crops, including but not limited to corn, canola, cereals, soybeans, and potatoes.

“Syngenta is excited to offer this new and innovative biological solution that gives growers more choice in how to manage their crop,” says Nathan Klages, biologicals business manager with Syngenta Canada. “Envita technology will help growers pushing for higher yields enhance their standard fertility program with systemic, season-long nitrogen in

the right place at the right time.”

Field-scale trials conducted across Canada over the past two years have shown crops treated with Envita outyielded untreated checks approximately 80 per cent of the time.

“Our agreement with Syngenta signals the next phase of growth of Azotic and the Envita product line,” says Ray Chyc, CEO of Azotic Technologies. “The strength of Syngenta in Canada combined with the leading nitrogen-fixing power of Envita offers growers and retailers the best of biofertility performance, expertise and support.”

“Envita is a strong addition to

the Syngenta Biologicals portfolio. It demonstrates our commitment to provide growers with industry-leading biological products and expands our nutrient use efficiency portfolio; and it’s all backed by the unmatched expertise, service and support they’ve come to expect from Syngenta,” Klages says.

Envita will be available from Syngenta for the 2023 growing season.

For more information about Envita, please visit the Envita product page, contact your local Syngenta sales representative, or call the Customer Interaction Centre at 1 87 SYNGENTA.

## SCENE ON TWITTER

John  @kowalchukfarms1 · 8h

The importance and broad reaching impact of the Haber-Bosch process and the invention of synthetic fertilizer will be widely recognized over the next few months

It has allowed a relatively small number of producers worldwide to feed billions

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## CROP PROTECTION

## Horticultural insights from Portugal and Morocco



**CHRIS DUVELSHOFF**  
CROP PROTECTION ADVISOR,  
OFVGA

For a change in perspective, I'm highlighting my recent agricultural tour of Portugal and Morocco.

I have been a participant in the Advanced Agriculture Leadership Program (AALP) by the Rural Ontario Institute for the past two and half years. As a member of AALP Class 18, there is a long history of this program in Ontario, going back 38 years to the mid '80s. It is an 18-month experiential executive leadership program for those interested in the future of the agriculture and food industry and who want to make a positive difference in rural communities across Ontario.

Our leadership journey as a class began in September 2019. As an experiential program, you can imagine our plans had to change immensely over the course of the pandemic. Seven seminars and two study tours later, Class 18 officially graduated from the program on April 30, two years and seven months after our initial seminar.

As the final objective of the program, Class 18 participated in an international study tour of Portugal and Morocco from March 26 to April 5 to enhance our global perspective on agriculture, trade, politics and culture. A few highlights may be of interest to the readers of **The Grower**.

Our time in Portugal was brief, only two and half days. However, it was a full agenda of interesting visits including an apple and pear producer, vegetable packing plant, precision corn producer, and a fly larvae-based composting facility – a story for another day.

One of our visits in Lisbon was meeting with two prominent farm associations, the Confederation of Farmers of



**Strawberry farm in Morocco. The greenhouse behind the strawberry field is a covered banana plantation. Many of those around too.**

Portugal (CAP) along with the Portugal Fresh association. CAP represents 250 individual agricultural organizations from across the spectrum of Portugal's national agriculture sector. Active at both the national and European Union (EU) level, CAP engages governments advocating for policies that support Portugal's agriculture sector.

Goncalo Santos Andrade from Portugal Fresh summarized the association's mandate to promote the consumption and export of Portuguese-grown fruits, vegetables and flowers both nationally and internationally. The horticultural sector is one of the main activities of agriculture in Portugal with its Mediterranean climate. Wine is the biggest agricultural export from Portugal to Canada. However, one fresh fruit export to Canada is Pera Rocha (translation rock pear), a pear variety known for excellent storage life.

Interestingly, both CAP and Portugal Fresh discussed agricultural issues that share many common themes with those facing Canadian farmers including: aging of farmers and access to labour, market concentration of large retailers, rising input costs and shortages, and the need to balance environmental and sustainability goals with production economics and food security. Lastly, it was discussed how the current war in Ukraine may be shifting EU policy from a heavily environmental focus in the "farm to fork" strategy towards promoting food security in light

of the reliance on agricultural imports from Ukraine and Russia by many EU member states.

"What's going on in Ukraine is going to change our whole approach, and our view on the future of agriculture," said EU Commissioner for Agriculture Janusz Wojciechowski in the European Parliament. "We have to have a return to food security."

Travelling south to the northern shores of the Mediterranean, I found Morocco to be a beautiful and diverse country with increasing importance on the global stage. Our visits ranged from palm-lined streets in Morocco's capital city of Rabat, to high-intensity horticulture farms on the Atlantic coast plains, temperate tree fruit production in the Atlas Mountains, to the open blowing sands of the Sahara Desert. Far too much to discuss in detail here, but let's focus on a few items of note.

One of our visits included a stop at the BAYTI farm school in Kenitra. Established in 1995, BAYTI is a non-profit, non-governmental organization, which works in Morocco for the protection and support of children and young people in difficult circumstances. One initiative is the farm school program helping youth develop marketable skills to enhance their life outcomes. One of their main crops is strawberries. Very modern, day-neutral strawberries are grown on plastic with row covers, much destined for export.

A lot of new growing technology and agricultural investment is occurring in



**The Confederation of Portuguese Farmers offices in Lisbon**



**Atlas Mountains in Morocco**

Morocco. Located only one day away from ports in southwest Europe, with a robust labour force, on the same latitude as central California, and with a Mediterranean climate strongly influenced by the Atlantic Ocean, it is well suited to the production of fruit and vegetable crops – limiting factor being water. Unsurprisingly, the Moroccan government is investing heavily into irrigation management.

Morocco also holds a critical trump card in the future of global geopolitics, and it's something Canadian farmers use by the

tonne – phosphorus. Morocco is already the second largest rock phosphate miner after China, and accounts for more than a third of global exports through its state-owned company OCP Group. Importantly, more than 70 per cent of the world's remaining phosphate reserves are found within its borders. If the world wants access to phosphorus fertilizers in the future, it will have to get along with Morocco.

You can find out more about AALP from the Rural Ontario Institute [www.ruralontarioinstitute.ca](http://www.ruralontarioinstitute.ca).

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CROP PROTECTION

# Emergency use approved for labelled weeds in carrots

JOSH MOSIONDZ

The Pest Management Regulatory Agency (PMRA) recently announced the approval of an Emergency Use Registration (EUR) for Tough 600 EC herbicide for control of labelled weeds on carrots in numerous provinces in Canada. This EUR for Tough 600 EC herbicide on carrots can be used only in British Columbia, Saskatchewan, Manitoba, Ontario, Québec, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador from May 1st, 2022, until December 31st, 2022.

Tough 600 EC herbicide was already labeled for management of weeds on a wide range of crops in Canada. This use will also be addressed as a future label expansion by an Agriculture and Agri-Food Canada – Pest Management Centre (AAFC-PMC) submission through the regional upgrade selected by the Maritime provinces at the 2022 AAFC-PMC ‘A’ priority setting workshop (pending favourable trial results and subsequent submission evaluation by PMRA). This EUR request was initiated by participating provinces in response to significant expected shortages of a key weed management tool in the 2022 field season which Canadian carrot growers traditionally rely upon for post emergence weed control.

The following is provided as an abbreviated, general outline only. Users should be making weed management decisions within a robust integrated weed management program and should consult the complete emergency use label before using Tough 600 EC herbicide.

Tough 600 EC herbicide has exhibited crop tolerance to carrots in development trials when used according to label

| Crop(s) | Target                    | Rate (L product/ha) | Application Information  |
|---------|---------------------------|---------------------|--|
| Carrots | Control of Labelled Weeds | 0.5 – 0.75          | Apply to actively growing carrots in the 2 to 7 leaf stage of crop growth. Use an appropriate spray volume that will provide sufficient coverage of the target weeds. Apply Tough 600 EC herbicide at the high rate when weed pressure is high or for harder to control weeds. Apply to carrots when the weeds are young and actively growing. Do not make more than one application to carrots. |

recommendations and rates. However, Tough 600 EC herbicide has not been tested on all carrot varieties for tolerance. Use the following considerations prior to applying Tough 600 EC herbicide to carrots:

- Test the product on a small area first, under local conditions and using standard practices, to confirm the product is suitable for widespread application.
- Do not apply if the crop is under stress caused by nutrients, disease, insects or climatic conditions.
- Apply to carrots which are actively growing, that have sufficiently hardened off and have a substantial waxy cuticle.
- Avoid irrigation in the three days prior to herbicide application.
- Delay application for three days after rainfall, cool, or cloudy weather to allow the crop to harden-off.
- Consult with your Belchim representative prior to adding any surfactants or tank-mix partners not specifically mentioned on the label.
- Do not apply Tough 600 EC herbicide when temperatures exceed 25°C, as crop injury may result. Application of Tough 600 EC herbicide is discouraged when the 24-hour temperature difference is >10°C, as this may increase the risk of crop injury.

This product contains an active ingredient and aromatic petroleum distillates, which are toxic to aquatic



organisms. Toxic to non-target terrestrial plants. Observe spray buffer zones specified under Directions For Use.

Follow all other precautions, restrictions, and directions for use on the Tough 600 EC herbicide.

For more information on weed management strategies for carrots during the 2022 field season, check the ONvegetables blog.

For a copy of the emergency use label, Ontario growers may contact Dennis Van Dyk, vegetable crops specialist, OMAFRA, Guelph (519) 766-5337, Kristen Obeid, horticulture weed management specialist, OMAFRA, Harrow (519) 965-0107, or Josh Mosiondz, provincial minor use coordinator, OMAFRA, Guelph (226)

971-3407. Non-Ontario growers from participating provinces may contact their local provincial minor use coordinator or provincial crop specialist(s). Alternatively, you may contact your regional supply outlet, Belchim Crop Protection Canada Representatives, or visit the PMRA label site.

*Note: This article is not intended to be an endorsement or recommendation for this particular product, but rather a notice of registration activity.*

*Source: Josh Mosiondz, OMAFRA minor use coordinator April 29, 2022*

# Elevate fungicide label expands for onions

JOSH MOSIONDZ

The Pest Management Regulatory Agency (PMRA) recently announced the approval of a minor use label expansion registration for Elevate fungicide for control of Botrytis leaf blight (*Botrytis squamosa*) in Canada. Elevate fungicide was already labeled for management of diseases on a wide range of crops in Canada. This minor use proposal was submitted by Agriculture & Agri-Food Canada, Pest Management Centre (AAFC-PMC) as a joint project with the United States Department of Agriculture (USDA) IR-4 project as a result of minor use priorities established by growers and extension personnel.

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

This product is toxic to fish and other aquatic organisms. Do not contaminate aquatic areas, including lakes, rivers, sloughs, ponds, coulees, prairie potholes, creeks, marshes, streams, reservoirs, wetlands, and

| Crop(s)                    | Target  | Rate (kg product/ha) | Application Information  | PHI (days) |
|----------------------------|---|----------------------|--|------------|
| Onion (green and dry bulb) | Botrytis leaf blight ( <i>Botrytis squamosa</i> ) | 1.12 – 1.7           | Apply the higher rate under conditions conducive for disease development. Repeat at 7-14-day intervals if conditions continue to favor disease. Do not make more than 3 applications per year. Applications can be made when conditions are favorable for disease development. Use sufficient water to obtain thorough coverage. | 1          |

marine/estuarine habitats through overspray, cleaning of equipment and containers, or disposal of waste. For the protection of non-target habitats, overspray or drift to sensitive habitats must be avoided. A buffer zone of 7 meters is required between the downwind point of direct application and the closest edge of sensitive aquatic habitats such as lakes, rivers, sloughs, ponds, coulees, prairie potholes, creeks, marshes, streams, reservoirs, and wetlands.

Follow all other precautions, restrictions, and directions for use on the Elevate fungicide label carefully.

For a copy of the new minor use label contact Travis

Cranmer, OMAFRA, Guelph (519) 835-3382, your regional supply outlet, or visit the PMRA label site [www.hc-sc.gc.ca/cps-spc/pest/registrant-titulaire/tools-outils/label-etiq-eng.php](http://www.hc-sc.gc.ca/cps-spc/pest/registrant-titulaire/tools-outils/label-etiq-eng.php)

*Note: This article is not intended to be an endorsement or recommendation for this particular product, but rather a notice of registration activity.*

*Photo by Glenn Lowson*

# Seeking Colorado potato beetles for testing

Attention all potato growers in Ontario, Manitoba and Alberta! Colorado potato beetles are the focus of a five-year national survey on tolerance levels to selected registered insecticides. Dr. Ian Scott is a research scientist with the London

Research and Development Centre at Agriculture and Agri-Food Canada (AAFC), and is the co-lead on this project.

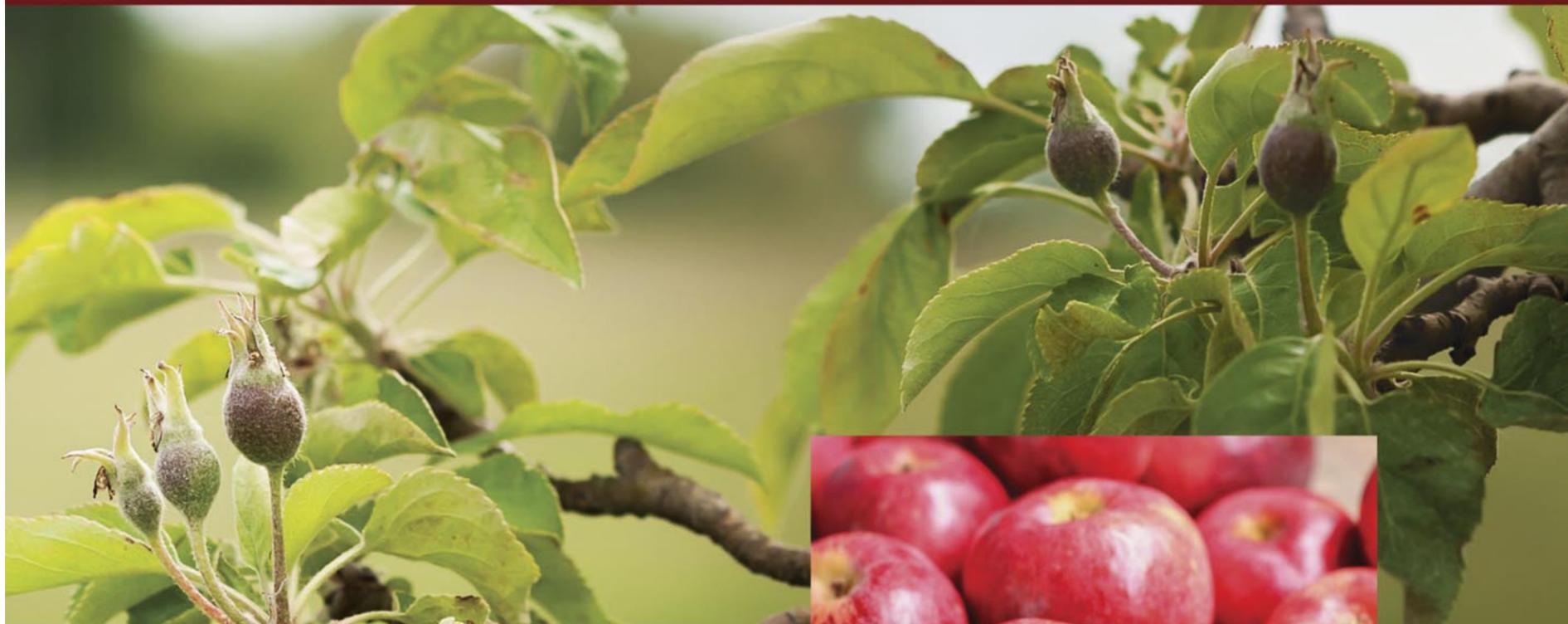
He is looking for approximately 150 “live” beetle adults and larvae per sample site. If you have a few you can spare, please

contact him and he will arrange for someone to come immediately to your farm and take some beetles off your hands. If you are outside of southwest/south central Ontario, a collection kit will be sent that can be returned by overnight courier

(pre-paid) to AAFC London, Ontario.

Please contact Ian Scott at [ian.scott2@agr.gc.ca](mailto:ian.scott2@agr.gc.ca) or Jessica Stokes-Rees at [jessica.stokes-rees@agr.gc.ca](mailto:jessica.stokes-rees@agr.gc.ca) for further information and to arrange delivery of the kits.

# Optimize Fruit Bulking with “Science Driven Nutrition”™



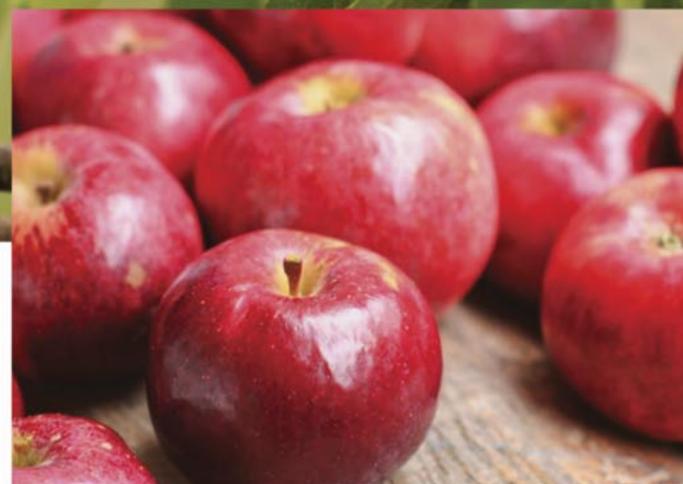
Growers have four main windows of opportunity to maximize their harvest as the apple crop's nutritional needs change through the season. Apple bulking, when fruit cells expand and the apple increases in size and weight, is an important opportunity to impact fruit development. Growers who use Science-Driven 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](http://www.agro-k.com).*

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