

## STATE OF THE APPLE UNION

# High-density orchards: more rewards, more risk



Thanks to high-density plantings, new production practices and harvest aids, growers are more competitive in a global industry. One such example is Tom Ferri harvesting Honeycrisp apples in a super spindle orchard near Clarksburg, Ontario. Photos by Glenn Lowson.

KAREN DAVIDSON

Tom Ferri has a quirky sense of humour when he compares his gnarled apple trees with the fruiting walls of his high-density orchard.

"This is Jurassic Park," he says, expertly twisting apples from atop a ladder in his old orchard. "We're only getting 25 bins to the acre and besides, it's a safety hazard being on ladders."

Ferri's reference is to the 1993 Steven Spielberg movie of Jurassic Park where dinosaurs

run amok in a theme park. Not everyone would agree with him but it's his metaphor for aging trees with old varieties that are handpicked. In the last decade, growers from coast to coast have transformed production practices, adopted harvesting aids and entered a New Precision Age.

Ferri and his wife Karen now manage 22 acres near Clarksburg, Ontario in an exceptionally dense orchard of 2,500 to 3,000 trees to the acre. He first saw the super spindle system in British Columbia

back in the late 1990s and planted his own orchard in 2002. Since then, the gains have been multifold. Smaller acreage is required and full production is reached sooner. Rather than 25 bins to the acre, they are obtaining 50 to 55 bins per acre of high-quality apples. Perhaps the biggest benefit is less labour.

"We can use more automation," says Ferri. "There's easier management of crop load and lower use rates of crop protection products because the foliage is less dense."

It's not been without

considerable investment. Establishment costs of \$45,000 per acre are table stakes for converting to high-density. If Ferri had to change anything, he would have planted at 18-inch spacings rather than 18-24 inches. Why? For even more yield.

"The industry has matured with a new generation of growers," says Charles Stevens, chair of Ontario Apple Growers. "Ontario has a long way to catch up with high-density systems of a thousand trees and more to the acre. But in the future, it's a

certainty that robots will be picking apples in high-density orchards."

Abundant Robotics will be testing a prototype this fall in Washington state. Chief executive and co-founder Dan Steere says it's difficult to locate and identify mature fruit within a canopy and then pick it without turning it into applesauce. Unlike other competitive technologies such as claws or graspers, Abundant uses a vacuum to pull the apple from the branch.

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## AT PRESS TIME...

### Minimum wages rise this fall

rates now exists across Canadian provinces, ranging from a low of \$10.85/hour in New Brunswick to \$13.60 in Alberta.

Province	Hourly Rate	Effective Date
British Columbia	\$11.35	Sept. 15, 2017
Alberta	\$13.60	Oct. 1, 2017
Saskatchewan	\$10.96	Oct. 1, 2017
Manitoba	\$11.00	Oct. 1, 2015
Ontario	\$11.60	Oct. 1, 2017
Quebec	\$11.25	May 1, 2017
New Brunswick	\$11.00	April 1, 2017
Nova Scotia	\$10.85	April 1, 2017
Prince Edward Island	\$11.25	April 1, 2017
Newfoundland	\$11.00	Oct. 1, 2017

Five provinces are set to raise minimum wages this fall with British Columbia leading the way. As of September 15, the minimum wage in B.C. is \$11.35/hour, up from \$10.85/hour. The provincial NDP government has indicated its intent to form a Fair Wages Commission that would study future increases. The terms of reference have been modified to plan for a minimum wage of \$15/hour by 2021.

“Most growers can absorb that increase over a period of time,” says Fred Steele, chair of the 500-plus member British Columbia Fruit Growers’ Association. “It’s going to be a time release capsule in contrast to what Ontario is trying to do all at once.”

Ontario’s minimum wage rises to \$11.60/hour on October 1 with plans to go to \$14/hour on January 1, 2018 and \$15/hour on January 1, 2019. That legislation has not yet been ratified.

A patchwork quilt of labour

### Aftermath of Hurricane Irma

Hurricane Irma’s devastating impact to Florida’s \$1 billion produce industry is yet to be calculated while transport logistics are experiencing a major shudder throughout the eastern half of North America. As of September 15, it will still take days for fuel trucks to restock gas stations throughout the sunshine state. Growers and shippers to the integrated North American produce industry felt the jolt immediately.

“There was a big ripple to the well-oiled machinery of the industry,” says Jack Streef, Streef Produce. “We have no orders.”

The Streef operation at Princeton, Ontario supplies fresh green beans and potatoes to stateside businesses. With no immediate customers in the U.S., produce is now diverted to the

Ontario Food Terminal in Toronto.

“This back-up affects pricing and it will be a week to 10 days before returning to normal,” predicts Streef. In beans alone, the disruption affects two to three plantings.

“Rates to take Canadian product down the U.S. southeastern states and Texas have been quite high before the hurricanes hit due to the seasonality,” says Jennifer Morris, Two Roads Logistics, based in Toronto. “That’s typical for this time of year. However I foresee rates staying high due to the demand for support and replenishment.”

Due to the earlier crisis of Hurricane Harvey in Texas, southeastern U.S. distribution centers led by Atlanta were shipping product westward to Houston. That diversion meant less capacity for the northeast, which pressured midwest distribution centers in Ohio and Chicago, Illinois. What was first perceived as a regional crisis in Texas and then Florida, has spread far beyond.

In Florida itself, fruit and vegetable damage depends on the crop and timing of planting or harvest.

Preparations for tomato and strawberry planting -- such as plastic ground covering and irrigation systems -- fell victim to the category 4 storm. The Florida Fruit and Vegetable Association (FFVA) predicts that the tomato crop will be light in November, but should recover again for December.

## NEWSMAKERS

Congratulations to **Doug Whitty**, Whitty Farms and 13th Street Winery, St. Catharines, Ontario, who has been named Grape King 2017. He’s the 62nd Grape King to be honoured by the Grape Growers of Ontario for his industry leadership and vineyard expertise.



Doug Whitty, Grape King 2017.

Hailed as the Okanagan Valley’s great wine pioneer, **Harry McWatters** marked his 50th vintage on August 28, 2017 with the very first crush at the new TIME Winery facility in downtown Penticton. McWatters is credited with laying down the foundation that would build British Columbia’s wine industry into the award-winning, internationally-recognized, \$3 billion industry it is today.

Federal opposition leader **Andrew Scheer** has named **Luc Berthold** as agriculture critic in his shadow cabinet. Elected in 2015, the MP represents the Quebec riding of Megantic-L’Erable.

Congratulations to **Dr. Tracy Shinnars-Carnelley**, P.Ag who has been promoted to Peak of the Market’s Vice President Research and Quality. Since she joined the organization eight years ago, she has opened a 40-acre research, education and quality enhancement site in southern Manitoba and strengthened quality assurance and control programs. Changing her title from director to vice-president recognizes her contributions to the senior management team.

The Canadian Horticultural Council has announced that **Caleigh Irwin** has accepted the position of manager, crop protection. With a background in applied entomology, she has been working in Canadian crop protection since 2008. For the past six years, she’s been working at a Toronto start-up where she managed the biological research and development of crop protection products for use in Canada and the United States.

Penticton, British Columbia will host the run-off for the 2017 Outstanding Young Farmers program on November 30 to December 3. Horticulture is well represented by Ontario’s **Dusty Zamecnik**, strawberry propagator and blueberry grower as well as Quebec’s **Veronique Bouchard** and **Francois Handfield**, organic vegetable producers.

## INTERNATIONAL

### CPMA and The Wilson Center host NAFTA event

The Canadian Produce Marketing Association (CPMA), along with the Canada Institute at The Wilson Center, hosted a panel discussion and reception in Washington, D.C. on September 18 to discuss NAFTA and its impact on the fresh produce industry. The event was well attended by members of the fresh produce industry and government officials from all three NAFTA countries.

The panel, comprised of industry and government representation from each NAFTA country, discussed issues of concern, collaboration and the path forward for each country during negotiations.

“As a business owner and grower, it is clear that NAFTA benefits all three countries,” said Jan VanderHout, Ontario Fruit and Vegetable Growers’ Association chair. “NAFTA 2.0 is an opportunity for us to modernize and strengthen this vital trading relationship.”

While the U.S. currently enjoys a \$2 billion trade surplus with Canada, CPMA has articulated areas for improvement, including: customs automation procedures, creation of a single-access window at one entry point for importers and exporters and special customs procedures for express shipments. CPMA is also in favour of a perimeter approach to trade in order to shrink the border and ensure shipments can flow through smoothly given the perishability of fresh produce. CPMA is also promoting further harmonizing of sanitary and phytosanitary requirements based on science.

For more information on CPMA’s NAFTA advocacy efforts, go to: <http://www.cpma.ca/advocate/advocacy/nafta>



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COVER STORY



conventional orchard



high-density orchard

VS

## High-density orchards: more rewards, more risk

Continued from page 3

None of that near-term technology would be possible if orchards weren't precision-planted to the inch. As in Tom Ferri's orchard, the new architecture is vertical rather than horizontal, where apples are trained to reach for the sky as quickly as possible.

What used to be a low-capital industry now requires high inputs, Charles Stevens points out. And the risks have amplified. New apple varieties are coming on stream but there's a downside if consumers don't catch on to the new variety.

Globalization has brought new varieties to the forefront such as New Zealand's Jazz apples and the United States' Rave apples. Those trends are resulting in decreased demand for varieties such as Golden Delicious. Canada, as a whole, is an importer of apples, bringing in 109 million kilograms more than it exports. The opportunity for Canadian growers is to expand their own domestic market and reduce imports.

British Columbia, for instance, must compete with Washington, the largest producer of apples in the U.S. Members of the BC Fruit Growers' Association (BCFGA) have been aggressively replanting under a successful provincial assistance program. The estimate for this season's crop is for a 3.6 million bushel crop, led by 1.6 million bushels of Gala and 820,000 bushels of Ambrosia – two of the

top-ranked consumer favourites.

"Our apple industry is growing by acreage," says Fred Steele, chair, BCFG. "After 32 years of decline, we've seen increases in the last three to four years. We have one grower with apples specifically for the cider industry."

Steele has not been shy in pointing out that success to federal agriculture minister Lawrence MacAulay. "We're now growing apples in six provinces including the minister's own Prince Edward Island riding," says Steele. As a member of the Canadian Horticultural Council's (CHC) Apple Working Group, Steele is advocating for a national replant program that would suspend the interest costs on replanting expenses for five years until trees come into full production. If implemented, the program would alleviate costs of \$6,000 to \$7000/acre.

"We've created the optimism," says Steele, "and that's a feeling that's contagious."

That government assistance is needed to accelerate the transition to high-density orchards. Without it, growers will be hard pressed to make the changes, especially as labour costs escalate rapidly.

"Transition is essential," says Brian Gilroy, chair of the CHC Apple Working Group, "or growers will exit the business."

*Editor's note: Thanks to the sponsorship of BASF Canada, go to our website at [www.thegrower.org](http://www.thegrower.org) to see The Innovative Grower video that illustrates this story.*

Canadian apple acreage and production (million tonnes)



Tom O'Neill, general manager, Norfolk Fruit Growers' Association, presented this graph at the U.S. Apple Outlook conference held in Chicago in late August.



Robots may be vacuum-picking apples in the not-too-distant future.

## NOTICE OF MEETING

is hereby given that the 159th Annual Members and Directors' Meeting of the **ONTARIO FRUIT AND VEGETABLE GROWERS' ASSOCIATION** will be held at the **HILTON HOTELS & SUITES NIAGARA FALLS/FALLSVIEW** 6361 Fallsview Boulevard | Niagara Falls ON L2G 3V9 **February 20, 2018**

Election of Directors of the Association will take place as well as dealing with resolutions and any other business that may arise.



## CROSS COUNTRY DIGEST

## BRITISH COLUMBIA

## BC winery strikes deal with Alberta sports franchise

TIME winery has announced its partnership with the Calgary Sports and Entertainment Corporation and South by Southwest Wine Imports of Calgary. The essence of the deal is to serve Okanagan wine to Flames fans while supporting the Flames Foundation. Penticton's TIME Winery will be the official wine supplier of the Calgary Flames and the Flames wine will also be sold at local retailers in Calgary.

TIME Winery's co-branded It's Go TIME Calgary Flames Pinot Gris and It's Go TIME Calgary Flames Cabernet Merlot(\$19.99

SRP each) will be the wines of choice at licenced venues across the Scotiabank Saddledome, the home of the Calgary Flames.

"Penticton is the summer home of the Flames and their fans, with some team members having summer homes here," explained Christa-Lee McWatters Bond, director of sales and marketing for TIME Winery. "They come to relax, enjoy outdoor activities, take in our dining scene and of course, explore Okanagan wine country."

Gord Norrie, VP sports property sales and marketing for the Calgary

Sports and Entertainment Corporation said the Calgary Flames have chosen to partner with TIME Winery considering the history of the McWatters family as pioneers in the British Columbia wine industry and pedigree of their wine-making ability and brand-building prowess.

Special retail promotions for the co-branded wines will be launched in Calgary, with proceeds supporting the Calgary Flames Foundation.

Source: *Town Hall Brands September 11, 2017 news release.*



## ALBERTA

## Average harvest predicted for seed potatoes

The Potato Growers of Alberta report that 10,000 acres of seed potatoes were planted this year, supporting an upward trend. Lamb Weston's new French fry processing plant in Richland, Washington opened this fall, supporting the optimism for seed potatoes.

It's too early to predict planting intentions for next year. For Jeff Ekkel, Sunnycrest Seed Potatoes, near Lacombe, Alberta, it's been an average year for his dryland farm where he grows 550 acres of seed potatoes.

"On average, I'm expecting 13 tons/acre but it depends on the variety," says the chair of

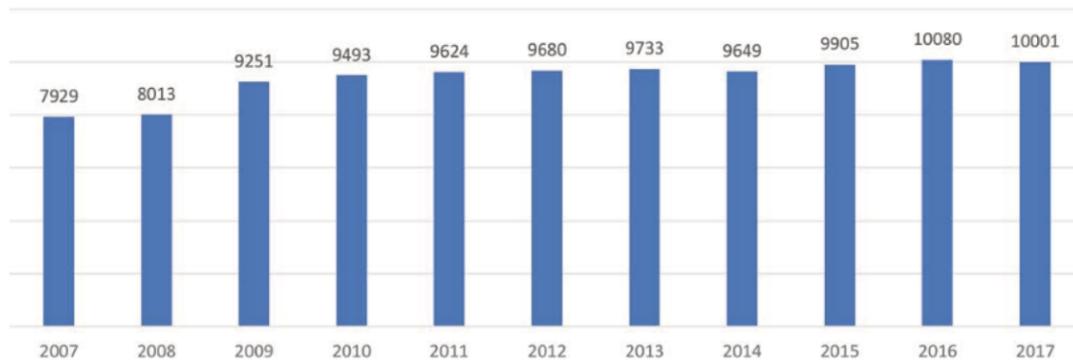
the Alberta Seed Potato Committee. "Most of my production, about 70 per cent, goes to the United States."

Demand for the popular French fry varieties, Russet Burbank and Shepody, is slowly changing, he says. Ekkel is growing a larger percentage of private varieties in order to hedge risks on oversupply of mainstream varieties.

The Alberta seed industry is looking forward to developing a potential offshore market in Thailand. Closer to home, it's also waiting for completion of a Cavendish Farms processing plant in Lethbridge. As recently as July, the federal government

announced \$11.2 million for wastewater facilities in the industrial park where the plant will be built. The plant will be up and running for the fall harvest in 2019.

Seed acres planted 2017



PGA's report engine indicates an equal amount of seed acres were planted this year compared to last year. With the low rainfall across the entire province this year, yields will certainly vary! This is especially true in the north, where most dry land producers are have not seen rain since June, but irrigation has helped to produce big seed crops. The report also shows 3,823 acres of table potatoes, and 39,553 acres of process potatoes were planted this year, both which are slightly higher than last year.

## QUEBEC

## Quebec hosts the national apple working group



Quebec hosted the mid-summer apple and orchard tour. Photo by Jennifer Gagne.

Quebec hosted the mid-summer apple tour on July 25 - 26. Highlights included:

- A discussion about the re-evaluation of Captan. Considerable action was taken following last year's Canadian Horticultural Council survey of a number of Canadian apple producers. Recently, the various associations answered a second questionnaire from the Pest Management Regulatory Agency (PMRA) in order to prepare arguments in favour of continuing its use in Canadian orchards.
- A proposal to make a video about the Seasonal Agricultural Workers Program, stressing the importance of these workers to the Canadian horticultural industry and highlighting the positive impact on the families of the workers. The Canadian Horticultural Council has

produced a video to ask for funding. Go here: <https://youtu.be/fGLSRkctfA0>

- A visit to Cataphard Orchards including Daniel Cormier who talked about practices to disrupt mating of the codling moth. Roland Joannin and Philippe Quinn talked about the apple of tomorrow.
- At a visit to the Marc Vincent Warehouse, Marilyn Courchesne presented the Agropomme Club. Chris Treville talked about Storex Industries.
- At a visit to Coeur de pomme orchard, Gérald Chouinard talked about an apple network. Éric St-Denis talked about double grafting, harvesting and weather stations.
- At a visit to Rochon et Frères Farm, Éric Rochon talked about the SALSA handling concept and staking.

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INTERNATIONAL

FRANCE

Bonduelle looks to North America



Bonduelle, the French vegetable processor, is focussing on North America for future growth. While consumer consumption of its frozen and canned products remains flat in Europe, its March 2017 purchase of Ready Pac Foods in the U.S. signals a more international perspective. In fact, the company's 2018 projections are for 50 per cent of its sales to come from North America.

With consumer trends shifting from the centre aisle to the periphery of the grocery store, Bonduelle is emphasizing fresh products, without losing sight of frozen and canned.

For more in-depth perspective, go to: <http://bit.ly/2vFWYp6>

ASIA

Hong Kong hosts Asia Fruit Logistica



In early September, Hong Kong hosted Asia Fruit Logistica, attracting nine Canadian exhibitors. They included: BC Blueberry Council, BC Cherry Association, BC TreeFruits, Consolidated Fruit Packers Ltd., Fresh Concept Canada Ltd., Global Fruit Brokers, Government of BC, SunSelect Produce, Windset Farms.

The Mid-Autumn Festival falls late this year on October 4. The BC cherry market will be tailing off and challenged to meet this opportunity.

Source: [FreshPlaza.com](http://FreshPlaza.com)

MAINE

Wild blueberries in short supply



The wild blueberry crop in Maine is projected to be 36 per cent lower this season, due to poor pollination and mummy berry disease. Prices have dipped to a 10-year low of 27 cents per pound to growers.

The smaller crop may have a silver lining in that it will counter balance the oversupply issues of the industry.

The U.S. Department of Agriculture has approved up to \$10 million to purchase surplus Maine blueberries, seeking to put a floor on prices.

Source: [FreshPlaza.com](http://FreshPlaza.com)

ITALY

Pears gaining ground



A promising array of pears will be displayed at Futurpera Expo to be held November 16 to 18 in Ferrara, Italy.

The show promotes the pear supply chain, showcasing different varieties grown in the Po Valley between Emilia-Romagna and Veneto. Expect to see Abate, Kaiser, Conference and Decana varieties. Germany remains a key market, however expo organizers are hoping to build awareness globally.

This season's dry growing season in Italy has resulted in high brix levels.

Source: [Futurpera.com](http://Futurpera.com)

BELGIUM

Third time for Strawberry Congress



The third international strawberry congress mixed science and business to attract participants to Antwerp from September 6-8. Norwegian researcher Anita Sonstebj talked about the environmental control of flowering and dormancy in strawberries while Belgian researcher N. Gallace talked about reduced winter chill as a means to improve production potential of the late day-neutral strawberry variety, Verity. U.K. speaker S. De Laethauwer presented his case study on how to match ever-bearing production to a retailer demand curve.

For more information, go to: [www.iscbelgium.com/](http://www.iscbelgium.com/)

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## CANADIAN HORTICULTURAL COUNCIL

## Government officials visit seasonal workers

This past summer, government representatives visited Ontario's Norfolk County to observe the Seasonal Agricultural Worker Program (SAWP) first-hand. They came from: Employment and Social Development Canada (ESDC); Service Canada; Immigration, Refugee and Citizenship Canada (IRCC) and Agriculture and Agri-Food Canada (AAFC). The two-day tour stopped at 12 farms, including greenhouses and packing facilities.

Government officials picked the farms they wanted to visit to make sure they were seeing typical SAWP environments, not ones hand-picked by the tour organizers. At each stop, tour participants talked with workers in group and private settings, and visited several bunkhouses of different ages. There did not appear to be any abuse of workers, unacceptable housing, denied health care or deprivation of human rights, contrary to concerns recently reported in the media. Participants agreed that the tour provided an excellent

opportunity to learn and exchange information that can help improve program administration and support growth in the sector.

### Interdependence of SAWP workers and farmers

Academic evidence of how SAWP workers and the Canadian economy mutually benefit from one another has been provided by the Universities of Guelph and York, Agri-Food Economic Systems, and the Inter-American Institute for Cooperation on Agriculture (IICA). The evidence states that, for every worker the SAWP employs, two full-time Canadian jobs are created elsewhere in the value chain.

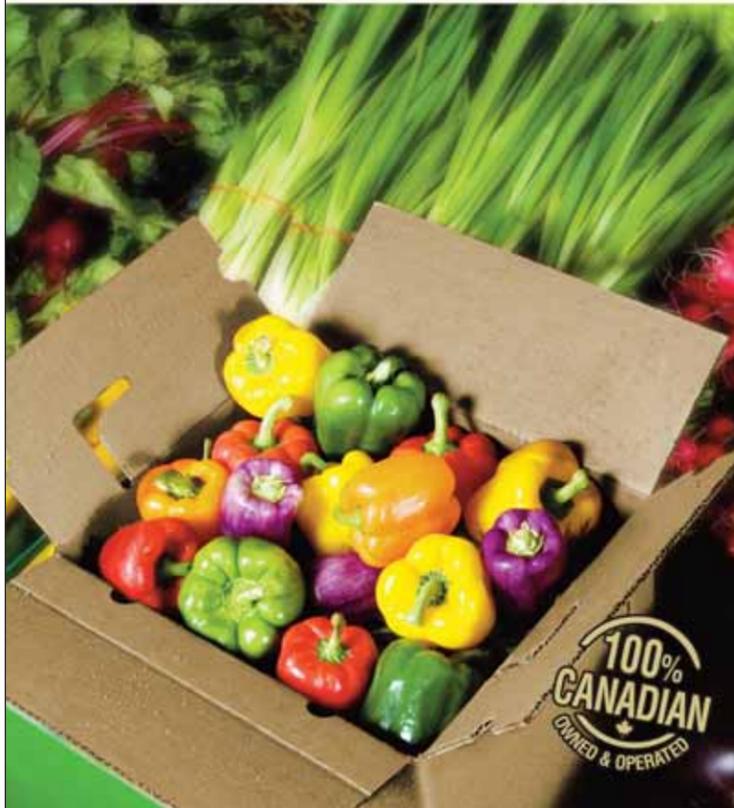
According to IICA, "the agri-food sector, just like other sectors, has become a global workplace. Canada's seasonal programming enables farm businesses to meet their seasonal labour needs, while providing economic support for workers from developing countries, with



Participants talk to SAWP workers and farmers. Photo: Janet Krayden (CAHRC)



WAXED CARTONS, COMMON FOOTPRINTS, BINS AND WAX ALTERNATIVES.



added potential of ongoing agricultural cultural exchange that allows for an exchange of ideas, innovation and technology." IICA research further reveals that "SAWP benefits to employees include increased opportunities to purchase homes and vehicles in the workers' home countries, [...] increased opportunities to educate their children, better healthcare, increased savings, and increased opportunities to purchase land and livestock."

### Making SAWP workers feel at home

To make their workers comfortable, farmers build seasonal housing, called bunkhouses, that are strictly regulated by municipal and provincial building codes and are regularly inspected. One farmer on the tour had recently finished a \$300,000 retrofit to his old home for his seasonal workers, following Ontario building code and municipal regulations, after he had moved himself and his family into a smaller house.

The retention rate of SAWP workers is remarkable, with many workers returning to Canada for more than 40 years to help harvest fruits and vegetables. Murray Porteous of Lingwood Farms and chair of the Canadian Horticultural Council's labour committee

emphasized how "important it is to treat your workers with respect. These people have become like extended family for those of us on the program." Tour participants met workers who have chosen to come to Canada on the SAWP for more than 45 years.

The communities which host the workers also try to make them feel at home. In Norfolk County, the community has reached out to welcome workers and is increasing its multicultural activities. The workers make regular visits to town where they participate in local church services (the local church pays for a pastor from the host country to come for special services), festivals, game nights and soccer tournaments.

Seasonal workers from Jamaica return to the same Canadian farms year after year. This year, a Canadian who is deaf but wanting to work hard, also joined Lingwood Farm.

### Why the SAWP is critical to Canadian agriculture

SAWP employees come from Barbados, Eastern Caribbean, Jamaica, Mexico, Trinidad and Tobago to help care for and harvest fresh fruit and vegetables destined for Canadian tables.

According to Porteous, "On our family farm, we rely on Jamaican workers through the SAWP to fill our vacancies. We

hire approximately 80 workers on a seasonal basis. Of the Canadian applicants we get every year as a result of advertising, only one person has shown up for an interview in the past 10 years." He further explained that "without access to foreign seasonal workers, our farm would be out of business immediately and the full-time Canadian workers at the fruit packing plant would be out of a job too."

Research conducted by the Canadian Agricultural Human Resource Council (CAHRC) shows that the labour gap in 2014 for horticulture commodities was 35,700. The SAWP in 2014 enabled Canadian farmers to successfully fill this seasonal labour gap with 35,000 seasonal workers. Over the next decade, fruit and vegetable farmers' challenges to find workers will intensify as the domestic workforce is anticipated to continue shrinking. By 2015, this labour gap is expected to increase to 46,500 for horticulture commodities. Over half (53%) of the work required on Canadian farms is seasonal. These are jobs that do not provide full-time, year-round work.

The Canadian Horticultural Council requests your support for an awareness campaign on the benefits of international farm worker programs. Go here: [youtu.be/fGLSRkctfA0](http://youtu.be/fGLSRkctfA0)



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## TRADE NEGOTIATIONS

## Risk and reward: Food safety and NAFTA 2.0

RORY McALPINE AND  
MIKE ROBACH

*Editor's Note: Just prior to the third round of NAFTA renegotiations from September 23 – 27 in Ottawa, the Canadian Agri-Food Policy Institute partnered with the Canada Institute of the Wilson Center to publish a document on the opportunities in the area of food safety. It's designed to stimulate debate.*

*Following are excerpts. The entire eight-page document can be found here: [http://www.capi-icpa.ca/pdfs/2017/CAPI\\_NAFTA\\_2.0.pdf](http://www.capi-icpa.ca/pdfs/2017/CAPI_NAFTA_2.0.pdf)*

Canada and the U.S. acting together created the International Joint Commission in 1912 to protect our shared waterways. Is this the moment in our collective history to jointly move to protect our shared food supply?

Taking advantage of NAFTA renegotiation, there is an opportunity to re-examine cross-border structures.

Whether Canadians are enjoying leafy greens from Yuma, Arizona, Americans are enjoying maple-flavoured bacon from Quebec or we are both

enjoying jumbo shrimp from Thailand, a Canada-U.S. “food safety risk assessment organization,” as an outcome of NAFTA renegotiation, could strengthen food safety and business competitiveness while being an example to the world.

### Lessons from abroad

So what could a solution look like? Certainly NAFTA 2.0 should have a stronger Sanitary and Phytosanitary (SPS) chapter, likely modeled on the SPS chapter that was agreed to in the Trans-Pacific Partnership (TPP) negotiations which expands on World Trade Organization (WTO) SPS rules. The emphasis should be on ensuring fair, transparent and science-based standards, conformity-assessment procedures, and SPS regulations while eliminating measures that are discriminatory.

But looking beyond typical SPS and Technical Barriers to Trade (TBT) disciplines and “technical working groups” (largely dormant under NAFTA 1.0), we can be more ambitious when it comes to scientific risk assessments for food and feed safety and possibly animal

health.

Lessons can be learned from the European Union, which more than 10 years ago created the European Food Safety Authority (EFSA). EFSA has become an integral part of the EU’s food safety system, providing world-class, up-to-date and fit-for-purpose scientific advice to member countries. It has helped to build the EU’s scientific assessment capacity and knowledge community and informed the making of science-based regulations and standards in all of the EU countries.

NAFTA renegotiation presents an opportunity to strengthen food (and feed) safety outcomes by establishing a new joint “food safety risk assessment organization” to (i) undertake science-based food safety risk assessments using common data (hazard identification, hazard characterization, exposure assessment and risk characterization), (ii) recommend best practices in food safety risk management along the farm-to-fork continuum; and (iii) collect, analyze and communicate food safety knowledge for the

benefit of consumers, government agencies, food producers, exporters and importers.

### From water to food safety: A history of collective solutions

NAFTA is now 23 years old. In that time, food safety risks, continental and global integration of food systems and the pressure on U.S. and Canadian food safety regulatory agencies have grown in equal measure. While some Americans might look enviously at Canada’s single food inspection agency (the Canadian Food Inspection Agency), Canadians can admire the food safety knowledge of U.S. institutions like the Centers for Disease Control and Prevention.

The point is that we both have strengths and we do things better when we do them together. In the worlds of plant and animal health, the U.S. Environmental Protection Agency and the Canadian Pest Management Regulatory Agency achieved the first joint approval of a NAFTA harmonized label for a pesticide product in 2007 and two years ago Health Canada and the FDA did the first joint review

and approval of a veterinary drug for a food producing animal. But if we wind the clock back to 1912 we created the International Joint Commission to protect our shared waterways.

In 1955 we went a step further with the Great Lakes Commission because it was recognized that successful management of such a precious, shared source of freshwater demanded it. Our shared food supply is not much different. Whether it is protecting Lake Ontario from zebra mussels or doing a joint risk assessment of norovirus in mussels (which the FDA and Health Canada actually did in 2014), by doing the science together we are better off.

What the U.S. and Canada did more than 60 years ago for the Great Lakes we can now do for our food supply. NAFTA 2.0 gives us the opportunity.

*Rory McAlpine is senior vice-president, government and industry relations for Maple Leaf Foods Inc based in Toronto, Ontario. Mike Robach is vice-president, corporate food safety and regulatory affairs, Cargill Inc., based in Minneapolis, Minnesota.*

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# Will the tax changes announced on July 18, 2017 affect you and your family?



**JAN VANDERHOUT**  
CHAIR, OFVGA

Many farmers have, over the last number of years, incorporated their farm business. Sometimes this has been done with the intent of deferring tax by holding assets in a private corporation, or often to facilitate a smooth transition to their successors, whether in their family, to employees or perhaps others. Many have gone this route with support from Growing Forward 2 after taking the “Growing Your Farm Profits” workshop provided by our

government. This year, those years of succession and tax planning will be changing.

It has been in the news that the federal government is planning to change the Income Tax Act to “close tax loopholes” and “stop tax cheats” as well as increase taxation on “passive investments.” I quite naively paid little heed to this announcement as it sounded like it was a good idea. It is not a good idea! In fact, these tax changes will be a huge drain on small businesses across the country and the supposed tax cheats are in fact small business owners who are paying the tax they owe year after year.

The point of “sheltering” funds in a corporation is to defer tax allowing the owner(s) to retain more working capital. With more money to invest in the business the owner may hire staff or invest in new technologies to make the business run better. This can also allow the business to expand creating more value, jobs, production, and ultimately

wealth which sometimes is drawn out of the business and taxed at the appropriate personal tax rate. This is very similar to the concept of our personal RRSP on a larger scale. Like an RRSP, it is not really tax avoidance but a tax deferral. When we and our spouses are dead the entire balance of our RRSP is taxed as if it were income in that year and the government can take as much as 53 per cent of that money as income tax leaving our heirs with less than half of the money from the RRSP. Shares in a company above the capital gains exemption are dealt with similarly creating a huge amount of tax cost for those of us who are being succeeded by our family members.

Farm businesses do not have the revenue stream to finance the take-over of the family farm business by the next generation. A farm business worth \$10 million does not generate income to pay off a \$10 million bank loan. Farm businesses succeed for multiple

generations because families leave their financial resources in the farm to purchase land and equipment which quickly become part of the farm’s operating efficiency. To keep the farm fluid through generational transfers, holding companies and family trusts are set up to allow the businesses’ growth to accumulate for the next generation and make the purchase of the assets easier when the time comes to buy or take over the parent’s shares.

The proposed tax changes will have a huge impact on the family farm and the viability of passing the farm on to the next generation. I am quite concerned about the challenge this will add to farmers’ lives as we try to redesign our succession plans with the hope of keeping family farms viable for future generations. The proposed changes are very complex and add accounting costs as well as legal fees as farm business owners try to keep their businesses going in an age when it does not seem to

matter where our food comes from or who produced it. To make matters worse this was announced on July 18 with a consultation deadline of October 2. This is the absolute busiest 10 weeks of the year for everyone in agriculture.

There may be pieces of this legislation that are reasonable and with an appropriate consultation period a fair resolution should be attainable. To make changes of this significance, this quickly, is very disruptive to our businesses. If this new tax law is a concern, I would like to encourage you to make a phone call to your local MP requesting an extended consultation period. Sending letters to federal politicians may also make a difference.

This new tax law is nothing short of a tax grab from the businesses that fuel Canada’s economy. More consideration needs to be given to these changes before irreversible impacts take place jeopardizing the efficiency of the economic driver we call “small business.”

## WEATHER VANE



Strawberry Tyme, Simcoe, Ontario hosted the Ontario Berry Growers’ Association at a twilight tour on September 12. Here, participants Rudy (L) and Tom Heeman survey about 70 seasonal agricultural workers transplanting day-neutral strawberry plugs. Photo by Karen Davidson.

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PERSPECTIVE



# Farmers asked to provide much needed transparency



**OWEN ROBERTS**  
U OF GUELPH

New research results show consumers think the food system is headed in the right direction, but they have big concerns over the rising cost of food – and they want farmers to provide some answers about what’s going on.

This is the second year in a row food costs have topped the list of things on consumers’ minds. And it’s a timely finding. The results, from the Canadian Centre for Food Integrity, were released as September was waning, at the beginning of Hunger Awareness Week, an event distinguished by the fact that four million Canadians say they have trouble putting food

on the table.

Here’s the story. The centre asked more than 1,300 Canadians about their attitudes towards Canadian food, and the agriculture and food system.

Right behind the rising cost of food – just one percentage point, in fact – was consumers’ concerns over keeping healthy food affordable. Clearly, economic matters top consumers’ concerns. Lower on the list were climate change, the humane treatment of animals, and having enough food to feed Canada.

Perhaps some conclusions can be drawn between these findings, and another based on whether the food system is heading in the right direction or on the wrong track.

This year, 13 per cent more said they thought it was headed in the right direction, with seven per cent fewer saying it was on the wrong track, or that they were unsure.

This finding mirrors a readers’ poll in a major daily newspaper the same day the research results were released, that contained the exact same question. In just three days, 360 readers responded; 200 said

they thought it was going in the right direction, with the rest pretty evenly split between not sure and wrong track.

The centre’s survey also identified a wide range of participants that consumers believe are responsible for transparency, meaning the open-book approach to food production, telling consumers the five Ws and H about how their food is produced.

Canadians say the responsibility lies across the board, with food processors and manufacturers, government, farmers, grocery stores and restaurants. But overall, food processors and manufacturers ranked number one, and farmers came in second.

This is a problem for farmers.

Processors and manufacturers have public relations and communications machines at their disposal. However, neither farmers nor most players in the industry that supports them have traditionally dedicated much in the way of resources to explaining their actions to the broad public.

The sector is pretty good at communicating to itself; only now that research is showing



Next month’s Royal Agricultural Winter Fair, November 3-12, is an ideal forum for growers to reach out to consumers. NatureFresh Farms, for example, has brought its Greenhouse Education Center exhibit for several years.

consumers expect some transparency from farmers has agriculture paid attention. Interestingly, though, consumers think the food system is on the right track. How do they know? Surely not from the information put forward by anti-technology advocates, or by anti-animal agriculture activists. Maybe they’re finally finding some of the good sources available for credible information about farming, such as the food

integrity centre, and Farm and Food Care.

Whatever the case, there’s an opportunity for farmers to show how they’re trying to keep the public informed, using social media to tell the stories of planting, tending and harvesting.

On a broader scale though, who will proactively and accurately tell that story to urban Canada is a question mark. It’s a huge job.

BY THE NUMBERS

## 2017 Ontario grape price agreement reached

The Grape Growers of Ontario, Wine Council of Ontario and Winery & Grower Alliance of Ontario (WGAO) have successfully negotiated a grape price agreement for the 2017 harvest. This agreement recognizes the various price categories within the industry, and includes an important proviso for both processors and producers to actively participate in developing a sustainable industry-wide plan following harvest.

“The constant in our industry is the consistent grape quality our growers produce every year to make 100% Ontario grown wine. This agreement recognizes that growers, with their wine partners, can work together to collectively build and strengthen our grape and wine industry’s future,” said Matthias

Oppenlaender, chair, Grape Growers of Ontario.

“WGAO members purchase some 85 per cent of the grapes grown by independent farmers in Ontario for VQA and International Canadian Blend

(ICB) wines, and we are very pleased that grape growers and processors have arrived at an agreement for grape prices in 2017,” stated Del Rollo, chair, Winery & Grower Alliance of Ontario.

2017 prices for 10 varietals

Varietal	\$/tonne
Shiraz	\$2,247
Pinot Noir	\$2,010
Merlot	\$1,957
Cabernet Sauvignon	\$1,942
Cabernet Franc	\$1,732
Pinot Gris	\$1,723
Sauvignon Blanc	\$1,695
Gewurztraminer	\$1,677
Chardonnay	\$1,535
Riesling	\$1,505

Source: Grape Growers of Ontario September 6, 2017 news release.

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## Economic survival

BRUCE KELLY

In my last article in the May issue, I spoke about the crazy list of things that were happening in 2017 and how too much was changing too fast. Since then we can add the scheduled increase to minimum wage and changes to tax implications of family corporations. It seems the list of stressors associated with farming have reached a tipping point where the outcomes are anything but predictable.

The future of agriculture in Ontario will hinge – as it always has – on key economic underpinnings such as labour and energy costs. According to the minimum wage impact analysis commissioned by OFVGA (Agri-Food Economic Systems, 2017), labour costs in vegetable production have averaged 65 per cent of operating earnings over time. With the increase to Ontario's minimum wage, salary expenses would rise to more than 90 per cent of operating earnings in 2018. In 2019, salary costs would exceed operating earnings and completely wipe out any margins for most horticulture producers. Crops and products where labour is a higher proportion of expenses –

such as processing cucumbers or organic production – are particularly vulnerable.

These changes will shake all of agriculture, but particularly the greenhouse and horticulture systems, which depend heavily on paid labour. Inevitably, the increase in the minimum wage will hasten the trend toward mechanization. Seed planting, flat propagation, seedling transplant, tending, irrigation, harvesting, processing, and packaging will all move toward fewer people and more mechanized systems. More and larger mechanical planting and harvesting equipment will be needed to respond to this pressure as the math of man vs. machine undergoes a massive quantum shift.

Farming seems to be the collateral damage in the social engineering that is happening in Ontario but what other unintended consequences might result? Some obvious trends will be a loss of jobs, losses of production in the province followed by losses in processing, a lack of inputs for our food processing sector and ultimately more imported food. And it's not just agriculture: the wage increase will focus pressure on all businesses with high labour costs relative to product margins.

At a time when our diet is already lacking in fruits and vegetables, we will be driving fruit and vegetable production out of the province, decreasing our food security, increasing the carbon miles our food travels and destroying our local food markets. The 100-mile diet will be just too expensive for the average Ontarian.

The balance between the work of a person and that of a machine and what that machine might cost, is not new. Technological advances in machinery have always increased the amount of work that the operator could do in a given time, generally reducing the labour force required in that occupation over time. The proposed changes to the minimum wage immediately start to change the fundamentals of this decision for any business manager and tilt the balance toward the purchase of better technology and away from agriculture's traditional reliance on labour.

We've seen this before. Highly paid factory workers across North America have been steadily displaced by machines and robots over the last 10 years as competitive forces hit the auto industry. As increases to wages fundamentally change the man-machine equation, lower paid workers will be displaced from their jobs. Fast-food positions are quickly being eliminated as wages rise and machines become more adept at a wider range of activities. Who has now ordered at the McDonalds new self-order stations or mixed their soft drink at the new soft drink dispensers?

Exactly how horticulture responds to these changes in economic drivers will depend on a number of factors, including the cost and availability of new equipment that can do the work of manual labourers – as well as the intestinal fortitude of farmers to adopt that new technology.

There will always be markets, and markets represent an opportunity, but exactly how to adapt and survive in the new economic reality is unclear at

best.

For more information on environmental or animal welfare projects at Farm & Food Care Ontario, contact Bruce Kelly at [bruce@farmfoodcare.org](mailto:bruce@farmfoodcare.org)

*Bruce Kelly is programs manager, Farm & Food Care Ontario.*

## COMING EVENTS 2017

- Oct 1-4 Third Global Minor Use Summit and Second Global Minor Use Workshop, Fairmont Queen Elizabeth Hotel, Montreal, QC
- Oct 1 – 7 Ontario Agriculture Week
- Oct 3-5 Canadian Agricultural Safety Association Annual Conference, Edmonton, AB
- Oct 4-5 Canadian Greenhouse Conference, Scotiabank Centre, Niagara Falls, ON
- Oct 20-21 Produce Marketing Association, New Orleans, LA
- Oct 30-31 Advancing Women in Agriculture Conference, Hilton Fallsview, Niagara Falls, ON
- Nov 3-12 Royal Agricultural Winter Fair, Enercare Centre, Toronto, ON
- Nov 9 International Potato Disease Summit, Bangor, ME
- Nov 14-16 Potato Growers of Alberta Annual General Meeting, Sheraton Red Deer, Red Deer, AB
- Nov 14-16 Ontario Farm Fresh Marketing Association "Foodie Tour," New York City, NY
- Nov 16-18 Futurpera, Ferrara, Italy
- Nov 17 Ontario Produce Marketing Association Gala, Universal Event Space, Vaughan, ON
- Nov 17 PEI Potato Board Annual General Meeting, Charlottetown, PE
- Nov 20-22 Alberta Irrigation Projects Association 2017 Conference, Lethbridge Lodge Hotel, Lethbridge, AB
- Nov 28-30 Grow Canada Conference, Hyatt Regency, Calgary, AB
- Nov 30- Dec 3 Outstanding Young Farmers' National Recognition Event, Penticton Lakeside Resort, Penticton, BC
- Dec 5-7 Great Lakes Fruit, Vegetable and Farm Market Expo, Grand Rapids, MI
- Dec 6 CanadaGAP Annual General Meeting, Ottawa, ON
- Dec 6 Ontario Potato Board Annual General Meeting, Cambridge Holiday Inn, Hall C, Cambridge, ON
- 2018**
- Jan 10-12 Potato Expo, Rosen Shingle Creek Resort, Orlando, FL
- Jan 23-24 Nova Scotia Fruit Growers' Association Annual General Meeting and Convention, Old Orchard Inn, Greenwich, NS
- Jan 24-25 Manitoba Potato Days, Brandon, MB



## NOTICE OF MEETING

Notice is hereby given that the  
Annual General Meeting  
of the

**FRESH VEGETABLE GROWERS OF ONTARIO**

will be held in the Town of  
Woodstock, Ontario  
at the

Ontario Ministry of Agriculture, Food and Rural Affairs

December 12, 2017  
9:30 a.m. – 4:00 p.m

In the large boardroom  
Election of Directors of the Association, discussion of financial  
reports and any other business that may arise will take place.

Lunch will be provided.

Meeting details will be posted to the FVGO website as they become available.  
[www.freshvegetablesontario.com](http://www.freshvegetablesontario.com)

To register for the meeting please call the FVGO office, 519-674-1500 Ext 63592  
or email [mmcdonal@uoguelph.ca](mailto:mmcdonal@uoguelph.ca)

RETAIL NAVIGATOR

# Get the right price by understanding the market



PETER CHAPMAN

competitors are selling to their customers for.

### Understand your own costs

Too many producers accept the price they get or wait until the end of the year to add it all up and see what their costs were. It is tough, but you will always be in a better position if you are knowledgeable about your own costs. You can explain or justify prices better and also know when you can afford to go a bit lower to move the volume. Your cost of production should be a factor in your pricing decisions.

If you are in a category where your customers are looking for contract prices you will need to do this work prior to the season to forecast costing.

### Setting your right price

Determining your right price is like building a puzzle...

- You have turned over all the pieces so you can see the image side
- You have found all the edge pieces
- You have even found the four corner pieces

The challenge for you will be that there is no picture on the box, however you need to assemble the pieces. You have the information, now you need to determine the right price.

To get to the right price you need to consider the market and your own business.

1. Challenge yourself to determine what the market will pay, trying to ignore what you really understand it to cost.

2. Consider your costs of production and operating your business with a fair rate of return.

3. Find the right solution between these two, given everything else you know about the market.

Consider the following table as you make the decisions about how to price your products. Your bottom line can be changed significantly by the decisions you make in your business regarding pricing and the costs that are required to produce your products. If you can figure out how to increase your price by five per cent and decrease your costs by five per cent you can triple your profits. I am sure most food producers and processors would be satisfied if they could triple their profits. Consider the impact of these factors when you price your products.

The best advice I can give is

You should have credible sources of 'the market' price if you are selling commodities. This can come from many sources including terminal markets in Canada and the U.S., the customers you trust, and some industry associations which publish pricing and retail stores. The right answer is probably a combination of prices from as many of these sources as you can find. Obviously supply and demand plus quality will have a big impact in produce.

It is true you can find a lot of information within the produce industry. I would encourage you to follow retail prices as well. You can learn a lot. You should be following regular shelf prices and advertised prices. You should be following your customers and their competitors. It is true many growers are so busy they find it tough to get to stores. My question is how can you not go to stores? If most business people would agree they want to satisfy their customer then you need to see what your customers are doing. Another option is to have someone else from your business visit stores. If the information you learn from the pricing allows you to get another .10 then it was worth the trip.

You can use your retail price and the expected category margin to determine an estimate of your selling price to the retailer. Keep in mind not every item is at exactly the category margin. The retailer could be higher or lower due to inventory issues, competitive pricing or trying to compensate for lower margins on other items. This is an indication what your customer thinks they should be paying. You can also use this formula to estimate the cost of your competitor's products.

If you are selling for more than 1.64 then you are probably doing well. If you are selling for less than 1.64 there might be room for you to get a bit more. Pricing is always changing so the more you watch it, the better prepared you are to be right. Using this formula you can also estimate what your

Present Situation	Costs	Profit
100 product units @\$2 = \$200 in sales	100 units cost of production @\$1.90 = \$190 in costs	\$200 Sales -\$190 Costs = \$10 Profit
Increase Price By 5%	Costs	Profit
100 product units @\$2.10 = \$210 in sales	100 units cost of production @\$1.90 = \$190 in costs	\$210 sales-\$190 costs = \$20 profit
Increase Price By 5%	Reduce Costs By 5%	Profit
100 product units @\$2.10 = \$210 in sales	100 units cost of production @\$1.80 = \$180 in costs	\$210 sales -\$180 costs = \$30 profit

that the more you understand about pricing in the market and within your own business the best chance you will have to get the price you want. I do understand customers are demanding and always pushing for a lower price, that is their job. Your job is to be informed and have a viable argument for something different if you believe it should be different.

If you have any questions about setting your right price please give me a call at (902) 489-2900 or send me an email at peter@skufood.com. Next month we will start to explore some of the many options consumers have to buy food.

*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*

**Regular retail=2.99 & Category margin=45%  
(2.99- (your selling price)) =.45  
2.99**

**2.99- (your selling price) =1.35  
-(your selling price) = (.45 - 2.99)  
-(your selling price) =-1.64  
your selling price =1.64**



*N.S. where he is the principal at GPS Business Solutions and a partner in SKUfood.com, an on line resource for food producers. Peter works with producers and processors to help them navigate*

*through the retail environment with the ultimate goal to get more of their items in the shopping cart.  
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## FOCUS: GREENHOUSE INNOVATION

## Joe Sbrocchi: 'We are moving to a golden age in the greenhouse sector'

KAREN DAVIDSON

Named Giuseppe in his native Italy, 'Joe' Sbrocchi is a long way from his home town of Roseto. Loosely translated, it means town of roses. During his lifetime in the produce industry, he's taken those early lessons to heart, respecting the thorns and tending to relationships. He now arrives at the Ontario Greenhouse Vegetable Growers as general manager.

As recently as September 15, Sbrocchi was vice-president of business development for Mastonardi Produce, representing the organization in California. Over the weekend, as he bridged to his new role on September 18, he answered questions from **The Grower**.

**Q.** What makes you passionate about produce?

**A.** Besides the farming experience at a hobby farm in the Brampton area as a young teenager, I grew up about seven blocks from the Ontario Food Terminal and as such, spent most of my summers working there. It's hard not to build a deep-rooted respect watching growers leave their homes wherever they may be to deliver their fruits and vegetables to the farmers' market in the middle of the night and to watch buyers attempting to get the best quality at the best prices for their stores of all sizes.

It drew me in. And I developed a deep fondness for all these incredibly hard-working people and the elegant relationships they built through trust and dependency. One day, a gentleman named Jack and I struck up a 15-minute conversation. It was a defining moment that at the time, I didn't even recognize. Eventually I found out that he was Jack Wolf of the Oshawa Group.

**Q.** What were three of the most memorable insights learned during your retail career at Sobeys and Walmart?

**A.** At Sobeys I had six roles in 14 years, all in the produce-related area and they just became progressively more leadership-oriented in nature. With Walmart it was different in that my job was very specific – to build the produce supply chain from vendor to store shelf and to move the company away from the haphazard way in which they were doing it at the time.

The key learnings were: 1) nothing gets done without people...they are your greatest asset. 2) The business is incredibly intricate and yet so simple all at the same time. Product seems to simply arrive at the store shelves but everything that happens before that is almost a miracle. 3) Produce is an incredibly 'relationship-oriented' business, driven by a supply/demand dynamic that

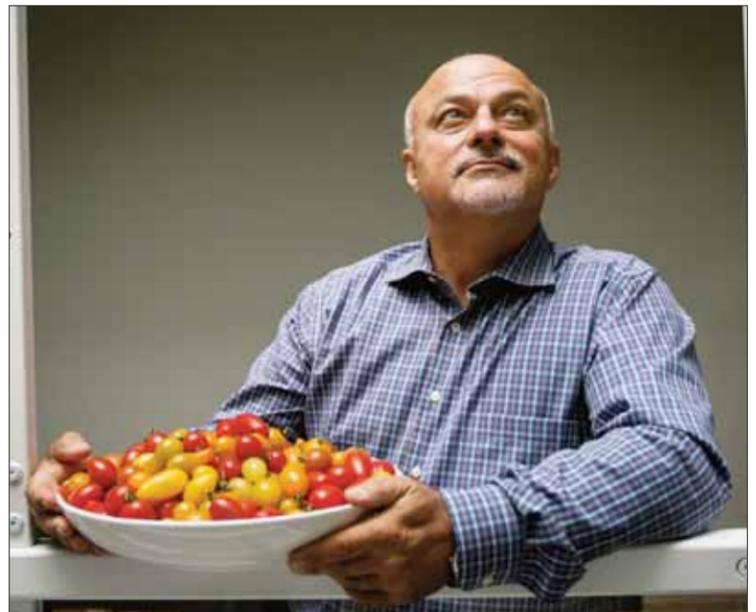
means it can change in the space of a second.

**Q.** In your role at Mastronardi Produce for the last eight years, what were the three most critical insights to growing the greenhouse industry in North America?

**A.** We grew very quickly at my previous employer and as such, there seemed to be a need for good people all the time. The challenge today in a fast-paced environment like our sector is the "magic" required in fitting the people that got you there with the new people (and skills), who are going to get you where you are going. In this dynamic, what is too often overlooked in my opinion, is taking some of your best current people and further educating them or at the very least melding those with the experience with really good newcomers and fostering that synergy that can really make the company boom.

Greenhouse growing can be incredibly perplexing to the average consumer, and hence this is the single greatest challenge to the industry especially in some major markets throughout North America.

There is a whole bunch of opportunity available to the greenhouse industry, and I truly believe we are moving to a golden age for my sector. For example, simply moving the consumption of peppers to 40 or 50 per cent of what is consumed in Europe, would require that



Joe Sbrocchi, most recently vice-president of business development for Mastronardi Produce, is now the general manager of the Ontario Greenhouse Vegetable Growers, based in Leamington. He plans to serve up plenty of ideas for the future. Photo by Glenn Lowson.

we quintuple greenhouse pepper production alone. Furthermore the world population is expected to grow and with it, I believe so will the demand for nutritious, high quality, sustainable and safe foods. The food we are producing in protected agriculture such as greenhouses is essential to the food supply of the future.

**Q.** In September 2017, we're in the third round of NAFTA talks in Ottawa. What do you see as the big watch-outs, concerns for the greenhouse industry?

**A.** Allow me to start with an overarching thought. It is entirely normal that major trade agreements between nations be tweaked from time to time. The fact that NAFTA involves three bodies in the conversation rather than two adds a further complexity. I really believe that the trade agreement as it pertains to produce in general and greenhouse in particular is pretty much favoured across North America. It is in the interests of all three nations to do their best to do no harm to what is already there and working very well.

**Q.** With labour costs – and availability – becoming more of a concern on both sides of the border, what measures should be taken to ensure a reliable workforce?

**A.** Thus far it has been almost impossible to attract Canadians and Americans to work in greenhouses in the numbers required and it is doubtful in my mind that this is likely to change. It is apparent that in both the U.S. and Canada, access to a cost-competitive labour force is a key component to providing the volume of food that needs to be produced at prices the marketplace is prepared to pay. At this point, I cannot tell you exactly how the respective governments will finally arrive at supporting this. But I believe that together with

the input of the growers who are affected, we can arrive at sound, "common-sensical" and financially logical solutions. As we have seen in the past, these programs can be changed or suspended should unintended consequences materialize. So from the standpoint of government it should be "do-able" and soon . . . but we shall see.

**Q.** Increasingly, OGVG members are building south of the border, not in Ontario. Do you see a ceiling for growth in Ontario, and if so, why?

**A.** Currently the industry has had strong tailwinds assisting its growth, and those good times don't last forever. The access to low-cost money and solid returns in general have prompted growers and marketers to spur acreage growth perhaps a little more aggressively than they would have in a different economic/financial climate.

From the discussions I have had with a number of industry members, I do believe that many of them intend to slow building after they finish their current projects. The industry needs an opportunity to "catch its breath" so to speak. I do not see a ceiling as much as a period of time where we can take the extra production that these additional acres will produce and develop homes for it before another major expansion gets underway.

Furthermore, I believe that strong consistent marketing, focused on growing the entire consumer demand pie on behalf of greenhouse producers is critical to any prosperity and expansion of the industry going forward.

**Q.** What opportunities and challenges lie ahead for OGVG?

**A.** Call me in 100 days and I will be better able to answer this question.

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## FOCUS: GREENHOUSE INNOVATION

## Shedding light on how to improve bumblebee pollination



AAFC researcher Rose Labbe is pictured with a bumblebee hive in a commercial greenhouse.



A bumblebee pollinates a strawberry plant in a commercial greenhouse.

KAREN DAVIDSON

Lights! Action! Let's roll!  
Not so fast. As greenhouse growers move to year-round production with supplemental lighting, there's one important aspect of the ecosystem to remember: bumblebee pollination. Insects navigate on light cues and if growers don't finetune their lighting regimes, they may not maximize pollinator activity.

Commercial bumblebee hives are a common sight in greenhouses to pollinate tomatoes, cucumbers and peppers. However, as Light-Emitting Diode (LED) lights are increasingly used to supplement High-Pressure Sodium lights (HPS), the effects

on insect pollination must be factored into the equation.

"Dusk is a biological cue to help bees navigate back to the hive," explains Rose Labbe, greenhouse entomologist at Agriculture and Agri-Food Canada's (AAFC) Harrow Research and Development Centre (HRDC). "Growers must turn off supplemental lights before dusk."

In 2015-16, the application of supplemental light for increasing greenhouse production in Canada really began to take off. Thanks to HRDC research at the southern-most tip of Canada and in many European institutions, it's been demonstrated that effective light spectra and combinations are required to optimize year-round vegetable production.

For many years now, research on the interaction of light and greenhouse arthropods has been conducted at the HRDC. Most recently, Dr. Labbe has examined the impact of lights on biological control agents used to suppress thrips and whiteflies in the greenhouse environment. This work has been funded in part by the Ontario Greenhouse Vegetable Growers.

Earlier research by Harrow's greenhouse entomology group showed that HPS supplemental lighting on tomato crops could impact bumblebee pollination. A key finding is that extending the photoperiod through the application of HPS lighting could contribute to increasing daily mean bumblebee activity. Research also showed that bees

remained active for the duration of the natural plus extended photoperiod. That means light supplementation has the potential to improve overall pollination in short-season crops and to contribute to yield increase.

Since the start of research in this field, some interesting facts about bumblebees are now known that could help develop best management practices for the use of bumblebees on crops lit by LED lights. As with many insects, bumblebees do not have a red photoreceptor. This means they perceive red light as darkness. This differs from plants for which red light is readily absorbed and often used as a source of light energy that allows for improved plant growth and productivity in wintertime in Canada. So, using red LED light alone in a greenhouse is unlikely to improve pollinator activity. Light waves such as blue or UV, however, can stimulate bumblebee activity and could be useful in achieving good crop pollination.

Secondly, UV light, which is abundant in natural sunlight, has an important range of wavelengths that bumblebees use for orientation. Since HPS lights are frequently used in greenhouses to supplement day length, and this source of light is low in UV irradiation, the bumblebees may not respond as effectively to HPS as a light source.

Thirdly, bumblebees are diurnal so are most active in the presence of light in the day, and spend the night in their hives. They rely on a gradual decrease of light intensity, which naturally occurs at dusk, to signal the onset of nighttime and which serves as a cue for them to find their way back to their hives before dark. In complete darkness, bees will not fly, but can crawl if needed.

If supplemental lights are switched off abruptly leading to complete darkness, it is unlikely that bumblebees will find their way back to their hives. This is

an important consideration as it may constrain when supplemental lighting is applied to the crop. Current practices suggest that supplemental illumination of greenhouse vegetable crops is optimal when plants have the chance to "go to bed" along with the natural dusk. In the same sense, during a typical Canadian winter, supplemental greenhouse lighting can be started early in the morning, can be turned off midday when light intensity is sufficiently high, then turned on again until the onset of natural dusk to achieve an optimal photoperiod for crop production.

This natural dusk also suits pollinator biology. This strategy works well in places such as southern Ontario, where such a photoperiod is also sufficiently long for greenhouse workers to achieve their daily plant maintenance routine. However, for winters in some Nordic countries such as Finland, and at higher latitudes in Canada, this strategy may not work. Longer periods of darkness in winter mean that more supplemental lighting is used overall, both at the start and at the end of the day to complete routine plant maintenance. In such a situation, natural dusk is not perceived by bumblebees. To get around this, commercial hives are now available in which bumblebees will enter and exit from separate holes, with the exit hole blocked at a particular point in the evening so that bees may enter but not exit. This way bees are retained inside nightly, with no significant loss due to abrupt light changes.

"We hope to keep this area of research going as the greenhouse industry continues to change and adopt new lighting technologies," says Labbe.

Dr. Rose Labbe will be speaking on October 5 at the Canadian Greenhouse Conference ([www.canadian-greenhouseconference.com](http://www.canadian-greenhouseconference.com)). For her talk titled "Pollination and Artificial Lights" go to Ballroom D at 9:30 am.

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## FOCUS: GREENHOUSE INNOVATION

# \$19 million fund available for competitiveness and innovation

The Agricultural Adaptation Council (AAC) is accepting applications from Ontario commercial greenhouses for the \$19 million Greenhouse Competitiveness and Innovation Initiative (GCII).

The objective is to help maintain the competitiveness of Ontario's commercial scale greenhouses in North American markets and its leadership position in developing and adopting innovative technology, and to encourage future investment and growth in the sector.

Through GCII, commercial greenhouse businesses in Ontario that grow or propagate vegetables, fruit, culinary herbs, or floriculture, with at least 20,000 square feet in production area, can apply for funding for

their operation. Applicants will identify eligible activities that advance their individual business goals and enhance the competitiveness of their operation.

The GCII program guide and application forms can be found on the AAC website. Applications will be reviewed by AAC staff on a continuous basis until September 28, 2018.

The Greenhouse Competitiveness and Innovation Initiative (GCII) is funded by the Ontario Ministry of Agriculture, Food and Rural Affairs. The Agricultural Adaptation Council is delivering GCII.

For more information: [adaptcouncil.org/program/gcii](http://adaptcouncil.org/program/gcii)



Photo by Glenn Lowson

## Forensic bill auditing and verification reduce costs

KAREN DAVIDSON

If there was an opportunity to save 12 per cent on your utility and service costs, would you seize it?

Bills have become so complex that specialist companies offer forensic bill audits splitting the realized savings with clients. That's the business model of Utility Advocates Inc., a Toronto-based company exhibiting at the Canadian Greenhouse Conference slated for October 4-5. For 10 years, the company has earned the trust of manufacturing facilities, but the more recent focus has been on agriculture.

"We find it much easier to engage with a president or a company owner," says Bob Groves, business development consultant, Utility Advocates Inc. "On average, we can realize a 12 per cent savings across 12 different utility and service sectors. To use a baseball analogy, we hit home runs, doubles and singles. In other words, there are large victories and sometimes smaller victories but always victories."

Potential clients fill out a survey that focuses on a dozen areas: water sewage, telecommunications, courier, fuel, natural gas, waste and recycling, freight, scrap metal, hydro, industrial gases, chemicals and raw materials. The client must identify five of these areas to audit with one of the five a minimum expense of \$100,000.

The survey also asks what managerial process is currently used to authorize payment of utilities. Is there a check for

reasonableness? Is there a full forensic audit? Or do you just pay the bill?

And then perhaps the most important question: How confident are you in the prices, rates and tariffs paid to suppliers?

Once engaged, clients provide copies of past invoices for a prescribed period. A detailed recommendation report is delivered three months later. Errors include but are not limited to estimates vs actuals, tax calculations, CCF (one hundred cubic feet) to cubic meter conversion and surprisingly double billing. Meters are a moving mechanism and over time, there can be metering anomalies. Over registering and under registering meters are equally problematic.

Once these errors are identified, the service provider

is liable for retroactive payments for up to two years' worth of billing but in some situations even longer.

"You might compare a September 2017 bill with a September 2016 bill," says Groves. "But if there was an error in the year-old bill, you're simply comparing one error to another compounding the problem. To what extent do you trust that your utility and service providers are accurate and working in good faith?"

Today's hydro bills are complex with 14 lines of charges. The misconception is often that your utility provider is a large entity and therefore, the billing staff is bulked up to match that size.

"At the end of the day, the providers are looking after their best interests," says Groves. "You have the right to question

the accuracy of the bill. Dozens of error types can occur such as the misclassification of your billing rate based on consumption." Billing errors don't discriminate. Because they occur across the board, a holistic approach to bill auditing is required.

One of the Utility Advocates' clients is a floriculture business. During the auditing process, it was discovered that the client had a dual fuel source for heating. The greenhouses had the capability to burn wood chips as an alternative to natural gas.

"Our review of the natural gas billing data revealed that the client had been overbilled on the incorrect rate tariff with the local gas distribution company," says Groves. "We made the recommendation to move the client to a more cost

effective interruptible service versus firm service."

Firm service provides the highest quality transmission to natural gas customers who anticipate no planned interruption. Interruptible service is subject to interruption at the option of the local distribution company. Rate tariffs for interruptible service are far cheaper than firm service, however costly penalties are imposed for non-compliance. Having dual fuel source heating essentially eliminated any potential liability and ensured the client would be compliant with the tariff requirements for interruptible service.

The rate tariff recommendation was successful and the client saved \$134,490 over 18 months.

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## FOCUS: GREENHOUSE INNOVATION

## A more flavourful, locally-grown tomato on the vine is in the works

KAREN DAVIDSON

Savouring a tomato starts before squashing it in your mouth. The eyes appreciate the artwork of the calyx. The nose smells the grassiness of the vine. Then taste buds evaluate the texture and sweetness.

Turns out there's more to breeding a more flavourful, locally-grown tomato-on-the-vine (TOV) than meets the eye. David Liscombe, research scientist, biochemistry, Vineland Research and Innovation Centre (Vineland) is at mid-point of breeding a better greenhouse tomato for the entire industry. He points out it won't be a club variety that's licensed to a few growers.

"It's a tall order," says Liscombe, "but we're lucky to focus on a single type of tomato, the red TOV, and not beefsteak, cocktail or cherry tomatoes as well."

Liscombe reports good progress on a breeding program that started in 2013 with the aid of research and funding partner, the Ontario Greenhouse Vegetable Growers. While the pristine environments of today's greenhouses produce high yields and beautiful tomatoes, growers are aware that taste is always what sells. To date, genetics have been developed in other countries under

different growing environments. It's the goal to develop a tomato that's suited to Ontario's hot and humid summers with lower light levels in the winter.

In 2017, there are about 327 acres of TOVs grown in the province. So it's a quest worth pursuing until a variety is commercialized in 2021.

**Vineland's expertise**

Vineland has several advantages in this ambitious project. First, the opening of its pre-commercial greenhouse in 2016 was perfect timing to pursue research that could be replicated. Second, there is a group of researchers with complementary backgrounds to evaluate many traits.

"While the commercial product must have flavour, we're not to lose sight of other key production traits such as disease resistance and yields. Agronomic data is needed. We also need to recommend rootstock combinations."

Vineland is known for its consumer-centric approach to breeding challenges. Through sensory panels, consumers offer feedback on the varieties that are being developed. It's better to have a baseline of consumer preferences first before spending a decade on research.

"Texture of tomatoes is very important," says Liscombe.

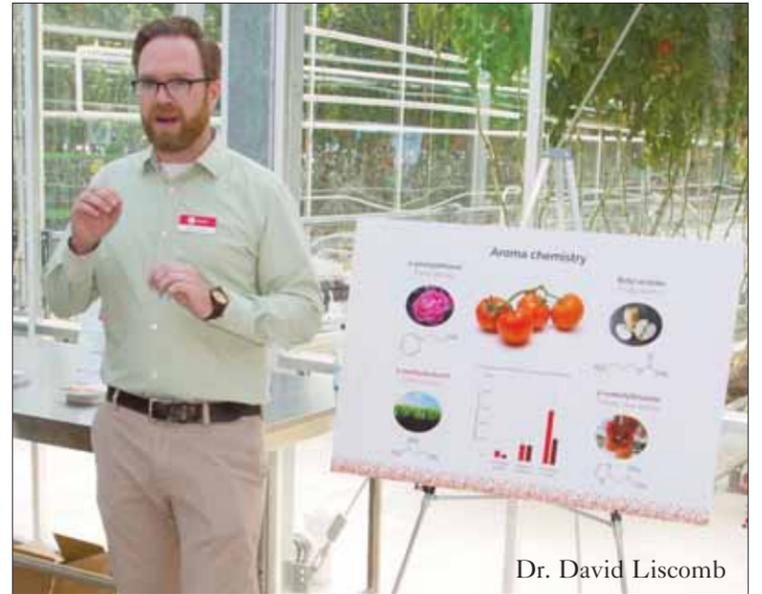
"Consumers don't like a texture that is mealy or too firm. Once you have the texture, the sweetness and aroma come into play. There is no sweet spot for tomatoes as we found with apples. We're finding out that horticultural products are different in terms of preference drivers."

**Complexity of tomatoes**

Tomatoes, it turns out, feature a complex array of volatile compounds as part of their aroma. There may be less sugar in a tomato, but because of the aroma, the consumer may perceive it as sweeter. These subtleties are a challenge, especially as a consumer doesn't really "taste" the aroma of a tomato until it's cut open. The Vineland team is studying these chemical interactions in the pursuit of a perfect tomato.

This year, about 75 Vineland-developed hybrids are being tested in Ontario commercial greenhouses. Grower feedback will be channeled into the hybrids that are selected for planting in December 2017 or January 2018 for the upcoming season.

Commercialization is years away, but someone will have the tough job of clinking glasses and toasting a new name.



Dr. David Liscombe



These tomatoes on the vine are some of the 75 hybrids that have been developed at the Vineland Research and Innovation Centre for feedback from Ontario greenhouse growers.

## Cornell University develops robotic insect to maneuver in small spaces



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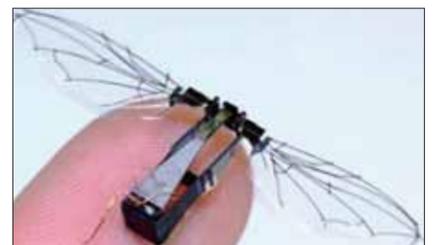
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Flying insects can perform impressive acrobatic feats, simultaneously sensing and avoiding a striking hand or landing on moving surfaces, such as leaves or flowers blowing in the wind.



Similarly, walking insects can display amazing speed, maneuverability, and robustness by rapidly sensing and avoiding predators, while foraging or seeking shelter in small spaces and unstructured terrains.

Silvia Ferrari, Sibley School of Mechanical and Aerospace Engineering, with Robert J. Wood (Harvard University), is working toward a future where autonomous, small-scale robots would have similar capabilities, sensing and responding to their environments and maneuvering without human commands. These robots would be particularly invaluable for surveillance or reconnaissance missions in dangerous or remote environments.

Agile maneuvers require fast sensors with high accuracy and low latency, which typically translates into more processing and battery power as well as greater weight. Ferrari and Wood are overcoming this bottleneck by developing integrated sensorimotor processing, planning, and control methods that would allow fully autonomous insect-inspired robots to carry out multiple tasks with speed and maneuverability, like their biological counterparts. Ferrari and Wood are developing event-based programming methods for: cost-effective and fast multimodal sensory integration and navigation; multiple, coordinated functionalities; and robust response to disturbances.

Robots at this scale have unique advantages, such as decreased cost, covertness, physical robustness, and access to unstructured and narrow spaces inaccessible to humans. By developing new and more effective sensorimotor architectures applicable at the gram or sub-gram scale, the project is making an important leap toward the fabrication of fully autonomous small-scale robots.

Source: Cornell University news release

## FOCUS: GREENHOUSE INNOVATION

## Low-volume mist sprayers for next generation biopesticides



Dramm Autofog – an automated cold-fogging device

MICHAEL BROWNBIDGE

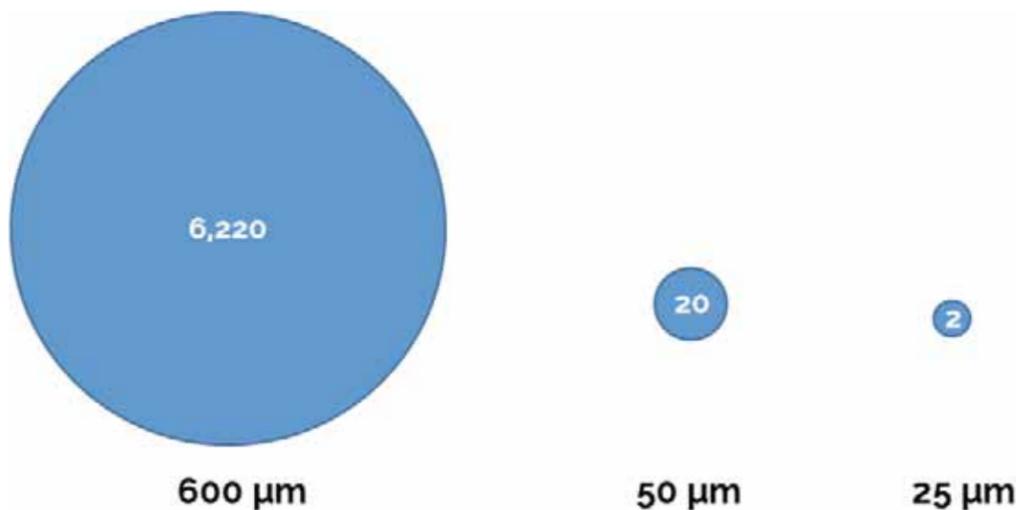
Microbial biopesticides can play a critical supporting role in greenhouse vegetable production. They are compatible with other natural enemies and beneficial insects, and complement their activity. To be effective, biopesticides must contact the target pest or disease. For foliar pests and diseases, excellent spray coverage is therefore essential.

Historically, hydraulic sprayers have been the workhorse of the greenhouse industry, delivering (relatively) high volumes of material via large spray droplets (in the range of 600 microns). However, better coverage is typically achieved when smaller spray droplets are applied. As a result, many growers are now using low-volume and ultra-low volume spray equipment, or adapting hydraulic systems with low-flow nozzles to produce finer droplets.

Low-volume mist (LVM) sprayers produce spray droplets in the range of 10 to 70 microns in size. There are two categories of LVM sprayers – cold foggers and thermal foggers – and with

both, plants are not directly aimed at with a spray stream. Crop coverage is achieved by movement of the ‘fog’ through the greenhouse and plant canopy; horizontal airflow fans help circulate the spray droplets. LVM sprayers use significantly less water to deliver the active ingredient to the plant, avoiding wasteful run-off with significantly less time to treat a large area. Several cold foggers are automated, so that the user does not have to remain in the greenhouse during spraying which has obvious worker health and safety benefits.

Currently, there is a shortage of information on the effectiveness of these LVM sprayers for application of biopesticides such as BotaniGard, Met52, Cease and Rhapsody. Being living microorganisms, these biopesticides are sensitive to high temperatures and pressure, integral factors for the transformation of product suspensions into spray droplets in LVM equipment. In trials carried out at Vineland Research and Innovation Centre, two LVM machines – the Dramm Mini AutoFog and the K-22 BIO Portable



Relative diameter of spray droplets produced by hydraulic and LVM sprayers, and approximate number of spores carried in each (using the recommended spray concentration for *Beauveria bassiana*, BotaniGard).

PulsFOG (a thermal fogger designed for application of heat-sensitive materials) – were tested to assess effects of the “fogging” process (cold and thermal) on the viability of *Beauveria bassiana* (BotaniGard) and *Bacillus subtilis* (Cease) spores.

The cold fogger had no effect on the viability of *B. bassiana* spores, whereas more than 90 per cent of spores were killed when using the thermal fogger, indicating that the K-22 BIO PulsFOG is unsuitable for application of this biopesticide. Different injection nozzles are used in other PulsFOG models and may be interchangeable into the K-22 BIO. The use of larger nozzles may reduce the energy and heat transferred to the spores during atomization; by avoiding exposure of *Beauveria* spores to potentially lethal temperatures and physical shock, it may be feasible to apply the product via a thermal fogger.

In contrast, *B. subtilis* (Cease) spores were unaffected by the thermal fogger. *Bacillus* spores are known to be high-temperature tolerant, especially when exposed for short periods of time. Results suggest that ‘Cease’ can be safely applied using a biological thermal fogger.

It is important to use the correct equipment to apply pesticide for proper efficacy. It is even more critical for microbial biopesticides, which have to be delivered in a viable state. Small spray droplets delivered by low-volume sprayers have the potential to penetrate and cover crop foliage more efficiently than larger drops produced by conventional

equipment. LVM sprayers are already successfully used for conventional pesticides; now we need to show how they can be used to apply the next generation of crop protection materials.

*Dr. Michael Brownbridge is research director, Horticultural Production Systems, Vineland Research and Innovation Centre.*

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# ONvegetables



Ontario Ministry of Agriculture, Food and Rural Affairs

## Downy mildew of brassica vegetables

TRAVIS CRANMER AND DENNIS VAN DYK

Downy mildew of brassicas (*Hyaloperonospora parasitica* syn. *Peronospora parasitica*) is a fungal-like oomycete that can be devastating in cooler, wet

weather. While the ideal temperature for downy mildew development is 8-16°C it can infect when temperatures are outside that range. Prolonged



Downy mildew

Table 1. Fungicides for Brassica Downy Mildew

Listed pathogen control products are not necessarily registered on all brassica crops. This table is meant to only act as a guide. See the most up-to-date product label to ensure registration on a specific crop.

LEGEND: C = control  
S = suppression  
R = registered  
— = not registered for control of this crop

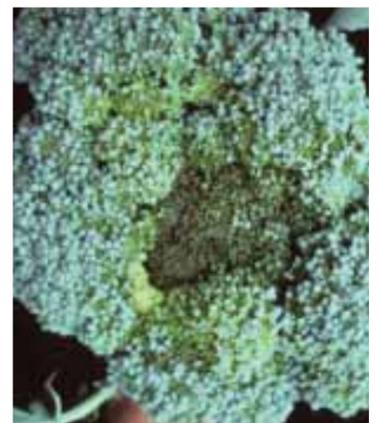
Trade Name	Group	Control Level	Crop Group 5-13					Crop Group 4-13B					CG-1	
			Broccoli	Cauliflower	Cabbage	Brussels sprouts	Napa cabbage	Mustard Greens	Chinese cabbage / Bok choy	Collards	Rapini	Mizuna		Kale
Pristine WG	7/11	S	R	R	R	R	R	—	—	—	—	—	—	—
Reason 500SC	11	S	R	R	R	R	R	R	R	R	R	R	R	—
Torrent 400SC	21	S	R	R	R	R	R	R	R	R	R	R	R	—
Aliette WDG	33	C	R	R	R	R	R	R	R	R	R	R	R	R
Confine Extra	33	S	R	R	R	R	R	R	R	R	R	R	R	—
Phostrol	33	S	R	R	R	R	R	R	R	R	R	R	R	—
Forum	40	S	R	R	R	R	R	R	R	R	R	R	R	—
Revus	40	C	R	R	R	R	R	R	R	R	R	R	R	—
Presidio	43	C	R	R	R	R	—	—	—	—	—	—	—	R
Cease	44	S	R	R	R	R	R	R	R	R	R	R	R	—
Serenade Opti	44	S	R	R	R	R	R	R	R	R	R	R	R	R
Zampro	45/40	C	R	R	R	R	R	R	R	R	R	R	R	—
Orondis Ultra B	U15	C	R	R	R	R	R	—	—	—	—	—	—	—
Copper 53W	M1	C	R	R	R	—	—	—	—	—	—	—	—	—
Bravo ZN	M5	C	R	R	R	R	—	—	—	—	—	—	—	—
Echo 90DF	M5	C	R	R	R	R	—	—	—	—	—	—	—	—

leaf wetness due to fog, dew, or evening irrigation can create ideal conditions for the pathogen to develop.

Downy mildew is most devastating on younger seedlings where it attacks the cotyledons and hypocotyls. In larger plants, lesions often expand outward to the leaf vein which results in angular spots. Plants infected late in the season can cause losses due to internal discoloration and lowers the duration of crop storage. The pathogen also increases the plant's risk to other pathogens such as soft rot bacteria.

White spores of downy mildew are produced on the underside of leaves and over time, the top of the leaf becomes grey, yellows, and prematurely senesces from the plant. Spores are spread mainly by wind or by splashing during rainfall or irrigation. Black lesions can appear on cabbage heads while infected cauliflower plants can develop grey spots in the curds. Downy mildew can also create grey streaking in the florets of broccoli.

Downy mildew spores overwinter on leaves and crop debris of compatible hosts. It is advantageous to remove crop debris, brassica volunteers such as canola or rutabaga and brassica weeds such as stinkweed, to reduce potential inoculum. Early plantings that have been harvested should be ploughed under as soon as possible after harvest as spores will continue to spread to younger plantings nearby. Always rotate with non-brassica crops. In the transplant greenhouse, improve air circulation to reduce humidity. Irrigate early in the day so leaves dry as quickly as possible and avoid smaller, frequent, irrigation



Head rot of broccoli caused by downy mildew

events. Keep plants strong and avoid nutrient deficiencies that will increase the susceptibility to the pathogen. Breeders have identified several genes of resistance to brassica downy mildew and many new cultivars are resistant or tolerant to this disease.

While there are many products registered for downy mildew, not all products can be used on all brassica crops. For example, Aliette WDG and Serenade Opti are registered for downy mildew control on all the brassica crops listed in Table 1, but Bravo ZN is only registered for use on the head and stem brassicas such as broccoli, cauliflower, cabbage and Brussels sprouts. Follow all other precautions and directions for use on the label. Remember to rotate between fungicide groups; the effectiveness of these fungicides in the future depends on the spray programs you choose today.

Travis Cranmer and Dennis Van Dyk are vegetable crops specialists with OMAFRA.

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## VEG FOCUS

## Red clover and rotation - the gift that keeps on giving

ANNE VERHALLEN

Red clover and winter wheat in rotation are gifts that keep on giving. We don't usually think of red clover cover crops as something that has much of an effect beyond one year but recent research from northern Europe suggests that they do.

We have research here in Ontario from the long-term rotation and tillage trials managed by Dr. Dave Hooker that certainly show overall yield improvements in the corn and bean crops that follow wheat and red clover. Let's take a closer look at what the clover roots really bring to the table.

The research study from northern Europe suggests that up to 40 per cent of the total plant nitrogen is held in the clover roots and that the

nitrogen concentration of the roots is significantly higher than the above-ground parts. The study also suggests that the root material is more lignified. Basically the materials in the roots are harder or more resistant to microbial breakdown. Makes sense when you think how long alfalfa roots or corn root balls hang around. In fact the lignin content in clover roots is 2.5 times higher than the clover shoots.

So what does that mean? So these high-nitrogen roots are slowly breaking down - in fact slower than the above-ground portion. Ontario research credits a good stand of clover with about 75 lbs of nitrogen per acre to the next year's corn crop. That would be coming from the breakdown of the shoots and roots. Some of the ongoing crop benefits that we see with clover



in rotation may be because of this almost slow-release nitrogen from the roots. The research study from northern Europe showed that after two years of decomposition in field there still was about 20 per cent of the initial nitrogen still

remaining in the clover roots underground.

Here's one more reason to include clover with wheat in Ontario crop rotations. You get an immediate benefit in the next corn crop and you know that you are feeding the soil for

the next two years at least.

*Anne Verhallen is soil management specialist for horticulture, OMAFRA.*

## It's the root that counts with cover crops

ANNE VERHALLEN

Every time I see a bare field this time of year I just think – what a missed opportunity – an opportunity to get a cover crop in and build soil. Cover crops should be a key part of any soil maintenance package. Adding a cover crop into the rotation not only protects the soil over winter but also adds to the length of time that the soil has an active living root system.

Active and living are the key here. Roots take in water and nutrients from the soil but don't forget plant roots continuously slough off and they also produce and secrete compounds back into the soil. These are called root exudates. These exudates can be waste materials from plant processes or they can be compounds with a known function such as lubrication or defence. Research has shown that, in their own way, plants continuously communicate with other plants and other organisms, often through these root exudates.

The exudates can be highly variable in quantity and composition, depending upon the age and health of the plant, soil type and nutrient availability. The greatest variety of compounds is in the lower molecular weight materials like amino acids, organic acids and simple sugars. Most of the exudates are larger molecules like proteins and complex sugars like polysaccharides. This helps to fuel the

microbiology of the soil and in turn helps to create stable soil aggregates that are able to resist wind and water erosion while also adding carbon to the soil.

Research is starting to show that while the above-ground plant growth helps prevent erosion it is the roots that build and maintain soil. Fall planted cover crops often don't have a lot of top growth to see but root growth can be significant. Two-week-old radish and oat seedlings will have roots that are almost 30 cm in length.

In early to mid September, oats and barley can be planted with expectation of good growth. As September slides into October, switch to winter cereals such as wheat, triticale or cereal rye to ensure continued growth as the soil cools.

The living roots of cover crops ensure that there is an active root zone outside of the main crop production times and add to the overall plant diversity in the field. Living roots help to build and maintain soil, supporting crop production while holding the soil in place through those fall and winter storms.

*Anne Verhallen is soil management specialist for horticulture, OMAFRA.*



While the above ground plant growth helps prevent erosion it is the roots that build and maintain soil.



David Wright planted a crop of sorghum in late August after completing cabbage harvest near Harrow, Ontario.

## What's hot at Canadian Greenhouse Conference, October 4-5, 2017

Energy conservation and light management will be hot topics at the Canadian Greenhouse Conference scheduled for October 4-5 in Niagara Falls, Ontario. Here are some of the highlights for greenhouse vegetable growers.

### Energy conservation

Leo Marcelis, Wageningen University, The Netherlands, will demonstrate how energy can be saved in greenhouses with better understanding of crop physiology. Some techniques include: intensive use of energy screens to conserve heat, controlled inlet and distribution of outside air to regulate air humidity, flexible temperature set points based on energy losses and plant demand.

Marcelis recommends that more focus should be on the microclimate near the plant organs than on the average greenhouse climate. For instance, the temperature of the shoot tip may deviate 4°C from that of the air. Temperature of the shoot tip has large effects on the development of the plant. Leaves are

important for plants to intercept light and to photosynthesize. For efficient use of light, plants should initially have high rates of leaf development. However, in fruiting vegetables, the plants have a larger leaf area index than needed. A number of studies have shown that production efficiency can be increased if fewer leaves are formed or can be removed in an early stage. Removing leaves may also lead to less transpiration which can contribute to energy savings during some periods of the year.

### Lighting management

Many growers are considering switching to LED lamps, but are faced with substantial investment. A panel presentation will summarize the differences between high-pressure sodium (HPS) and Light-Emitting Diode (LEDs). Panel participants include: Marco de Leonardis, Freeman Herbs, Beamsville, Ontario; Lasse Schulze, Peace Naturals, Stayner, Ontario and Ruben Houweling, Houweling Group, British Columbia.

### Greenhouse strawberries



Photo by Glenn Lowson

The strawberry has relatively complex physiology that demands production technologies to be optimized based on cultivars, growing systems and climate conditions. Chieri Kuboto, Ohio State University, will talk about high quality transplant production as well as growing systems, light management and substrates that are needed to support this emerging industry.

Bert Meulenbroek, Fresh Forward Breeding, from The Netherlands, will address traits and development of the ideal strawberry plant.

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## AUCTION

### On-Site Auction Grape Farm Clearing Auction Sale For Tom and Molly Tancock (905) 685-4367 (Farm Sold)

Saturday, November 18th at 10:30 a.m.  
(Preview Friday from 12:00 to 4:00 p.m.)

Located at 2513 -5th Street Louth, St. Catharines L2R 6P7. From QEW take (Exit 51) Seventh St. South approx. 3 1/2 miles to St. Paul St. (Reg. Rd. 81) Turn left to 5th St Louth then right to farm (Watch for signs).

#### Partial List Only:

- 1994 Gregoire Model 130 Grape S.P. Harvester with conveyor arm 1515 hrs
- N.H. I.N. 75-S 4 x 4 Tractor Cab - Air (2080 hr)
- John Deer 5310 4 x 4 with 340 QT Loader (1300 hrs)
- 1981 Ford 8000 tandem truck with 20' hyd dump flat deck and 4' racks (3208 Cat)
- 2012 Stockmayer 1 row leaf remover - Grape Hedger (Pellenc), Kubota 3 P.T.H. backhoe - Kubota 1460 riding mower, J.D. Hi-Arch 450 78" hydro push manuer spreader, Howard 3 P.T.H. 4' rototiller, Clemens grape hoe, 3 P.T.H. 5' Aerway, 3 section 10' Crowfoot packer - Post Pounder (Shaver #8) on trailer - 3 P.T.H. Bush Hog 6' rotary mower
- White 5' Model 25 3 P.T.H. disc - Rear dump hyd grape trailer
- 4 - Allied 4 Ton grape bins - approx 4000 grape stakes - 8' steel and 5" wooden posts - Electronic and propane bird scarers - 3 P.T.H. Allied Fork Lift Mast - 5' rubber tire roller
- 16' Tandem flat deck car trailer, Farm wagon & rack - 12 ton Horst Wagon with 1200 gal plastic tank - Honda Water Pump & Hoses - Bush Hog 50" pull type flail mower and gas motor - Air prunners - Hyd log splitter - J.D. 4 x 14" S.M. Plow, White 3 P.T.H. 4 x 14" plow - 3 P.T.H 2 shank subsoiler, Single shank subsoiler with ditch attachment
- Home-made grape planter - White 251 -10' wheel disc - 5' + 6' 3 P.T.H. cultivators
- Oliver 2 x 10" Plow 3 P.T.H. 6' Landpride blade - Lucknow 7' 3 P.T.H. snowblower
- 3 P.T.H. post hole auger 10" - 12" auger - IH 5100 16 DD disc seed drill with seed box, Pull type fert spreader, 35' boom 250 gal pull type sprayer - Brillion 5' grass seeder
- 4 section harrow & carrier - Enviro mist compact sprayer - IH 12' model 4500 cultivator - approx. 800 grow tubes
- 12' x 6'8" enclosed snomobile trailer - 23' Golden Falcon house trailer 1981 fully equipped with awning,
- (2012) 5' x 8' J.D.J. hyd Dump Tandem Trailer - 1998 Roto X 440 Ski-doo (950 miles)
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### RETIREMENT AUCTION of Orchard Farm Equipment for Angela and Matteo Russo 1629 3rd Ave. Louth, St. Catherines (east of 7th St. Louth between QEW and 4th Ave.) (Farm is sold) Saturday, October 21, 2017 - 10:30 a.m. PREVIEW Friday Oct 20, 2017 - 10-3pm

**Tractors:** Massey Ferguson 235 dsl, M.F. 245 with front-end loader, Ford 4600 dsl. Power steering, CASE I-H 685 orchard special, Parts Tractors: M.F. 250 dsl., M.F. 255 dsl.

**Trucks:** 1986 Ford 8000 s/a straight truck, 20 ft. box hyd. Brakes, electric tailgate, 1988 GMC pick-up 350 km. (165 on new factory engine) (both trucks sell certified and E-tested). 2012 Jeep Patriot 110,000km cert e tested

**Equipment:** G.B. Laser 15 1600 ltr. Orchard sprayer, Danhuser posthole auger with 24" planting bit and 10" bit, 6' and 8' 3 pth cultivators, 8 ft. Bushhog offset mower, 8ft. Wheel lift disc, 12x7 orchard trailer, Rittenhouse 3pth. Weed sprayer, 3pth 2 row FORD 309 planter (peas, sweetcorn), 3pth P-406 poly fert-spreader, 3pth poly sprayer.

**Forklifts:** 2000 lb. Yale propane forklift

**Packing Line & Packaging:** T.E.W. 24" packing line, 3 circ. Sorting tables, washer, absorber, waxer, sizer, Bartlett pear grader, approx. 1000 wax 11 qt. picking baskets, qnty. new wooden 6 qt baskets, bushells, plastic punnets etc., wooden and micro fruit bins, cardboard pumpkin bins, G.P. skids, steel market racks,

Raymond powerjack, RiGo prime mover extenda reach powerjack (both with chargers), B.T. Lifter pallet jacks,alum. deck plate, dsl tank, qnty. alum. and wooden picking ladder is various heights, picking harness, hand pruners, elec. Welder, Delta band saw, Delta drill press, table saw, Stihl 085 chainsaw,

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## MINOR USE

## CRAIG'S COMMENTS

## Fundamental change



CRAIG HUNTER  
OFVGA

People are asked throughout their lives to make changes big and small. Some of these changes are made with great reluctance, and others are embraced with fervor. Some are simple, like putting aside a blanke when one starts JK, or tough like when quitting smoking. Long held ideas on what is right or wrong are very difficult to let go, even in the face of irrefutable evidence. One set of changes may lead to a cascading set of further changes. That first child being born may well change your long-held Saturday golf game with the guys in favour of helping out around the house. Later that morphs into taking children to soccer practice or dance lessons. All of these were un-thought of when you said "I do."

I started spraying an orchard at 17. The instructions included how to start the engine of the sprayer, how to turn on the water pump leading to the overhead tank, and where to get my own copy of the ODAF spray guide. Everything else was up to me. It was even considered sissy to wear a mask let alone a spray suit. Nozzles were cleaned with (bare) hands, and the spray tank was sometimes cleaned out of gunk with a garden hose. The choice of what and when to spray was left up to me by a trusting? or complacent orchard owner. I guess it all worked out because there was usually a clean crop, and I made sure to avoid over-spraying as much as possible. I

do remember when I was away one time and someone else with even less experience sprayed every crop with the same materials. The plum trees turned yellow in reaction to the use of a non-approved fungicide. The boss didn't panic, but got me to re-spray the plums twice with a high rate of sulphur. That greened the trees up almost overnight. To this day I have no idea why that worked, and how he knew it would. His experience had started with hand-held sprayers in the thirties, so he must have seen a similar issue in his past.

Experience. That seems to be the key to change. Over the years the experience of working with various pesticide products and careful reading of labels has led me to have a deep respect for what to do, or not to do, with pesticides. Those old labels were short on guidance! Today a label is pages long, and contains a lot of guidance. That still doesn't help unless one reads those labels, **and follows the instructions.**

All of those label words are still only readily available to the actual grower or his/her spray applicator who handles the products. They are in both English and French in Canada, and additional instructions may be available in various languages varying by province in their sprayer safety programs. The applicator has to meet varying requirements depending upon provincial laws, but in every case must demonstrate the ability to read a label, make simple calculations to determine the amount of product to apply, and how much to put in a sprayer tank of water. They must also know what personal protective gear is required when handling/spraying that product. The re-entry times are also a key requirement they have to know following application.

Today even that is no longer enough!

There are other people that need to receive warnings from a label who have no direct means of seeing it. In any case these people may not be able to read,

or at least not English or French. Every person who has permission, (direct or implicit) to enter a farm property needs to be protected. While it is simple to place "Do Not Enter" signs there are folks who DO have permission to enter. These include but are not limited to: scouts, processor-based field men, acreage measurers, farm employees, crop insurance investigators, repairmen, government extension staff, government investigators, IPM consultants and others.

Many (most) farms have some sort of arrangement to let folks know if a field has been sprayed. Fewer farms actually post a re-entry time/date. Fewer still make direct contact with others beyond their own staff. Notification may be done verbally face to face, it may be posted on a notice board in a bunkhouse or it may be at a daily (usually morning) meeting. It may be done using an interpreter or a multi-lingual foreman where that is necessary.

Unfortunately it may not be done at all.

This is where the Pest Management Regulatory Agency (PMRA) has a problem in dealing with the re-evaluation of many of our fungicides and now some insecticides. There are requirements in the U.S. for notification of all non-family farm workers that arose from changes in their Worker Protection Act. These may not be specifically laid out in Canadian legislation, and may explain why our situation varies from that in the U.S. and other jurisdictions.

Nevertheless, the upshot of these requirements in the U.S. could mean a need for similar kinds of worker protection here. This is NOT a bad thing. It is up to growers here to raise the bar on worker protection, especially if it is the deal maker on the continued access to many of these products under review. While we continue to disagree with the numbers they used to calculate the actual exposure potential to workers,

we do NOT disagree that workers (and others) need to be protected.

PMRA has found in their field audits over the years that some growers have NOT been following all the existing instructions on labels. This includes those for the use of protective gear by the applicator and for the observance of strict re-entry times. They do admit that most growers who have been cited for these violations have been found to have come into compliance with a follow-up audit. However, it gives them disquiet for even considering adding further label requirements such as protective gear for farm workers, when the current ones are sometimes being ignored or treated in a cavalier fashion.

**This is where a fundamental behaviour change needs to happen!**

When people take on a weight loss program, or a stop-smoking program there is usually a lot of money on the line as incentive. For growers to understand the cost involved here, they need to think long and hard about the value of these pesticide products to their farm operation. Can you even survive, let alone have a saleable crop without the use of these fungicides and insecticides? Can you live with just the odd one or two uses offered up on some crops, but with impossible re-entry times? Do you actually naively believe that somehow a miracle will happen to save all the uses and life carries on as it did in the past? Do you actually believe that some new registration will cover all the disease problems so these products are no longer needed?

Think again! That is just not in the cards!

**Growers need to embrace this change, and they need to do it quickly!** They need to not only have a means to contact and warn all authorized entrants to their farm fields about spray activity, re-entry times, and any

protective gear needed, they need to have an auditable record that 'proves' that they did so. Word of mouth may be fine, but cannot be audited. **Proof is what will make PMRA comfortable.** It is their comfort that will be needed to allow further label language about the use of protective gear for workers re-entering a treated field with a reasonable re-entry time.

Perhaps a label needs to be created by a registrant that provides options. These could include: shorter re-entry times if field workers wear specified clothing and gloves, more applications/uses of a product in a season if protective gear is labelled, and all of this predicated on the grower having some form of auditable records of what/when/where something was applied, and a 'sign-off' that all applicable folks were given instructions on re-entry times, and labelled protective gear required for re-entry.

All others who cannot or will not comply will bear the weight of the current recommendations with limited or no uses on some crops, and impossible re-entry times.

**Growers need to either get with the new program or suffer the loss of use.**

It will take brave registrants to write and propose such a new label, and willing growers to adapt to such a change in business. To keep a level playing field, maybe ALL such products should be so labelled!

We will continue to try to get changes made to the numbers, but in the end, these fundamental changes must be embraced -- not just for the current fungicide dilemma but also for the many more re-evaluations coming at us, soon. It is 2017, not the 1960s anymore! Get with the program, or accept the serious loss of uses. The ball is firmly in the Growers' Court!

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## MINOR USE

## Rovral fungicide now available for brown rot control in nectarines

FMC of Canada has announced the registration of Rovral fungicide WP for use on nectarine crops in Canada. The wettable powder product controls the blossom blight form of brown rot while protecting fruit against infection. Rovral is a Fungicide Resistance Action Committee (FRAC) group 2 dicarboximide fungicide. As a group 2 product, Rovral will be an important tool in the fight against fungicide resistance for the nectarine crop. A one-day pre-harvest interval (PHI) contributes to the versatility of



the product.

“Addition of nectarines to the Rovral fungicide WP label introduces a new mode of action for brown rot,” says Wayne Myers, eastern business manager for FMC Canada. “Nectarines have grown in popularity in recent years with both consumers and growers and now account for 15 per cent of the tender fruit acreage in Canada. It is important for growers to have access to Rovral fungicide WP as a rotational treatment to help slow the development of resistance,”

Myers added.

On March 31, 2017, FMC announced the signing of a definitive agreement to acquire a significant portion of DuPont’s Crop Protection business and to sell FMC Health and Nutrition to DuPont. Closing is expected to occur in the fourth quarter of 2017. For more information on FMC crop protection products, please visit [www.FMCCrop.ca](http://www.FMCCrop.ca).

## DowDuPont announces structuring plans

The merger of Dow and DuPont is progressing, with some targeted adjustments between its Material Science and Specialty Products divisions. What is material to horticulture is that DowDuPont will operate an Agriculture division that “brings together

the strengths of DuPont Pioneer, DuPont Crop Protection and Dow AgroSciences to better serve growers around the world with a superior portfolio of solutions (seeds, traits, crop chemicals, seed treatment, agronomy and digital services), ensuring

greater choice and competitive price for value.”

The combined capabilities and innovation engine will enable the intended Agriculture company to bring a broader suite of products to the market faster, so it can be an even better partner to growers,

delivering innovation and helping them to increase their productivity and profitability.

The intended company will be headquartered in Wilmington, Delaware, with global business centers in Johnston, Iowa, and Indianapolis, Indiana. For more

information, go to: [www.dow-dupont.com](http://www.dow-dupont.com).

*Source: DowDuPont September 12, 2017 news release*

## COMPANY NEWS

## Inocucor expands Canada sales and distribution reach

Inocucor, the agri-tech company that produces biological crop inputs for agriculture, will have greater capacity to serve Canada’s farmers and greenhouse growers with the appointment of Jan Kral to vice president of sales—Canada, and Sean Chiki, formerly of BASF Canada, to lead its Ontario sales effort.

Impetus for the company’s expanded Canada presence stems in part from a distribution agreement it cemented in April with Axter Agrosience Inc., one of Canada’s leading providers and distributors of foliar feeding crop solutions. Axter supplies Inocucor’s Synergro product to Canada’s growers of crops that include strawberry, tomato, lettuce and broccoli.

Kral is a long-time member of Inocucor’s leadership team and has been developing the U.S. market for Inocucor’s products since their introduction in 2012. He will use his expertise with U.S. growers of a full range of fruits and vegetables to expand use of Inocucor’s products in Canada.

Chiki will lead Inocucor’s expansion in Ontario, one of Canada’s most productive agricultural and horticultural regions. He brings 18 years of experience with Canada’s farming community through past sales and marketing

positions with agricultural product manufacturer BASF Canada, and with Engage Agro, a distributor of specialty agriculture products. He holds a B.Sc. degree in Environmental Science from the University of Waterloo.

Inocucor uses a patented fermentation process to combine multi-strains of bacteria and yeasts into powerful soil and plant inputs that boost crop yields, improve the microbial ecology of soils and reduce groundwater pollution caused by chemical fertilizers. These products are safe for people and the environment.

Inocucor’s current products, Synergro and Synergro Free, are among the first microbial products of their kind to be registered by the Canadian Food Inspection Agency (CFIA). Synergro is also a Pro-Cert Approved Input for use in organic growing in Canada.

In Canada, Inocucor’s products are being produced at its 20,000-square-foot R&D and pilot production laboratories at Technoparc Montreal. Inocucor will open its Denver-based 30,000-square-foot U.S. headquarters and production facility in early 2018.

*Source: Inocucor Technologies Inc. August 30, 2017 news release.*

## Building real success. Let’s talk soil.

“Standing still is like going backwards. I don’t want to be just ‘sustainable,’ I want to improve my soil year after year. That is what success looks like to me.”

Charles Emre  
Emre Farms  
Windham Centre, Ontario

**Farming:** Potatoes, asparagus  
**Soil health strategy:**

Flowering mustard mowed and incorporated as a bio-fumigant, pearl millet to control root nematodes and build organic matter.

**Soil story:** My grandfather once told me to plant buckwheat. He said it took the wildness out of the ground. I laughed, but he was right. If we can combine some of our forefathers’ practices with the technology of today, I think we can have real success improving soil for the future.

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