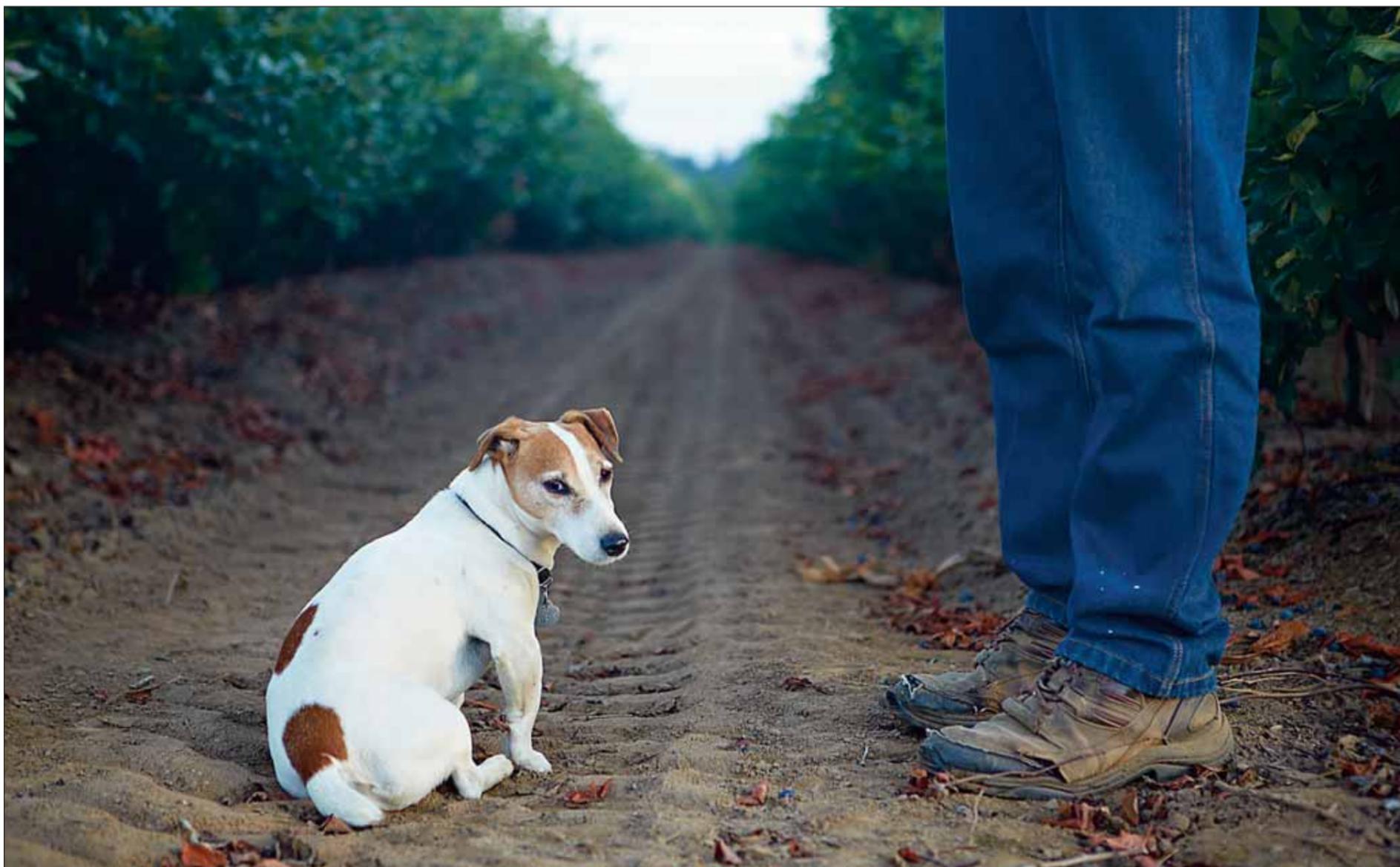


TRUMP TIMES

Taking stock of the Canadian-American relationship



British Columbia's blueberry industry is export-dependent, with 60 to 70 per cent of the crop going to the United States. That's just one example of the highly integrated economies in produce. Based on day-to-day relationships with American customers, Canadian growers are bullish about upcoming NAFTA talks. That's because the record shows American businesses need Canada's raw and intermediate products for their processing plants. Canadians are a lot like this Jack Russell terrier, standing on guard, a fearless personality in the face of challenge. Photo courtesy of BC Blueberry Council.

KAREN DAVIDSON

It's time to put aside visceral feelings about the Trump administration and put some stock in facts, where they can be found.

If Robert Lighthizer is confirmed as the U.S. trade representative, it would seem that between him and U.S. commerce secretary Wilbur Ross, the U.S. Congress will be notified soon of intentions to renegotiate NAFTA. These announcements could come as soon as April.

These newly significant players are not well-known in Canada, however Lighthizer's approach provides insight: "I try to be friendly in negotiations. I'm not the theatrical type. The art of persuasion is knowing where the leverage is."

In these early months of the Trump government, Canadian growers are bullish about the future of the trading relationship with the United States. The

balance of produce trade is in favour of the U.S. with \$4.5 billion coming north and \$2.5 billion going south (Statistics Canada 2015). Here are a few examples that illustrate how integrated the economies are.

Trade

Starting in British Columbia, the blueberry industry is very export-oriented with 60 to 70 per cent of the fresh crop going to the U.S. "There's been a lot of media about the new president but I hope it will be business as usual this year," says Jason Smith, former chair of the BC Blueberry Council. He explains that U.S.-based companies such as Driscoll's and Naturipe are active in sourcing B.C. berries. Working under the umbrella of the U.S. Highbush Blueberry Council, growers are levied \$18 per ton on all blueberries going to the U.S. for marketing campaigns.

On the prairies, Manitoba ships 30 per cent of its fresh potato crop to the U.S. says Larry McIntosh,

president and CEO, Peak of the Market. "Any negative change in NAFTA would be potentially devastating to us. It would be a shame because NAFTA works so well for vegetables."

Canada is a net importer of fresh vegetables which need to move quickly and freely across the border to have value. "If the U.S. tightens up the border, we don't want trucks sitting at the border for hours," says McIntosh. "We're based on just-in-time deliveries."

Ontario is a good example of how produce flows both ways. John Hambly, president of Gwillimdale Farms, is a muck crop grower based in Bradford. He ships two trucks of jumbo carrots per week to Salinas, California in the winter season and the back haul brings salad ingredients to Canada. His American buyers value the consistent quality that Gwillimdale is able to provide to the U.S. foodservice industry.

Continued on page 3

Rising costs dominate CHC meeting PG 10

What's ahead in apples PG 16

Focus: Irrigation and water management Section B

AT PRESS TIME...

\$19 million announced for Ontario greenhouse sector



Ontario agriculture minister Jeff Leal announced the Greenhouse Competitiveness and Innovation Initiative on March 23. The province is providing \$19 million to enhance competitiveness of the greenhouse sector by supporting development of new technologies, encouraging investments in greenhouse agriculture and boosting productivity.

"This important investment will allow Ontario's greenhouse sector to continue to expand, enhancing economic growth and creating good jobs right here in Ontario," said Leal.

Ontario's greenhouse sector is currently growing at the rate of 150 acres per year, with a

total of 2,876 acres of tomatoes, peppers and cucumbers in production. The greenhouse industry contributes nearly 10 per cent of the province's agri-food sector jobs and GDP. Last year, Ontario's greenhouse sector and related value chain supported more than 81,000 jobs and \$3.2 billion in GDP.

"This funding will support the continued growth of our sector and its capacity to create jobs, drive exports and provide a reliable supply of locally grown greenhouse products for Ontario consumers," said Jan VanderHout, chair of The Ontario Greenhouse Alliance (TOGA).

Photo by Glenn Lowson

NEWSMAKERS

The Canadian Horticultural Council (CHC) has elected **Alvin Keenan**, a potato farmer from Souris, Prince Edward Island as the new president. First vice-president is **Brian Gilroy**, an apple grower from Meaford, Ontario. For more information on the CHC annual general meeting, go to page 10.

Photo right: Alvin Keenan, (L) and Ralph Eichler, Manitoba minister of agriculture.



Congratulations to **Gary Linkletter** who was honoured with the CHC's **Doug Connery** award for his leadership and contributions to industry. He is a 7th generation potato farmer from Summerside and a past-chair of the PEI Potato Board. He is a partner in Linkletter Farms, a family farm operation which grows seed, table and processing potatoes.

Photo bottom right: Paulette Connery (L), Gary Linkletter and Keith Kuhl, outgoing CHC president. Photos by David Folkerson.



NEWSMAKERS

Ian MacKenzie, former president of the Ontario Produce Marketing Association, has been appointed to a three-year term on the board of directors for the Ontario Food Terminal.

Catherine Clark has been named new executive director of Farmers' Markets Ontario (FMO) effective April 1. She replaces **Robert Chorney**, FMO founder, who is retiring after more than 25 years at the helm of the association which now has 182 member markets across the province.

The Niagara Peninsula Fruit and Vegetable Growers' Association has honoured **Bill George Jr.** with its Award of Merit. He was chair of the Grape Growers of Ontario from 2007 – 2016, vice-chair from 2003-2007 and has been a board director from 1994 to 2016. He is currently vice-chair of the Ontario Fruit and Vegetable Growers' Association.



Photo: (L-R) Leslieann and Bill George Jr. and association president Jeff Duc. Photo by Denis Cahill.

Broccoli grower **Ken Forth** has been re-elected as president of the Foreign Agricultural Resource Management Services (FARMS) which organizes the logistics for about 17,000 workers in Ontario.

The Tender Fruit Growers of Ontario have honoured **Austin and John Kirkby** with their annual Award of Merit.

Eric Biddiscombe has joined Southern Corporate Packers as vice-president of Canadian operations based in Kitchener, Ontario. With headquarters in Florida, the grower/shipper/packer grows melons in the U.S., Canada, Mexico and Nicaragua. It also has seven packing sheds along the eastern seaboard of North America. Most recently, he was senior director planning, produce business unit, for Loblaw.

The Ontario Farm Fresh Marketing Association (OFFMA) has a new president in **Steve Martin**, Martin's Family Fruit Farm. Vice-president is **Kristin Ego MacPhail**, Ego's Greenhouses. Directors include: **Cara Ferguson**, Edana Integrated Marketing, **Leslie Forsythe**, Forsythe Family Farms Inc., **Nicole Judge**, Spirit Tree Estate, **Dana Thatcher**, Thatcher Farms, **Karen Whitty**, Whitty's Farm and 13th Street Winery. New members include: **Colleen McKay**, Your Farm Market; **Jordan McKay**, Willowtree Farm Market; **Erin McLean**, McLean's Berry Farm. **Jessica Kelly** is the OMAFRA liaison. **Cathy Bartolic** is secretary treasurer.

Congratulations to OFFMA's Leadership Award: **Phil and Stephanie Quinn**, La Ferme Quinn. The Ambassador Award went to **Anna Olson**. Outstanding On-Farm Market Award was won by Heeman's. The Innovation Award was given to **Katan Kitchens/Quinta Quinoa**.

The Great Ontario Hopped Craft Beer Competition, now in its fifth year, was sponsored by BASF Canada. The first-place winner was **New Limburg Brewing Company** along with **Heyhoe Hops** and **King Lake Farms**. Second-place winner was **Walkerville Brewery** and **Heyhoe Hops**, **King Lake Farms** and **VQH Farms**. Third-place winner was **Wellington Brewery** and **Heyhoe Hops**. A record 18 teams participated this year.

Winners of the sweet cider competition are: **Thomas Wilson**, Spirit Tree Cider; **Hector Delanghe**, Delhaven Orchards; **Colin Campbell**, Amelia's Cider House.

Winners of the craft cider, common category are: **Doug Johnson**, Thornbury Village Cidery and Brewery; **Peter McArthur**, Heritage Estate Winery and Cidery; **Tim Schneider**, Duntroon Cider House.



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COVER STORY

Taking stock of the Canadian-American relationship

Continued from page 1

Since the 1800s, the wild lowbush blueberry industry has been concentrated in Quebec, the Maritimes and the state of Maine. Peter Rideout, executive director of the Nova Scotia Wild Blueberry Association, points out that annual production has grown steadily with more than 400 million pounds harvested in 2016. About a quarter of that is in Maine.

Two companies, Jasper Wyman & Son and the Oxford Food Group have factories in both Maine and the Maritimes and several smaller Maine processors buy wild blueberries from producers in the southern Maritimes. The high level of integration and collaboration is quite unique to the wild blueberry sector.

“There is also considerable cross-border movement of specialized harvesting equipment and crews,” says Rideout. “As an industry, we’re nervous that nothing happens to the border or that taxes may be imposed. There’s a lot of investment in land, equipment and processing facilities.”

With \$7 billion of produce trade under the microscope, the Canadian Horticultural Council will be working with the federal government and other industry groups such as the Canadian Produce Marketing Association (CPMA). The immediate task will be monitoring tariff and non-tariff barrier threats to the NAFTA agreement and developing a position paper that supports the free flow of produce.

As recently as March 20, CPMA president Ron Lemaire consulted with 20 growers and shippers on a teleconference to better understand the needs going forward.

“It will be important to leverage the relationships with the governors of 29 states which have agrifood trade with Canada,” says Lemaire. “We need to remind them that their best trading partner is a truck ride away, not a boat ride away.”

The produce industry is concerned about the trial balloon of border taxes. And despite the success of a recent trade agreement with Europe (CETA), growers still worry that when supply management is discussed, the produce industry might become collateral damage in negotiations. It’s hard to predict what the future will bring, given that so many other industries -- automotive, forestry, services -- are part of the picture. One common

complaint from the past NAFTA agreement is that the harmonization of pesticides and Maximum Residue Levels (MRLs) is unfinished business.

Water

Trade is but one aspect of the U.S.-Canada relationship. President Trump has already signaled a 31 per cent cut to the budget of the Environmental Protection Agency. Of most worry is that \$300 million earmarked for the Great Lakes Restoration Initiative would be pared to a mere \$10 million per year. This action would curtail such projects as controlling invasive species and reducing nutrient run-off. If these budget cuts are approved, bordering states would be choked for program funding while nearby Canadian provinces -- and farmers -- would still be tied to legislation.

In British Columbia, another question hangs over the Columbia River treaty which must be reviewed by 2024. A series of four dams -- three in British Columbia, 11 in Washington state -- were completed in 1964 for power and flood control. In the future, the U.S. wants to pay less for the right to store water in British Columbia. From the perspective of B.C. fruit farmers, the water that’s flowed southward has nourished a vibrant Washington state fruit industry that now dominates the price for the entire industry. Look for the Columbia River treaty to be a bellwether of water negotiations in the future.

Labour

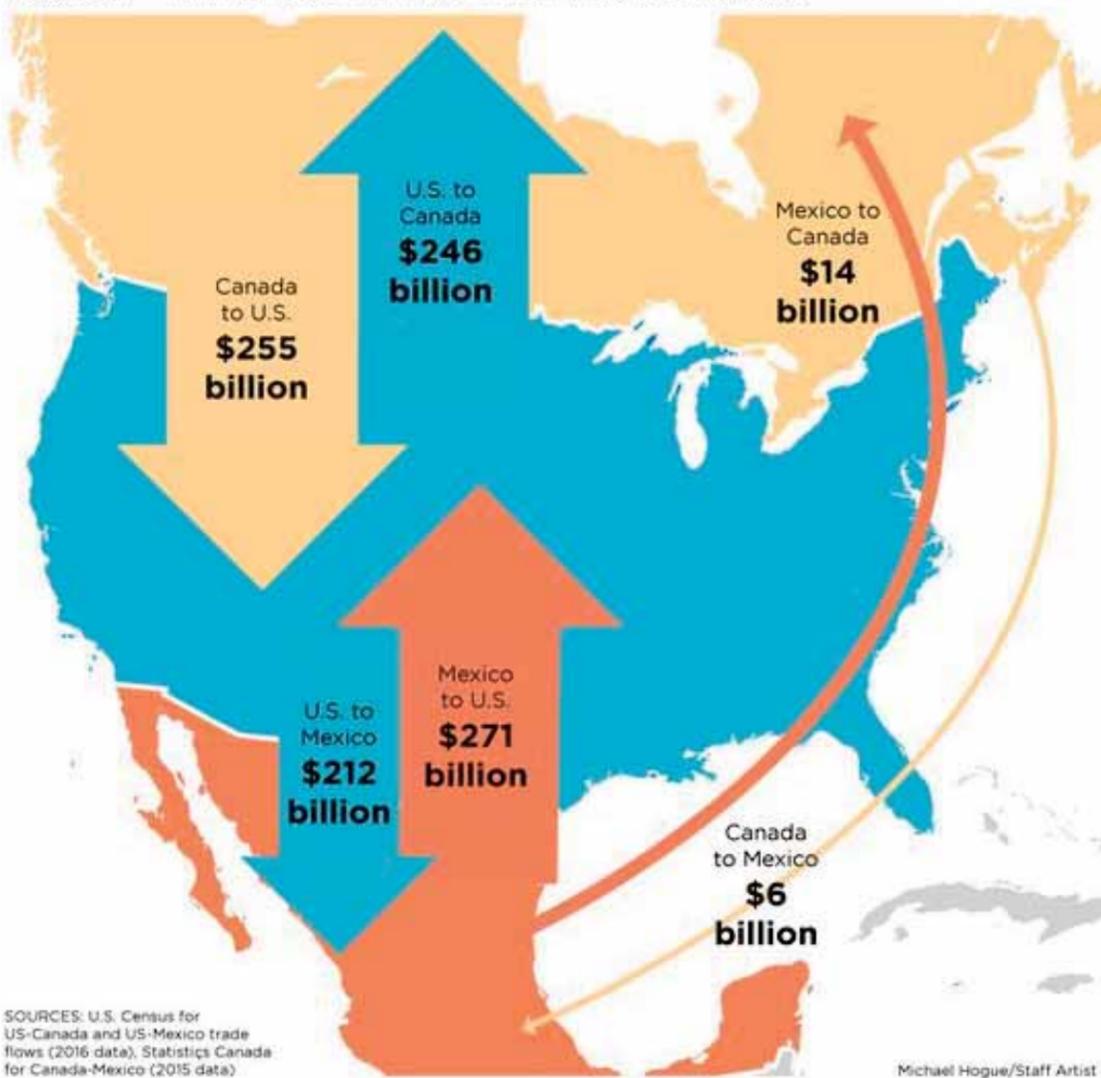
Not all Americans in agriculture are thrilled with the policy direction. For example, the United Fresh Produce Association, helmed by president and CEO Tom Stenzel, is on the record in stark contrast to the president’s policies.

“Immigration policy in this country is in shambles, and reforms of current laws and federal regulations on the books are desperately needed if we are going to maintain a vibrant and successful fruit and vegetable industry,” he stated. He advocates for a three-part platform that:

- supports an adjustment of status for experienced, but unauthorized, agricultural workers who reside in the U.S.
- calls for the reform and replacement of current agricultural worker program with a new agricultural worker visa program.

Flow of trade between NAFTA partners

Billions of dollars worth of goods move each day between the United States and its neighbors -- far more than when NAFTA went into effect in 1994.



“It will be important to leverage the relationships with the governors of 29 states which have agrifood trade with Canada. We need to remind them that their best trading partner is a truck ride away, not a boat ride away.”

~ RON LEMAIRE, CANADIAN PRODUCE MARKETING ASSOCIATION



• works to ensure that ongoing and future efforts for border security and enforcement continue as long as they are coupled with a solution to provide agriculture with a legal and stable workforce.

The immigration policies of the Trump administration may have unintended consequences. For Washington state apple growers, the worry is so great about access to competitively-priced labour -- at rates ranging from \$13.50 to \$15 US per hour -- that efforts are well underway to develop robotics for harvesting as early as 2017.

To finance the high cost of capitalization and infrastructure, the apple industry is increasingly dominated by integrated mega-farms with thousands of

acres, state-of-the-art packing, storage and marketing.

“These huge operations are on an innovation treadmill,” says Murray Porteous, chair of the Canadian Horticultural Council’s labour committee. “To cope with increasing labour rates and to stay competitive given their high dollar, companies are looking to replace labour with robotics. These U.S. labour trends will place more pressure on Canadian competitiveness.”

What to watch for next?

In the near future, watch for the timing of NAFTA negotiations which will require Canadian produce policy input. In mid-May, watch for the

broad strokes of the new U.S. budget. Watch for what the Canadian government does on the Trans-Pacific Partnership (TPP). While few headlines were generated in mid-March, Canada attended TPP meetings in Chile, perhaps its last chance for preferential treatment in Asian markets.

Years in the making, the TPP trade agreement may still have legs. Consider the members: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam. If TPP11 were to go ahead in some shape or form, the trade agreement could provide Canada with some well-needed leverage.

CROSS COUNTRY DIGEST

SASKATCHEWAN

Saskatoon is home to Canada's first commercial vertical farm

Ecobain Gardens, the largest commercial vertical farm operation in Canada, has completed installation of Philips GreenPower LED production modules. By upgrading the fluorescent lighting previously used in the facility to LED, Philips Lighting is helping the vertical farming pioneer to produce at commercial scale, accelerate growing cycles and grow healthier, more consistent plants, while saving up to \$30,000 in energy costs per year.

Producing both organic and non-organic, nutrient-rich herbs and microgreens in a fully controlled indoor facility, Ecobain Gardens was established in 2013 and is the first commercial vertical farming operation in Saskatchewan, Canada. The facility produces 18,000 pounds of produce each year in less than 1,400 square

feet. Its farming method uses up to 98 per cent less water, zero harmful chemicals or pesticides. The vertical growing technology and local distribution systems reduce energy use, travel time and proximity of the crop, spoilage rates and overall operating costs.

Ecobain Gardens has partnered with food distributor Star Produce to distribute its produce throughout Canada to retailers such as Loblaw, Federated Co-op, Safeway, Sobeys, and other local grocery stores.

"Our goal is to grow our operation to a scale where we can make a difference to the people of our community who need quality nutrition, no matter their economic standing or geographical location," said Brian Bain, co-founder and CEO of Ecobain Gardens.

The operation is now producing more than 10,000 basil plants a week, which is at commercial scale. The low heat output of the Philips LED lights produces healthier, more consistent plant growth by reducing the heat stress on the plant canopy and root zone and by providing more uniform lighting. Plants also have a better dry weight compared to fluorescent lighting or LED lighting systems from other manufacturers.

In addition, the LED lighting system helped to reduce Ecobain's HVAC system costs by almost 50 per cent while providing Ecobain with increased space efficiency due to the minimal heat radiated by the modules. These benefits enable tighter placement of crop rows and therefore more yield from the same growing area.



LED Lighting Lunch-n-Learn

Philips is holding LED lighting lunch-n-learn seminars for:

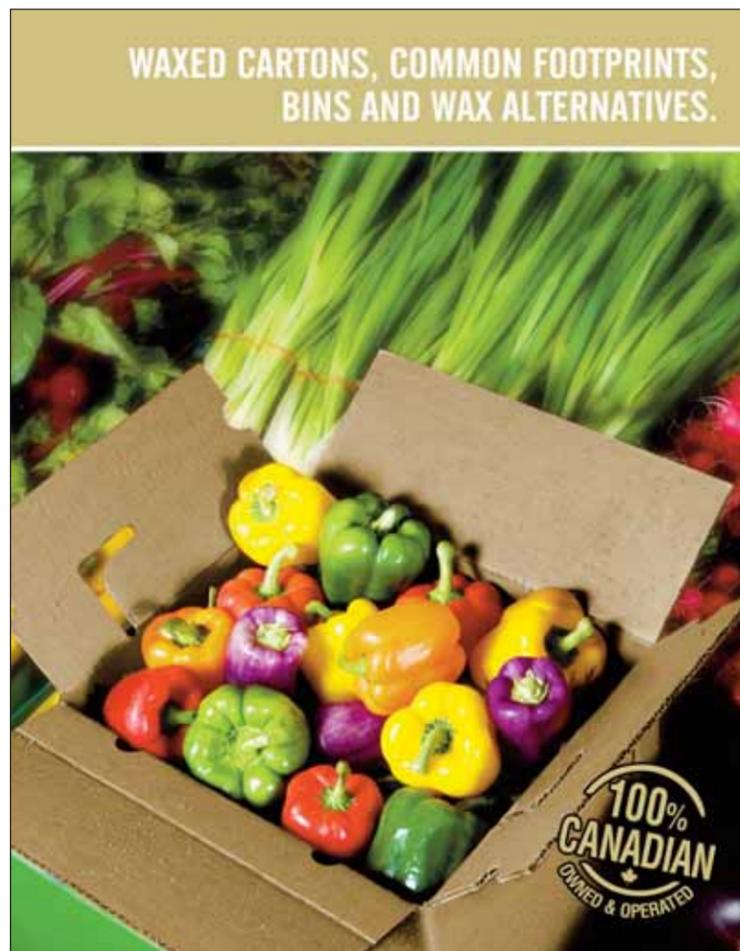
Jordan Station, ON – March 28
Medicine Hat, AB – March 29
Surrey, BC – March 30

For more information, go to www.lighting.philips.ca/products/horticulture/ledlunch

Source: Philips Lighting news release

BRITISH COLUMBIA

First genetics, then packaging in greenhouse tomatoes



Tomtastic Yellow Cherry Tomatoes: Selected for their sweet flavour and yellow burst of colour, these cherry tomatoes are packed in 12 x 10.5 oz. clamshells.

With more than 200 acres in production in Canada and the United States, Houweling's Tomatoes continues to expand its product line-up.

Houweling's Tomatoes has announced three new high-flavour tomato packs as part of their premium Signature

Selection line. This brand dictates a strict criteria for varietal selection and growing practices, placing flavour at the forefront of the selection criteria, followed by other key attributes such as texture, and appearance.

Houweling's Group is a leading greenhouse vegetable

grower, propagator and marketer with operations in Delta, British Columbia, Camarillo, California, Mona, Utah and Loveland, Colorado.

See them at next month's Canadian Produce Marketing Association convention and trade show in Toronto, Ontario.

CROSS COUNTRY DIGEST

PRINCE EDWARD ISLAND

Nuffield scholar identifies key success factors in global potato industry

Greg Donald, general manager of the Prince Edward Island Potato Board, has completed his Nuffield scholarship with a paper titled: "Identification of key success factors from world leaders in processing, seed and fresh potatoes to assist with long-term planning of PEI's potato industry."

After visits to Belgium, the Netherlands and the United Kingdom in 2016, he authored a paper that's worth reading not only for its implications in the potato sector, but all horticultural sectors. One of his observations is that the Netherlands seed industry is getting better, not bigger. That's a lesson transferable to Canada.

Here's a refresher on what Nuffield Canada Agricultural Scholarships are about. The organization offers scholarships to agricultural leaders to expand their knowledge and network with top individuals around the world, to promote advancement and leadership in agriculture.

The scholarship provides individuals with the unique opportunity to assess the world's best in food and farming; stand back from the day-to-day occupation to study a topic of keen interest; achieve personal development through travel and study; and to deliver long-term benefits to Canadian farmers

and growers and to the industry at large.

Applications are due annually by April 30.

For a sense of Greg Donald's paper, here is his executive summary.

Belgium is the land of the fries – an appropriate reference because it is the world's leader in processing potatoes. Belgium has achieved this title because of its strategic location, high yields, competitiveness (low cost of production) and the industry's expertise. Belgium's future success factors will include a continued focus on sustainability, research and innovation, collaborations within the sector, increasing promotion and capitalizing on growing export markets. I believe that Belgium's most significant success factor is its strong competitiveness in the potato processing sector attributable to its high yields and low production costs.

The Netherlands has become the world's leader in seed potatoes by getting better, not bigger. Generally speaking, I believe this has been the country's key success factor. More specifically, the Netherlands' success is the result of its strategic location, favourable soil and climate, expertise, innovation and infrastructure. Netherlands' future success factors will include a continued focus on new market-oriented variety

development, research and innovation and pest management. It was apparent production costs are very high (in particular land costs) and the prevalence of the latest in technology. These two factors are among the reasons why it is believed the Netherlands has become and will continue to be the world leader in the seed sector because of the need to focus on continuous improvement.

The study tour in Great Britain provided a "fresh" perspective for this project. The key success factors that have made Great Britain a world leader in the fresh potato sector include a huge local market, a focus on new exclusive varieties, branding, promotion of healthy attributes, economies of scale and value-added products. Great Britain's future success factors will include managing supply, promoting the health benefits of potatoes, improving convenience, and increasing environmental stewardship. It was most apparent that addressing the decline in fresh consumption will be the single most important future success factor for Great Britain.

To meet the world's increasing food needs, the potato will play a critical role in large part because of its ability to produce a great deal of food per unit of area with less water per unit of production versus the world's other



major crops. Growth in both potato consumption and production area will occur in the developing countries, where consumption will be static or declining in developed countries. Production area will also decline in developed countries due to increasing yield trends. Trade of frozen processed products will follow a similar trend as fresh potatoes, however it is believed that production of processing potatoes and processed products will be provided by the most competitive suppliers. The big question globally will be whether local processing sectors in developing countries will be able to compete with the quality and price of world leaders such as Washington state and Belgium.



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BEE TRENDS

BeeConnected helps encourage communication between beekeepers and farmers

JILLIAN BENDER

It's well understood that honey bee health is complex and honey bees face pressures from a number of factors throughout the year including: pests and parasites such as the Varroa mite, harsh weather, disease from bacteria and viruses, a lack of nutritious food sources and potential exposure to pesticides.

Fortunately, according to the 2016 data from Statistics Canada, honey bee colony numbers continue to increase and are in fact at an all-time high. There were more than 750,000 honey bee colonies in Canada and close to 10,000 beekeepers, as of the end of 2016.

"Bees and pesticides are integral and complementary components of sustainable agriculture, so we are very happy to see these numbers increasing," said Pierre Petelle, acting president and CEO CropLife Canada. "Our industry is proud to be playing a key role to ensure both beekeeping and agriculture continue to co-exist and thrive."

In 2016, CropLife Canada partnered with the Canadian Honey Council to bring BeeConnected to Canada.

BeeConnected is an app that

anonymously connects registered farmers, beekeepers and pesticide applicators – free of charge. This allows them to share information about where beehives are located and when pesticide applications will happen, all through the use of a web browser, iPhone or Android device.

"We've heard from a number of groups that communication between all parties could be improved," said Petelle. "The BeeConnected app addresses this issue with an end goal of helping prevent bees from being unintentionally exposed to pesticides."

Getting started with the app is easy. Users simply visit the website (www.beeconnected.ca) or download the app from Apple store or Google Play and create an account right on their smartphone.

Farmers are then notified when a beekeeper logs a bee yard location within five kilometres of their property and beekeepers are notified when any crop activity is logged within five kilometres of their hives. All registered information is kept confidential and users are always anonymous.

Registered users can choose to use BeeConnected's built-in messaging service to coordinate and privately share information



Photo by Denis Cahill

“Bees and pesticides are integral and complementary components of sustainable agriculture, so we are very happy to see these numbers increasing.”

~ PIERRE PETELLE

with specific users or they can broadcast their message to any relevant users registered within a five kilometre radius of their activity or hive.

Farmers, commercial

pesticide applicators and beekeepers can also explore the in-app map to find any nearby activity that could affect them. But beekeepers can't see other beekeepers and farmers and pesticide applicators can't see other farmers and applicators.

Efforts such as BeeConnected demonstrate the high level of interest that exists to support honey bees in Canada and to help protect them from inadvertent exposures to agricultural pesticides. Health Canada's Pest Management Regulatory Agency's recent update on Canadian bee incident reports shows these efforts are having a positive impact.

Here are a few highlights:

- The number of beekeepers reporting incidents potentially associated with a pesticide spray application in Canada have been cut in half – there were

seven in 2016 and 14 in 2012.

- The number of bee yards with reported incidents potentially associated with corn and soybean planting have decreased by 75 per cent from 2013.
- The number of beekeepers reporting incidents, and the severity, potentially associated with corn and soybean planting are down – there were 37 in 2016 and 89 in 2013.

"The goal of a tool such as BeeConnected is to further help by improving communication between farmers and beekeepers about agricultural activity or hive locations with their neighbours," said Petelle.

To learn more about how the app works, head to www.beeconnected.ca

Jillian Bender is senior communications officer for CropLife Canada.

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MARKETING

Trustee takes over Ontario processing vegetable growers' board

KAREN DAVIDSON

Nine southwestern Ontario growers, duly elected by their peers, were terminated by the Ontario government on March 3 because negotiations with tomato processors had broken down two days earlier.

Ontario's agriculture minister Jeff Leal appointed Elmer Buchanan, until recently, the vice-chair of Ontario Farm Products Marketing Commission, as trustee of the Ontario Processing Vegetable Growers (OPVG) board. In the minister's words, the decision was prompted by the "impasse" in negotiations for tomato contracts which represents about half of the \$89 million in farmgate receipts in vegetable processing.

Mr. Buchanan arrived in the OPVG's London, Ontario offices on March 3. The non-profit organization represents producers of tomatoes, green peas, sweet corn, green and wax beans, cucumbers, beets, cabbage, carrots, cauliflower, lima beans, peppers, pumpkin and squash for the canning, freezing and pickling industry.

"This is a slap in the faces of nine growers who have been democratically elected to the board," says chair Francis Dobelaar, a tomato and field cucumber grower near Wallaceburg, Ontario. "I'm receiving calls from growers who say they will park their equipment this spring. They are currently negotiating loans at banks and they won't be held ransom."

Until as recently as March 1, OPVG was bargaining with tomato processors: Highbury Canco (formerly Heinz), Sun-Brite Foods and ConAgra. According to a five-year memorandum of understanding signed a year ago, OPVG framed the terms and conditions to be negotiated including abiding by tomato processing prices set in California. Talks were going well with Sun-Brite Foods and ConAgra, however on the deadline day, none of the processors appeared with their final offer.

"I have been closely monitoring the 2017 contract negotiations between Ontario's tomato growers and processors and was recently informed by growers, processors and the Ontario Farm Products Marketing Commission (OFPMC) that negotiations have reached an impasse, jeopardizing this year's crop season," said Leal in a statement to stakeholders. "Risking this year's tomato crop and the

thousands of jobs that support it, is something I am not prepared to do."

Elmer Buchanan, a former Ontario agriculture minister, temporarily assumes the powers of the board to negotiate 2017 contracts until elections for a OPVG board are held prior to December 31, 2017. Upcoming negotiating deadlines for tomatoes, carrots, cabbage and green and waxed beans were extended by 14 days to about

mid-March. The timelines are tight, given that seedlings must be contracted for delivery in time for spring planting.

These deadlines have put the processing vegetable industry in disarray. Given the dialogue of the last few months, OPVG commissioned an economic analysis by Dr. John Groenewegen, JRG Consulting Inc.

"It's a telling report," says Dobelaar. "Exports of tomato



paste are way up. Raw product pricing is competitive, but energy costs aren't. It would appear that processors are trying to have farmers take all the risk."

In 2015, tomato paste exports were tallied at 79,925 kg and by 2016, exports had climbed to 1,559,606 kg. Ontario has been competitive to California prices.

The Ontario Fruit and

Vegetable Processors' Association, helmed by president Steve Lamoure, also issued a news release on March 3.

"We look forward to working jointly with the OPVG, their appointed trustee, and our grower partners in putting together the details for this progressive move."

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Stars are rising in the produce universe

KAREN DAVIDSON

Produce never sleeps. It's an industry notorious for a 3 am wakeup call. So in the 21st century, what's the allure of a produce career?

Eight years ago, the Canadian Produce Marketing Association (CPMA) woke up to succession planning when it launched the Passion for Produce program. Essentially, CPMA asks companies to nominate participants. From that list, the final mentees are invited to a two-day mentoring program at the annual trade show and conference. The idea is to inspire young people about a produce career with access to about 25 mentors in a range of industry roles.

"Three years ago, we started a speed-mentoring event where mentees can meet mentors in 10-minute intervals," explains Greg Ogiba, education chair, CPMA. "The feedback is that this is their favourite event."

The produce industry is evolving with more millennials and more women in the ranks, says Ogiba. Trends such as mobile apps are revolutionizing how consumers are accessing information about produce – where and how it's grown. Those transformative trends are migrating through the produce industry. For

example, technology is improving the tracking of inventory for ultimate freshness and food safety.

With this year's show in Toronto, Ontario, guided tours have been arranged for Passion for Produce participants to visit Ippolito Produce Ltd. (experts in leafy greens) and Sysco Foods (foodservice).

Ogiba, chief operating officer of AMC North America, spends his time between Toronto and Philadelphia moving citrus and grapes to consumers. He's an example of the diversity of careers. He'll be on hand to meet with this year's crop of 18 mentees from across Canada.

Here's a glimpse into the future of the produce industry.

Cristina Medeiros

When Cristina Medeiros left an Ontario tobacco farm for culinary school in downtown Toronto, she never imagined that her career path would take her back to her roots. After graduation, she spent several years in high-end restaurants but the grueling lifestyle didn't suit her. She joined Bamford Produce in 2008 and hasn't looked back. She's enjoyed several roles within the company – receiving, buying, importing – and is now in charge of business development

for sister company Fresh Advancements in Toronto. As part of that role, she sees the schoolmates of her youth in new roles at the Ontario Food Terminal.

"I think the new millennial generation will shake things up," says Medeiros. "In the future, I'd love to become a buyer. I'm fascinated by how things grow and the new hybrids that are coming on the market such as kalettes."



Steve Chan

Being at the right place at the right time doesn't hurt. But for Steve Chan, being part of a produce family is perhaps the

biggest lucky charm of his life. His uncle was one of the co-founders of Fresh Direct Produce Ltd. in Vancouver, British Columbia. When Chan graduated with an economics degree from Simon Fraser University in 2002, he needed work and Uncle Kam's company was just starting. His first job? Sweeping the warehouse floor and packing orders.

He's now an account manager in sales, selling everything from exotic fruit and vegetables to British Columbia's famous fruits from the Fraser and Okanagan valleys.

"Our customers get the most excited about cherries," he says, admitting that the best part of his day is walking into the cooler, snapping photos of new produce, sending them to his contact list and getting on his phone to work out deals.

He is eagerly anticipating the trip to Toronto, particularly to see the Ontario Food Terminal. He's also looking forward to meeting the leaders of the industry, because one day he hopes to be in a managerial position as well.

The long hours, 10 to 12 hours a day, are tough on his young family. But he's found a way to stay energized. He's at the gym five times a week. Says Chan: "My heart is already pumping when I arrive at 8 am."

Register now

One of the highlights of this annual convention is the keynote speaker. Don't miss Matthew Corrin, founder and CEO of Freshii restaurants, at the breakfast, May 10.

Matthew Corrin is well on his way to building a billion dollar business. At 23 years old, Matthew set out to create a restaurant brand that would help people all over the world live healthier and longer lives with fast food that is convenient and affordable. Enter Freshii: a brand which is now growing at a faster pace than Starbucks.

Today, Freshii has more than 200 locations in countries around the world and can be found in some Canadian airports.

Also put on your calendar Eddie LeMoine. His 10-11 am talk on May 10 will give advice on how to attract, retain and motivate talent.

Keynote Speaker
Wednesday, May 10, 2017
8:00 a.m. – 9:45 a.m.

Matthew Corrin - Founder & CEO of Freshii

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INTERNATIONAL

Fruit Logistica: postcards from Berlin



PETER CHAPMAN

In February I had the opportunity to attend Fruit Logistica in Berlin. This is one of, if not the largest, produce show in the world. Think of 24 exhibition halls, each the size of a soccer field, devoted to produce. There is so much to see it is a challenge to get through it in three days. It really should be a destination for everyone in the industry.

Displays and booths were incredible. It is always interesting to see what can be done with produce. An Eiffel Tower full of French produce or a Brandenburg Gate made entirely of garlic!

We did see a number of items where they are combining different commodities into the same package. Mushrooms even had the cheese for stuffed mushrooms. Great for consumers looking for convenience.

Many suppliers were showcasing items cooked with the sous vide method. Lots of tasty offerings are ready for the consumer to take home to re-heat and eat right away.

There were lots of examples of packaging, different than what we see in North America. One company told me they are trying to make the packaging more of an event for the consumer to discover the product. Others are trying to talk to the consumer, showcase product benefits or the actual farmer.

It was very interesting to see the many cultures and products in one place. The producers are together by geography so it is enlightening to see the differences as you 'travel' from France to Spain to Holland.

Peter Chapman is a retail consultant, professional speaker and the author of A la Cart-A suppliers' guide to retailer's priorities. Peter is based in Halifax N.S. where he is the principal at GPS Business Solutions and a partner in SKUfood.com, an on line resource for food producers. pchapman@gpsbusiness.ca

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CANADIAN HORTICULTURAL COUNCIL ANNUAL GENERAL MEETING

The Canadian horticultural landscape: from cost to cost to cost



Newly elected CHC president Alvin Keenan is from Souris, Prince Edward Island. He is joined by vice-president Brian Gilroy, Meaford, Ontario and 2nd-vice president Bar Hayre, Abbotsford, British Columbia. Directors include: Keith Kuhl, past president, MB; Fred Steele, BC; Beth Connery and Robert Purton, Prairies; Adrian Huisman, ON; Stéphanie Levasseur and Jocelyn St-Denis, QC; Peter Swetnam and Andrew Lovell, Maritimes.

Photo Front Row: (left to right) Bar Hayre, BC; Charles Stevens, ON; Linda Delli Santi, BC; Beth Connery, MB; Rebecca Lee, CHC executive director, ON; Alvin Keenan, president, PE; Keith Kuhl, MB; Stéphanie Levasseur, QC; André Plante, QC; Peter Swetnam, NS.

Back Row: (left to right) Jack Bates, BC; Robert Purton, SK; Fred Steele, BC; Andrew Lovell, NB; Brian Gilroy, ON; Jocelyn St-Denis, QC; Adrian Huisman, ON; Ken Forth, ON; John Bareman, AB; Mark Wales, ON. Photo by Jody Mott.

KAREN DAVIDSON

Winnipeg, MB – The theme of “cost creep” dominated the recent annual general meeting, March 14-16, of the Canadian Horticultural Council (CHC). When tallied, the costs that are now borne by growers threaten competitiveness in a global marketplace. And carbon taxes top the list.

Peter Cummings, chair of the B.C. Greenhouse Growers’ Association, said in the greenhouse committee meeting,

“I have views of climate change and am skeptical that policy remedies are going to yield the outcomes that politicians desire . . . If concessions aren’t met, the result will spell the end of our industry and an adverse effect on our economy . . . We need to find a benign way to get in front of the public on this issue. If we as an industry don’t engage with the public on this issue, then we are headed to ruination.”

Cost of production

Current carbon pricing policies vary between Canadian provinces and between global trading partners, in their implementation timelines, provisions of rebates and program options. Provincial governments have been given until 2018 to implement one of two pricing systems or the federal government’s floor price for carbon emissions will be imposed: \$10 per tonne which will rise by \$10 per tonne per year until it reaches \$50 per tonne in 2022. Many anecdotes chronicle the meteoric rise of

electricity bills in the tens of thousands of dollars, sometimes on one farm alone.

The CHC board of directors sponsored a resolution that said in part: “The Canadian government, already valuing the horticultural industry as an economic driver, must acknowledge the horticultural growers’ continued role and contributions towards the intersecting priorities of both climate change mitigation and food production. We resist the concept of a carbon price without a formal plan to demonstrate how funds collected will address the challenges faced by growers in mitigating and adapting to climate change. The Canadian Horticultural Council will lobby the federal government to continue to provide guidance in the implementation of provincial carbon pricing policies.”

To address these new federal policies in a more formal way, the CHC members passed a resolution to create an Energy and Environment Standing Committee.

Other costs are chipping away at profitability: a recent 10 per cent increase on corrugated cardboard, annual increases to the minimum wage, a cost recovery initiative of the Canadian Food Inspection Agency and deductions by grocery retailers of six cents out of every farmgate dollar for marketing purposes.

In particular, growers pushed back on grocers with two resolutions. One requested that Canadian retailers recognize the CanadaGAP program, or equivalent, and implement a broad-based retailer code of practice to avoid further abuse of the dominant market position of highly concentrated retailers.

The B.C. Fruit Growers’ Association, sponsors of the resolution, explained that Costco and Walmart are introducing additional specific requirements that are not science and evidence-based such as testing water from monitored municipal systems. A second resolution, sponsored by the B.C. Greenhouse Growers’ Association, also lobbied for a grocery retailer code of practice.

Cost of loss of access to pesticides

Another issue of high concern to growers is the Pest Management Regulatory Agency (PMRA) re-evaluation of several pesticides which are used in 43 horticultural crops. The current proposal is to ban agricultural uses of the active ingredient, imidacloprid. If this neonicotinoid product is withdrawn, the potato industry in particular would be hard hit in controlling Colorado potato beetle and other insects.

An update of re-evaluation timelines was shared by Margherita Conti, director-general, value assessment and re-evaluation management directorate, Pest Management Regulatory Agency (PMRA).

“The public consultation to date has garnered 31,000 comments and we expect that number to increase substantially,” she said, referring to the comment period extended to March 23. “Additional aquatic toxicity data are anticipated from Ontario’s Ministry of the Environment and Climate Change.”

Decisions on imidacloprid as well as clothianidin and thiamethoxam are expected in late November 2017.

Continued on next page

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CANADIAN HORTICULTURAL COUNCIL ANNUAL GENERAL MEETING

The Canadian horticultural landscape: from cost to cost to cost

Continued from last page

Next steps may include changes to the use pattern – currently in-furrow and seed-piece treatment in potatoes -- depending on new environmental data and any compelling science produced.

Bayer CropScience, the manufacturer of Admire (imidacloprid), is deeply involved in providing more scientific data on the broad-spectrum insecticide. Luc Bourgeois, issues manager, says, “We have no reported incident with imidacloprid after 20 years of use. Like any product, we need to minimize risk. Risk is equal to toxicity and exposure.”

In his presentation, Bourgeois explained that PMRA’s proposed ban of imidacloprid is based only on laboratory studies and the chemical’s effect on aquatic invertebrates.

“It’s interesting to note that a high level of emergence of mayfly was witnessed in the river valleys of the Red River and Assiniboine Rivers in 2016,” said Bourgeois. If residues of imidacloprid were problematic, then these insects would have been killed. They were not.

“The PMRA’s proposed ban is motivated by 604 samples from 14 sites, primarily in three Ontario watersheds. With today’s technology, we can find minute levels of the pesticide, but they are below any risk to mayflies.”

Bourgeois concludes that mitigation and stewardship should be evaluated prior to an outright ban. He questions the validity of new water thresholds that were based on laboratory data only. He knows of no evidence of harm to water invertebrates. Bayer CropScience data shows a reduction in concentrations of imidacloprid in water samples taken in 2015 and 2016 despite an increase in product use.

Charles Stevens, chair of the crop, plant protection and environment committee, helped draft a resolution that CHC lobby Health Canada and PMRA to continue their commitment to not deregister crop protection products when there is no replacement product that the horticultural industry considers effective. The committee also supports sponsoring on-farm tour experiences for PMRA staff on an annual basis.

Cost of maintaining public trust

To date, Canada’s fruit and vegetable sector has not suffered the crises of public confidence that other sectors have endured: avian influenza in poultry, mad cow disease

(BSE) in beef cattle, Listeria-tainted pork products. However, growers are realizing the need to tell the story of how fruit and vegetables get to consumers’ plates in an increasingly urbanized Canada.

Guest speaker Marty Seymour, director of industry and stakeholder relations, Farm Credit Canada, underscored the opportunity. In citing recent polls from the Canadian Centre for Food Integrity, he said the battleground is in the middle – about 50 per cent of consumers

say they’re not sure the food system is headed in the right direction.

“That’s an opportunity to talk about food, not production,” said Seymour. “Build trust through shared values. Science is less relatable to consumers. Build lines of communication not lines in the sand.”

To that point, members of the CHC labour committee, chaired by Murray Porteous, are looking to tell the story of the Seasonal Agricultural Workers Program (SAWP). Most

Canadians, including politicians, need to be reminded that it’s a Canadians first program, however, few Canadians apply to work in orchards, vegetable fields and greenhouses often in rural areas. The SAWP program has signed agreements with Mexico and Caribbean countries to supply reliable workers. In turn, these workers are paid according to Canadian standard wages, more than could be earned in their home countries. The benefits that flow back to their families are rarely publicized in their

own words, including the ability to educate their children and start small businesses. While in Canada, the workers provide an economic boost to their local communities. These essential messages will be communicated in a more proactive way in the future.

As growers headed home from Winnipeg, Marty Seymour provided a pep talk.

“Agriculture is a big deal worth 6.6% of Canada’s GDP. The biggest project in Canada is seeding every spring.”



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Just trying to thrive



JAN VANDERHOUT
CHAIR, OFVGA

weather, production and market prices. We can mitigate the impacts of weather as much as possible and accept the outcome of production but the wild card certainly is prices, which are hugely unpredictable. A bumper crop either here or somewhere else in North America, can throw prices into a tailspin or conversely, a severe weather event in a key production area can move prices up significantly, though the later seldom will line up with our peak production times.

As growers, we continually face increasing regulatory burden, which can also add significant costs to our operations. With the requirement to have an Environmental Compliance Approval (ECA), significant cost must be borne by the farmer for applications, engineering and required structural changes. These costs are impossible to pass on to the customer and so they are carried on the back of the farmer again with the hope that these costs might translate into a higher value for the farm. In some cases, borrowing against the appreciated value of the farm is the only access to capital there is.

How many horticulture producers or for that matter farmers as a whole sometimes feel like we are on some kind of financial treadmill with the motors and belt going ever faster as we move our legs ever faster to avoid being run off the track? Often we can ask ourselves if the effort we are putting in is paying dividends and so we settle our anxiety by reminding ourselves that we didn't choose this occupation for the money. Still, how did it come to this?

The dynamics around horticulture are interesting because returns can sway significantly depending on the

So how can we thrive in this challenging business climate? Some have opted to develop a bit of a niche market with an on-farm market or pick-your-own. Others are trying to stay on top of the wave of economies of scale sometimes with a component of direct sales as well. All of these ideas require more capital and a lot of hard work. Increased staffing costs more but also adds an element of management that is difficult to love. For those who choose to go big there is always a component of debt which is not too bad with today's relatively manageable interest rates but who knows how it will be when interest rates climb even just a couple of per cent. What we end up with is growers who are investing more and more of themselves into growing their business to varying degrees of success. As these businesses grow the hope is that you are profitable. When you are selling millions of dollars' worth of produce per year, even a few per cent profit margin puts some dollars in your pocket. This is viewed as success and it is a good thing.

Others may choose not to invest in their farm as the risk is

high or they do not have anyone to take over when they retire. This creates less pressure for the grower but also limits the prosperity of their business. The real issue that I want to raise is the long-term competitiveness of these two models. Will these farms still be growing fruits and vegetables 10, 20 or 30 years from now? Sadly, I think that many of the smaller operations will not be in business as owners retire. There is a waning interest in this lifestyle so I predict that as time passes so will the number of farms in operation. Some farms will be amalgamated with their neighbouring farms to continue as fruit and vegetable producers while others will switch to growing corn or soybeans. I find this a sad loss.

So how do we avoid this attrition of our sector?

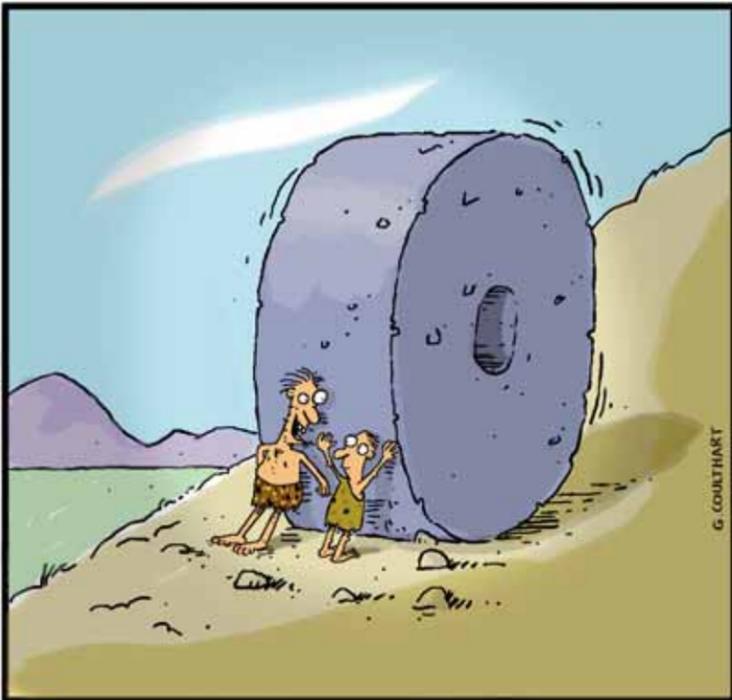
Somehow, we need to ensure that farms have the opportunity to remain competitive at various sizes. We also need to cultivate a new generation of growers whether they are family members or otherwise. We as agriculture organizations must be vigilant that the growers are not buried in a tangle of red tape. Consumers must be

reminded that "Good Things Grow in Ontario" and that they should recognize the benefits of buying "locally" grown produce when they can. We need to produce products that appeal to the consumer's palate as well as their pocketbook. As farmers, we must continue to find more efficient ways to produce more for less. Government needs to help ensure that products imported meet the same standards that we are expected to meet or identify them accordingly.

We should not hesitate to encourage young people to consider a career in horticulture by talking about the things we love about our career choice. It is always time to think about the future of your farm and who might hold the keys to that future. I know that I can truthfully say that what I love about my job is the variety it provides whether it is negotiating some pricing with a vendor, solving the latest production issue, or better yet working on that next idea to make our system better. I am thankful for the opportunity to do what I love and I hope that this sector can remain a viable career option for generations to come.

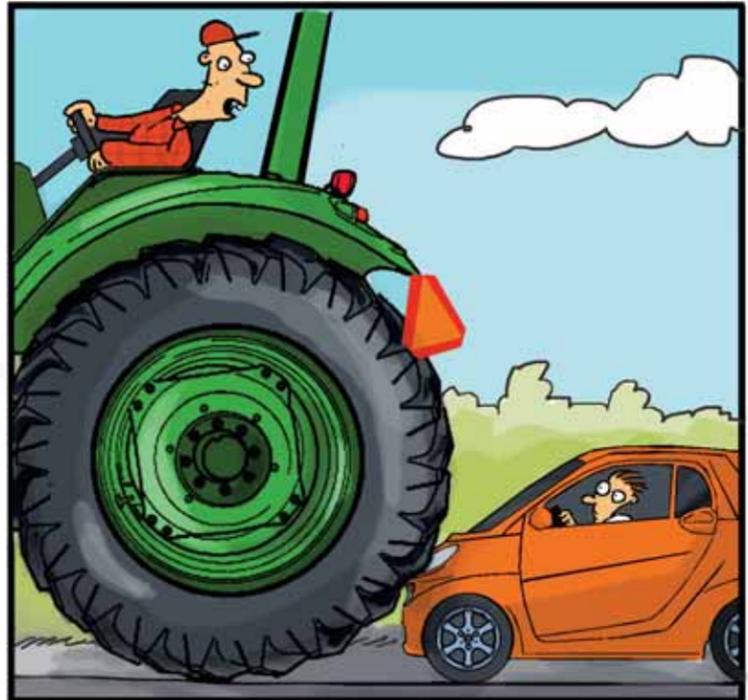
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I think this wheel thing is my safest invention yet.

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Editor: Karen Davidson, 416-557-6413, editor@thegrower.org
Production: Carlie Melara, ext. 221, production@thegrower.org
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OFFICE
355 Elmira Road North, Unit 105
Guelph, Ontario N1K 1S5 CANADA
Tel. 519-763-8728 • Fax 519-763-6604

The Grower is printed 12 times a year and sent to all members of the Ontario Fruit and Vegetable Growers' Association who have paid \$30.00 (plus G.S.T.) per year for the paper through their commodity group or container fees. Others may subscribe as follows by writing to the office:

\$30.00 (+ HST) /year in Canada
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THE GROWER

PERSPECTIVE



Restaurants' growth could lead to lucrative markets



OWEN ROBERTS
U OF GUELPH

If you planted hops a few years ago, anticipating continued growth in craft beer, you picked a winner. Canada's romance with homegrown suds is just not letting up.

The latest evidence comes from Restaurants Canada. After polling more than 560 professional chefs across the country, it named craft beer and microbrews the top food trend for 2017 in its eight annual Canadian Chef Survey.

The rest of the top five trends were food smoking, charcuterie and house-cooking meats, sous vide, and locally sourced foods. This is good news for fruit and vegetable producers. Who can meet the demand for locally sourced foods like you?

The five emerging trends – the ones the chefs expect to see on the list next year, or in years to come -- are ancient grains, culinary cocktails with savoury, fresh ingredients, new cuts of meat, fermenting, and ethnic or street-food inspired appetizers.

It's significant that this list would come via a restaurant association. Traditionally, I suspect most producers considered restaurants less important of a destination for their produce than grocery stores.

Feds announce funding for potato marketing

More than \$274,000 will be earmarked for the Canadian Horticultural Council to expand markets for Canadian potatoes. Dan Vandal, Manitoba MP (Saint Boniface-Saint Vital) made the announcement at the CHC annual convention, on behalf of the agriculture minister.

Under the Growing Forward 2 AgriMarketing Program, the project will help expand domestic and foreign markets through trade shows, targeted advertising, incoming missions,

But think again.

Food eaten outside of the home – much of it in restaurants, now consumes about 35-40 per cent of the food dollar. That's huge. And it's all leading to more restaurants, which now number 94,000 in Canada, and are on a roll. Restaurant numbers, according to the Conference Board of Canada, have grown by 1.8 per cent since 2011. That compares favourably to the 1.1 per cent growth in the general population, it says.

Jobs-wise, Statistics Canada recently released a labour force survey showing total employment in Canada's foodservice industry rose to a record 1,244,600 people in 2016. That's nearly seven per cent of the country's total workforce. In fact, foodservice was among the top five private-sector job creators in 2016, with employment rising by 11,000 jobs, more than double the 5,400 jobs created in 2015.

Unfortunately, some restaurants don't succeed. You hear a lot about restaurant closures, about how hard it is to make it in the business.

And indeed, restaurant profit margins are razor thin, like they are in much of the food business. But a lot of people are giving the restaurant business a try.

Maybe new entrants will have more odds of finding success if they focus on breakfast. The conference board says breakfast traffic is a particularly bright spot for the industry, with breakfast meals rising by more than six per cent in 2016. They now account for almost one in five restaurant visits, and have spawned the growing popularity of all-day breakfasts at several of the well-known chains.

market research and development and product promotion.

"The funding will allow Canadian growers to maintain a presence in international markets by participating in trade shows, international standard-setting processes and in phytosanitary market access activities," said John Bareman, chair of the CHC potato committee.

Canadian potato exports are currently valued at \$1.6 billion annually.



There's yet another reason to consider making a direct connection with restaurants. Despite increased competition and tight margins, restaurant prices rose in 2016, by 2.3 per cent. That was contrary to the overall price of food, which Statistics Canada's Consumer Price Index shows actually fell by two per cent.

Interestingly, leading the way in that drop was fruit and

vegetables, which were down 10-15 per cent in price from 2015-2016 -- thanks mainly to the drought easing in California, Canada's main supplier of vegetables in the winter.

So the age-old argument of fruit and vegetables being too expensive to buy and serve is dealt yet another blow.

For this and other reasons, I'm optimistic that restaurant growth bodes well for the

sector, and for those who pursue it. As chefs and restaurants distinguish themselves from each other, the odds of them serving interesting side dishes and desserts increase.

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Will 2017 be too wet or too dry? – likely yes



Photo by Bradley Van Luyk

BRUCE KELLY

Farmers love to talk about the weather. And as we move into the 2017 planting season, farmers are forever the optimists hoping that good weather will once again give them a good crop. (Or that the irrigation pond is big enough to carry them through the dry spots).

While the outlook for Ontario this summer is still anyone's guess, we have certainly had some irregular weather patterns this winter. Seasonal through the early part of winter until February, when Wiarton Willie predicted an early spring. Then, just as predicted, a short 16 days later a 10-day warm spell brought the early end to winter.

In the U.S. vegetable belt, we have heard that the five-year drought in California is over. Bountiful lettuce and greens in our stores this winter are an indicator here that things have greened up in California; the salad bowl of America. In Northern California, the mountains are exceptionally wet and covered with snow. The state's reservoirs are fuller than their long-term average (with a few exceptions). Flood control structures are being employed, some for the first time since 2006.

For a few days in February, we watched the news closely as authorities ordered some 188,000 people downstream of Oroville, California to evacuate their homes over concerns that the dam's emergency spillway could fail and an onrush of water out of the reservoir could flood nearby towns and roads. The Oroville Dam in northern California is the tallest dam in the United States, rising 770 feet high. It holds back a reservoir containing 1.1 trillion gallons of water, supplying farms and cities across the state.

The past dry years have helped us better understand the balance needed for California's water system – which must operate for many sometimes-conflicting purposes in a climate with wild swings in water availability. Every year, California must plan for drought, flood, public and ecosystem health, and economic prosperity (or at least financial solvency).

As of mid-March California's seven main reservoirs report being at 110 to 200 per cent of seasonal capacity with a healthy snow pack still left to melt down from the mountains.

But some parts of the environment don't just bounce back from years of drought. Despite these wet conditions, California has remnants of drought, some of which will persist for

decades. Some Central Coast reservoirs remain very low. Most of the groundwater deficit is in dry parts of the San Joaquin and Tulare basins, which could take decades to recover – with long-lasting effects on local wells. The millions of forest trees which died from the drought will need decades to recover, if the warmer climate allows. Native fish species, already suffering before the drought, are in even worse conditions today.

The end of drought does not solve California's most important water problems. Groundwater sustainability, effective ecosystem management, and fixing rural drinking water systems remain major problems (Jay Center for Watershed Sciences at UC Davis)

Like California, Ontario is big enough that some parts are almost always too wet and some too dry in the same year. In fact in 2016 the weather swings were so dramatic when it stopped raining at the end of May that a couple of farmers in the Durham area collected crop insurance for too wet and too dry on the same farm.

The Ontario 2016 drought was particularly hard for the Niagara Peninsula and the north shore of Lake Ontario from Oshawa to Gananoque and north to the Peterborough region. Most of the southern portions of the province is still actually quite dry and in a level one low water response state and the Otonabee watershed (near Peterborough) has remained at a level two low water rating throughout the winter as ground water levels have not returned to normal.

Long-range weather forecasting in Ontario is just about impossible as the path of the jet stream dictates our weather patterns. Ontario farmers are resilient and know that they have to be able to handle both dry and wet, but if they are dependent on irrigation, April is a great time to check the pump and pipes.

Good farming to all in 2017. For more information on Farm Environmental or Animal Welfare projects at Farm & Food Care Ontario, contact Bruce Kelly at bruce@farmfoodcare.org

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

COMING EVENTS 2017

- April 1 Garlic Growers of Ontario Annual General Meeting, OMAFRA office, Woodstock, ON
- April 5 Grape Growers of Ontario Annual General Meeting, Club Roma, St. Catharines, ON
- April 12-13 Muck Vegetable Growers' Annual Conference and Trade Show, Bradford and District Memorial Community Centre, Bradford, ON
- April 12 Farm and Food Care Ontario Annual General Meeting, Hilton Garden Inn, Burlington, ON
- April 13 Farm and Food Care Ontario Annual Conference and Speakers' Program, "Myths and Food Fantasies: The search for easy answers can be hard to digest," Royal Botanical Gardens, Burlington, ON
- May 9 – 11 Canadian Produce Marketing Association 92nd Annual Convention and Trade Show, Metro Toronto Convention Centre, Toronto, ON
- May 31 Food and Beverage Ontario Annual Conference, Steam Whistle Brewery, Toronto, ON
- June 4-8 International Organization of Biological Control Meeting (Western Palearctic Region), Niagara Falls, ON
- June 11 Ontario Agricultural Hall of Fame Induction Ceremony, Country Heritage Park, Milton, ON
- June 13-15 United Fresh 2017, West Hall, McCormick Place Convention Center, Chicago, IL
- June 16 Garlic Growers of Ontario Field Day, Hensall, ON
- July 5 Ontario Apple Growers Summer Tour, Niagara, ON
- July 17-18 BC Wine Grape Council 18th Annual Enology and Viticulture Conference and Trade Show, Penticton Trade Show and Convention Centre, Penticton, BC
- July 17 -19 FPT Agriculture Ministers' Meeting, St. John's, NFLD
- July 28-30 PMA Foodservice Conference, Monterey Conference Center, Monterey, CA
- August 3-4 Triggs International Premier Vinifera Lecture Series, Brock University, St. Catharines, ON
- August 8-9 Triggs International Premier Vinifera Lecture Series, BC
- Aug 9 or 16 Potato Research Day, Elora Research Station, Elora, ON
- August 16 Peak of the Market's 19th Annual Family Fun Day, Winnipeg, MB
- August 17 Ontario Potato Field Day, HJV Equipment, Alliston, ON
- Aug 17-19 Quebec Produce Marketing Association Convention, Hilton Lac Leamy, Gatineau, QC
- Sept 12 – 14 Canada's Outdoor Farm Show, Woodstock, ON

Growing Forward 2

A federal-provincial-territorial initiative

Turning ideas into action

Greg Devries and Hilco Tamminga of Truly Green Farms tapped into Growing Forward 2 cost-share funding to install a biosecurity system that helps protect their hydroponic tomatoes. They're managing risk, improving biosecurity, enhancing food safety and protecting quality.

Get an up-close look at Devries and Tamminga's project – watch the video at ontariosoilcrop.org.



RETAIL NAVIGATOR

Getting on the same page with your customer



PETER CHAPMAN

Often suppliers are so focused on executing everything that needs to be done they forget to take a look at performance to see what really happened. No doubt the thrill of closing the deal or seeing the big displays in store is exhilarating. The real win comes when you and your customer see that you exceeded the expectations. This will get you an invite to the party much faster than filling the purchase orders. Your customer is focused on sales and your products need to deliver them.

Great if you are both focused on sales but they need to be the same expectations. Your customer might see your product selling 1,500 cases during the summer BBQ season and you might think 1,000 cases would be a great effort. This will never work! You need to agree on the number prior to the season.

You also need to agree on the regular movement that is expected of your product. This is one of the most important numbers in your business. You and your category manager need to agree on this to ensure you are both working to the same goal. They always have an expectation for every product based on the other items in the category and their experience.

You have to walk out of the category manager's office with agreement on regular weekly movement and promotional movement.

Chart your progress

This should be a simple task in your business. Build a spreadsheet to forecast your weekly/monthly movement and monitor the results. There are a number of factors that impact your results. Some are in your control such as service level, participating in promotional campaigns and your promotion efforts outside the store. Others are not within your control such as competitive activity, retailer execution and other retailers' programs. Make note of issues impacting your results -- it is too

easy to forget when you are sitting across the desk. Use this simple chart to forecast your results.

In our example total sales for the quarter are close to the forecast but still below expectations. Do not fall into the trap of "our competitor's product was advertised so we missed our forecast." This should have been built into the forecast. You should always take the proactive approach and look to the future with the attitude "how do I make it up." That is what your category manager will be trying to do.

See it through your customer's eyes

I am giving you a mini version of how category managers will look at their category. They will look at total sales at regular price and total sales on promo. Most have sophisticated tools to do this but in the end they need to understand how much are they selling at regular price and how much on promo.

When you take this approach to your business they will respect that you are committed to sales and understand how important sales are.

It is true you do not have access to the front-end information as to how products are selling. Often you will have to make some assumptions as to how much is promo but in the end you do know your total movement into the warehouse or stores. The most important number is the total. That should be the starting point for the conversation. Sometimes category managers will even tell you what sold during the ad to make your information more valuable.

WHAT'S IN STORE

Sections in Sobeys stores

Recently I was looking in a store under renovation by Sobeys. They are implementing these sections to put extra emphasis on the items. I do not know the charge or the duration of the program but it does certainly stand out from the rest of the aisle. Consumers are creatures of habit so if you can train them to go to your section you probably have a better chance at repeat sales.

Retail news

Loblaw results will frustrate some

In February, Loblaw reported its Q4 profits for the 2016

fiscal year. They were up 57 per cent over the same quarter of 2015. If you remember Loblaw created a lot of controversy in the fall of 2016 when it demanded a 1.5 per cent reduction in cost of goods from grocery suppliers. It is impossible to make the correlation as to what the reduction in cost of goods was worth but there is no doubt it contributed to the overall results.

Same store sales were essentially flat when you compare to the previous year and same store sales at Shoppers Drug Mart were up but reduced from the increase in 2015.

Peter Chapman is a retail consultant, professional speaker and the author of A la Cart-A suppliers' guide to retailer's priorities. Peter is based in Halifax N.S. where he is the principal at GPS Business Solutions and a partner in SKUfood.com, an on line resource for food producers. Peter works



with producers and processors to help them navigate through the retail environment with the ultimate goal to get more of their items in the

shopping cart.
pchapman@gpsbusiness.ca

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APPLE PRODUCTION

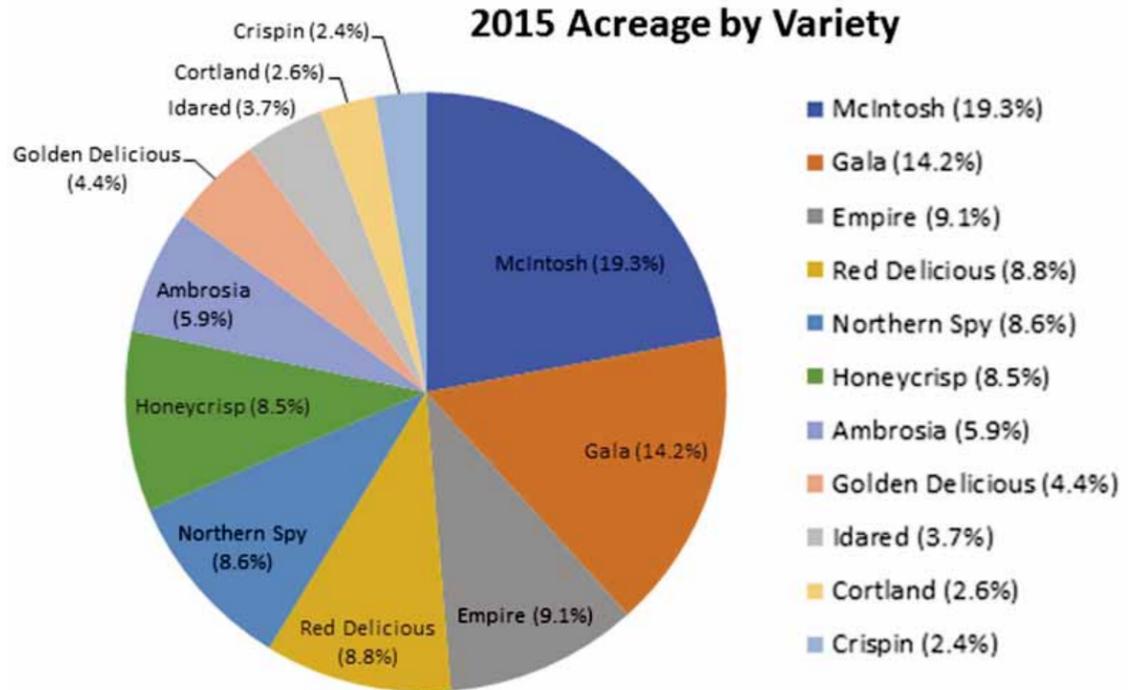
Apple growers plan expansion



Ontario's apple industry faces aggressive competition from the United States. A recent comparison of apple prices in the Greater Toronto Area on one March weekend showed Washington state Gala apples priced at \$1.49 per pound, 18 cents per pound lower than the same Ontario variety at \$1.67 per pound. These prices were noted at discount banner stores.



To plant a high-density apple orchard with the newest varieties can cost upwards of \$30,000 per acre. Photo by Glenn Lawson.



KAREN DAVIDSON

Ontario's apple growers are eager to capture more domestic market as they plan expansion of 650 acres this year and next. That's only one of the facts coming from a recently released economic analysis of the industry by the JRG Consulting Group. Growing, packing and processing generates economic activity of \$634 million and supports more than 5,100 jobs in the province.

"Ontario is the largest apple producing province in Canada and this research shows for the first time just how significant

our industry's contribution to the provincial economy is," says Charles Stevens, an apple farmer from Newcastle and chair of the Ontario Apple Growers.

Overall, 230 grower members generate farmgate receipts of \$80 million. Every million in spending generates 20 jobs. That's a memorable statistic for the provincial government which is looking to agriculture to create jobs. When apple leaders talk to government officials, they will be underlining the need for a business environment that supports research and development, a replant program and a

robust processing industry.

Plans for new acres will include planting consumer favourites such as Ambrosia, Gala and Honeycrisp. As variety analysis shows, 63 per cent of the apples planted in the last five years are of these varieties. A large percentage of Ontario's acres are in need of rejuvenation with these more popular varieties.

At present, apple farmers currently supply 45 per cent of the Ontario fresh apple market. This means Ontario is a net importer of apples, bringing in approximately 80.6 million kilograms for fresh consumption annually, and leaving the industry with vast growth opportunities.

The industry is facing some strong winds: variable spring weather which requires major investments in frost protection, labour costs, a concentrated retail sector and needs for more processing capacity for value-added products. However, highly skilled growers also sense an opportunity. Ontario has several micro-climates which spread the risk of any one area succumbing to a weather event.

Apple packers are well-established with expert marketing expertise. The "buy local" movement and marketing support of Foodland Ontario supports local product. Southern Ontario has a large consumer market in close proximity to orchards.

One of the strengths is that apple growers are travelling. They're aware of global trends, by belonging to the International Fruit Tree Association. The 2018 study tour, for example is in New Zealand.

All of these factors are pushing growers to sharpen their skills.

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APPLE PRODUCTION

Trends in apples foreshadow more automation in horticulture

KAREN DAVIDSON

What's driving Ontario expansion in apple acreage? At \$30,000 per acre for establishment costs, it's not for the faint of heart. Chris Hedges thinks that growers can't afford to manage older orchards anymore. He should know. As a grower with 225 acres near Vanessa, Ontario and owner of Ontario Orchard Supply, he's got his hand on the pulse of the business.

Once growers get used to the modern systems approach of trellised trees, irrigation and picking with platforms, he says it's no longer feasible to prune and hand pick in older orchards. It's even more difficult when two types of orchards are in production.

"It's like having a computer keyboard and a typewriter," he says. "You can operate both ways, but it's hard to orient workers and equipment to such different styles."

Estimates of 650 acres expansion this year may be true, but he expects that Ontario acreage may soon become static with growers tearing out old orchards of less popular varieties.

Hedges predicts that the industry will soon rationalize to three to five popular varieties. Honeycrisp, Gala and Ambrosia are popular with consumers now, but the big question to be answered is what varieties will take fourth and fifth spot. Is it Fuji? Red Delicious?

Washington state is planting lots of Fuji, but it's too early to tell if this very sweet-tasting variety will take off here. The top five most popular apple varieties in the U.S. are Red Delicious, Gala, Granny Smith, Fuji and Golden Delicious.

Fuji may fit as a later-maturing apple in late September and October. And that would be positive. One of the challenges is that Honeycrisp and Gala mature at the same time, making for a very intense peak of harvest. The industry needs a later-maturing variety to make use of labour. Red Delicious still presents an option, a variety with global demand and a harvest window away from Gala and Honeycrisp.

"I also think that some packhouses are pursuing their own variety, a club variety that differentiates them in the marketplace," says Hedges.

Sooner rather than later, Hedges anticipates that robotic harvesters will be in the realm of reality. With such large investments in Washington state, growers won't abandon

their sunk costs with dwindling access to labour. They will absolutely be committed to getting the crop off.

The most recent International Fruit Tree Association meeting in Washington hosted speakers that predicted the first robotic harvesters to be in the field in 2018.



Fuji apple

The top five most popular apple varieties in the U.S. are Red Delicious, Gala, Granny Smith, Fuji and Golden Delicious.

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APPLE PRODUCTION

Equipment to optimize value in fallen fruit

KAREN DAVIDSON

Grounders are a fact of life in the apple industry, but there's new equipment to optimize their value and make the collection easier. ProduceTech, a five-year-old Quebec company, has brought a fallen fruit harvester to the marketplace from Europe.

"Fallen fruits are a problem," says Eric Deschambault, ProduceTech, from Granby, Quebec. "Workers are already hard to find so having to pay them to harvest the fruit on the ground is not cost-effective. The problem is that if apples are left on the ground, then insects, molds and disease make them less valuable."

He has imported equipment that rakes the fruit at a rate of five to six bins per hour with only one worker.

"I want to help growers be more competitive," says Deschambault. "I try to bring equipment that will optimize the harvesting process."

Apple grower Raphael Cournoyer has 45 acres of apples including a pick-your-own operation at Rougemont, Quebec. He produces around 100,000 litres of cider per year.

"Two years ago, I bought the machine to help us clear the orchard floor once or twice a week depending on the weather," says Cournoyer. "This helps us present a clean orchard for pick-your-own pickers on weekends." While grounders could be used for processing, Cournoyer is also selling those apples to deer hunters.

For the equipment to work best, the orchard floor needs to be clear of rocks and relatively level. The grass must be cut.

"We lose fewer apples to



rot," he says. "The machine can collect up to 99 per cent of the apples on the ground."

Cournoyer is considering the opportunity to use the machine

for custom picking grounders. So far, ProduceTech has sold seven machines in North America including Quebec, Ontario, New York, Vermont

and California.

Photo by Denis Cahill.

Prove quality with an in-orchard brix test

A digital handheld pocket brix tester was the apple of Brian Gilroy's eye when he recently attended Fruit Logistica in Berlin, Germany. Japanese company Atago has manufactured an instrument that takes real-time, in-orchard tests of sugar levels in apples.

"The apple is cradled in a cup and then the operator presses a button for a reading," explains Gilroy, an apple grower

near Meaford, Ontario. "The infrared-equipped instrument takes an accurate reading to help time appropriate harvest."

By placing the fruit on the sample stage, there is no need to cut or squeeze the fruit. The apple is intact for a future sale. The tester is designed so that it can be held in one hand while measuring the brix of the fruit still on the tree.

This instrument could be

particularly helpful for packers and their agents as well as growers of more challenging varieties such as Honeycrisp. Evaluating brix levels is critical to knowing when to harvest and to start proper storage procedures.

The cost is \$750 US. The North American distributor is located in Bellevue, Washington at 425-637-2107.



Today's orchards start with precision planting

No one really knows how many new acres of Ontario apples have been planted in recent years, but Zac Farmer attests that the chore is easier.

The orchard manager for Watson Farms, Bowmanville, Ontario has planted as many as 30,000 trees in a "dark-to-dark day planting" thanks to GPS

technology.

The precision of planting new varieties such as Honeycrisp, Gala and Ambrosia in 10 to 11-foot row spacings



with three feet between trees has benefits throughout the season and the following years.

"The real benefit is the ability to change the density of trees when you want to switch to a different variety," says Farmer. "Yes, you still have to walk the trees and heel them in and set the height of the bud union. But the labour requirement is not as big."

Several apple farmers have benefitted in agreeing to use GPS technology installed by Halltech Equipment. First, Algoma Orchards agreed to locate the base station at its processing plant which has a

clear line of sight to neighbouring farms including Watson Farms and Wilmot Farms. The signal reaches the auto steer unit on the tractor, giving precise guidance to the "tripper" on where to stop for the next hole. When the tractor is at a planting speed of only one mile per hour, this information is critical so that there are "no wandering rows."

Precisely planted orchards pay off during the season when equipment can navigate cleanly for pruning, spraying and harvesting. For growers, there are fuel savings with one pass of the tractor.

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APPLE PRODUCTION

Tests show streptomycin still effective in managing fire blight

WENDY MCFADDEN-SMITH, KRISTY GRIGG-MCGUFFIN & AMANDA GREEN

A joint Growing Forward 2 project with the Ontario Apple Growers and the Ontario Tender Fruit Growers was launched this past year to investigate fire blight (*Erwinia amylovora*) management in Ontario apple and pear orchards.

Streptomycin Resistance Survey

In 2016, samples of fire blight infected shoots were collected across Ontario from commercial apple and pear orchards. Environmental conditions were suitable for fire blight development and project consultants were able to collect from a total of 64 orchards (42 apple and 22 pear). These samples were tested for the presence of streptomycin resistant *E. amylovora*. From each orchard, up to 250 isolates of *E. amylovora* were screened for growth on agar medium amended with 100 and 1000 ppm streptomycin to identify isolates with moderate or high resistance, respectively.

The following results were found:

- No *E. amylovora* was isolated from seven of the orchard sites surveyed, leaving 57 sites for resistance analysis.
- Overall, no growth occurred on either amended medium in 27 sites, which means no resistant isolates were detected.
- In the remaining 30 sites across the province, the highest percentage of moderate and high resistant isolates were three and two per cent, respectively, which suggests that very little selection for resistant isolates has occurred in any of the orchards sampled.

It is typical to have a low proportion of less susceptible isolates in an average population due to natural mutation. Grower cooperators in this project will receive their individual orchard results before spring 2017.

So, what does this mean for Ontario growers? The results indicate streptomycin is currently still a very effective product for management of fire blight. However, in order to keep this product as a viable tool, it is very important to incorporate other control products and management strategies to reduce selection pressure.

Fire blight management should:

- Consist of a season-long program, including pruning out infected material as soon as possible and maintaining good insect control to prevent spread of bacteria.

- Include a dormant copper spray at silver tip to ¼ inch green.

- Delaying copper after ½ inch green can result in phytotoxicity and severe fruit russetting, depending on the copper product used, especially on lighter skinned apples and some pear varieties such as Anjou.

- Do not apply under slow drying conditions or just prior to a predicted frost to also help minimize the risk of phytotoxicity.

- Use a sound rotational

program of registered products during bloom, including antibiotics (Streptomycin, Kasumin), copper (Cueva, Copper 53W) and/or biologicals (Blossom Protect, Bloomtime, Double Nickel, Serenade OPTI).

- Ensure adequate water volumes are used and that sprays are deposited into blossoms. Do not use excessive air speed on sprayers as this will propel sprays past the flower targets. For more information on calibrating an airblast sprayer or troubleshooting coverage, refer to Airblast 101 Handbook.

- Products are most effective when applied just prior to an infection period. Since biologicals have a preventative action, these products should be applied when forecasting model says risk is coming in the next three to four days. Antibiotics will provide activity 24 hours before and after a wetting event.

- Products should be re-applied every two to three days during times of infection risk.

- Copper and some fungicides are not compatible with

biologicals. Check the label.

- Apply control products when infection conditions are predicted using a forecasting model such as:

- CougarBlight
- Maryblyt
- OMAFRA Fire Blight Prediction Maps

- Consider managing growth of succulent shoots by limiting excess nitrogen and incorporating Apogee (apples only) beginning at king bloom petal fall.

The authors are OMAFRA horticultural specialists.

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ONvegetables



Ontario Ministry of Agriculture, Food and Rural Affairs

Tips for broadleaf weed control in pumpkins and winter squash

ELAINE RODDY

Even with the use of herbicides, broadleaf weed control in pumpkins and squash can be problematic. Product selection is key but timing and weather conditions are also important to the success or failure of a weed control program. Each of the broadleaf herbicides comes with its own strengths, weaknesses and risks.

As a general rule, the spectrum of weeds controlled can be increased by using tank-mixes. But, for pumpkins and squash, it is wise to limit the tank-mix to two products. A three-way tank mix is risky from a crop safety standpoint; root damage, stunting, yellowing and/or burning may occur, especially under certain soil conditions.

All of the pre-emergence herbicides require soil moisture. The active ingredient is carried by the soil water into the germinating weed seedlings, causing them to die. Under dry soil conditions, it is tempting to

use overhead irrigation to “activate” the herbicides. This is an inexact science. Too much water can quickly move the herbicide band into the zone of the germinating crop roots, causing injury to the pumpkins or squash. Too little water may be insufficient to move the herbicide into the germinating weeds.

It becomes a gamble between loosing crop to herbicide damage or loosing yield to weed competition. Fortunately, both Dual II Magnum and Sandea can be used for early post emergence weed control. Unfortunately, control of weeds such as lamb’s-quarters and pigweed is less effective with a post emergence spray.

Product: Command 360 ME (clomazone)

Timing: after seeding but before crop and weed emergence

Rate: 0.78-1.17 L/ha (0.31-0.47 L/acre)

- use the low rate on light, sandy loam soils; use the high

rate on heavy soils

Strengths: lamb’s-quarters, nightshades, ragweed, velvetleaf

Weaknesses: pigweeds

Cautions: very sandy soils and/or certain varieties may be prone to crop injury, see label for details. Also refer to the label for rotational crop restrictions.

Product: Sandea (halosulfuron)

Timing(s): after planting and before soil cracking (direct seeded)

- before transplanting; do not transplant sooner than 7-days after application

- Post-emergence between the 3-5 true leaf stage or 14-days after transplanting¹

Rate: 35-70 g/ha (14-28 g/acre). See the product label for specific rate information for direct seeded, transplanted, processing and fresh market pumpkins and squash.

Strengths: pigweeds, lady’s thumb, mustards

Weaknesses: lamb’s-quarters
Cautions: Under adverse growing conditions (dry or excessive



Figure 1. Pigweed escapes in pumpkins

moisture, cool weather, etc.) the maturity of the treated crop may be delayed which can influence harvest date, yield, and quality. Under dry soil conditions, apply 3 – 5 cm of sprinkler irrigation to settle the soil after planting and prior to application. Do not make a post emergence application if female blossoms are present on the plant; crop damage may occur to developing fruit.

Product: Dual II Magnum (s-metolachlor/benxacor)

Timing: pre-emergence or at the 1-2 leaf stage (direct seeded crops)

- prior to transplanting or within 48 hours after transplanting

(transplanted crops)

Rate: 1.15 L/ha (0.47 L/acre)

Strengths: annual grasses, nightshades, pigweeds

Weaknesses: lady’s-thumb, ragweed, velvetleaf

Cautions: risk of crop injury increases with cool and wet conditions. Foliar contact can increase the potential of crop injury. Note: research in Ontario has shown high levels of phytotoxicity when using Dual II Magnum on cucumber crops. Use on cucumber crops is not recommended.

¹ If using pre-emergence and post emergence applications of Sandea, allow for a minimum of 21 days between the two applications.

Samples requested for clubroot survey

Clubroot, caused by the soil-borne pathogen *Plasmodiophora brassicae* can cause yellowing, stunting, wilting and club-like roots on susceptible Brassica species including broccoli, cabbage, canola and cauliflower. Clubroot causes an estimated yield loss of 10-15 per cent in Brassica crops worldwide and in severely infested fields a 30-100 per cent yield loss can occur. There are different races of clubroot known as pathotypes and the resistance of many cultivars is pathotype dependent.

Clubroot is classified as neither a fungi nor bacteria, but shares many attributes of both. The resting spores of clubroot are very resilient, and have the ability to remain dormant in the soil for up to 18 years. The resting spores are activated when there is adequate soil moisture, temperatures are above 12°C and root exudates from a potential host roots stimulate the spores to germinate and release primary zoospores. These zoospores have two whiplash tails that allow them to swim short distances in water films to Brassica root hairs. Once a zoospore contacts a root hair, it infects the cell, divides, and goes on to cause secondary infection within the root cortex.

Spores responsible for secondary infection in the root cortex disrupt the host cell metabolism. They cause the host cells to expand and cell division to increase resulting in the formation of

clubs. While it takes only one spore to cause an infection, many spores are responsible for the secondary infection and the formation of clubs. Clubbing of susceptible host roots is typical when concentrations of spores reach over 1000 spores per gram of soil. At the end of the season, clubbed roots break down in the soil and release millions of new spores that will have the ability to infect next year’s crop.

Clubroot spores are extremely difficult to eradicate, as they have been found over one meter deep within the soil profile. There are few cost-effective management strategies currently available at this time. Liming to raise the pH to ≥ 7.2 has been found to be effective in some situations, but not all. Resistant cultivars of some broccoli, Brussels sprouts, canola and cabbage are available, but most Brassica lines are susceptible. The best management strategy is avoidance.

To limit the pathogen’s spread, do not share equipment from fields where clubroot is suspected and avoid all forms of soil movement. High-pressure washing has found to be effective at removing spores from equipment, but takes time and is labour intensive. When working in fields with clubroot, always work from the least infested areas to those that are more infested.

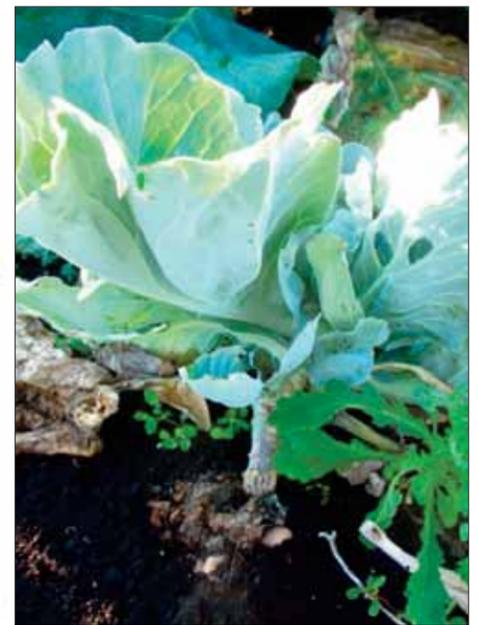
The distribution of clubroot throughout Ontario is unknown and there is



Pak choy with severe clubbing, six weeks after seeding.

even more uncertainty surrounding the specific pathotypes that are present. We are currently organizing a clubroot survey to determine the distribution of this pathogen throughout Southwestern Ontario. If you suspect you have clubroot in your field, we are requesting soil samples or clubbed roots to determine if clubroot is present in your field and if so, what pathotype(s) is/are present.

We would greatly appreciate your help in this study and in return we will be able to make better decisions with



Stunted cabbage with severe clubroot, ten weeks after seeding

regards to cultivar resistance as well as limit the spread of the pathogen to other areas of Ontario.

Previous studies have shown sampling at the field entrance has the best outcome, as the entrance typically has the highest amount of resting spores. Five litres of soil or clubbed roots from three plants are requested for the pathotype testing. If you have any questions about soil sampling or would prefer if we took the soil samples, please contact Travis Cranmer at travis.cranmer@ontario.ca or (519) 826-4963.

POTATO SCOUTING

The importance of scouting your potato fields

EUGENIA BANKS

Crop scouting keeps growers on top of field conditions, helps to detect and diagnose problems early and allows for timely management practices before economic losses occur.

Potato growers face crop challenges every year. Some challenges can be predicted, some occur randomly. Insects, diseases, weeds and physiological problems affect potatoes every growing season and can seriously impact both yield and quality. However, this negative impact can be reduced by using Integrated Pest Management (IPM) strategies.

IPM is a sustainable approach to managing pests by combining biological, cultural, mechanical and chemical tools in a way that minimizes crop losses and protects the environment. Regular field scouting throughout the growing season is the foundation of an IPM program. By identifying pests and other problems early, corrective action can be taken before serious crop losses occur.

Field scouting is complemented with Economic Thresholds (ET), the levels at which pests require control, otherwise economic losses would occur. ETs for insects are very important and should be used in conjunction with weather forecasts. Insect development is very fast in warm weather. For instance, the populations of potato leafhoppers increase so rapidly that insecticides need to be applied before insect numbers reach economic thresholds.

For devastating potato diseases such as late blight, scouting and a preventative fungicide program are the best strategy. Late blight is an explosive disease under cool, wet conditions. Economic thresholds are irrelevant.

Potato scouts—be they growers, crop advisors, summer students or farm workers—need to have a thorough understanding of crop growth/development, the key pests and their life cycles. Scouts also need to

know how the environment affects different diseases and insects. Potato fields should be scouted twice weekly during the growing season because pests may develop rapidly. In general, warm, dry seasons favour insects; cool, damp weather provides favourable conditions for diseases.

Besides the visual inspection of fields, scouts can also make use of yellow sticky cards for aphids and potato psyllids as well as pheromone traps for black cutworms and wireworms.

IPM requires good records. Scouts must complete a report for the grower immediately after scouting a field. The report should include a field map identifying problems and showing where the problems are located.

Cell phones with good cameras and GPS have improved reporting over the last five years. Text messages and email have made it much easier to communicate with growers. Drones can be used to map nutrient deficiencies, insect defoliation or any other problem that can be detected at drone flying altitude. While new technologies are useful, they will never replace field scouting.

POTATO SCOUTING TIPS

Distribution pattern of field problems

- Circular patterns are typical of aphid infestations. Seed-borne late blight starts as a circle. Plants that emerge from infected seed are sources of spores that infect neighbouring plants forming a circular patch of diseased plants.

- Some problems appear uniformly over a field. Early blight will affect nearly every plant in a field if the crop is under stress. Colorado potato beetles are often distributed uniformly in non-rotated fields.

- Scattered distribution is usually seen in fields planted with seed that had a low percentage of viral infections, such as mosaic or leaf roll.

- Uneven spray distribution creates problems that follow the row.



Time of field monitoring

The time of the day is also important for disease and insect identification.

- Common mosaic symptoms caused by the PVYo virus are easier to see on cloudy days. Bright sunlight masks the symptoms.
- Colorado potato beetles are easier to find on warm, sunny days. Adults and larvae tend to hide under leaves when it is cool and windy.
- Cutworms are not seen during the day because they feed at night leaving typical holes on the leaves. To find cutworms during the day, dig soil around the affected plants.

The need for laboratory analysis

- Laboratory tests are needed to identify the mating type and strain of late blight.
- Soil tests are required to identify nematodes and estimate numbers. Also, the

level of Verticillium infestation requires a soil test.

- Viral diseases require lab analysis to identify the viruses or combination of viruses causing symptoms.

Field identification can be helped with some simple tools

- A pocket knife to cut stem/tubers to check for internal symptoms.
- A 10x hand lens is useful to confirm diagnosis of diseases such as black dot and grey mold.
- Flags to mark problem areas and assess the performance of pesticides.
- Plastic bags are useful for collecting samples from diseased plants. Plastic containers with small holes punched in the lids should be used to collect insect samples. Placing the samples in a cooler will keep them in good condition.

Things that scouts should

always remember

- Before scouting a field, check when the field was last sprayed.
- Know and obey the re-entry intervals of the pesticides commonly applied to potatoes.
- Carry drinking water and use sunscreen even on cloudy days.
- Be aware of the weather pattern prevailing in your area. Leave the field immediately if you hear thunder.
- Wear disposable shoe covers to avoid carrying soil between different fields.

IPM programs are constantly changing. What is considered state-of-the-art today may be outdated technology in three years. Growers will need to adapt to new management practices. Whatever the changes, field scouting will continue to be the foundation of potato IPM programs.

Eugenia Banks is a consultant to the Ontario Potato Board.

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MINOR USE

CRAIG'S COMMENTS

Responsibility: Where does it begin and end

CRAIG HUNTER
OFVGA

our comments revolve around change to the government proposal that are needed to reach our 'happy place.' It is never easy, and always fraught with the danger of not achieving your needs. It could even embitter the government when you lay out proposed changes, because after all it was 'perfect' to them when it went out for our comments!

This also raises another point. When comments on a proposal come in, it is typically the selfsame staff who prepared the original proposal who sit in judgment of those comments. Judge, jury and executioner- all the same folks! Perhaps government needs to offer up the original proposal and all the comments to an independent third party to assimilate all that information, and to create a final version that reflects all the inputs. What a concept! But I can see the reluctance of the original creators to let go of their sacred proposals!

In the pesticides world, we end up needing to rely on good data to buttress our position. Most of this data is the property of registrants. There is always some data freely available online from academia but some sources must be looked at with askance or with a 'consider the source' mentality before using it to make one's case.

Company data is tricky too. Why was it not already in the hands of PMRA if it had bearing on the situation under review? Why was it not freely shared when asked for? Why was it already available to and reviewed by the US EPA, but never shared with PMRA? Most recently, why were required studies as conditions of temporary/conditional registrations never done, or not submitted, or done so poorly that the continuance of registration comes into doubt?

Growers come to rely upon some key uses to remain competitive. They feel betrayed when they find out the use is

Almost every day we get asked to make comments on some new or altered position being taken by government. In my realm they are proposed decisions, or policy decisions coming from Pest Management Regulatory Agency (PMRA). For the rest of Ontario Fruit and Vegetable Growers' Association they are coming from OMAFRA, MOECC, MOL (Ministries of Agriculture, Environment, Labour) etc. (Even the plethora of acronyms can become stressful!)

All of us need to read what has been proffered for comment, and then decide if comment is warranted, if we feel it is going to make even an iota of difference in the long term, and most importantly of all, will it be of help to our members. Answer to the final point is most critical -- if it won't or cannot help our members, we walk away.

When we do decide to make comment, it behooves us to investigate fully what was the former position, what is the expected outcome if the new proposal is accepted, and where do we feel it needs to be to meet the needs of our constituents. That is just the beginning! It could take days of digging and making contacts to suss out all the details needed to write a position statement. Once we have the facts (a la Joe Friday) our position moving forward can be stated, and all



We must keep PMRA aware of our needs and show willingness to accommodate new practice if that is what it takes to get and/or maintain labelled uses.

lost or the whole product is lost due to actions by the registrants that growers has assumed were well in hand. Notwithstanding that there are times when we have 'differences of opinion' with PMRA; they are not always the boogeyman. It becomes really difficult to remain as a supporter and an advocate when you get let down.

There are occasionally times when I have found myself being led down the garden path as well. Once we had a small delegation headed to Ottawa for a showdown on the continued availability of a key product. It was only during my trip to the airport that morning when I got an off the record call to tell me the registrant had already submitted the damning evidence that supported the PMRA decision to drop the registration.

Growers had been kept in the dark. Maybe it was an oversight, but I did not think so then or now. We had been encouraged to make a plea hoping that might change the PMRA decision. The evidence was such that I felt it was our only position to immediately support the PMRA decision, and to use the meeting to investigate what alternatives could be investigated and moved forward rapidly to fill the needs gap ahead of us. Some of the group were not initially

supportive of this move. I have always believed that growers were supportive of doing the right thing, based on good data. This was a slam dunk. The data was conclusive, and I made it clear that not only was our case already lost, we had been played as dummies. Even though it was a few years ago, that still rankles.

As we face several ongoing and many future re-evaluations, it continues to be crucial that we insist on sound science, good data and providing an understanding of how our farming practices come into play when any pesticide is used. There is an important role to be played in getting the registrants to think about the impact of their actions/inactions on our livelihoods. In a similar vein, we must keep PMRA aware of our needs, and show willingness to accommodate new practice if that is what it takes to get and/or maintain labelled uses. If all three partners can find creative ways to develop good data, to interpret available data with open minds, and to reach conclusions that meet all of our needs, then everyone wins. It is only when any one party falls down in their due diligence that things start to fall apart.

Just this spring, our office looked at some position papers we had been invited to make comments on. All had been

done, but to varying degrees of intensity. In the coming months as we get inundated with more re-evaluations, I and many others will have to decide on which ones are the most important, and which ones go under the bus. It is never easy to let anything go, but strict prioritization will be needed. If registrants do not appear to be willing to do what is needed, how or perhaps why would we bust a gut to help? Would our help even matter at PMRA if they do not get good quality, or even any new supporting data they have requested?

None of this means that any registrant has totally failed in their due diligence all the time. However, it is a disturbing trend that needs to be halted in its tracks. There is an old saying that I have paraphrased: 'The Lord helps those who help themselves, but Lord help those who get caught helping themselves at someone else's expense.'

We want to work with partners. We want mutual trust and dedication to prevail. All players must be prepared to go beyond current rigid thinking boundaries to find solutions even if it means more work.

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MINOR USE

Chateau herbicide now registered for use on broccoli and caneberry

Chateau herbicide, by Valent Canada, Inc. is now registered for use on broccoli and caneberry.

Broccoli and caneberry growers in Canada now have another effective tool to assist in the control of Group 2-acetolactate synthase (ALS) resistant weeds such as red root pigweed, green pigweed, eastern black nightshade and common ragweed.

Chateau, containing flumioxazin (51.1%), is a powerful, residual pre-emergent herbicide. A PPO inhibitor,

Chateau's mode of action is different than many other commonly used herbicides. So it helps fight resistance, while providing long-lasting control of tough weeds including Group 2-resistant weeds.

"Chateau has proven to be an effective herbicide on a wide range of crops," says Maria Dombrowsky, horticulture specialist at Nufarm Agriculture Inc. "I am pleased that this tool is now available to broccoli and caneberry growers for incorporation into their IPM program."

An important part of an Integrated Pest Management (IPM) program, Chateau should be used in rotation with other herbicide modes of action. Chateau is also registered for use on many other crops including pome fruit, blueberries and strawberries. For more information, consult the complete product label at www.nufarm.ca/product/chateau

Source: News release from NuFarm and Valent Canada.



Engage Agro releases two new products

Engage Agro Corporation has announced the release of two new products to serve horticultural producers across Canada.

Property 300 SC fungicide is a suspension concentrate fungicide that offers superior protection against powdery mildew in grapes, cucumbers, pumpkin, squash and melons.

Pyriofenone, the active ingredient in Property, is the newest generation chemical found in the FRAC U8 group.

It demonstrates extremely fast translaminar activity that is complemented by a "vapour effect" which is stronger and longer lasting than that of other chemistries found in the same group.

Property is the only group U8 fungicide that can be applied up to the day of harvest on grapes.

Cosavet DF is a dry flowable sulphur fungicide that prevents powdery mildew and controls erinium mite of grape. Its

patented formulation ensures a low dust, easy to mix product that helps to minimize the risk of scorching. Cosavet DF also controls a wide variety of diseases in tree fruit, Saskatoon berries, cucumbers and peas.

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IRRIGATION AND WATER MANAGEMENT

Blue-sky thinking required for long-term agricultural irrigation



Overhead irrigation rigs were common in the Niagara peninsula during last summer's drought. While tender fruit growers struggled to size fruit close to harvest, grape growers needed water at the same time during fruit development. Photo by Denis Cahill.

KAREN DAVIDSON

Last summer's Ontario drought underscored the limitations of the Niagara peninsula's agricultural irrigation system. While some Niagara-on-the-Lake growers have access to water from the Niagara River, Lake Ontario and the Welland Canal, due to the open channel system established in 1988, growers in the Lincoln area don't have the same access. Providing and distributing water in the right volumes when it's needed most is the key question for future sustainability.

"Closer to the lake, soils are sandy however the vines seemed to be happy,"

says Andy Reynolds, researcher with Cool Climate Oenology and Viticulture Institute (CCOVI) at Brock University. "In the heavier clay soils at the base of the Niagara escarpment, soil moisture is higher but the clay holds the water tighter. Root systems are shallower and availability of water was not that great. Those vines were under stress."

Red varieties can manage water stress a little better than white varieties. Not many growers have drip irrigation, however Reynolds says that preparing for more droughts in the future might be wise.

Kevin Buis, who farms 300 acres of vineyard and stone fruit in Niagara-on-the-Lake, confirmed that it was a

challenging summer to irrigate with overhead guns. About 1.5 inches of water are applied per round, but given his acreage, not all the acreage got covered.

"We're talking about drip irrigation but that's an expensive proposition," he says. A member of the irrigation committee for the local town, he will be advocating for more water capacity for future years.

"Water is like grease," says Buis. "It makes the wine a little smoother."

Generally, the demand for water is at its peak between bloom and fruit set. Water is cut back for grapes at veraison so that flavours can concentrate.

Austin Kirkby, grape grower and past chair of the Niagara-on-the-Lake

irrigation committee, says that lobbying is required to make agricultural infrastructure a high priority at the municipal, regional, provincial and federal government levels.

A previous report estimated that \$100 million plus was needed to construct a pressurized pipeline system for both Lincoln and Niagara-on-the-Lake. The process for gaining permits from the ministry of environment and climate change (MOECC) to access water will trigger the need for other studies from other ministries.

Kirkby underlines the need for long-term planning and future funding mechanisms which will require vision and determination.

Soil moisture monitors B2

Variable rate irrigation B4

De-dirting B7

FOCUS: IRRIGATION AND WATER MANAGEMENT

Soil moisture measurements made easy

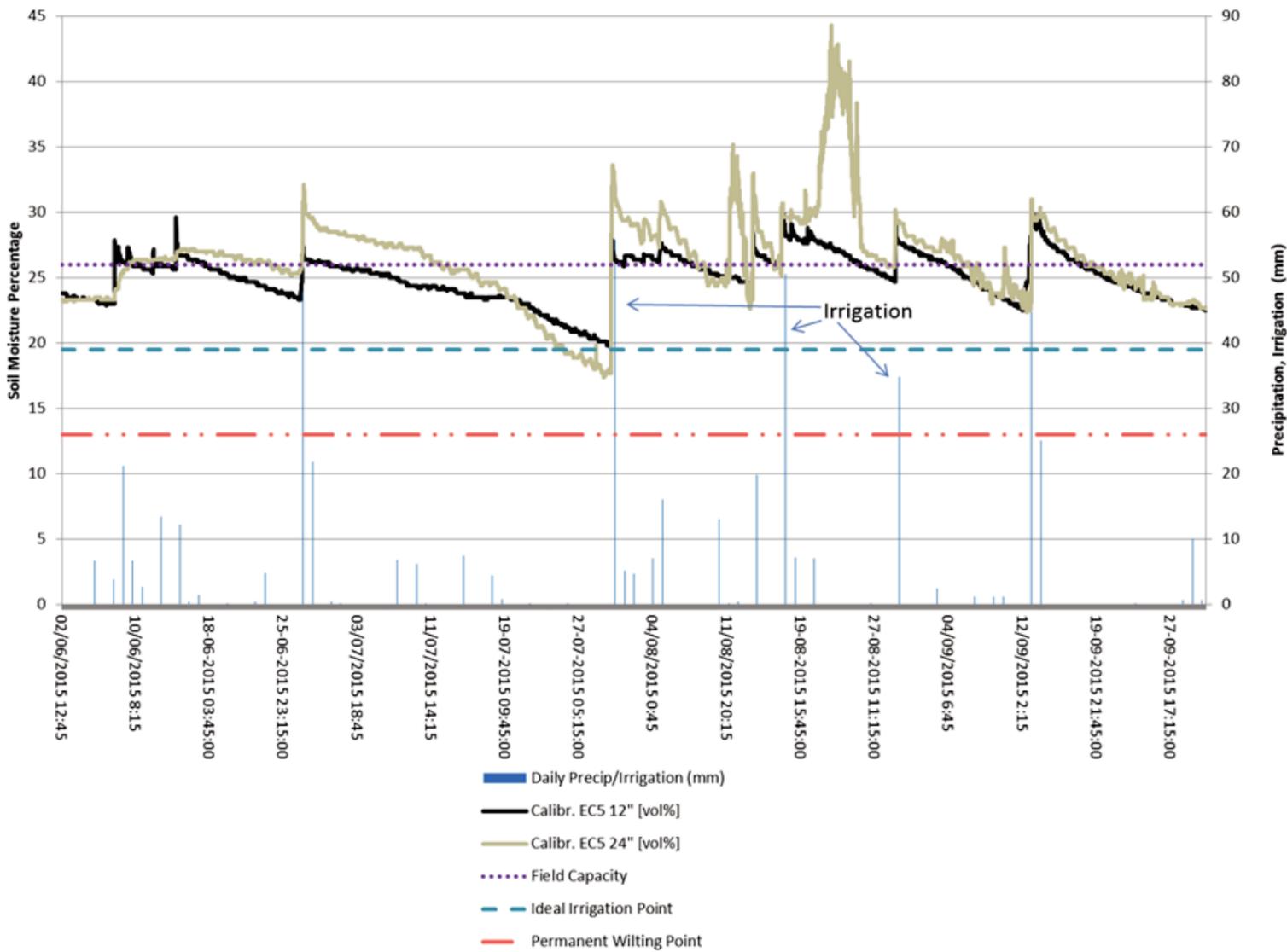


Image left: Site 3. Soil Moisture 2015 growing season

Top photo: Wireless transmission systems bring field data to the internet automatically

REBECCA SHORTT & LARISSA OSBORNE

Insufficient moisture is a major weather risk for tree fruit growers. Shortage of moisture during critical periods of crop growth and fruit development affects both yields and size of

produce. Having remote access to soil moisture information means quick and easy answers to questions such as:

- Is it time to irrigate?
- Did the last application soak in as far as I want?
- Should my next irrigation be

more or less than the last one?

- Do my trees have enough water for the winter?

Soil moisture information can improve production efficiency by enhancing irrigation decision making.

Methods:

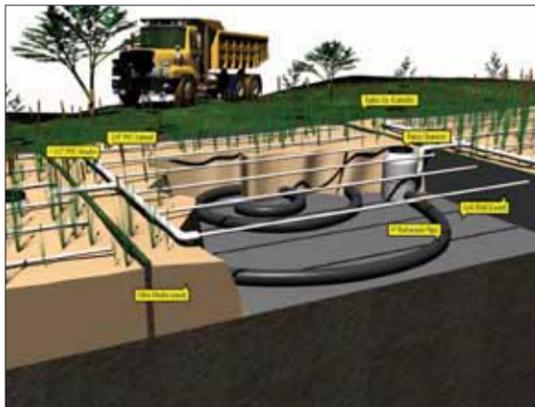
- Monitor five tender fruit sites with two Decagon EC-5 probes/site
- Compare the data collection and transmission using either Weather Innovation Network (WIN), Lincoln Hubs, or Decagon EM50G loggers.
- Data collected is automatically graphed and displayed in Crop Tracker.

moisture beyond what is necessary in the deeper depths (24" grey line going above 40%). In the fall many growers were wondering if the soil was too dry heading into the winter season. For this field we can see that at the end of the monitoring on Sept 30th there is still enough moisture in the soil for the trees to enter dormancy.

The 'AQUA Wetland System' "A new breed of constructed wetland"

AQUA Treatment Technologies Inc. designs and installs the 'AQUA Wetland System' (AWS) for tertiary treatment of many types of waste water including sanitary sewage, landfill leachate, dairy farm & abattoir wastewater, greenhouse irrigation leachate water & mushroom farm leachate water (i.e. manure pile leachate) and high strength winery washwater.

The 'AQUA Wetland System' is operated out of doors and can achieve year-round tertiary treatment of wastewater. This sub-surface, vertical flow constructed wetland consists of sand & gravel beds planted with moisture tolerant plant species. Water is pumped vertically from cell to cell. There is no open or standing water. Treatment occurs through physical filtration & biological degradation. Plants shade & insulate the cells, cycling nutrients while preventing algae growth. There is no production of sludge.



The AWS has been approved for use by the Ontario Ministry of Environment through over 40 Environmental Compliance Approvals. Recently the Region of Niagara began approving the AWS for treatment of 'small flow' winery washwater i.e. < 10,000 liters per day. Other agencies who have issued approvals include Health Canada, USEPA and OMAFRA. Recent projects include:

- 1) treatment & re-use of greenhouse irrigation leach water at greenhouses in Niagara & Haldimand
- 2) treatment of winery wastewater at Greenlane Estates Winery & numerous other in Niagara
- 3) treatment of landfill leachate at sites in Pembroke, Niagara and Alabama

For additional information please contact Lloyd Rozema at 905-327-4571 or email lrozema@aqua-tt.com



Benefits of Crop Tracker:

- Crop tracker displays soil moisture in easy to understand graphs
- Provides hourly updates
- Available on your smart phone or office computer

Results example:

The graph above shows soil moisture (grey and black lines) decreasing during dry periods and increasing with each rainfall or irrigation.

The blue bars are the daily rainfall amounts except on July 30, Aug 17 and Aug 29 which are the irrigated amounts.

Starting July 19th the grey and black lines begin to decrease more rapidly. This shows that the trees are aggressively taking water from both the 12" and 24" depth. The grey line crosses the irrigation trigger point around July 24. Potentially the first irrigation could have been a week earlier (July 24) to meet the crop demand.

The second irrigation on Aug 17 was likely not needed and it significantly increased the soil

Costs:

- Decagon EC5 probe \$150/each
- Remote transmission ~\$1,000 to \$1,600 to own or ~\$800/yr to rent
- Crop Tracker access free to Tender Fruit Growers
- Costs increase with options such as rainfall monitoring

Conclusions:

- Probe readings must be compared over time, as opposed to numerical values.
- Identifying the "full" (field capacity), empty (permanent wilting point) and ideal irrigation point, requires a few weeks of continuous monitoring.

For more information see OMAFRA Factsheet: Monitoring Soil Moisture to Improve Irrigation Decisions.

Rebecca Shortt is OMAFRA engineer-water quantity.

Larissa Osborne is market and production analyst, Ontario Tender Fruit Growers.

FOCUS: IRRIGATION AND WATER MANAGEMENT

Irrigate efficiently at the right time and the right place

The majority of requests to a plant doctor – 80 per cent -- are water-related. Not insects or disease but water! One of California's foremost experts on irrigation shared this statistic with tender fruit growers at the Ontario Fruit and Vegetable Convention.

"When there's a historic drought and resources are scarce, farmers are prompted to do a better job," says Inge Bisconer, technical market and sales manager for Toro Corporation. "In California, we've become more efficient in the last two decades. Two-thirds of all drip irrigation in the U.S. happens in California. And the result is better quality produce."

Moving to drip irrigation is an expensive proposition for tree fruit growers. She explained that the root zone is generally 24 inches deep but 80 to 90 per cent of the feeder roots are in the top foot of soil where most of the moisture is extracted. She's a fan of drip irrigation which does a good job of feeding feeder roots.

Micro-irrigation should wet 25 to 60 per cent of the root zone.

To set up an effective system, make sure you employ the experts for good design. Equipment selection and choosing the right drip tape are key.

Regardless of the terrain, soil conditions and irregular-sized fields, it's important to custom design a system that will factor in these variables.

"A good design will ensure that the sub-mains will feed properly into the laterals," says Bisconer. "But to be honest, irrigation scheduling is the art."

"Water is free from the sky but labour is expensive, so reducing labour inputs is critical," she says.

"The bottom line is that farmers are blaming the regulators for their water headaches, but once they get through the pains of better water management through technology, they make more money."

Once you adopt drip irrigation, you become more knowledgeable about the crop



Inge Bisconer, Toro Corporation, is a fan of drip irrigation. She is pictured at the Dubois Agrinovation booth at the Ontario Fruit and Vegetable Convention. Photo by Denis Cahill. For a video of the Dubois demonstration, go to www.thegrower.org.

growth curve and more sensitive to the exact times when water is needed.

Maintenance of drip irrigation systems tends to be forgotten but is equally important. Small passageways may get clogged with organic material. It's key to flush these particles out for top performance.

"You have to manage the system like a Jacuzzi – the system needs cleaning," she says.

In the future, look for the irrigation results from the Kearney Agricultural Research and Extension folks at the University of California. They are comparing conventional height peach trees with

pedestrian height (six to seven feet) trees at four to eight-foot spacings using UC-developed size-reducing rootstocks. They are comparing conventional micro-sprinkler irrigation of conventional height trees versus subsurface drip irrigation in the pedestrian trees.

Soil moisture monitors to be field tested

KAREN DAVIDSON

At major trade shows, there are some new upstarts on the street – tech companies looking to disrupt current practices with software. Esprida, for example, is based in Mississauga, Ontario. It creates and markets remote device management "middleware" built on a service-oriented architecture platform. That's geek talk for enabling communications between devices and users via the Internet.

More of these companies are looking to make inroads in agriculture. The trick is to pair technical expertise with practical expertise.

Vanden Bussche Irrigation based in Delhi, Ontario is well-known for its range of products and services. At the recent Ontario Fruit and Vegetable Convention, Gerard Vanden Bussche conducted a survey on soil moisture sensors, garnering 34 participants.

"A few of our customers have been using soil moisture sensing products for years now," says Vanden Bussche. "Others are just beginning to ask about them. We've been approached by a few different manufacturers and software producers to carry their line of products. Before we choose which one we would stand

behind, we wanted to gather some customer data.

Of the 34 who answered the survey, 12 were very interested. These 12 market-leading growers manage 100 acres plus. Of the group, two are using soil moisture sensors: Decagon and Hortau. Willingness to pay for soil moisture data ranged from 50 cents per acre to \$10 per acre. Almost 60 per cent of the respondents are interested in both air and soil temperature data. A resounding 97 per cent of the respondents want alerts from the sensor in either text or email format whether the field is "too dry" or "too wet" or "air temperature is near freezing."

Almost 70 per cent of the respondents would purchase a soil moisture monitor at cost, and don't want a subscription payment structure. The features most important to the growers were: ability to send alerts at field capacity or permanent wilting point, easily displayed historical data, access to data on mobile devices, ability to also collect air temperatures and reasonable cost of ownership.

The irrigation company will be testing a few different products at the VandenBussche Irrigation Learning Centre Farm this season and expect to make a decision in the fall of 2017.

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FOCUS: IRRIGATION AND WATER MANAGEMENT

Crop by each water drop

Two-thirds of irrigated land in Canada is in Alberta, of which more than 70 per cent is in the Lethbridge region. That fact alone may have been one of the key drivers for Cavendish Farms to announce a new processing plant in Lethbridge by 2019.

In an era of climate change and variable snowpack in the Rocky Mountains, it will be critical to steward the water resource if the plant expansion demands another 9,000 acres of raw product for its frozen foods. Potato growers and researchers are looking ahead to future needs with the appointment of Dr. Willemijn Appels to

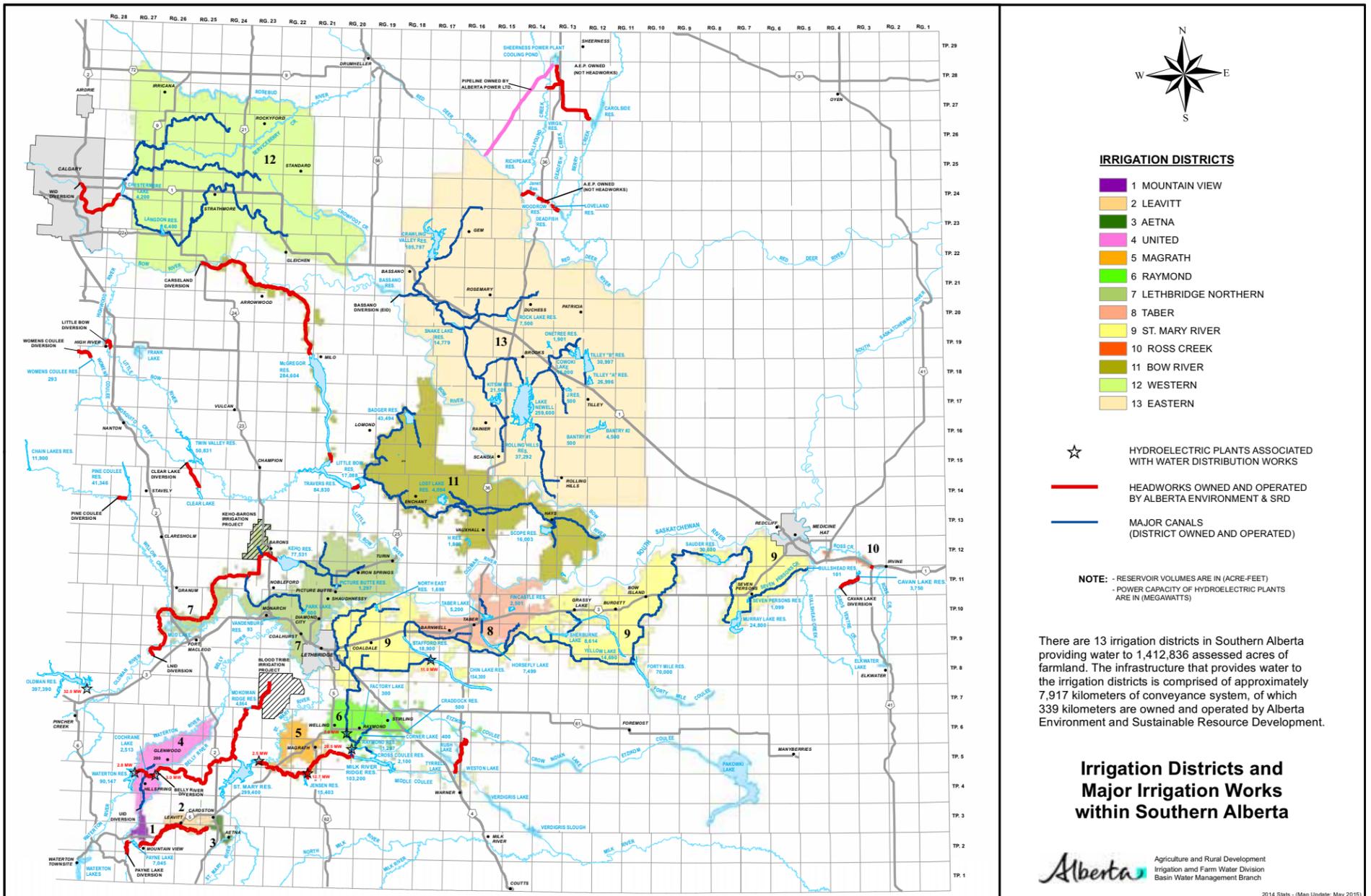
the Mueller Applied Research Chair in Irrigation Science. A year into her appointment, she's set for a busy summer in 2017.

"There's a lot of new technology available," says the hydrologist and soil physicist, "but it requires high-entry level of data from the fields and monitoring equipment for soil moisture conditions. How to integrate all of that is the next step."

While pivot irrigation is king in Alberta, Appels acknowledges that controlling the output of each nozzle on a pivot may make some sense. Her research will

study the variability in each section of land and how to finetune the prescription for variable amounts of water when it's most needed according to crop development. It's common to pump an inch of water on a potato field, but perhaps conditions may require more or less in various locations throughout the field.

"We can still increase our crop per drop," says Appels. To achieve these goals, she's working closely with growers, equipment manufacturers and other industry leaders.



A new study about irrigation, commissioned by the Alberta Irrigation Projects Association and funded by the federal-provincial Growing Forward 2 program, says that for every cubic metre of irrigated water delivered, \$3 is created for the provincial GDP and \$2 for labour income.

We need to show the value of irrigation to all Albertans.

“ ”
 ~ ERWIN BRAUN, THE CHAIR OF THE PROJECTS ASSOCIATION.

Variable rate irrigation to be tested in summer 2017

A trial with variable rate irrigation technology on a quarter section with potatoes is planned for summer of 2017. Appels says the focus of this study is on zone delineation based on various input variables (elevation, hillslope characteristics, bulk EC, soil texture, soil depth, and historic yields) and dynamic prescriptions base on soil

moisture observations in the different zones. Tests with alternative irrigation technologies such as Precision Mobile Drip Irrigation (PMDI) are also on the radar. The focus will be on subsurface redistribution of water with this low-pressure application technique.

"We will be exploring how to use drone images with point

observations of soil moisture status to improve the applications," says Appels.

Photo right: Dr. Willemijn Appels, originally from the Netherlands, is now applying her hydrology and soil expertise to the potato acres of southern Alberta. Photo courtesy of Gregory Thiessen.



FOCUS: IRRIGATION AND WATER MANAGEMENT

Making a solid set sprinkler system better



they must be divided into zones. The entire field can't be watered at once.

The Nelson sprinkler, while not new, is now paired with a flexible riser. The Nelson sprinkler has a lower flow rate than impact sprinklers. The time to water a zone is longer, but more sprinklers can be installed in that zone. For example, a field that had three zones, may now only have two. This can provide cost savings in

Solid set sprinkler systems have been around for a long time, however the team at Vanden Bussche Irrigation has come up with a flexible riser that accommodates the unique growth habit of ginseng.

In general, solid set sprinklers are simply pipe with sprinklers, used by many growers for irrigation and frost protection. Aluminum pipe is often used because it can be picked up and moved when no water is running. PVC pipe is more cost effective, but must be cut apart, once glued together.

The traditional solid set sprinkler systems for ginseng growers use PVC pipe with a PVC pipe riser. PVC is used because the irrigation lines must be placed in the planted rows. It can't be picked up and brought back later because of plant injury. It's best to set it up during spring planting, let the ginseng grow and then pick it up when the field is done in three to five years. PVC pipe is blown out and drained for the winter, but stays in the field. Some growers remove the sprinkler and riser for inside storage, while some don't.

The problem with the PVC pipe is that it twists, compresses and expands with fluctuating temperatures. It's very hard to keep the riser and sprinkler 90° upright when the pipe leans left or right. When the pipe leans, sprinklers spray directly at plants – damaging them – and don't reach others. Traditional impact sprinklers also have a high flow rate, shortening the amount of time to water that particular zone. However zones are smaller because fewer sprinklers can be run simultaneously in that zone. Most ginseng gardens are big enough that

This is a new idea that we came up with when evaluating the challenges for ginseng growers.

~GERAD VANDEN BUSSCHE

such equipment as valves.

The overall impact of the Nelson sprinkler is not in how long it takes to put one inch of water on the entire field. The pump is still pumping the same amount of water. However, there is a distinct design advantage. The Nelson sprinkler has a better uniformity

rate, distributing the water more evenly than impact sprinklers. This system avoids the situation of some areas being flooded while others are dry.

"This is a new idea that we came up with when evaluating the challenges for ginseng growers," says Gerad Vanden Bussche. "It keeps the sprinkler

independent from the PVC pipe, so that if or when the pipe twists, it won't affect the 90° upright sprinkler. In the winter, it is an easy clip to detach the sprinkler from the pipe and store inside. It also eliminates damage and speeds up installation when the system is moved between crops."



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FOCUS: IRRIGATION AND WATER MANAGEMENT

More soil left behind

BRIDGET VISSER

Concerns for the sustainability of specialty crop lands prompted Holland Marsh Growers' Association (HMGA) and OMAFRA researchers to look for methods to keep soil in the field during root vegetable harvesting in the Holland Marsh area. The purpose was to evaluate existing dedirting systems on harvesters for their ability to remove soil from vegetables.

Dedirting methods evaluated include bumpers, finger tables, and hedgehogs. Bumpers are located along the initial belt and knock off loose soil and clumps pulled from the field with the carrots. Finger tables are a set of interlocked rotating rubber fingers that jostle soil from the produce. Some finger tables have scrapers located underneath to clear build-ups of soil; this can be necessary with wet soil conditions or clumping soil types. A hedgehog uses an angled belt to pull loose debris up while the produce falls down. Finger tables and hedgehogs aim to remove soil attached to the individual vegetables.

During the project, bumpers and a finger table were tested separately and five harvesters

were evaluated as a whole system. Two similar harvesters operated under two soil moisture contents to show the impact of weather on their ability to separate soil from the produce. All of the testing was completed in carrot fields and while most of the harvesting occurred in muck fields, one harvester was used in a mineral soil.

Bushels of carrots were collected at various points of the harvesting process including hand harvesting, before and after dedirting, and off the final conveyor. They were washed using the Muck Crops Research Station's small barrel washer and the amount of suspended solids in the exiting water was monitored. Comparing samples from different points showed the reduction in solids achieved by dedirting.

The amount of soil attached to root vegetables during harvest depends on a number of factors including the soil moisture, temperature and soil composition. The soil moisture ranged from 18.3 to 59.5 per cent for the muck soil whereas the mineral soil had a soil moisture of 3.7 per cent. Samples were hand pulled from the field to determine how much soil would be carried by carrots with no dedirting. A



Photo by Glenn Lowson

kilogram of produce pulled directly from a muck and mineral field had, on average, 18.3 and 4.7 grams of soil respectively.

Findings

Bumpers are a valuable method of dedirting; knocking off the loose soil prior to further dedirting and reduces the potential of clogging a finger table. For example, if a kilogram of carrots carries 18.3 grams of soil, in a pallet box holding 545 kg of carrots (1200 lbs) there would be an additional 10 kg of soil in the pallet box. If bumpers were used and

removed 84 per cent of the soil, the amount of the soil in the pallet box would be reduced to 1.6 kg.

Combining multiple methods of dedirting will increase soil removal but the amount is hard to predict. As more soil is removed, the remaining soil is increasingly more difficult to remove. Root vegetables will always leave the field with some level of soil attached.

Soil moisture has an impact on the efficacy of the system. The wetter soil was more difficult to remove.

Speed is a factor when operating any moving dedirting methods. For example, finger

tables set to rotate too quickly reduces the time produce spends having soil removed.

Conclusions

Dedirting methods can greatly reduce soil leaving the field. Small equipment changes such as replacing aging parts, adding bumpers, or manipulating the speed of systems will increase soil removal.

This HMGA Project was funded by Environment Canada.

Bridget Visser provided leadership to the HMGA project as an independent consultant.

Precision irrigation saves water

Much of the North American strawberry business (86%) is concentrated in California while seven per cent is in Florida and the remainder is split between British Columbia, Quebec and Ontario. To date,

evapotranspiration rates have been used to estimate needs for irrigation. However, recent research shows a more accurate method in using soil tensiometers for real-time water needs and to trigger irrigation.

Jean Caron is a Laval University professor and also the Natural Science NS Engineering Research Council of Canada/Hortau Industrial Research Chair in Precision Irrigation. He was invited to



speak at the Great Lakes Expo in Michigan last December and presented "Getting the most of irrigation systems for day-neutral strawberries."

His research was carried out by comparing various precision irrigation management practices, all of which were monitored by Hortau irrigation management systems. The objective was to help growers detect the water stress in plants in real time using wireless soil tension sensors. Researchers were able to determine the optimal trigger irrigation threshold and irrigation frequencies to maximize plant growth, marketable yields and crop water productivity (CWP).

The tensiometer approach saves water by avoiding water logging and leaching and by maintaining the crop within an optimal soil tension range. The target is -10 kPa to initiate irrigation and to maintain the

crop within the -5 to -10 kPa range most of the time. A kilopascal (kPa) is a unit of pressure measurement equivalent to cbars in Imperial units. This regime recorded a 11 per cent yield increase compared to irrigation managed using evapotranspiration rates and visual assessment with a 10 per cent decreased in water use.

In highly draining soils with a lot of 30 to 70 per cent of coarse sand and shales – common in 42 per cent of strawberries in Quebec – pulsed irrigation improves crop water productivity compared to non-pulsed irrigation. Market yields are increased by 12 per cent without increasing the amount of water used. Applications are divided into shorter durations of 20 to 30 minutes and by spacing them from one to three hours.

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FOCUS: IRRIGATION AND WATER MANAGEMENT

Making root vegetables easier to wash

Dedirting at the washing facility creates uniformity when harvested produce is variable due to harvested conditions

BRIDGET VISSER and
CHARLES LALONDE

In an effort to improve the efficiency of washing at vegetable packing facilities, a team of Holland Marsh Growers' Association (HMGA) and OMAFRA researchers examined opportunities to reduce the amount of soil on root vegetables prior to washing at various Holland Marsh packing sheds. Removing soil before washing has the benefit of reducing water required to wash vegetables which reduces the size of treatment facilities needed to process washwater to regulatory standards prior to discharge.

Harvesting root vegetables commonly includes dedirting equipment on the harvesters. Some growers rely solely on one method which limits the effectiveness of soil removal. Despite installing additional dedirting methods, there is a limit to how much soil can be removed. For example, wet field conditions can cause the soil to stick. Consequently,

washing facilities receive produce with variable amounts of soil based on harvesting equipment and weather conditions. In storage, the soil dries which makes additional dedirting prior to a wash line possible and a shrewd investment as there is opportunity to remove more soil before the vegetables come in contact with water.

The focus of the project was to evaluate the impact of existing dedirting methods utilized in washing facilities on the amount of water needed to wash produce.

Bushels of carrots and potatoes were collected before and after washing facilities' dry soil removal equipment (finger tables) and a fluming system. Finger tables positioned prior to a wash line consist of rotating rubber fingers that jostle soil from root vegetables. The bushels collected were taken to the Muck Crops Research Station where they were washed using a small barrel washer and the amount of water necessary to clean vegetables was monitored. The produce was

considered clean when the exiting washwater reached a certain level of clarity (a turbidity of 200 NTU).

Findings

Soil removal prior to produce entering the wash line is valuable regardless of the amount of dedirting performed in the field. Dedirting at the washing facility creates uniformity when harvested product is variable due to harvesting conditions. The soil may dry in storage or during transport making it possible to remove it at the packing facility.

It is important to remove soil on produce prior to washing as it will greatly impact the amount of water necessary to reach the desired cleanliness. Reducing water use will reduce water treatment system size and costs as well as increase water use efficiency.

Testing was conducted using washing facilities' equipment as it was set for commercial operations. There was no attempt to optimize equipment prior to testing. Consequently,



some equipment did not perform well compared to others. The finger tables used in conjunction with the produce grown in mineral soil would benefit from optimization and reconfiguration to achieve optimal performance.

The placement and speed of the finger tables have an effect on their efficacy. If the table is above tanks or flumes and water splashes back into the fingers, it creates mud that clogs the fingers. Also, if the table is operating too fast, the produce does not have enough contact time with the fingers and less soil is removed.

Fluming can be used to move produce or remove soil before washing but since it requires water to do so, it will increase water treatment

requirements. Dry soil removal should be placed prior to all wet process steps.

Conclusions

Removing soil prior to washing root vegetables reduces both water use and also water requiring treatment prior to discharge. If produce is moved using water in flumes, the amount needed to complete the final wash is greatly reduced. The ability to manipulate the water volume used at various points of the washing line is recommended.

This HMGA Project was funded by Environment Canada.

Bridget Visser and Charles Lalonde provided leadership to the HMGA project as independent consultants.

Eliminate manual water measurements



The LTC Levellogger Edge is a compact (7/8" x 7.5" (22 mm x 190 mm)), sealed device that continuously measures and saves water level fluctuations, temperature and conductivity when deployed in a well or other water source. It combines a datalogger, pressure sensor, temperature detector, and conductivity sensor in one small instrument. It is simply programmed using Levellogger PC Software to record at intervals as frequently as two seconds.

It is very easy to suspend in a well using wireline or rope says Tricia Lane, Solinst marketing coordinator. Alternatively, it can be deployed using direct read cables to allow real-time communication with the PC Software while it is downwell. It can also communicate with the Solinst Levellogger App on a smart device. When required, data can be downloaded and viewed using the PC Software or App.

If deployed on a direct read cable, the LTC Levellogger Edge also has the option to be connected to a LevelSender telemetry system. The

LevelSender is designed for discreet installation in a standard 2" diameter well. The LevelSender uses a GSM cellular modem to send LTC Levellogger Edge data back to your PC database, email, and as a text message to your smartphone.

This automated device eliminates the need for manual water measurements, increasing accuracy and the amount of data collected. Water level fluctuation data helps meet monitoring requirements of Permits to Take Water (as mentioned here: thegrower.org/news/permit-take-water-compliance). Conductivity data provides a general indication of changes in water quality. When combined with LevelSender telemetry, irrigation wells or other water sources can be monitored remotely. Data is easily saved for historical records; telemetry option provides ongoing data for real-time monitoring.

For more information, go to www.solinst.com

Source: Solinst news release

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FARM EQUIPMENT: Hardi Commander CM750 hi-wheeled sprayer, c/w 90' booms, foam markers, chemical rinse & induction, hydraulic booms & monitors; 2000 Salford 24' "S" tyne double walking tandems & rolling harrows (they are off the cultivator but will be sold with it); IH 475 hydraulic fold disc, 18½', packer hitch & rear hydraulics; DF 18' crowfoot packer, hydraulic lift (skid of spare packer wheels sold separate); IH 710, 5 furrow, 16" trail plow (hard to find); Triple "K" 4 row, 3pth cultivator; Case IH 21 run, soybean special drill, c/w press wheels and hydraulic markers; 1999 IH 4900, DT466, c/w Market 325 gravity box & tarp and 12' auger; Buhler Farm King 150 HD blade, c/w hydraulic angle; 24' steel mesh bale rack, c/w Horst 12 ton double reach wagon; 14' steel mesh bale rack, c/w 1600 gallon water tank on Horst 14 ton wagon; Lundell 4 row stalk chopper; tandem axle 12' hydraulic dump wagon w/ tarp; AC 32 plate wheel disc; Kongskilde 12', 3pth cultivator, c/w new teeth; Vicon 3pth pendulum fertilizer spreader; several plastic water tanks.

IRRIGATION EQUIPMENT: 6 Cadman Power Pack irrigation pumps, c/w JD 6 cyl turbo charged diesels, Berkley B4 pumps, all have approx 2000hrs; Ford 6 cyl irrigation pump; Baur E Rainstar 125-400T irrigation reel; Approx 233 Wade Rain 6"x30' pipe & 11 short pieces; Approx 329 Wade Rain 5"x30' pipe & 39 short pieces; Approx 1666 Wade Rain 4"x30' pipe; Approx 15 Wade Rain 3"x30' pipe; Approx 13 Wade Rain 2"x30' pipe; 9 suction pipe; 4 irrigation pipe wagons w/ removable lifts; Approx 2000 Rain Bird risers; HUGE quantity of Wade Rain 6", 5", 4" hydrants, T's, elbows, rubbers, plugs etc; NEW 6" suction hose; 14 Nelson high volume irrigation guns; 9 irrigation suction barrels;

TRUCKS & TRAILER: 2006 KW 200 tractor, NEW 11x22.5 tires, air suspension, C-13, 13 speed, 1,145,000km, aluminum buds, current safety; 2005 KW 2000 tractor, new 11x22.5 tires, automatic, C-15 engine, aluminum buds, 8 bag suspension, 922,000km, current safety; 2000 KW T2000 tractor, c/w 11x22.5 tires, 13 speed, aluminum buds, C-12 engine, Approx 950,000km, wet line, current safety; 2001 Navistar 4400, tandem truck, c/w 30' aluminum box, rollup door, 315,000km, current safety; 2007 & 2006 Utility 3000R tandem, 53' stainless, flat floor reefer trailers, c/w Thermo King Whisperer B-210 reefers, one with 1036hrs, one with 3700hrs, current safety; 2011 Eby 22' deck over, aluminum tag-a-long trailer, c/w beavertail, 3 ramps, aluminum wheels, current safety; 1985 Fruehauf 28' tandem, aluminum dump trailer, current safety; 1964 Trailmobile 45' tandem trailer.

POTATO & VEGETABLE EQUIPMENT: 2010 Grimme SE 75-40, 1 row digger; Structural 21, 4 row potato planter, c/w cross fill fertilizer; chemical fill pumps & 2pth; 440 plastic Micro 34 bins; 95 plastic Micro 32 bins; large quantity of potato seed separating trays; BDK Fabrication, 24'x18" hydraulic drive & lift conveyor, c/w Honda 13hp electric start engine; 2 (two) 1998 IH 4900 trucks, c/w DT466E & Lockwood 22' potato boxes; Cruse 4 row, 3pth hiller; Haines potato cutter; Haines potato duster; Gallenberg 2 row, model G502-3213 pto drive ginseng digger; RainFlo 3pth plastic layer; 3 row, 3pth plug planter; Caisier 2 row, 3pth cultivator; IH 3 row, model 365 unit, 3pth planter, c/w plates; 4 row side dressers; plug planter parts; 3pth plastic roll picker; 4 totes of hanging potato bags & racking; large quantity of plastic plant boxes & green hampers; large assortment of NEW spare parts for EVERYTHING!

POTATO PLANT & PACKAGING EQUIPMENT: LINE#4 2002 Upmatic Model 2112D computerized bagging system c/w 5lb poly bags & 10lb dual head paper & stitch bags, SELLING AS ONE UNIT; Comairco Sullair ES-8 screw air compressor; Comairco Airtek CT60 air dryer, c/w cold trap; Multi Phase MT45 Hydro Converter from single phase to 3 phase; 2 (two) 600V transformers; LINE #1 Holding tank, potato washer/dryer, infeed and outfeed conveyors, 4 compartment sizer grader; LINE #2 Stainless steel, 42" brush washer, c/w 36" infeed table, 8'x36" outfeed table, 36" incline, Kerian 10'x30" sizer; LINE #3 Newtec VB40CC, 2lb stainless steel poly bagger, 8'x22" incline elevator, bulk tank w/ 20'x30" cleated belt, 7'x15' cleated conveyor, 14'x8" conveyor belt, 6' rotating table, 10'x24" stainless roller conveyor, 8'x24" stainless roller; LINE #5 7'x24" conveyor table, 15'x24" stainless, plastic cleated belt conveyor, 20'x24" conveyor, three 14' holding tanks w/ conveyors, 20'x24" stainless cleated elevator, 14'x24" stainless cleated conveyor, 4 compact sizer, 6'x48" stainless incline roller table; 8'x48" sponge dryer, two 8'x48" brush washers, 5'x48" plastic belt conveyor, 5'x48" chain conveyor, 10'x24" chain feed incline conveyor; Walthambury W320, 25kg bagger; Walthambury 300, 50lb bagger; Haines 50lb bagger; 2 (two) Fischbein portable sewer; hydraulic power pac; DF 10'x24" plastic belt, incline conveyor; Porta Cool model HP cooler fan; Cardinal 5000lb, portable scale; 2 (two) 5' electric round tables; 2 (two) Hitachi RX13 label printers; New long sewer, c/w Haines 8' conveyor & printer; 20 NEW rolls of various sized grading chains; DF 12' conveyor; 40'x18" stainless conveyor; 8'x12" stainless auger; stainless 24" incline conveyor; Fischbein ECR sewer; 2 (two) Fischbein E sewers; 3 air staplers; HUGE QUANTITY of different packaging sizes of bags, boxes, poly to be sold by skids; fingerling grade

VEHICLES: 2006 Ford F250 XLT Lariat Super Duty, quad cab, short box, 4x4 diesel pickup, c/w lift kit, Banks Power, 185,000km, current safety; 2008 Ford F350 Super Duty Lariat pickup, quad cab, short box, 4x4, loaded, 432,000km, current safety; 2004 Ford F250 XLT regular cab, 4x4 diesel pickup, loaded, current safety; 2001 Ford 3/4 ton, 15 passenger van, c/w V8 Triton, 194,000km, current safety.

COLLECTOR VEHICLES: 1961 Corvette hardtop, c/w 283 Corvette engine, 4 speed standard, 50,757 MILES! Nice car; 1937 Chevy 2 door coupe, c/w Corvette 327 engine, automatic, resto-car, steel body, no fiberglass! Nice car; 1995 Camaro Z-28 Iroc-Z convertible, 4 speed, nice vehicle to restore; 1995 Camaro RS for parts; Ford F150 pickup for parts;

BOAT: 2006 Lund Pro Angler, 16' fishing boat (custom built for Steve), c/w Honda 50 four stroke, wide side, 6 person & tarp, Meltrail custom built tandem trailer, USED TWICE.

COLLECTOR SNOWMOBILE & BIKES: 1972 Ski Doo Elite twin track snowmobile, Nice; Raider Double Eagle twin track snow mobile, nice; 3 Raider Double Eagle's for parts; 1974 MF Ski-Whiz 444; 1974 MF Ski-Whiz 344; 1972 Arctic Cat 292 Lynx; Chrysler Sno Runner; 1985 Yamaha BW (Big Wheel) 200; 2000 Honda 70R dirt bike; Ram Go golf cart, c/w Honda engine; Elite new hood for start of restoration.

SEED: Red, Yellow & Purple potato seed; White, Yellow & Purple fingerling potato seed for approx 20 acres; skid of #31 rye seed; One ton of 6-24-24 fertilizer; large quantity of Berger BM2 germinating mix.

GENERATOR: Stanford Single Phase 175 stand-by generator, c/w Cummins 285hp, LT10, ONLY 49hrs.

ANTIQUE EQUIPMENT: Cockshutt potato classifier; 4 potato plows with handles; 2 Canadian Potato Machinery (MFG Galt) potato planters; transplanter; fertilizer and duster for potatoes; Stover Manufacturing & Engine Company, hit & miss engine; Four 1 row pull type potato diggers; Plant JR digger; Aspinall potato cutter; portable cabbage cutter.

MISCELLANEOUS: Rotary 12,000lb drive on hoist with sliding dollies; Ingersoll Rand T-30 twin air compressors; 15 General Electric, 2 way radios & base (serviced by Oxford Communications); Goodyear hydraulic hose crimper & attachments; 8'x6' 4 hole ice hut; Four 10' Work Station Pro, 20 drawer & work bench combination, with cabinets; Work Station Pro mechanics toll chest & contents; 2 Vidmar bolt cabinets & contents; Hobart Mig Welder; ESAB Plasma cutter; King Metal band saw; Coates tire changer; large quantity of orange & blue steel racking; NEW STEEL on racking; metal lathe; 55 ton press; parts washer; Stihl chain saws; weed trimmers; 12 totes of 1 phase industrial lighting; 200 gallon fuel tank & electric pump; 40 bins of tote bags; Tennant floor sweeper; 38' house trailer converted to car carrier, not complete; AMT Sunlamper for pickup; Five 20' van bodies for storage; bolt bins; welding tables; office equipment; Approx 1200, 4x4 hardwood skids; bunkhouse furniture; Inglis washer & fridge; welders; large assortment of bearings & sprockets; skid of #31 rye seed; two 10.5hp Yard Works, walk behind snow blowers; Slot machines, working; Dynablast hot water pressure washer; Honda 11hp pressure washer; skid of puck boards. PLUS MUCH, MUCH MORE!

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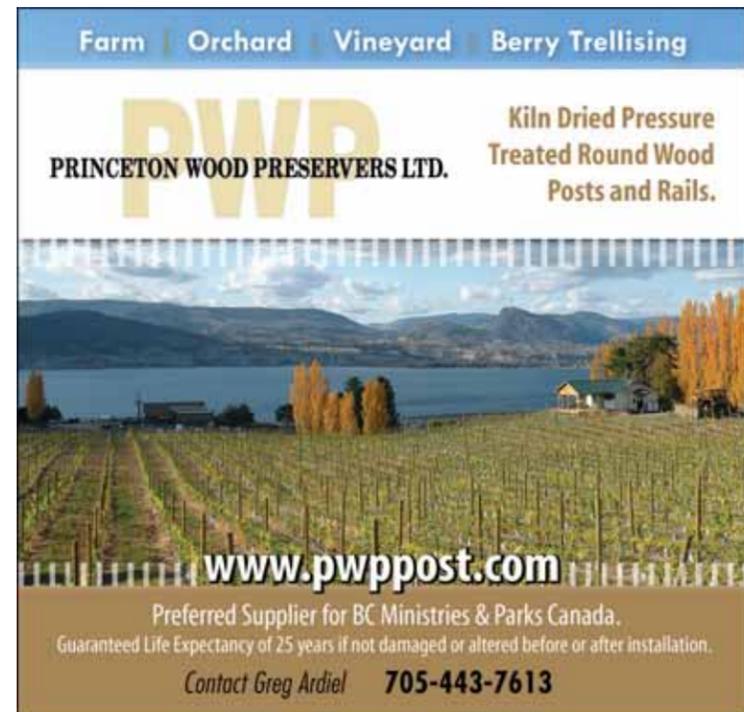
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