

# National Potato GUIDE

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# Canadian potato industry back on an upswing

**A weaker loonie and promotion of potatoes prepared in more healthy ways are improving prospects for growers and processors**

BY MARK HALSALL



PHOTO: MICHELE KONSCHUH, ALBERTA AGRICULTURE AND FORESTRY

2016 variety trials underway at the Crop Diversification Centre South in Brooks, Alta.

After several years of challenging times, the Canadian processing potato industry is feeling a lift, in part due to a lower loonie. It's stimulated exports of french fries and other processed products as well as fresh potatoes to the United States and other markets, and for the first time in years some processing plants in Canada are expanding their production lines.

Kevin Maclsaac, general manager of the United Potato Growers of Canada, says most of the big processing companies like McCain and Simplot have plants on both sides of the border and will move production around to gain the most benefit from currency fluctuations. Recently, this has been helping Canadian producers.

"The way the dollar is now, (the processors) can run their plants harder in Canada," he says. "In the past, when the dollar went the other way, they ran their plants harder in U.S. and perhaps were under capacity in Canada."

Generally, though, the past 10 to 15 years have been tough for the Canadian potato industry. Not only has demand for fresh

spuds and processed potato products been flat to diminishing, producers have faced ferocious competition from prime growing areas like Idaho and Washington in the U.S. and northwest Europe. As a result, there are a lot fewer people growing potatoes in Canada today than there were a decade or two ago.

"The numbers of growers have probably contracted, I would say, by about a third over the past 10 to 15 years," says Maclsaac.

Statistics Canada estimates about 347,000 acres of potatoes were grown in 2016 — considerably less than the peak of 457,500 acres in 2003.

While there are fewer potato farms, the operations that remain are larger than ever. According to Maclsaac and other observers, there's a trend towards amalgamation, caused by such factors as high input costs and thinning margins that encourage increased efficiencies and economies of scale, which mirrors what's going in agriculture in general.

Maclsaac says processing companies tend to want to deal with fewer growers these days. More joint ventures and



PHOTO: MARY KAY SONNIER, P.E.I. POTATO BOARD

**Above:** Variety trial field day held in September 2016 at Agriculture and Agri-Food Canada Charlottetown Research Station – Harrington Research Farm.

**Top right:** Fresh market red potato on display at variety trial field day held in August 2016 at the Alberta Agriculture and Forestry Crop Diversification Centre South in Brooks, Alta. **Bottom Right:** Chipping potatoes on display at variety trial field day held in August 2016 at the Alberta Agriculture and Forestry Crop Diversification Centre South in Brooks, Alta.



PHOTO: MICHELE KONSCHUH, ALBERTA AGRICULTURE AND FORESTRY



PHOTO: MICHELE KONSCHUH, ALBERTA AGRICULTURE AND FORESTRY

grower partnerships are being formed, he says, which “allows the plant to only have to deal with one voice at the other end of the phone with regard to scheduling loads, food safety regulations and that sort of thing.”

### Three consecutive yield records

Even though there are fewer potato operations, crop production and yields have been rising, particularly in Western Canada, thanks to improved tools, technologies and management practices.

According to UPGC figures, total potato production in Canada this year was 105,172 cwt, a half per cent increase from 104,624 cwt in 2015 and almost 4.5 per cent higher than the 2014 total of 100,654 cwt.

The average yield in Canada is also high — higher than ever, in fact. UPGC pegs the national yield in 2016 at 307 cwt per acre, up from 305 cwt in 2015 and 294 cwt in 2014. It’s the third straight year of record-breaking potato yields for Canada.

“Some of that is related to where potatoes are grown in Canada,” says MacIsaac.

For example, Alberta and Manitoba, where much of the potato acreage is irrigated, produced excellent crops and record yields in 2016. In Central and Eastern Canada, where irrigation is limited, results were mixed last year. Quebec and Atlantic Canada produced generally good potato crops,

but in Ontario production was way down (17.2 per cent according to UPGA figures) in 2016 due to a really dry summer and near-drought conditions in some areas.

Peter VanderZaag of Sunrise Potato in Alliston, Ont., acknowledges 2016 was a tough year but is confident Ontario’s potato producers will bounce back.

“Farmers are resilient,” says VanderZaag. “We take the bad years with the good ones.” While growers face different weather challenges from year to year, declining or flat demand has been a persistent growth barrier for many years now.

### Competing for the shopping basket

Keith Kuhl is president and CEO of Southern Potato in Winkler, Man., and is also president of the Canadian Horticultural Council. He cites declining consumption of fresh potatoes is an important factor but also stresses there’s a lot more competition for consumer dollars these days.

“We’re also competing with a lot more SKUs (shelf space) in the grocery store. Ten or 20 years ago the number of products that were available in the produce section was relatively limited. Today, there’s a huge variety of products that potatoes are competing with,” Kuhl says.

“As producers, we have to become much more aware of

what the consumer trends are, and then find ways to ensure that we're meeting them."

At a national level, there have been a number of recent promotional efforts organized by the Canadian Potato Council, a subgroup of the CHC.

In 2016, the CPC helped sponsor a pair of potato-related videos featuring renowned chef Michael Smith that were part of a campaign called "Half Your Plate," aimed at encouraging Canadians to eat more fruit and vegetables. The Half Your Plate videos followed the successful completion of a national promotion campaign featuring potato recipes that ran in *Chatelaine* and *Today's Parent* magazines and websites in 2015. The CPC is also currently looking into establishing a national organization that would include potato promotion as part of its mandate.

"We are looking at trying to set up a national research and promotion agency in Canada which would allow us to raise funds for research and promotion at the national level," Kuhl says. "We have engaged with a firm in Ottawa to continue the discussion so hopefully sometime in the next year we'll be able to develop a position."

### Which products to promote?

Kuhl acknowledges that raising enough money to set up and run such an agency is an important question. "That's certainly always part of the discussion — who pays, and what are the funds used for," he says. In addition to efforts at the national level, different grower organizations in the potato-producing provinces actively promote fresh potatoes, most notably the Prince Edward Island Potato Board.

Kendra Mills, marketing director with the P.E.I. Potato Board, says a new packaging program recently introduced to enhance the already strong "P.E.I. Potatoes" brand is paying off, and there are plans to introduce a few more tools to the marketing tool box for retailers and other dealers. In addition, the board is relying more and more on social media platforms like Facebook and Twitter to spread positive messages about the health benefits of potatoes and other attributes. "We're really focused on social media. We see a lot of really great success from that," Mills says.

Mills notes there's lots going on in other parts of the country as well, with marketing groups like Manitoba's Peak of the Market and businesses like Little Potato Company in Alberta and Ontario's EarthFresh Foods developing innovative products and finding creative ways to promote potatoes with consumers.

"There are a lot of people doing a lot of really great things. You don't have to look too far," she says. "The retailers are recognizing the importance of potatoes — it's still the number one vegetable consumed, and there's still a lot of ways to push the category."

One way to push potatoes is to develop and promote table varieties that appeal to consumer tastes with respect to size, appearance and flavour, a marketing strategy that's well established in Europe but is relatively new in Canada.

"In Europe virtually every bag of potatoes in retail now will be identified by variety and we're just starting to see some of that happen in Canada," says Kuhl. "With better communication between the producer and the retailer that will continue to change. The North American market tends to be a decade to a decade and a half behind the European market on marketing trends anyway. •



PHOTO: MICHELE KONSCHUH, ALBERTA AGRICULTURE AND FORESTRY

**Above:** Variety trial field day held in August 2016 at the Alberta Agriculture and Forestry Crop Diversification Centre South in Brooks, Alta.

**Right:** Raul Acosta (left) and Luis Rodriguez harvesting mini-tubers produced by seedlings (each a potential new variety of potato) at a Sunrise Potato farm in Alliston, Ont. The tubers are being placed into individual paper bags for storage and field planting the following season.



PHOTO: PETER VANDERZAAG, SUNRISE POTATO

# Research and development

**Two main focuses are increasing consumer demand and varieties with improved quality and storage characteristics**

BY MARK HALSALL

Potato R&D in Canada is conducted by companies and an assortment of government, university and private breeders, and new varieties developed both at home and abroad are constantly being evaluated at research centres and in farmers' test plots in the country's major potato-producing areas.

"Every province pretty much is involved in potato variety evaluation," says Mary Kay Sonier, the seed co-ordinator for the P.E.I. Potato Board who also leads the Canadian Potato Variety Evaluation Program for the Canadian Potato Council. "Everybody's always looking for the next, best and the brightest thing."

In addition to consumer traits, new varieties are assessed for yield potential and other agronomic qualities such as pest and disease resistance, heat and drought tolerance, and reduced dependence on nitrogen and other crop inputs. Much of the evaluation efforts involve foreign-bred varieties being tested for their suitability to Canadian growing conditions.

"If (a new variety) has been bred in Europe or somewhere else, that doesn't mean there'll be a fit here. So this is a great way for them to check for adaptation and determine whether or not the breeder's claims are holding up here," says Michelle Kenschuh, potato research scientist with Alberta Agriculture and Forestry. "We can give data back to them that's meaningful and they can make good business decisions based on the data."

## New varieties

Clearwater Russet and Ivory Russet are two

varieties developed outside the country that have been assessed in Canadian research plots for a number of years. According to Sonier, both are now in the commercial evaluation and early adoption stage in Canada and they're already creating a buzz in the industry.

"They've been accepted by McDonald's so they'll probably have a fairly wide reach in terms of acreage plus they're available — they're not restricted as to who can grow them," says Sonier.

**"At the end of the day it's (the Innate potato) more sustainable. Its carbon footprint is lower, and you have less waste. So it's very significant."**

Innate is another new variety capturing attention in Canada, largely because it's genetically modified. The Generation 1 Innate potato from Idaho-based J.R. Simplot Company was approved for sale in Canada in March 2016 by the Canadian Food Inspection Agency and Health Canada.

Innate technology was developed by introducing genes from wild and cultivated potatoes to enhance and suppress specific traits. The Generation 1 potatoes have less browning or bruising compared to conventional spuds

as well as lower levels of asparagine (which turns into acrylamide, a potentially hazardous product, during frying).

Doug Cole of Simplot's marketing and communications says the company hopes to receive Canadian approval for the next version of Innate sometime during 2017. The Generation 2 potatoes have enhanced protection against late blight and improved cold storage capability in addition to the Gen 1 traits.

Cole says Canadian approval came too late for Generation 1 potatoes to be grown commercially in this country in 2016. Kevin MacIsaac of the United Potato Growers of Canada believes they will attract a lot of commercial interest in this country in the future.

"A big reason it was developed was to reduce waste or reduce cullage. There's less black spot, fewer bruising effects to the potato with this new trait," he says. "Growers want to ensure they have the most marketable product going out the door. There will be less waste by growing this particular kind of potato and I think they will be attracted to that."

Ontario's Peter VanderZaag, who in addition to growing spuds is a world-renowned potato scientist, is also keen on Innate's prospects. He believes cisgenesis techniques — in which genes are transferred from closely related organisms that could be otherwise conventionally bred — represent a "game-changer" for the potato industry in North America.

"At the end of the day it's more sustainable," VanderZaag says. "Its carbon footprint is lower, and you have less waste. So it's very significant. To me, that's one of the most exciting things that's happening in our industry." •



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# Keeping out the invaders

**Provincial organizations encouraged to promote a national on-farm biosecurity standard**

BY MARK HALSALL



This growing season, potato producers in Canada will be on the lookout for dickeya, an emerging blackleg pathogen in the U.S. that caused significant crop losses in the country's northeastern region in 2015.

Preventing new diseases like dickeya and keeping old adversaries like late blight in check are important reasons why growers subscribe to farm biosecurity, which can be defined as a set of management practices designed to protect farm properties from the entry and spread of harmful diseases, pests and weeds.

Developed by the Canadian Food Inspection Agency, Agriculture and Agri-Food Canada, the Canadian Food Inspection Agency, the Canadian Potato Council and other industry members, the Producers Guide to the National Farm-Level Biosecurity Standard for Potato Growers was released in 2012 to help producers develop biosecurity plans for their farms.

"I think generally speaking the material that was in there really captured the majority of the practices that people were already implementing in one way or another," says Tracy Shinn-

Carnelley, director of research and quality enhancement with Manitoba's Peak of the Market. She helped draft the guide as a member of the Potato Sector Biosecurity Advisory Group.

"By working on the initiative it was a great way to pull all the information together into one reference document," Shinners-Carnelley says. "It also provided a tool for growers to be able to look at the level of biosecurity that they were already doing on their farm and identify some opportunities as to how they could improve or enhance that."

### Potato growers industry leaders

Shinners-Carnelley considers potato producers as the leaders in biosecurity within Canada's ag industry, and says that's been driven by necessity.

"We can never sit back on our heels and say we know... what diseases and pests are out there. It's a dynamic industry and, generally speaking, the risk of pathogens and damage that they can do on a farm is always changing, whether it's the evolution in the strains of late blight or new bacteria like *dickeya* that can be associated with blackleg," she says.

Keith Kuhl, president and CEO of Manitoba's Southern Potato and president of the Canadian Horticultural Council, was also involved in drafting the biosecurity guide.

Kuhl isn't sure how many potato farmers have referred to the handbook since its release but he suspects it's not a huge number. Kuhl believes more could be done by some provincial

organizations to raise awareness within the industry of the guide and the importance of biosecurity planning.

Part of the challenge, he adds, is that farmers can feel overburdened at times by all the paperwork involving issues like food safety, sustainability and the environment, and they may tend to focus on plans that have shorter-term objectives as a result.

However, Kuhl believes most potato growers have some level of awareness of biosecurity and follow practices to safeguard their farms, even if they don't have prescribed biosecurity plans in place.

He believes biosecurity is important, not only as a way to help growers protect their investment, but also to protect future generations of farmers from disease, pest and weed threats. "Part of being sustainable is having a good biosecurity plan for your farm," Kuhl says. •

**"It also provided a tool for growers to be able to look at the level of biosecurity that they were already doing on their farm and identify some opportunities as to how they could improve or enhance that."**

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# What's new for your potatoes in 2017

## Aprovia

Aprovia fungicide is a new alternative for the control of verticillium wilt. Aprovia contains the fungicide Solatenol, a SDHI (succinate dehydrogenase inhibitor) fungicide from FRAC Group 7. It is registered for in-furrow application to suppress verticillium wilt, silver scurf and rhizoctonia (black scurf, and stem and stolon canker). [syngenta.ca/](http://syngenta.ca/)

## Aprovia Top

Aprovia Top fungicide combines difenoconazole (FRAC Group 3) with Solatenol (FRAC Group 7) in order to control alternaria-caused early blight and to suppress alternaria-caused brown spot. Because Solatenol is slowly metabolized by the plant, it provides a longer residual activity. As soon as it dries out, Aprovia Top becomes rainfast and, thanks to the translaminar property of its two active ingredients, it shelters both sides of the leaf. [syngenta.ca/](http://syngenta.ca/)

## Double Nickel 55 WDG

Potato growers now have access to a new biofungicide called Double Nickel, which controls white mould and early blight as a foliar spray. Applied in the furrow, it also suppresses rhizoctonia canker. Double Nickel belongs to a new class of fungicidal-bactericidal agents (Group 44), whose active ingredients are made up of biological products presenting low risk for the environment.

Manufactured by Certis USA, Double Nickel is registered in five countries, including the United States, where growers have been using it for more than two years. Double Nickel contains the D747 strain of the beneficial rhizobacteria *Bacillus amyloliquefaciens* as well as its metabolites that are factory-produced through fermentation. These metabolites, called lipopeptides, destroy pathogenic fungi and bacteria found on leaf and root surfaces by damaging their cell membrane.

When Double Nickel is applied in the soil, *Bacillus amyloliquefaciens* quickly colonizes the roots, thus creating a biofilm that prevents initiation of root diseases while destroying pathogenic fungi populating the rhizosphere. Double Nickel is an effective tool for managing resistance to chemical fungicides, and is an important part of an integrated pest management program. It presents little risk to the bees and other beneficial insects. Re-entry interval after its application is only four hours, and it can be sprayed at low rates up until the day of harvest.

This biofungicide is available as water-dispersible granules (WDG) or as a liquid concentrate (LC). It leaves no visible residue on the plants treated and can be tank mixed with other pesticides including copper-based fungicides. [uap.ca/](http://uap.ca/)

## Elixir

United Phosphorus offers its new Elixir fungicide, recently registered in Canada and created exclusively for potato production. It is composed of chlorothalonil and mancozeb. These two very popular active ingredients control early and late blight of potatoes.

Chlorothalonil is the active ingredient of Bravo 500, Bravo Zn, Echo 90 DF and Echo 720. As for mancozeb, it is the active ingredient of Dithane 75 DG, Manzate Pro-Stick and Penncozeb 75 DF. The discovery of these two active ingredients dates back to the 1960s. Their multi-site mode of action ranks them inside Group M.

Applied early in the season, Elixir efficiently controls early and late blight. It can be applied up to 10 times per season. This inexpensive fungicide will be available for the 2017 season.

Elixir makes it possible to have a product containing both active ingredients in the form of water-dispersible granules. [upi-usa.com/Canada](http://upi-usa.com/Canada)

## Orondis Ultra

Orondis Ultra provides long-lasting protection against potato late blight using two modes of action. It combines mandipropamid (active ingredient of Revus — Group 40) with oxathiapiprolin, a new active ingredient from Group U15, thus ensuring effective control of late blight. Oxathiapiprolin enters the leaf surface and moves upwards inside the plant, protecting both existing tissues and new growth. This new active ingredient has an innovative mode of action that delivers superior residual control of late blight. It safeguards the new growth by undergoing a systemic and “acropetal” movement within the plant.

Field trials carried out at the Honeywood research station in Florida and in Plattsville, Ont., have shown Orondis Ultra could offer protection against late blight up to 21 days after a preventive application. [syngenta.ca/](http://syngenta.ca/)

## Presidio

Valent has applied for a spring 2017 minor registration in Canada for the use of Presidio fungicide for suppression of pink rot. This product, whose active ingredient is fluopicolide (Group 43), is already registered for the control of late blight in potato.

Fluopicolide's mode of action is typical of the systemic fungicides used specifically against oomycete fungi: it disrupts many steps in their reproductive cycle. For a maximum protection when using this product as a foliar spray, it is preferable to tank mix it with a chlorothalonil-based product.

Presidio allows for a protective, curative, controlling and antispore action. Its active ingredient fluopicolide acts as a locally systemic and

translaminar penetrating agent (as a foliar spray); it works systemically by moving inside the plant xylem. Presidio fungicide is particularly efficient as part of a regular spraying program, and in association and alternatively with other effective fungicides relying on a different mode of action (that is, from a group other than Group 43).

For controlling pink rot, Presidio must be applied as a band at planting or with directed spray on row sides between hilling and tuber initiation.

Field experiments in Maine (Dave Lambert, University of Maine) with potato variety “Russet Norkotah” have shown Presidio to perform a better suppression of pink rot as compared with many other products currently used against this disease. [nufarm.ca/](http://nufarm.ca/)

### Quash

Already known as an effective product against early blight, Quash is a fungicide composed of metconazole, from the triazole family (Group 3). Quash provides a broad-spectrum action that inhibits the fungus’s sterol biosynthesis. It has a systemic activity. Quash is quickly absorbed by the tissues of the plant inside which it can move upwards, but not downwards. Metconazole does not affect the spore germination of fungi. However, it disrupts other mechanisms in their life cycle’s early stages. Quash is particularly efficient when applied before infection.

Quash is now registered for suppression of white mould caused by *Sclerotinia sclerotiorum*. For a vigorous suppression, Quash must be sprayed before infection, generally at row closure.

Scientists from the U.S. company Miller Research report a significant yield increase in potatoes treated with the fungicide Quash. Jeff Miller, president and CEO of the research firm, believes this yield increase is brought about by a physiological change in potato plants which tend to be shorter and greener when treated with Quash. [nufarm.ca/](http://nufarm.ca/)

### Sencor STZ

Bayer expects its herbicide Sencor STZ to be registered in the spring of 2017. Sencor STZ will combine the action of Sencor 75 DF (Group 5) with that of a Group 14 herbicide. In fact, we will have access to a product mixing metribuzin, the active ingredient of Sencor 75 DF, and sulfentrazone (Group 14).

The idea is to create a barrier at the soil surface fighting the weeds listed on the label of Sencor 75 DF and those resistant to triazines — including lamb’s-quarters and all types of pigweed — with the additional aid of sulfentrazone. [bayercropscience.ca/](http://bayercropscience.ca/)

### Velum Prime

On November 16 Bayer announced Canadian registration of Velum Prime, a non-fumigant potato nematicide. Velum Prime’s active ingredient is fluopyram.

This nematode-controlling product introduces a new mode of action

and thus a new chemical family (pyridinyl ethyl benzamide). Velum Prime’s label states it suppresses root-borne nematodes, northern root-knot nematode, and potato cyst nematodes, including pale cyst and golden nematode.

According to Bayer’s Jon Weinmaster, “Velum Prime provides protection against a yield-robbing pest that, for many growers, didn’t have a viable solution outside of fumigants.”

Velum Prime must be applied in-furrow at planting. Moreover, this in-furrow application has the added benefit to protect the potato plant against early blight. However, it is important to keep monitoring this disease all summer long. The use of foliar fungicides with a different mode of action will help reduce resistance development and strengthen early blight control later in the season. [bayercropscience.ca/](http://bayercropscience.ca/)

## Diseases, weeds and parasites

Common names	Scientific names
Early blight	<i>Alternaria solani</i>
Pigweed	<i>Amaranthus</i> spp.
Lamb’s-quarters	<i>Chenopodium album</i>
Silver scurf	<i>Helminthosporium solani</i>
Late blight	<i>Phytophthora infestans</i>
Northern root-knot nematode	<i>Meloidogyne</i> spp.
Golden nematode	<i>Globodera rostochiensis</i>
Pale cyst nematode	<i>Globodera pallida</i>
Root-borne nematodes	<i>Pratylenchus</i> spp.
Black scurf, stem and stolon canker	<i>Rhizoctonia solani</i>
White mould	<i>Sclerotinia sclerotiorum</i>
Alternaria brown spot	<i>Alternaria alternata</i>
Verticillium wilt	<i>Verticillium dahlia</i>



SEED PIECE TREATMENT			DISEASE <sup>2</sup>									INSECT PEST					APPLICATION	
COMMERCIAL NAME	COMMON NAME (ACTIVE INGREDIENT)	Group <sup>1</sup>	Early blight (Alternaria solani)	Fusarium rot	Seed piece decay and leak (Phythium spp.)	Pink rot	Late blight	Rhizoctonia canker (black scurf)	Silver scurf	Common scab	Verticillium wilt	Colorado potato beetle	Aphids	Leafhopper	Wireworm	Flea beetle	Seed piece treatment	In-furrow treatment
Admire 240 / SPT (in-furrow and on seed pieces)	imidacloprid	4										X	X	X		X	Y <sup>5</sup>	Y
Actara 240 SC (in-furrow and on seed pieces)	thiamethoxam	4										X	X	X			Y	Y
Alias 240 SC (in-furrow and on seed pieces)	imidacloprid	4										X	X	X		X	Y	Y
Aprovia	benzovindiflupyr	7						X	X		X						N <sup>5</sup>	Y
BAS 700 01 F / BAS 700 04 F	fluapyroxade	7						X									N	Y
Capture 240 EC (in-furrow)	bifenthrine	3													X		N	Y
Clutch 50 WDG / Chlothianidin (in-furrow)	chlothianidin	4A										X					N	Y
Cruiser Maxx Potato Extreme	fludioxonil + difenoconazole + thiamethoxam	12+3+4	X					X	X			X	X	X			Y	N
Fortensa	cyantraniliprole	28										X					Y	N
Genesis 240	imidacloprid	4										X	X	X		X	Y	N
Genesis XT	mancozeb + thiophanate-methyl + imidacloprid	M+1 (4)	X					X				X	X	X		X	Y	N
Genesis MZ	imidacloprid + mancozeb	M (4)	X									X	X	X		X	Y	N
Grapple / Grapple 2	imidacloprid	4										X	X	X		X	Y	Y
Heads Up	Saponins from quinoa (Chenopodium quinoa)	NA						X									Y	N
Manzate 200 WP / MancoPlus	mancozeb	M	X														Y	N
Maxim D	fludioxonil + difenoconazole	12+3	X					X	X								Y	N
Maxim MZ PSP	fludioxonil + mancozeb	12+M	X					X	X								Y	N
Minecto Duo (in-furrow)	thiamethoxam + cyantraniliprole	4 + 28										X	X	X		X	N	Y
Nipsit Inside	thiamethoxam	4										X	X	X	X	X	Y	N
Penncozeb 80 WP / Dithane M-45 8%	mancozeb	M	X														Y	N
Penred 240 FS (in-furrow and seed piece)	penflufen	7						X	X <sup>3</sup>								Y	Y
Phostrol	phosphites	33			X												N	Y
Polyram 16D	metiram	M	X														Y	N
Potato ST16 / Tuberseal / PSPT 16%	mancozeb	M	X														Y	N
Pyrifos 15 G / Chlorpyrifos 480 EC	chlorpyrifos	1B													X		N	Y
Quadris F / Abound / Azoxy	azoxystrobin	11						X	X								N	Y
Reason 500 SC	fenamidone	11					X										Y	N
Ridomil Gold 480 SL / EC	metalaxyl-m	4			X												N	Y
Senator PSPT	thiophanate-methyl	1	X						X	X							Y	N
Serenade SOIL (in-furrow)	Bacillus subtilis	-	X	X	X			X									N	Y
Solan MX / Condor MZ / Mancoplus	mancozeb	M	X														Y	N
Thimet 15-G	phorate	1B													X		N	Y
Titan Ernesto 	clothianidin + penflufen + prothioconazole	4+7+13	X					X	X			X	X	X	X	X	Y	Y
Titan ST 	clothianidin	4A										X	X <sup>3</sup>	X	X <sup>3</sup>	X <sup>3</sup>	Y	Y
Velum Prime 	fluopyram	7	X <sup>4</sup>														N	Y
Verimark (in-furrow and on seed pieces)	cyantraniliprole	28										X				X	Y	Y
Vertisan	penthiopyrade	7						X									N	Y
Vibrance Potato	sedaxane	7					X		X								Y	N

1. **Group:** Classification of fungicides according to their mode of action. Products belonging to the same group have a similar mode of action.

2. **Diseases / Insects:** The treatment product is registered for control or suppression of the corresponding diseases in the table.

3. **For treatment of the seed piece only.**

4. **Registered also for the control of nematodes.**

5. **Yes** (applies for this type of application).

**No** (does not apply for this type of application).

**FUNGICIDES**

COMMERCIAL NAME	ACTIVE INGREDIENT	Group <sup>1</sup>	Mode of action of main active ingredient <sup>2,3,4</sup>	DISEASES <sup>2</sup>													RESTRICTIONS				
				Early blight (Alternaria solani)	Late blight (Phytophthora infestans)	White mould (Sclerotinia sclerotiorum)	Pink rot (Phytophthora erythroseptica)	Seed piece decay/ leak (Pythium spp.)	Fusarium rot (Fusarium spp.)	Grey mould (Botrytis cinerea)	Late blight on tubers (Phytophthora infestans)	Rhizoctonia canker (Rhizoctonia spp.)	Black dot (Colletotrichum coccodes)	Brown leaf spot (Alternaria alternata)	Silver scurf (Helminthosporium solani)	Security delay (hours) <sup>7</sup>	Delay before harvest (days) <sup>8</sup>	Maximum number of applications <sup>4</sup>	Interval between applications (days) <sup>5</sup>		
Acrobat 50 WP (+ Bravo or Dithane DG or Polyram DF)/Forum	dimethomorph (+ chlorothalonil or mancozeb or metiram)	40+M	PAD		X							X						48	4	3	5-10
Allegro 500F	fluazinam	29	EC		X	X												24	14	10	7-10
Aprovia Top	benzovindiflupyr + difenoconazole	7+3	PND	X									X					12	14	2	7-14
Azoxy	azoxystrobin	11	PND	X	X							X						12	1	3	7-14
BAS 650 00 F	ametotradin	45	PND		X													12	4	3	7-10
BAS 700 01 F / BAS 700 04 F	fluxapyroxade	7	PND	X		X						X <sup>6</sup>						12	7	-	7-14
Bravo 500 / Bravo Zn / Echo 90 DF / Echo 720	chlorothalonil	M	C	X	X					X								48	1	-	7-10
Cabrio Plus	pyraclostrobin + metiram	11+M	PND	X	X													24	3	3	7-14
Cantus	boscalid	7	PND	X														12	30	4	14
Confine Extra / Winfield Phosphite Extra	phosphorous acid	33	CS				X				X					X <sup>6</sup>		4	1	5	14
Copper 53 W	tribasic copper	M	C	X	X													48	1	10	5
Copper Spray	copper oxychloride	M	C	X	X													24	1	10	7-10
Curzate (+ Manzate or Dithane)	cymoxanil + mancozeb	27+M	PND		X													24	8	7	5-7
Cyazofamid 400 SC	cyazofamid	21	EC		X							X						12	7	6	7
Dithane / Manzate / Penncozeb	mancozeb	M	C	X	X													24	1	-	5-10
Double Nickel 55 WDG	bacillus amyloliquefaciens	44	C	X		X						X						-	-	-	3-10
Elixir	mancozeb + chlorothalonil	M	C	X	X													48	1	10	7-10
Evito 480 SC	fluoxastrobin	11	PND		X													12	7	3	7
Gavel 75 DF	zoxamid + mancozeb	22+M	EC	X	X													48	3	6	7
Headline EC	pyraclostrobin	11	PND	X	X													48	3	3	7-14
Inspire	difenoconazole	3	PAD	X														24	14	4	-
Kocide 101 / 1000 / 2000 / Parasol FL / WP	copper hydroxide	M	C	X	X						X							48	1	10	7-10
Luna Privilege 	fluopyram	7	PND	X														12	7	5	7-14
Luna Tranquility 	fluopyram + pyrimethanil	7+9	PND	X		X						X	X					12	7	5	7-14
Orondis Ultra	mandipropamid + oxathiapropalin	40+U15	PAD		X													12	14	4	7-10
Parasol	copper hydroxide	M1	C	X	X													48	2	10	7-10
Penred 240 FS	penflufen	7	PND									X <sup>6</sup>						-	-	-	-
Phostrol	phosphorus acid	33	CS		X		X											12	0	7	7-14
Polyram DF	metiram	M	C	X	X													24	1	-	7-10
Presidio / Fluopicolide 4 SC (+ Bravo)	fluopicolid	43	PAD	X	X													48	7	4	7-10
Quadris F	azoxystrobin	11	PND	X	X		X <sup>6</sup>				X <sup>6</sup>	X	X <sup>6</sup>					12	1-90 <sup>6</sup>	3	7-14
Quadris Top	azoxystrobin + difenoconazole	11+3	PND	X								X	X					24	14	3	7-14
Quash (Metconazole 50 WDG)	metconazole	3	PAD	X		X												12	1	3	7-10
Ranman 400 SC/ Cyazofamid 400SC/ Torrent 400 SC	cyazofamid	21	EC		X						X							12	7	6	7
Reason (+ Bravo or Dithane DG)	fenamidone	11	PND	X	X													48	14	6	7-10
Revus	mandipropamid	40	PND		X													12	14	4	7-14
Ridomil Gold / Bravo Duo	metalaxyl-m + chlorothalonil	4+M	CS	X	X		X	X	X	X	X							48	14	3	14
Ridomil Gold MZ	metalaxyl-m + mancozeb	4+M	CS	X	X		X	X										48	3	3	10-14
Scala SC	pyrimethanil	9	PND	X														48	7	6	7-14
Sercadis	fluxapyroxad	7	PND	X		X						X <sup>6</sup>						12	7	3	7-14
Serenade ASO / MAX	Bacillus subtilis	M	C	X		X												4	0	-	7-10
Tanos 50 DF	famoxadone + cymoxanil	11+27	PND	X	X													24	14	6	7
Tattoo C	propamocarb HCL + chlorothalonil	28+M	PAD		X													48	7	6	5-7
Treoris	penthiopyrade + chlorothalonil	9+M	PND	X														12	14	4	7-14
Vertisan	penthiopyrade	7	PND	X						X		X <sup>6</sup>						12	7	3	7-14
Zampro SC	ametotradin + dimethomorph	40+45	PAD		X						X							12	4	3	5-10

**1. Group:** Classification of insecticides according to their mode of action. Products from the same group have a similar mode of action.

To prevent resistance, repeated applications of products from the same group must be avoided.

**2. Diseases:** Each of these fungicides is registered for control or suppression of the corresponding diseases.

**3. Delay before harvest (DBH):** The number of days between the last application of the fungicide and the harvest.

**4. Maximum number of applications:** The maximum number of fungicide applications per season, if specified on the label.

**5. Interval between applications:** The maximum and minimum numbers of days between two consecutive applications of the same product.

**6. When fungicide is used in the furrow.**

**7. Security delay (SD):** Delay (hours) before going into the treated zone.

**8. Post-harvest application.**

Some fungicide combinations are approved by the Pest Management Regulatory Agency. Application guidelines may vary from one province to another. Make sure to always read guidelines before using any fungicide.

**POST-HARVEST TREATMENT**

**DISEASE<sup>2</sup>**

COMMERCIAL NAME	COMMON NAME (ACTIVE INGREDIENT)	Group <sup>1</sup>	DISEASE <sup>2</sup>								
			Fusarium rot (Fusarium spp.)	Leak, seed decay (Pythium spp.)	Pink rot (Phytophthora erythroseptica)	Blackleg, bacterial soft rot (Erwinia)	Late blight (Phytophthora infestans)	Rhizoctonia canker or black scurf (Rhizoctonia solani)	Silver scurf (Helminthosporium solani)	Common scab (Streptomyces spp.)	Verticillium wilt (Verticillium spp.)
Bio-Safe 10 LP	Pseudomonas syringae	-	X							X	
Confine / Confine Extra	phosphorous acid	33		X		X		X			
Mertect SC 58	thiabendazole	1	X						X	X	
Phostrol / Rampart	phosphorous acid	33		X		X					
Serenade SOIL	Bacillus subtilis	-								X	
Stadium (post-harvest)	azoxystrobin + fludioxonil + difenoconazole	11+12+3	X							X	
Storox	hydrogen peroxide	-	X								

**1. Group:** Classification of fungicides according to their mode of action. Products belonging to the same group have a similar mode of action.  
**2. Diseases / Insects:** The treatment product is registered for control or suppression of the corresponding diseases in the table.

HERBICIDES	Group <sup>1</sup>	APPLICATION TIME					ANNUAL GRASSY WEEDS						ANNUAL BROADLEAF WEEDS				PERENNIAL WEEDS						
		Pre-plant	Pre-emergence	Pre-emergence (cracked soil)	Early post-emergence	Post-emergence	Before harvest <sup>2</sup>	Crab grass	Barnyard grass	Wild oats	Witchgrass	Fall panicum	Proso millet	Foxtails	Polygonum (Smartweed, wild buckwheat)	Lamb's quarters	Wild mustard	Pigweed	Common ragweed	Yellow nutsedge	Quackgrass	Perennial sow-thistle	Canada thistle
Aim EC	14					X	P	P	P	P	P	P	P	P	P	E	P	E	P	P	P	P	P
Boundary LQD	15+5		X				E	E	P	E	E	P	E										
Chateau WDG / Flumioxazin 51 WDG	14		X				P	P	P	P	P	P	M		E		E	E					
Des-I-Cate <sup>2</sup>	16					X	-	-	-	-	-	-	-										
Dual II Magnum <sup>3</sup>	15	X	X				E	E	P	E	E	P	E	P		P	M	P	P	E	P	P	P
Dual II Magnum + Lorox	15+7		X				E	E	P	E	E	P	E	E	E	P	E	G	M	P	P	P	P
Eptam 8E <sup>3</sup>	8	X					E	E	E	E	E	-	E	M	M	P	E	M	E	G	P	P	P
Excel Super	1					X	E	E	P	E	E	E	E	P	P	P	P	P	P	P	P	P	P
Glyphosate (many formulations)	9	X		X			E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Gramoxone <sup>3</sup>	22			X	X		G	G	G	G	G	-	G	M	G	G	G	G			G	M	P
Ignite SN <sup>3</sup>	10			X			E	E	E	E	E	-	E	E	E	E	E	E					
Lorox L <sup>3</sup> / Linuron 400 L <sup>3</sup>	7		X				M	M	P	P	M	P	M	E	E	P	G	G	E	P	P	P	P
Outlook	15		X				E	E	-	E	E	-	E	P	P	P	E	P	P	M	P	P	P
Poast Ultra	1					X	E	E	E	E	E	E	E	P	P	P	P	P	P	P	M	P	P
Prism 	2					X	P	E	P	E	E	P	E	-	M	G	E	P			G	-	-
Reglone <sup>2</sup> / Desica <sup>2</sup>	22					X	E	E	E	E	E	E	E	E	E	E	E	E	E	P	P	M	P
Reflex	14					X	-	-	-	-	-	-	-	E	E	E	E	E			-	-	-
Select / Arrow 240 EC / Centurion / Shadow RTM	1					X	E	E	E	E	E	E	E	P	P	P	P	P	P	P	E	P	P
Sencor DF <sup>3</sup> / Tricor 75 DF <sup>3</sup>	5		X	X	X		G	G	-	G	G	-	G	E	E	E	E	E	E	P	P	P	P
Sencor + Dual II Magnum	7+15		X				E	E	E	E	E	-	E	E	E	E	E	E	M	P	P	-	
Sencor + Eptam	5+8	X					M	E	E	E	M	-	E	G	E	E	E	E	M	P	P	P	
Sencor + Gramoxone	5+22			X			G	G	G	G	G	G	G	E	E	E	E	E	-	G	M	-	
Sencor + Linuron	5+7		X				G	G	-	G	G	-	G	E	E	E	E	E	P	P	P	-	
Titus Pro	2+5				X	X	G	E	P	E	E	P	E	E	E	E	E	E	P	P	P	-	
Venture L <sup>3</sup>	1					X	E	E	E	E	E	E	E	P	P	P	P	P	P	P	E	P	P

**1. Group:** Products belonging to the same group have a similar mode of action.

Rating*	
E	Excellent
G	Good
F	Fair
P	Poor
-	Insufficient data

To prevent resistance to a product, avoid repeated applications of products from the same group.

**2. Pre-harvest:** These products are used as vine killers before harvest.

**3. Combinations with other herbicides are also registered.** Application guidelines with other products may vary from one province to another. Make sure to always consult the label before use.

\* Efficiency of herbicide treatments may vary with time and rate of application.

**INSECTICIDES**

COMMERCIAL NAME <sup>1</sup>	ACTIVE INGREDIENT	Group <sup>2</sup>	INSECT PESTS <sup>3</sup>								RESTRICTIONS			
			Flea beetle	Potato leafhopper	Colorado potato beetle	Aphids <sup>4</sup>	European corn borer	Other lepidopterous insects	Tarnished plant bug	Wireworm	Delay before harvest (days) <sup>5</sup>	Security delay after treatment (hours) <sup>6</sup>	Maximum number of applications <sup>7</sup>	
Actara 240 sc / 25 WG	thiamethoxam	4		X	X	X						7	12	2
Admire 240 / Alias 240 SC	imidacloprid	4	X <sup>8</sup>	X <sup>8</sup>	X	X						7	24	2
Agri-Mek <sup>10</sup>	abamectin	6			X							14	12	2
Assail 70 WP	acetamiprid	4			X	X						7	12	2
Bartlett superior 70 oil / Superior 70 oil	mineral oil	N/C				X						14	12	10
Beleaf 50SG	flonicamid	9C				X						7	12	3
Clutch 50 WDG / Clothianidin	clothianidin	4A		X	X	X						14	12	3
Closer SC	sulfoxaflor	4C				X						7	12	2
Concept	imidacloprid + deltamethrin	3 + 4	X	X	X	X	X		X			7	24	3
Coragen 	chlorantraniliprole	28			X		X					24	12	4
Cygon 480 EC / Lagon 480 E	dimethoate	1B		X		X			X			7	36	3
Cygon 480 AG / Cygon 480	dimethoate	1B		X		X						7	36	3
Decis 5.0 EC	deltamethrin	3	X	X	X	X	X		X			1	12	3
Delegate	spinetoram	5			X		X					7	12	3
Diazinon / Diazol	diazinon	1B	X	X	X	X						14	24	–
Dibrom	naled	1B	X	X	X							4	48	2
Entrust 80 W	spinosad	5			X		X					1	12	2
Exirel / Benevia	cyantraniliprole	28	X		X	X	X	X				7	12	4
Fulfill 50 WG	pymetrozin	9B				X						14	12	2
Furadan	carbofuran	1A	X	X	X				X			7	48	2
Governor 75 WP	cyromazin	17			X							14	12	2
Grapple 2	imidacloprid	4				X	X					7	24	2
Imidan 50 W / Imidan 70 WP	phosmet	1B	X	X	X	X						7	120	5
Lannate	methomyl	1A	X	X		X		X				3	12	1
Lorsban / Warhawk 480 EC / Nufos 4E	chlorpyrifos	1B	X		X				X			7	24	1
Malathion / Fyfanon 50 EC	malathion	1B		X	X	X						3	24	1
Matador / Warrior / Silencer 120 EC	lambda-cyhalothrin	3	X	X	X		X		X			7	24	3
Movento <sup>10</sup> 240 SC / 150 OD	spirotetramat	23				X						7	12	2
Orthene	acephate	1B	X	X		X			X			21	24	4
Pyrifos 15 G	chlorpyrifos	1B								X		70	24	1
Pyrinex 480 EC / Chlorpyrifos 480 EC / Citadel 480 EC	chlorpyrifos	1B	X		X				X			7	24	1
Pounce / Ambush 500 EC / Perm-Up	permethrin	3	X	X	X		X		X			1	24	1
Pro Malathion 50 EC	malathion	1B		X	X	X						3	24	1
Rimon 10 EC	novaluron	15			X		X					14	12	2
Ripcord / Mako / Up-Cyde 2.5 EC	cypermethrin	3	X	X	X				X			7	24	3
Sevin 5-D/XLR	carbaryl	1A	X	X	X		X		X			7	24	–
Sivanto prime 	flupyradifurone	4D		X		X						7	24	3
Success 480 EC / Entrust	spinosad	5			X		X					7	12	1-3
Superior 70 Oil / SunSpray	mineral oil	N/A				X <sup>9</sup>						14	12	10
Surround WP	kaolin	N/A		X								0	0	–
Thimet 15-G	phorate	1B								X		90	48	1
Thionex EC / Thionex 50 WSP	phosmet	1B	X	X	X	X			X			5	120	5
Twinguard	sulfoxaflor + spinetoram	4C + 5			X	X	X					7	12	2
Up-Cyde 2.5 EC	cypermethrin	3	X	X	X				X			7	12	3
Voliam Xpress <sup>10</sup>	chlorantraniliprole + lambda-cyhalothrin	28 + 3					X	X				7	24	2
Vydate L	oxamyl	1A	X	X	X	X			X			7	72	2

- Commercial name:** Many brands and/or formulations with the same active ingredient may be available.
- Group:** Classification of insecticides according to their mode of action. Products from the same group have a similar mode of action. To prevent resistance to a product, repeated applications of products from the same group must be avoided.
- Insect controlled:** The insects for which a product is registered, as stated on the label. These insects may vary depending on the brand and the active ingredient. Check the label to make sure the insect pest is included on the list.
- Aphids:** Many species of aphids can attack potatoes. For more information about the species of aphids that are controlled, check the label.
- Delay before harvest:** The number of days that must elapse between the last insecticide application and the harvest.
- Security delay after treatment:** The period to respect between the application and the time when workers can return to the field.
- Maximum number of applications:** The maximum number of times the insecticide can be applied per season as listed on the label. It is the number of ground applications; verify for aerial applications. Empty spaces mean that there is no restriction on the label.
- When the insecticide is applied in the furrow.**
- This product has a repulsion action toward the insect.**

# Pesticide review a huge issue for hort sector

**Time of worker re-entry after application and use of protective equipment are stumbling blocks**

BY RALPH PEARCE, CG PRODUCTION EDITOR



PHOTO: THINKSTOCK

Canada's horticultural growers say they're concerned about a review of many of the broad-spectrum crop protection chemistries they've relied on for years.

The Pest Management Regulatory Agency (PMRA) is conducting the review, with a final outcome due in 2018. That gives growers and other industry stakeholders the rest of 2017 to strengthen their arguments and garner support from more players in the industry to change what's now on paper.

Craig Hunter, who oversees research and crop protection issues for the Ontario Fruit and Vegetable Growers' Association (OFVGA), says the biggest challenge comes from Canada's procedures in conducting the review. It all stems back to 1996 when the U.S. passed its Food Quality Protection Act, which required U.S. registrants to re-evaluate all pesticides on a 15-year cycle.

Canada adopted the same approach in 1998, with the PMRA starting the process soon after, although the agency

was already two years behind. Some were conducted as joint reviews, but most were not, and in the initial re-evaluation, about 150 ingredients were dropped — most because the registrants declined to spend the money to defend them, says Hunter.

That left 406 products to be re-evaluated, and the PMRA is not done yet, meaning it's three years late in getting its first 15-year plan completed. Since it's due to start the next cycle (and will likely be two to five years behind the U.S.), it's unlikely there'll be as many joint reviews done as there could or should have been.

"The first 15 years, we lost those 100 active ingredients, and some of them were pretty important products to us," adds Hunter.

He says there have been a lot of new registrations in those 15 years, especially fungicides. But most are single-site, single mode-of-action products which are prone to resistance if not used in combination with others in careful rotation.

### Several potato products

Re-evaluations in 2015 and released for comment in 2016 included almost all of the broad-spectrum potato fungicides including Captan, Bravo, Polyram and Thiram. Mancozeb was another that was re-evaluated the year before. All of those products are needed to prop up the use of the newer fungicides, yet in every case, the proposals on these older fungicides were either to eliminate the use entirely, or greatly reduce the number of applications. Or they were targeted because they suggested a hugely increased re-entry time after application — to the point where growers couldn't use them in most horticultural crops because workers have to go into those fields.

The proposal threatens the life expectancy of 30 or more other fungicides that have been registered in the last 20 years.

Hunter says this could affect all of horticulture as well as pulse crops in parts of Western Canada. It's not about residue limits, it's about worker safety and protection. But he says the PMRA has made its decisions using flawed information. Registrants told the PMRA to use the data in the post-application workers safety database, which was put together by some of the larger companies, merging studies that they'd all conducted and collected in one database.

"But that database is out of date, and never did apply to horticulture in Canada and sure as hell doesn't apply to horticulture in 2016," says Hunter. "But they either referred to that database by registrants who didn't want to spend the money to do 'modern work,' or they referred to the database in the absence of other data. So their assumptions on worker activity are invalid in many cases."

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### Worker safety concerns

Hunter says the horticulture sector has tried hard to document farm worker activities for the PMRA, but it's running up against a policy that prevents the agency from putting the use of personal protective equipment (PPE) on a label. Personnel say they have no way of ensuring that growers will see that workers wear gloves or other protection if they're going to be in a treated crop. Hunter says the industry disputes that.

"Farmers, first and foremost, want to protect their workers, a) because they want them to keep working and b) they don't want the liability of workers who have problems either now or down the road," he says. "But we've been using these products for 40 years and have not had any — any — documented problems with post-application worker exposure to the products that we use according to the label."

Hunter says that during a national conference call involving PMRA personnel, grower groups and provincial representatives, the PMRA spoke of different provincial worker-protection legislations confounding the process. Yet there are grower safety courses in all but one province, and in horticulture, there are on-farm food safety programs where everything is documented, including pesticide use and an acknowledgement that label instructions for personal protection for operators have been followed. Technological advances also make it easier for such accountability practices, including apps for smartphones to enter application data.

## "The first 15 years, we lost those 100 active ingredients, and some of them were pretty important products to us."

*Craig Hunter, Ontario Fruit and Vegetable Growers' Association*

"The ball's in the PMRA's court: they have to say that they will put these on the label, and they'll have to tell us how they will audit or inspect to make sure people are following them," says Hunter. "And of course, it's up to farmers to follow the label for this like everything else, like making sure the re-entry interval is followed."

Hunter says he is continually frustrated by the agency's inability to adapt to the modern reality of what farmers do, what farming looks like and the farmers' obligations for their workers.

"If there are some bad actors out there, and I suspect there are, nail them to the wall," says Hunter. "Why should the vast majority of the people who are doing the right thing be denied, in this case, our major fungicides, that without them we're in serious trouble, all because of a few bad actors?"

Hunter says more farmers need to step up and speak out to help the PMRA realize that the bad farmers are the exception, not the rule. And they'll make their workers wear gloves and if that's what it takes to allow the growers to continue. He has already spoken with the registrants and they're pledging to put those kinds of directives on the label — if the PMRA will let them. Some companies have even offered to provide workers with the gloves, if that's what it takes to maintain the uses of these products.

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### Fungicide losses?

Hunter says that potato producers will be directly affected by the potential loss of Mancozeb and Bravo, two of the primary fungicides for late and early blight, along with some uses of Polyram.

"Our growers will be in big trouble without the use of these, and if they use some of the other products that are available that are single-site modes of action, they'll be lost in five years or so because of resistance," says Hunter. "And once you get resistance, you can never go back to them again — you've lost them."

Another indication of changing times is the PMRA's seeming reliance on the "precautionary principle" in many of these evaluations: the agency concedes in its documents that neither the European Union nor the U.S. is imposing these directives.

Hunter met with federal Health Minister Dr. Jane Philpott in May 2016 and discussed the evaluations, among other issues. The minister told Hunter that she can't interfere with the agency's dealings, although he made her and her staff aware of the details of the discussions with the agency and the fact that the review is to be completed by 2018 with the final outcomes of the re-evaluations also due next year. •

# Alberta potatoes mostly escape the deluge

**A bit of luck, combined with tile drainage, helped Alberta potato growers survive the province's wet 2016 season**

BY JEFF MELCHIOR

For Alberta potato growers, the 2015 and 2016 growing seasons could not have been more different — hot and dry followed by cold and wet. Despite that, 2016 yields were more or less consistent with the past several years.

“Our acres are flat — they have been for the past couple of years,” says Terence Hochstein, executive director of the Potato Growers of Alberta (PGA). He says there are about 53,000 acres in Alberta — 3,000 acres of fresh potatoes, 10,000 acres of seed potatoes and 40,000 acres for the process industry. “The grand total fluctuates from year to year but that 40,000 acres of process potatoes stays consistent.”

Hochstein says some of this consistency can be attributed to better agronomic practices. Growers are becoming more diligent by tackling weed issues earlier and more aggressively. The rest, he says, comes down to luck. In this case, Mother Nature has been sparing with late blight.



Three generations of Alberta seed potato growers: Clarence, Gord and Matthew Visser of Norbest Farms. The family has been growing potatoes since Gord's grandfather came from Holland to Canada in the 1950s and have been farming seed potatoes since the 1970s.

“I don't care where you live across Canada — if the environmental conditions are conducive to late blight, you can only control the human factor,” Hochstein says. This year we had a good year with virtually nothing to deal with. There was very little disease pressure.”

## Seed potatoes held in high regard

Most of Alberta's potatoes are grown under irrigation in the south and are process potatoes earmarked for sale to the area's several french fry and potato chip processors. But growers in the north and central regions of the province have become known internationally for their hardy seed potatoes.

Gord Visser of Norbest Farms is a third-generation potato producer who farms just outside the municipal boundaries of Edmonton. He says most of his neighbouring growers were able to get their potatoes out of the ground before the first frost.

“We have about a 130-day growing season in this area,” he says. “We know our windows for planting and harvest — they're narrow. There have been challenges for us a lot of years but this year we've had pretty good quality in storage.”

Visser says the province's northern climate gives seed potato producers an edge.

“Down in the U.S. they tell us the seed potatoes from Alberta are the best they can get. It has a lot to do with us being as geographically as far north as we are. We don't have the overwintering type of pests they have farther south because our ground freezes solid.”

As with most crops, managing for unpredictable weather is a key to success in producing quality. Potatoes have an advantage because they're generally more resilient in wet conditions than many other crops, says Visser. The trick is to keep moisture on top of the soil and the roots dry underneath. “Potatoes don't like wet feet,” he says.

Fortunately for Visser, his land missed most of the moisture that hit much of the province this year. He uses tile drainage to manage moisture accumulation in high-precipitation periods. “Last year drain tiling worked amazing,” he says. “We had 110 acres of tiling done with 10-inch pipes coming out of the field. It really works well because we have irrigation on top and we can hopefully keep their roots dry through the drain tiles.

“It’s costly per acre and if you own the land you can afford to do it. It definitely pays for itself if it’s land you use over and over again.”

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### Process grower beats the frost

Like Visser, southern-Alberta-based process-potato grower Laus Stiekema of Vauxhall was fortunate in that he missed the heavy moisture much of the province experienced. The third-generation potato farmer, who moved from the Netherlands in 2004, says he had average yield and quality this year.

“It was a little bit under last year’s crop but it was still an average crop. I think we have nice potatoes in the bins.”

Mother Nature was kind to Stiekema, ordering up a light frost on September 12 but otherwise leaving enough time for him to get his potatoes in the bins.

“Towards September we get those colder nights and we’re always hoping not to get that first frost before September 20 so we have a well-matured crop,” he says.

Although potato producers in Alberta face obstacles — such as a shorter season — that competitors in the states of Washington and Idaho do not, Stiekema says crop quality is generally consistent from year to year. “With irrigation you have very even growth typically. It takes a lot of stress away from growing a good and healthy crop. But we’re basically in a desert area and can get too much rain too. It doesn’t happen very often but when it does that’s a big challenge.”

Most of the time, however, the main water-related challenge is keeping moisture on the land. “We have to do everything to preserve water; we dammer-dike the potatoes to hold the water in place so it doesn’t run off.”

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### Transportation challenges

Thanks in large part to the processing infrastructure in place in the province, demand for Alberta potatoes is fairly consistent. However, growers still need to think on their feet in terms of the future, says Visser.

“I think there’s some change in the wind in regards to demand for different types of varieties. As seed growers we have to be on the leading edge of that. It takes four generations before they go out to the customers who grow them for table



Laus Stiekema (middle), his son Lauran (left) and son-in-law Jaco are process-potato growers from Vauxhall, Alta., in the heart of southern Alberta’s irrigation country. Laus says they had an “average” crop this past year, missing much of the precipitation that hammered the province throughout the spring and summer.

or processing potatoes. We have to project and get a feel for variety changes.”

Stiekema sees the effects of globalization, combined with transportation limitations here at home, as ongoing challenges.

“The biggest challenge, on a world scale, is we’re running into European potatoes everywhere,” he says. “This year it’s not a big issue because they’re short and prices are high there. We have a competitive advantage now but in the big picture there will be rising costs for us to haul product out to the marketplace and we’re kind of landlocked here.”

Stiekema would like to see extra rail and road capacity for all agricultural products moving west.

“Yields are double for canola compared to 20 years ago and yields are going up for wheat and other crops. We’re going to need a way out for that product.

“There is also a challenge for Alberta to stay competitive compared to other areas after implementing (the proposed provincial) carbon tax. It will have a big effect on processing cost as well as growing potatoes with fuel cost for irrigation, growing and transporting product.”

One of the year’s biggest developments in the Alberta potato industry was the securing of market access for Alberta seed potatoes in Thailand, an agreement that some industry experts estimate could be worth up to \$2 million annually. While Visser thinks this is a positive development, he sees it as just the first step towards developing a market for Alberta seed potatoes in that country.

“We have a trade agreement with Thailand and now we have to develop the markets as an Alberta industry. We need to find out what varieties are growing and find out the trading avenues we need to use to trade with them. This is a process that takes time.” •

# Maritime harvest a pleasant surprise

Late-season rains gave the crop a lift, but access to irrigation remains a concern for Island growers

BY ANDY WALKER

The 2016 harvest in the country's largest potato-producing province proved to be a pleasant surprise.

By mid-August, many growers in Prince Edward Island were starting to brace for a below-average harvest. A dry summer saw much of the crop, especially in the central part of the province, slow to size up and problems with both yield and quality were predicted.

"It is hard to project the impact of dry conditions on the final overall yield but, at this time, the projected average yield will be down to 270 hundredweight to the acre from last year's 279," United Potato Growers of Canada general manager Kevin Maclsaac said in an August 15 crop report.

He was as happy as anyone that his projection was way off the mark. By the time the harvest was in full swing in October, the projected yield for the 89,000 acres planted was 290 cwt. That figure was also used by Statistics Canada when it released its production figures in late November.

What happened? In short, Island growers received that often-elusive combination of the right weather at the right time. That badly needed rain finally came in the last week of August and was followed by plenty of sunshine in September and early October.

"The situation turned out much better than it looked back in July, no question about it," said Maclsaac, who is also a former chair of the P.E.I. Potato Board. "Harvesting conditions were pretty close to ideal for the most part."

The favourable change in the weather also had a positive impact on quality. The general manager of the P.E.I. Potato Board described the quality of the Island crop as "average." Greg Donald added "while there are some isolated issues,

overall the quality is good — for the most part, things sized up nicely."

Turning to New Brunswick, there were 47,000 acres harvested compared to 47,900 in 2015. Yield also dropped from 315.2 to 305 cwt. However, Maclsaac said that figure is somewhat deceiving since growers in the northern part of the province (especially in the Grand Falls area) had record yields and excellent quality.

"It was almost like New Brunswick was split in two and there were major differences," Maclsaac said.

## Irrigation limited

Irrigation — or rather the lack of it — continues to be a major issue for the P.E.I. industry. There has been a ban on new high-capacity wells for agricultural use since 2002 and both the P.E.I. Potato Board and Cavendish Farms began to press for the measure to be repealed following a dry summer in 2014. The government eventually responded by sending the matter to a legislative committee, which recommended the development of legislation to govern all water use. A draft act is expected to come before the legislature next spring.

What has growers like Gary Linkletter particularly upset is that the ban pertains only to agricultural irrigation. Deep-water wells for such uses as car washes and golf courses are routinely approved by government. Meanwhile, the former chair of the P.E.I. Potato Board and president of family-owned Linkletter Farms Limited has few options but to watch his crop wilt when nature fails to provide enough moisture.



PHOTO: ANDY WALKER

Ryan Barrett, co-ordinator of the enhanced agronomy initiative for processing potatoes, holds a tillage radish, one of the cover crops being looked at to help soil fertility.

"You can do everything right but if you don't get rain it doesn't matter," Linkletter said. "We just want that option available if a grower chooses to use it."

Current Potato Board chair Alex Docherty agrees, saying growers can't always depend on the weather conditions turning around like they did this year. He pointed to the dire situation faced by growers in Ontario, where drought cut acreage significantly, even on farms where irrigation was available.

"We intend to remain very involved in the process as the Water Act is developed and we will continue to lobby government to ensure our concerns are heard."

### Surplus disappears

Docherty said the mood among Island growers is vastly different from just a year ago. In the fall of 2015, the industry was dealing with a surplus of spuds in the marketplace as shipments began for that year's crop.

This time around, there was little in the way of inventory left and Docherty is convinced prices will be strong as shipments begin to move. He noted that is great news for the Island economy, noting "for every penny that the price increases, that is an extra \$9 million that goes into the P.E.I. economy."

Maclsaac agreed. "Canadian shipments will be generally balanced. Overall demand has been good and shipments as of the end of November are ahead of a year ago."

He said another major factor is that processors in New Brunswick are purchasing

significant amounts of open-market potatoes, which didn't happen in 2015.

### Agronomy initiative

In the spring of 2016, P.E.I. processing growers joined forces with Cavendish Farms, Dalhousie faculty of agriculture and the provincial Department of Agriculture and Fisheries to form the Enhanced Agronomy Initiative. This industry-led effort sees growers who sell to Cavendish Farms fund their portion through a checkoff when they sell their crop. The money collected will be matched by the processing company and the Department of Agriculture and Fisheries.

"It is up to the growers to decide the priorities," said Ryan Barrett, who is the research co-ordinator for the P.E.I. Potato Board and the project lead for this new initiative.

**"You can do everything right but if you don't get rain it doesn't matter. We just want that option available if a grower chooses to use it."**

*Gary Linkletter, Linkletter Farms*

Barrett said the money could be used for such things as demonstration day, bringing in speakers, or joint research projects in partnership with government, academic institutions or other organizations.

Three working groups have been established — soil and water management, seed improvement, and science and technology. Barrett said there will be meetings held over the winter to set research priorities for 2017. •

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# U.S. looks to gain back market share

BY MARK HALSALL

A big factor influencing potato demand in the past decade or two has been low-carb diets that eschewed potatoes. But those negative views are changing, according to Blair Richardson, president of Potatoes USA.

"The research we've been conducting in the last couple of years (shows) that consumer perception of the potato is actually improving quite a bit." Richardson points to recent studies illustrating the nutritional value of potatoes as a big reason why.

"The major change that we've made at Potatoes USA in the last year or two is we have switched from a defensive perspective to an offensive perspective," Richardson says.

"We're not just saying it's OK to eat potatoes; we're using the research that the Alliance for Potato Research & Education group and that we ourselves have put together... to say you should eat potatoes and not only that, you should eat more potatoes."

Another test for U.S. producers has been fierce competition in the global french fry market, which has grown considerably in recent years. French fry exports still account for a big part of the U.S. industry, but rivals from northwest Europe have eroded the market share for American producers, says Bruce Huffaker, publisher of *North American Potato Market News*.

**"The dynamics of the market are such that yields are going up and demand is either flat or going down. As a result people are having to reduce acreage and that tends to be a painful process."**

*Bruce Huffaker, North American Potato Market News*

"The global demand for french fries is growing very rapidly, and the Europeans are grabbing the lion's share of the extra business."

Huffaker says that as a result of aggressive pricing, currency issues and some transportation advantages, producers in northwest Europe — and particularly in Belgium — have captured about 80 per cent of the growth in the global french fry market over the past 10 years.

Kevin MacIsaac, general manager of the United Potato Growers of Canada, notes U.S. french fry exports have started to pick up in the last year or so, and that's led to line expansion at a number of American processing plants, particularly in the Pacific Northwest. •



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