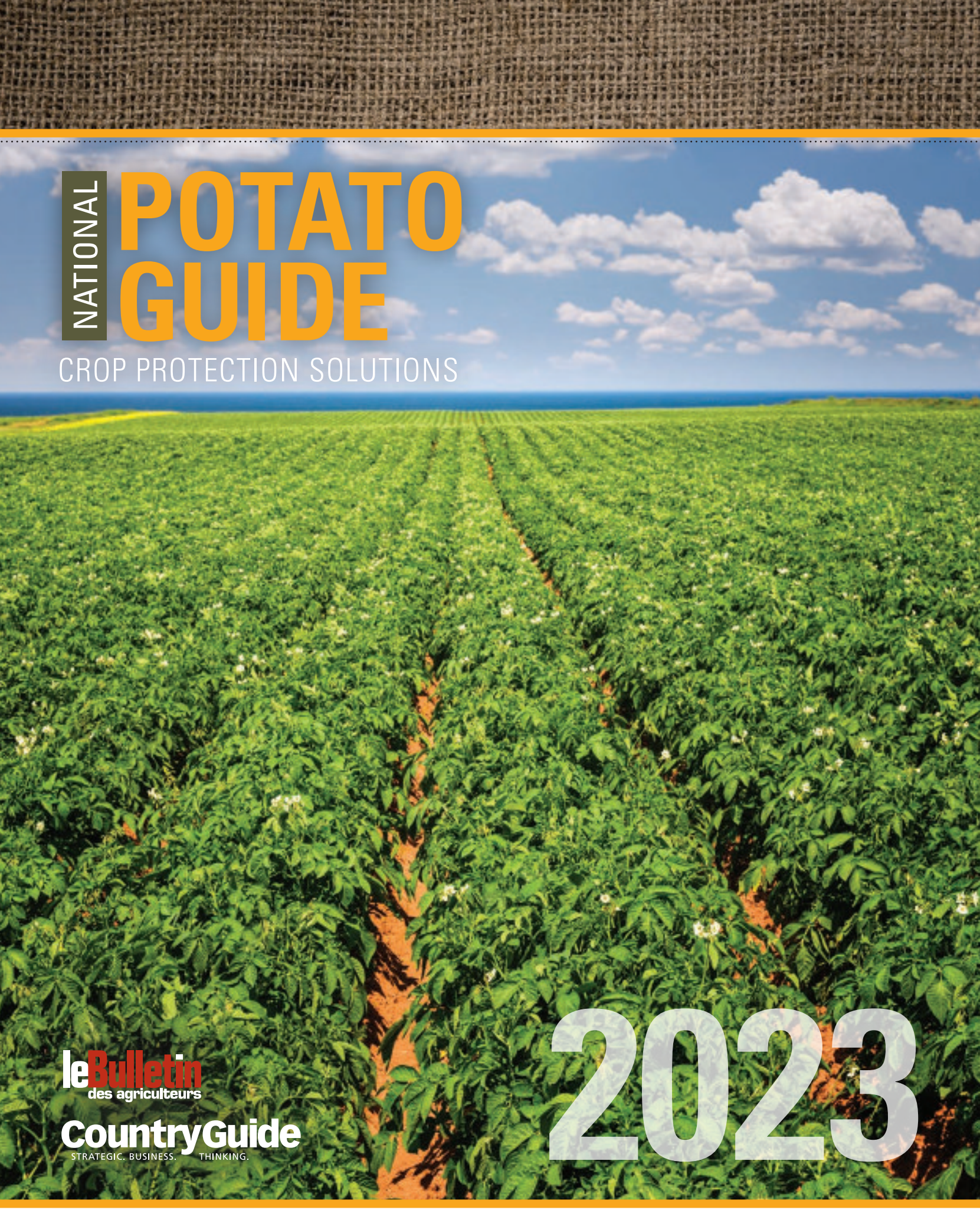
NATIONAL

POTATO GUIDE

CROP PROTECTION SOLUTIONS



2023

leBulletin des agriculteurs

CountryGuide
STRATEGIC. BUSINESS. THINKING.

SEED PIECE TREATMENTS | FUNGICIDES | POST-HARVEST TREATMENTS | HERBICIDES | INSECTICIDES

FMC | An Agricultural Sciences Company

LOTS OF OPTIONS. ONE DESTINATION.

Our products help you on your way to higher yield and superior quality.

Coragen® MaX insecticide – Residual control of ECB and CPB in a new, highly concentrated formulation that covers more acres with less.

Beleaf® 50SG insecticide – Reliable aphid control, unique anti-feeding action and beneficial-friendly, with a short 7-day PHI.

Exirel® insecticide – Systemic, residual control of sucking and chewing pests, including CPB, ECB, armyworms, flea beetles and aphids, with a short 7-day PHI.

Verimark® insecticide – Fast uptake for superior in-furrow control of CPB and potato flea beetle.

Aim® EC herbicide – Tank-mix with Reglone® Desiccant for more complete vine kill, leading to better tuber quality.

Cygon® 480-AG insecticide – Consistent, systemic control of leafhoppers, with a short 7-day PHI.

See our full portfolio

Always read and follow label instructions. Member of CropLife Canada.

@FMCAgCanada

ag.FMC.com/ca | 1-833-362-7722

POTATO PRODUCTION IN 2022

Despite farmer challenges such as high input costs and adverse weather conditions in many areas, Canada saw an overall increase in total production and yield numbers from 2021

A potato crop being sprayed with a late blight fungicide in Ontario.

PHOTO: EUGENIA BANKS, ONTARIO POTATO BOARD

BY MARK HALSALL, GFM STAFF

For many potato farmers in Canada, 2022 was a challenging year. There were some major weather difficulties to contend with — cold, wet springs delayed planting for producers in New Brunswick, Quebec, Manitoba and B.C. and in some cases contributed to later harvests as well. Harvest was also held up in P.E.I. after the tail end of Hurricane Fiona lashed the Island in late September. But a challenge shared by every Canadian potato farmer was how to deal with considerable hikes in the cost of production spurred in part by the war in Ukraine.

Victoria Stamper, general manager of United Potato Growers of Canada, says producers felt the financial strain from high fertilizer, fuel, transport and labour costs throughout 2022. "It has been a really tough year for a lot of the growers," she says.

Kevin Brubacher, general manager of the Ontario Potato Board, agrees. "This past season was the most expensive we've ever seen," he says. "Fertilizer was a big part of that, but for everything across the board, we saw increased costs associated with it."

Dan Sawatzky, general manager of Manitoba's Keystone Potato Producers Association, says he doesn't see much relief in sight. "The ability to buy fertilizer when the prices are lower is gone," he explains. "I anticipate they will continue to be high throughout this spring, so there's no window of opportunity this year to buy cheaper inputs."

Brubacher says in contract negotiations with some of their major customers last year, potato producers for Ontario's chipping sector were able to secure price increases to help offset the higher price tag for crop inputs. But he says it wasn't enough to cover all the costs.

Sawatzky says processing potato producers in Manitoba managed to negotiate a bit of an increase in pricing in 2022, "so that helped to at least keep growers on an even playing field. Going forward, we'll have to negotiate something to help out with those rising input costs in 2023 as well."

Statistics Canada figures released December 7 showed the average potato yield in Canada in 2022 was 322.4 hundredweight per acre, up 0.2 per cent from 2021. Total production was also up — Canadian farmers produced just under 123 million hundredweight of potatoes, a 0.8 per cent increase from 2021.

Stamper notes the bump up in total potato production in Canada was due to increases in planted acres and yields in certain parts of the country. The overall planted acreage in Canada in 2022 was 386,591 acres — a 0.9 per cent increase that was largely due to increased demand for processing potatoes in North America.

Stamper says good weather at harvest helped farmers bring in almost all of the planted potato crop. "Weather conditions were very favourable during the harvest season across Canada, which permitted most growers to harvest the vast majority (98.7 per cent) of the total seeded area."

Atlantic Canada

Total potato production in New Brunswick dropped 6.6 per cent to 17 million hundredweight and the average yield was down too, declining 5.9 per cent to 329.5 hundredweight per acre.

In Prince Edward Island, total production fell 2.2 per cent to 26.6 million hundredweight of potatoes. A big reason for this drop is the continued export ban on seed potatoes grown in P.E.I.

Canada stopped sending P.E.I. potatoes to the U.S. on November 21, 2021, after potato wart fungus had been detected a few weeks earlier in two fields on the Island being monitored by the Canadian Food Inspection Agency. The export ban on table potatoes to the U.S. was lifted in April 2022, but P.E.I. seed potatoes are still barred from shipment to the United States pending the outcome of a U.S. Department of Agriculture review.

The average potato yield in P.E.I. was up in 2022, however, climbing 0.9 per cent to 324.8 hundredweight per acre. Greg Donald, general manager of P.E.I. Potato Board, attributes the yield increase to good growing conditions on the Island.

"We had a really good spring as far as planting goes," Donald says. "Early in the season we had better than average heat units and good moisture (and) we probably some of the nicest looking plant stands I've ever seen."

Donald says the good weather lasted until the first or second week of August when it turned dry. "You can almost draw a line down the middle of the Island — the eastern half was dry and then the western half continued to get decent rains almost weekly. That did impact the final yield a little bit more in the eastern end."

September saw Fiona, categorized as a post-tropical storm by the time it hit P.E.I. but still packing up to 140 km/hour winds, whip through

Continued on page 4

CANADIAN POTATO CROP PRODUCTION (000 CWT)				
PROVINCE	**2019**	**2020**	**2021**	**2022**
Nfld. and Labrador	54	55	55	52
Nova Scotia	416	300	357	240
Prince Edward Island	24,302	21,000	27,209	26,600
New Brunswick	16,400	11,500	18,200	17,000
Quebec	12,648	12,731	14,100	14,916
Ontario	6,705	7,518	8,953	8,160
Manitoba	19,700	24,000	24,927	26,139
Saskatchewan	1,500	1,400	1,519	1,450
Alberta	21,718	23,407	24,614	26,813
British Columbia	2,145	2,155	2,080	1,600
Total Canada	105,589	104,066	122,014	122,970

CANADIAN POTATO CROP YIELDS (CWT/ACRE)				
Province	**2019**	**2020**	**2021**	**2022**
Nfld. and Labrador	179.7	169.2	183.1	149.3
Nova Scotia	260.1	250.0	310.6	300.0
Prince Edward Island	289.3	251.5	322.0	324.8
New Brunswick	310.6	237.4	350.0	329.5
Quebec	293.0	285.5	308.0	308.7
Ontario	200.0	210.0	240.0	219.9
Manitoba	345.6	337.1	319.6	329.8
Saskatchewan	250.0	233.3	245.0	250.0
Alberta	382.0	404.0	363.0	375.9
British Columbia	325.0	331.5	325.0	320.0
Total Canada	308.9	292.7	321.6	322.4

Source: Statistics Canada

the Island. "That was the worst storm we've ever seen," says Donald. "It was like nothing folks had ever experienced before."

Donald says P.E.I.'s potato harvest was delayed by four or five days due to widespread power outages and fallen trees that had to cleared from roads and farmers' fields. "Many of our farms didn't have any power to run bin pilers and sorting equipment and dirt eliminators and ventilation systems in warehouses."

Donald says the saving grace after Fiona was "absolutely gorgeous weather" that continued well into fall.

"We needed it because of Fiona. We were really lucky we had good conditions," he says, adding it allowed Island potato producers to finish harvest more or less on schedule. "I think farmers were really happy with the crop."

Central Canada

Total potato production in Quebec was 14.9 million hundredweight last year, a 5.8 per cent increase from 2021. Average yield was up slightly to 308.7 hundredweight per acre, a 0.2 per cent increase. Ontario saw its total production numbers fall 8.9 per cent to 8.2 million hundredweight. The average yield was also lower, dropping 8.4 per cent to 219.9 hundredweight per acre.

Brubacher notes while there was a sizable drop in Ontario's total production number in 2022, "it's not as terrible as we anticipated during the summer." He says the potato season started well for farmers but tailed off after that.

"We had some good rains after planting, but then the taps turned off and we didn't see any (rain) until just before the end of August," says Brubacher. "We had extremely dry weather, but for the most part we didn't get any long-standing heat waves. The nighttime temperatures actually were fairly favourable through the summer."

Brubacher says this meant most potatoes going into storage were good quality, although they were generally smaller due to the dry summer weather which interfered with the bulking process.

Western Canada

In Manitoba, total production was up 4.9 per cent to 26.1 million hundredweight in 2022 and the average yield climbed 3.2 per cent to 329.8 hundredweight per acre. Total production in Saskatchewan dropped 4.5 per cent to just under 1.5 million hundredweight and the average yield increased 2.0 per cent per cent to 250 hundredweight per acre.

"This past season was the most expensive we've ever seen. Fertilizer was a big part of that, but for everything across the board, we saw increased costs associated with it."

— Kevin Brubacher, Ontario Potato Board

Alberta saw an 8.9 per cent jump in total production to 26.8 million hundredweight and the average yield was up 3.6 per cent to 375.9 hundredweight per acre. In B.C., total production was down 23.1 per cent to 1.6 million hundredweight while the average yield was 320 hundredweight per acre, a 1.5 per cent decline from 2021.

Sawatzky says about 1,500 acres of potatoes in Manitoba had to be disced under in the spring due to crop damage caused by cold, wet weather, but things improved after that.

"We had a late season as we were about three weeks behind in our planting," he says. "We did have ideal growing conditions though. We didn't have the (extreme heat) some of the other areas did."

Sawatzky says the good weather helped the Manitoba potato crop catch up, so it was only a week or so behind by the end of August. Some September rain delayed harvest for a few days and resulted in a few storage losses due to pink rot in some flooded fields.

"It was mid-September when guys got going in earnest," says Sawatzky. "Most growers like to try and be done by October 1. I think there were only a few who made that deadline, so harvest dragged on longer than most years."

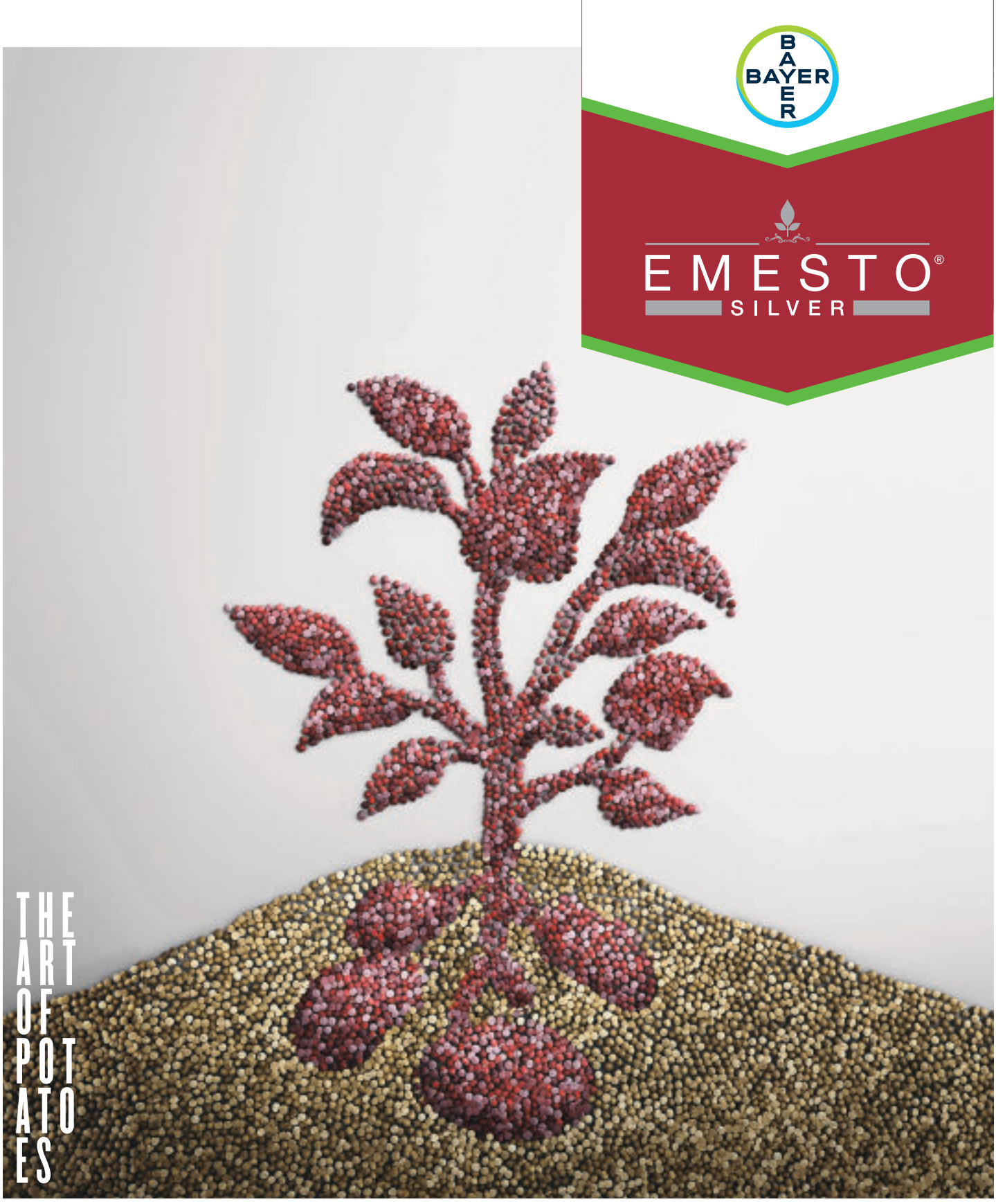
Sawatzky notes an early October frost did a little bit of damage in some areas, but nothing severe enough to cause much storage breakdown.

Stamper says a July hailstorm as well as high temperatures throughout August tempered yield expectations for the Alberta potato crop, but favourable harvest conditions helped boost the average yield numbers in 2022 from the previous year.

"This larger crop will be welcome with an overall tight supply of processing potatoes in North America this season," she says.

According to Stamper, the large drop in total production in British Columbia in 2022 reflects a cold, wet start to the year, followed by little rain and high temperatures throughout August and into September, which really put a damper on the potato crop in that province.

"B.C. was planting almost into June. They're usually done way ahead of that. They were really, really behind," says Stamper. She adds after mid-September, temperatures dropped nicely and produced good conditions for harvest, enabling growers to get most of the crop out of the ground despite dry ground in some areas.



Your crop is your masterpiece.

We just bring the tools. The unmistakable red formula of Emesto® Silver fungicide seed treatment protects your potato seed-pieces from seed and soil-borne diseases. With two modes of action against fusarium, it even safeguards against current resistant strains. But what insecticide you choose to combine it with is completely up to you – because when it comes to art, the artist always knows best.

cropscience.bayer.ca | 1 888-283-6847 | @Bayer4CropsCA | #AskBayerCrop

Breaking down barriers to sustainability

McCain Foods teams up with Farm Credit Canada and McDonald's Canada to provide financial incentives for farmers who adopt regenerative agricultural practices

BY MARK HALSALL, ASSOCIATE EDITOR

PHOTO: MCCAIN FOODS

McCain Foods pledged two years ago to implement regenerative agricultural practices across 100 per cent of its potato acreage worldwide by 2030. To help reach that goal, the company is now offering up financial solutions to make sustainable farming more affordable for Canadian potato producers.

McCain Foods announced in November it was teaming up with Farm Credit Canada (FCC) for a new program aimed at reducing financial barriers for potato farmers transitioning to sustainable agricultural practices. This follows the move by McCain in August to partner with McDonald's Canada to establish the Future of Potato Farming Fund, which will offer $1 million in grants to growers to help them implement regenerative ag practices and technology.

Both programs support McCain Foods' global Regenerative Agriculture Framework. This voluntary framework, which supports farmers as they transition to sustainable agriculture, was developed in collaboration with a range of stakeholders. It sets clear definitions and measurements for a regenerative potato acre at four different stages — onboarding, beginner, expert and master levels. For more details, go to www.mccain.com/media/4036/mccain-foods-regenag-framework.pdf.

"Smart and sustainable farming is a key pillar of McCain's commitment to be a more environmentally conscious company," says Daniel Metherington, vice-president of agriculture at McCain Foods.

"Regenerative agriculture is part of our DNA as a family business born on a potato farm in Florenceville, New Brunswick, in the 1950s," he adds. "Regenerative agriculture also provides critical climate adaptation to secure supply for the future of our industry. We are committed to working in partnership with our growers to identify and test regenerative practices that make agronomic and economic sense and build soils to improve resilience."

McCain acknowledges the transition to more sustainable farming practices often requires upfront investments in new equipment and practices from farmers. Metherington says the new programs are intended to help potato growers with that.

McCain and FCC Initiative

The funding initiative offered by McCain Foods and FCC offers financial incentives to McCain's 140 or so potato farming partners in New Brunswick, Manitoba and Alberta. It uses a combination of funds from FCC's Sustainability Incentive Program and from McCain to issue an annual incentive to producers who are at the onboarding level or higher on the Regenerative Agriculture Framework.

FCC customers who are McCain potato suppliers are eligible to receive incentive payments of up to $2,000 a year. Participating McCain growers can also receive free access to FCC AgExpert farm management software for a year.

McCain Foods is adding to the FCC incentive paid to its potato producers, based on where the farmers are in their journey on the Regenerative Agricultural Framework. McCain will provide matching funds of $2,000 to eligible producers at the onboarding level, while those at the highest master level are eligible to receive up to $14,000 from McCain.

"McCain and FCC are proud to both reward growers who are leading the way on regenerative agriculture and reduce barriers for those who are starting the journey," says Metherington. "We saw (this) as a good opportunity to build an incentive program to encourage farmers to adopt regenerative agricultural practices and move their way up our Regenerative Agricultural Framework."

The executive director of New Brunswick Potatoes, Matt Hemphill, stated in a press release:

"We are excited to see this new offer between McCain and FCC that rewards Canadian potato growers for their sustainable practices and provides an incentive to advance. The ability for expert and master regenerative farmers to receive a significant incentive reduces barriers to farm investment in an era of rising rates, increasing complexity and escalating climate variability."

Future of Potato Farming Fund

The Future of Potato Farming Fund established by McCain Foods and McDonald's Canada provides education, demonstration and cost-sharing grants to eligible McCain producers.

The joint initiative consists of two rounds of grants (the first round opened last August) for farmers to implement established regulatory practices to build soil health and resilience. During the program, McCain Foods, McDonald's Canada

McCain Foods' Farm of the Future in Florenceville, N.B., is the centrepiece of the company's regenerative agriculture efforts in Canada.

"McCain and FCC are proud to both reward growers who are leading the way on regenerative agriculture and reduce barriers for those who are starting the journey."

— Daniel Metherington, McCain Foods

and the Soil Health Institute are working together to measure soil health progress in areas like increased soil organic carbon, aggregate stability and improved drainage capacity.

"Through our shared vision with McDonald's Canada, we are focused on supporting our growers in accelerating the transition to the key principles of regenerative agriculture like maintaining living cover, reducing tillage intensity, diversifying rotations, reducing the intensity of chemical applications and enhancing biodiversity," said Jeremy Carter, McCain's director of agriculture for Western Canada, in a press release.

Under the Future of Potato Farming Fund's cost-share mechanism, qualifying growers can get help paying for projects identified in the fund's priority list of regenerative practices and technologies. These include cover crop seed, flower strip seed, lower intensity tillage equipment, decision support systems, organic soil amendments and more.

Hemphill said potato producers welcome the initiative. "This is a great example of supporting Canadian farmers with the tools they need to trial regenerative farming techniques, with an aim to future-proofing the land, and ensuing quality potatoes to share with Canadians for generations to come."

Farm of the Future

Metherington says McCain Foods is making good headway as the company moves toward the 2030 regenerative ag goal for its contracted potato acreage.

"Farmers are already making great progress on this journey and our framework clearly lays out the areas of focus. Our local technical teams are working with farmers to understand which areas and practices will help and accelerate them along the framework," he says.

"However, this is a total supply chain solution and new varieties also play a key role. McCain is heavily investing in this to ensure we bring varieties that optimize inputs and are more resilient to the climate challenges we are facing each year."

Metherington notes the centrepiece of his company's regenerative ag efforts in this country is Farm of the Future Canada, a commercial-scale, full rotation regenerative farm operated by McCain in Florenceville.

"Farm of the Future Canada has recently completed its second full growing season, and we are encouraged by the results," says Metherington. He adds priority practices in the first two years included cover cropping, diversifying rotations, rotational grazing and controlled traffic farming.

Metherington says the purpose of the farm is to test regenerative ag practices and establish farming methods which are not only scalable and feasible but also make financial sense for potato producers.

"That said, we know regenerative best practices vary by region. For that reason, we need model farms in all three of our Canadian potato growing regions," he says. To achieve this objective, McCain is launching Innovation Hubs with potato grower partners in Manitoba and Alberta who will test local regenerative best practices, technologies and new varieties in their fields. The first Innovation Hub will be in Manitoba this year.

Metherington says McCain designed its Farms of the Future project to test regenerative agricultural practices not just in Canada but in different potato growing regions around the world. Farm of the Future Canada led the way, and a second one, Farm of the Future Africa, will be established in South Africa. The location of a third Farm of the Future has yet to be announced.

SEED PIECE & IN-FURROW TREATMENTS			DISEASE[2]								INSECT PEST							APPLICATION[6]	
COMMERCIAL NAME	COMMON NAME (ACTIVE INGREDIENT)	Group[1]	Early blight (Alternaria solani)	Fusarium rot	Seed piece decay and leak	Pink rot	Late blight	Rhizoctonia canker (black scurf)	Silver scurf	Common scab	Verticillium wilt	Colorado potato beetle	Aphids	Leafhopper	Wireworm	Flea beetle	Nematodes	Seed piece treatment	In-furrow treatment
Admire 240 / SPT (Bayer)	imidacloprid	4A										X	X	X		X		Y	N
Actara 240SC (Syngenta)	thiamethoxam	4A										X	X	X				Y	Y
Alias 240 SC	imidacloprid	4A										X	X	X		X		Y	Y
Cimegra (BASF)	broflanilide	30													X			N	Y
Clutch 50 WDG / Chlothianidin	chlothianidin	4A										X						N	Y
Cruiser Maxx Potato Extreme (Syngenta)	fludioxonil + difenoconazole + thiamethoxam	12 + 3 + 4A		X				X	X			X	X	X				Y	N
Dithane M-45 8%	mancozeb	M		X														Y	N
Double Nickel 55 WDG	bacillus amyloliquefaciens	44						X										N	Y
Elatus (Syngenta)	benzovindiflupyr+ azoxystrobin	7 + 11						X	X		X							N	Y
Emesto Silver (Bayer)	penflufen + prothiocanazole	7 + 3		X				X	X									Y	N
Evito 480 SC (in-furrow) (UPL)	fluoxastrobin	11						X										N	Y
Heads Up	Saponins from quinoa	–						X										Y	N
Minecto Duo 40WG (Syngenta)	thiamethoxam + cyantraniliprole	4A + 28										X	X	X		X		N	Y
Minuet (in-furrow) (Bayer)	bacillus subtilis	BM02		X		X		X										N	Y
Nipsit Inside 600	clothianidin	4A										X	X	X		X		Y	N
Orondis Gold Potato (Syngenta)	metalaxyl-M + oxathiapiprolin	4 + 49			X	X												N	Y
Penncozeb 80 WP (UPL)	mancozeb	M		X														Y	N
Phostrol	phosphites	33				X												N	Y
Presidio	fluopicolide	43				X												N	Y
Pyrifos 15 G	chlorpyrifos	1B													X			N	Y
Quadris (Syngenta)	azoxystrobin	11						X	X									N	Y
Reason 500 SC	fenamidone	11					X											Y	N
Revus (Syngenta)	mandipropamid	40				X	X											Y	N
Ridomil Gold 480 SL (in-furrow) (Syngenta)	metalaxyl-M + S-isomer	4			X	X												N	Y
Salibro (Corteva agriscience)	fluazaindolizine	–															X	N	Y
Senator PSPT	thiophanate-methyl	1		X	X	X			X		X							Y	N
Sercadis (BASF)	fluxapyroxad	7						X										N	Y
Serifel (BASF)	bacillus amyloliquefaciens	BM02						X										N	Y
Stargus	bacillus amyloliquefaciens	–				X												N	Y
Thimet 20-G	phorate	1B													X			N	Y
Titan (BASF)	chlothianidin	4A										X	X[3]	X	X	X[3]		Y	N
Velum Prime (Bayer)	fluopyram	7	X[4-5]														X	N	Y
Verimark (in-furrow) (FMC)	cyantraniliprole	28										X				X		N	Y
Vertisan	penthiopyrade	7						X										N	Y
Vibrance Ultra Potato (Syngenta)	sedaxane + mandipropamid + difenoconazole	7 + 40 + 3		X		X	X	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 seed pieces only.
4. Registered also for the suppression of early blight
5. Black dot supression.
Y = Yes (applies for this type of application).
N = No (does not apply for this type of application).

This guide does not replace the product label. In the case of any discrepancy, the product label should be followed.
Potato Guide cannot assume responsibility for the results obtained from the use of any of these products.

FUNGICIDES				DISEASES[2]												RESTRICTIONS			
COMMERCIAL NAME	COMMON NAME (ACTIVE INGREDIENT)	Group[1]	Mode of action of main active ingredient***	Early blight (Alternaria solani)	Late blight	White mould	Pink rot	Seed piece decay, leak	Fusarium rot (Fusarium spp.)	Grey mould (Botrytis cinerea)	Late blight on tubers	Rhizoctonia canker	Black dot	Brown leaf spot	Silver scurf	Security delay (hours)[7]	Delay before harvest (days)[3]	Maximum number of applications[4]	Interval between applications (days)[5]
Allegro 500F syngenta	fluazinam	29	EC		X	X										24	14	10	7-10
Aprovia Top syngenta	benzovindiflupyr + difenoconazole	7 + 3	PAD	X										X		12	14	2	7-14
Bravo ZN syngenta	chlorothalonil	M - 5	C	X	X					X						48	2	3	7-10
Cantus BASF We create chemistry	boscalid	7	PND	X												12	30	4	14
Cevya BASF We create chemistry	mefentrifluconazole	3	PND	X									X	X		12	7	4	7-14
Confine Extra / Winfield Phosphite Extra	phosphorus acid	33	CS				X				X				X[8]	4	1	5	14
Copper 53 W / Cuivre 53W	tribasic copper	M	C	X	X											48	1	10	5
Copper spray fungicide	oxychloride	M	C	X	X											48	1	10	7-10
Cueva	copper octanoate	M	C	X	X											4	1	15	5-10
Curzate CORTEVA agriscience (+ Manzate)	cymoxanil + mancozeb	27 + M	PND		X											24	8	4	5-7
Diplomat 5 SC	polyoxin D zinc salt	19	C	X												0	1	3	7-14
Penncozeb UPL	mancozeb	M3	C	X	X											24	1	–	5-10
Double Nickel 55 WDG	bacillus amyloliquefaciens	44	C	X		X						X[6]				–	–	–	3-10
Echo 90 DF / Echo 720 / Echo NP / Echo 90 WSP	chlorothalonil	M	C	X	X					X						48	1	–	7-10
Evito 480 SC UPL	fluoxastrobin	11	PND		X											12	7	3	7
Forum (+ Bravo / Polyram DF / Dithane) BASF We create chemistry	dimethomorph	40	PDA		X						X					12	4	3	5-10
Forum (+ Bravo or Dithane Rainshield) BASF We create chemistry	dimethomorph (+ chlorotalonil or mancozeb)	40 + M	PDA		X						X					48	14	3	5-10
Gavel	mancozeb + zoxamide	22 + M3	C	X	X											12	3	3	7
Kocide 101 / 1000 / 2000 / Parasol FL / WP	copper hydroxide	M	C	X	X						X					48	1	10	7-10
Lifegard WG	bacillus mycoides isolate	M	C	X	X	X										–	0	–	7
Luna Tranquility Bayer	fluopyram + pyrimethanil	7 + 9	PND	X		X							X	X		12	7	5	7-14
Maestro 80 DF	captan	M	C	X	X											48	7	7	7-10
Manzate Max UPL	mancozeb	M3	C	X	X											24	1	–	5-10
Manzate Pro-Stick UPL	mancozeb	M3	C	X	X											24	1	–	5-10
Minuet Bayer	bacillus subtilis	BM02	C				X		X			X				4	0	–	7
Miravis Duo syngenta	pydiflumetofen + difenoconazole	7 + 3	PAD	X		X				X				X		12	14	3	7-14
Orondis Ultra syngenta	mandipropamid + oxathiapiprolin	40 + 49	PAD		X											12	14	4	7-14
Parasol (FL.WG, or WP)	copper hydroxide	M1	C	X	X											48	2	10	7-10
Phostrol	phosphorus acid	33	CS		X		X									12	0	7	7-14
Proline GOLD[9] Bayer	fluopyram + prothioconazole	7 + 3	PND	X		X							X	X		24	14	2	7
Propulse[10] Bayer	fluopyram + prothioconazole	7 + 3	PND	X		X							X	X		24	14	2	7
Presidio / Fluopicolide 4 SC (+ Bravo)	fluopicolid	43	PAD		X											48	7	4	7-10
Quadris Top syngenta	azoxystrobin + difenoconazole	11 + 3	PAD	X		X							X	X		12	14	3	7-14
Quash / Quash SC	metconazole	3	PAD	X		X										12	1	3	7-10
Rampart	phosphorus acid	33	CS	X			X				X					4	0	5	3
Ranman 400 SC / Cyazofamid 400SC	cyazofamid	21	EC		X						X					12	7	6	7
Reason (+ Bravo)	fenamidone	11	PND	X	X											48	14	6	7-10
Revus syngenta	mandipropamid	40	PND		X											12	14	4	7-10
Ridomil Gold 480 SL syngenta	metalaxyl-M and S-isomer	4	PAD	X	X		X	X			X					12	14	3	14
Scala SC Bayer	pyrimethanil	9	PND	X												12	7	6	7-14
Sercadis BASF We create chemistry	fluxapyroxad	7	PND	X		X						X[6]				12	7	3	7-14
Serenade OPTI Bayer	bacillus subtilis	BM02	C	X		X									X	0	0	–	7-10
Serifel BASF We create chemistry	bacillus amyloliquefaciens	BM02	C	X												4	0	–	7-10
Tanos CORTEVA agriscience	famoxadone + cymoxanil	11 + 27	PND	X	X											24	14	3	12
Veltyma BASF We create chemistry	mefentrifluconazole + pyraclostrobin	11 + 3	PND	X									X	X		12	7	2	7-14
Vertisan	penthiopyrade	7	PND	X						X		X[6]				12	7	3	7-14
Zampro BASF We create chemistry	ametoctradin + dimethomorph	40 + 45	PAD		X						X					12	4	3	5-10

*** Mode of action of the main active ingredient	
C	Contact
EC	Elaborated contact (anti-sporulating action)
PND	Penetrating: non-diffusing or translaminar
PAD	Penetrating with ascending diffusion
CS	Completely systemic

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 number of days between two consecutive applications of the same product.
6. **When fungicide is used in-furrow.**
7. **Security delay (SD):** Delay (hours) before going into the treated zone.
8. **Post-harvest application.**
9. **Western Canada only.**
10. **Eastern Canada only.**

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

COMMERCIAL NAME	COMMON NAME (ACTIVE INGREDIENT)	Group1	DISEASE[2]						
			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
Bio-Safe 10 LP	pseudomonas syringae	–	X						X
Confine / Confine Extra	phosphorus acid	33			X		X		X
Mertect SC syngenta	thiabendazole	1	X					X	X
Phostrol / Rampart	phosphorus acid	33			X		X		
Stadium syngenta	azoxystrobin + fludioxonil + difenoconazole	11 + 12 + 3	X						X
Storox	hydrogen peroxide	–	X			X			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

COMMERCIAL NAME	Group[1]	APPLICATION TIME						ANNUAL GRASSY WEEDS							ANNUAL BROADLEAF WEEDS					PERENNIAL WEEDS			
		Preplant	Pre-emergence	Pre-emergence (cracked soil)	Early post-emergence	Post-emergence	Before harvest[2]	Crab grass	Barnyard grass	Wild oats	Witchgrass	Fall panicum	Proso millet	Foxtails	Polygonum (Smartweed)	Lamb's quarters	Wild mustard	Pigweed	Common ragweed	Yellow nutsedge	Quackgrass	Perennial sow-thistle	Canada thistle
Afolan F[3]	7		X					F	F	P	P	F	P	F	E	E	P	G	G	P	P	P	P
Beloukha	26						X	E	E	E	E	E	E	E	E	E	E	E	E	P	P	F	P
Biolink EC	26		X					E	E	E	–	–	–	–	–	–	–	E	–	E	–	–	–
Aim EC[3] FMC	14	X					X	–	–	–	–	–	–	–	E[7]	E	–	E	–	–	–	–	–
Boundary LQD[6] syngenta	15 + 5		X					E	E	P	E	E	P	E	–	–	–	E	–	–	–	–	–
Chateau WDG[4] / Flumioxazin 51 WDG	14		X					P	P	P	P	P	P	F	–	E	–	E	E	–	–	–	–
Chateau EZ[4]	14		X					P	P	P	P	P	P	–	–	E	–	E	E	–	–	–	–
Dual II Magnum syngenta / Metallica	15	X	X					E	E	P	E	E	P	E	P	–	P	F	P	E	P	P	P
Dual II Magnum syngenta + Lorox	15 + 7		X					E	E	P	E	E	P	E	E	E	P	E	G	F	P	P	P
Eptam EC[3]	8	X				X[8]		E	E	E	E	E	–	E	F	F	P	E	F	E	G	P	P
Frontier Max	15		X					E	E	–	E	E	–	E	P	P	P	E	P	F	P	P	P
Glyphosate / Roundup brands Bayer	9	X		X				E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Komodo	15	X	X					E	E	P	E	E	P	E	P	–	P	F	P	E	P	P	P
Lorox L[3]	7		X					E	E	P	–	–	–	E	E	E	P	E	B	–	P	P	P
Prism SG Corteva	2					X		P	E	P	E	E	P	E	–	F	G	E	P	–	G	–	–
Reglone[2] syngenta / Desica[2] syngenta / Armory 240[2]	22	X	X				X	E	E	E	E	E	E	E	E	E	E	E	E	P	P	F	P
Reflex[6] syngenta	14		X					–	–	–	–	–	–	–	E	E	E	E	E	–	–	–	–
Select / Arrow 240 EC / Centurion / Shadow RTM / Statue BASF We create chemistry	1					X		E	E	E	E	E	E	E	P	P	P	P	P	P	E	P	P
Sencor[3] Bayer	5	X	X	X	X			G	G	–	G	G	–	G	E	E	E	E	E	P	P	P	P
Sencor + Dual II Magnum	5 + 15	X	X					E	E	E	E	E	–	E	E	E	E	E	E	F	P	P	–
Sencor / Tricor 75 DF + Eptam	5 + 8	X						F	E	E	E	F	–	E	G	E	E	E	E	F	P	P	P
Tricor 75 DF + Eptam UPL	5 + 8	X						F	E	E	E	F	–	E	G	E	E	E	E	F	P	P	P
Strim MTZ / Flag LQD UPL	5 + 15	X	X					E	E	E	E	E	–	E	E	E	E	E	E	F	–	–	–
Tricor LQ UPL	5	X	X	X	X			G	G	–	G	G	–	G	E	E	E	E	E	P	P	P	P
Venture L[3] syngenta	1					X		E	E	E	E	E	E	E	P	P	P	P	P	P	E	P	P

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

1. Group: Products belonging to the same group have a similar mode of action.
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.
4. For Western Canada only.
5. For British Columbia and Eastern Canada only.
6. For Eastern Canada only.
7. Registered for control of smartweed but not wild buckwheat.
8. Can be applied post-emergence but must be soil incorporated. Restriction on harvesting within 60 days of application.

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

INSECTICIDES			INSECT PESTS[3]								RESTRICTIONS		
COMMERCIAL NAME[1]	ACTIVE INGREDIENT	Group[2]	Flea beetle	Potato leafhopper	Colorado	Aphids[4]	European corn borer	Other lepidopterous	Tarnished plant bug	Wireworm	Delay before harvest (days)[5]	Security delay after treatment (hours)[6]	Maximum number of applications[7]
Actara syngenta	thiamethoxam	4A		X	X	X					7	12	2
Admire 240 / Alias 240 SC BAYER	imidaclorid	4A		X	X	X					7	24	1
Agri-Mek SC[10] syngenta	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	–				X					14	12	10
Beleaf 50SG[10] FMC	flonicamid	29				X					7	12	3
Clutch 50 WDG / Clothianidin	chlothianidin	4A		X	X	X					14	12	3
Closer CORTEVA agriscience	sulfoxaflor	4C		X		X			X		7	12	2
Coragen MaX FMC	chlorantraniliprole	28			X		X	X			1	12	4
Cormoran	novaluron + acetamiprid	4 + 15		X	X	X	X	X			7	12	2
Cygon 480 AG / Cygon 480 EC FMC Lagon 480 E	dimethoate	1B		X		X					7	12	2
Decis 100 EC[11] BAYER	deltamethrin	3	X	X	X	X	X		X		1	12	3
Delegate CORTEVA agriscience	spinetoram	5			X		X	X			7	12	3
Dibrom	naled	1B	X	X	X						4	48	2
Entrust CORTEVA agriscience	spinosad	5			X		X				7	12	2
Exirel FMC	cyantraniliprole	28	X		X	X	X	X			7	12	4
Harvanta	cyclaniliprole	28			X			X			14	12	2
Superior 70 oil / SunSpray	mineral oil	–				X[9]					14	12	10
Imidan 50 W / Imidan 70 WP	phosmet	1B	X	X	X	X					7	120	5
Warhawk 480 EC / Nufos 4E	chlorpyrifos	1B	X		X			X	X		7	24	1
Malathion / Fyfanon 50 EC	malathion	1B		X	X	X					3	24	1
Minecto Pro syngenta	abamectin + cyantraniliprole	6 + 28	X		X		X				14	12	2
Movento[10] 240 SC BAYER	spirotetramat	23				X					7	12	2
Orthene 75 SP	acephate	1B	X	X		X			X		21	24	4
Pyrinex 480 EC / Chlorpyrifos 480 EC / Citadel 480 EC	chlorpyrifos	1B	X		X				X		7	24	1
Pounce 384EC FMC / Ambush 500 EC	permethrin	3	X	X	X		X	X	X		1	12	4
Perm-Up UPL	permethrin	3	X	X	X		X	X	X		1	12	4
Rimon 10 EC UPL	novaluron	15			X		X				14	12	2
Sefina BASF We create chemistry	afidopyropen	9D				X					7	12	4
Sivanto Prime BAYER	flupyradifurone	4D		X	X	X					7	12	2
Success CORTEVA agriscience	spinosad	5			X		X				7	12	1-3
Surround WP	kaolin	–		X							0	0	–
vayego 200 SC BAYER	tetraniliprole	28	X		X	X	X				14	12	2
Veltyma BASF We create chemistry	mefentrifluconazole + pyraclostrobin	3 + 11											
Vydate CORTEVA agriscience	oxamyl	1A	X	X	X	X			X		7	12-72	2

1. **Commercial name:** Many brands and/or formulations with the same active ingredient may be available.
2. **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.
3. **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.
4. **Aphids:** Many species of aphids can attack potatoes. For more information about the species of aphids that are controlled, check the label.
5. **Delay before harvest:** The number of days that must elapse between the last insecticide application and the harvest.
6. **Security delay after treatment:** The period to respect between the application and the time when workers can return to the field.
7. **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.
8. **When used as seed-piece treatment**
9. **This product repels insects.**
10. **This product provides suppression of Psyllids.**
11. **For British Columbia and Eastern Canada only.**
12. **For Eastern Canada only.**
13. **Localized populations of some insect pests** (e.g.,Colorado Potato Beetle, Spotted Tentiform Leafminer) have developed resistance to other synthetic pyrethroid insecticides and can be expected to quickly develop resistance to these products.

This guide does not replace the product label. In the case of any discrepancy, the product label should be followed. Potato Guide cannot assume responsibility for the results obtained from the use of any of these products.

New products for 2023

Gavel

Zoxamide and mancozeb are the active ingredients for Gavel, a new fungicide from Gowan, which says they work in synergy to protect crops from major diseases. Zoxamide kills fungal zoospores before they are released and attempt to penetrate leaf surfaces. Mancozeb inhibits spore germination and disrupts enzyme activity.

Gowan says Gavel provides excellent control of early blight and late blight in potatoes. Although Gavel is not systemic, it is resistant to rain on the foliage because zoxamide is absorbed and held firmly in the waxy layer of the leaf cuticle, making it difficult to wash off.

It's advised to start applications at the first signs of disease or when cases of infection are reported in the area. Apply every seven days when disease pressure is high or when disease is present or environmental conditions are favourable for continued disease development. A maximum of six applications per season is allowed, with a pre-harvest interval of three days.

ca.gowanco.com/products/gavel-df-fungicide

Minuet

Minuet biological fungicide is Bayer CropScience's newest addition to its crop protection product portfolio. Registered for potatoes across Canada, it is a concentrated preparation of Serenade SOIL, a biological fungicide for furrow application which has been available for several years.

Minuet can be applied before or after planting and by irrigation, as a transplant drench, in-furrow or shanked/injected in. When applying by spray, it is important to irrigate so that the product penetrates the seed.

As a soil-applied biological fungicide, Minuet uses an active ingredient from FRAC group BM02 (organic with multiple modes of action), Bacillus subtilis strain QST 713. Minuet protects against soil-borne diseases such as rhizoctonia, black scurf and stem canker, in addition to suppressing pink rot and root rot caused by fusarium, phytophthora and pythium. In the soil, it forms a symbiosis with the plant and triggers activation of root and plant growth. It activates the plant's defence response, which helps to increase quality and yield potential.

Applications may be repeated at 21- to 28-day intervals. The shorter interval is recommended in cases of moderate pressure to breed diseases.

cropscience.bayer.ca/en/products/fungicides/minuet

Propulse

Bayer CropScience's Propulse fungicide has been granted expanded registration for use on potatoes in Eastern Canada. Propulse has been used for several years against sclerotinia in beans and blueberries.

The combination of prothioconazole (Group 3) and fluopyram (Group 7) will allow potato growers to control alternaria blight, brown spot and sclerotinia, in addition to suppressing black dot.

Bayer says Propulse's single dose of 750 ml/ha makes it easy to use. It is recommended to start Propulse applications preventively. After the first application, a second pass can be made 10-14 days later if conditions remain favourable for disease development. When disease pressure is severe, use the shorter intervals. Make sure the area to be treated is evenly covered because spray area coverage and canopy penetration are important to ensure optimum results.

cropscience.bayer.ca/Products/Fungicides/Propulse-Products/Propulse

Emesto Complete

Bayer CropScience's Emesto Complete is a new product that consists of a twin pack of Emesto Quantum (penflufen, Group 7, and clothianidin, Group 4A clothianidin) and Emesto Pro (prothioconazole, Group 3).

Emesto Quantum is a fungicide and insecticide for use on potato seed pieces to control certain diseases and insects. For fungal diseases, penflufen is active on seed-borne Rhizoctonia solani (black spot and stem and stolon canker) and Helminthosporium solani (silver spot). For additional protection against Rhizoctonia solani, which can be transmitted through the soil, an in-furrow fungicide is recommended in addition to the full Emesto application to the seed pieces. Emesto Quantum does not control bacterial diseases that may be present in seed. For insects, clothianidin controls Colorado potato beetle, aphids, flea beetles and leafhoppers.

Emesto Pro is a systemic fungicide that controls fusarium dry rot, but it does not control bacterial diseases that may be present in the seed (mole rot).

For optimal effectiveness against diseases and insects, good coverage of the seed piece is necessary. Apply the specified rate as a dilute spray using equipment that provides uniform coverage of each seed piece. It is also recommended not to apply more than 150 ml of mixture/100 kg of seed pieces, with application immediately after cutting. An absorbent is recommended to improve the suberization process.

Like any pesticide, it should be used as part of a total integrated approach to disease management. This includes cultural, mechanical and, where appropriate, other chemical techniques. These techniques include, but are not limited to, the use of high-quality seed, crop rotation, optimal planting and harvesting time, proper tuber handling, proper sanitation to reduce inoculum levels, and the use of post-harvest fungicide applications of alternative chemicals to reduce disease in storage.

cropscience.bayer.ca/Products/Seed-Treatments

Re-evaluation of products containing lambda-cyhalothrin: Voliam/Matador/Silencer/Warrior

Under the Pest Control Products Act, Health Canada's Pest Management Regulatory Agency (PMRA) periodically re-evaluates registered pesticides to ensure they meet current health and safety standards.

The PMRA has completed the re-evaluation of lambda-cyhalothrin and found it acceptable to maintain the registration of certain products containing it, with the imposition of additional risk-mitigation measures. However, the use of lambda-cyhalothrin is withdrawn for potato and some companies have decided to discontinue sale of their products for other uses.

Re-evaluation Decision RVD2021-04 (publications.gc.ca)

A new source of nitrogen

Biological products like Utrisha N and Envita enable potatoes and other crops to harvest nitrogen from the air

BY RALPH PEARCE, PRODUCTION EDITOR

The question of how different crop production would be if plants could fix their own nitrogen has been at the forefront of researchers' work and stakeholders' interests for more than 60 years. Aside from the ability of soybeans and edible beans to fix their own nitrogen, researchers have sought to find the same process for other crops.

It was a decade ago that a company from the United Kingdom — Azotic Technologies — finalized the development of a biological seed treatment that would enable a corn plant to fix nitrogen in the root zone. The work began in 1960 at the University of Nottingham in England and continued until 1988 when researcher Edward Cocking discovered a bacterium in sugar cane — one of roughly 500 different bacterial strains — that could supply up to 50 per cent of a sugar cane plant's nitrogen needs.

Ten years later, two companies have derived biological treatments, each with a unique mode of action which helps plants capture nitrogen from the atmosphere for a variety of crops including potatoes. Corteva Agriscience has brought Utrisha N, a foliar treatment, to the market while Syngenta has Envita, which is derived from Cocking's research more than 30 years ago and can be applied either in-furrow or as a foliar treatment.

Utrisha N

The 2022 growing season was the first in this country for Utrisha N, with higher than expected uptake among corn growers in Eastern Canada and canola growers in Western Canada, according to Corteva. The company expects Utrisha N will also be used in cereals, soybeans and horticulture crops.

According to Mark Versluys, specialties business leader with Corteva Agriscience Canada, grower uptake and response have been positive.

"We're still running through the trial data, but it looks very strong," says Versluys. "Feedback has been extremely positive on user experience, including application. There was a strong reaction regarding biologicals in general and Utrisha N, in particular, on the survey which was sent out to growers. As well, there was a very high response rate relative to other non-biological surveys that have gone out. The expectation is for rapid growth in this segment going forward."

Referred to as a nutrient efficiency biostimulant in company literature, Utrisha N enters the plant through the stomata in leaves. Once inside, its active ingredient — Methylobacterium symbioticum — colonizes and converts nitrogen gas from the air into ammonium, providing a constant supply of usable nitrogen to the plant.

In May 2022, Corteva Agriscience received certification from the Organic Materials Review Institute for the use of Utrisha N in organic farming in Canada.

Continued on page 16

"A plant with access to all of its nutritional needs will be more able to fend off pests, diseases and other environmental stressors. Since Utrisha N allows the plant to have access to nitrogen all season long, it would contribute to this state."

— Mark Versluys, Corteva Agriscience Canada

PHOTOS: SYNGENTA CANADA

Envita plot trials exhibit the difference between potatoes treated with Envita (left) and the untreated checks (right).

"Field-applied nitrogen is not always plant-available due to environment or the weather, root development and the nitrogen cycle, so Envita helps fill that nitrogen gap."

— Nathan Klages, Syngenta Canada

Versluys says he anticipates Utrisha N will have an excellent fit with potatoes since it's an opportunity to supplement the nutrient needs of this high-value crop with a sustainable form of nitrogen. The 2022 growing season saw a number of Utrisha N trials for potatoes with high-profile growers and consultants. Anecdotal information referred to healthier looking, more robust plants in some situations.

"A plant with access to all of its nutritional needs will be more able to fend off pests, diseases and other environmental stressors," says Versluys. "Since Utrisha N allows the plant to have access to nitrogen all season long, it would contribute to this state.

"It's a fully supplemental source for the plant, allowing the fertility plan to meet its potential by eliminating having to pull nitrogen from a single source. Conventional nitrogen sources have limitations with respect to the prospect of volatilization or leaching."

In addition to supplementing the supply of nitrogen to plants during the season, products such as Utrisha N could attract more attention as a way to address environmental concerns as the drive for sustainability becomes more prominent in agriculture. Company literature from Corteva states the use of the product carries no risk of leaching into water tables or releasing additional greenhouse gases.

The plan for Corteva is to have farmers use Utrisha N as a complementary product within existing fertility plans to maximize their potential. It is also the company's first step into the biologicals space in Canada, with more entrants to come in the near future.

Envita

It has been a long journey for Envita from its arrival in Canada by way of Azotic Technologies to today. Like Corteva's biologics entrant, it's expected Envita's highest uptake will be for corn in Eastern Canada and canola in Western Canada, although Syngenta says there's been interest in its use for cereals, soybeans, pulses and potatoes as well. The technology also recently received approval for organic use in Canada.

"Envita is a perfect fit for Canadian growers," says Nathan Klages, biological business manager for Syngenta Canada. "We continue to evaluate new biological products and will be adding to our portfolio in the coming years."

The single rhizobial bacterium Cocking isolated in 1988 — Gluconacetobacter diazotrophicus — remains the active ingredient in Envita. According to Syngenta, the bacterium fixes nitrogen from the air soon after Envita is applied, providing an additional N source where and when it is needed the most for yield.

Cocking found G. diazotrophicus thrives in the intercellular (outer) environment of sugar cane, forming a symbiotic relationship with the plant. Azotic Technologies has now determined the bacterium also functions intracellularly — within the plant.

Klages states the response to test plots of Envita within the potato sector has been strong.

"Under irrigated and non-irrigated situations, we've seen very positive results during field-scale comparisons," he says. "Field-applied nitrogen is not always plant-available due to environment or the weather, root development and the nitrogen cycle, so Envita helps fill that nitrogen gap."

Field-scale trials conducted across Canada during 2020 and 2021 showed crops treated with Envita out-yielded untreated check plots approximately 80 per cent of the time. The product will be available from Syngenta for the 2023 growing season.

Klages considers N-fixing biological products a game changer for agriculture, and he says it's something growers have been waiting for.

"Syngenta actively promotes best management practices and stewardship with growers, with a goal toward greater sustainability," he says. "Envita provides an opportunity for more crops to be capable of fixing atmospheric nitrogen."

Klages says he sees a need for Envita in regions like Manitoba and Ontario which are seeing increased calls for better nutrient management in soils, especially in areas where watercourses are nearby. He adds it could also be a tremendous benefit to potato producers in Prince Edward Island who are trying to reduce soil erosion while improving water quality.

GROWER SURVEY

A recent survey of roughly 800 Canadian producers revealed a majority believe their crops could benefit from alternative sources of nitrogen.

In the survey conducted by Corteva Agriscience, growers said they would consider using biostimulants and that they regarded biologicals as a viable, cost-effective and environmentally sensitive option to help their crop nutrient plans.

The survey also showed a level of confusion regarding biostimulants and differentiating between biologicals and micronutrients. Growers did express a desire to learn more about biologicals and how they work.

Specific results include:

78% of participants were concerned about nitrogen loss in their fertility program

95% said sustainability in their crop inputs is important

89% said they believe their crops would benefit from a supplemental source of nitrogen

80%+ would consider adding a biostimulant to their fertility plan

79% are using biologicals or biostimulant products or are interested in learning more about them

Commitment to change

Embracing soil health and new technologies helped Peter VanderZaag build a successful potato business. Like most farmers these days, he's faced with having to do more with less

BY RALPH PEARCE, PRODUCTION EDITOR

Every farmer knows that change is inevitable. New markets beckon, new technologies emerge, end-user tastes, preferences and opportunities shift, and it's often the primary producer who's one of the first to react.

Peter VanderZaag has spent much of his farming career investing wisely in new equipment, securing contracts and growing his Sunrise Potato Storage business in Alliston, Ont., to where it is today. But VanderZaag's journey required a firm and ongoing commitment to change, first in terms of soil health and productivity, and then in meeting his customers' demands for quality and consistency while incorporating new technologies. Given his starting point, the changes were neither quick nor simple.

"Most farmers understand they have to do this," says VanderZaag, who grew up on a family farm near Alliston in the 1950s. "You cannot get a mediocre crop — you need an excellent crop. You have to have everything done right, and that starts with good soil health and good soil management … and then good seed and good management of the crop as it grows."

Peter Vander Zaag has taken all he's learned about soil health and applied it to his Sunrise Potato Storage endeavour.

As a child helping out on a farm which included cows, hogs and potato, grain and hay production, VanderZaag says he learned the value of diverse cropping practices. Sustainability was possible, even with 100 acres.

However, from 1963 to 1980 there was significant expansion of monoculture potato production in southern Simcoe County where the farm was located. VanderZaag says diverse crop rotations and livestock production were abandoned across much of the district and soils began to show signs of deleterious pathogen levels as well as water and wind erosion, with frequent sandstorms in the area. Then interest rates spiked in the early 1980s and farm productivity collapsed, he adds, and numerous producers in the region abandoned potatoes altogether following a disastrous growing season in 1986.

VanderZaag eventually became a potato scientist, and in 1991 he and his wife Carla returned to Canada after living abroad for decades. The couple set their sights on potato production and leased several abandoned farms in an area north of where VanderZaag grew up.

Seeing the impact of soil degradation in many parts of the world, the VanderZaags realized soil heath and crop diversity would be key to their farming success and they could also serve as an example for others to consider. They embarked on a 16-year journey in returning the soils on their farms to full productivity, employing many of the regenerative agricultural practices they had learned from their travels.

Three of the farms the VanderZaags rented and later purchased couldn't sustain barley production the first season, while four rented farms still had potato ridges left from previous years, with volunteer trees growing in some spots. Their first two measures were to install some tile drainage and then secure an agreement with a local beef producer for liquid manure to be applied annually to the fields. Other measures included adding irrigation to fields and selective seeding of cover crops on less productive areas, as well as variable rate applications of potassium, lime and gypsum.

PHOTOS: PETER VANDERZAAG

Potatoes going into the bin at Sunrise Potato Storage.

Doing more with less

VanderZaag, whose daughter Ruth and son-in-law Nick Ploeg now play a leading role as farming partners, says in spite of high fertilizer and fuel prices and increasing demands from processors for supply, quality and consistency, Sunrise has managed to "do more with less" — a common refrain in agriculture these days.

"With potatoes we use more fertilizer and more diesel fuel than most (crops) per acre of land," he says. "We bought a lot of our fertilizer last year before the prices went up. Whatever we could pre-order and pay for, we did, and that helped to some extent. But … we couldn't order (fuel) in advance and then nitrogen costs went up, so it all adds up."

VanderZaag says having contracts with three chipping processors with plants in both Canada and the United States and also some timely investments in equipment have enabled Sunrise to weather some of the cost volatility of late.

About six years ago the farm invested in a Tomra optical sorting system, which VanderZaag says cuts down on labour required for sorting and also lessens the chance of reduced quality or a loss of confidence by their buyers, the processors.

"If you don't have that system, your potatoes may be considered of inferior quality at the plant because they're not as clean, not as well sorted," he says. "If you find a walnut in your potatoes, for example, you're in trouble. Those are all things that have now become an issue."

For VanderZaag, the 2023 potato season brings a blend of optimism and caution. In spite of forecasts of a recession, he says, economic downturns can have an interesting benefit — consumers increase their chip purchases during harder financial times. There's also the Canadian dollar's relative weakness compared to the U.S. dollar, which becomes a substantial advantage for shipping potatoes south of the border.

"Our problem is that demand exceeds our supply, both locally and to the northeastern United States," says VanderZaag. "Brokers like W.D. Potato (potato wholesaler) want more potatoes because they can't fill contracts, or they want bigger contracts. That's something in our favour, but the flip side is to buy a new digger or windrower or a tractor, the prices are through the roof."

Added to that is the impact of interest rate hikes. "I hope it's not like the '80s with 18 per cent interest," says VanderZaag. "My father told me when I came back to the farm, 'Don't spend a dollar unless you have a dollar' because he'd gone through the '80s. We have to be very careful not to spend too much money because that interest eats you up pretty quick.