ALBERTA CANOLA
SaskCanola
Manitoba Canola Growers
canolacouncil OF CANADA

January 2023

# canola DIGEST

The Source for Canada's Canola Growers

# DATA CRUNCH

**Canola Digest asked its six panelists, including Melissa and Jason Damiani of Bluffton, Alberta, how do you put your data to work? /pg 10**

INSIDE:

# TOUGH WEEDS IN CANOLA? STRIKE BACK WITH A LITTLE 'TUDE.

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canola DIGEST
January 2023







## THE RISE OF VERTICILLIUM STRIPE

Verticillium stripe's prevalence has been on a steady upward trajectory in the Eastern Prairies. In Manitoba, it was found in 38 per cent of canola fields surveyed in 2022 – a level similar to sclerotinia stem rot. But severity remains uncertain. Researchers don't know if it causes sclerotinia levels of yield loss.



### Using data to map the profitability of VR

Wayne Schneider bought a variable-rate-equipped drill, invests in variable-rate maps and applies urea to canola based on those prescription maps. He does it because it makes logical sense. But does it pay? That's what a new data analysis program will tell him – eventually.



### Two machines, one person

Synchronous operation has two machines – one with an on-board operator and another autonomous – working together doing the same job and following the same field map. With close supervision of the robot, this could be the system that introduces large-scale robots to Prairie fields.



### Agronomists name herbicide-resistant weeds as top threat

The Canola Council of Canada surveyed 330 agronomy providers from across the Prairies in August 2022. When asked "What canola agronomic risk factors are likely to be the greatest concerns for your farmer customers over the coming five years?", the top answer was herbicide-resistant weeds.



### Pest number one becomes number one-er

Hungry hoards of tiny flea beetles are part of the brassica crop landscape. Damage the past few years, particularly for the Eastern Prairies, is beyond normal and has farmers looking at lower action thresholds, later seeding dates and steps to improve efficacy of insecticide sprays.

# DEPARTMENTS



# PROVINCIAL BULLETINS

**4** ALBERTA CANOLA

Alberta's Marketing Council, the oversight body for the 20 agricultural boards and commissions in Alberta, has directed Alberta Canola to develop bylaws that will help update the Alberta Canola Producers Marketing Plan Regulation. This will improve the overall regulatory process and adaptability in a dynamic agricultural environment. Alberta Canola welcomes Katie Elliott as Communications & Events Coordinator.

**6** SaskCanola

Saskatchewan is known worldwide as a consistent and reliable supplier of safe, high-quality agri-food products; SaskCanola reminds the federal government that increasing domestic food production must be supported and resourced. Apply for Learn to Lead 2023, with sessions on governance, media training, leadership style and decision making.

**8** Manitoba Canola Growers

Meet the Tulepps – farming sisters Stefanie and Cassandra Lepp from Rivers, Manitoba. On any given day you can check in with The Tulepps, and many others in the agricultural community, on social media as they post about what they are doing and why they are doing it, with full transparency. Plan to attend Canola Morning at Ag Days, now a ticketed event. You can pay at the door.

# CALENDAR

**SASKCANOLA AGM**
January 10, Saskatoon, Saskatchewan
**saskcrops.com**

**ALBERTA CANOLA CONFERENCE (AND AGM)**
January 17-18, Lethbridge, Alberta
**events.albertacanola.com/acc-23**

**CANOLA MORNING AT MANITOBA AG DAYS**
January 17, Brandon, Manitoba
**agdays.com**

**CROSSROADS - ALBERTA'S CROP CONFERENCE**
January 24-25, Edmonton, Alberta
**crossroadscropconference.ca**

**SASKCANOLA HOSTS TOP NOTCH FARMING**
January 31 – North Battleford
February 1 – Saskatoon
February 7 – Regina
February 8 – Swift Current
February 15 – Melfort
**saskcanola.com/events**

**CROPCONNECT CONFERENCE**
February 15-16, Winnipeg, Manitoba
**cropconnectconference.ca**

**MANITOBA CANOLA GROWERS AGM**
February 16, Winnipeg, Manitoba
**canolagrowers.com**

**CANADIAN CROPS CONVENTION**
March 7-9, Ottawa, Ontario
**canadiancrops.ca**

**THE CANOLA DIGEST IS A JOINT PUBLICATION OF:**

**Alberta Canola OFFICE**
Karla Bergstrom, Alberta Canola Producers Commission
14560 – 116 Avenue NW
Edmonton, AB T5M 3E9
(780) 454-0844 Fax: (780) 451-6933
Email: karla@albertacanola.com

**SaskCanola OFFICE**
Tracy Broughton, SaskCanola
212 – 111 Research Drive
Saskatoon, SK S7N 3R2
(306) 975-0262
Email: tbroughton@saskcanola.com

**MCGA OFFICE**
Delaney Ross Burtnack,
Manitoba Canola Growers Association
400 – 167 Lombard Avenue
Winnipeg, MB R3B 0T6
(204) 982-2120 Fax: (204) 942-1841
Email: delaney@canolagrowers.com

**Canola Council of Canada (Publisher)**
400 – 167 Lombard Avenue
Winnipeg, MB R3B 0T6
(204) 982-2100 Fax: (204) 942-1841

**EDITORIAL OFFICE**
Jay Whetter, Editor
Canola Council of Canada
400 – 167 Lombard Avenue
Winnipeg, MB R3B 0T6 | (807) 466-3025
Email: whetterj@canolacouncil.org

**Production:** Suckerpunch Creative
(204) 452-9446 | Email: hello@suckerpunch.ca
www.suckerpunch.ca

**ADVERTISING SALES:** WTR Media Sales Inc.
1024 – 17 Avenue SE, Calgary, AB T2G 1J8
Robert Samletzki (403) 296-1346
Toll free: 1-888-296-1987
Email: robert@wtrmedia.com
Linda Samletzki (403) 296-1349
Toll free: 1-888-296-1987
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Toll Free..... 866-834-4378

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# Listen to me

Humans are talkers. I went into journalism because I wanted to talk to people, ask questions, hear their stories and share them. I talk to people for my articles in Canola Digest, a magazine that remains, thankfully, popular among canola growers. I also talk to people for the Canola Watch podcasts.

As a teenager, I spent a lot of time in tractors, especially at harvest. Radio was my friend. On 58 CKY, Huey Lewis and the News were in heavy rotation at that time with "If this is it" (somewhat appropriate for a teenager going around and around fields) and "Hip to be square". *I'm working out most every day and watchin' what I eat* still goes through my head. On CBC, I had Peter Gzowski and Morningside. I learned a lot about our country and its people from Peter Gzowski. While concentrating on keeping cultivator and swath passes straight, I had that caring character for three hours each morning. I wanted to be him.

Today we are more advanced. We have autosteer. And we can access any song or podcast at any time. Podcasts continue to gain popularity.

Edison Research shares results from digital media surveys in an annual report called "The Infinite Dial". The 2022 surveys found that 58 per cent of Canadians 18 or over have listened to at least one podcast in their lives, and 43 per cent listened to one in the past month. These figures have risen steadily from 47 per cent and 28 per cent, respectively, in 2018. The male-female split is about even and the big demographic is 18 to 34 year olds.

A Canola Council of Canada survey in 2022 asked agronomy providers about their preferred ways to receive agronomy information. Only 19 per cent included "podcast" in their selections, but that choice was in the ball park with Twitter (22 per cent) and videos (23 per cent). Field days and email newsletters were the top two.

What is better for learning – reading or listening? I found a report from Virginia Clinton-Lisell, associate professor in educational foundations and research at the University of North Dakota. Clinton-Lisell published "Listening ears or reading eyes: A meta-analysis of reading and listening comprehension comparisons", which found no overall difference between the two.

I tracked her down for a few follow up questions. It was the Wednesday before U.S. Thanksgiving and she was on her way to her mother's farm. "There's canola grown on my mom's farm in northwestern North Dakota! So she was pretty excited to hear of your interest," Clinton-Lisell wrote in an email.

Clinton-Lisell says reading typically has an edge in speed of comprehension because people usually read faster than presenters talk. However, she adds, listeners have a work-around: they can increase podcast playback speed by 1.5X or 2X.

Reading tends to be better for more complicated concepts. "My hunch is that being able to see the text allows for looking back and connecting different ideas in a way listening doesn't," she says. Listening has the benefit of convenience. "People can learn new information while they are driving or doing chores, which also allows for broader access," she says. "So really, the best way to have access to information is to provide written and audio options – which is what you're doing." (I didn't ask her to say that.)

I listen to at least 10 podcast episodes per week. My current go-to's are The Decibel, The Food Programme from BBC, KERA's Think, Radiolab from NPR, and Stories & Strategies from Doug Downs. If you are a fellow podcast fan, please listen to the Canola Watch podcast. You can find it through podcast providers or at canolawatch.org. Click "Podcast" in the Quick Links box.

After writing the flea beetles article in this issue of Canola Digest, I re-listened to episode 48 of the Canola Watch podcast. In that episode, Jim Tansey, provincial entomologist for the Saskatchewan Ministry of Agriculture, explains how flea beetles find canola and how far they'll travel for food. The article and the podcast will be a good one-two of reading and listening for farmers who want to enhance their flea beetle management strategy for 2023. An expert in North Dakota recommends you do both.

ALBERTA CANOLA
CONFERENCE & AGM

Alberta Canola's RESEARCH SYMPOSIUM
JANUARY 18, 2023 | LETHBRIDGE

INTRODUCING THE

# 1st Annual Alberta Canola Conference

**Lethbridge, AB | January 17 & 18, 2023**

**ALBERTA CANOLA PRODUCERS COMMISSION**

**33rd Annual General Meeting**
Tuesday, January 17 at 3:30pm

**Research Symposium**
Wednesday, January 18

**Join us in person at the Alberta Canola Conference or online for the AGM.**

**Register now to connect with like-minded growers and discuss the issues that impact the success of canola farming in Alberta.**

For information and to register, visit: **albertacanola.com/engage**

# Bylaw Development:
## A RED TAPE REDUCTION EFFORT

Creating a more streamlined process, especially when it comes to regulatory procedure, is a priority for the Alberta Canola Producers Commission.

As the Government of Alberta continues to reduce regulatory red tape, there's an opportunity for Alberta Canola to help with this. Marketing Council, the oversight body for the 20 agricultural boards and commissions in Alberta, has directed Alberta Canola to develop bylaws that will help update the Alberta Canola Producers Marketing Plan Regulation. This will improve the overall regulatory process and adaptability in a dynamic agricultural environment.

In July 2020, changes were made to the Marketing of Agricultural Products Act (MAPA) that provides authority to develop bylaws. This means that Alberta Canola can now gain approval easier if there are changes to bylaws instead of facing the task of making changes to Marketing Plan Regulations.

This was an important step for enabling a more streamlined process. Bylaws function as alternate regulatory instruments and rules that support the governance of members and regulation of affairs that help the operation of the organization. In other words, the terms of office, elections of directors, general rights of producers and overall governance of the organization can now be removed from regulation and placed into bylaws.

In the past, Marketing Council required approval from Council and the Minister of Agriculture for regulatory changes. Now, they'll be able to consider approval of proposed bylaw changes more efficiently as they only need Council review. Any changes that Alberta Canola wishes to make to its bylaws or regulations must be presented to the members for approval at the Annual General Meeting.

Alberta Canola will be targeting creation of bylaws to present to the membership for support at the 33rd Annual General Meeting on January 17, 2023. For more details on the Annual General Meeting please visit **albertacanola.com/agm**.



## Alberta Canola welcomes Katie Elliott as Communications & Events Coordinator

Alberta Canola Producers Commission is pleased to announce that Katie Elliott has joined our team as the new communications & events coordinator.

Katie comes to us from CAREERS: The Next Generation, an organization that works with Alberta schools to connect students to employers for paid internships, where she has been working as marketing and communications coordinator since 2019. Katie will be assisting with Alberta Canola's communication strategies and supporting and leading event coordination for in-person and virtual events.

Her experience in communications and event management will be a great addition to the Alberta Canola team. Katie is excited to join the team and looks forward to helping achieve Alberta Canola's goals.

Katie holds a Bachelor of Communication Studies in Professional Communications, a certificate in Project Management and diplomas in Journalism, and Acting for Film and Television.

**Katie can be reached at:**
katie@albertacanola.com
780-655-5283

# Food security remains top of mind

Saskatchewan farmers grow field crops – including canola – in one of the harshest climates for farming in the world. Our growing season is short, our winters are (very) cold, our summers are hot, and there is often too much or too little rain.

After decades of farming in these conditions, Saskatchewan growers have become resilient, innovative and amazingly productive. In 2021 alone, our province exported more than $2.7 billion in each of its four key crop sectors – grains, pulses, oilseeds and edible oils.

As other countries face agricultural challenges due to climate change, Canada's federal government has taken action to help farmers grow more food in developing parts of the world. For example, Canada has pledged $75 million to expand and deepen the United Nation's International Fund for Agricultural Development's (IFAD) impact on the rural poor in developing countries.

"The IFAD pledge is highly commendable and has proven to be somewhat prescient in light of the subsequent war in Ukraine, which has threatened food security around the world," says Dale Leftwich, SaskCanola's policy manager. "That said, Saskatchewan farmers are facing the same level of threat as farmers in other parts of the world."

Our Prairie province is known worldwide as a consistent and reliable supplier of safe, high-quality agri-food products. As a province, Saskatchewan has the potential to maintain – and to even increase – its crop production while overcoming the effects of climate change. Increasing domestic food production must be supported and resourced by Canada's federal government.

"Our federal government has prioritized fighting climate change and this will have a very beneficial impact in the longer term. However, there has not been an increase in funding to improve food security, which may become an even more urgent threat to humanity. The age of cheap and plentiful food seems to be slipping away," says Leftwich.

"The focus on emissions from nitrogen fertilizer concentrates is one element of climate change. As Canadians, we need to be able to do more than one thing at a time. While we reduce our emissions, we need to collaborate on ways to increase crop production to take the place of global production shortfalls," adds Leftwich. "This can only be done if we acknowledge that Saskatchewan growers need to be protected from the adverse effects of climate change, while simultaneously increasing food production."

For decades, Saskatchewan growers have been at the forefront of global innovation in agricultural production. We were early adopters of technologies that have greatly lowered our emissions. Growers in the province are unique in having low emission intensity while having high agricultural intensity.

Saskatchewan farmers have proven that we can reduce greenhouse gas (GHG) emissions. In fact, current farming practices have reduced GHG emissions by the equivalent of taking 1.83 million vehicles off the road.

"We have the ability to not just maintain our current crop production but to increase it while we decrease our carbon footprint. However, this requires increased scientific research, increased innovation and an increased focus on food security," says Leftwich.

As an industry, Canadian agriculture cannot lose sight of the urgent need to improve global food security while also improving our fertilizer efficiency. Feeding the world can never drop off the policy table.

*Dale Leftwich, SaskCanola's policy manager, says Saskatchewan farmers have the ability to increase production and decrease their carbon footprint at the same time. "However, this requires increased scientific research, increased innovation and an increased focus on food security," he says.*

# SaskCanola presents Top Notch Farming meetings

SaskCanola hosts Top Notch Farming meetings to share valuable knowledge with growers and agronomists, as well as to provide an opportunity to connect in-person with subject matter experts.

Learn about the latest agronomy and research findings for canola and barley. This year, keynote presentations will focus on canola disease identification and flea beetles, as well as research results regarding herbicide-resistant weeds and nutrient management. Canola oil health benefits, policy and advocacy, market outlook and mental health topics will round out each session. Each Top Notch Farming meeting will also feature an update on SaskCanola's priorities and our investments in research.

Top Notch Farming partners include SaskBarley, Saskatchewan's Ministry of Agriculture and Nutrien. As well, Certified Crop Advisor and Certified Crop Science Consultant continuing education units will be available. Stay tuned for more details at saskcanola.com/events.

### TOP NOTCH FARMING – 2023 DATES AND LOCATIONS

| | |
|---|---|
| North Battleford | January 31 at the Western Development Museum |
| Saskatoon | February 1 at the Saskatoon Inn |
| Regina | February 7 at the Queensbury Convention Centre |
| Swift Current | February 8 at Living Sky Casino |
| Melfort | February 15 at the Kerry Vickar Centre |

# Apply to Learn to Lead!

*Learn to Lead delegates from 2022*

Engaging with producers and fostering leadership capacity in Saskatchewan's agriculture sector are top priorities for SaskCanola.

For this reason, each year SaskCanola hosts a performance strategies workshop for future agricultural leaders in Saskatchewan. One of the benefits of Learn to Lead is an evening networking event with program alumni, other delegates and key stakeholders in the province's agricultural sector.

This two-day workshop includes best-in-class sessions on governance, media training, leadership style and decision making. There is no cost for successful delegates to attend Learn to Lead. This year's workshop will take place at the Delta Bessborough hotel in Saskatoon from Wednesday March 22 to Friday March 24, 2023.

**"In addition to members of SaskCanola's Board of Directors, SaskBarley, Canary Seed, SaskFlax, SaskOats, SaskPulse and Sask Wheat, all have current or past board members who were also Learn to Lead participants," says Tracy Broughton, executive director of SaskCanola.**

# Farmers are multi-faceted people

**"It is easier than ever to connect to farmers and find out about where your food comes from."**

— Stephanie Lepp *(right)*

Scan this QR code to watch The Tulepps ***"Beyond the Plate"*** video

Social media has opened a window into the lives of farmers that has never existed before. On any given day you can check in with The Tulepps, and many others in the agricultural community, as they post about what they are doing and why they are doing it, with full transparency.

Sisters Stefanie and Cassandra Lepp are grain farmers from southwestern Manitoba. In 2018 they started an Instagram page, called the Tulepps, where they showcase day-to-day life on the farm with the goal of breaking down barriers and challenging the image of a farmer. The Tulepps are role models for the next generation of females growing up on the farm. They may not visually fit any of the farmer stereotypes, yet they are the equipment operators, ground crew for their family's aerial application business, grain marketers and the primary decision makers on their farm. They are farmers, and they are also jewelry designers, craftspeople, fashion models, water sports enthusiasts, animal lovers and influencers. No one can be defined by just one title.

Featured recently on Great Tastes of Manitoba's Beyond the Plate segment, Stefanie and Cassandra share how science and innovation play an important role in reducing food waste, and growing food more efficiently. They encourage consumers to seek out reputable sources of science-based information about food and farming practices.

**"A tulip doesn't strive to impress anyone. It doesn't struggle to be different than a rose. It doesn't have to. It is different and there is room in the garden for every flower."**

— Marianne Williamson

Follow them on Instagram **@thetulepps**

# Hybrid Annual General & Special Meeting

**FEBRUARY 16, 2023, 8:00 A.M. - MARK IT DOWN!**

The meeting will take place in person at the Victoria Inn Hotel and Convention Centre in Winnipeg in conjunction with the CropConnect Conference. **Pre-registration is not required to attend the in person meeting.**

Members and guests wishing to join virtually are asked to pre-register. Confirmed members will receive log in details allowing them to engage and vote during the meeting. Guests will receive a link to watch the meeting by livestream. Registration details can be found at **CanolaGrowers.com**

**RESOLUTION DEADLINE**

January 30, 2023, 4:30 p.m. Please submit resolutions to info@canolagrowers.com

**Check out our Annual Report on pages 28 & 29**


# What do YOU DO with data?

**Data, data everywhere but not a way to use it.** That may be how farms feel when they consider combine yield maps, thumb drives, computer spreadsheets, notebooks (paper and phone) and wonder how to make better use of it all. Canola Digest asked its six panelists, how do you put your data to work?

BY JAY WHETTER

## MELISSA DAMIANI BLUFFTON, ALBERTA

Melissa Damiani, shown above with her husband, Jason, has a lot of data but she doesn't use high-tech methods to collect and apply it. She uses a binder and a white board. "Manual data collection works for us," she says.

The binder is arranged field by field, with information from this year and past years. It includes hail and rain events, scouting results and products sprayed. "I'm an agronomist and these detailed notes help jog my memory," Damiani says. "For example, if 2016 was a similar year, weather-wise, I can go back and check whether we sprayed fungicides or what weeds were a problem."

Spray details include product, date applied, product and water rates, and conditions at the time of spraying. Damiani also writes summary reports for each field each year, including cultivars planted and what they liked and didn't like about product decisions.

The white board is in the shop where everyone gathers each morning. The board marks key events for the year, including hail dates and spray dates, for easy reference. It also shows the plan for the day – what herbicides will go on what fields, for example. Though low tech, Damiani also links the platforms. "White board notes all go in the binder," she says.

Damiani will use high tech options. She has access to NDVI field maps through Echelon, a division of Nutrien (she is branch manager for Nutrien in Rimbey), and Climate FieldView. The maps show crop biomass levels across fields, which she uses as a scouting aid. "We can look for problem areas growing," she says. If the map shows a low biomass area that's not a known slough or saline patch, they walk the field to check it out.

> "I'm an agronomist and these detailed notes help jog my memory. For example, if 2016 was a similar year, weather-wise, I can go back and check whether we sprayed fungicides or what weeds were a problem."
>
> —Melissa Damiani

Damiani knows there are more high-tech ways to make use of data, including variable rate maps. "But we don't have VR-capable equipment," she says. "So at the end of the day, if I'm not going to act on the data analysis, what's the point of paying for it?"

## MURRAY LEWIS CLEARDALE, ALBERTA

Murray Lewis collects a lot of data but he doesn't have a lot of confidence in the interpretation. Fields have so much variability to begin with, it can be a challenge to accurately identify differences in treatments, he says. Ten strips through a field with the same treatment corner to corner can provide quite different yield results for each strip. Even along strips, variability can be high.

"If yield variation along the strip is wide, I will have less confidence in results from a strip to strip comparison," he says.

That doesn't stop Lewis from using his on-farm data to make decisions. "Absolutely I do that. When I want to try something new, I run quite a few tests in one year. If results are positive, I might adopt it generally. But I also want to test it again the following years."

Results the next year may confound, or be the opposite to, results from the first year, but with enough tests patterns may start to show, Lewis says.

> "If you want to be sure of something, test it just once. You might be ignorant, but you're confident."
>
> —Murray Lewis

"If you want to be sure of something, test it just once," he says. "You might be ignorant, but you're confident."

Lewis would like a data-management tool that addresses a few of his wishes. First, he'd like the database of results to contain analysis from this year and previous years. He doesn't have that now, which makes it more difficult to compare old results with new results, or re-query historical data. Second, he'd like a tool that weights the quality of data. One year might have great growing conditions that increase confidence in trial data. The following year may have a challenging harvest, with weather delays and muddy combining conditions that may result in "crappy" data. Rather than throw out the bad data, he'd like to keep it but have a program that automatically weighted the data based on seasonal conditions and other quality parameters. Third, he'd like a tool to improve his confidence in small differences. "A one bu./ac. difference in yield for a product that costs only a few dollars per acre might actually provide a return on investment, but statistical analysis will say the result is not significant," Lewis says. "These small differences are very difficult to measure." But they might be real.

Finally, he says many of his data-informed decisions are minor compared to the yield effect of weather. "I might quibble over a decision that makes a two bu./ac. difference in yield when weather makes a 30 bu./ac. difference," he says. "A person could do everything wrong but still win in a good weather year."

### RYAN SAWATSKY KILLARNEY, MANITOBA

Ryan Sawatsky often wonders about inaccurate data and, possibly more deceiving, inaccurate analysis of good data. "Analysis can go sideways quickly with our biases," he says. With confirmation bias, people tend to look for data that supports their thinking and ignore or downplay what doesn't. Sawatsky also mentions complexity bias – "people are more prone to believe simple lies, not complex truths" – and recency bias. "We know next year is going to be different than this year, but we often make seed variety decisions based on what happened this year," he says. Sawatsky has to remind himself to check his biases when making data-based decisions.

For Sawatsky, one important source of farm data checked by various sets of eyes are his year-end statements. Because he hires outside expertise to verify the numbers, Sawatsky has confidence that they're accurate. He has generational year-end statements going back to 1973. Interestingly, the drought year of 2021 was one his most profitable years in the past 25 – even though yields were his worst in 25 years. Drought meant lower input costs and higher grain prices, which made up for lower yields. "We wouldn't know that if we didn't do accurate economic analysis," he says.

"As farmers, we're often reluctant to predict what the future holds, but with accurate data analysis we can improve our forecasting and move from good guesses to better guesses."

—Ryan Sawatsky

A key part of economic analysis is yield data. Sawatsky builds in redundancies to check and re-check the numbers. He has combine yield data which he verifies with scales on the grain cart. Then he compares that to grain delivered through the year. "If the numbers don't match, then I know I shouldn't make too many decisions based off of my yield maps," he says.

There's no guarantee that decisions made will be the best ones, but unbiased assessment of good data improves the odds. "As farmers, we're often reluctant to predict what the future holds," Sawatsky says, "but with accurate data analysis we can improve our forecasting and move from good guesses to better guesses."

### JOSH HEIDT KERROBERT, SASKATCHEWAN

"Data management is definitely a weak point for us," says Josh Heidt. They collect data with the seeders, sprayers and combines, "but I'm not sure we do much productive with it."

"The key with data is to "hire someone in tune with how to use it."

—Josh Heidt

He adds, frankly, "I don't even know what we would do with a lot of it."

Their drills collect seeding rate and seeding speed data the combines collect yield data. In theory, one could use the combine yield maps to cross reference seeding rates and speeds to identify correlations to make better seeding decisions. However, Heidt hasn't been confident in the accuracy of combine yield maps. "We have six units, and there has been quite a bit of variation among them," he says. The technology is getting better, he adds.

The farm does use soil test and topography data to create prescription maps for variable rate fertilizer application, which they use on all acres. The Heidts work with Max Ag Consulting to build the SWAT maps. "Variable-rate fertilizer application is beneficial, for sure," Heidt says. "We can identify the most productive and least productive parts of the farm so we can get the most out of our high-yielding areas." Before variable rates, they were applying the same rate of fertilizer across fields, "even in areas that could only yield 10 bu./ac."

Heidt also collects NDVI images – satellite images that show in-season biomass differences across fields. "For cereals and canola, there is a high correlation between biomass and yield." They use this information to verify and support SWAT maps.

The key with data, Heidt says, is to "hire someone in tune with how to use it."

## FIONA JOCHUM
## ST. FRANCOIS XAVIER, MANITOBA

Fiona Jochum collects accurate yield data by weighing every grain cart load and using that to ground-truth the combine yield monitors. With that information, along with moisture measurements, the farm has a very accurate assessment of grain in the bins. From that accurate start point, Jochum tracks the weight and price for every load that goes out. "We know exactly what we have left to sell," she says.

Jochum also uses yield maps to check on decisions made on each field. For example, in 2020 they ran out to time to till all fields in fall, so in the spring of 2021, some soybeans went into fields that were tilled and some went into fields that just got a harrow pass. "Min-tillage is not that common in the Red River Valley. The popular belief is that we need the soil black so beans pop out of the ground quicker," Jochum says. The situation gave them an opportunity to test that belief.

"Throughout the year, it looked as though beans on no-till were behind, but I think it was an optical illusion. Green plants on black soil will tend to look larger," Jochum says. At harvest, yield data showed no difference. So the Jochums asked themselves, why are we tilling?

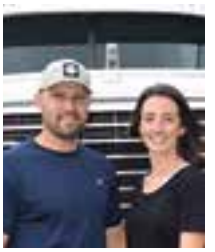
"We want to make sure there's a reason for everything we do. We want to make money," Jochum says. "So maybe we don't need to turn everything black."

In the fall of 2022, their only tillage was to get rid of sprayer ruts. Fields have a tillage pass every 120 feet, so "our fields might look funny to the neighbours," she says.

To give one more of example of putting data to use, the Jochums use Climate FieldView climate crop index (CCI) vegetative maps to make timing decisions for fungicide and pre-harvest sprays. "From the road, canola may look mature enough to spray but the map shows a high level of green biomass," she says. "So we go check and the field isn't as mature as we thought."

**"We want to make sure there's a reason for everything we do. We want to make money."**

—Fiona Jochum



## BREANN AND BRYCE MOORE
## LEROY, SASKATCHEWAN

The Moores use PRS Cropcaster from Western Ag (Bryce is an agronomist with Western Ag) to predict yield and set fertilizer rates based on soil nutrient analysis, available moisture from soil reserves and snow, forecast rain and maximum anticipated temperatures at flowering. For in-season rain, they enter a total of 8.5 inches, which is the 25-year average for their area. For maximum temperature at flowering, they use 30°C.

At the end of the production year, the Moores use Cropcaster to "backcast", comparing actual yield and rainfall with what the model predicted. For backcasting, the enter total rainfall that infiltrates into the soil during the growing season. "If we get a three-inch rain, I don't count the total amount because some of it will run off," Bryce says. They also log actual maximum temperature at flowering, actual fertilizer rate and actual yield for each field. With this information, the Moores can see which fields are exceeding yield potential and which are falling short.

**"For example, in a year with high temperatures at flowering, I can see which genetics handled it best."**

—Breann and Bryce Moore

This is particularly useful for making cultivar decisions, Bryce says. "For example, in a year with high temperatures at flowering, I can see which genetics handled it best."

Bryce also works with around 40 clients using the same program. "I get to see what they're doing to exceed their predicted yields," he says.

The Moores run a few replicated trials every year. In 2022, one canola trial compared strips with and without an in-season nitrogen top up. A good rainfall at late bolting brought the season total to 10.5 inches, which was well above the predicted 8.5 inches, so the Moores wanted to try a nitrogen top up to match the increased yield potential. They applied melted urea at a rate of around 10 lb./ac. of actual N, using the sprayer and flat fan nozzles. Melted urea has a very low risk of nitrogen burn, Bryce says, so dribble nozzles are not as important as they might be for UAN. "The timing was a little later than recommended for a nitrogen top up, but the canola had a lot of foliage and was hungry for nutrients," he says. They applied nitrogen to 120 acres within the quarter, with side-by-side replicated treated and untreated strips through the middle of the field. They recorded yield for each strip using a grain cart equipped with a scale. Average yield increase for treated areas was 3.5 bu./ac., with a range of 0.5 to 5.6.

*—Jay Whetter is editor of Canola Digest.*

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Verticillium stripe's prevalence has been on a steady upward trajectory in the Eastern Prairies. In Manitoba, it was found in 38 per cent of canola fields surveyed in 2022 – a level similar to sclerotinia stem rot. But severity remains uncertain. Researchers don't know if it causes sclerotinia levels of yield loss.

# THE RISE OF VERTICILLIUM STRIPE

*When clipped near ground level, verticillium stripe (right) can cause more of a starburst discolouration of the stem cross section. Blackleg (centre) will be darker, with more wedge-like discolouration. The stem at the left has no disease.*

BY RICHARD KAMCHEN

Verticillium stripe is coming under greater scrutiny as the canola sector digs deeper into finding how much of a threat it poses, and how to defend against this stem disease.

First discovered in Manitoba in 2014, verticillium stripe in canola has since been found in other provinces, including Saskatchewan and Alberta.

## 2022 PRAIRIE DISEASE SURVEYS

The Western Committee on Plant Diseases' Oilseed Diseases Report for 2022 showed Manitoba most affected by verticillium stripe. In an examination of 116 fields across Manitoba, verticillium stripe was found in 38 per cent of canola crops (prevalence), with 23 per cent of plants showing symptoms in fields with the disease (incidence). Across all 116 fields surveyed in Manitoba in 2022, the average incidence of verticillium stripe was 8.7 per cent.

Verticillium stripe's prevalence has been on a steady upward trajectory in Manitoba. Below 10 per cent in 2018, prevalence levels reached 30 per cent in 2020 and 2021, and nearly 40 per cent in 2022 – a level similar to sclerotinia stem rot.

David Kaminski, Manitoba Agriculture field crop pathologist, points out that prevalence alone falls well short of telling whole story, as it merely shows how many of the fields surveyed have any symptoms. Prevalence doesn't address incidence within a field, nor the severity of the disease, he says.

Preliminary observations for Saskatchewan's 2022 after-swath verticillium-specific survey, which targeted areas in eastern Saskatchewan, revealed verticillium stripe was "no longer a rare disease in eastern Saskatchewan." In Alberta, out of 353 canola fields surveyed, the prevalence of suspected verticillium stripe was 2.4 per cent, and average incidence 0.1 per cent.

It's not clear why Manitoba levels are higher than the rest of the Prairies.

"Clubroot originated in Alberta and made its way east, and some people say blackleg originated in Saskatchewan and made its way east and west, and in that kind of analogy, we could say that verticillium has been more prevalent in Manitoba, and seems to be moving westward," Kaminski says. "But we don't have full documentation on that."

## YIELD LOSS

A lot remains to be determined about verticillium stripe, Kaminski says. That includes a lack of a rating scale for severity of verticillium stripe, and only anecdotal reports of the seriousness of yield losses.

"In Europe, where the disease has been present for around 30 years, yield losses range from 10 to 50 per cent," adds Canola Council of Canada (CCC) agronomy specialist Courtney Boyachek. She says yield losses caused by verticillium stripe can be very inconsistent within a field and across growing regions. Research is underway to uncover yield implications in Western Canada.

"Clubroot originated in Alberta and made its way east, and some people say blackleg originated in Saskatchewan and made its way east and west, and in that kind of analogy, we could say that verticillium has been more prevalent in Manitoba, and seems to be moving westward. But we don't have full documentation on that."

—David Kaminski

## SYMPTOMS

The most commonly observed symptoms of verticillium stripe are found on canola stems and roots, Boyachek says. These symptoms include necrosis, stunting, discolouration, and wilting, which will appear on all parts of the plant due to verticillium stripe causing interference of water and nutrient uptake, she explains.

"What we are looking for when scouting is stem senescing on half of the plant, showing stem infection on the lower stem, and then moving up onto the branches," Boyachek says.

Stems may become bleached and brittle, and, as necrosis sets in, the stem epidermis will start to peel off, like wallpaper peeling off a wall, she adds. "This reveals the microsclerotia within the stem, giving a 'pepper-like' look to the inside of the stem," Boyachek says. "The roots will also start to show peppering, as well as a star-burst like pattern when you cut the stem for a cross section."

This darkened cross section may seem like blackleg. The brittle stems may seem like sclerotinia stem rot. That is why identifying verticillium stripe in the field can prove challenging, but accurate identification will be easier with experience.

"The shredding of the stem symptom is comparable to sclerotinia, however, the hollowing of the stem and larger sclerotia bodies from sclerotinia is different from the smaller microsclerotia present from verticillium stripe," Boyachek says.

> "In Europe, where the disease has been present for around 30 years, yield losses range from 10 to 50 per cent."
>
> —Courtney Boyachek

*Courtney Boyachek, agronomy specialist with the Canola Council of Canada, says most commonly observed symptoms of verticillium stripe are found on canola stems.*

Looking at the cross section of the stem after cutting it at ground level can help tell the difference between blackleg and verticillium. "Verticillium will present some general discolouration, generally in a starburst like pattern. Blackleg will present itself in a distinct solid black wedge covering a percentage of the stem," Boyachek explains. Verticillium discolouration also tends to extend farther up the stem. CCC recommends scouting for symptoms post-harvest.

## MANAGEMENT

No fungicides or seed treatments are currently available for control of verticillium stripe, a soil-borne disease that can live in the soil for 10 to 15 years. As a result, growers are limited to implementing best management practices to mitigate the risk of infection. These include eliminating host crop weeds like volunteer canola and wild mustard every year, and applying biosecurity practices such as equipment and tool sanitation, and controlling field traffic, says Boyachek. Extending crop rotations is also recommended.

If you suspect you have verticillium stripe in your fields, submit plant samples to your province's respective lab, she recommends. "Knowing it's in your field is the first step to managing the disease," Boyachek says.

## GENETIC RESISTANCE

Genetic resistance would be ideal, and the pathogen's emergence has generated interest in developing a resistant cultivar. No commercial varieties are considered to be verticillium stripe resistant, although a University of Manitoba lab found genetic resistance in Canadian and Chinese germplasm.

Hossein Borhan, research scientist with Agriculture and Agri-Food Canada in Saskatoon, also has a project to identify verticillium-resistant canola lines. He says resistance to verticillium stripe is multigenic, which means breeding for resistance could be a challenge because it may require multiple genes with minor effects. His lab's work to map the location of verticillium resistance genes, a project funded by the Canola AgriScience Cluster, is in progress.

"A main question remains to be answered is: how important is verticillium stripe for canola production and yield in Canada? If it is not an economically important disease, then monitoring the disease and rotation could be sufficient to keep verticillium stripe under control," says Borhan.

Right now, Corteva Agriscience is the only company promoting a verticillium score. Its seed brand Brevant has several hybrids with verticillium scores of five or six, including Brevant Seeds' B3012 and B3014 LibertyLink hybrids. The range is one to nine, with nine being most resistant and one most susceptible. These trait rating scores are based on comparisons with other Brevant products, not competitive products, and are assigned by Corteva research managers.

"Later-maturing products seem to have a little bit better verticillium stripe score," says Ellis Clayton, Corteva's technical product manager for Western Canada. "I think it ties to the life cycle of when the disease hits, and it's our earlier maturing products that seem to get hit a little harder with verticillium stripe."

*—Richard Kamchen is a freelance agriculture writer based in Winnipeg, Manitoba.*

*Hossein Borhan, research scientist with Agriculture and Agri-Food Canada in Saskatoon, says resistance to verticillium stripe is multigenic, which means breeding for resistance could be a challenge because it may require multiple genes.*

*Late in the season is a good time to scout for verticillium stripe. At that time, infected stems may become bleached and brittle, and, as necrosis sets in, the stem epidermis will start to peel off, like wallpaper peeling off a wall. This reveals the microsclerotia that give a 'pepper-like' look to the inside of the stem.*

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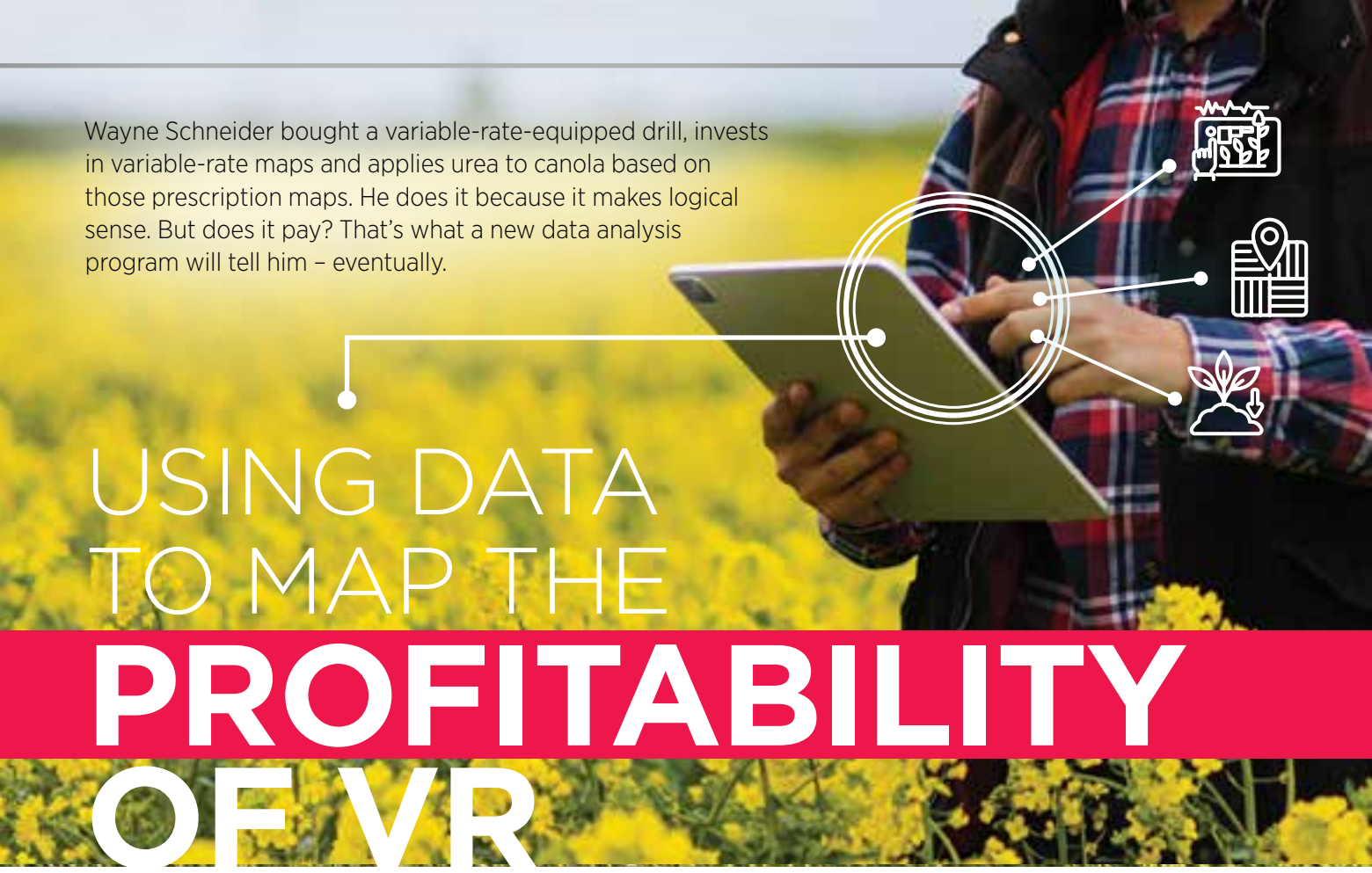

Wayne Schneider bought a variable-rate-equipped drill, invests in variable-rate maps and applies urea to canola based on those prescription maps. He does it because it makes logical sense. But does it pay? That's what a new data analysis program will tell him – eventually.

# USING DATA TO MAP THE PROFITABILITY OF VR

BY JAY WHETTER

Wayne Schneider, an Alberta Canola director who farms at Nisku, is back using variable-rate (VR) fertilizer applications on his farm – but he doesn't know whether it provides a return on investment.

"Right now, I can't answer that question," he says.

Schneider is working with Conservis, a farm data management company based in Minneapolis, Minnesota, to find out. The Conservis connection came through his MNP accountant and John Deere dealership. The dealership and MNP saw opportunity to work together to match the producer's data from each source – the individual producer's accounting data from MNP with application and yield maps from John Deere Operations Center – to come up with more detailed profit maps for each field, and potential other decision-making data. They needed farmers to be part of the pilot project, and they asked Schneider. They also needed a data management company with experience pulling it all together. They found Conservis.

Conservis, which Telus Agriculture and Rabobank purchased in 2021, provides farms with what Conservis calls "zone economics." It combines all field map data, including application and yield maps, with soil test results and itemized costs of production to provide "high-resolution insights into cost-per-bushel production performance across a field," says George Hadjiyanis, Conservis vice president of sales and marketing.

These insights can answer questions like: What was my most efficient seeding rate?

Did my seed variety give me the return (not yield) that was expected? What is my most economically optimal rate of fertilization? How do I limit economic losses in areas of fields that don't produce so I can improve overall return?

"It should show how profits adjust up and down if I take out a chemical application or adjust fertilizer rates, for example," Schneider says.

When asked if Conservis recommends that farmers run replicated treated-untreated trials to test the economic return from certain practices, the company's sales engineer Bryant Boyer says the focus is on workflows and cost of production. "Our growers work with their trusted agronomy advisors to make the best agronomic production decisions for their farm," Boyer says. "Strip trials or field by field comparison enable growers to make better informed decisions, and Conservis looks to be the partner along with their agronomy advisor in helping bring valuable data to determine best practices."

With VR fertilizer maps, Conservis analysis should be able to show, over time, how higher or lower rates affect profitability per acre. "I want to look at numbers over a number of fields and years," Schneider says. Only then

"Our growers work with their trusted agronomy advisors to make the best agronomic production decisions for their farm. Strip trials or field by field comparison enable growers to make better informed decisions, and Conservis looks to be the partner along with their agronomy advisor in helping bring valuable data to determine best practices."

—Bryant Boyer

does he feel he can say whether VR fertilizer application is more profitable than a flat rate for each field.

Schneider got back into VR fertilizer again after upgrading his seeder tank. The first time he tried it eight years ago, or so, his tank had a ground-drive meter adjusted with an electronic solenoid. "It could take 30 seconds to fully change rates," Schneider says. He could see the map and the rate adjustment on the monitor and the amount of lag was "silly," he says. So he gave up.

Schneider now has a John Deere 1910 tank with a hydraulic-powered meter that provides instantaneous adjustment. The tank has three compartments, one for seed, one for the seed-row blend and one for urea. For canola, he creates VR maps for the urea only.

He pays for outside help to do all soil testing and build the maps. The package deal costs around $8 per acre. For the sake of round numbers, let's put the urea price at $1,000 per tonne. In 2022, Schneider had a canola prescription map with five zones with urea rates ranging from 124 lb./ac. at the low end and 232 at the high end. At $1,000 per tonne (chosen because it's a round number), his urea costs, based on those rates, would be $56 per acre at the low rate and $105 at the high rate. Does this variable application improve Schneider's profits? Or would he be further ahead spending the same amount of money for urea but skipping the $8 per acre and applying the same rate for each acre? That is what he hopes to find out. When he does find out, Canola Digest will write another article. In the meantime, the magazine shares this experience to highlight an important consideration for any investment in precision agriculture: Yes, it may make logical sense. But does it pay? Or will it pay, eventually?

*—Jay Whetter is editor of Canola Digest.*

*Wayne Schneider, an Alberta Canola director who farms at Nisku, is back using variable-rate (VR) fertilizer applications on his farm. He is working on a data-analysis project to see it provides a return on investment.*

## FIRST STEPS

**Canola Digest asked a few data experts to answer this question:**

# What do you think is a good first step for farmers who want to put their data to work — to reduce costs and increase profitability?

### KRIS KINNAIRD

**HEAD OF MARKETING AND CUSTOMER EXPERIENCE, FARMERS EDGE**

"The first step to putting your data to work is ensuring accurate, real-time collection of all critical datasets, ideally as passively as possible. This means bringing together crop plans, agronomic data, operational data, weather data and equipment data all to one place, in a clear, consistent format. Farmers have always managed their data in some shape or form, but the challenge has been bringing it all together so they can analyze it, draw insights from it and accurately measure the cost of their decisions."

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### MATTHEW EVES

**DIGITAL FARMING LEAD, BAYER CROPSCIENCE CANADA**

"A good first step is to get existing data captured and uploaded into one place. Farms often have fertilizer rates and harvest yields going back a few years, and some of it is still on USB drives stacked beside the computer. A program like Climate FieldView can provide a very basic start point for farmers who have data and want to use it to get a baseline of what's going on on the farm. FieldView has a data inbox to upload field reports from all colours of equipment. With fertilizer rate and yield data uploaded, farms can start to see how the data might be useful in the future. It could be for variable rate maps. It could show nutrient use efficiency – if needed for sustainability and carbon sequestration programs."

Climate FieldView staff can help farmers upload their data and run basic analysis. Climate FieldView has many helpful videos at youtube.com/c/climatefieldviewcanada. To start, Matthew Eves recommends "A new look at FieldView: Product video" and "Data-driven farming in 2.5 minutes using the FieldView app."

For more information visit **climatefieldview.ca/features**.

### ERIN PETRICHUK

**DIGITAL AG ENABLEMENT LEAD, SYNGENTA CANADA**

"Calibrated and accurate yield data is key to maximizing profitability. Record keeping of multiple years in a format that makes it easy to see cost per acre per field is important as well. Grain sales and storage records can also be very helpful in looking at profitability. Data is only as good as the information you are getting out of it. Lots of customers collect tons of data but don't know how to work with it. Start simple with yield, input costs and grain inventory and sales. Agronomic inputs are the next step with soil definitely being the key."

Richard Marsh, digital ag manager with Syngenta Canada, adds: "If you don't consistently soil test, now is the time to start. Consider working with an agronomist to discuss potential benefits of soil sampling at a higher resolution to enable variable rate fertilization. Compare the yield maps to the as applied fertilizer maps to help calibrate your future fertilization rates and implement the 4Rs of nutrient stewardship. The next step after optimizing data collection is to implement on farm trials, which could be trying a new seed variety, fertility or fungicides, preferably using a replicated and randomized design. Setting up and collecting data in this format takes some time and effort, but the payoff is collecting actionable data from your own farm."

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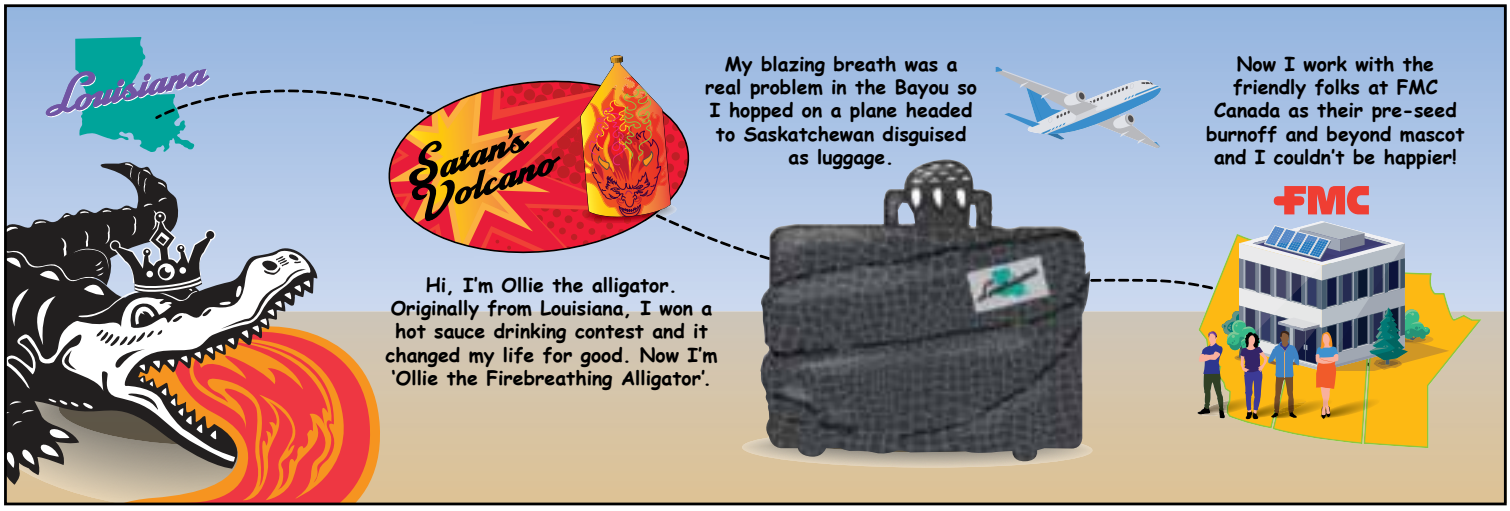

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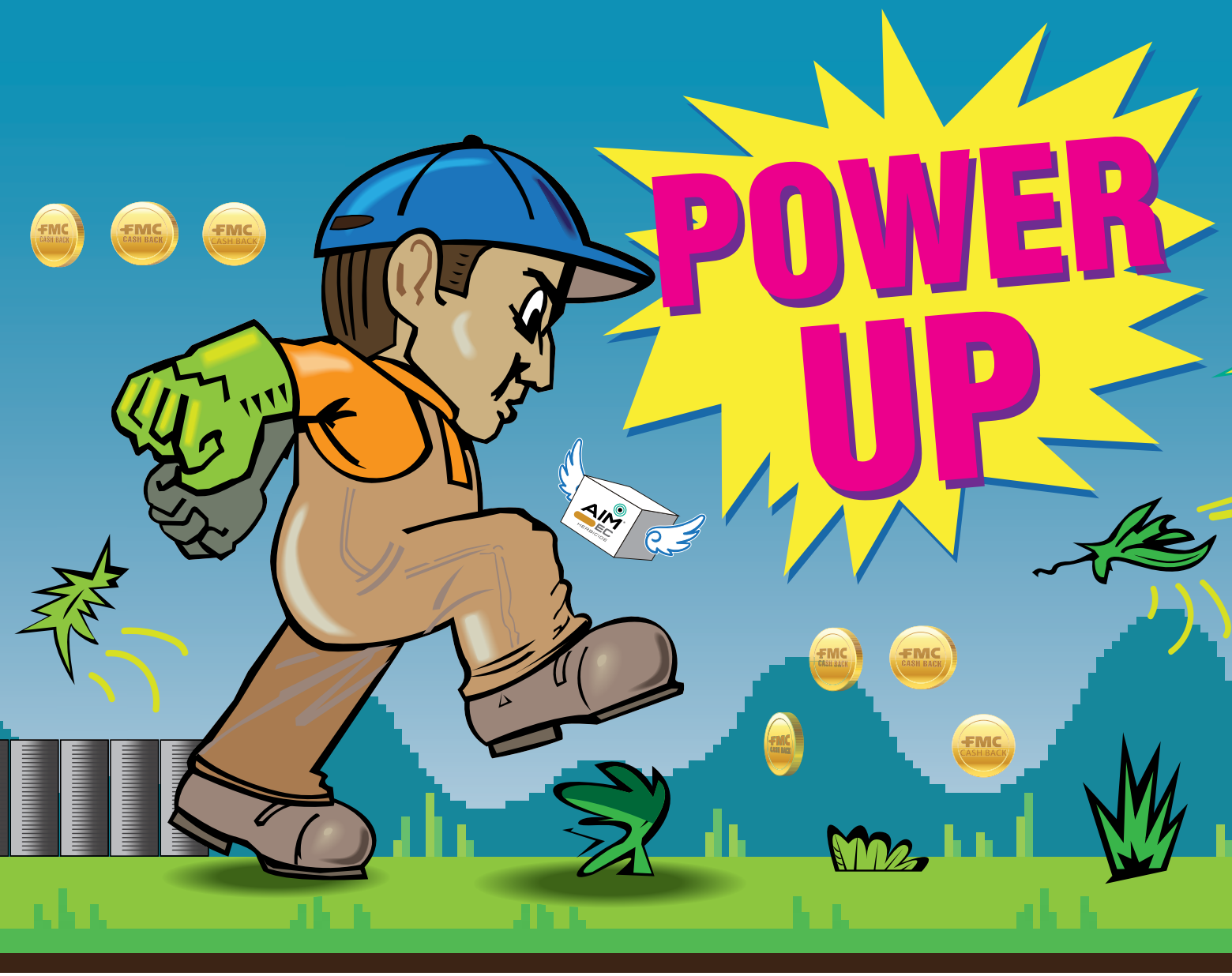


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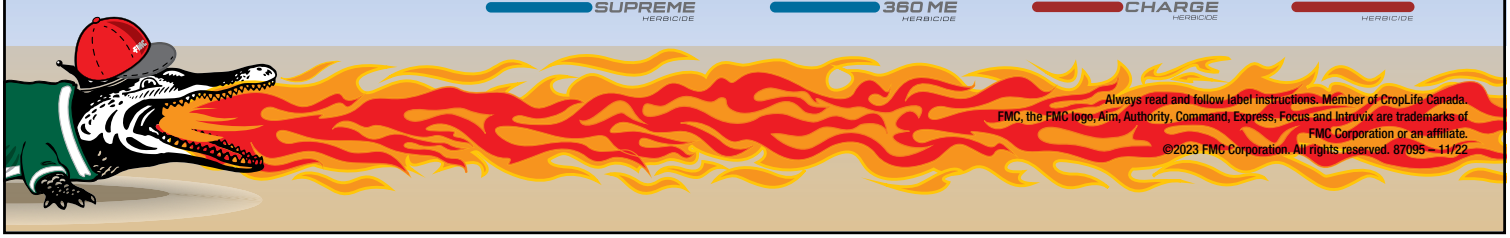

Synchronous operation has two machines – one with an on-board operator and another autonomous – working together doing the same job and following the same field map. With close supervision of the robot, this could be the system that introduces large-scale robots to Prairie fields.


# TWO MACHINES, ONE PERSON

BY JAY WHETTER

Chuck Baresich has spread lime with a robot. The farmer and custom applicator from Bothwell, Ontario, south-west of London, experiments with farm robots through his business Haggerty AgRobotics.

"Spreading a bulky product like lime or compost, which can go on at 4,000 lb./ac., is a slow tedious process with one machine," Baresich says. So he tested a system with two spreaders, one with an operator and one mounted on the autonomous OMNiPower platform. The loader operator also monitored the robot, and both units worked off the same Raven Viper 4 map.

"It's a pretty cool system," Baresich says. While it will be difficult to eliminate people from agriculture jobs – from a regulatory and safety perspective – Canadian agriculture could soon commonly see field operations where not all machines have a person onboard.

"Synchronous operation definitely has a future," Baresich says.

At Olds College of Agriculture & Technology in Alberta, Roy Maki leads a project to test synchronous seeding and spraying operations on Prairie-sized fields. The college has logged 14,000 acres on its OMNiPower unit. "The technology is mature enough that we can run it on broad-acre missions," Maki says. He uses the word "missions", which seems appropriate for robots.

For the seeding project, the Olds College OMNiPower unit carries a 30-foot SeedMaster DSR air seeder while the conventional unit is a Case-IH 4WD pulling a 60-foot version of the same seeding tool. Olds College claims this is the first time in agricultural history that one operator controlled two seeders. Field maps were synchronized in real-time, which is essential, using Raven Slingshot technology.

In the first field studied, the autonomous unit seeded 43 of 142 acres, or about 30 per cent.

Maki and his team compared field, fuel and route efficiency for the two units. Field efficiency is the actual time to cover an area relative to the theoretical time it would take the same unit, based on width and speed, to do the job if filling and turning times were eliminated. Field efficiency is 65-70 per cent for both, Maki says. Fuel efficiency is also similar for both. OMNiPower has a slight advantage in route efficiency, which is the shortest possible path to get the job done, because it makes perfect headland turns. "Operator habits and practices may not always be the most route efficient," Maki says.

Olds College also claims to be the first to try synchronous operation of two sprayers. In the trial, OMNiPower carried a 1,600-gallon tank with 120-foot boom, same as the conventional unit. The productivity difference in the spray trial related to ground speed. The robot worked at 10-12 miles per hour while the conventional sprayer, with more horsepower and operator perception, could travel up to 20 mph.

**"Synchronous operation definitely has a future."**

—Chuck Baresich

*Close up of OMNiPower mounted with a SeedMaster DSR air seeder.*

Perception – the eyes and ears of an operator – is the one major limitation of autonomous units, Maki says. While a human will see a rock pile or a slough and drive around it, OMNiPower, at this time, changes course only if these obstacles are on the prescription map. Otherwise, when it encounters an obstacle, it stops and waits for human help. "When sensing equipment that detects obstacles in real time improves, autonomy improves," Maki says. "Right now, it needs to have an observer."

OMNiPower, which began its life as the SeedMaster innovation called DOT, was bought by Raven, which was later bought by CNH. Erin Rinehart, director of strategic marketing with Raven, says OMNiPower is presently being used as a rental and demo platform only. It is not available for commercial sale.

Raven Autonomy has other autonomous platforms, including the Case IH Trident 5550 applicator, which looks like a regular cabbed spreader. OMNiPower is more like an entry-level robot. "Whether it's at a demo event or hands-on training, the platform serves as an all-encompassing approach to driverless ag as more iron integrated solutions are developed," Rinehart says. "As we develop more autonomous capabilities, OMNiPower allows us to get more customer feedback – which we use to continuously improve our technology."

Olds College of Agriculture & Technology

*Staff from Olds College prepare the two units for their synchronous demo. OMNiPower requires trailer transport from field to field.*

Chuck Baresich at Haggerty AgRobotics is trying various robots, from small weeding robots that drive between rows of wide-row crops to large-size spreaders run synchronously with conventional units.

His vision for synchronous operation has two planters in a field, one autonomous and one regular. The farmer on the regular planter does all the headlands and "goofiness," while the autonomous planter does the A-B lines. Once the headlands are done, the farmer fills the autonomous unit and lets it finish the field. Meanwhile the farmer packs up and moves to the next field, then has a rest and eats dinner.

"That's what I see when I think about synchronous operation," Baresich says.

*—Jay Whetter is editor of Canola Digest.*

*Roy Maki leads the Olds College project to test synchronous seeding and spraying operations on Prairie-sized fields. The college has logged 14,000 acres on its OMNiPower unit.*

***Olds College of Agriculture & Technology tested synchronous operation in field-scale trials. One operator controlled two seeders: a traditional 60-foot SeedMaster DSR air seeding, pulled by a tractor, and a 30-foot Seed Master DSR mounted on a Raven Precision OMNiPower autonomous power source.***

Olds College of Agriculture & Technology

The Canola Council of Canada surveyed 330 agronomy providers from across the Prairies in August 2022. When asked "What canola agronomic risk factors are likely to be the greatest concerns for your farmer customers over the coming five years?", the top answer was herbicide-resistant weeds.

# AGRONOMISTS NAME HERBICIDE-RESISTANT WEEDS AS TOP THREAT

BY JAY WHETTER

Glyphosate-resistant kochia is everywhere on the Prairies, glyphosate-resistant waterhemp has arrived in Manitoba and gyphosate-resistant downy brome was found in southern Alberta. While herbicide resistance has been an issue for decades, resistance to glyphosate – an important tool for minimum tillage and for herbicide-tolerant canola – has elevated the economic risk.

In a Canola Council of Canada (CCC) survey of agronomy providers in August 2022, respondents ranked herbicide-resistant weeds number one when asked, "What canola agronomic risk factors are likely to be the greatest concerns for your farmer customers over the coming five years?" They could make more than one selection from a long list. Overall, 68 per cent chose herbicide-resistant weeds. It was the top selection in Alberta and Saskatchewan by a wide margin. Manitoba agronomy providers had it in second place, behind increased insect pressure.

As a result of the survey, CCC agronomy specialists will focus more on herbicide-resistant weeds prevention and management messages in 2023. Agronomy providers and farmers can already find many resources on integrated weed management to reduce the risk and spread of herbicide-resistant weeds, and a good first stop is "Integrated weed management: Best practices" in the weeds section at canolawatch.org/fundamentals.

## ROOM FOR IMPROVEMENT

The survey asked an open-ended question, "In general, what agronomic practices are canola farmers most likely to get wrong?" Out of the 330 agronomy providers surveyed, 104 gave answers that fit the nutrient management theme which was the most common response. Many just said "fertilizer" or "fertility". Some were more specific. Here are a few answers:

- "At least in my area, soil testing and using fertility recommendations based on the results is not common practice."
- "Knowing how much of what fertilizer is needed to grow a 60-bushel crop."
- "Unbalanced fertility programs. Too much focus on nitrogen and not enough on phosphorus, potassium, sulphur or micros in some circumstances."

Plant establishment was another common theme, especially related to seeding rate, depth or date. The ultimate goal is five to eight plants per square foot emerging uniformly. Based on survey responses, agronomy providers see opportunities to improve.

*In many cases, the 330 agronomy providers surveyed showed good alignment with key canola best practices. The CCC recommends a stand of five to eight plants per square foot. Some seed companies recommend five to seven. Ninety-three per cent of respondents recommend one of those two options.*

## Support for CCC agronomy priorities

The survey asked 330 agronomy providers to share their views on the Canola Council of Canada's five agronomy priorities.

| Agronomy priority | Do you support this priority? (% yes) | Do you actively promote this priority? (% yes) | Is the priority easy for farms to apply? (5 is easy, 1 is difficult) | What is the priority's impact on yield? (5 is high, 1 is low) |
|---|---|---|---|---|
| Use 4R Nutrient Management | 76 | 71 | 3.6 | 4.0 |
| Choose the best canola seed traits for each field | 73 | 74 | 3.9 | 3.9 |
| Achieve a uniform 5 to 8 plants per square foot | 73 | 78 | 3.7 | 4.0 |
| Identify and manage the top yield robbers in each field | 76 | 80 | 3.7 | 4.3 |
| Harvest all seeds and deliver them at No.1 grade | 69 | 49 | 3.3 | 4.0 |


## Canola Council of Canada agronomy products

Growers and agronomy providers with canola questions may find help from the following CCC products and services:

- Canola Watch email newsletter (sign up at **canolawatch.org**)
- CCC website (**canolacouncil.org**)
- Canola Encyclopedia (**canolaencyclopedia.ca**)
- CCC printed brochures and scouting guides (Find Agronomy Guides under the "Growing Canola" tab at **canolacouncil.org**)
- Canola Calculators – tools for seeding rates, harvest optimization and more (**canolacalculator.ca**)
- Canola Digest magazine (**canoladigest.ca**)
- Canola Research Hub (**canolaresearch.ca**)
- CCC YouTube channel (**youtube.com/canolacouncil**)
- CCC Twitter accounts (**@canolacouncil @canolawatch**)
- Canola Watch on Facebook (**facebook.com/CanolaWatchCCC**)
- Canola Watch podcast (Quick Links box at **canolawatch.org**)

### CANOLA DISEASES NEED MORE ATTENTION

Canola diseases, especially sclerotinia stem rot, blackleg and clubroot, remain major yield robbers. They are, for the most part, manageable with fungicides (especially for sclerotinia stem rot and somewhat for blackleg), crop rotation (especially for blackleg and clubroot) and cultivar resistance (for blackleg, clubroot and somewhat for sclerotinia stem rot). Yet CCC agronomy specialists were surprised how little the issue came up in the survey. For the risk factors question where herbicide-resistant weeds ranked first, increased disease pressure ranked fourth.

In the open-ended question about what farmers are most likely to get wrong, only 26 of 330 respondents mentioned anything related to disease management. When asked "What canola seed traits do you make a point of recommending for farmers in your area?", respondents were allowed to check as many as they wanted from the list. Pod shatter was tops at 84 per cent. Days to maturity specific to the local season was second. Use clubroot resistance was third, with 66 per cent, and rotate blackleg R genes was fifth, with 42 per cent.

When asked an open-ended question, "What is one change farmers can adopt to make the biggest improvement in their canola yield?", over half the answers had to do with nutrient management, crop rotation or plant establishment. Disease management was way down the list, with five per cent saying fungicide use and another five per cent saying disease management, in general.

"The role disease has on yield may be undervalued," says CCC agronomy specialist Ian Epp. "Diseases take the top end off yield in many canola fields."

### HARVEST LOSS MANAGEMENT CAN BE HARD

As part of the survey, the CCC wanted to know what agronomy providers thought of the five CCC agronomy priorities:

- Use 4R nutrient management
- Choose the best canola seed traits for each field
- Achieve a uniform five to eight plants per square foot
- Identify and management the top yield robbers in each field
- Harvest all seeds and deliver them at No.1 grade

When asked which ones they actively promote to customers, the first four scored high – three in the 70s and one, yield robbers, at 80 per cent. However, only 49 per cent actively promote harvest loss management. And when asked to choose a number between one and five to indicate how easy each priority is to apply at the farm level, harvest loss management ranked the lowest at 3.3. (See the table.)

For the question about one change that would have the biggest improvement in yield, reducing harvest loss rarely came up.

"I think we may have a huge disconnect on harvest management," says Curtis Rempel, CCC vice president.

Setting combines to reduce loss is complicated by various influencing adjustments – sieve spacing, concave spacing, header settings, rotor speed, fan speed, ground speed – done in response to changing harvest conditions. This does take some extra time. The CCC agronomy team, when interpreting the results, acknowledge a need for more on-farm expertise in this area, which could provide a consulting opportunity for agronomists beyond their typical services.

### CCC THE SOURCE FOR CANOLA AGRONOMY

When asked "Who provides most of your canola agronomy information," the most common answer was the CCC. Agronomy providers could choose more than one option from a long list, and 79 per cent chose the CCC. Next were "my employer/my business" at 52 per cent and "CCA credited events and courses" at 43 per cent.

However, when asked more specific questions about CCC products, only 46 per cent knew about the online Canola Encyclopedia. And while a high percentage had heard of Canola Watch, only about 60 per cent were subscribers. This will inspire some focused Canola Watch promotion in 2023, and extra attention to raise awareness of valuable CCC agronomy resources. (See the sidebar.)

### AGRONOMY WINS

Respondents showed good alignment with key best practices:

**Target stand:** The CCC recommends a stand of five to eight plants per square foot. Some seed companies recommend five to seven. Ninety-three per cent of respondents recommend one of those two options.

**4R designation:** When asked, "Do you have the 4R designation through either the CCA program or Fertilizer Canada program?", 44 per cent said yes and another 39 per cent said they plan to within the next two years.

**Swath timing:** The CCC recommends swathing once main stems show at least 60 per cent seed colour change. This timing is important for yield and quality. In the survey, 68 per cent of respondents say they recommend 60 per cent or more. Of the six per cent who chose "other", most specified an even later cut time. Fifteen per cent recommend 51-59 per cent seed colour change.

*—Jay Whetter is editor of Canola Digest.*

Manitoba Canola Growers

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# Canola on the Hill

On November 15, 2022, Canadian Canola Growers Association (CCGA) and the Canola Council of Canada (CCC) went to Parliament Hill to meet with parliamentarians and senior staff to advocate on behalf of Canada's 43,000 canola farmers and the entire canola value chain. We concluded a full day of meetings with a joint reception.

BY TENESHA LAWSON AND TROY SHERMAN

## CCGA'S LOBBY DAY HIGHLIGHTS

Demand for canola has never been higher. Domestic and global markets see Canadian canola as a heart-healthy cooking oil, high-quality feed products and a low-carbon biofuel feedstock. For Canadian canola farmers to meet this growing demand, they need tools for sustainable growth.

CCGA, joined by the provincial canola commissions, participated in over 25 Parliamentary meetings to highlight three important tools for sustainable growth: timely and reliable rail transportation, access to crop protection products and fertilizer, and access to working capital. When farmers have the tools they need to succeed, they can invest in their operations to be more efficient, competitive and sustainable.

### 1 Transportation

With over 90 per cent of Canadian canola exported to international markets, it is vital that canola farmers have access to timely and reliable rail transportation. In October 2022, the final report of the federal government's National Supply Chain Task Force was released, which highlighted several important recommendations to help solve systemic railway performance issues, including enhancing railway competition across Canada through expanded inter-switching and increasing transparency of supply chain data and labour disputes with industry.

**Our ask:** Increase transparency and confidence in Canada's railways and take immediate action on the National Supply Chain Task Force report.

### 2 Access to crop protection products and fertilizer

Farmers need access to crop protection products and fertilizer to grow healthy, sustainable and abundant crops. As stewards of the land, canola farmers take pride in their best management practices and adoption of the latest technologies.

**Our asks:** Support Canada's innovative and sustainable farmers by focusing on increasing productivity, incentivizing best practices, and measuring emissions on an intensity and efficiency basis. Champion science-based decision making and restore confidence in Canada's regulatory system.

### 3 Working capital

Access to working capital is a key tool for Canadian canola farmers to prosper and drive Canada's sustainable growth. Farmers require working capital to invest in their operations and remain competitive in the global market. Exempting on-farm use of natural gas and propane from carbon pricing (Bill C-234) and allowing farmers the choice of who can diagnose and repair their farm equipment (C-244) are important measures to help farmers keep working capital within their operations, so they can invest in the long-term sustainability of their farms.

**Our Ask:** Support Canadian farmers and vote in favour of Bills C-234 and C-244.

### What's next?

CCGA will continue to advocate for these issues and ensure canola farmers' voices are heard in our nation's capital.

> **"CCGA's lobby day on the Hill was a great opportunity for farmers to engage directly with decision-makers on policies that have an impact on farm. Sustainable growth on farm and for our economy can only be done through constructive collaboration with government and farmers."**
>
> —Dave Carey, CCGA's vice president, government & industry relations.

## CCGA meetings of note:

- Minister of Agriculture and Agri-Food
- Minister Responsible for Prairies Economic Development Canada
- Leader of the Official Opposition in the Senate
- Parliamentary Secretary to the Minister of Transport
- Shadow Minister for Agriculture, Agri-Food and Food Security

## CCC meetings of note:

- Deputy Minister of Agriculture and Agri-Food
- Deputy Minister of International Trade
- Parliamentary Secretary to the Minister of International Trade
- Chair of the House of Commons Special Committee on Canada-China Relations
- Conservative Shadow Minister for Foreign Affairs

*CCGA grower directors met with Marie-Claude Bibeau, Minister of Agriculture and Agri-Food (centre).*

*CCC directors meet with MP Michael Chong. From left to right: Ryan Law, Bunge; Tessa Ritter, Viterra; Hon. Michael Chong, Conservative Shadow Minister for Foreign Affairs; Justin Nanninga, Alberta Canola; Jeff Pleskach, Cargill.*

## CCC'S LOBBY DAY HIGHLIGHTS

As we continue to work towards the industry's production targets as outlined in Keep It Coming 2025 and to meet global demand for Canadian canola, the CCC board of directors engaged with parliamentarians, political staff and senior civil servants to advance the value chain's public policy priorities. These priorities included fertilizer and sustainability, international trade and market access, and a competitive regulatory environment.

This year's lobby day was the first time since 2019 that the CCC board of directors was able to engage in-person with decision-makers in Ottawa. It provided the industry an important opportunity to forge new relationships, build on existing ones and position the industry for success going into 2023.

### ❶ Fertilizer and sustainability

Canola is a climate solutions provider and is playing a key role in reducing emissions. As emissions reduction and carbon intensity increasingly become a competitiveness issue within the global marketplace, we must have access to needed support, tools and technologies to ensure a level playing field with our competitors.

**Our Ask:** Commit to maintaining the fertilizer emissions reduction target as voluntary and focus on emissions intensity as we look to increase production and meet global demand.

### ❷ International trade and market access

With 90 per cent of Canadian canola destined for export markets, international trade is the lifeblood of the industry. With new canola crushing capacity coming online in the next several years, finding high value markets for more canola-based products, such as meal used in animal diets, will be important for our diversification efforts. Open and predictable trade is essential as we navigate an increasingly complex and competitive global marketplace.

**"Many of our issues and opportunities today are inter-connected and touch multiple parts of the value chain. Whether we're talking economics, the environment, innovation or competitiveness, having those different value chain perspectives on these topics reflected in our engagement with government is critical to our collaboration and developing good policies and practices that will benefit the industry and the broader sector."**

—Chris Davison, CCC vice president, stakeholder & industry relations

**Our asks:** Support the establishment of a well-resourced Indo-Pacific Agriculture and Agri-Food Office, advance ambitious Free Trade Agreements, and maintain a balanced approach to trade with China, recognizing its importance as a key export market for Canadian canola.

### ❸ Foster a competitive and innovative regulatory environment

As Canada looks to advance dual objectives of economic growth and emissions reduction, a competitive and innovative regulatory environment is necessary to drive investment and innovation. This must include an unwavering commitment to science- and evidence-based decision-making.

**Our Asks:** That the government lift the pause on maximum residue limit (MRL) increases, which were put in place in August 2021; do not reopen the Pest Control Products Act and use non-legislative mechanisms to address transparency interests; and establish a clear regulatory pathway for plant breeding innovation in Canada.

### What's Next?

The CCC will continue to work with parliamentarians, political staff and senior civil servants in Ottawa to advance the public policy priorities of the Canadian canola industry.

*—Tenesha Lawson is manager of stakeholder communications for Canadian Canola Growers Association. Troy Sherman is director of government relations for the Canola Council of Canada.*

*From left to right: Jim Everson, president of the Canola Council of Canada, Terry Duguid, parliamentary secretary to the Minister of Environment and Climate Change, and Mike Ammeter, chair of Canadian Canola Growers Association. Terry Duguid gave opening remarks at CCGA and CCC's joint reception, titled "Growing a Sustainable Future."*

Hungry hoards of tiny flea beetles are part of the brassica crop landscape. Damage the past few years, particularly for the Eastern Prairies, is beyond normal and has farmers looking at lower action thresholds, later seeding dates and steps to improve the efficacy of insecticide sprays.

# PEST NUMBER ONE BECOMES NUMBER ONE-ER

BY JAY WHETTER

If flea beetles could love, they would love the canola growers who feed them. But the love is not mutual. The Canola Council of Canada (CCC) grower survey of 2020 asked which pests present the greatest economic risk to canola productivity. Flea beetles were number one by a wide margin. The CCC asked the same question in a follow up survey in 2022 and, based on early results, the margin has increased. Flea beetles are pest number one.

One might wonder why these crop gobblers still cause so much grief after decades of canola production and the economic fortitude of 20 million acres a year. The more realistic view is that canola, at 20 million acres, lays out the red carpet for brassica-loving pests. Flea beetles, like mosquitos, mice and my neighbour Fred, will not go away – especially with so much food. They're here. Stay near. (Be ready for action.) No fear.

## BEETLE BASICS

Flea beetles winter in sheltered areas, preferably with lots of foliage, and emerge from late April to early June. All of the flea beetles that show up in canola crops each spring are those that survived the winter. They're not having a bunch of winter babies. Egg laying occurs in May and June after adults fill up on newly-emerged canola. Larvae hatch and pupate through June and July, around the same time their parents are dying off. The next population of adults break out of their pupae in August. Those are the ones we see in late summer and fall. They feed for a bit then hunker down for the winter.

If those are the same ones that emerge in spring, why not spray them in the fall? A farm could, but it may not be economical. For one thing, winter could wipe out a large percentage of the population without the need to spray. Two, those that emerge in the spring will move in search of food, so spraying one location may not reduce the threat. "They are good fliers," says Jim Tansey, provincial entomologist for Saskatchewan Ministry of Agriculture. "The distance hasn't been specifically examined, but there are anecdotal accounts of kilometres-long flights." Flea beetles drawn in by odours from the first-emerging canola in an area will be motivated to move. Finally, prophylactic spraying – spraying when the economic threat is unknown – is discouraged. So we wait for spring to see what actions, if any, are required.

Striped flea beetles are a little more cold tolerant, so in spring become active one to two weeks earlier than crucifer flea beetles. Early-seed crops, therefore, may have more striped flea beetles.

Like cold-blooded insects in general, flea beetles are most active when weather is warm, dry and calm. Agriculture and Agri-Food Canada research scientist Julie Soroka, now retired, led a study a decade ago on mitigating flea beetle risk. The study found that crucifer flea beetle damage to cotyledons nearly doubled with each 5°C increase in temperature from 5°C to 25°C.

Behaviours change when weather is not warm, not dry and not calm. With high winds, the beetles may move down and feed on stems and the underside of leaves; research is ongoing to verify this. In rainy cool weather, they often take shelter in the soil and don't feed as much.

Dry weather, as noted, is ideal for flea beetles and, because aridity slows crop growth, it tends to exacerbate the risk. Dry is bad for crops and great for flea beetles.

## VIGOROUS STANDS

"Flea beetles are rarely a single issue problem," says CCC agronomy specialist Keith Gabert. Actionable levels of feeding are often related to stand establishment issues. "The combination of low emergence and high flea beetle numbers is dangerous territory."

Tim Darragh, Bayer market development manager for canola, agrees. "When farmers are having to make four or five applications to save the crop, this is likely a cascade effect resulting from an establishment issue," he says.

Seeding shallow into warm, moist soil is ideal. If soils are dry, seeding down into moisture may allow for seed germination, but often results in poor emergence and an extended emergence period. With any delays, seed treatment protection may not last through the at-risk period. (Read more on seed treatments in the next section.)

A later seeding date may reduce the flea beetle risk if it means warmer soils and faster growth. Wayne Schneider, who farms south of Edmonton at Nisku, has never sprayed for flea beetles. "It may be because I seed canola one to two weeks later than the earliest seeded canola in my area," he says.

Curtis Rempel, vice president of crop production and innovation with the CCC, says that in cool spring conditions, it may be more appropriate to seed cereals and pulses first, especially in high-risk areas for flea beetles (See graph 2.). "Seeding canola into dry soil, with low or non-uniform emergence and slow seedling growth leads to a vulnerable crop," Rempel says. "The reduced yield potential and added cost of foliar insecticide application needs to be balanced off with delayed planting, which could help canola pop out of the ground and grow rapidly." Like most agronomy decisions, delayed seeding comes with trade offs: it may reduce flea beetle risk but may not be ideal to avoid summer heat on flowers and limit fall frost risk. "Better weather forecasting would help take some of the risk out of this decision for growers," Rempel adds. "As we get more research on planting date as it relates to flea beetles, that will help improve recommendations."

Canola plant population is another management factor. In areas where flea beetle risk is high, a target stand at the high end of the recommend range of five to eight plants per square foot will mean more plants for a fixed number of flea beetles. That means fewer beetles per plant, a situation more likely to keep leaf area loss below the threshold of 25 per cent. Of course, more plants mean higher seed costs.

Tillage as a management option is fraught with ambiguity. While canola in warmer blackened soil may emerge faster, that same warm ground cleared of obstacles also tends to attract more flea beetles. John Gavloski, provincial entomologist for Manitoba Agriculture, recalls a situation where volunteer canola growing in wheat stubble had next to no feeding. "Across the road, canola seeded into a bare field was getting hammered," he says. "Flea beetles, if they have a choice, prefer a more open environment. Stubble can create microenvironment less appealing to flea beetles." Rempel says some farmers observed lower flea beetle damage on canola growing in corn stubble. "Flea beetles are visual animals and corn stubble may trick the beetle into thinking overwintering habitat instead of food source – even though canola plants are emerging in the field," Rempel says, adding, "This is hypothetical at this time. More grower data will help us understand the impact of stubble on flea beetle behaviour." Finally, crop residue retains soil moisture, which can contribute to more rapid emergence when moisture is limiting.

## ADVANCED SEED TREATMENT

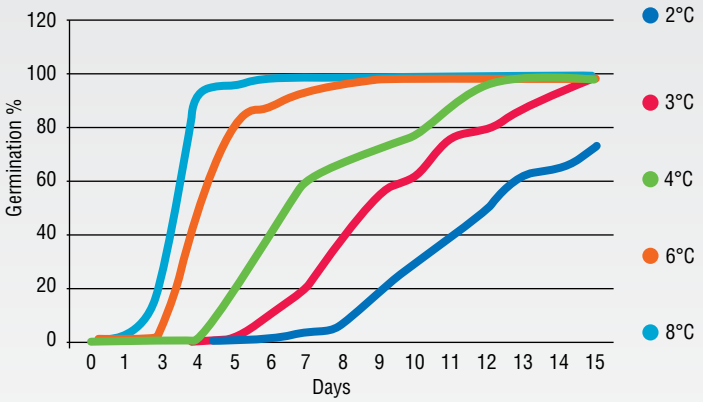
Julie Soroka's research from a decade ago showed that neonicotinoid seed treatments provided better control and protection against crucifer flea beetles than against striped flea beetles. Soroka also found that saturated soil and high temperatures during germination and seedling emergence can reduce seed treatment performance.

Rempel says seed treatments don't work as well or are not actively taken up when the plant is not growing or when moisture is inadequate for the transfer of active ingredient from seed coat to seedling.

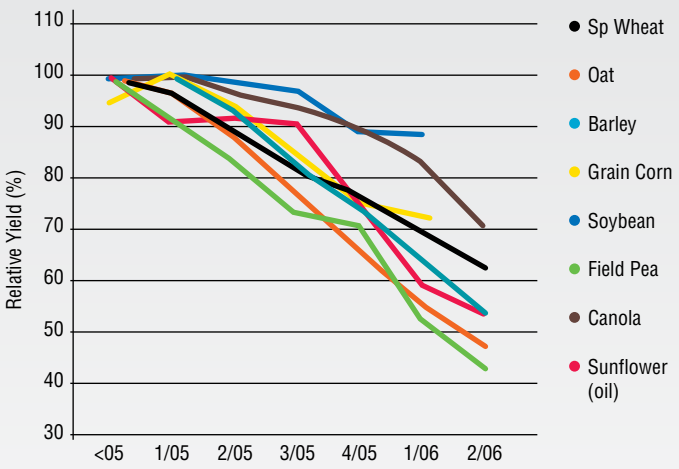
In better growing conditions – conditions that allow germination and plant growth to proceed as expected – advanced seed treatments will improve flea beetle protection in high-risk areas.

Neonicotinoids are Group 4A insecticides. Advanced products

**Influence of Soil Temperature on the Rate of Canola Germination B. Napus**




*Graph 1. Canola germinates very slowly in cool soil temperatures. Seeding into warmer soils will mean faster emergence and likely faster growth, which can reduce the flea beetle risk. Later seeding also means more canola in the area, so the flea beetle population is spread across more plants. Source: canolaencyclopedia.ca, Time of Seeding section in Plant Establishment chapter.*




*Graph 2. Relative yields reported to MASC during each sowing week for selected crops grown in Manitoba for the period of 2012-2021. The vertical axis represents the percentage of average yield, and the horizontal axis represents the week each crop is sown. Data source: Manitoba Agriculture Services Corporation Seeded Acreage Report and Harvest Production Report.*

with stronger and longer protection from other active ingredients include Buteo Start, Lumiderm, Fortenza and Fortenza Advanced. (See Table 1 for details.)

Shad Milligan, seedcare technical lead with Syngenta, maker of Helix and Fortenza seed treatments, says treatments are absorbed into the seed and translocated to all plant parts, including stems and the underside of leaves. Flea beetles need to take a bite to take in the insecticide, and a bite anywhere will give them a dose. However, a bite to the stem will be worse for the seedling than a bite to the leaf. This brings us to thresholds.

## AGGRESSIVE THRESHOLDS

The action threshold for flea beetle spraying is when 25 per cent of leaf area, averaged over a few spots in the field, has been eaten and feeding continues.

Insect management thresholds are not rules posted on product labels. They are guidelines to help farmers make input decisions that provide a return on investment. "With canola prices closer to $20 per bushel, not $10, and with plant counts often below five plants per square foot, not the old seven to 14, farms have a lower tolerance for three weeks of feeding stress," Gabert says.

Rempel says farmers may be in situations where action is required before feeding reaches the threshold. If canola plants are slow growing and lack vigour while flea beetles are numerous and aggressive, the action threshold could be met and surpassed very quickly. "In that situation, growers need to start spraying before 25 per cent, perhaps at 15 per cent," Rempel says.

Economic spray decisions depend on close scouting during the at risk period. "It is critical to remember that flea beetles can move quickly," Gabert says. "Warm, dry conditions that promote rapid flea beetle feeding may warrant more aggressive management and daily scouting."

To see if damage is getting worse from one day to the next, flag specific plants. Mark the area with a GPS pin to return to the precise location and use a washer or coloured zip-tie to find the exact plants. Take close-ups of damaged leaves for accurate comparisons each day. "This is so you don't lose perspective," says Darragh. "You might think damage is getting worse, but maybe it's not."

And don't forget to look for stem feeding. Thresholds don't account for stem feeding specifically, but seedlings with significant bites on the stem may be considered lost. Include them as 100 per cent when calculating average leaf area loss for a field.

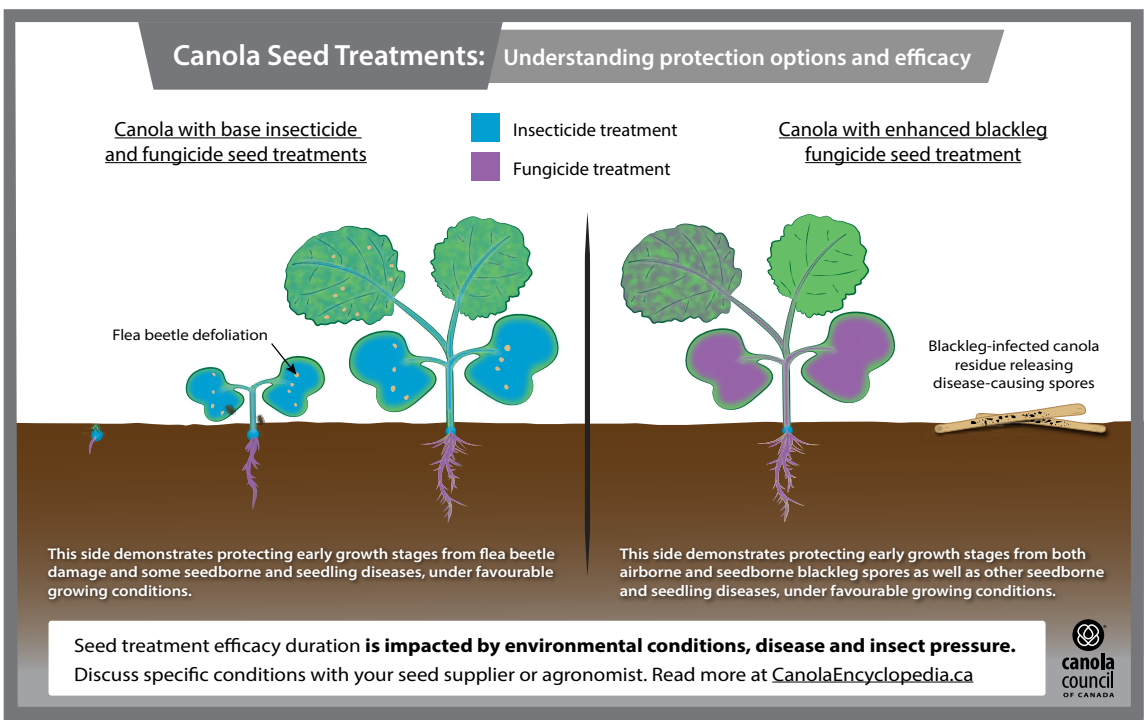
If flea beetles overwhelm seed treatments, especially advanced seed treatments, some programs will provide financial support for the required in-crop sprays. But even if in-crop sprays are relatively low cost, farmers want them to work.

## MORE EFFECTIVE SPRAYS

Everything to this point is about strong defence. When flea beetles overwhelm the defences, farmers take offence. With insecticide sprays, precision pays. Fifty shots don't help much if they all miss the net. And with flea beetles, it can be easy to miss.

Temperature will affect spray results. Days with temperatures of 15°C to 20°C can provide better results for pyrethroids, the Group 3A insecticides. Research from 1970s showed that pyrethroids were 2.6 times more potent at 15°C than at 32°C. The label for pyrethroid Decis reads: "Do not spray under a strong temperature inversion, or when temperature exceeds 25°C as this will result in a reduction in control."

With hot weather, spray in the morning or at night, or switch to Group 1B malathion,




Episode 48 of the Canola Watch podcast has Jim Tansey talking about flea beetle behaviours, including how far they can fly to find canola. To listen, go to **canolawatch.org** and click Podcast in the Quick Links box.

which has this recommendation: "For best results apply when daytime temperatures are above 20°C." Sevin XLR, active ingredient carbaryl, is another option. It doesn't have a specific temperature recommendation but the label says to avoid application with gusty winds or in dead calm.

Cool and wet conditions will reduce product efficacy and will shrink the target – because flea beetles take cover in soil and residue.

Droplet size also influences insecticide efficacy. For small targets like flea beetles, Tom Wolf, owner of Agrimetrix Research and Training and partner in sprayers101.com, recommends nozzles that produce "medium" droplet sizes. "Any finer isn't really necessary and just creates drift issues. Coarser droplets risk poor control," Wolf says.

Low-drift nozzles used for herbicides can create "medium" sprays at higher pressures, but the pressure required for medium sprays may be too high for some nozzles. The easiest solution, Wolf says, is to have a set of finer nozzles on hand, such as conventional flat fan, a pre-orifice design or even certain low-drift venturi nozzles. The finer versions of venturi nozzles will produce a "medium" spray at higher pressures. "Coarser tips for very low-drift uses should be avoided as even higher pressures can't get the spray quality fine enough. It's easy to create too fine a spray, and this creates more grief than advantage. Any breeze or hot, dry day will prevent them from reaching the target," Wolf says.

The "medium" droplet objective can create an efficacy issue when insecticides are tank-mixed with herbicides. Low-drift nozzles recommended for herbicides produce a coarse droplet that may not provide the coverage or contact needed for flea beetles.

Water volume will also improve results. Because insecticides rely on contact as well as ingestion, higher water volumes will improve the chance of droplet contact on beetles and droplet settlement on tiny canola leaves. Randy Retzlaff, technical lead with Syngenta, recommends the label rate of 100 litres per hectare (10 gallons per acre) at a minimum. When striped flea beetles are the more common species, or on a cooler windy day when flea beetles have moved down to feed on stems or the underside of leaves, Retzlaff says results can improve with 150-200 litres per hectare (15 to 20 gallons per acre).

Farms may be able to save some money and time with targeted spraying. If scouting indicates heavy flea pressure along one side of a field, spraying only that area can be enough. However, that strategy usually requires spraying quickly after scouting. Within a day, flea beetles may have spread throughout the field.

Finally, some insecticide sprays have restrictions on the number of applications per field per year. For canola growers anticipating more than one insect pest of concern each season, have a product plan to effectively manage pests and stay within label restrictions.

## Table 1. Seed treatments with flea beetle protection

| Trade Name | Insecticide-only Active Ingredient | Group | Chemical Family |
|---|---|---|---|
| Prosper Evergol | *clothianidin* | 4A | *neonicotinoids* |
| Vercoras | *clothianidin* | 4A | *neonicotinoids* |
| Helix Vibrance | *thiamethoxam* | 4A | *neonicotinoids* |
| Buteo | *flupyradifurone* | 4D | *neonicotinoids - butenolides* |
| Fortenza Advanced | *cyantraniliprole+sulfloxaflor* | 28+4C | *neonicotinoids - sulfoximines* |
| Fortenza | *cyantraniliprole* | 28 | *diamides* |
| Lumiderm | *cyantraniliprole* | 28 | *diamides* |

## BETTER SOLUTIONS

"More research is being done so we can give excellent advice to manage flea beetles, and avoid situations where multiple in-crop sprays are required," Rempel says.

Mária Angélica Ouellette, research coordinator at the North Peace Applied Research Association, has a project to evaluate the effect of canola seeding rate and seed size on flea beetle damage and population. Maya Evenden and Sharavari Kulkarni, crop insect researchers at the University of Alberta, are working on predictive models for flea beetles. Boyd Mori, researcher in agricultural entomology at the University of Alberta, is monitoring flea beetles for insecticide resistance. In the populations he tested, there were no signs of resistance to deltamethrin, the active ingredient in Decis and Poleci. As for resistance to seed treatments, Mori will collect more data through 2023. Alejandro Costamagna, researcher at the University of Manitoba, continues research into the effect of plant density on flea beetle management, the effect of stem feeding damage, the role of natural enemies, and regional predictive models for flea beetle abundance.

Gabert has not heard of any new active ingredients in the pipeline. Commercial launch of an RNA interference product, which would precisely target flea beetles, is not close. A protective hairy canola trait is still in its research phase, and is far from commercial release. Bayer has MagicTrap that could simplify pest insect scouting, including for flea beetles, but they're still looking at potential applications for North America.

Weather the past few seasons, particularly for the Eastern Prairies, has delayed seedling growth, making plants more vulnerable to flea beetles. Will a change in the weather reduce the risk in 2023? Who knows. For now, farms with two or three bad beetle years are looking at options they can apply immediately – including lower action thresholds, later seeding dates and steps to improve efficacy of insecticide sprays.

*—Jay Whetter is the editor of Canola Digest.*

# Which risk management programs are right for your farm?

**MNP's Ag Risk Management Projector (ARMP) is an interactive program to help farmers see the costs and benefits of numerous insurance risk management programs, and how to tailor them for their specific operations.**

BY RICHARD KAMCHEN

What are the potential risks to your projected income, and what farm insurance programs can mitigate them?

MNP's interactive Ag Risk Management Projector (ARMP) can help farmers answer those questions by providing them insight into the costs and benefits of numerous insurance risk management programs, and how to tailor them for their specific operations.

## PROJECTING INCOME

"Forecasting an income statement is the start of the process, and requires clients to provide their MNP advisors a history of their financial statements", says Steve Funk, MNP director of agriculture risk management resources. The historical income statement is used to estimate the balance of costs on the income statement, and factor in recent key trends like fuel cost increases.

From there, they discuss crop plans for the upcoming year, such as the intended crops to be planted, the number of acres for each crop, their anticipated prices, as well as input costs – seed, chemicals, fuel – on a crop-by-crop basis.

"Because we're projecting a complete income statement, we're showing not only potential revenue risks, which could be production or price risks, but we're also showing potential risks in expenses, too," says Funk.

It's through creating a forecast that one can determine the factors that could affect it. There are typical risks like a hail storm, tornado or flood, but recent years have brought issues nobody saw coming, like COVID-19 and its wide-ranging effects.

"For those who've forecasted their income statement, it's a question of what's the worst thing that can happen, or what are some likely things that could happen and what impact would that have on my income statement," says Funk.

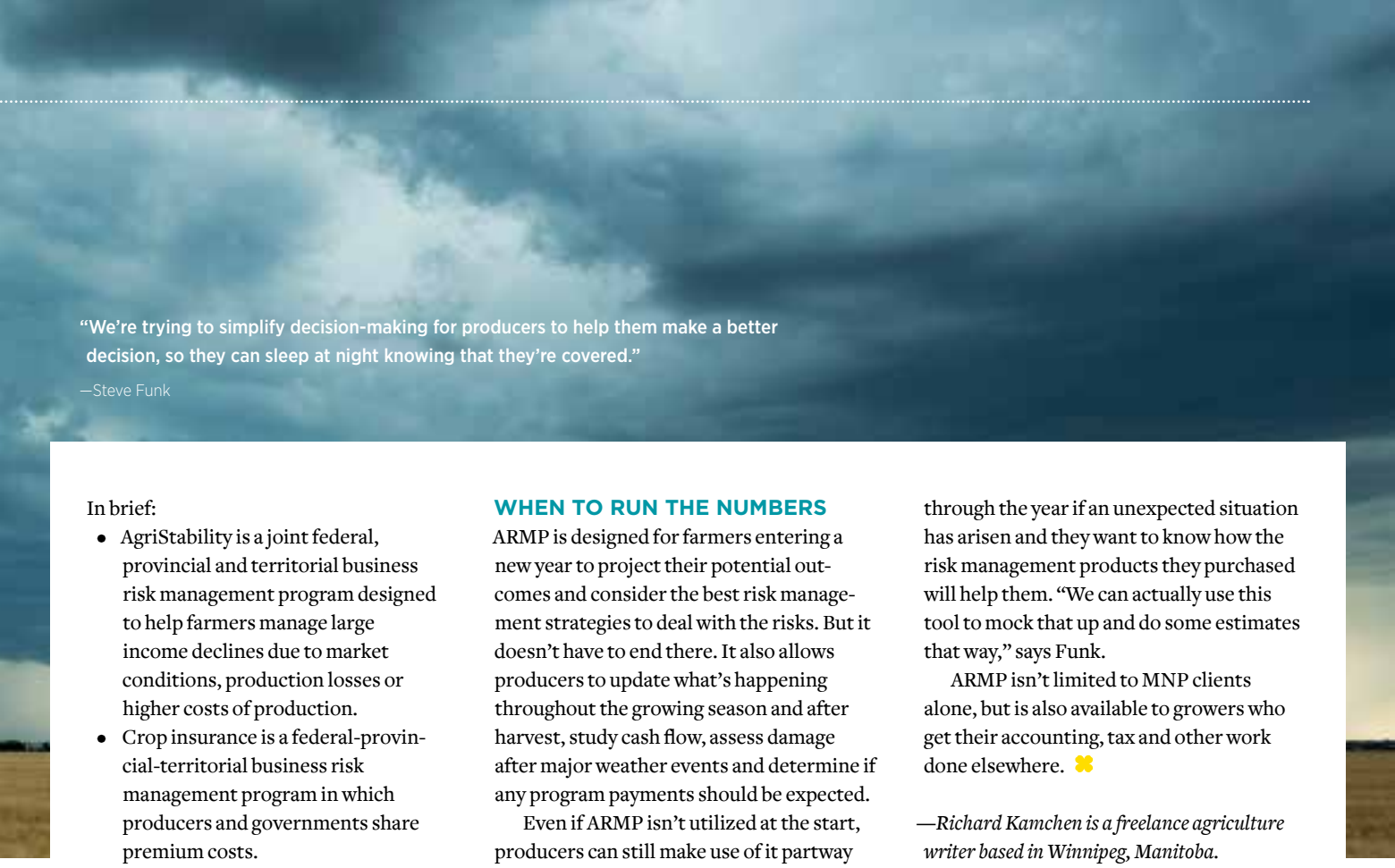
Generating an income and risk forecast also assists lenders in better understanding how income loss may impact a producer's debt service.

After creating a reasonable income statement estimate for their current year, client and advisor can begin modelling risk management products.

## RISK MANAGEMENT PROGRAMS

ARMP can be used to model products and coverages of AgriStability, crop insurance, Global Ag Risk Solutions (GARS), and Just Solutions, where applicable, to compare price and production loss scenarios, and show which combination of programs will be optimal in reacting to various losses.

"It's a very complicated thing, and you have to understand not only your own financial statements, but a little bit about each of these programs and how they work in order to rough out any numbers at all," says Funk.



"We're trying to simplify decision-making for producers to help them make a better decision, so they can sleep at night knowing that they're covered."

—Steve Funk

In brief:

- AgriStability is a joint federal, provincial and territorial business risk management program designed to help farmers manage large income declines due to market conditions, production losses or higher costs of production.
- Crop insurance is a federal-provincial-territorial business risk management program in which producers and governments share premium costs.
- GARS offers multi-peril tailored production cost insurance that covers seed, fertilizer and chemicals, plus a gross margin the farmer chooses above those costs.
- Just Solutions provides cash flow protection to Western Canadian producers with its Ag Right Risk Management policy coverage that deals with yield, grade and price.

"We're trying to simplify decision-making for producers to help them make a better decision, so they can sleep at night knowing that they're covered," says Funk.

MNP advisors can also investigate how different combinations of programs can work under various scenarios, thereby helping evaluate and determine a client's annual insurance risk management strategy. For instance, as proceeds from private insurance no longer offset AgriStability payments, farmers can conceivably double up on coverage if they take AgriStability and private insurance.

## WHEN TO RUN THE NUMBERS

ARMP is designed for farmers entering a new year to project their potential outcomes and consider the best risk management strategies to deal with the risks. But it doesn't have to end there. It also allows producers to update what's happening throughout the growing season and after harvest, study cash flow, assess damage after major weather events and determine if any program payments should be expected.

Even if ARMP isn't utilized at the start, producers can still make use of it partway through the year if an unexpected situation has arisen and they want to know how the risk management products they purchased will help them. "We can actually use this tool to mock that up and do some estimates that way," says Funk.

ARMP isn't limited to MNP clients alone, but is also available to growers who get their accounting, tax and other work done elsewhere.

*—Richard Kamchen is a freelance agriculture writer based in Winnipeg, Manitoba.*

Beaver Creek Farms has tiled 300-500 acres per year over the past 20-plus years, including some long-term rental land. They have another 400 acres to go and then will have everything tiled.

# TILE DRAINAGE – a foundational investment

Canola Council of Canada agronomy specialist Jason Casselman is digging into tile drainage as a land improvement option for farms in Western Canada. The $1,000 to $1,400 per acre investment works for many decades to improve productivity, especially in land where ponding and crop drown-outs are common.

BY JASON CASSELMAN

Recently I had the opportunity to speak with farmer Don Wiebe of Beaver Creek Farms, a family farm near MacGregor, Manitoba. Don has been farming with his brother Stan since 1968 and together they grow several crops, including canola, wheat, corn, soybeans and potatoes for the french fry market. They have a team of 12 full-time employees and are currently transitioning to the next generation.

After listening to a presentation from Chris Unrau and Frank Elias from Precision Land Solutions about some of the tile drainage work they have been doing with growers, I reached out to Don at Beaver Creek Farms to dig a little deeper into his on-farm experience with tile drainage and what it has meant to their farming operation.

One of the first things Don mentioned to me was that his brother Stan was interviewed for an article about tile drainage in County Guide magazine in 2005. When asked about the benefits of tile, Stan said at that time that canola on tiled land yielded 50 bu./ac. while canola on untiled land yielded six bu./ac. because it had drowned out.

Back in the late 1990s, the Wiebes started watching neighbours and another farm near Winkler who had installed tile on some potato ground. They were impressed. Tile drainage helped those neighbours deal

with the struggles of excess moisture on potato land. When potato processors mandated irrigation in the contracts, the Wiebes started installing tile before installing the irrigation. It improved the productivity and profitability of their Almasippi sand.

The Wiebes have weather records for a lot of years and 2022 was their wettest growing season on record. This was too much water – even for some tile-drained land. I asked Don about tile-drained land in dry years. It doesn't hurt them on a dry year, it only drains water the soil can't hold, he says.

When Beaver Creek Farms started installing tile drainage in the late 1990s, they didn't have a lot of local options, so they hired a contractor out of Thorndale, Ontario. Plastic tile drainage pipe also had to be trucked in from Ontario. Manitoba now has its own installation contractors and pipe manufacturing companies.

Beaver Creek Farms has tiled 300-500 acres per year over the past 20-plus years, including some long-term rental land. They have another 400 acres to go and then will have everything tiled.

## "A FOUNDATIONAL INVESTMENT"

Investing $1,000 to $1,400 per acre for tile drainage will not be in the budget for a lot of farms, but the benefits are long term. On Beaver Creek Farms, the first tile installed over 25 years ago is still in excellent condition and working as well as it did on day one, Don says.

Tile drainage is a "foundational investment," Don says. It's nothing glamorous like buying a new combine, but it helps set up the next generation for success. Don lists the benefits:

1. Risk management. Like insurance or irrigation, tile drainage is a risk management investment that doesn't have to make money every year.
2. Tile drainage just lets them farm. After a rain stops field operations, tiled fields are ready to go quickly. With untiled fields, there is uncertainty when you can get back on them.
3. It makes life easier.
4. Tiled land helps Don sleep better when he knows there is more rain coming.

I asked Don how much more tile drained land was worth in his area compared to untiled land. He doesn't really know because he hasn't seen any local tiled land go up for sale. Farms installing tile drainage aren't into selling land, he says.

## HURDLES AND ADVICE

I asked Don about hurdles they had to get over when starting to do tile drainage. Basically the biggest thing that helped, he says, was to educate neighbours and the community about how tile works. They also had to understand the infrastructure required to make the system work properly with good outlets and a place for the water to go.

Beaver Creek Farms has learned a few things about system design and how to do things differently. This includes installation of more electric lift stations to help get the water to where it needs to go and making sure sprayer operators are careful when driving on newly tiled fields.

I asked Don what advice he would give someone thinking about tile drainage. He listed some things he has learned:

- Start with a reputable tile contractor and stick with them. That relationship is invaluable. You don't want to be at the bottom of the list when installation season starts.
- Start small and prove it to yourself.
- Start now. Don is glad they started early as it has given them a career of farming on tiled land.
- Pick a field that needs it. Fields that already have good drainage don't show the contrast.
- You can start to fix saline soil, but it is very slow and you need a pile of water to flush the salt out.
- Tile drainage works because it follows a fundamental physics principle.

Beaver Creek Farms are, for the most part, do-it-yourself people but they appreciate the expertise that a professional contractor can bring to the job. "A poor tile drainage installation is worse than no tile at all," Don says. He recommends a farmer be on site during installation and to have operators show what they're doing and explain the process. Contractors with a good reputation and professional business can get the permits required and do proper job design that works the way it is supposed to.

I asked Don what some of the myths about tile drainage. One of the biggest myths, he says, is that tile drainage fixes everything. With so much water in 2022, they experienced some crop loss on a few tiled fields. Their tile drainage system at 50 foot spacing and a 0.25 inch drainage coefficient might not be enough for some fields or some parts of fields, he says. Tile doesn't prevent overland flooding. Beaver Creek Farms still does some surface ditching, which helps keep the infrastructure maintained and working properly.

Beaver Creek Farms has seen the soil health benefits from tile drainage and how communities can grow when farms are healthy and able to support the economy with employment and opportunities. Investment in tile drainage might not win for you every year, Don says, but it will give you a chance, a better chance, to get a better crop.

My conversation with Don Wiebe helped me understand their goal to tile drain as much of their land as they could. Tile drainage is part of their overall plan of "foundational investment" in the health of the land. Land is the primary asset for a farm, for the short term and the long term.

For more on tile drainage, find the factsheet "Beneficial management practices for agricultural trial drainage in Manitoba" at **pami.ca**, and "Agricultural water management – Drainage approvals" at **wsask.ca**.

*The specialized machine cuts a trench and inserts tile pipe in one pass. Tiles are spaced 50 feet apart – sometimes more, sometimes less. The cost can be $1,000 to $1,400 per acre, but the benefits are long term. Photo credit: Precision Land Solutions*


*The new Canola Eat Well website focused on three sustainability objectives – healthy people, healthy planet and healthy farm economy.*

# Canola oil – healthy and so much more

Canola Eat Well has updated its website, adding information to share with Canadians how canola oil fits three sustainability objectives – healthy people, healthy planet and healthy farm economy.

BY LORI DYCK

Canola Eat Well has redesigned its website to refocus the way it talks to Canadian consumers about canola.

"We needed a place where we could showcase the full Canadian canola story for Canadians. Now you can not only learn about reasons to love canola for your kitchen and health, but also the good news sustainability story of our farmers. There's even space to expand on the 'Flower Power' of the crop through discussion on biofuels, canola meal and more," says Jennifer Dyck, market development manager and Canola Eat Well lead for Manitoba Canola Growers. "This site is for Canadian consumers. Language and images have been carefully chosen and will continue to be updated as we learn more about how to best connect with those outside our industry."

Canola Eat Well is a joint program funded by SaskCanola, Alberta Canola and Manitoba Canola Growers, with the mandate to increase Canadian demand for canola through market development activities.

The website at canolaeatwell.com takes a new approach to the question, "What is canola oil?," providing the following answers.

## IT'S TRULY CANADIAN

Canola is a true "Made in Canada" success story and the foundation of a thriving, sustainable industry. Canola is one of the most widely grown crops in Canada. Most canola grown in Canada is Brassica napus species, part of the large Brassicaceae family that includes mustard, cabbage, broccoli, cauliflower, turnip, kale and other healthy vegetables.

"This site is for Canadian consumers. Language and images have been carefully chosen and will continue to be updated as we learn more about how to best connect with those outside our industry."

—Jennifer Dyck

## IT'S SUPPORTING CANADIAN FARMERS

When you buy any bottle of canola oil, any size, any brand at any grocery store, you are supporting Canadian farmers. Canola brings diversity to the farm. As a cool season crop, it grows very well on the Canadian Prairies and in other parts of the country. It has become one of Canada's most valuable agricultural exports and an important source of income for 43,000 Canadian farmers. More than 207,000 Canadian jobs are linked to canola – and the crop's potential continues to grow. Renewable biofuels are the latest opportunity to expand uses for Canadian canola.

**When you buy any bottle of canola oil, any size, any brand at any grocery store, you are supporting Canadian farmers.**

### IT'S HEALTHY

Canola oil is low in saturated fat and the highest sources of plant-based omega-3 fats among all common cooking oils. At pennies per serving, this kitchen powerhouse is also easy on the wallet, making it great value for health. Canola meal, the solid part of the canola seed once the oil has been extracted, is used as a protein-packed feed for animals. While traditionally used only for animal feed, canola protein has the potential to offer nutritional benefits for humans as well.

### ITS FUTURE IS BRIGHT

Canadian canola is used in biofuel production around the world because it's a low carbon, sustainable and renewable resource in abundant supply. Biofuels are ready to use right now. That's a clear advantage over other technologies requiring gradual adoption. When canola-based biofuels play a bigger role in Canada's fuel supply, we will achieve real and immediate benefits for the environment, the economy and the whole canola value chain.

"Recipes remain a key driver to the Canola Eat Well website. The redesign is our opportunity to be more and to expand the story," says Lynn Weaver, market development manager and Canola Eat Well lead for SaskCanola. "The fact that canola oil is a healthy choice for Canadians and a home-grown agriculture success story needs to be celebrated."

*—Lori Dyck owns Wildfire Online, a Manitoba communications company that specializes in digital marketing. She has worked on various canola projects, including the Canola Eat Well website redesign.*

## Red flags to identify misinformation on social media

Social media is noisy, but can also be entertaining and informative. Sometimes you need to filter out the misinformation. Science and well-sourced content drives us at Canola Eat Well and if you find yourself out in the wild, here's how to navigate the space and spot the junk.

The International Food Information Council, based in Washington, D.C., hosted a webinar in October called "Navigating Nutrition Science in the Media." One presenter, Charlotte Martin, a registered dietitian, described obvious red flags when it comes to spotting nutrition misinformation on social media. Posts with misinformation often:

- blame a specific food for the chronic disease we see today, and strongly encourage you to eliminate it from your diet. Big ones are gluten, dairy, soy, added sugar and seed oils
- use words like clean, toxic and chemicals in their posts
- strongly encourage people to choose organic as healthier than conventional
- push a distrust in conventional medicine and those with formal nutrition education, and frequently mention "big Pharma" and "big ag"
- preach eating whole, unprocessed foods but also sell their own line of supplements
- are often defensive, aggressive and can't admit when they're wrong
- use fear mongering to frighten people into action
- don't have credentials. However some with health care credentials will make posts with other red flags.
- speak in absolutes and extremes - they say "never" "eliminate" "prevent" instead of "may help" or "may prevent"
- use popular buzzwords and phrases. Lately, these include inflammation and hormone balancing.

For more from the International Food Information Council, go to **ific.org** and **foodinsight.org**.

# Surveillance and strategies to manage HR weeds

Recent research projects give us an update on the state of herbicide-resistant weeds on the Prairies, and provide tips for effective prevention and management. Outside agronomic expertise may help with a practical integrated weed management plan.

BY TARYN DICKSON

Prairie surveys reveal that herbicide-resistant (HR) weeds are a widespread issue, and that predominant weed species and type of resistance vary by location. The Canola Research Hub's "Scenario-specific options will improve herbicide-resistant weed management" blog at **canolaresearch.ca** investigated weed management, tapping into research found on the Hub and other helpful resources.

Preliminary results from Charles Geddes's "The next generation of Prairie herbicide-resistant weed surveys and surveillance" project reported Group-1 resistance in wild oat, green foxtail and yellow foxtail in a 2019-20 Saskatchewan survey and Group-2 resistance in wild oat, kochia, sow thistle species, wild mustard, stinkweed, redroot pigweed, false cleavers, shepherd's purse, pale smartweed, lamb's quarters, hemp nettle and chickweed. It also found wild oat with resistance to both Group 1 and 2. Geddes also confirmed the first glyphosate-resistant downy brome, which is the first glyphosate-resistant grass weed identified in Canada.

Chris Willenborg's "Quantifying the risks associated with late and sequential herbicide applications in herbicide-resistant canola systems" project concluded that (1) the response of canola to late and sequential applications was somewhat ambiguous, but highly dependent on herbicide-tolerant system, and that (2) off-label applications in the glyphosate-resistant (Roundup Ready) system can have substantial impacts on crop yield, yield components and even seed quality. This emphasizes that late, off-label applications should be avoided.

The "Biology and management of glyphosate-resistant kochia" study offered these recommendations:

- Since kochia that emerged early spring to mid-August could still produce viable seed before a killing fall frost, kochia needs to be controlled whenever it emerges in this timeframe.
- The kochia seedbank can be quickly reduced with vigilant action, as kochia was found to usually germinate or die within one to two years.
- Herbicides that are effective on regular kochia should also be effective on glyphosate-resistant kochia, based on this research.
- If canola is planned for a field with glyphosate-resistant kochia, it is recommended to grow Liberty Link, as glufosinate provides a consistent and high level of kochia control. Consider the use of ethalfluralin or carfentrazone to get other herbicide modes of action in the weed control program.

Findings from Breanne Tidemann's "Mitigating herbicide resistance – investigating novel integrated weed management systems" project reported that early implementation of a integrated weed management (IWM) is critical. Waiting until resistance establishes could result in management failure and loss of control.

To get started: Identify the HR (and non-HR) weeds in each field, and consider herbicide product options for each crop in the rotation. Then work with an agronomist to make strategic selections on herbicide tolerance systems, herbicide groups (factoring in the use frequency each year and over the long term), modes of action and application timing options. Keep growing season records and then assess after each fall before making crop rotation and herbicide plans for next year.

*—Taryn Dickson is resource manager for Crop Production and Innovation with the Canola Council of Canada. Taryn also coordinates the Canola Research Hub.*


## Weed management resources

Try these helpful resources to support your integrated weed management strategy:

- Watch "Canola Group 2 weed management with Ian Epp" video at **youtube.com/canolacouncil**.
- Listen to Canola Watch podcast "Episode 72 on glyphosate resistance and IWM". Find it through your podcast provider or find Podcast in the Quick Links box at **canolawatch.org**.
- Read "Top 10 herbicide resistant weed management practices" at **wgrf.ca**.
- Read the "Managing herbicide resistance in kochia" factsheet at **manageresistancenow.ca**.
- Read "Integrated weed management: Best practices" in the Weeds section at **canolawatch.org/fundamentals**.
- Find direct links in the November 10 blog post, "Scenario-specific options will improve herbicide-resistant weed management," at **canolaresearch.ca**.

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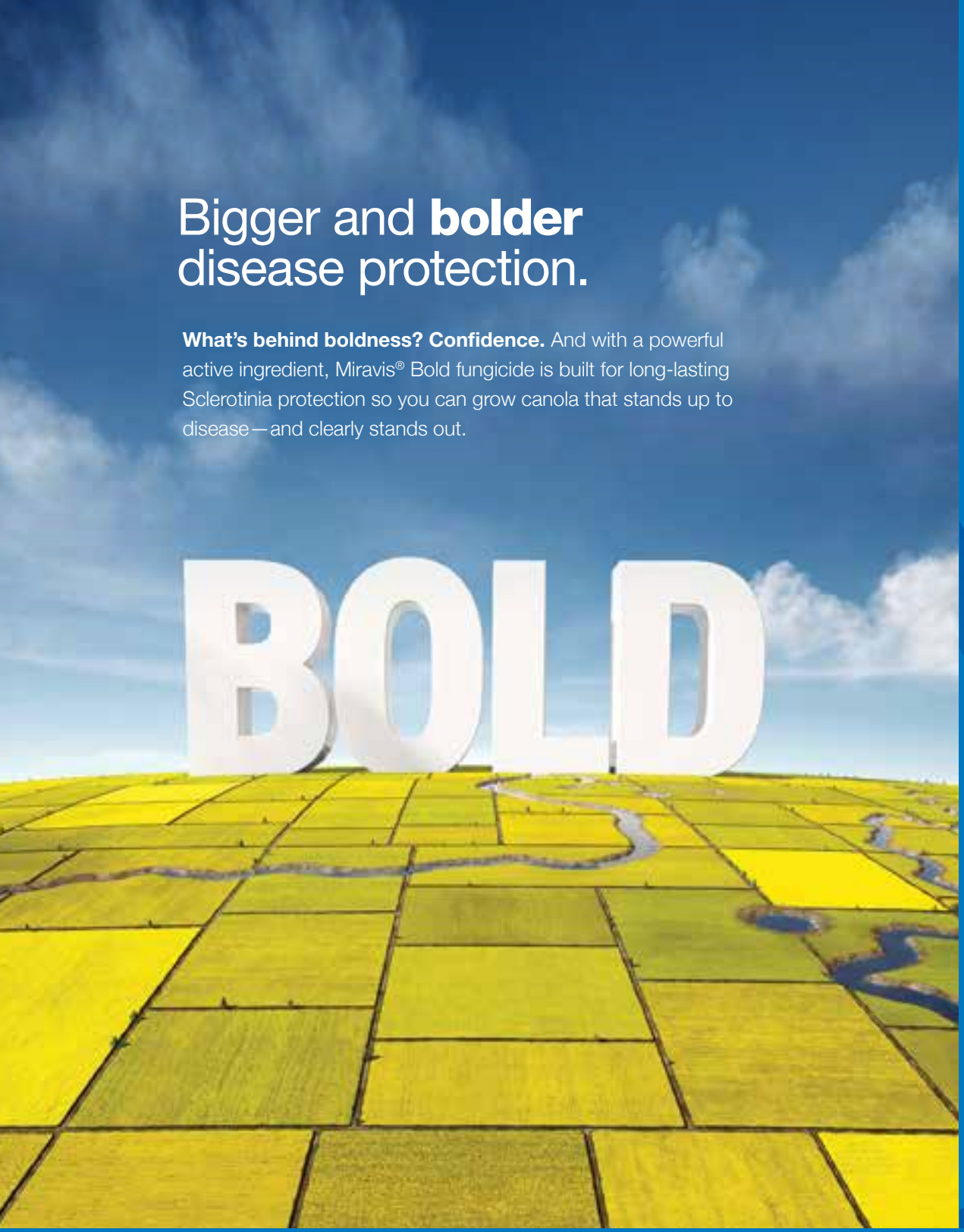


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