ALBERTA CANOLA
SaskCanola
Manitoba Canola Growers
canolacouncil OF CANADA

September 2021

canola DIGEST

The Source for Canada's Canola Growers

Best Returns

WE ASK OUR FARMER PANELISTS TO DESCRIBE THE BEST RETURN-ON-INVESTMENT PURCHASE THEY MADE RECENTLY AND WHAT MOTIVATED THEM TO MAKE IT / PAGE 30

INSIDE:

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HOW TO IMPROVE YIELD WITH GENETICS

Maximizing yield potential starts with cultivar selection, and then relies on environmental conditions and agronomy decisions to reach the target. This article will look at this three-pronged relationship – genotype (the specific canola hybrid and its traits), environment and management, often shortened to G x E x M – with extra emphasis on genetic decisions to improve yield.

Credit: iStock.com/Chushkin

DEPARTMENTS

CALENDAR

ALBERTA CANOLA GROWER ENGAGEMENT MEETINGS
Lethbridge – November 17
Nisku – November 23
Red Deer – December 7
Grande Prairie – December 14
albertacanola.com/GEM

CROPCONNECT
February 16 & 17, 2022
Winnipeg, Manitoba
Registration opens in December

LEARN TO LEAD
Saskatchewan – November 26 & 27
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Hopper Days

Grasshoppers are eating everything in sight. Let's party!

That was the conclusion of community leaders in my home town of Hartney, Manitoba in 1987. I was a teenager on the farm in the 1980s. The decade started with high interest rates and farm foreclosures and ended with dry conditions and grasshoppers.

"It wasn't much fun," recalls Bruce Evans, who worked at the local New Holland dealership at that time. (He retired this spring after 40 years. He was also on town council for 20 years, including eight as mayor.)

"Grasshoppers were taking the paint off buildings," Evans says. I thought he was using an expression, like "hungry enough to eat a horse," but he was serious. Grasshoppers were literally eating paint.

"They were eating everything, not just crops. It was hard to have a lawn or garden," Evans says. "I think the grasshoppers were starving."

The farming town needed a morale boost in 1987, so a few local business leaders got together and organized a festival for the second weekend in August. They called it Hopper Days. It had bed races, a street dance, a slow pitch tournament, a parade and a biggest grasshopper contest.

"Some said celebrating grasshoppers was in poor taste," says Evans, "but most people thought it was fun."

Then came 1988. Agriculture and Agri-Food Canada's agroclimate division puts 1988 among the top five driest years since 1950. Canadian average canola yields in 1988 were 20.2 bu./ac. on 9.2 million harvested acres, and just 17.5 bu./ac. in Manitoba. Hartney held its second annual Hopper Days and people needed it more than ever.

The decade closed with another bad year for canola. In 1989, the Canadian canola average was 19.6 bu./ac., and Manitoba pulled up the rear again with 15.5. Hopper Days got bigger and better.

Over the years, the festival has included golf, crib and horseshoe tournaments, antiques displays, pancake breakfasts, flying club fly-by (with the "s#!+hawks"), beer gardens and a horticultural society flower show. (My grandma took the competition very seriously. She was a flower-arranging whiz.) It was typical small-town stuff, and we loved it. Costs were low and participation was high. When farming is tough, it helps to know you're not alone.

Prairie farmers might be looking for something to celebrate after 2021. The worst drought since 1950 was in 1961."It is often named the worst drought in Canadian history," says Trevor Hadwen, agroclimate specialist with AAFC. Others in the top five are 2001, 2002 and... 2021.

"It's been a crazy year and I don't think we have seen the worst yet. Livestock feed is going to be an ongoing issue through to next spring," says Hadwen.

How do you plan for a drought? The Canola Research Hub article in this issue has a couple of tips to improve water use efficiency. Tall stubble helps, and if you have to incorporate stubble, do it in the spring. Seed decisions might help, too. Short-season hybrids give some flexibility on seeding date and can help the crop dodge the hottest summer days. We know management works because we're not seeing 1930s-style dust bowls – but crops need rain. Period.

When weather and insects do what they do, be there for each other. Lean on your community. Check in on friends and family members. Talk to the farm stress lines. And plan a party. That's what Hartney did.

Credit: iStock.com/ithinksky

"Grasshoppers were taking the paint off buildings."

-Bruce Evans

THE CANOLA DIGEST IS A JOINT PUBLICATION OF:

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CANADIAN POSTMASTER
Send address changes and undeliverable copies (covers only) to:
400 – 167 Lombard Avenue
Winnipeg, MB R3B 0T6

PRINTED IN CANADA
ISSN 0715-3651
Postage paid in Winnipeg, MB
Publication Mail Sales Agreement #40027283

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Carbon Policy Is Heating Up!

In the introduction to the Pan-Canadian Framework, the federal government's plan to reduce greenhouse gas (GHG) emissions, it is argued that across the globe humans are seeing increasingly severe weather phenomena. It is becoming more and more apparent that governments need to prepare for changes in climate. There is increasing international pressure to reduce carbon emissions. The goal of the Paris agreement, which Canada signed on to in 2015, is to keep global warming below 2 degrees Celsius, 1.5 degrees Celsius, if possible, in comparison to pre-industrial levels. In March 2021, the Supreme Court of Canada determined that federal carbon pricing is constitutional under the Peace, Order and Good Government clause of the Constitution Act. Carbon pricing is essential to the Pan-Canadian Framework. Canada's 2030 goal is to reduce emissions to 30 per cent below 2005 levels.

From stakeholder engagements to new funding programs, carbon policy is heating up. The members of Team Alberta (Alberta Canola, Alberta Pulse Growers and the Alberta Wheat and Barley Commissions), have been working with provincial and national groups like the Canola Council of Canada, Canadian Canola Growers Association, and Grain Growers of Canada to make sure government policies reflect the needs of agriculture. Alberta Canola's Policy Analyst, Aymie Haslam, started started a 4-part summer series, Temperature Check, to inform our farmers about what's happening with carbon policy.

Alberta's Technology Innovation Emissions Reduction (TIER) regulation prices GHG emissions and establishes a trading system. Carbon pricing is touted by economists as the most efficient way to reduce GHG emissions while also investing in clean technology innovations. Provinces have the option of using the federal climate policies or using their own, so long as it meets the minimum standards. TIER regulates approximately 60% of Alberta's emissions. Since the Supreme Court decision, the Government of Alberta is working to create policies that are right for Albertans.

Farmers have sequestered carbon since the 1990s and championed responsible environmental stewardship practices. Use of Beneficial Management Practices will continue to have a significant role in reducing greenhouse gas emissions. Team Alberta's submission for the Alberta Environment and Parks Stakeholder Engagement emphasized the current efforts made by producers to reduce emissions as well as how the government can support producers in economic growth. Team Alberta also sent a letter commenting on the federal offset credit system. Ideally, credits would be tradeable between provinces, but comes with complications around pricing differences and must be thoroughly analyzed.

As climate policy grows and evolves, Alberta Canola will continue to follow adjustments closely. Visit albertacanola.com/tempcheck for updates.

GROWER ENGAGEMENT MEETINGS

Alberta Canola will be hosting 4 Grower Engagement Meetings this winter. The meetings will provide canola farmers in Alberta with the opportunity to learn more about Alberta Canola's agronomic research programs and active policy files, and to provide feedback and input in these important areas. **For more details visit albertacanola.com/GEM**

DATES AND LOCATIONS

November 17	Lethbridge
November 23	Nisku
December 7	Red Deer
December 14	Grande Prairie

ALBERTA CANOLA

Agricultural Content in Alberta's Curriculum

Alberta Canola, in conjunction with other crop sector organizations, recently submitted letters to Hon. Adriana LaGrange, Minister of Education and Hon. Devin Dreeshen, Minister of Agriculture and Forestry, requesting agricultural examples be incorporated in the new Alberta Program of Study for all applicable grades and subjects.

To accomplish this request, the organizations suggested Alberta Education establish an agriculture and natural resources education advisory group. The advisory group would include various agricultural commodity groups, along with Ag for Life and Inside Education to collaborate, advise and provide input on how fact-based agricultural content could be applied to the revised Alberta curriculum.

Alberta's crop sector believes agriculture should be included in the new school curriculum because agriculture is one of the biggest economic drivers in Alberta. Our future leaders should be well versed in the science and economic drivers behind agriculture; Alberta's number one renewable resource. Educating future generations about food literacy contributes to a viable agricultural sector, and helps to improve the overall economy, health, and environmental sustainability of natural resources in Alberta's communities.

The following organizations fully support adding agriculture education to Alberta's K-12 curriculum: Alberta Canola Producers Commission, Alberta Irrigation Districts Association, Alberta Pulse Growers, Alberta Sugar Beet Growers, Alberta Oat Growers Commission, Alberta Wheat and Barley Commissions, Potato Growers of Alberta, and the Alberta Beekeepers Commission. Commissions are directed and funded by elected producers to represent the interests of over 20,000 farmers and commercial honey producers across Alberta in the areas of research, education and extension, policy development and advocacy. The letters can be viewed at **albertacanola.com**

Leaders Wanted to Represent Alberta

The Alberta Canola Producers Commission is seeking four canola growers to serve as directors on the board of directors for a three-year term. This year, nominations for directors are being accepted for regions 3, 6, 9, and 12. New director terms will begin following Alberta Canola's Annual General Meeting in January of 2022.

Alberta Canola divides Alberta into 12 regions, with each region electing a producer director to represent the canola farmers within that region. The board of directors meets quarterly and is guided in decision making by five committees that include board members and staff:

- Research
- Government & Industry Affairs
- Grower Relations & Extension
- Public Engagement & Promotion
- Governance & Finance

WHO CAN BECOME A DIRECTOR?

Anyone who has paid a service charge on canola to Alberta Canola since August 1, 2019 is an eligible producer and can stand as a director. Eligible producers can be individuals or represent a corporation, partnership or organization. To be nominated, eligible producers must grow canola within the defined region but do not have to reside within it.

Nominations for the position of director must be filed at the Alberta Canola office on or before October 29, 2021 at 4:00 p.m.

For complete details on Alberta Canola's regions, the roles of directors or to obtain a nomination package, visit albertacanola.com/elections or contact Alberta Canola's General Manager Ward Toma at 780-454-0844.

Germplasm enhancement research is important to Canadian Canola industry

Investing in research at the early pre-breeding or germplasm-enhancement stage provides the foundational pieces that complement commercial hybrid seed breeding programs and the ultimate release of new traits and hybrids. SaskCanola strategically invests in canola research, including several upstream projects in germplasm enhancement and trait development.

"Our pre-breeding research and innovation strategy encompasses germplasm enhancement, which includes identification, discovery and generation of new germplasm diversity and traits under selection," says Sally Vail, research scientist and oilseed breeder with Agriculture and Agri-Food Canada (AAFC) in Saskatoon. "It also includes new tool development for trait selection. We are actively working in both of those areas across different projects."

The goal is to develop new germplasm that is licensed to canola breeding companies to help make quicker progress by enabling them to start with germplasm already adapted to canola quality. Vail and AAFC research scientist Lone Buchwaldt are collaborating on a new germplasm diversity project improving sclerotinia resistance to canola quality breeding lines. Through Buchwaldt's research, several sources of resistance have been identified across all *Brassica napus* lines; however not all sources have canola quality. Vail and Buchwaldt are partnering to introduce new resistance traits into canola quality lines with early flowering and maturity suited for the Prairies.

Other AAFC projects are looking to related species for new diversity. "Utilizing germplasm from the AAFC breeding programs for related Brassica species, we now have advanced populations generated from crosses between winter *B. napus* and canola quality *B. juncea*," explains Vail.

"We are working with commercial companies to see how these new lines fit in their hybrid canola breeding program, and if the new diversity has higher yield and better yield stability advantages associated with them." Other projects focused on new disease resistance diversity include the development of clubroot resistance genes led by Fengqun Yu, and blackleg quantitative disease resistance led by Hossein Borhan.

A significant resource for assisting all of these germplasm advancements is the nested association mapping population (NAM) tool for *B.napus* led by Isobel Parkin, AAFC Brassica genomicist, in collaboration with Vail and other researchers. NAM allows researchers to identify the multitude of genes associated with complex traits and diversity within a wide range of breeding lines. The knowledge of associations between the genes and various traits yields practical tools and germplasm for plant breeders.

"All of these pre-breeding efforts are assisting us with developing an arsenal of different germplasm. This helps commercial breeding programs be positioned to respond quickly to different strategies and challenges,"

Above: Nitrogen use efficiency is one complex trait that could be improved through early pre-breeding work in Saskatoon. This aerial image shows nitrogen use efficiency trials from July 22, 2019 at the Saskatoon site.

Photo courtesy of AAFC Saskatoon Research and Development Centre and the Plant Phenotyping and Imaging Research Centre at the University of Saskatchewan in Saskatoon.

adds Vail. "It is very exciting as a canola breeder to see all of these different germplasm enhancement projects and to be a potential user of these developments down the road."

Alongside germplasm enhancement is specific trait development work, with AAFC leading or collaborating on various projects looking at new traits for *B. napus*. "All of these projects use the NAM resource and genomic information paired with various breeding tools for efficient selection of new traits and potential canola quality breeding lines," explains Vail. Other research platforms such as the Plant Phenotyping and Imaging Research Centre (P2IRC), led by Andrew Sharpe at the University of Saskatchewan (U of S), focus on developing new tools for plant breeders to advance key prairie crops including canola.

"We really value the research investment by SaskCanola, growers, and other funders in recognizing the importance of germplasm enhancement work," says Vail.

"Working with different breeders to address the long-term needs and being able to transfer new resources to commercial companies who are able to move forward and scale with great speed is quite remarkable. There is so much intellectual power in the canola industry. The underlying strength comes from the different perspectives of public and private plant breeders, commercial industry, canola organizations and growers collectively. It is very exciting to see that together we have the right platforms to move the industry in the right direction."

See reports for SaskCanola-funded research projects at **saskcanola.com/research**.

Canada Grain Act Review – Supporting Statement by SaskCanola

Stakeholders in the grain value chain widely recognize that the industry has changed substantially since the last comprehensive review of the Canada Grain Act over 35 years ago. SaskCanola, along with the other representatives of the crop sector, advocated for the Canada Grain Act to be changed to reflect the size and sophistication of today's farms.

In early 2021, SaskCanola actively participated in the development of submissions by the Canadian Canola Growers Association and the Grain Growers of Canada, and endorsed their positions. We also reiterated and reinforced the issue of farmer protection, as well as the need for increased price transparency.

SaskCanola believes that the Canadian Grain Commission must maintain its mandate of protecting farmer interests. The Grain Commission must provide the protection needed at the point where the grain leaves the ownership of the farmer at the grain terminal and becomes the property of grain companies. In addition, over 50 per cent of canola is now delivered to a crushing facility. These deliveries have to have the same protections that are provided at primary elevators.

SaskCanola believes that the Canadian Grain Commission must maintain its mandate of protecting farmer interests.

Producer protections are in place to ensure that growers are treated fairly and that their risk is limited. Protections also demonstrate accountability of the grain system to producers, strengthen growers' position as an important part of the grain production process and support the development of strong producer-elevator relationships.

The review of the Canada Grain Act is an opportunity to modernize and update the Act to accommodate all parties involved in the production and export of Canadian grain. SaskCanola plays an important role in ensuring producers' voices are heard, and that their concerns are thoroughly addressed and considered. To view our full statement, please visit SaskCanola.com.

GRADUATE SCHOLARSHIPS

To invest in the canola industry and build research capacity, in 2021 SaskCanola awarded graduate scholarships to four students at the University of Saskatchewan.

Congratulations to all our graduate scholarship winners.

NAZIFA AZAM KHAN
New recipient

MENGYING LIU
New recipient

IVANTHI KUMASATUGE
Second year recipient

RAJEEV DHAKAL
Second year recipient

Leaders Wanted To Represent Manitoba Canola Growers

Become involved with an organization that is on the cutting edge of the canola industry. Manitoba Canola Growers is seeking members to stand for election to the Board of Directors. Four positions are up for election, each holding a four-year term.

Successful applicants will have the unique opportunity to represent the canola farmers in Manitoba. Manitoba Canola Growers board members play a primary role in making decisions that will affect the future of canola and the agriculture industry in this province.

The board of directors meets four to six times a year and is guided in decision making by four committees that include board members and staff. A combination of virtual and in-person meetings are used to reduce travel requirements.

Time away from your farm is valuable. Manitoba Canola Growers recognizes this value through a compensatory per diem, mileage, and expense package for directors while they are away from the farm business representing members of the organization.

Who is eligible to run for election?

Anyone who has contributed check off to the Manitoba Canola Growers Association since August 1, 2019, is 18 years of age or older and is a resident of Manitoba.

What is the deadline for nominations?

Nomination forms must be submitted to the Manitoba Canola Growers office on or before November 30, 2021 at 4:00 pm.

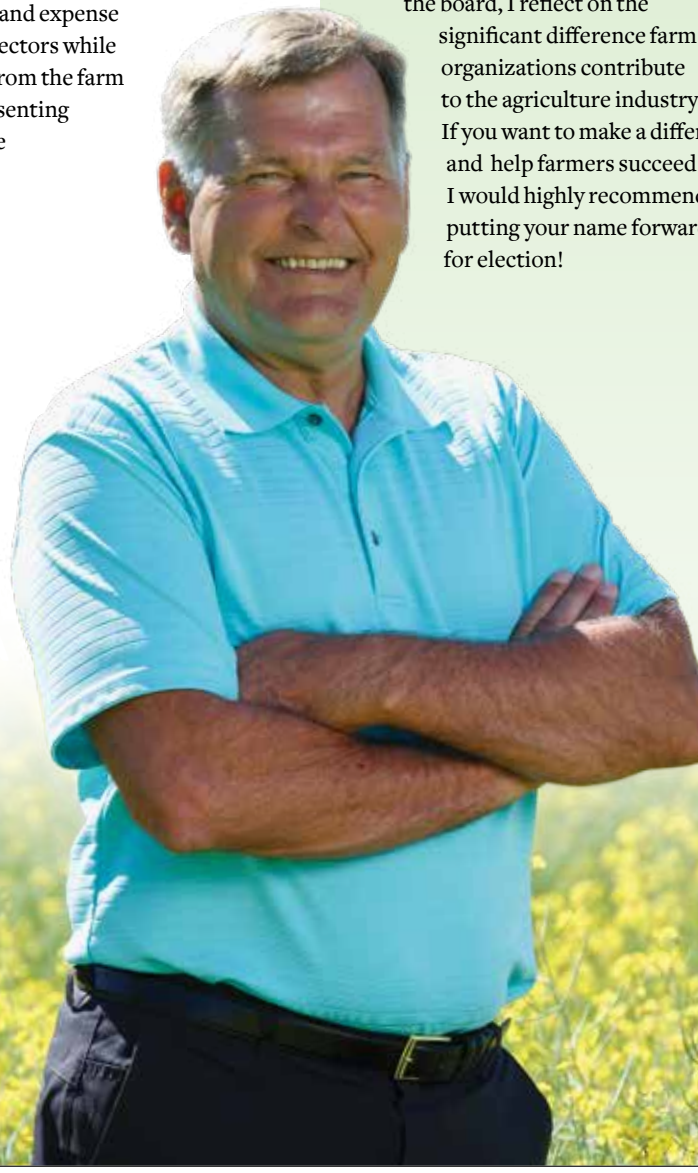
For complete details on how to become a director, director job description details or to download a nomination package visit our website at **canolagrowers.com.**

Jack Froese on being a board member

If you are enthusiastic about contributing to the betterment of agriculture, then you would make an ideal candidate for the MCGA board.

Since joining the board, I have experienced the scope of agriculture through a lens I would not have thought possible when I first started as a director. My experience on the board has led me to many new lifelong friendships, cutting-edge information for leading experts, and a return equivalent or greater than my personal contributions.

As I enter my final two years on the board, I reflect on the significant difference farm organizations contribute to the agriculture industry. If you want to make a difference and help farmers succeed I would highly recommend putting your name forward for election!



$1,000 SCHOLARSHIPS FOR FIVE DESERVING STUDENTS

Each year, the Manitoba Canola Growers are pleased to award five $1,000 scholarships to students who are graduating from grade 12, are from a farm that is a member of the Manitoba Canola Growers Association and plan to attend post-secondary education in any field within two years of graduating.

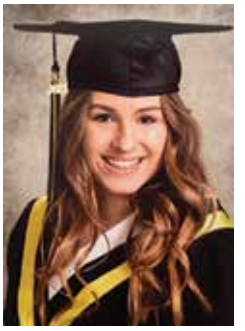
Students submit their applications, which are judged by an independent panel, based on academic standing, personal canola connection, references, essay submission, and school and community involvement.

Manitoba Canola Growers are proud to announce our 2021 winners. Congratulations! We wish you the best of luck as you pursue your chosen careers.

To learn more about this scholarship visit our website at CanolaGrowers.com

CHARLOTTE LITTLE
Hamiota, MB
She is enrolled in the Faculty of Agriculture at the University of Manitoba.

JESSICA YOUNG
Miniota, MB
She is enrolled in the Faculty of Education at the University of Regina.



KYLA KRAHN
Mather, MB
She is enrolled to continue her education at the University of Manitoba.

MEGAN BESWITHERICK
Austin, MB
She is enrolled in Business Administration at Assiniboine Community College.

SAMUEL KRAHN
Rivers, MB
He is enrolled in the Faculty of Science at Brandon University.

$100,000 for ACC's Collaboration Zone

The Manitoba Canola Growers Association has committed $100,000 to sponsor an industry collaboration area, the Collaboration Zone, within Assiniboine Community College's Prairie Innovation Centre for Sustainable Agriculture. MCGA recognizes the value of collaboration and is honoured to play a role in bringing this new facility to life.

Canola has a lot of untapped yield potential. Yield starts with cultivar selection, and then relies on environmental conditions and agronomy decisions. This article will look at this three-pronged relationship – genotype (the specific canola hybrid and its traits), environment and management, often shortened to G x E x M – with extra emphasis on genetic decisions.

HOW TO IMPROVE YIELD WITH GENETICS

This is the first article in a four-part yield series for the Canola Digest 2021-22 season.

BY JAY WHETTER

Credit: iStock.com/Viktoriia Oleinichenko

We learned in 2021 (again) that the growing environment plays a huge role in the yield potential of any crop. For canola in Western Canada, excessive heat combined with abnormal dryness is a bad combination for yield, especially when they occur at flowering. Canola has the capacity to rebound from a lot of stress – as long as the plants survive and that stress occurs before flowering.

This article will look at genotype by environment by management (G x E x M) to see how we can take canola productivity to a new level of sophistication and optimization.

GENOTYPE: SELECT THE RIGHT CULTIVAR

A genotype is the collection or library of genetic traits of a cultivar. Yield potential is based on a complex combination and interaction of traits, including those for pod size, seed size, pod number, root size, nutrient use efficiency, water use efficiency, plant size to seed mass ratio, as well as posted traits like disease resistance, lodging resistance and days to maturity.

The grower's goal is to find the best canola cultivar for their environment and farming system. The "best" cultivar is often in the eye of the beholder. It could be the one that provides consistent yield year to year under different environmental conditions, the highest yield this year in the nearest trials or the highest yield from among a short list of cultivars that provide the clubroot resistance, pod-shatter tolerance, herbicide system and days to maturity the farmer wants.

Days to maturity (DTM) generated some interesting discussion in canola circles in 2021. This trait relates to flowering date and harvest date, and shorter-season hybrids could help canola dodge major establishment issues and achieve a timely harvest. Dave Kelner, North American canola

Early-maturing canola hybrids could have a great fit in Western Canada to avoid heat in summer or frost in the fall. "They also work as a secondary option grown in combination with full-season products as part of a farm production risk management strategy."

—Dave Kelner

FOUR BIG SEED FACTORS FOR 2022

Based on recent experience, canola growers may want to consider the following in their seed decisions for 2022.

1

DAYS TO MATURITY

Having trouble getting the crop off? One strategy could be to choose earlier-maturing hybrids, which can be ready for harvest before later-maturing hybrids. This also reduces some establishment risk if it means you can seed a little later to dodge spring frosts and heavy flea beetle feeding due to slow-growing crop.

2

CLUBROOT RESISTANCE

Clubroot resistance (CR) will be in almost all canola hybrids by 2025. Between now and then, the CCC recommends that all farmers ask for CR hybrids to keep infection levels (and, therefore, spores levels) low from the get-go. See the article on CR canola in this issue.

3

HARVEST TRAITS

Cutting later usually leads to higher yields. All hybrids can be safely cut at 60 per cent seed colour change on the main stem. Hybrids with pod-shatter tolerance can be cut later with lower risk, and this later cutting translates into yield. See the article on pod shatter tolerance in this issue.

4

FLEA BEETLE SEED TREATMENT

Flea beetles are always a major pest of canola in Western Canada, but are they getting worse? If foliar spraying is becoming regular practice on your farm, consider booking seed with an enhanced insecticide seed treatment for 2022. The Agronomy Insight article in this issue also has a few more management ideas for canola growers in a worsening flea beetle situation.

portfolio manager with Bayer, says canola growers in North Dakota tend to choose early-maturing cultivars even though the North Dakota growing season is longer than ours north of border. "This isn't about end of season maturity, but rather the need for earlier flowering to avoid the onset of July heat. These products flower up to a week earlier and mature three to four days sooner than full maturity products," Kelner says. "Combined with shatter tolerance, early maturity and early seeding, this is a very successful combination for these typically hot, drier environments."

Kelner says early-maturing canola hybrids could have a great fit in Western Canada to avoid heat in summer or frost in the fall. "They also work as a secondary option grown in combination with full-season products as part of a farm production risk management strategy," he says.

Days to maturity can be a quirky trait. A "100-day" hybrid might actually mature in 90 days in Manitoba and 110 days in the Peace. Russell Trischuk, BASF's regional technical services manager for InVigor Canola, explains: "Western Canada is a very large geography and the environmental conditions (e.g. photo period, growing degree days, moisture and soil type, to list a few) that occur across these vast expanses differ significantly, which ultimately has an impact on how long it takes for a certain hybrid to mature across different geographies."

For this reason, Trischuk says a farmer must recognize that the DTM rating listed for a hybrid is generalized based off data collected across Western Canada. "From a practicality perspective, growers should base their hybrid selection on it being a short-, mid- or long-season hybrid and ultimately recognize that if they are in a long-season zone, maturity may occur a few days sooner whereas in a short-season zone, maturity may take a few extra days," Trischuk says.

Public breeders in Canada do a lot of behind-the-scenes work to enhance the yield potential of canola. Habibur Rahman at the University of Alberta is one such breeder. Rahman's canola genetics lab has already turned out clubroot resistance traits that have made it into commercial channels. "Nutrien was the first company to receive the clubroot resistance gene of rutabaga from the University of Alberta," Rahman says. "This confers resistance to multiple pathotypes, and the company used it extensively in their breeding program."

Rutabaga is a *Brassica napus* plant, the same as canola. Rahman is also looking through the genotypes of other canola relatives, including *Brassica rapa* and *B. oleracea* lines, looking for traits to improve yield.

Yield potential is based on several genes. "Breeders constantly reshuffle the genes and look for the better gene-combinations," Rahman says. He says we may soon reach the point where improvements using the current germplasm may become exhausted. "We have to get favourable genes from other sources to broaden the genetic base of canola," he says.

Rahman sees the *B. oleracea* genes for earliness as one possible path to higher yields. "If we can get canola flowering earlier," he says, "this may give the plant a longer duration for grain filling."

Part of a grower's seed decision is to select traits that preserve yield potential. Disease resistance traits have been essential ever since blackleg resistance was discovered. These days, growers can now choose hybrids with blackleg resistance that suits the particular blackleg races in their fields. In the near term, yield advantages from disease management will come from clubroot resistance. (See more in the article on page 22.) The Canola Council of Canada surveyed 1,000 canola growers last winter, and results showed that use of clubroot-resistant hybrids is associated with higher yield in the Black and Grey soil zones.

Pod shatter tolerance is another trait that can improve yield. Several research projects have shown that yield goes up if canola seeds are given more time to fill before cutting. For any canola hybrid, yield is generally higher if growers swath at 60 per cent seed colour change instead of

Habibur Rahman is a canola breeder at the University of Alberta. He's looking at canola relatives for various yield-enhancing genes, including those for flowering timing. "If we can get canola flowering earlier," he says, "this may give the plant a longer duration for grain filling."

30 per cent. For canola with pod shatter tolerance, growers can wait even longer and possibly capture more yield. (See more in the article on page 16.)

The next steps in canola yield improvement could come through a focus on complex abiotic stress tolerance traits. These include increased tolerance to cold soils in the spring, increased moisture foraging and moisture retention capabilities, and increased tolerance to summer heat. Again, a lot of this work will start with public breeders. We'll have more on that in the next section.

ENVIRONMENT: WEATHER-PROOF YIELD

Are you in an area where the environment, especially moisture and humidity, tend to increase disease pressure? Are you in a long-season growing zone? Are you in a region where hot summer days and nights put yield at risk? Seed choices can provide some genetic advantages for these scenarios.

Canola is a cool-season crop that tends to yield best with summer temperatures below 28°C and cool summer nights in combination with timely rains. Canola doesn't like heat, but some cultivars handle heat better than others. While this trait isn't publicly tracked and reported, growers could use location results from Canola Performance Trials (canolaperformancetrials.ca) to see how hybrids performed with weather in their regions.

Sonia Wilson, a graduate student with Robert Duncan and Claudio Stasolla at the University of Manitoba, is looking at canola tolerance to excess moisture. "I'm looking for traits that

would help a canola plant survive in submerged soils," Wilson says. "We are observing that some genotypes can survive and recover under submergence conditions better than others."

Wilson's experiments include a submergence treatment for seven days. "The main consequence of excess moisture stress is reduced oxygen availability. Oxygen is required to generate energy," she says. "Some genotypes may perform better than others due to their ability to undergo metabolic changes and alterations in energy-producing processes that allow cells to cope with such low oxygen conditions. These are the genotypes that I am looking to identify." Duncan and Stasolla are also focusing on drought and heat tolerance.

Baoluo Ma, research scientist with Agriculture and Agri-Food Canada (AAFC) in Ottawa, is using canola genotypes from Robert Duncan's lab to compare their above- and below-ground response to heat stress. The goal is to understand how increasing temperatures will impact canola growth in terms of root traits, seed yield and lodging resistance. In a 2020 published report, Ma et al showed differences in stem lodging under high temperatures. They also identified a technique to evaluate genotypic differences as they related to heat stress tolerance.

Pre-commercial canola genetics research from Canadian public institutions is an important step in brining improved traits to commercial hybrids. Brad Orr, Corteva marketing leader for Canada, says, "public-private partnerships in plant breeding have the potential to create significant value for farmers and consumers." Public breeders can do a lot of exploratory work in the gene pool that private breeders may not have the time or budget to do.

"Fundamentally, the partnership is about reducing risk for plant breeding developers that are working towards commercializing a new product concept," Orr says. "The benefits have the potential to be maximized when collaboration begins early and all partners work towards ensuring that the appropriate regulatory framework and policies are in place."

MANAGEMENT: MAKE BALANCED DECISIONS

The final step in G x E x M is management. Management decisions to improve yield require a weighing of pros and cons with a heavy dose of economics. A big management decision for yield revolves around fertilizer, especially rates, but future genetics work on nutrient use efficiency could be an important part of the G x E x M relationship.

Other management decisions that give a boost to genetics include seeding rate and harvest timing. Canola's genetic potential for yield is maximized with a stand of five to eight plants per square foot. This is based on detailed analysis by Murray Hartman, retired oilseed specialist with Alberta Agriculture and Forestry, and Steve Shirtliffe, researcher and prof at the University of Saskatchewan.

Canola hybrids yield more if left longer before cutting. With lower seeding rates than in the past, more yield comes from side branches. By cutting at 60 per cent seed colour change, or later, on the main stem, growers give seeds in side branches more time to fill. With traits for pod shatter tolerance, cutting could wait a little longer. This isn't delayed maturity. Rather, the hybrid is chosen for appropriate maturity for the ecozone, then let stand longer for increased yield and oil content. One thing to note is that hybrids have different levels of pod shatter tolerance, even if advertised as having this trait, so consider the pod shatter limitations of each hybrid.

Sonia Wilson, a graduate student with Robert Duncan and Claudio Stasolla at the University of Manitoba, is looking at canola tolerance to excess moisture. "We are observing that some genotypes can survive and recover under submergence conditions better than others," Wilson says.

Fertilizer rates will increase yield, and we'll dig into that in more detail in the next issue of Canola Digest. For this article on genotype, the management factor to keep in mind is that increased nitrogen can delay maturity, which could take away some of the timing benefit of a short-season hybrid.

A final point on management as it relates to genotype centres on disease resistance. Preserving these valuable traits requires some management, especially with rotations. A two-year break between growing canola on the same field goes a long way to protecting the viability of clubroot resistance in particular.

Canola yield potential will continue to increase as public and private breeders keep shuffling genes, bringing in new genes from close relatives, and using new tools to identify more complex traits like cold tolerance and nitrogen use efficiency. Hand in hand with that, growers have many management steps that can help them get the most out of the yield potential currently available. Benefits of these practices can be hard to see in a year where "E" so strongly influenced the G x E x M relationship. Here's hoping that 2022 allows canola growers to see how genotype and environment and management decisions interact to actually improve canola yield.

—Jay Whetter is the editor of Canola Digest.

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Even with a trait that limits the amount of pod shatter, canola hybrids left standing will experience some level of pod loss. This article provides scouting and agronomy tips to identify the point at which canola hybrids should be straight combined, so growers make the right decision – and limit harvest losses – for each specific hybrid.

NOT ALL POD SHATTER RESISTANCE IS THE SAME

BY SHAWN SENKO

Growers need to know two important things about pod shatter resistance. First, hybrids with pod shatter resistance do not all have the same level of resistance. Second, pod shatter resistance does not reduce or prevent pod drop, which is another risk when canola is left standing for straight combining. The bottom line is that pod shatter resistance will reduce the risk of yield loss when straight combining, but it doesn't completely eliminate risk to pod drop and loss.

The Canola Council of Canada, in collaboration with seed companies, is working on a pod shatter rating scale to describe the differences in pod shatter resistance among commercially-available hybrids. This will be similar to a lodging score already widely adopted by industry. The hope is to have this ready some time in 2022. In the meantime, this article will describe a few tips to make sure canola is straight combined before pod shatter begins.

HARVEST TIMING CONSIDERATIONS

The high potential for yield loss before and during canola harvest is due in part to the non-synchronous nature of pod and seed maturation – bottom pods mature faster than top pods and the main stem matures at different rate than side branches. If the plant matured uniformly, it would be much easier to manage.

Growers often use one of three strategies to time the start of straight combining. It can start when seed moisture is below an established concentration, when pod material has dried down, or when the stalks are dry. Those who wait for dry stalks will have an easier combining experience, but stalks can take a long time to dry naturally and, while waiting, the risk of pod shatter and pod drop increases.

On the other hand, combining as soon as seed moisture is below an established concentration could create issues with green plant material. Plugging may be more frequent, threshing losses may be difficult to reduce, and green material may be difficult to chop and spread. Green leathery pods will often pass through the rotor and be spit out the back, unthreshed. This can be hard to correct without cracking seed.

Aiming somewhere in the middle could strike a balance between acceptable seed moisture and ease of harvest. If harvest ease is the prime objective, growers could try a pre-harvest aid to move harvest along while keeping shatter and pod drop to a minimum.

An Indian Head Agricultural Research Foundation (IHARF) grower-funded study looked into pre-harvest treatments for straight-combined canola. For Liberty Link canola, the IHARF study found that glyphosate applied alone reduced whole plant moisture 67 per cent of time and seed moisture concentration 50 per cent of the time. For Roundup Ready and Liberty Link canola, saflufenacil reduced plant moisture 33 per cent of the time and seed moisture concentration 25 per cent of the time. While it was relatively rare that saflufenacil with glyphosate provided a measurable benefit over glyphosate applied alone in Liberty Link canola, this occasionally did occur. Diquat provided the most consistent dry-down benefits,

Shattered pods drop their valves and seeds, leaving nothing but the membranous pseudoseptum attached to the plant.

Find more on canola harvest in the Harvest Management section at **canolaencyclopedia.ca.**

reducing whole plant moisture 83 per cent of the time and seed moisture 67 per cent of the time. The study also found that applying diquat too early could result in an increase in green seed count. No other products had this effect and negative impacts on quality could generally be prevented by avoiding application prior to the recommended crop stage.

The IHARF report also stated, "not applying a pre-harvest herbicide or desiccant should be considered a potentially viable option, especially for early-seeded, reasonably uniform and weed-free fields where a hybrid with good pod shatter resistance is grown."

The key is that not all hybrids are the same, and they should not be treated the same when it comes to straight combining timing. Some should be cut the day they're ready. Others can hang on for a week or two with minimal pod shatter.

POD SHATTER VERSUS POD DROP

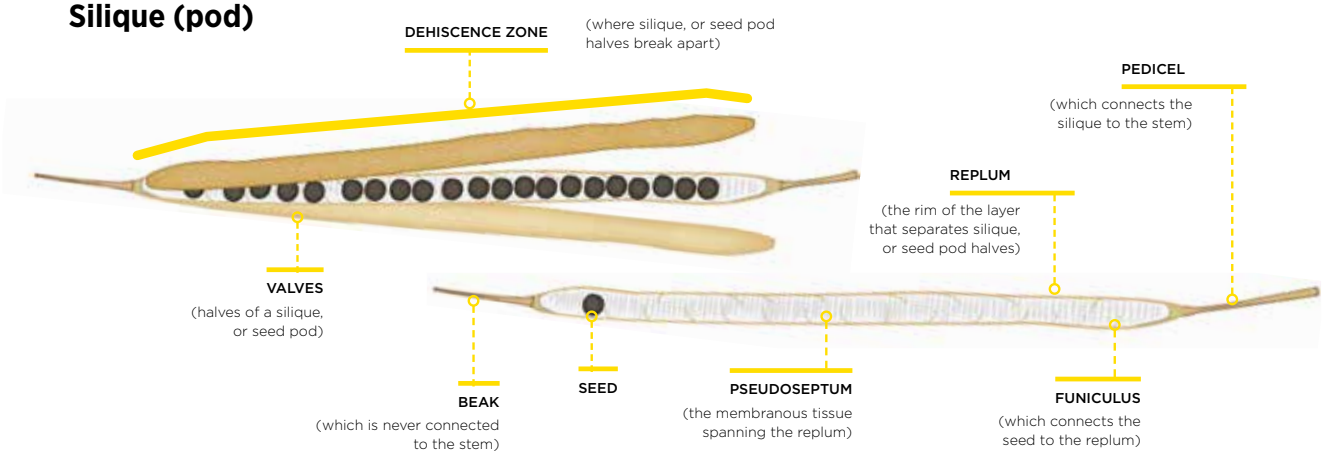
Canola seed losses before and during harvest are caused by two factors – pod shatter and pod drop. They are different and current research and observations have reported that these are controlled by different genes.

The key is that not all hybrids are the same, and they should not be treated the same when it comes to straight combining timing. Some should be cut the day they're ready. Others can hang on for a week or two with minimal pod shatter.

Canola shatter refers to the splitting and loss of seeds from the seed pod (or "silique") while the small stem (or "pedicel") of the pod remains attached to the main stem ("raceme").

Pod drop refers to the snapping-off of the entire intact pod at the junction of pedicel and raceme.

Both of these contribute to harvest loss. Companies have made significant genetic improvements in preventing or reducing pod shatter in the past years, particularly with



interest in straight combining rising. Companies also look at pod drop, but the environmental effect on pod drop makes it a more challenging trait to test and select for.

A canola loss study by Andrea Cavalieri with the University of Manitoba found that genotype is the primary influence on pod shatter, while environment along with genotype are the dominant drivers for pod drop. This environmental effect was evident in 2020, when parts of the Prairies experienced a number of days with very high winds in late summer and early fall. Shatter-resistant hybrids performed well and did not easily shatter, but many fields experienced high levels of pod drop. Due to the fact that the seed-filled pods did not shatter, these heavy pods were ripped off the plant at the junction of the raceme, and yield was reduced as a consequence.

While scouting to see if a crop is ready to combine, check for pod shatter and pod drop. Shake a few plants to simulate a strong wind and check if pods are dropping. If they are, this crop should probably be combined.

POD SHATTER RATINGS

Western Canada Canola/Rapeseed Recommending Committee (WCC/RRC) has a sub-committee working on a pod shatter rating scale for canola cultivars. The current plan is to use a one-to-nine scale. Cultivars with a seven rating are "good" for pod shatter resistance and those with a nine "do not shatter".

The greater the shatter resistance, the lower the risk in delaying harvest. Intermediate products – those with a seven rating, for instance – can work well in many situations, but growers need to know they will not protect yield as well as an eight in cases of wind or hail events if the crop is dry.

The rating scale is a work in progress. It will not be ready for 2022 seed purchases made this fall, and the final version is subject to change.

For the 2021 harvest season, remember that pod shatter resistance is not the same for all hybrids and that pod shatter resistance will not reduce pod drop, which can be a significant yield loss factor for canola left standing too long. I hope this helps with your harvest planning, and puts more canola in the bin.

—Shawn Senko is an agronomy specialist with the Canola Council of Canada. Email senkos@canolacouncil.org.

THE IDEAL CROP FOR STRAIGHT COMBINING

Here are field factors for a successful straight-combining experience. For thin crops, read "other considerations".

Pod-shatter resistance. This reduces pod splitting while waiting to harvest, but keep in mind that hybrids with pod shatter resistance do not all have the same level of resistance. When shatter ratings are available, those with lower ratings should be managed more carefully.

Well-knitted plants. The crop should be well knitted and slightly lodged to reduce wind whipping that can increase pod shatter and pod drop. If a large proportion of the plants appear to move independently in the wind, they will be at higher risk as the plants senesce and dry down.

Healthy pods. If a lot of pods have been damaged by frost, drought, hail or insect damage, this may not be a good candidate field for straight combining. Hail will typically cause more damage to a standing crop than a swathed crop.

Uniform growth stage. A uniform crop with all plants drying down at the same rate makes straight combining easier to time.

No green weeds. Weeds may stay green longer, and make straight combining much more onerous on the combine. Green material may also end up in the hopper, increasing the storage risk.

Low disease. The crop should be relatively free from blackleg, sclerotinia stem rot, clubroot, alternaria and verticillium, as these diseases can result in premature ripening, which increases shattering losses.

Low frost risk. Canola seed is at significant risk for fall frost damage until seed moisture drops below 20 per cent. This moisture drop will take much longer in a standing crop, and as such, late-maturing crops can be poor candidates for straight cutting.

Pre-harvest spray. If the crop is a good candidate for straight combining but timing could be an issue, growers could try a pre-harvest spray application of glyphosate, saflufenacil or diquat to move harvest along while keeping shatter and pod drop to a minimum.

Other considerations...
Short, severely lodged, or excessively branched canopies may be candidates for straight combining because if swathed there would be small windrows and minimal stubble left to anchor them in high winds. In this situation growers should consider the potential for wind damage to the swath relative to shattering risk if left standing.

TIP#4

STORE YOUR CROP PROPERLY

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AGRONOMY INSIGHTS

Tips and tools from the Canola Council of Canada agronomy team

A BETTER FLEA BEETLE MANAGEMENT PLAN

Flea beetles are one of the most prominent pests for canola, and were particularly harmful this year with the warm and dry spring, which disadvantaged the crop and encouraged flea beetle development. This article looks back at 2021 and provides some management tips for 2022.

Our May 5 Canola Watch quiz included this question: "Flea beetles tend to cause more damage in slow-growing canola crops. John Gavloski, entomologist for Manitoba Agriculture, says canola will have lower risk of flea beetle damage if conditions are conducive to rapid growth. Gavloski says canola will be at lower risk of flea beetle damage if it goes from seeding to the four-leaf stage in _____." The answer is three to four weeks.

Unfortunately, the month following that quiz brought environmental conditions perfect for flea beetle feeding and poor for rapid, uniform canola establishment. Flea beetles are most active in warm, dry conditions, which we had in spades. Meanwhile, crop growth slowed to a crawl with excess heat, depleted soil moisture reserves, frost events and sand-blasting wind. Seed treatments barely stood a chance.

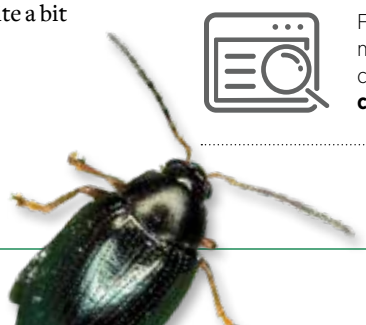
The result was weak-looking canola crops, quite a bit of reseeding and in-crop insecticide spraying.

FRUSTRATED FARMERS

Nicolea Dow farms at Portage la Prairie, Manitoba. "When you seed early, the clock for seed treatment starts ticking and by the time the crop comes up you don't have a lot left, so we try to seed later to get the crop up quick," says Dow. "That didn't help this year. We got a frost after May long weekend, right as plants were coming through the surface. Then we had a week of extreme heat. In that week, canola seedlings had four or five days with no growth while flea beetles kept eating." Dow checked canola fields every other day, sometimes every day, through this stretch, and had to spray some fields three times. "Those spray decisions were made following thresholds and guidelines, not as an overreaction," she says.

Dow says "farmers were beyond frustrated."

For more on flea beetle lifecycle and management, read the "Flea beetle" chapter in the Insects section at **canolaencyclopedia.ca.**



Credit: iStock.com/Tomasz Klejdysz

A BETTER PLAN FOR 2022

There is no perfect solution for hot, dry growing conditions. Crops hate it. Flea beetles love it. Here are some tips that will help growers get their advantage back.

Ask for enhanced seed treatment. Neonicotinoid (or "neonic") seed treatments are the primary insecticide seed treatment available, and in-field trials show they're effective. However, they are less effective on striped flea beetles, which are becoming the dominant species in more areas of the Prairies. Neonic performance is also reduced in dry soil conditions. Neonics require soil moisture (more specifically soil vapour pressure) to translocate from the seed coat to the emerging seedling root and hypocotyl. When canola is planted into dry soil, the seed treatment stays with the seed coat or is adsorbed by surrounding soil particles (especially clay particles) rapidly. Plants must be actively growing to translocate the neonic from the roots to above ground plant biomass . When the plant has slowed or stopped growing due to stress, less neonic is translocated.

In the Canola Council of Canada survey of 1,000 growers in 2020, flea beetles ranked as the number one pest among those surveyed. The survey showed that Manitoba growers are the most likely to spray for flea beetles, with 82 per cent saying they sprayed in-crop for flea beetles in 2019 and/or 2020. Yet only 59 per cent chose seed treatment with enhanced flea beetle protection. Like most flea beetle management steps, enhanced insecticide seed treatments are not perfect, but when used in combination with other management practices, they should make the insect somewhat more manageable.

Leave stubble and surface residue. Stubble provides protection from the wind, and this protection keeps flea beetles feeding on leaves. This is a good thing. Without that stubble protection, flea beetles move out of the wind and start to feed on stems instead. Stem feeding can be much more damaging than leaf feeding. Soils with residue cover also don't get as hot in the sun, and crop residue helps to retain moisture. Both of these factors help the crop advance more quickly, which is good protection from flea beetles.

Use a higher seeding rate. Five plants is the minimum recommended target plant density to maintain high canola yield potential. Targeting eight plants per square foot allows for some plant loss without sacrificing yield potential. It also means fewer flea beetles per plant and more seed treatment per acre. The top end of the recommended range of five to eight plants per square foot is recommended for higher risk scenarios.

Wait for moisture. Rapid plant establishment depends on available soil moisture. If available soil moisture is low, seeding after soil moisture reserves are recharged can help the crop grow from seeding to four-leaf in three to four weeks. It also gives the seed treatment a chance to help. Dane Froese, oilseed specialist with Manitoba Agriculture, says, "a little patience played out very well for some farms in 2021."

Consider growing conditions when assessing economic thresholds. Twenty-five per cent leaf area loss is the action threshold to spray for flea beetles, but this can be tweaked. When flea beetle feeding is combined with poor plant growth during hot, dry weather, this stressed canola will tolerate less flea beetle feeding than canola growing under more ideal conditions. In stress situations, consider spraying sooner than the action threshold.

Improve the efficacy of in-crop insecticide applications. This might be a bigger deal than people realize. Pyrethroids have restrictions for application in higher temperatures. The label for pyrethroid Decis (active ingredient deltamethrin), for example, says: "DO NOT spray under a strong temperature inversion, or when temperature exceeds 25°C as this will result in a reduction in control." Tank mixing with herbicide also reduces efficacy because low-drift herbicide nozzles, which are a good practice for some herbicides, produce a coarse spray droplet that may not provide efficient coverage or flea beetle contact for higher product efficacy. As sprayer specialist Tom Wolf says, "the likelihood of a flea beetle ingesting leaf tissue at the spot where the insecticide hit is low, and gets lower the larger the droplets."

Dow says, "these foliar sprays are not terribly effective," and the factors described in the previous paragraph could explain why. If farmers can improve insecticide efficacy, they won't have to spray as often – which would be good for them, for their farm profitability and for biodiversity.

Froese saw wide discrepancies in flea beetle damage from field to field in Manitoba in 2021, even when those fields faced the same temperature, moisture and wind stresses. "Huge differences in field survivability are not always a direct result of flea beetles, but a combination of factors, like seeding date, soil temperature, seeding depth, seed-placed fertilizer rate, seedbed moisture at time of seeding, previous crop residue cover and seed treatment."

Growers have dozens of clubroot-resistant canola cultivars to choose from. Using the CR trait before the disease becomes a problem is a key step in keeping the disease-causing spores low and local.

USE CLUBROOT-RESISTANT CANOLA EARLY TO KEEP SPORES LOW

BY AUTUMN BARNES

The Canola Council of Canada wants to see clubroot-resistant canola cultivars grown responsibly on all canola acres in Canada. Clubroot-resistance (CR) will be a standard feature on most canola hybrids by 2025, but canola growers should start to use CR and other integrated management strategies for clubroot immediately.

Planting CR cultivars before the disease gets established will help slow spore reproduction. Keeping spore concentration low helps maintain yield and protect CR traits. Growers who wait until the disease has taken hold in a field before choosing CR could be stuck with challenging levels of clubroot for a long time.

Here's why: One clubroot gall can produce millions to billions of resting spores, and that population of spores can contain multiple *Plasmodiophora brassicae* pathotypes. Plasmodiophora brassicae is the pathogen that causes clubroot.

First generation CR cultivars are resistant to the most common pathotypes, but if spore counts are allowed to spike, the field could already have enough of the other pathotypes to cause major clubroot outbreaks – even in CR hybrids.

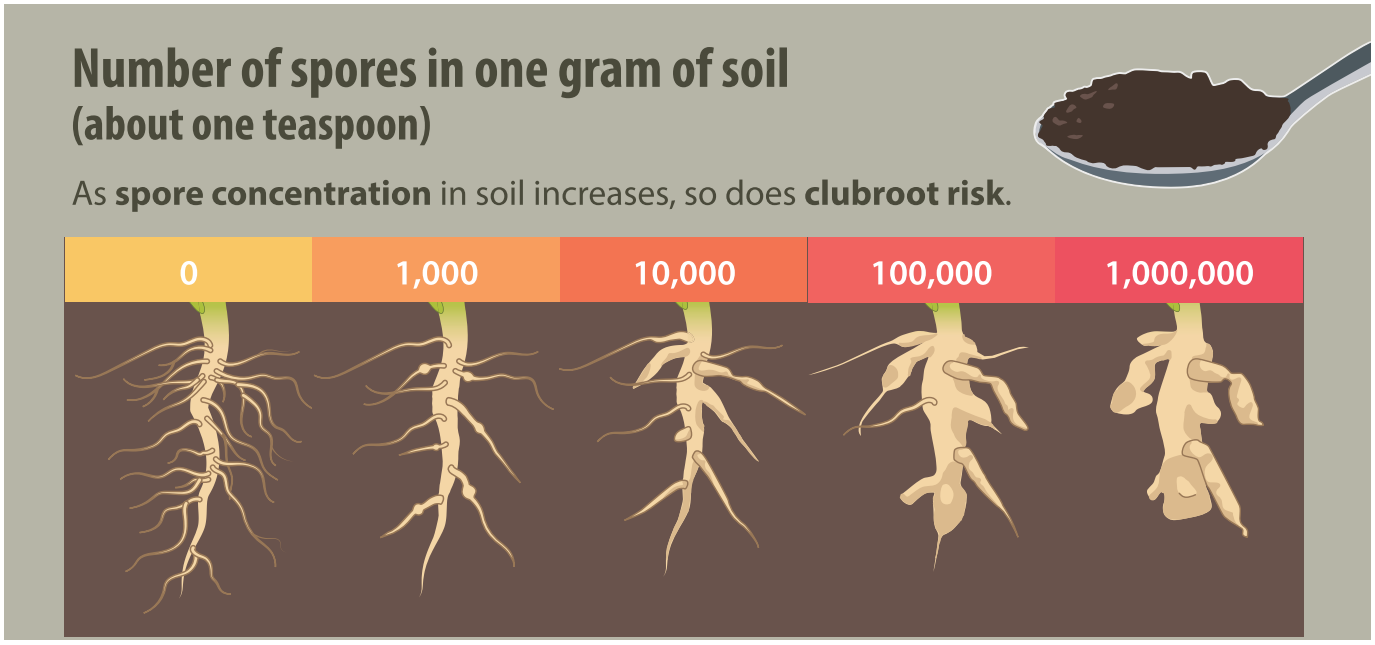
This selection for virulent pathotypes is why CR should be deployed before the spore load reaches a yield-loss level. A minimum two-year break between canola crops (one in three-year rotation) also helps keep spores low and protects the CR trait from natural selection. With a two-year break between clubroot hosts, the viability of resting spores left in soil can decline to levels where the "low" objective remains manageable. (Learn more about integrated management strategies in the clubroot chapter in the Diseases section at canolaencyclopedia.ca.)

For growers in established clubroot areas, getting *P. brassicae* spores low and keeping them local is still a worthy objective. Fields or patches with higher spore concentrations will need a longer break between canola crops to get spores back down to a manageable level. Regular scouting will help identify these areas early, and provide options for more patch or field management practices to reduce soil movement and increase spore degradation.

WHICH CR HYBRID TO CHOOSE?

The list of CR canola cultivars, including those with base ('first-generation') or additional ('second-generation') resistance, is posted in the "Control clubroot" section of the clubroot chapter at canolaencyclopedia.ca. CR traits are available from each seed company, in all growing zones, and in any herbicide tolerance system.

'First-generation' resistance is a good place to start, unless you know there are resistance-breaking pathotypes in that field. 'Second-generation' resistance traits should be used in fields where pathotypes are breaking



first-generation resistance. No CR trait is a stand-alone management practice. All canola cultivars should be grown in addition to other integrated management strategies like crop rotation, scouting and biosecurity.

Canola Performance Trials include CR hybrids, and results are posted in the booklets for 2019 and 2020. Find them at canolaperformancetrials.ca.

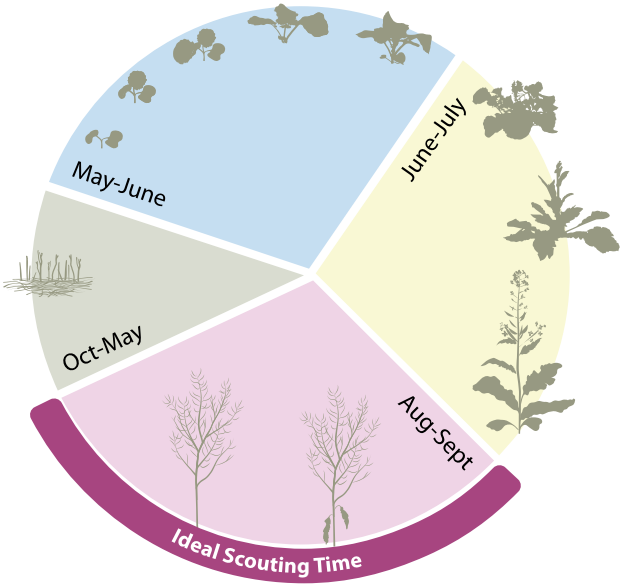
CR ASSOCIATED WITH HIGHER YIELD

Growers still on the fence about CR hybrids may find motivation from results from a recent survey. The Canola Council of Canada surveyed 1,000 canola growers last winter to identify key practices that have an impact on yield. Results show that most measures and practices strongly associated with a higher average canola yields pertain to fertilizer management and integrated pest management.

When asked what pests presented the greatest economic risk to their canola production, growers put flea beetles first and sclerotinia stem rot second, which isn't really a surprise. Clubroot took third spot in north and central Alberta, and fourth spot overall. Statistical analysis of survey results showed that growers who use CR varieties also tend to be those growers with higher canola yields, particularly in the Black and Grey soil zones.

CR hybrids deployed early will help keep a lid on clubroot. And as the survey shows, canola growers who see CR hybrids as an important part of their disease management practices also tend to have higher canola yields.

–Autumn Barnes is an agronomy specialist with the Canola Council of Canada. Email barnesa@canolacouncil.org.



The ideal scouting time for clubroot is just before harvest when galls are largest and severely-damaged plants are prematurely ripening while other plants are still green.

Learn more about integrated management strategies in the clubroot chapter in the Diseases section at **canolaencyclopedia.ca.**

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With a fall canola stem count, canola growers can see if they hit their target stand. They can also enter their results at canolacounts.ca and help the CCC assess the plant stand situation across the Prairies.

WAS YOUR CANOLA STAND GOOD ENOUGH?

BY AUTUMN BARNES

In-season stressors and self-thinning can reduce plant density by 10 to 15 per cent, sometimes more, between emergence and harvest. Growers can use fall plant counts to better understand how canola fared this season, and identify areas for improvement. The constant quest to improve keeps a business moving in the right direction.

We know that the ideal canola population for yield is five to eight plants per square foot spread evenly across the field at a uniform growth stage. This is based on results from numerous hybrid canola research studies done in Western Canada.

HOW DO YOUR FIELDS MEASURE UP?

Canola growers can enter fall counts at CanolaCounts.ca, the online portal for a crowdsourced research project from the CCC and provincial canola grower associations. Growers and agronomists who enter field results will get a report to see how their results compare to average results for the region.

From a macro perspective, the CCC will use this information to see how many fields are meeting the minimum five plants per square foot target stand for yield. If some regions are lower than others, the CCC can look more closely at the factors contributing to those lower numbers and develop agronomy messages specific for that area.

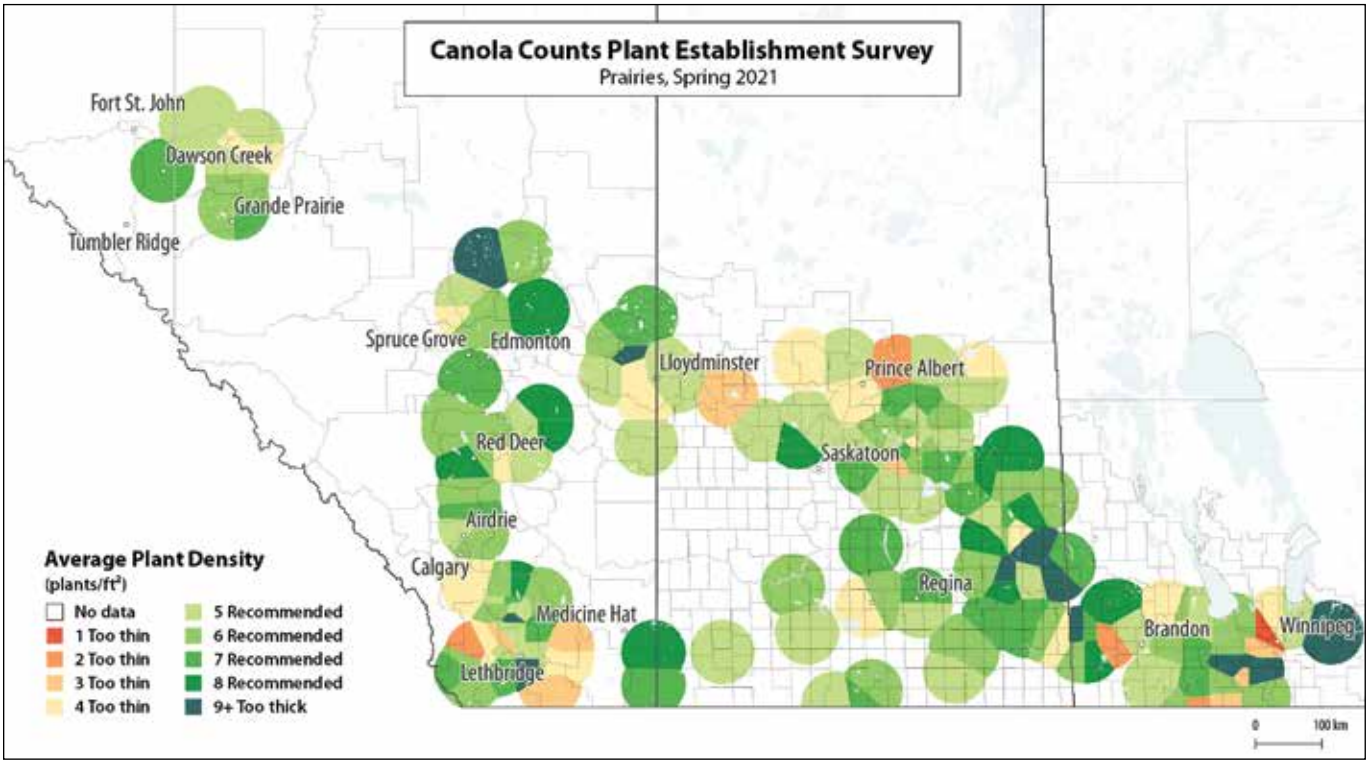
WHAT DID WE LEARN FROM SPRING 2021 COUNTS?

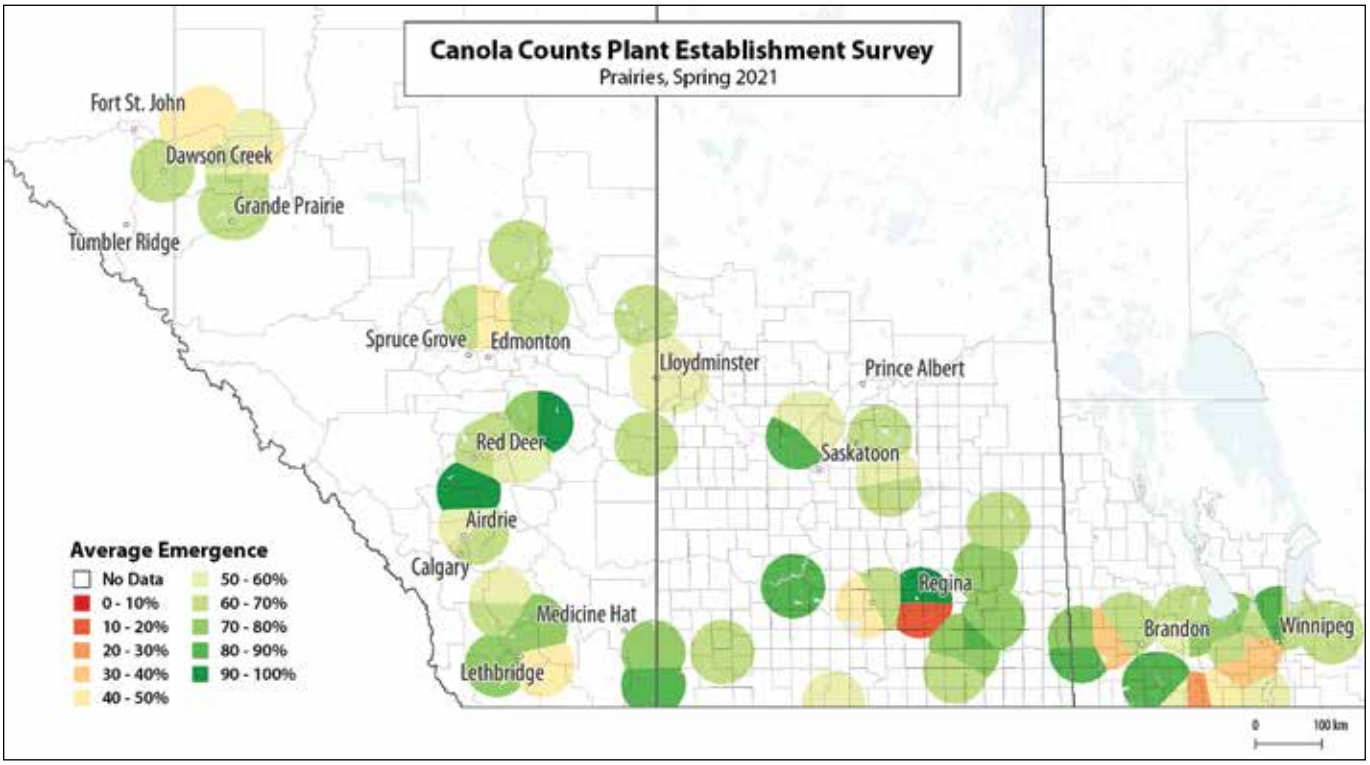
The Canola Counts survey launched in May to gather counts taken after emergence. While some parts of the prairies started the season with decent moisture, other areas saw compounding problems as a result of dry soils in the spring. The emergence map below illustrates the variability in emergence, with numbers ranging from below 20 per cent, up to over 90 per cent. Remember that emergence is the number of plants actively growing, as a percentage of the seeds planted.

Interestingly, while Canola Counts data showed low to average emergence in 2021, most fields submitted were within the recommended five-to-eight-plants range for canola plant density.

HOW TO PARTICIPATE IN CANOLA COUNTS THIS FALL?

Swathed or combined fields are relatively easy to move around in, and the goal is the same as in spring: get a good representative average plant density for each field. With plant count results as well as seed size in grams per 1,000 seeds and seeding rate in pounds per acre, the online tool at canolacounts.ca will quickly calculate emergence. For growers, emergence percentage is helpful for economic assessment, as emergence rates are necessary for calculating return on investment for seed and evaluating stand establishment methods that could improve emergence rates for 2022.





Steps to increase seed survival for 2022

The following list is from the more detailed article "How to increase canola seed survival rates" at canolawatch.org. Growers could review some of these steps over the winter and look at ways to tweak their strategies for next year.

ROTATE CROPS
A tight canola rotation could increase the risk from seed and seedling diseases that can prevent emergence or weaken the young plants.

LIMIT SEED-PLACED FERTILIZER
The safest practice is to place only phosphate fertilizer with the seed at rates up to 20 pounds of phosphate per acre.

PENETRATE RESIDUE
Use openers and drill settings to penetrate residue so all seeds go into the soil. Residue should be spread evenly across the soil surface during or after harvest the fall before seeding canola.

PACK APPROPRIATELY
In wet conditions, reduce packing pressure to limit hard crusting. In dry conditions, pack more to conserve moisture in the seed row and ensure adequate seed-to-soil contact.

SEED SHALLOW
Half an inch to one inch below the packer furrow is the recommended seed depth for canola.

SEED AT A CONSISTENT DEPTH
For some drills, the overall average may be one inch, but the range could be zero to two inches. The result can be highly variable emergence dates and an uneven field.

SEED SLOWER
At higher speeds, rear openers tend to throw more soil over the front rows and the whole seeding tool is less likely to cut and pack smooth, even seed rows.

SEED INTO WARMER SOILS
Soil temperatures of 5°C or higher with warmer weather in the forecast should facilitate reasonably good rates of emergence.

—Autumn Barnes is an agronomy specialist with the Canola Council of Canada. Email barnesa@canolacouncil.org for more information on Canola Counts.

Find the full article "How to increase canola seed survival rates" at **canolawatch.org**

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Best return on investment

Canola Digest asks its farmer panelists for 2021-22 to describe the best return-on-investment purchase that they made recently, and to describe what motivated them to make the purchase.

BY JAY WHETTER

NICOLEA DOW
PORTAGE LA PRAIRIE, MANITOBA

Nicolea Dow recently bought a used Bourgault 3310 seeding tool with independently-mounted paralink openers. "The decision came from a piece of wisdom that an older farmer told my dad," she says. "That is, you only have one opportunity to seed a crop right, so make sure to do it as best as you can."

Whenever Dow invests in something for the farm, top of mind is, how does this make me more money? "I'd rather pull a $150,000 air seeder with a $20,000 tractor than the other way around," she says. "I know those are low numbers, but you get the idea."

Dow originally thought that a disc drill might be better for their lighter land. Her thinking changed after being on a panel at the Manitoba Agronomists Conference with Jeff Strukov from Bourgault. She asked Strukov, "If you farmed where I did, what would you use?" He recommended the paralink option. So, at Ag Days in Brandon in 2020, Dow and her dad went through every drill and made a final decision.

Nicolea Dow recently purchased a used Bourgault 3310 seeding tool. "The decision came from a piece of wisdom that an older farmer told my dad. That is, you only have one opportunity to seed a crop right, so make sure to do it as best as you can."

–Nicolea Dow

Dow says the new drill gives them a more uniform plant stand for canola and cereals. "This uniform start means we get more value from all the other applications in the field, like fungicides," she says.

With mid-row banders, the drill also puts down all fertilizer in one pass without placing high rates near the seed row.

"The three sustainability factors – profit, people and planet – are top of mind for me," she says. "On the people front, mid-row banders help with workload because we can now do all fertilizer application in one pass at spring time. Environmentally, spring banding can reduce losses compared to fall applications and broadcast application. We put NH_3 through the mid-row banders, which means we can go a longer distance on one tank fill and reduce nitrogen costs. Mid-row placement also has plant safety benefits. All of these improve profits."

BRETT JANS
NEW NORWAY, ALBERTA

Brett Jans's father bought a used Vertec 250 bu./hr. dryer back in the 1990s. He set it up with 1,500-bushel bins at each end, one for wet grain and one for dry, and it provided the farm with a "reliable" system for over 20 years, Jans says. Then their area went into a wet harvest cycle starting around 2014 and the old dryer became a bottleneck.

"We were putting the majority of our grain through the dryer," Jans says. With low capacity and small wet and dry bins, they were constantly moving grain around.

"It was like a make-work project," Jans says. "The breaking point was 2018 when we had 32,000 bushels of wheat at 22 per cent moisture. It was terrifying to think of how much grain we had to dry and the spoilage risks."

In 2019, they bought a Neco dryer with capacity to dry 500 to 1,000 bu./hr. and set it up with two 4,000-bushel wet bins and 11 4,000-bushel bins for dry grain storage. Grain moved from the wet bins to the dryer with a high flight conveyor and from the dryer to the dry bins on a pneumatic system that was fully automated. Western General installed the system. Natural gas fuels the dryer and Jans rents a diesel generator for two months a year to provide the required three-phase power.

Now, on a typical harvest day, they fill the wet bins plus the trucks and carts. The dryer runs all night to work through the wet bins, then first thing in the morning Jans refills the wet bins with grain from the trucks and carts. "I'm usually caught up by the time combining starts again."

Almost all malt barley and wheat goes through the dryer, which allows them to start harvest earlier in the season and extends the harvest day. They didn't have to dry any canola in 2020, but if it's October and canola isn't combined, Jans says they will combine canola at 15 per cent moisture.

"I still don't know if the dryer is a good investment," Jans says. "Other farmers pay the elevator to dry their grain, so they don't have to go to the expense of an on-farm system."

Jans says the dryer makes him "a bit of a maniac" at harvest because he'll take some grain off "at ridiculously high moisture levels" that he might not have to deal with if he just waited a week.

He also has to "babysit" the dryer. "I haven't had any fires, but I have had 'smoke shows' that require some quick action," he says.

But the dryer can spread out harvest which, as others have said, is like having another combine. It can save grades for malt barley and wheat. And it means Jans has been able to avoid the cycle of spring harvests that lead to late seeding and then late harvests again and again.

Brett Jans upgraded the farm's grain drying system in 2019 because the old one couldn't keep up. "The breaking point was 2018 when we had 32,000 bushels of wheat at 22 per cent moisture. It was terrifying to think of how much grain we had to dry and the spoilage risks."

-Brett Jans

Roland Crowe says one of best returns he had was from a Case Credit line of credit, which allowed him to buy the basic machinery he needed to farm. "I couldn't afford downtime, so if I had a breakdown the local dealership would provide a replacement while I waited for repairs. It was a good dealership. They were extremely understanding of me."

–Roland Crowe

ROLAND CROWE
PIAPOT FIRST NATION, SASKATCHEWAN

Roland Crowe was chief at Piapot First Nation for a decade and was provincial chief for another decade or so. Piapot First Nation is about 50km northeast of Regina in the fertile land of the Qu'Appelle River Valley. The First Nation ran a productive farm in its early days, running a herd of 1,000 cattle and selling thousands of tonnes of grain to customers in Regina. Despite government policies that eventually restricted First Nations' ability to sell their production off-reserve, Crowe has been a farmer most of his life. "I was a young farmer who got extremely lucky in politics," he says.

Crowe farmed for a number of years near Avonlea on a large block of land the First Nation received in the 1980s to make good on unfulfilled treaty land entitlements. Most of that land is now rented out. "We're in a partnership with renters to grow canola and other crops on that land," he says. At age 78, Crowe still farms a half section of land on the Piapot primary reserve in the Qu'Appelle Valley.

A big challenge for First Nations farmers is that they don't own the land individually, and reserve land can't be used as collateral for a loan. This limits access to start-up and operating capital. Crowe says one of the best returns he had was from a Case Credit line of credit, which allowed him to buy the basic machinery he needed to farm.

Credit: iStock.com/PeopleImages

"I couldn't afford downtime, so if I had a breakdown the local dealership would provide a replacement while I waited for repairs," he says. "It was a good dealership. They were extremely understanding of me," he says. He also had a line of credit for fuel from Co-op. For all other necessary crop inputs like seed, fertilizer and herbicide, he paid for with money he made from the farm the year before.

To see a greater benefit from the land, Crowe would like to see policies and programs that would make it easier for more First Nations people to farm their own land.

LYNDON NAKAMURA
TABER, ALBERTA

Lyndon Nakamura runs the canola business for Nakamura Farms, which grows potatoes, sweet corn, spring wheat, sunflowers, peas and hybrid seed canola under irrigation. The operation has 12 full time staff, including an agronomist and bookkeeper, and another 50 or so temporary staff during potato harvest. Nakamura says the best investment they made recently was to build a large office hub on the farm to centralize everything.

"The building has a boardroom, a lab to check potato samples and do grain grading, office spaces, locker space for staff and a proper lunch room," Nakamura says.

They had been renting office space in town, but "it was hard to keep everything coordinated," Nakamura says. Now everything is centralized in a 2,500 square foot building.

"This gives us a place to meet and get together as a team," Nakamura says. "It may be hard to give it a dollar value, but it will improve our overall farm efficiency and people will be more team motivated. It will provide long-term gains for the farm."

Internet is a little slower than it was in town, but it can still run Zoom meetings, Nakamura says. They have discussed running fibre optic from town out to the new farm office.

CODIE NAGY
OGEMA, SASKATCHEWAN

Codie Nagy has four weather stations across his farm and says "the dollar value they bring for a relatively small investment is substantial."

The stations measure temperature, rainfall, relative humidity, wind, and soil moisture. The latter is a key feature for Nagy. The probe goes 100cm into the soil, providing moisture measurements at 10cm increments through the soil profile. The station computer uses this information to estimate the crop's water-driven yield potential (WDYP).

Weather stations go in after seeding, so Nagy seeded 30 acres really early this year so he could place the probe and use the results to make final decisions on fertilizer rates across the farm.

"Snowfall had been low, so we were going into spring not sure what we were up against," he says. "The probe said the field had potential for above average yield if it received average rainfall. So we didn't cut fertilizer rates."

Then, after a good rain during May long weekend, the probes increased the WDYP so Nagy decided to add more fertilizer as a top dress, using the sprayer with stream bar nozzles. "The original yield target for canola was 50 bu./ac. With the rain, we increased the target by seven to 10 bu./ac. and added about 30 per cent more nitrogen."

The farm's average canola yield is 42-43 bu./ac., but certain fields have the ability to yield over 60 bu./ac. with good moisture conditions, Nagy says.

All of Nagy's probes are from South Country Equipment, with probe information available through the Crop Intelligence app. A new feature is a leaf wetness sensor, which Nagy can use to make decisions on fungicide applications for sclerotinia stem rot in canola and fusarium head blight in wheat.

Nakamura Farms' best purchase lately was a new office complex. "It may be hard to give it a dollar value, but it will improve our overall farm efficiency and people will be more team motivated. It will provide long-term gains for the farm."

–Lyndon Nakamura

Codie Nagy has four weather stations across his farm and says "the dollar value they bring for a relatively small investment is substantial."

–Cody Nagy

Maple Grove Colony bought and rebuilt a 30-foot Case IH Concord disc drill last winter. (See the image.) "It is one of the best purchases we've made lately."

–Leonard Waldner

LEONARD WALDNER
LAUDER, MANITOBA

The farm bought and rebuilt a used Case IH Concord 30-foot disc drill over the winter. "It is one of the best purchases we've made lately," says Leonard Waldner, farm manager at Maple Grove Colony.

They seeded about half of their canola with their rebuilt disc drill this year, which has 7.5-inch row spacing. Waldner says the small drill works nicely in the corners around each

irrigation pivot. They also used it rejuvenate 640 acres of long-term alfalfa stands, with the discs cutting nicely into standing crop. "The fields are so sandy, we actually reseed alfalfa when it's raining to improve seed placement and get it off to a good start," Waldner says.

The 30-foot disc drill is their second seeding tool. Their primary tool is a 60-foot Great Plains planter with a central tank system and 15-inch spacing. The planter puts in about 1,000 acres of corn each year as well as soybeans. This year, they used it for the other half of the canola. All crops are direct seeded.

"You have to watch that you don't have too much air, but the planter can seed canola at 2.5 lb./ac.," Waldner says. It also improves seed spacing down each row. "Even if you have one inch between each seed, the plants don't have to fight each other, and six to 10 inches is even better," he says. "The plants have a big stem and don't blow over."

With dry conditions so far in 2021 (this interview was done in late June), their canola has struggled to achieve ground cover, Waldner says.

—Jay Whetter is the editor of Canola Watch.

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The Advance Payments Program is a federal loan program administered by the Alberta Wheat Commission. It offers Canadian farmers marketing flexibility through interest-free and low interest cash advances.

Maximize water and nutrient use efficiency

Findings from two meta-analyses could influence preparations this fall for 2022, specifically to do with stubble height, nitrogen choices and fertilizer application timing.

BY TARYN DICKSON

Michele Konschuh and Dilumi Liyanage, researchers at the University of Lethbridge, recently completed a meta-analysis of investigating factors affecting nutrient and water use efficiencies in spring canola in North America. Their report, which is based on 730 comparisons from 24 peer-reviewed publications, recognized the interesting balance between optimum nitrogen use efficiency (NUE) and nitrogen rate. While relative yields increase with increasing nitrogen rates, the rate of yield increase diminishes. That means NUE tends to be lower for each additional pound of nitrogen.

Other findings from this research to consider, which may affect post-harvest fertility considerations, include:

- When soil moisture is not available, reducing N applied can improve NUE. Split applications can also improve NUE. Spring-banded controlled-release urea or split urea applications allow producers to respond to environmental conditions during the growing season. That is, if soil moisture is available during flowering, additional N may improve yield. Note that in-crop N applications should be done before the crop needs it.
- Spring-applied urea and controlled-release urea resulted in greater NUE than fall-applied nitrogen.
- Several improvements in water use efficiency (WUE) were specific to irrigated production. In the absence of irrigation, leaving taller stubble and adjusting the timing of stubble management practices were effective strategies at improving water use efficiency. More specifically, tall stubble (30 to 45cm) reduced wind speed, soil drying and evapotranspiration, effectively increasing WUE. If stubble needed to be incorporated, spring stubble incorporation (along with nitrogen fertilizer) provided better WUE and seed yield than fall incorporation.
- Canola needs sulphur to support seed production (and resulting yield), oil content and optimum growth. Sulphate forms of sulphur fertilizer applied in the spring with adequate nitrogen and moisture improved sulphur rate efficiency. Elemental sulphur can also be effective, but since it must oxidize before the crop can take it up, it may not be available the year it is applied. Elemental sulphur should be well dispersed in fine particles to increase contact with soil microorganism, which will improve the oxidation process.

The full summary and final report of this project, titled "Main factors affecting nutrient and water use efficiencies in spring canola in North America: A review of literature and meta-analysis", is on the Canola Research Hub at canolaresearch.ca. The Hub also has other fertility research and the Hub blog, which featured more findings from this project.

PHOSPHORUS

The Hub also links to Cynthia Grant and Don Flaten's 4R Management of Phosphorus Fertilizer in the Northern Great Plains: A Review of the Scientific Literature report, which provides a concise, but comprehensive evaluation of phosphorous management. The related peer-reviewed article, published in the Journal of Environmental Quality, September 2019, shares that principles, technologies and management practices must be integrated with 4R practices to optimize crop yield and agronomic efficiency while minimizing negative environmental impact and conserving phosphorus resources.

Grant and Flaten suggest that, in Western Canada, "placing ammonium phosphate fertilizer in a band, in or near the seed-row at the time of seeding and at a rate that matches phosphorus removal by the crop generally provides the greatest phosphorus efficiency, long-term sustainability, and environmental protection for small grain, oilseed, and pulse crop production".

—Taryn Dickson is resource manager for Crop Production and Innovation with the Canola Council of Canada

Tall stubble (30 to 45cm) reduced wind speed, soil drying and evapotranspiration, effectively increasing water use efficiency (WUE). If stubble needed to be incorporated, spring stubble incorporation provided better WUE and seed yield than fall incorporation.

Photo Credit: istock.com/Hemerocallis

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*Internal John Deere test of X9 1100 Combine, based on field conditions.
**PAMI independent comparison between X9 1100 and Claas 8800 Combines.
†Internal John Deere test comparing X9 1100 and S790 Combines, based on field conditions, per unit harvested.

SaskCanola, Alberta Canola and Manitoba Canola Growers are farmer-run organizations, so they need passionate farmers to run for board elections. Are you ready to put your name forward? This article describes the requirements and rewards of joining a board.

BE THE LEADER YOU WANT TO BE

BY JAY WHETTER

Canola is the biggest crop in Canada and contributes about $30 billion per year to Canada's economy. Joining a provincial canola association board gives you a significant role in Canada's economy.

The farmer-run boards of SaskCanola, Alberta Canola and Manitoba Canola Growers invest levy dollars into research, extension, public affairs, advocacy and canola promotion to support the long-term sustainability of canola farmers. Healthy farms are the foundation of a strong canola industry.

SaskCanola and Manitoba Canola Growers have eight directors. Alberta Canola has 12. These 28 directors represent all canola growers on provincial, national and sometimes international stages. And with term limits for directors, canola organizations depend on a few new farmers coming forward every year. Will that be you in 2021?

This article might inspire you to take a leadership role in Canadian canola.

WHY ARE THESE ORGANIZATIONS IMPORTANT FOR FARMERS?

SaskCanola, Alberta Canola and Manitoba Canola Growers are very active in farm policy. They fund, direct, develop and distribute practical, science-based research that meets the needs of farmers, and use their network of research collaborations to increase the value for every research dollar. They use various extension programs, including Canola Digest, to share research results and provide farmer members with valuable opportunities to learn and grow.

Market development initiatives build demand for canola. Provincial canola organizations work together to develop and deliver a national and provincial marketing strategy.

SaskCanola, Alberta Canola and Manitoba Canola Growers recognize that the success of the canola industry hinges on strong leadership and advocacy for canola from the time it is planted in the field to when it is consumed in the kitchen and all steps in between.

They represent a unified voice for canola farmers in each province, and represent a national voice through Canadian Canola Growers Association and the Canola Council of Canada.

WHY DO THEY NEED GOOD BOARD MEMBERS?

Directors play a primary role in making decisions that will affect the future of canola and the agriculture industry in each province. This farmer voice influences decisions and policies to support a progressive, profitable, and forward-thinking canola industry. Farmers drive honest conversations and inspire others to be creative and innovative.

WHAT DO THEY LOOK FOR IN A BOARDMEMBER?

A willingness to learn, to grow and to lead are essential. Other beneficial skills include an open mind, strategic and critical thinking, and knowledge of the canola industry. Some experience in finance, research, agronomy, policy development, public relations or governance would be helpful as many of the board duties fall under those categories.

Director candidates must also be able to commit some time to the organization and have the ability to zoom out to a regional, provincial, and industry-wide perspective to represent all growers.

The organizations want a diverse board. You are never too old, too young or too small to run.

WHAT DO BOARD MEMBERS DO?

Directors will attend three to five board meetings per year, as well as committee and industry meetings as required. They should stay informed about board matters, prepare for meetings, and review and comment on minutes and reports. That includes the annual budget and regular finances. They commit to actively participate in board and committee work.

That commitment includes an effort to get to know other board members and build a collegial working relationship that contributes to consensus. Directors work with other directors and staff to continuously monitor, access, and revise strategic direction of organization. Directors volunteer for and willingly accept assignments and complete them thoroughly and on time.

Board members provide the farmer perspective at provincial and national levels. They build an extensive network across the industry, and enhance the public image of the organization.

HOW MUCH TIME DOES IT REQUIRE?

Directors should be able to commit at least 10 days a year to the organization. They will find many other opportunities to represent farmers, so the time invested could be 15 or 20 days for more active directors.

COMMENTS FROM A PAST DIRECTOR – JOHN GUELLY

WESTLOCK, ALBERTA – PAST DIRECTOR AND CHAIR OF ALBERTA CANOLA

WHY DID YOU GET INVOLVED?
I was familiar with Alberta Canola. I knew the previous directors, and when our regional director was terming out on the board, it seemed like the right time and place to get involved. It was at a point in my life when I had some time available.

I was on the board for six years, two three-year terms, which is the maximum in Alberta. It went by quickly. To say I don't miss it now would be a lie.

I learned new perspectives on how to manage the farm – from agronomy to human resources to business. I know I'm a way better farmer and person for being involved.

For example, I was on the Western Canada Canola/Rapeseed Recommending Committee (WCC/RRC) to approve new canola varieties. You can take in a lot of info from expert researchers in the room. I also sat in on every clubroot meeting you can imagine. I had been on a two-year rotation for 12 to 14 years because it was simple when I worked off farm. After learning more about clubroot, I now have a longer rotation, do way more scouting and use resistant seed. If I have a hot field, I do that field last so I can give equipment a more severe clean.

WHAT WAS THE BEST THING ABOUT BEING A DIRECTOR?
The one thing I enjoyed most was being on the research committees. I was among the experts and would suck in everything they were saying and see how it equated to my farm. If you were having a problem, say, with sclerotinia stem rot, you could tap into those experts and get first-hand information.

WHAT WAS THE BIGGEST CHALLENGE?
It can be a challenge trying to represent all farmers in your region and your province. You try to keep your own biases in check when making decisions. It is small-mind versus big-world thinking.

HOW WOULD YOU MOTIVATE OTHER FARMERS TO GET INVOLVED?
When you ask people to run, the common answer is, "I'd love to do it, but I don't have time." The board is understanding. It knows it is family and farm first, and you only have to put in as much time as you want to. If you see someone putting in a lot of time, it's probably because they have that time. If you want just do board meetings, that's all you have to do. Don't feel overwhelmed by the time commitment. I can't say enough about the benefits of having been on the board.

Election cycles

Alberta Canola will elect four directors this fall. For details on regions and nomination deadlines, read Alberta Bulletin in this issue or go to albertacanola.com

Manitoba Canola Growers has four positions up for election this year. Nomination forms are due November 30 at 4:00 pm. See more in the Manitoba Bulletin in this issue or go to canolagrowers.com

SaskCanola elects four new directors every second year. The next SaskCanola election is in 2022. For information, go to saskcanola.com.

BE THE LEADER YOU WANT TO BE

Being on a provincial canola board gives you a real chance to have significant impact on Canada's canola industry and Canada's economy in general.

Yes, it requires a large chunk of time, but directors get as much as they give. When directors leave the board, they almost always feel like they got more out of it than they put in.

That's because directors work side by side with other leading farmers and deep thinkers from across the Prairies. Directors often talk together about farming practices, economics and research. Through board work and events, directors expand their networks to include agri-business leaders, researchers and extension staff.

They get first-hand experience on the challenges and opportunities in Canadian agriculture, the latest research, financial management, and how to influence government policy.

Everyone else has to pay big money to learn those business skills. You can learn them by jumping in and getting active on a canola board.

You are a leader. This is your opportunity to lead.

COMMENTS FROM A NEW DIRECTOR

NICOLEA DOW

PORTAGE LA PRAIRIE, MANITOBA – DIRECTOR WITH MANITOBA CANOLA GROWERS

WHY DID YOU GET INVOLVED?

Manitoba Canola Growers had one open board position after its AGM in 2020, so it put out a call. I responded. I'm a young farmer and did not attend the AGMs, so I wasn't sure I was connected enough to put my name forward for election. But I felt like I had a lot to contribute. When I left a job at a life science company and went back to farming full time five years ago, I missed being involved at the industry level. I took advantage of this opening to join the Manitoba Canola Growers board.

WHAT IS THE BEST THING ABOUT BEING A DIRECTOR?

This has been a weird time to get involved because we haven't had an in-person meeting since I joined the board. Even so, it has been a busy year for the commodity groups, with discussions on the Code of Practice and federal bills on carbon and biofuels, for example. I also represent MCGA on the Canola Performance Trials committee and Western Canada Canola/Rapeseed Recommending Committee (WCC/RRC).

I saw this an opportunity to get involved and see meaningful change. MCGA has good people who are a pleasure to work with. The staff provide lots of support for me in my committee work, and this has been very rewarding.

A specific example was an exciting board meeting on canola harvest. We talked about issues with pod drop, and how it would be useful for growers to have some standard for pod shatter. So MCGA made a formal motion to WCCRRC to tackle the issue. Now I'm chairing a subcommittee to work on a standard for pod shatter. It has been rewarding to see quick results.

WHAT WAS THE BIGGEST CHALLENGE?

Being on a board takes a lot of time, especially if you want to go further and have broader influence – say with CCGA or CCC. You also have to enjoy meetings. I love them, but not all farmers do. I farm with my dad and brother, and they're really good at being flexible and allowing me the time to be involved.

HOW WOULD YOU MOTIVATE OTHER FARMERS TO GET INVOLVED?

I think it's important that commodity boards have young farmers involved. I see a lot of young farmers getting active through social media, but I don't see a lot of them on boards.

We have a lot of pride in our own farms. By joining a board, we take those same values and put them on a broader scale – with a goal to give the whole farm industry a better tomorrow.

My goal is to leave the canola industry in a better place. Moving the industry forward is a huge motivator for me.

Canola advocacy: Neonics example

Canola industry leadership does not happen without input from farmer directors on the provincial boards and without levy support from all farmers. If farmers don't support this work, who will?

In March, Canada's Pest Management Regulatory Agency (PMRA) released its final special review decision on clothianidin and thiamethoxam, two neonicotinoid seed treatments that protect emerging canola crops from flea beetles. The PMRA decision found that current use of these products by canola farmers does not pose an unacceptable risk to aquatic invertebrates and that the product use be maintained for seed treatment on canola.

National canola organizations, the Canadian Canola Growers Association (CCGA) and the Canola Council of Canada (CCC), were engaged with PMRA on the review process, and used scientific data to support current use. Curtis Rempel, CCC vice president of crop production and innovation, provided leadership.

"We're pleased that PMRA allowed time to consider all the relevant data to arrive at a decision based on the best science available," Rempel says. "Our competitiveness as an agriculture sector relies on a regulatory system built on rigorous scientific analysis and evidence-based decision making."

Without farmer support for the research and leadership needed to have science-based engagement on policy, farmers are not at the table. Financial support and policy input from farmer-run organizations like SaskCanola, Alberta Canola and Manitoba Canola Growers pays the salaries and provides the motivation for people like Curtis Rempel who work so hard for the success of Canada's canola industry.

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Do you need more help on the farm? Before hiring anyone, accurately describe the help needed and make sure the job posting is clear on expectations. Get familiar with the required paperwork, and study a few tips on employee satisfaction and retention.

Credit: iStock.com/shotbydave

You're hired?

How to employ, retain farm employees

BY JESSIKA GUSE

Within the next four years, the Canadian agriculture sector will see a deficit of more than 114,000 workers. If that isn't a wake up call for worker retention, I don't know what is.

This projection from the Canadian Agricultural Human Resource Council (CAHRC) is based on data from 2014. However, with the amount of job advertisements up at the present moment, the findings are holding true.

The loss in workers can be attributed to a number of things, including old age along with international workers changing jobs or going back home. The bottom line is increased competition for labour. For farms looking to add another employee, the following article should give insight on how to go about it, along with tips on why a structured human resource (HR) plan helps in the long run.

CAHRC's acting executive director and director of operations, programs and partnerships Jennifer Wright says it's important to have a plan in the first place. Plan ahead in the off-season and look at your needs for the following season.

"It will help you hire appropriately for the season," Wright says. "Planning can also have a positive impact on recruitment and retention of employees."

Through planning, a farm manager can identify where they might have shortfalls in the amount of available work compared to when they could use extra hands during busy seasons. Whether hiring a year-round full-time worker, part-time worker or a casual worker, Wright says any job posting must be clear with their work expectations.

"It is important in any scenario to be clear in the recruitment process about the intent. If you are hiring to pick berries over a three week period then be clear about that in the job ad. If you intend to hire for a role that may be full-time April to October (for example) and then part-time over the quieter winter months, be clear about that in the job ad."

Once you've settled on where your needs are, the next step is getting the word out. This can be internally with your current employees, perhaps offering a referral bonus, or you may need to advertise. To this, Wright says to create compelling and clear advertisements that include information such as:

- Job title;
- Info about your farm operation;
- Description of the job;
- Wages and hours;
- Required skills and/or certifications;
- Preferred years of experience;
- Process and deadline of application; and,
- Contact information.

Plan ahead in the off-season and look at your needs for the following season. "Planning can also have a positive impact on recruitment and retention of employees."

–Jennifer Wright

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After you get a few bites on the ad, start to review applicants based on what you listed as specific job requirements. Once you've picked a few that stand out, have a set of standardized questions for each candidate to answer. These questions can range from behaviour in the workplace to specifics about the role they'll be filling. Keep the questions consistent for each candidate. This creates a simplified process for both you as the employer and for the person applying as there really is no "guessing game" in the process.

Based on the resume, interview and reference checks, you should be able to make your decision on who would be the best fit. Offer of employment should include key information such as pay, benefits, hours, working conditions (meals provided vs. lunch only provided, work boots supplied or not, etc.) and should be presented both verbally and in writing.

"Taking time to develop a strong hiring process is the first step to having strong, effective and efficient recruitment and retention practices."

PAPERWORK: THE FARMERS ARCHENEMY

An employer must follow the proper rules and regulations when it comes to each individual they hire. Numerous resources are readily available, such as CAHRC's toolkit at hrtoolkit.cahrc-ccrha.ca.

Wright says the toolkit includes everything needed to understand legal requirements, recruitment processes, an Employee Policy Handbook, and templates for interviews, job ads, and letters of offer. Any members of CAHRC's partnerships have free access to the resources. They are also available for a small fee for anyone that is not a member of their partner organizations.

When it comes to filing proper tax information, the key thing to remember is that there are both provincial and federal guidelines surrounding taxes. The Canadian Revenue Agency has a simple payroll deduction calculator at canada.ca/revenue-agency that's available for anyone to use along with an Employer's Guide to payroll deductions and remittances. Download the guide to learn all the ins and outs when it comes to payroll. As the saying goes – time is money, and money is time – and should a producer have it in the budget, companies will provide payroll and tax services for a fee for small to large farm operations.

Similarly, employment work safe standards need to be met both provincially and federally. The laws are in place to prevent any sort of discrimination along with providing recourse should anyone be affected by it. As outlined by the Canadian Human Rights Act, there's a legal obligation for employers to maintain a non-discriminatory workplace along with the duty to accommodate process for managers. Search for "Duty to Accommodate: A General Process for Managers" at canada.ca. Other legislation items include topics surrounding hiring, benefits, recruitment ads, workplace harassment, and much more.

In the midst of a global pandemic, Covid-19 safety protocols would have to also be followed, to which the Canadian Agricultural Safety Association (CASA) has you covered. At www.casa-acsa.ca, CASA outlines what each individual province has when it comes to Covid-19 and farm safety protocols along with a free download for a resource list.

WHAT MAKES AN EMPLOYEE WANT TO WORK FOR YOU?

Though the definition of a "good employer" is objective, an employer has a few things that can help with worker retention.

According to Kristine Ranger, an agricultural business consultant, to retain employees an employer must understand the purpose or aim of his or her HR system. This, along with having supportive mechanisms or practices in place for onboarding, giving and receiving feedback, coaching and corrective action, may help the employee stick around for more than just a season.

"An employer can offer psychological safety. This is when an employee feels that it's safe to take interpersonal risks, such as disagreeing with an idea or a person," Ranger explained, highlighting that while on the farm, the ideal behaviour is mutual respect, vulnerability-based trust, and true teamwork.

"A high-performing team, and a competent team leader, must understand that conflict is inevitable and actually required in groups or teams to achieve peak performance," Ranger says.

Ranger adds that managing conflict is an advanced skill set that can be used to get team members to buy into a procedure or practice, especially when new. A bad HR system beats a good person every time, she says.

"In other words, recognizing that it's not always the fault of the employee will earn the employer a more positive reputation in the community, which leads to more job candidates," she says.

Last but not least, Ranger says the employer must understand that it is a core responsibility of the leadership team – both the owners and managers – to improve its HR system. By having your system in place ahead of time, and a cohesive team at the top, leaders will be clear and consistent in all communications. This can reduce misunderstandings, mistakes and micromanaging.

"By identifying and implementing HR practices that support (the farm operations) mission, vision and values, (producers) will also begin to attract and retain the right people," Ranger says.

—Jessika Guse is a freelance agriculture journalist based in Calgary, Alberta.

"Recognizing that it's not always the fault of the employee will earn the employer a more positive reputation in the community, which leads to more job candidates."

–Kristine Ranger

Find further human resources info at ***hrtoolkit.cahrc-ccrha.ca***.

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Hey dietitian, what are clients asking about oil?

Registered dietitians are well-educated health professionals who deal first hand with consumers and their questions about food. What are they hearing about canola oil?

Credit: iStock.com/Veni vidi...shoot

BY JAY WHETTER

People who buy food for health benefits expect to pay a premium for that food. "For them, more expensive means healthier," says Rowena Leung, a registered dietitian on staff at two Loblaws supermarkets in the Toronto area.

For that reason, Leung's conversations with clients about canola oil often come back to the price. A common question, she says, is how can something you say is good for me be so low priced compared to other oils?

Leung tells her clients that the low cost is partly because canola is produced here in Canada. She assures them that canola offers the lowest saturated fat of any oil, as well as high levels of monounsaturated fat and an optimal omega 3 to omega 6 fatty acid ratio. It is a healthy staple for anyone looking to improve their diets.

Most of Leung's clients are people looking for diet advice to manage heart disease, cholesterol, diabetes or weight. Some are health-conscious consumers looking for everyday advice. The Loblaws network of corporate stores, which include Zehrs, Superstore, Provigo and City Markets, are hiring staff dietitians all across the country, bridging the gap between pharmacy and food. The Loblaws program also offers webinars, school group visits and a chat service through the PC Health app.

Canola Eat Well, a partnership of Manitoba Canola Growers, SaskCanola and Alberta Canola, has built a strong connection with Leung over the years. Leung has connected with Canola Eat Well at Diabetes Canada events and Restaurants Canada events, to give two examples. Through these connections, Leung has a strong knowledge of canola, how it's grown and what it can mean for health. She can recommend canola oil knowing it has the support of scientific research showing positive effects for several chronic health problems, including heart disease and diabetes.

Leung says registered dietitians are part of a professional organization called the College of Dietitians, and they have to comply with professional standards, just like a doctor or a lawyer. "Our work is based on science-based recommendations," she says.

To become a registered dietitian, a person takes a four-year degree from a university program accredited by Dietitians of Canada. After graduating, prospective dietitians then compete for internships at teaching hospitals or go for a Masters degree. Leung got her four-year degree at Western University in London, Ontario, and took her internship at St. Michael's Hospital in Toronto.

She says it can be frustrating, given the professional designation and the training required to be a registered dietitian, that basically anyone can call themselves a "nutritionist" and try to influence people on healthy eating. "Some nutritionists have so many misconceptions about food and health," Leung says.

WHICH OIL IS HEALTHIEST?

Erin MacGregor is a registered dietitian, professional home economist, and was the co-creator of How to Eat, a nutrition communications team. (Follow them on Instagram @how_to_eat.) MacGregor has worked with Canola Eat Well on a number of programs and projects, including #canolaconnect harvest camp. MacGregor says conversations around fats often start with "Which oil is the healthiest?" and circle around health-related buzzwords like "anti-inflammatory" and "unprocessed".

"Unprocessed falls in line with the trend of seeking out 'natural' and 'clean' options, which people often associate with being healthier choices," MacGregor says. "When an oil is described as processed, the implication is that it is unhealthy, despite the fact that all oils are processed in some way. Unfortunately, this line of thinking ignores the advantages that processing can afford, including safety, shelf-life, affordability and versatility."

One big trend, MacGregor says, is transparency. "Consumers are trying to make socially responsible choices. Whether that means environmental sustainability, supporting local producers, or ensuring fair working conditions for agricultural workers, I think we're going to continue seeing a push in this direction," MacGregor says. "One barrier here is that consumers are looking for simple ways to identify these 'socially responsible' products, yet these issues are often very complex."

CONTINUED ON PAGE 48

Credit: Josh Tenn-Yuk

"Knowing canola growers have been at the forefront of using biotechnology to improve both affordability and sustainability plays a role in my choosing canola."

–Erin MacGregor

Rowena Leung (on the left in the photo), a registered dietitian with Loblaws, says conversations with clients about canola oil often come back to the price. They ask, "How can something you say is good for me be so low priced compared to other oils?" Leung tells her clients that the low cost is partly because canola is produced here in Canada. She assures them that canola oil is a healthy staple for anyone looking to improve their diets.

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If four new canola processing plants announced earlier this year get built as planned, Canadian processors will have capacity to use 16-17 million tonnes of canola per year by 2025, up from around 11 million currently.

MORE PROCESSING REQUIRES MORE CANOLA

BY JAY WHETTER

The promise of biofuel market expansion in the U.S. and Canada, driven by renewable fuel policies, has sparked a building boom in Canada's canola processing industry. Growing demand and competition for canola seed will support prices at the farm gate and provide more delivery options.

The medium-term view, despite drought-related production challenges in 2021, is that supply will increase to meet demand from long-term seed export customers and from a domestic processing industry that will have 16-17 million tonnes of capacity by 2025.

"Processors are showing a high level of optimism that canola supply will be there," says Chris Vervaet, executive director of the Canadian Oilseed Processors Association. "They are confident in the ability of farmers to react to the increased demand."

BIOFUELS POLICY UPDATE

Canola does not have an approved pathway to access the U.S. renewable diesel market at this time, but Vervaet says the canola and renewable diesel industries are working with the U.S. government to get canola approved. Vervaet estimates that Canada's Clean Fuel Standard, also not yet defined and approved, could use another two million tonnes of canola oil per year by 2030.

THE BUILDING BOOM

Four big processing projects were announced March 22, April 22, April 26 and May 25 of this year. It was an exciting two months for agribusiness in Saskatchewan and Canada.

First was Richardson, announcing March 22 that it will double the capacity of its Yorkton, Saskatchewan facility to 2.2 million tonnes per year. The expansion will come on stream in 2024.

On April 22, Cargill announced a new one-million-tonne plant for the north side of Regina. Four days later, Viterra said it will build a 2.5-million-tonne facility in the same general area. Both plants are expected to open in 2024. These two announcements alone will change the canola landscape for Regina and for growers in southern Saskatchewan.

Vervaet says two fundamental factors make the Regina location appealing. One is that Saskatchewan is the biggest canola producing province and has been underrepresented when it comes to canola processing capacity. The other is the intersection of CN and CP rail lines at the build sites. "Dual access to rail line is almost a 'must have' to ensure the flow of product continues," Vervaet says.

On May 26, Minneapolis-based Ceres Global, a new player in Canadian canola processing, said it would add a 1.1-million- tonne crush plant beside its existing grain terminal at Northgate, Saskatchewan. The border-hugging facility is on the BNSF line for easy access to the U.S. market.

In the May 26 media release, Robert Day, president and CEO at Ceres, says, "While there are multiple drivers contributing to this demand, the most important is the movement towards green energy and the

RICHARDSON
WHO: RICHARDSON
WHERE: YORKTON, SK
WHEN: 2024

Cargill
WHO: CARGILL
WHERE: REGINA, SK
WHEN: 2024

VITERRA
WHO: VITERRA
WHERE: REGINA, SK
WHEN: 2024

CERES GLOBAL
WHO: CERES GLOBAL
WHERE: NORTHGATE, SK
WHEN: 2024

Viterra processing facility in Bécancour, Quebec

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CANOLA PROCESSING CONTINUED FROM PG 46

need for vegetable oil as feedstock for the production of renewable diesel."

Vervaet says the renewable fuels market is "definitely one of the drivers" behind these announcements, providing more market diversification. "But we can't lose sight of our biggest market, which is canola oil for food use," he says. "Demand for food oils continues to expand around the world, and historically, over 90 per cent of Canadian canola oil has gone into the food market."

Canada's canola industry strategic plan, first announced in 2014, set a goal of 26 million tonnes of total production and sales by 2025. Specifically, the goal is to have 14 million tonnes go through domestic processors and 12 million exported as seed. As of 2020, exports were 11.8 million tonnes and processing was 10.3 million tonnes. If the four plants get built, processors should achieve the 2025 goal and keep pace with the value chain's production target.

"Assuming these plants can utilize 85 to 90 per cent of their capacity, processors could process 15 million tonnes, exceeding the 2025 target they set for themselves and adding value to half of the canola crop right here at home," Vervaet says.

Canola processors in Canada

The 14 current canola processing facilities in Canada have capacity to handle around 11 million tonnes of seed per year. That will rise to 16-17 million by 2024 or 2025 when new Cargill, Ceres and Viterra facilities and the doubled capacity at Richardson Yorkton come on stream.

COMPANY	LOCATION	OPERATIONAL
ADM	LLOYDMINSTER, ALBERTA	CURRENT
ADM	WINDSOR, ONTARIO	CURRENT
BUNGE	ALTONA, MANITOBA	CURRENT
BUNGE	HARROWBY, MANITOBA	CURRENT
BUNGE	NIPAWIN, SASKATCHEWAN	CURRENT
BUNGE	FORT SASKATCHEWAN, ALBERTA	CURRENT
BUNGE	HAMILTON, ONTARIO	CURRENT
CARGILL	CLAVET, SASKATCHEWAN	CURRENT
CARGILL	REGINA, SASKATCHEWAN	EXPECTED IN 2024
CARGILL	CAMROSE, ALBERTA	CURRENT
CERES GLOBAL	NORTHGATE, SASKATCHEWAN	EXPECTED IN 2024
LOUIS DREYFUS	YORKTON, SASKATCHEWAN	CURRENT
RICHARDSON	YORKTON, SASKATCHEWAN	CURRENT/DOUBLING BY 2024
RICHARDSON	LETHBRIDGE, ALBERTA	CURRENT
VITERRA	STE. AGATHE, MANITOBA	CURRENT
VITERRA	REGINA, SASKATCHEWAN	EXPECTED IN 2024
VITERRA	BECANCOUR, QUEBEC	CURRENT

CANOLA EAT WELL CONTINUED FROM PAGE 44

When asked how she weaves canola oil into conversations about socially responsible food choices, MacGregor says it depends on personal values. "For me, getting to know Canadian canola growers through Canola Eat Well events has driven me to support Canadian whenever possible. Learning first hand from the producers, while being able to visit their farms and meet them and their families in person, adds a very personal layer to my decision around choosing an oil. I feel it is my responsibility to support these hard-working families."

Registered dietitians who use their science backgrounds to have practical conversations around food are important allies for Canola Eat Well.

"Canadians recognize dietitians as trustworthy and credible sources of nutrition advice," says Lynn Weaver, who is a registered dietitian, professional home economist and the promotion manager for SaskCanola. "Working together with dietitians like Rowena and Erin helps us to promote all of the wonderful attributes that canola oil offers, especially the health benefits."

—Jay Whetter is the editor of Canola Digest.

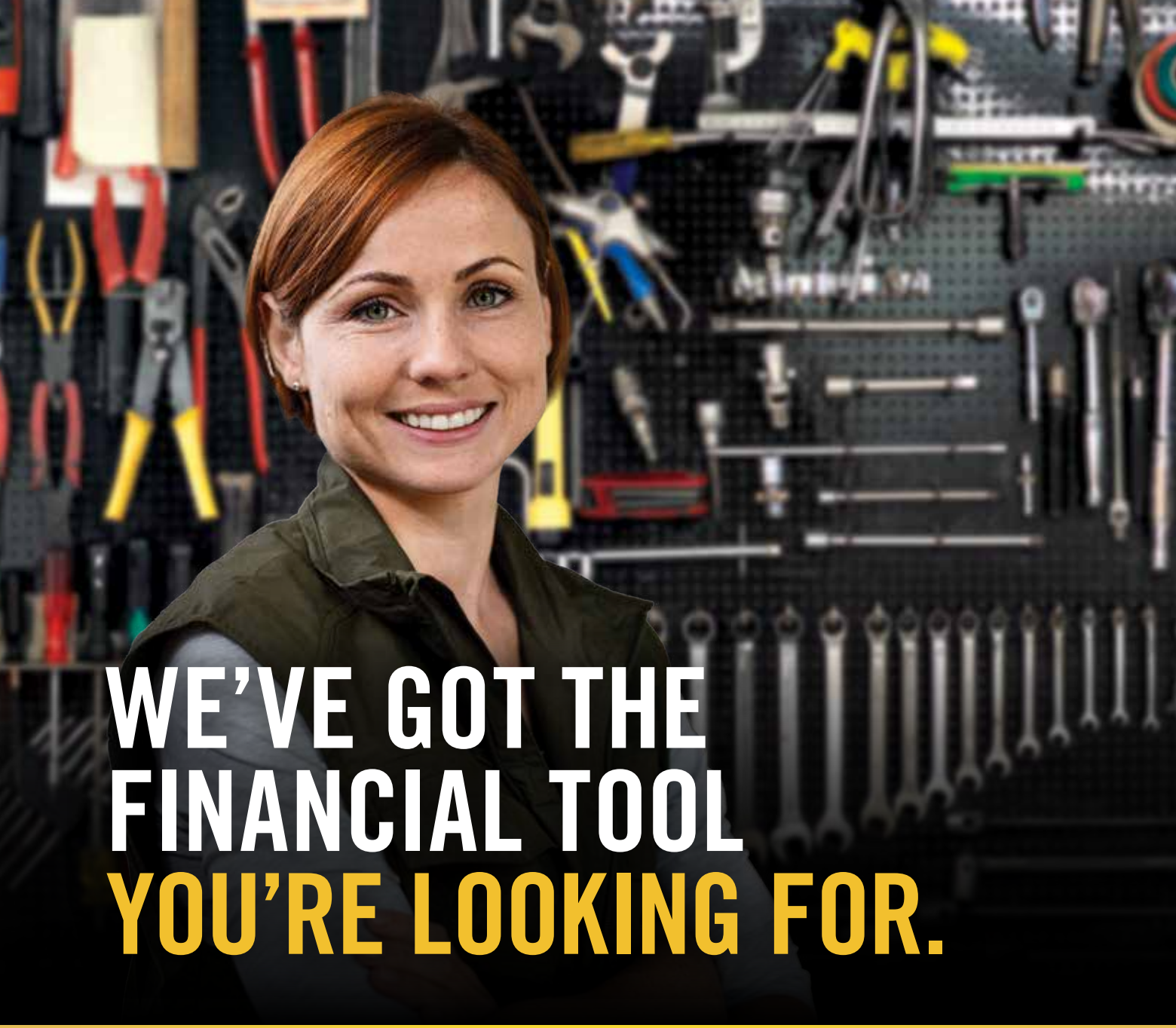
What is Canola Eat Well?

The Canola Eat Well mission is to inspire Canadians to choose Canada's oil – canola oil – and connect Canadians to the farm. The goals are to increase demand for canola oil consumption in Canada, and enhance public trust and awareness of canola oil.

Canola Eat Well is a joint effort of the provincial canola organizations. Market development programming across the Prairies is about maintenance and in Ontario is about increasing awareness and demand.

Follow "CanolaEatWell" on Facebook, Twitter, Instagram, YouTube and Pinterest.

Find out more at **canolaeatwell.com**



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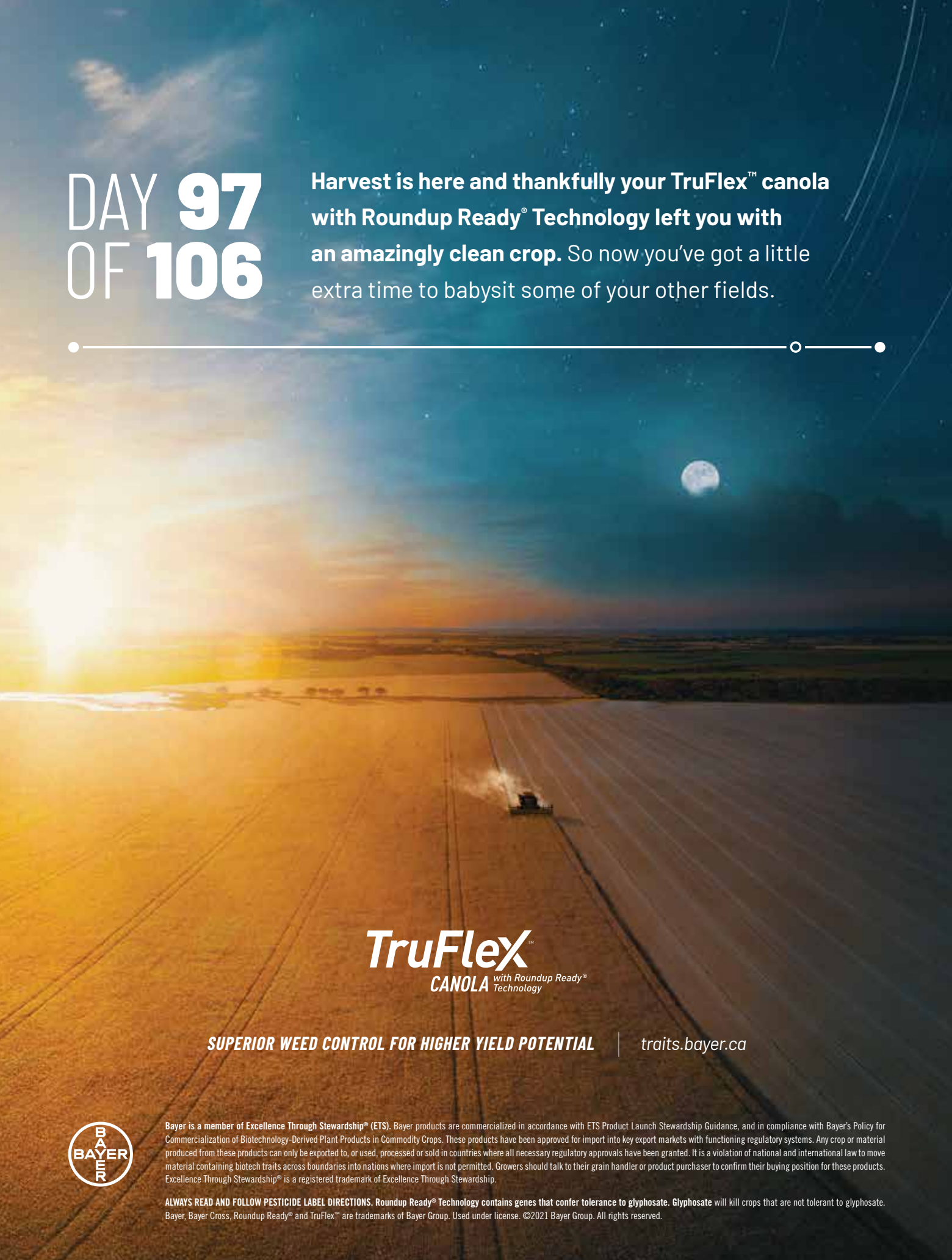

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