ALBERTA CANOLA
SaskCanola
Manitoba Canola Growers
canolacouncil OF CANADA

September 2020

canola DIGEST

The Source for Canada's Canola Growers

The heat is on

ON-FARM DRYING SYSTEMS CAN TAKE SOME STRESS OUT OF HARVEST AND STORAGE.

/ SEE ARTICLES ON PAGES 10, 14 & 16.

INSIDE:

There's only one InVigor®.

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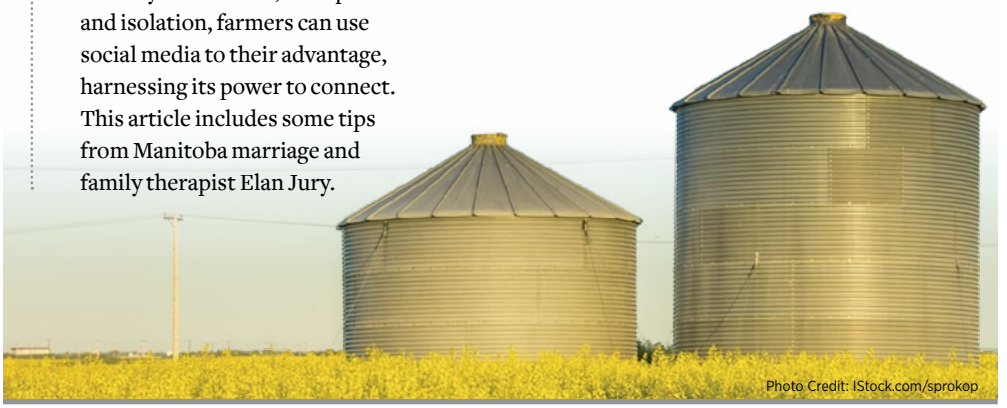
DEPARTMENTS



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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

New Renaissance

My canola colleague and friend Rick Taillieu, manager of grower relations and extension with Alberta Canola, sometimes sends me lyrics from The Tragically Hip songs that fit with whatever is going on that day. Here's a line for the times from "Three Pistols", a song from the Hip's 1991 *Road Apples* album: "Bring on a brand new renaissance, 'cause I think I'm ready."

Over the past few months, I've heard, as a message of inspiration and hope, that the bubonic plague in Europe from 1347 to 1350 inspired the Renaissance – a period of exceptional creativity. One glitch in this historical analogy for inspiration and hope is that the Renaissance wasn't an instant response. The re-birth period lasted 300 years and one of its poster boys, Leonardo da Vinci, who painted the Mona Lisa and envisioned the helicopter, wasn't born until a century after the plague. The good news is that we don't need the genius of da Vinci to have our own new renaissances.

David Kohl, professor emeritus in agricultural and applied economics at Virginia Tech, made a COVID-themed presentation during Ag In Motion's virtual Discovery Plus conference in July. He gave pointers on how to manage through this "black swan cycle". The black swan symbolizes an unpredictable event with potentially severe consequences. As Kohl phrased it, the dirty bird splash down that is COVID-19 has put the "global economy on life support." It has brought deglobalization, business failures, job losses and general frustration, confusion and anxiety. He reminds us that it's "OK to feel a loss" while trying to figure out where to turn next.

At another virtual COVID-era conference, Angela Duckworth, a psychologist who created the Character Lab (**characterlab.org**), described a common characteristic of people who find a way to succeed – and that's "grit". Character Lab is all about building grit in ourselves and our children, and has playbooks to "cultivate strengths of heart, mind and will". In one article, contributor Don Moore has a message about confidence that I think is helpful:

"Don't assume that more confidence is always better. Both overconfidence and under-confidence are errors. Do seek out accurate information about risks and opportunities. Use that information to estimate the likelihood of different possible futures, then reflect on your particular tastes and values. Nobody can predict the future, but reason and self-awareness can empower you to take risks wisely."

At the end of Duckworth's presentation, she left us with this question: "What is the most valuable thing discovered through the pandemic?"

David Kohl's business IQ management checklist will help farmers dig into Duckworth's question and find answers that could improve your farming grit. The business IQ checklist has 15 points. (I will post the slide with the complete checklist in the Editor's Update section at **canoladigest.ca**.) Point 1 is to "know your cost of production". You get three points if you have your cost of production "written" out, two points if it's "in your head" and one point if you have "no idea". Point 11 is "modest lifestyle habits" – with three points for "yes". Point 15 is attitude – three points for "proactive", two points for "reactive" and one point for "indifferent". An overall score of 35 or more is what you want.

Do you have a proactive attitude toward your COVID-19 renaissance? There are commonplace business tools that can "empower you to take risks wisely", such as good knowledge of costs of production, and marketing plans that use those cost profiles to recognize and act on profitable sales opportunities. A proactive attitude also includes some study of trends and potential new opportunities to improve cash flow.

I'm just brainstorming here, but do you see opportunities in COVID-19-driven demand for holiday experiences that don't require planes and hotels, for more direct-to-home delivery of farm fresh food, and for communication and commerce technology that might make global trade relationships more personal?

"Three Pistols" is actually about Canadian painter Tom Thomson, now considered a renaissance man but who, at that time, was just a painter with his own style and a drive to capture the essence of Canada's landscape in his own way. That is perhaps all we can ask of ourselves. Be ready for our own new renaissance. Have a written plan for our businesses. Recognize our own style and vision. Be confident, but not overconfident. Get help to build grit. Take this re-birth opportunity to re-set expectations, reflect on what we really want and set in place a few new steps to get there.

"Bring on a brand new renaissance, 'cause I think I'm ready."

–The Tragically Hip

Leaders Wanted To Represent Alberta Canola Growers

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 2, 5, 8 and 11. New director terms will begin following Alberta Canola's Annual General Meeting in January of 2021.

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:

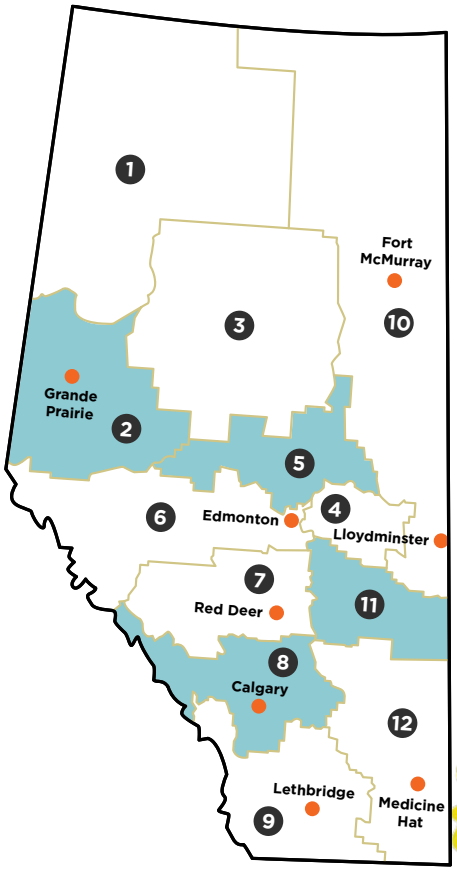
- Research
- Government & Industry Affairs
- Grower Relations & Extension
- Public Engagement & Promotion
- Governance & Finance

WHO CAN BECOME A DIRECTOR?

Anyone who has paid a service charge on canola to Alberta Canola since August 1, 2018 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 30, 2020 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 the Alberta Canola General Manager Ward Toma at 780-454-0844.



John Guelly on being a director

Being a director for Alberta Canola has not only been an eye-opening experience, but it has also been a huge addition to my personal career growth and the knowledge base on our farm.

Most farmers are unaware of all that takes place behind the scenes of our industry. As a director, I have been able to participate, provide input on behalf of other farmers and help lead the industry to a position that is hopefully better than when I began as a director six years ago.

As my second and final three-year term comes to a close, I've met a tremendous amount of great people throughout the canola industry and participated in more industry events and organizations than I would have ever dreamed of.

If you want to make a difference in our industry, I highly recommend putting your name forward for election.

Being a director for Alberta Canola has been a life changing experience!

Educational Resources

September means back to school and Alberta Canola has curriculum-based educational resources available for teachers and parents.

Check out **learncanola.com** for free downloadable resources.

Public Engagement & Promotion Update

Alberta Canola welcomed Tara Baycroft as the agriculture and school coordinator at the end of September last year. Tara grew up on a mixed family-run farm outside of Bashaw, Alta. She has a teaching degree in secondary education from the University of Alberta and has a wide array of teaching experiences spanning the last 10 years in both public and non-profit private schools teaching students-at-risk.

Tara will be creating accessible content to be delivered by educators or parents about agriculture, canola production, science and general canola knowledge that is linked to the Provincial Program of Studies, which teachers are mandated to follow. She will also be sharing information and promoting ag literacy involving canola by engaging with teachers at specific teaching professional development events, PD sessions and other public events like the Calgary Stampede.

She is excited to be educating the next generation and the public about local, healthy and versatile canola, where canola is coming from and the science behind it!

Tara Baycroft can be reached at:

tara@albertacanola.com

Cell: 780.993.5740 | **Office:** 780.454.0844

Choosing the Right Canola Variety for Your Field (not your Farm)

Crop rotation and variety selection are the best profitability and risk management tools available for producers. Selecting varieties that demonstrate high yield potential for your ecological zone is important, but arguably more important is selecting a canola variety with the combination of traits best suited to each individual field on your farm.

This likely means some added logistical and decision-making complexity, but the reward is often higher profitability, reduced risk and increased yields.

The first step is to take inventory of your fields. A field record with cropping history, including variety and yield, and detailed notes on environmental conditions, disease levels, herbicide history, insect pressure and weed infestations for each field is invaluable!

Make a list of all fields that will be planted to canola in 2021, and think about aspects of those fields that could impact yield – historic disease levels, proximity to canola fields that had yield-robbing disease levels, seedbed condition, background fertility and rotation.

Next, list all of the canola traits that are important for you and rank them for each planned canola field. Typical traits include herbicide tolerance system, pod shatter, height, lodging, days to maturity and disease resistance.

DISEASE RESISTANCE

If clubroot is in your community, clubroot resistance trait should be at the top of the list! If you have blackleg incidence that has been increasing over the years, or you have had yield losses, then consider blackleg resistance genetics in your variety selection decision. Researchers have shown that the majority of canola varieties released in the past decade have relied on one blackleg resistance gene (Rlm 3) and these researchers have also shown that this resistance is being overcome by the fungus in regions. If this is the case on some of your fields, consider a canola variety with a different resistance gene. Rotation of genetic sources can help to protect disease resistance traits and improve yields on individual fields, however different hybrids don't necessarily mean different resistance sources. If sclerotinia is always a risk in your area, but moisture patterns don't always trigger a fungicide application, a variety with sclerotinia tolerance may protect yield and reduce risk.

POD SHATTER

If severe environmental conditions at maturity have reduced yields, if logistical constraints have required early swathing or left the crop standing too long, or if header or swather losses have been unusually high then a variety with some level of pod shatter tolerance may be useful to protect yield. Consider whether this is your greatest yield limitation, or whether disease resistance should take precedence.

MATURITY

Choose varieties that are selected for optimal yields in your season zone. If you are in a long-season zone, does it make sense to plant a particular field to a short- or mid-season maturity variety and plant this field early to get some yield into the bin and spread out the harvest? Many of the short- and mid-season canola varieties have excellent yield potential.

Once you have your traits ranked for each field, consult the seed guide or other resource material to find varieties with the traits that you need for each field. From this list of candidates, you can start looking at yield potential.

YIELD

With your narrowed down list of candidate varieties, look at the yields achieved in trial sites with soil type, rain fall and season length similar to your fields. Additionally, look at results in dissimilar areas and prior years to understand the "yield stability" of the variety. Consider the yield potential of your field, your fertility program and look for varieties that consistently achieve that yield, and not just at varieties that "win" the highest yield at the location nearest you. Consider that yield results seen in trials may not necessarily be achievable on your own farm. Plots are often grown in the most productive, consistent and well drained areas of the field to ensure field conditions are not a confounding factor. As well, your own fields' fertility regimen, background fertility, organic matter, pH and available moisture could differ substantially from the trial site.

Yield data from seed company strip trials or grower-sponsored strip trials is a good starting point, especially when you can look at data from multiple locations. The 'gold standard' for yield data comes from the grower-funded Canola Performance Trials (CPT). Find this data at **canolaperformancetrials.ca**. The CPTs are randomized, replicated trials – a trial model that is the backbone of agronomy and breeding research.

In closing, make your canola hybrid decisions a team event. Consult the family members or employees you farm with to get their input. With the team contributing observations, analytical thinking and math skills to find the right variety for each field, the result should be enhanced farm profitability.

Reminder:

Participate in Saskatchewan Clubroot Monitoring

This fall, we are ensuring that farmers have the tools they need to detect clubroot on their farm through the clubroot soil testing program, offered by SaskCanola and the Saskatchewan Ministry of Agriculture As part of this program, a farmer can request a soil sampling bag, collect soil from their field and submit it for testing. SaskCanola will cover the $100 cost.

Call the SaskCanola office to request your soil test at 306-975-0262.

Call for Nominations: Four Director Positions Available on SaskCanola Board

Nominations are being accepted to fill four positions on SaskCanola's eight-member Board of Directors, with the successful candidates beginning their four-year term on January 2021.

For Saskatchewan canola farmers, this is a unique opportunity to guide investments into research and extension, influence policy and inform consumers.

If you, or someone you know, would like to have a voice in the agriculture industry and help maintain a strong farmer presence at the decision tables of the agriculture industry and regulators, now is your time to get involved.

The nomination package is available for download at **saskcanola.com** or by calling the SaskCanola office 306- 975-0262 to request one. All applications must be received no later than 4:00 p.m. on September 18, 2020.

SaskCanola Invests in Team Dunstone

SaskCanola has proudly partnered with Saskatchewan professional curling athlete Kirk Muyres for a number of years and will continue to as we sponsor Kirk and his new Team Dunstone this upcoming season. Our investment aims to increase SaskCanola's profile within Saskatchewan and canola product awareness across Canada as the teams' apparel proudly showcases our brand. We wish good curling to our provincial ambassadors for farmers and canola oil!

MATT DUNSTONE

BRAEDEN MOSKOWY

KIRK MUYRES

DUSTIN KIDBY

SaskCanola Donates Oil

With many summer events cancelled or held virtually due to the pandemic, SaskCanola had some canola oil on-hand that needed a new purpose. We decided that the best home for our cases of oil were food banks in some of Saskatchewan's major centres, including Regina, Saskatoon, Prince Albert, Moose Jaw and Swift Current.

This donation of oil is one way that our commission can give back to the communities that Saskatchewan farmers call home.

Above: Saskatoon Food Bank staff receive SaskCanola's oil donation from director Doyle Wiebe (pictured far right).

Manitoba Canola Growers welcomes Nicolea Dow

Earlier this year Manitoba Canola Growers appointed Nicolea Dow to the board of directors. Following the fall election, the board table was left with one vacant seat; consequently, they launched an open application process to fill the seat. Nine highly qualified farmers from across the province submitted applications sharing their interest in representing canola farmers in Manitoba. Among the nine applicants, Dow was successfully selected to fill the vacant seat.

The board of directors prides itself on being informed, engaged leaders in the agriculture industry. The board searches for individuals that are representative of the many experiences and perspectives in Manitoba farming to share their input and direction for MCGA.

Nicolea is a fourth-generation farmer working alongside her dad and brother on their family farm near Portage la Prairie. She has a Bachelor of Science (Agriculture) in agronomy from the University of Manitoba and spent several years working for Bayer in research before deciding to return to the family farm full time.

"I am truly thrilled to join the Manitoba Canola Growers board," shared Dow. "As a young farmer, it's a real honour to be given this opportunity. Having my skills and experience in agriculture recognized in this way has been both a humbling and affirming experience. My grandfather served as the president of the sugar beet board for nearly three decades and I am proud to continue that legacy of service to the agriculture community in this way."

Nicolea's experience in agronomy and research will be an asset to the board.

"With the challenges that canola has had the last number of years, from pest problems to high input costs and global trade conflicts, farms are having a harder time seeing the profits they have in years past. However, I believe that challenge always gives rise to innovation and new opportunities, and I am very pleased about joining the Manitoba Canola Growers board. The vision of Manitoba Canola Growers of maximizing farmers' profits through sustainable production is very much in line with my personal values as a farmer, and especially relevant in these days."

Canola is a $4.2 billion dollar industry in Manitoba. The farmer voice is an important influence in developing decisions and policies that will support a progressive, profitable and forward-thinking canola industry as it moves forward.

Nicolea shared insight into her hopes for her role on the board of directors. "I am looking forward to bringing my experience in agronomy and research to the board, as well as my voice as a young farmer. It will be rewarding to draw on the experiences of the rest of the board and staff of the Manitoba Canola Growers and to learn more about the canola industry outside the gates of my farm."

The selection committee was pleased to see a strong slate of candidates seeking the position on the board. "The fact that Nicolea excelled within such a competitive field gave us confidence that she would be an outstanding MCGA director," stated Bill Nicholson, MCGA director. "Even early in her farming career she is clearly respected in her local farm community, and her education and work in the agriculture industry have provided her with skills and experience that will be a valuable addition to our organization."

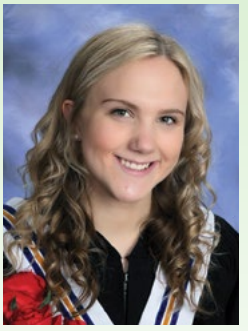
Manitoba Canola Growers board and staff look forward to working with Nicolea as they continue to serve canola farmers in Manitoba.

2020 High School Scholarship Winners

Manitoba Canola Growers are proud to announce the winners of our 2020 high school scholarships. Five $1,000 scholarships have been awarded to the following deserving students from across Manitoba.

This year's recipients are:

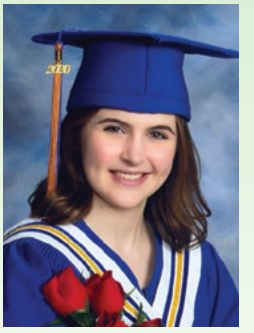
CAITLIN STEWART
Swan River, MB
She is enrolled at in Environmental Studies at Lakehead University.



CORA FIJALA
Manitou, MB
She is enrolled in Practical Nursing at Assiniboine Community College

MATTHEW PAULS
LaRiviere, MB
He is enrolled at Brandon University to take Science – Pre-Professional Veterinary Medicine.

NATHAN KRAHN
Rivers, MB
He is planning to take a year off and enter Agriculture and Food Sciences at the University of Manitoba in 2021.



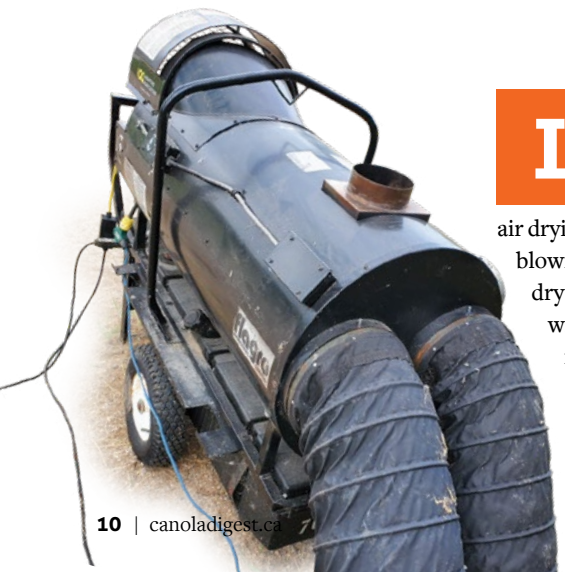
MIA SHIRTLIFF
Starbuck, MB
She is enrolled in Engineering at the University of Alberta.

Congratulations to this year's winners! We wish you the best of luck as you pursue your chosen careers.

Heaters added to bin aeration systems will greatly increase air's capacity to dry at a time of year when natural air drying just isn't practical or often even possible.

HOW TO SET UP FOR **IN-BIN DRYING OF CANOLA**

BY RICHARD KAMCHEN



If Prairie farmers face another wet harvest, they'll be left with a lot of damp and tough grain to deal with again. Many producers use natural air drying (NAD) systems, but cool fall air blown through a bin has very little capacity to dry tough grain. Adding supplemental heat will allow farmers to use their bins to remove moisture from their grain.

Key success factors for adding supplemental heat are airflow rates and the right temperature increase.

AIRFLOW

"Airflow rate is the most important component of any in-bin drying," says Glenn Wilde, engineer and director with Top Grade Ag.

Airflow is particularly important in canola because of its higher resistance, adds Angela Brackenreed, agronomy specialist with the Canola Council of Canada. "The smaller the grain, the smaller the voids between the grain, which means more resistance to airflow," she explains.

Producers need to know their airflow to have predictable results, and Top Grade Ag

Fan Model	Commodity	Quantity (bushels)	Starting Moisture (%)	Final Moisture-Tested (%)	Running Time (days)	Average Airflow (CFM)	Airflow per Bushel (CFM)	Water Removed (ImpGal)	Average Removal Rate (ImpGal/hr)
GGI-80711	Canola	7360	11.5	9.1	7.7	4600	1.5	957	5.2
GGI-80711	Canola	3687	11.6	8.2	7.4	4900	2.6	672.7	3.8
GGI-80711	Canola	2000	12	11.2	1.9	4754	2.4	86	1.9
GGI-80711	Canola	1400	12.4	5.7	3.7	4934	3.5	498.8	5.6
GGF-80511	Canola	1000	11.3	9.3	1.5	2972	3.0	109.1	3.0
GGF-80511	Canola	1810	11.8	8.9	4.9	2795	1.5	289.7	2.5
GGF-80511	Canola	1050	12	8.2	2.5	3076	2.9	219.4	3.7
GGF-80511	Canola	1570	15.6	7.1	8.9	2646	1.7	713.7	3.3
GGF-80511	Canola	1440	15.8	9.9	6.3	2981	2.1	470.7	3.1
GGI-80511	Canola	1440	11.3	9.3	2.5	3396	2.4	158.3	2.6
GGI-80511	Canola	1140	12.2	9.9	2.1	3448	3.0	145.1	2.9
GGI-80511	Canola	1650	12.3	9.3	4.9	2847	1.7	274.6	2.3
GGI-80511	Canola	1450	12.6	10.1	2.8	3410	2.4	199.6	3.0
GGI-80511	Canola	1120	15.7	7.4	6.7	3012	2.7	499.9	3.1
GGI-80511	Canola	1650	16.2	9.4	9.4	3014	1.8	616.9	2.7
ATT-80311	Canola	2400	11	9.1	3.8	3089	1.3	253.4	2.8
ATT-80311	Canola	1500	15	8.5	9.7	3546	2.4	561.5	2.4
GGI-80311	Canola	1000	12.1	7.7	4.3	2916	2.9	237	2.3
GGI-80311	Canola	1600	13	8.3	10	2597	1.6	411.4	1.7

Glenn Wilde provides these canola moisture removal results from Top Grade Ag's test trials. "I want to stress that this data is from our beta test locations. We are learning a lot and the accuracy of this data will continue to improve as we initiate more research," Wilde says. While these are research results, it does show the potential moisture removal for a system with proper air flow and temperature.

offers an in-bin drying (IBD) monitor that provides three sensors. These sensors provide real-time data on air flow and water removal rates, bin average moisture content, heater status and fuel/power cost per hour, Wilde says.

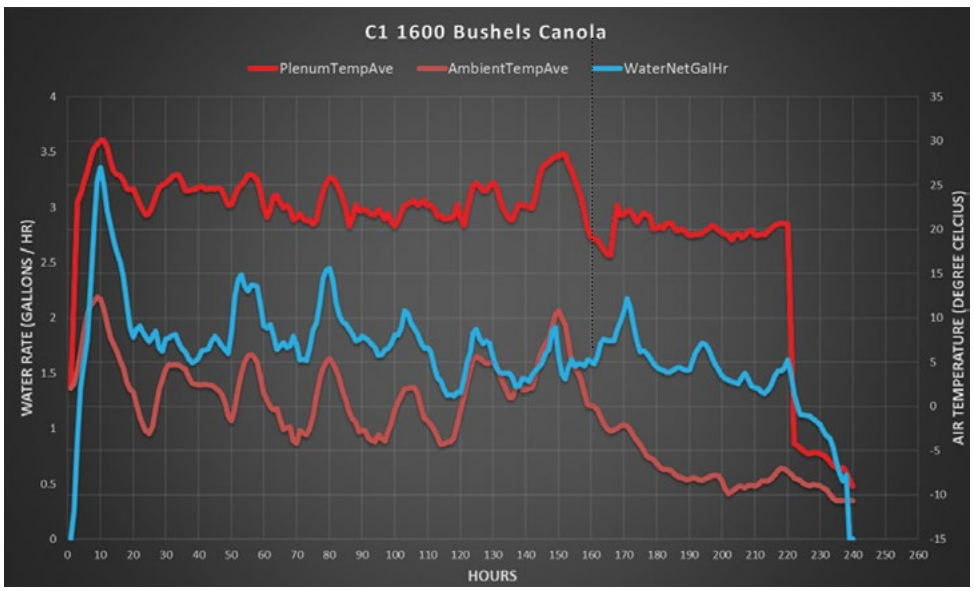
HOW HOT?

Glenn Wilde warns that canola is prone to heating even if the moisture content is low, and that adding excessive heat makes it extremely important to ensure the bin is cooled down sufficiently after turning off the supplemental heat. Increased temperature also raises the risk of fire, he notes.

"With the correct temperature, your in-bin drying event should replicate field drying and maintain perfect quality," Wilde says.

Angela Brackenreed adds that different temperatures have widely varying rates of moisture holding and removal. One cubic metre of 30°C air will hold 30 grams of moisture before reaching saturation, but 10°C air will hold only eight grams of water, she explains. And 18°C air removes moisture five times faster than 10°C air, Brackenreed notes.

Prairie Agricultural Machinery Institute (PAMI), which is currently working on a research project comparing drying systems in Alberta, urges farmers to maintain consistent air temperature flowing to the bin as much as possible. This can be achieved with thermostatic controllers.



This graph shows the outside (ambient) air temperature, the heated air temperature going into to the bin and the rate of moisture removal. This is for the bottom example in the graph above, a 1,600-bushel bin of tough canola. "We turn off the heat the evening before we terminate the drying event. This cools the grain and you can see how the water removal rate drops off," Glenn Wilde says.

In recently released trial results, PAMI reported a risk of overheating grain unless an adequate airflow rate – a minimum of one cubic food per minute per bushel (cfm/bu.) – can be ensured.

FUEL COSTS

Fuel type has the greatest impact on operating costs. Although natural gas is the least expensive fuel, Brackenreed notes most farms don't have access to it. And although propane is often cheaper than diesel, diesel is very easy to use and everyone has diesel tanks on the farm, she says.

Breaking down the costs for supplemental heat, Wilde says a standard system with natural gas would be close to two cents per point of moisture removed per bushel, while propane or diesel would cost closer to five cents.

An off-grid farmer he dealt with had all-in costs, including generating power with a diesel generator, of around eight cents per point per bushel.

He notes costs are dependent on factors like commodity prices, generator efficiency and IBD system efficiency.

IBD ADVANTAGES AND DISADVANTAGES

Advantages to IBD include adding value to bins with multifunction use, says Wilde. "It's also a safe and effective method of drying and is easily scalable, not requiring hundreds of thousands of dollars to do. They're also easy to get up and dismantle seasonally," Wilde says.

PAMI says IBD has the potential to be a lower capital alternative to a stand alone dryer set up, but adds that careful management is required to keep operating costs comparable to that of a dedicated dryer system.

One drawback is that the IBD drying front can create a tough top and overdried bottom, Wilde says.

PAMI trials suggested that over-drying at the bottom of the bin may not be avoidable, and that an average dry moisture should be targeted and then the grain should be mixed.

"It's very hands-on," agrees Brackenreed. "It's not like we can add heat and then walk away from it."

Another limitation is the system becomes less of an option once temperatures start falling below 0°C, she says.

SETTING UP BINS

When designing an IBD system, Wilde says he first needs to define a monthly drying capacity based on the annual gross bushels harvested each year. "Using the monthly drying capacity, candidate bins are picked based on size, air delivery systems and the aeration fans available," he explains.

FANS

Before upgrading air delivery systems in search of the "ideal" set up, Wilde strongly recommends installing an IBD monitor on your drying bins. "This allows you to evaluate the current performance, and gives you justification to make upgrades. It also allows you to evaluate any upgrade based on the before and after performance."

Although he says any fan can be used for IBD applications, he says low-speed centrifugal is the better option for low static pressure. In his experience, axial fans are only good for very small batches.

Brackenreed adds: "There's fans that produce high air flow, but that don't operate at high static pressures. These are great for conditioning beans and corn, but will be useless when trying to condition canola."

Brackenreed notes some farmers will under-fill bins to get better airflow results. She adds that a perforated floor on a flat-bottom bin typically allows for more even air distribution and less resistance to airflow.

"Airflow rate is the most important component of any in-bin drying."

–Glenn Wilde

"With portable heaters, there's more opportunity for heat escape and heat loss, but they're also convenient, often having multiple outlets, and can be moved from bin to bin."

–Angela Brackenreed

DUCTING

Ducting is a huge item, and operators must be conscious of what their ducting is sized for, Wilde says. Brackenreed adds that ducting can affect resistance to airflow, and that poor ducting will create avenues for heat escape.

VENTING

PAMI advises farmers to ensure adequate ventilation in the headspace as condensation on a cold bin roof can cause moisture problems in the stored grain. Brackenreed notes the rule of thumb of one square foot of ventilation for every 1,000 cfm of airflow.

HEATERS

Providing enough BTUs to remove moisture is key to predictable and consistent drying, Wilde says. For a rough guide, use this formula to choose the right heater: Heater capacity (btu/hr) = temperature increase (degrees C) x air flow rate (cfm) x 2.05. For example, a target increase of 25°C multiplied by airflow of 2,500 cfm multiplied by 2.05 will require a heater capacity of 128,000 btu/hr.

Brackenreed notes that potential heat transfer loss can be as high as 50 per cent, but choosing a heater can go beyond simple energy efficiency. She explains: "With portable heaters, there's more opportunity for heat escape and heat loss, but they're also convenient, often having multiple outlets, and can be moved from bin to bin."

–Richard Kamchen is a freelance agriculture writer based in Winnipeg.

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Dedicated grain driers work quickly, removing more moisture in less time than a bin-based supplemental heat system. This may be the better choice for farms that expect to handle a lot of high-moisture grain every year.

BENEFITS AND RISKS WITH A STAND-ALONE DRYER

BY RICHARD KAMCHEN

Any kind of drying system can offer substantial benefits to farmers in wet harvest years.

"Having the capacity to do significant drying out of the field, whether with high temperature dryers, natural air drying or supplemental heat, allows farmers to remove the environmental wildcard," says Angela Brackenreed, agronomy specialist with the Canola Council of Canada (CCC).

She adds that drying capability could improve harvest logistics and potentially reduce resource requirements.

"You could start harvesting at a higher moisture target, and once you get to the final fields, they're closer to dry. This puts less strain on an operation's harvesting capacity," Brackenreed says.

She cautions, however, that there's risk and cost involved with taking off high moisture grain. That includes a significant cost and carbon footprint attached to drying a lot of bushels, she says, but points out farmers are budgeting based on producing high-yielding No.1 grade canola. "There's always risk of severe weather degrading quality and inducing significant yield loss."

STAND-ALONE DRIERS

Farmers looking for quick drying of their grains in significant quantities may wish to consider setting up high-temperature driers.

"Usually when you're talking about a stand-alone drier, you're talking about a column drier with drying temperatures from 150°F to 220°F [65°C to 105°C], depending on drier design," explains Ken Hellevang, agricultural engineering specialist with the North Dakota State University Extension Service.

By going with that higher heat and higher air flow rates associated with column driers, farmers are able to dry much more rapidly, he says.

Hellevang adds that high temperature driers aren't limited in the maximum moisture content that they can handle: "So whether it's grain coming in at 15 or 20 per cent moisture, we can safely and economically dry that with a stand-alone drier."

SPECIFIC CANOLA RECOMMENDATIONS

The Canola Encyclopedia says canola can be dried at up to 82°C, and that lower temperatures should be used when canola is damp (over 12.5 per cent moisture) or when it is to be stored for over six months.

The CCC advises that green weed seeds and canola stems and pods can interfere with canola's passage through a dryer, and that at high drying temperatures, stationary canola may catch fire. Also, canola seeds can ignite when passed by the burner.

"Once a fire gets started, with it being an oil crop, it gets to be more difficult to extinguish that fire," notes Hellevang.

He recommends periodical cleaning of driers, as well as monitoring to ensure good flow. "This is probably more of an issue with continuous-flow style driers than a batch drier," Hellevang adds.

CCC also recommends cleaning canola seed to remove light or fine material before drying, using wind deflectors to prevent drawing airborne material through the burner, avoiding over-drying the seed and leaving off the burner when putting canola through on warm, sunny days.

ELECTRICAL REQUIREMENTS

Among the advantages of high temperature drying is that, typically, fan sizing and electrical requirements end up being very minimal as a percentage of heat and energy input.

"With a stand-alone drier, we're typically looking at the electricity cost being less than five per cent of the operating cost," says Hellevang.

> "Resistance to airflow is an issue with in-bin drying, but we don't generally have to worry about it in high temperature stand-alone driers."
>
> –Ken Hellevang

Many of the larger stand-alone driers and bin driers today are going with three phase fans, he says. With single phase, farmers will usually be limited to 15 horsepower size, but three phase can go to much larger sizes. Many producers will use a phase converter so they can still be hooked up to a single-phase electrical distribution system.

MIXING AND AIRFLOW

Another benefit to stand-alone driers is they don't have the kind of issues bin driers can have where drying grain needs to be mixed.

"Resistance to airflow is an issue with in-bin drying, but we don't generally have to worry about it in high temperature stand-alone driers," says Hellevang.

With stand-alone driers, there used to be concerns about grain not mixing well as it came down through the drying column, but he says that today, most of the driers will have some method of mixing the grain in that column.

Some set-ups will use grain diverters, others grain inverters or augers at the bottom, so the grain on the inside of the column that would be exposed to the hotter air is moving at a much more rapid pace than grain on the outside, Hellevang says.

–Richard Kamchen is an agriculture freelance writer based in Winnipeg.

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One farmer has a diesel-powered heater that he can move from bin to bin and add heat to any aeration system. The other has a stand-alone 320-bushel dryer and leg system that runs independently. Both say their investments have paid off.

FARMER EXPERIENCES WITH **ON-FARM DRYING SYSTEMS**

BY RICHARD KAMCHEN

Farmers who've set up their own grain drying systems praise the convenience and return on their investments.

Shawn Senko, Canola Council of Canada agronomy specialist and farmer, says he chose a diesel-powered supplemental heater as a cheap way to get started drying grain.

His 400,000-btu diesel supplemental heater, with hoses and adapter plates, cost $3,000, and aeration fans were already on the bins, Senko explains. His system also has a control box to turn the heater off and on as needed to maintain proper drying temperatures.

Jon Kauffman of Prairie West Farms at Tofield, Alta., set up a Brock Superb 320-bushel Model SQ16 dryer for $72,000. A 12,000-bushel wet bin and 7,000-bushel dry bin, plus augers and electric motors, cost an additional $56,000.

"The biggest reason we went with the Brock Superb was fuel efficiency as well as its ability to run largely independent of supervision," Kauffman says. This allows him to harvest and dry at the same time, as well as dry through the night, without someone watching over it.

In 2019, Kauffman made the improvement to run chain drags and legs on both the wet and dry side after wearing out two augers in the first couple years.

"The decision to go to legs will substantially reduce wear and tear," he says. "The legs are also much quieter and more gentle on grain."

COST PER BUSHEL

Kauffman's set up is plumbed for both natural gas and propane, and he uses the latter during the later months of the season when colder temperatures prevent his gas line from keeping up.

His natural gas cost is one to five cents per percentage point of moisture per bushel, but propane's significantly more at eight to 12 cents per point.

Senko says his costs are heavily dependent on outside temperatures and the humidity of the ambient air.

Jon Kauffman's drying system, shown here, is build around a Brock Superb 320-bushel Model SQ16 dryer.

"The biggest reason we went with the Brock Superb was fuel efficiency as well as its ability to run largely independent of supervision."

–Jon Kauffman

"It's much more economical to dry earlier in the season, or to cool grain for storage, then dry it in the spring," Senko says.

RETURN ON INVESTMENT

Senko's motivation behind his set up was to dry grain for the purpose of marketing. "Some elevators dry, but they aren't always taking grain, or the price is low," Senko says.

Kauffman says his capital and variable costs of $256,000 compare favourably to the $277,000 he estimates elevators would have charged to dry the over one million bushels he's dried since 2017. He's also able to cash in on premiums, especially in 2019

Above: Shawn Senko uses his 400,000-btu diesel supplemental heater to boost the drying capacity of his aeration fans. The lower up-front cost and ability to move it from bin to bin make these supplemental heaters an attractive drying option.

Above: This is a Brock SQ16 dryer, similar to the other Jon Kauffman has on his farm.

when there was a glut of tough grain.

"We were able to harvest early and take advantage of over-drying premiums at some elevators, which tacked on up to an additional dollar a bushel on a good chunk of our wheat," Kauffman says.

With dry crops for offer, sales are a snap as elevators are always looking for it. Kauffman's been able to move the majority of his grain before the end of November, even though some contracts were for March delivery.

Custom drying has provided an additional revenue stream for Kauffman, who, after his first year, was able to dry at least enough custom to cover his own drying costs. "In 2019, we custom-dried 284,000 bushels on top of our entire production from 4,400 acres."

DRY YEARS

Is the investment still worth it if there are several consecutive dry years? Senko says yes. For him, his investment was small so the risk was low, he says.

The reduction of stress and knowing you're able to start your harvest early also has value, Kauffman says. "I would venture to guess you will never regret it. I know I would feel lost without ours at this point," he says.

–Richard Kamchen is a freelance agriculture writer based in Winnipeg.

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Applications from the on-farm combine loss survey

Prairie Agricultural Machinery Institute surveyed canola fields last fall to measure grain loss out the back of the combine. Losses ranged from 0.2 to 4.1 bu./ac., and operator experience with a combine tended to result in lower losses.

BY TARYN DICKSON

Harvest is a busy time, so anything that will slow you down has to be worth it in terms of increased profitability. Fortunately, the recent Canola Agronomic Research Program study, funded by Manitoba Canola Growers and SaskCanola and conducted by Prairie Agricultural Machinery Institute (PAMI), found that taking time to measure and manage combine losses could save yield (increase profit) while preventing volunteer canola issues.

To determine the amount of combine losses and the variables impacting them, PAMI visited 31 producers across Alberta, Saskatchewan and Manitoba during the 2019 harvest season and measured in-field canola combine losses from 50 combines (which included 40 different combine models from six different manufacturers).

Average losses measured were 1.3 bu./ac. (or 2.8 per cent of yield), with a range of 0.2 to 4.1 bu./ac.

An overview summary report and, for those who want more detail, a comprehensive final report of this study are all available on the Canola Research Hub at **CanolaResearch.ca**. Look for "On-farm survey of combine grain loss in canola across Western Canada" in the Harvest Management section.

At a high level, the operator's knowledge of the machine and how they adjust to environmental conditions is an important factor in lower losses, according to Amie Harrison, PAMI's project lead.

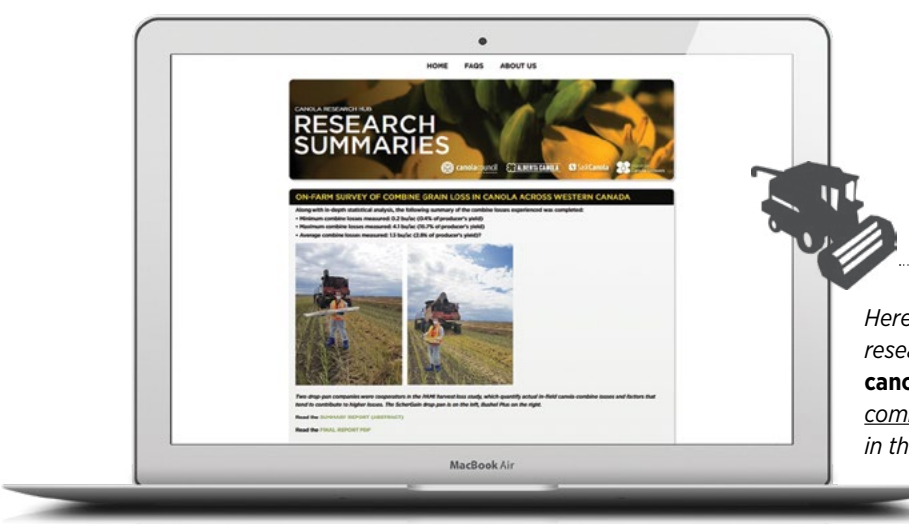
Ambient temperature, relative humidity, weather conditions, harvest method (swathed/straight cut), canola variety (shatter resistant/non-shatter resistant) and ground speed all had a significant impact on the combine losses, while combine brand, model and age were not major factors.

Furthermore, this study (which noted additional testing is recommended) found that:

- Canola combine losses were significantly lower during tests completed above 23°C and at relative humidity levels of less than 45 per cent.
- Tests completed on days with minimal cloud cover had significantly lower combine losses.
- Swathed canola had significantly lower combine losses compared to straight cut canola.
- Non-shatter resistant canola varieties tested also showed significantly lower combine losses compared to the shatter resistant varieties.
- Ground speeds less than 4.3 mph (6.9 km/h) were also attributed to lower losses.

Read more about this project at **CanolaResearch.ca**

–Taryn Dickson is resource manager, crop production and innovation with the Canola Council of Canada.



Here is a screen shot showing a sample of how these research results are presented at the Hub website, **canolaresearch.ca**. *Look for "On-farm survey of combine grain loss in canola across Western Canada" in the Harvest Management section.*

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Do you choose seed with an end-user in mind?

Four canola growers talk about their canola seed decisions, and their farm marketing strategies that consider customer needs and specialty users.

BY JAY WHETTER

DEAN ROBERTS COLEVILLE, SASKATCHEWAN

Dean Roberts always thinks about the people who will eat his crops. "With every decision, I want to be able to explain why I did it and why it's a good thing," he says. "Label rates matter. Pre-harvest intervals matter. I want to deliver crops that I would also feed to my family."

Growing quality food has always been important, but farming with the end user in mind "absolutely has to be done now," he says. "Food safety is too prevalent in the public mind to not think about it."

Roberts often has more than four crops on the farm, but his rotation in 2020 was more diverse than usual. He grew canola, flax, peas, lentils, spring wheat, feed barley and, for the first time, fall rye and winter wheat. "This year, I'm going to get an early jump on harvest," he says. While Roberts got all his crop off last fall, he has had three crops snowed on and lodged over the past five years. With the winter crops, harvest could start in mid-August.

For most of his acres, Roberts prefers to grow crops with more transparency in terms of pricing and grading. For canola, he sticks with regular commercial canola. "We have a lot of market options in our area, so I like the freedom to deliver where I want and when I want," Roberts says. "My big thing is about keeping market access and market freedom."

"With every decision, I want to be able to explain why I did it and why it's a good thing. Label rates matter. Pre-harvest intervals matter. I want to deliver crops that I would also feed to my family."

–Dean Roberts

CHRISTI FRIESEN
BROWNVALE, ALBERTA

Christi Friesen's approach is to be open-minded about any possibilities. She uses the Cargill MarketSense program, which looks into various crops and possible end users, and helps make decisions that consider the best profitability.

"Growing a specialty canola is definitely something we're open to. We always look at it every year," Friesen says. "We pay attention to what the trends are doing. Because if that is what's going to keep the wheels rolling, then that's what we have to do. If you don't have an open mind, you'll never grow at all."

Friesen tried green peas this year. "We've never grown green peas ever, always yellows," she says, "But with market trends, it made sense for our farm to grow green peas."

In 2019, they also tried a 60-acre intercrop of Clearfield 45H76 and Amarillo peas, a later variety that lined up with the canola maturity. "My husband Kelly did a lot of research on it. He wanted to see what the return on investment would be for a crop that got the least amount of inputs."

They seeded with a paired-row opener, putting peas at 2.5 bu./ac. down the middle and canola at 3 lb./ac. on the sides, with a starter rate of monoammonium phosphate. In the end, the peas yielded 25 bu./ac. and the canola yielded 42 bu./ac. "It worked really well," Friesen says.

So, while it's clear they're open to new crops, Friesen says one challenge up in the Peace region is transportation. Delivery points for speciality canola are not always convenient, so delivery costs can eat into the margins.

"We pay attention to what the trends are doing. Because if that is what's going to keep the wheels rolling, then that's what we have to do. If you don't have an open mind, you'll never grow at all."

–Christi Friesen

CHUCK FOSSAY
STARBUCK, MANITOBA

The Fossay brothers have been growing Clearfield canola under contract through Viterra for the past eight years. Viterra processes the non-GMO canola through its facility at Ste. Agathe, Man., which is about 30 minutes from the Fossay farm.

"Lately, we've been growing 800 to 1,000 acres of canola each year, and it has all been Clearfield," says Chuck Fossay, one of four brothers who farm together. He is also a director with Manitoba Canola Growers.

"The contract pays a premium of 30¢ to $1 per bushel, and the longer we store it, the better the premium," Fossay says. "When we compare our yields to what neighbours are getting with other hybrids, they're usually very similar – three bu./ac. plus or minus. With the premium, we feel that we're receiving at least the same amount of money."

With the contract, the Fossays also get on-farm pick up.

Fossay says growing non-GMO canola is not about any particular farm philosophy, except maybe a philosophy of profitability. "It's strictly a marketing opportunity," he says.

"Typically when we sign up, the contract is for the first 30 bu./ac., but over the past three or four years they've been accepting all of the canola we can grow."

This contract gives them some flexibility to seek other marketing opportunities for anything above the 30 bu./ac., especially since Clearfield can go directly into the regular canola market channel. But they've opted to sell it all through the Viterra contract anyway, Fossay says.

Most of their acres over the past few years have been seeded to Pioneer Hi-Bred 47H76, although they did try a couple of new ones this year – including one with increased pod shatter tolerance. "This new hybrid should be able to be straight combined," Fossay says, but that isn't a big selling feature for him at this time. "I still prefer to swath," he says. "Recently, we've been able to combine our swathed canola before people with standing canola have been able to start their harvest." That said, he says they might try straight combining "a couple of acres" in 2020.

"Lately, we've been growing 800 to 1,000 acres of canola each year, and it has all been Clearfield."

–Chuck Fossay

"The market premium for the specialty canola allows us to diversify our canola marketing strategy a little bit."

–Katelyn Duncan

KATELYN DUNCAN
REGINA, SASKATCHEWAN

The Duncans used to grow Cargill Victory Roundup Ready varieties back when they had a swather, but stopped for a few years waiting for a specialty variety with pod-shatter tolerance.

"We are back again this year, growing InVigor Health L258HPC," says Katelyn Duncan. She farms with her sister, Mary, who does all of the marketing.

The Duncans grow a lot of canola each year, and being able to seed some acres to a specialty variety is attractive to them. "The market premium for the specialty canola allows us to diversify our canola marketing strategy a little bit," Duncan says.

While the Duncans don't know the actual end user, the canola goes to Cargill's facility at Clavet, Saskatchewan and, as a high-oleic variety, the oil goes into specialty food-use markets.

Agronomically, the Liberty Link option works with their herbicide rotation strategy. "And the kicker is being able to straight cut it because we don't actually have a swather anymore," she says. L258HPC has the InVigor pod-shatter reduction trait.

As part of their efforts to maintain agronomic and market diversity, the Duncans also tried an identity-preserved Clearfield soybean variety this year. "We need a longer break for our lentils, so are looking for a crop with a herbicide system that works for us the way lentils do," she says. This particular soybean variety fit with their system, so they decided to try soybeans again – even though their limited experience with the crop hasn't been great so far. "We grew soybeans once before, three years ago, and they were a wreck."

–Jay Whetter is the editor of Canola Digest.

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“EVERYONE DEPENDS ON THE SAME MARKETS.

Export markets that either have tighter tolerances, or no tolerance, established for crop protection products, is something we need to pay attention to. We need to be aware of which products may have special concerns around them.

We need to pay attention on an ongoing basis, not just once a year, but regularly to see what the Keep it Clean advisories have highlighted as products to pay particular attention to.

– COREY LOESSIN, Radisson, SK ”

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Two canola farmers share how they handled the fallout of last year's brutal harvest conditions, including spring harvest of their 2019 canola crop.

WHAT I LEARNED FROM HARVEST 2019-20

BY JEFF MELCHIOR

From the Peace Country of northern Alberta all the way down to southern Manitoba, many Prairie canola producers agree that fall 2019 was one of the worst harvest seasons on record. Several found themselves trying to salvage what canola they could well into the spring. Quality, yield and ease-of-harvest for this spring-harvested canola depended highly on circumstances.

Andre Harpe's 2019-20 canola story had many of the makings of a disaster, but a little luck – and a lot of sweat – turned his spring-harvested canola into a relative success.

Plentiful moisture throughout summer 2019 initially bode well for the Valhalla Centre, Alberta canola and barley producer. But those conditions quickly turned into too much of a good thing.

"Throughout the summer and going into the fall we had what was rapidly becoming a bumper crop," says Harpe. "The conditions that led to the crop being very good unfortunately never quit."

Sometime around October 24 his area was blanketed by a heavy, wet snowfall which dashed his hopes for a fall harvest.

Although his crop insurance provider wrote off his unharvested barley, it didn't extend the same offer for his canola. "They really encouraged us to try harvesting it before we wrote it off."

When the snow finally melted late in the spring, Harpe was pleased to discover that the snow had served as protective cover for his canola crop.

"One of our saving graces was the snow never left us,"

Half of Andre Harpe's unharvested canola was swathed and half was standing. The swathed canola was fairly easy to pick up in the spring, but the standing canola, as shown in this photo, was flat and "extremely slow and difficult to pick up," Harpe says.

Photo Credit: Andre Harpe

he says. “It never went through freeze-thaws. The canola wasn’t exposed to air until April. I think what happened is none of the moulds that usually set in had that opportunity. Scientifically I can’t prove it, but I think it helped.”

Harpe wasn’t able to apply combine canola until April 29, just as it was time to plant a new crop. What followed was a “logistical nightmare” full of wet, 16-hour days.

“Half of my (unharvested) crop was swathed and half of it had been left standing. The swathed canola was fairly easy to pick up and went fairly fast,” Harpe says. “The standing stuff was so low and flat that it was extremely slow and difficult to pick up.”

The canola Harpe was able to salvage did quite well. “The canola – for the most part – was in very good condition. Ninety per cent of my canola graded at number one.”

However, he still lost a sizeable portion of his crop. “I probably lost a quarter to a third of the crop just through shelling and disappearing through normal wear and tear on the pods.”

Because there were so many circumstances beyond his control, Harpe says he doesn’t plan to do anything different in harvest 2020.

“Last year was a very abnormal year and typically we do get a few good weeks of harvesting weather. I don’t expect to see such conditions (as last year) happening again and I’m hoping they won’t happen for quite a while.”

“Ninety per cent of my canola graded at number one.” However, he still lost a sizeable portion of his crop. “I probably lost a quarter to a third of the crop just through shelling and disappearing through normal wear and tear on the pods.”

–Andre Harpe

Credit: Andre Harpe

Here is Jordan Sawchuk's spring-harvested canola. He doesn't expect to get much for it.

Photo Credit: Jordan Sawchuk

"It showed us some vulnerabilities that we have as an operation. We learned that our combines will combine very wet grain; we just need the ability to deal with that wet grain."

–Jordan Sawchuk

A MANITOBA EXPERIENCE

Jordan Sawchuk is no stranger to abundant rain and snow, early winters, late falls and few growing degree days on his mixed farm in the southern Manitoba community of Mountain Road.

But the fall, winter and spring of 2019-20 proved almost insurmountable – even for this veteran. With excessive moisture starting in mid-August and continuing on through the winter, he and his workforce pushed themselves and his equipment through 24-hour days to get off what they could. Ultimately, 1,000 acres of canola and about 400 acres of wheat were left on the ground over winter – a sum representing half of his total crop.

Still, he considers himself lucky compared to some of his neighbours. "We didn't have a great harvest, but a lot of guys didn't even get started in our area, and by that I mean their combines didn't even leave the yard."

When the land dried up enough to attempt harvest in the spring, Sawchuk had some tough decisions to make. Lacking the manpower and trucks to harvest and plant at the same time – not to mention fears of cross-contaminating harvested seed with fertilizer and treated seed – he decided to combine as much as he reasonably could before planting a new crop.

Starting May 7 and running for six days, he and his crew jumped from field to field attempting to harvest the driest areas. "We ended up having to burn what we were unable to harvest," he says.

Much of his crop remains in storage with plans to sell, but Sawchuk isn't expecting to get much out of it. "It was very high dockage, going by the samples we sent to the elevator. I don't even know what they graded it."

Sawchuk doesn't think there was much he could have done differently to turn his luck around last fall. However, he refuses to complain, opting instead to take the ordeal of 2019-20 as a learning experience.

"It showed us some vulnerabilities that we have as an operation," he says. "We learned that our combines will combine very wet grain; we just need the ability to deal with that wet grain."

For Sawchuk, that means higher drying capacity. Although he hasn't figured out all the details at this point, he knows he wants a high-throughput drying system, large wet bins and the ability to move canola and grain to multiple bins using limited manpower on a 24-hour schedule.

"We're looking at a system approach," he says.

"You always have to step back and look at things and you have to learn. Can I prevent Mother Nature from dumping six to 10 inches of rain on us?" he says, referring to a recent weather event at the time of interview. "No I certainly can't. But maybe there are things we can do."

–Jeff Melchior is an Alberta-based freelance writer specializing in agricultural writing.

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Canola Digest asked a few seed leads for their thoughts on major yield robbers that reduce field performance of canola genetics in Western Canada. We also asked about agronomy and technology that might help, and the next game-changing traits.

HOW CAN CANOLA ACHIEVE MORE YIELD IN THE FIELD?

CHAD KOSCIELNY
North American canola breeding lead, Corteva

Chad Koscielny says the gains in canola yield over the past two decades have been a great story. "The industry's response to biotic stressors, including blackleg, sclerotinia and clubroot, has been a big win leading to increased sustainability and yield gains," says the research scientist and canola breeding lead with Corteva. But Koscielny adds that any significant future gains will have to come from a genetic response to abiotic stress. He took time to answer our questions.

1. What are the most important yield-limiting factors that keep farm averages well below the genetic potential for canola in Western Canada?

The factors are primarily abiotic stress from heat, drought and excess moisture. Improvements can come through agronomy. For example, I did some field studies as part of my Ph.D. that showed how shifting planting dates from early May to late May or early June can cause around a 20 per cent reduction in yield. The reduction is primarily related to increased heat stress for the late-seeded crops.

Genetic tolerance to these abiotic stresses is something we haven't really solved for growers. For farmers around Carman, Manitoba, where I work, this can be a big challenge. They have a great looking canola crop established, but then the crop only flowers for three weeks with the summer heat, and they harvest their 40 to 45 bu./ac. crop as usual and are left feeling frustrated knowing that it could be yielding a lot more.

2. From a seed developer's point of view, what technology do you think will be the most valuable in terms of increasing economic returns for canola?

There is really no quick solution when it comes to the issue of abiotic stress due to the multi-genic plant response. For heat stress, we have to use the entire genome to look for positive responses. Then, for breeding, we need to implement proper screening to select for the lines with the best combination of genetics so we can be assured of a fairly consistent response in the field. This can take a long time and requires patience.

When it comes to all technologies available, we have to recognize that the recipe of technologies that provide the best yield benefit and return on investment for growers at Watrous, Saskatchewan will be different than the recipe for Leduc, Alberta.

"We have to recognize that the recipe of technologies that provide the best yield benefit and return on investment for growers at Watrous, Saskatchewan will be different than the recipe for Leduc, Alberta."

–Chad Koscielny

3. We have seen several game-changing genetic advancements in canola over the past 30 years – blackleg resistance, herbicide tolerance, hybridization and now pod shatter resistance. What do you think will be the next game-changer?

In the short term (one to five years), it will packaging up all traits into a single package and offering it with different herbicide options for grower flexibility. Target traits would include clubroot, blackleg and sclerotinia resistance, pod shatter and maturity. We have recently launch P505MSL which is a Liberty Link hybrid with improved resistance to sclerotinia, improved shattering tolerance, clubroot resistance and is rated R (resistant) to blackleg. Our goal is to continue to layer these traits into more genetic backgrounds with different herbicide options and maturities.

In five to 10 years, it will be use of genetic predictions to drive agronomic and yield performance to the next level, and finally 10 to 15 years out, it will be the use of genetic predictions combined with crop modelling. I would really like to get to the point where we have a more robust crop growth model so we can predict how the crop will respond to different weather conditions. With this model, our breeders could run simulations and then put together a genetics package that will respond well in those situations. That way, we could have hybrids suited to places with a lot of summer heat, to situations where spring frost risk presents a risk to early-seeded crops, and to places where summer day length is very long. Corn has been leading the way in this.

MALATHION AND CANOLA DON'T MIX

Malathion can linger in bins for months and the residue can be picked up by canola seed, making it unacceptable for export.

Protect your investment and help keep markets open for all. Do not store canola in bins treated with malathion during this growing season and never use malathion to prepare canola for storage.

Keep canola out of malathion-treated bins.

keepitclean.ca/canola/malathion

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For more information contact your local Canola Council agronomy specialist or call (866) 834-4378.

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4. Of the traits currently available or on the "game changer" list you describe in question 3, which is the hardest to breed?

It is a challenge to put together an entire package of traits and offer this package in multiple herbicide-tolerance systems and with a range of two or three maturities. This challenge can become more difficult if we have to introduce new clubroot resistance traits if resistance breakdown occurs. Growers can really help the seed companies by using some of the tools, such as a one in three rotation and controlling volunteers, to improve the duration of disease resistance.

5. Tell us about your company's breeding investments in end-use traits that could improve the long-term marketability of canola?

Valuation creation per acre will become more critical for Canadian growers, especially as other countries around the world get better at producing more. Improving value per acre could mean producing crops with higher value traits, including high oleic oil, increased protein levels and potentially even designer proteins. Corteva is working on specialty oils and proteins through its Brevant distribution network and its recently announced Protein Industries Canada grant, respectively. Increased health awareness and increased value of seed components will provide opportunities for canola growers in Western Canada, who have proven themselves as rapid technology adopters. The goal is to increase returns per area farmed for growers and consumers.

WADE STOCKER
Manager, canola seeds and traits, BASF Canada

STEWART BRANDT
BASF global head, InVigor canola breeding

1. What are the most important yield-limiting factors that keep farm averages well below the genetic potential for canola in Western Canada?

Stewart Brandt: First of all, for plots and trials we look for the most uniform performing areas within a field. We're not seeding into sloughs, for example. And those plots are managed proactively and intensively for nutrients, diseases and insects. Farmers, on the other hand, seed whole fields and will accept some loss to insects and disease before considering whether to spend the money on a spray, as they have an economic threshold. For these reasons alone, farmed canola may not achieve the yield potential of canola grown in trials and plots.

Wade Stocker: We know some Canadian farms and fields can get to 90 bu./ac. canola yield in spots, but field averages have to include low spots, drowned out areas and hill tops.

Stewart Brandt: Aside from this variability that will reduce the average, the other major yield limiting factors ones start with weather, particularly timely, adequate (but not an overabundance of) moisture. Soil type, organic matter and growing degree days are other factors. If farmers can seed earlier into soils with high organic matter and in an area with more growing degree days, we know the yield potential will be higher. Finally, the other major factors are agronomic decisions, including seeding date, plant stand and harvest management.

Wade Stocker: Agronomic decisions all season long can have a major cumulative effect on canola yield. Adding to the ones Stewart listed are fertilizer placement and seeding equipment that can help farmers achieve uniform seed placement and plant populations.

2. From a seed developer's point of view, what technology do you think will be the most valuable in terms of increasing economic returns for canola?

Wade Stocker: As seeding equipment becomes more precise, we'll be able to achieve more consistent depth and seed spacing down the row. This will improve stand establishment. I also see a bigger role for the concept of an agronomy recipe for each field and for zones within each field. This recipe will include targeted fertilizer blends and rates, seeding rates and crop protection rates.

Stewart Brandt: Farmers and seed companies have a huge amount of data available to them, including data from weather stations, satellite images and drones. The challenge is to make sense of the data. We're collecting the data, but we also need to process the data and provide solutions that farmers can implement. As companies, we could do a better job of providing the agronomy solutions that come from the data processing.

Wade Stocker: That's exactly where the BASF Agronomic Excellence group comes in. Through that group, we want to define the specific agronomy decisions that will improve hybrid performance in various situations. This is part of writing the recipes I mentioned earlier.

"As seeding equipment becomes more precise, we'll be able to achieve more consistent depth and seed spacing down the row. This will improve stand establishment. I also see a bigger role for the concept of an agronomy recipe for each field and for zones within each field. This recipe will include targeted fertilizer blends and rates, seeding rates and crop protection rates."

–Wade Stocker

Stewart Brandt: It could be possible to have a hybrid for every microclimate, but if we try to fine-tune it too much, the hybrid might be right for a field one year, but not the next. We feel that the better approach for our customers is to look for hybrids that provide stable performance across many different environments.

3. We have seen several game-changing genetic advancements in canola over the past 30 years – blackleg resistance, herbicide tolerance, hybridization, and now pod shatter resistance. What do you think will be the next game-changer?

Stewart Brandt: Blackleg resistance, herbicide tolerance and hybridization all came to canola in the late 1990s. The combination of these three advancements had a big impact on canola production. The next game-changing advancements could come from resistance to abiotic stress, including extreme weather, from stable durable resistance to disease, and from improved nutrient use efficiency. At this point, we've identified traits that could play small roles to improve nutrient use efficiency, but the results are not always consistent or measurable. We don't have our head around everything yet, but with genomics, phenotyping and other tools, we're getting closer.

Wade Stocker: In the meantime, InVigor's proprietary pod shatter reduction technology could be considered a game changer in the flexibility it provides to harvest timing. I don't think we really realized how big a deal this would become for farmers.

4. Of the traits currently available or on the "game changer" list you describe in question 3, which is the hardest to breed?

Stewart Brandt: One challenge with breeding for a new or improved trait, like insect resistance, nutrient use efficiency or abiotic stress tolerance, is to identify genes or genetic sources that are different enough to provide some improvement. That is difficult enough. But when we find genetic material that contains these target traits, it often also has other things that can cause yield drag or unfavourable agronomics or reduce canola oil quality. So even if we find improved clubroot resistance in an exotic brassica plant, for example, these exotic traits can actually slow down breeding efforts if we have to strip away the other baggage that comes with it. This is important for farmers to know because it emphasizes the challenge to bring new sources of resistance to market using the current tools available. That's why it's important to protect the traits currently available on the market.

JAMIE MILLS
Canola marketing manager, Bayer Crop Science

1. What are the most important yield-limiting factors that keep farm averages for canola well below its genetic potential?

Over the years, the environmental conditions continue to be some of the most yield-limiting factors farmers face. In particular, moisture, too much or not enough, and temperature, too cold or too hot, have both been issues in Western Canada.

2. What technology do you think will be the most valuable in terms of increasing economic returns for canola?

The future of increasing economic returns for growers is a combination of many factors working together. Continual improvements in genetic yield potential, improved herbicide traits and options, improved seed treatment options, improved fungicide options and improved agronomic practices will be all integrated by improvements in equipment and precision farming supported by new digital technologies that allow growers to more accurately manage each acre.

3. We have seen several game-changing genetic advancements in canola over the past 30 years – blackleg resistance, herbicide tolerance, hybridization, and now shatter resistance. What do you think will be the next game-changer?

Clubroot continues to be a growing concern for farmers and has the ability to drastically impact how we are able to grow canola in the future. Bringing new and more durable genetic resistance to market in conjunction with improved stewardship will be critical for the future production of canola in Western Canada.

4. Of the traits currently available or on the "game changer" list you describe in question 3, which is the hardest to breed?

Searching for new sources of clubroot resistance means looking at different plants that might not be closely related to canola. Finding the genes is a difficult task, but once they are identified, being able to breed them into a commercially acceptable hybrid is another difficult and lengthy process. It takes many years to breed these types of resistance into canola and still provide farmers an agronomically sound canola hybrid that will produce increased economic return for them.

BRUCE HARRISON
Senior director, seed breeding and innovation, Nutrien

LYLE COWELL
Manager, agronomic services, Nutrien

ALAN GROMBACHER
Senior breeder, Nutrien

COREEN FRANKE
Manager, pathology research, Nutrien

CYNTHIA DEITZ
Proven Seed brand manager, Nutrien

1. What are the most important yield-limiting factors that keep farm averages well below the genetic potential for canola in Western Canada?

Bruce Harrison: Western Canada is a large and somewhat diverse growing region. Aside from the environment, assembling hybrids having high yield potential, and protecting that potential with broad disease resistance is the key to driving yield improvement. More recently blackleg and clubroot challenges have increased and, as breeders, we all need to focus on managing these challenges.

Lyle Cowell: One way to increase yield is to get marginal areas out of production. When we push canola into more marginal areas, canola yields will stay low. Fifty-two bushels per acre is not achievable on a significant number of soils in Western Canada, and in those where it is possible, every field has soils that won't support 52 bu./ac. That means higher-producing areas of the field have to yield 70 bu./ac.

Alan Grombacher: We will see gains by adjusting fertility based on yield potential differences in different parts of the field. You don't want those high-producing areas to be yield-limiting for nutrients. I also think activities around planting the crop are a big yield limiting factor. Planting is where most of the problems start, so make sure the planters are achieving the seed placement and stands needed for optimum yield. That's how you optimize genetics. With no stand, you're not going to see the crop perform – no matter what you do.

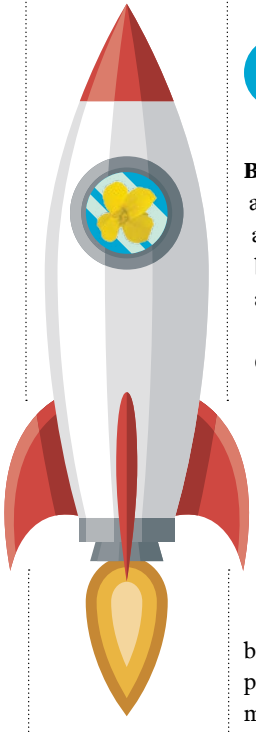
Coreen Franke: An enormous limiting factor is the environment. With climate change and increasingly unpredictable weather, reaching canola's true yield potential will be an ongoing challenge.

2. From a seed developer's point of view, what technology do you think will be the most valuable in terms of increasing economic returns for canola?

Cynthia Deitz: Breeders are building a rocket with a big payload. Agronomy is trying to limit the gravity effect on that rocket. Agronomy gets help from the precision tools available now, including seed placement that provides even depth and even spacing, and variable-rate fertilizer to provide control over variability within fields. The next layer is the use of data to identify the responses to these variables, combined with known environmental data, like weather and soil capacity.

"Breeders are building a rocket with a big payload. Agronomy is trying to limit the gravity effect on that rocket. Agronomy gets help from the precision tools available now, including seed placement that provides even depth and even spacing, and variable-rate fertilizer to provide control over variability within fields."

–Cynthia Deitz



Lyle Cowell: Through our Echelon division, we have farmers collecting field data and using that to realize the potential of every acre.

3. We have seen several game-changing genetic advancements in canola over the past 30 years – blackleg resistance, herbicide tolerance, hybridization, and now pod shatter resistance. What do you think will be the next game-changer?

Bruce Harrison: Problems at hand are clubroot resistance, and erosion of the resistance in the Mendel gene. Multi-genic clubroot resistance will become significantly more important to the canola industry in Canada. Also on the list are traits to address abiotic stresses and more known traits including shatter tolerance. Another approach is more targeted breeding of hybrids that can provide yield stability based on local conditions.

Cynthia Deitz: Our analytics team is looking at the data and patterns, matching up trial results and trying to flag geographic, weather and soil type parameters to align varieties to those areas. We're getting pretty close to this in soybeans and corn due to having Canadian and U.S. data sources. Canola is further away because there are not as many yield data sets available.

4. Of the traits currently available or on the "game changer" list you describe in question 3, which is the hardest to breed?

Bruce Harrison: There are unique challenges for breeding any trait. For Nutrien, we're focused on grower needs and assembling hybrids with a complete package delivering both yield and yield stability across variable geographies and growing environments.

Coreen Franke: Clubroot is proving to be highly adaptive and extremely pernicious. Already, 17 pathotypes have been identified that can overcome the single gene Mendel resistance source. There is much we still don't understand about the pathogen, and genetics for resistance are quite complex. The development of effective multi-genic resistance to contend with the numerous pathotypes is not an easy task and will take more time – and even then, these varieties won't be a silver bullet. The only solution to manage clubroot and protect valuable genetics is to adopt an integrated crop management plan, including growing CR varieties and rotating crops.

Photo Credit: iStock.com/bortonia

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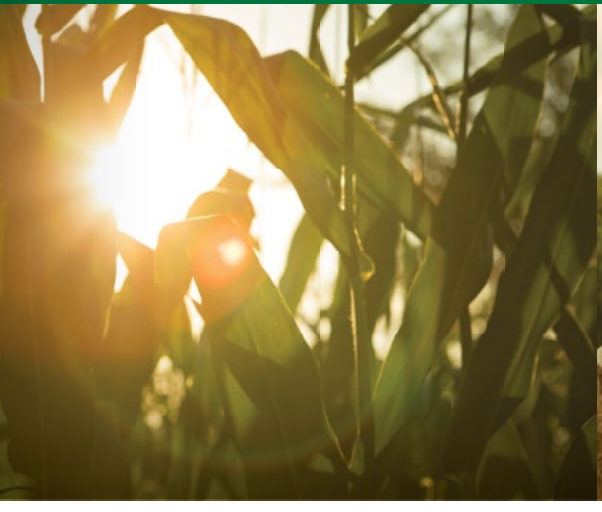

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CHOOSE THE PERFECT HYBRID FOR EACH FIELD

One goal of the Canola Council of Canada agronomy team is to encourage canola growers to consider choosing hybrids based on the opportunities and challenges in each particular field. This approach is seen as one way to improve productivity and profitability of the crop. Here are some scenarios describing how a farm might benefit from adopting this strategy:

1. **To try clubroot-resistant genetics.** This is a good strategy for most of the Prairies now that clubroot is fairly widespread. Fields that have used clubroot resistance at least twice may be good candidates for a new source of resistance.

2. **To take some pressure off the sclerotinia spray decision.** Hybrids with tolerance to sclerotinia stem rot will provide some peace of mind in those situations where the decision to spray is not so easy.

3. **To address an increase in blackleg disease in a field.** In that situation, growers will be able to choose a variety with a different major gene for blackleg resistance. A stubble test to identify the most common blackleg race in a field will allow rotation of major gene resistant germplasm using information available from many of the seed suppliers.

4. **To provide some harvest choices.** Hybrids with improved straight cut features or pod shatter tolerance are better suited to late swathing and straight combining, which could provide a little more flexibility on harvest timing and method.

5. **To spread out harvest.** Unless there are major delays with spring seeding, a good strategy to ensure an actual difference in maturity at harvest is to seed the earlier maturing hybrids first. Otherwise, if those earlier-maturity hybrids are seeded much later than later-maturing varieties, a useful difference in harvest time is unlikely.

6. **To hedge their bets on weather.** Some hybrids may perform better or worse in certain environmental conditions. Because we can't predict growing season weather, having a few different hybrids may hedge the bet somewhat. For a strategy, you could check canolaperformancetrials.ca and choose a hybrid that has high yield potential and another hybrid that is more consistent year to year. Seed companies want to start identifying hybrids that best suited to certain situations, such as soil zone, moisture or cool springs. They're not there yet, but they might have some rough ideas on hybrids that seem to perform differently in different situations, so you might ask for their advice.

7. **To rotate weed management.** Herbicide rotation is always good practice, but if you know your weeds, that can help drive some more specific strategies when it comes to canola hybrid choice. For example, the Roundup Ready system is better for Group-1-resistant wild oats, and the Liberty Link system is the better choice if the field has known or suspected Group-9-resistant kochia.

8. **To choose hybrids that may respond better to higher fertility rates.** Some varieties may be more prone to lodging with increasing N rates.

9. **To expand marketing opportunities.** A few fields seeded to a specialty canola variety could cover off many of the points above while also providing a different marketing angle with premiums, specified delivery dates, on-farm pick up or whatever features the contract provides.

Bottom line: If a farm grows only one canola hybrid and has an issue with performance, they may not be able to determine whether a different set of genetics might have helped in their scenario. With a variety of hybrids, cultivar performance can be analysed. Through this process, farms can start to do their own "phenotyping" – which is to analyze genetic performance based on local growing conditions.

SCLEROTINIA RESISTANCE **KEEPS GETTING BETTER**

Corteva and its Pioneer Hi-Bred seed brand have been the leaders in sclerotinia stem rot resistance in canola. The current level of resistance provides good protection in situations where a grower isn't quite sure the crop needs a fungicide spray. In situations where moisture is good and the risk is high, these varieties may still benefit from a fungicide application. If growers struggle each year with the decision to spray, they may appreciate a hybrid with some degree of resistance.

AIM FOR LESS THAN 2% HARVEST LOSS

Farmers can keep canola losses out the back of the combine to below two per cent of yield – which is one bu./ac. for a 50 bu./ac. crop. A PAMI survey last fall showed that many combines are performing quite well.

Between August 22 and October 18, 2019, PAMI visited 31 farms across Alberta, Saskatchewan and Manitoba, and measured canola threshing losses from 50 machines. These included 40 models from six combine manufacturers.

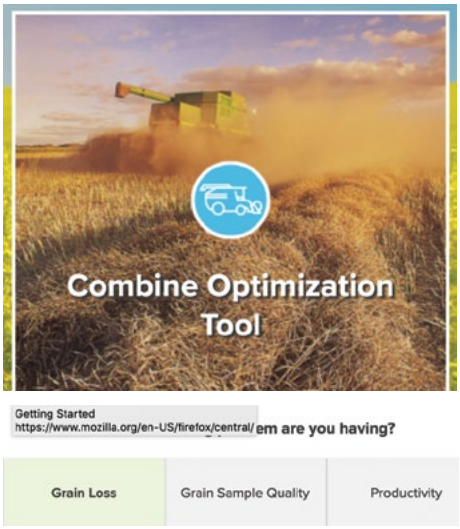
Each loss test was repeated three times per combine, and combine operators were asked to run at their normal settings and ground speed. The range of loss for the survey was 0.2 to 4.1 bu./ac. (0.4 to 10.7 per cent of yield), with an average of 1.3 bu./ac. (2.8 per cent). Surveyors also gathered information on weather conditions, harvest practices (straight-cut, swathed), canola variety (shatter resistant, non-shatter resistant), ground speed, grain feed rate and combine age.

Combine brand and model were not major factors. Interestingly, there was a trend of higher losses with newer machines, which more than likely correlates to higher horsepower and the ability for greater throughput.

Unsurprisingly, weather factors had significant influence on losses. This emphasizes the need to regularly adjust and test throughout the day and harvest season. Temperatures greater than 23°C, relative humidity less than 45 per cent, and low cloud cover all contributed to lower losses. Additionally, lower losses were found with swathed canola, non-shatter tolerant varieties, and with ground speeds less than 4.3 miles per hour.

The finding of higher losses with shatter-tolerant canola or straight-cut canola can be overcome by treating these as a distinct crop from swathed canola and adjusting settings accordingly, with, for example, more aggressive threshing.

Lost yield reduces the tonnes of harvested crop per acre, and increases the greenhouse gases produced per tonne of crop. Lost yield is also a waste of inputs and can increase management cost for volunteer canola.



Try the Combine Optimization Tool at **canolacalculator.ca**. It provides guidelines to set the combine to meet targets for grain loss, grain sample quality and/or productivity.

For tips on how to check for losses, read the section "Minimizing grain loss during harvest" in the harvest management section at **canolaencyclopedia.ca**

A GOOD REASON TO COUNT STEMS AT HARVEST

Average stem counts for each canola field harvested this year can put yield, quality and harvest date results in perspective and help with seeding rate decisions in 2021.

By collecting a few years' worth of plant stand data and cross referencing it with seeding rates, yield, grade and maturity data for each field, farms can determine their own optimum target stand. Profit and risk are best optimized with canola plant densities of 50-80 plants per square metre (five to eight per square foot). Growers may discover that in some situations, 50 plants per square metre (five per square foot) is a suitable target while in other situations (weedier fields, shorter growing season, etc), 70-80 plants per square metre (seven to eight per square foot) is more appropriate.

Although lower plant densities may reach yield targets in some years, thin stands cause a decline in yield stability and predictability. Thinner stands will produce branchier plants that take longer to mature, leading to later harvests and an increased risk of fall frost that can lock in green seed.

Compare harvest counts to spring emergence counts. Canola plant counts can drop 10 to 15 per cent through the season. If plant density declines throughout the season, check scouting notes and consider the most likely reasons – self-thinning due to high plant density? insects? weather? disease? – and whether there's a profit-improving way to prevent this. Seed choice may be part of the solution.

Use the calculators at **canolacalculator.ca** to help with target stand and seeding rate decisions. For tips on how to count, read "Why count canola stems in the fall?" at **canolawatch.org**.

Average stem counts for each canola field harvested this year can put yield, quality and harvest date results in perspective and help with seeding rate decisions in 2021.

Keep it Clean is a joint initiative of the Canola Council of Canada, Pulse Canada, Cereals Canada, Barley Council of Canada and Prairie Oat Growers Association, providing growers with tips and tools for growing crops that meet the requirements of our domestic and export customers.

WHY DO YOU **KEEP IT CLEAN** ON YOUR FARM?

Keep it Clean! Resources to Grow Market-Ready Crops

WE TALKED TO FARMERS AND ASKED THEM A SIMPLE QUESTION "WHY DO YOU KEEP IT CLEAN ON YOUR FARM?" HERE ARE THEIR RESPONSES.

FIONA JOCHUM
St. François Xavier, MB
Canola, oats, soybeans and wheat

It's important because across Canada we are known for our quality products. That standard is what people look for when they buy from us, so that's what we have to deliver. Exporting is so important for Canadian agriculture; we don't want to jeopardize any of our markets or our relationships with our customers. Even beyond that, if you think about it, we're all consumers here too, we're consuming the food that we grow and we all want a safe, nutritious food supply.

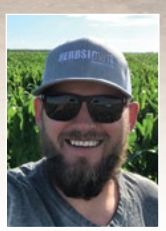
As a young farmer, I'm still learning. That's why I like using the Keep it Clean staging guides, in particular for canola. You can't tell how the crop is doing by just looking at it from a distance, you actually have to go in, break open pods and whatnot. The staging guide is really easy, so it helps to take a quick look at it, so I know exactly what I'm supposed to look for when I go out to judge the timing. Then when I go out and check for seed colour change, I can make sure it's at that 50, 60 per cent colour change before we head out there to spray pre-harvest glyphosate.

We all know what it's like to be on a team, and market access is a team effort. Everybody needs to be on board, follow the rules and work together to keep it clean.

JAKE LEGUEE
Fillmore, SK
Canola, durum, lentils, peas and wheat

It's all about keeping our export markets open. I went on a New Crop Mission last September to our key durum export markets, where I was able to talk to buyers in those countries. That really drove home for me that what you do on your farm matters. That's the message that I try to tell neighbors and friends. You might think your individual fields are no big deal. But, if your crop happens to be one of the samples taken at the export destination, and they can catch residues greater than the MRL, now we all have a problem.

Everything you do, does make a difference. We need to ensure were doing this properly. To me, that means it's okay to ask questions and seek help, because we can't be experts on everything.



KOREY PETERS
Randolph, MB
Canola, corn, soybeans, sunflowers and wheat

Well, quite frankly, we all like to make money and having access to more markets means there is a greater opportunity for your business to succeed. If we lose access to certain markets because of improper use, or because we're using chemicals that country doesn't accept, then we're in trouble, which is why we need to make sure we are managing those applications as best as we can.

I think just making sure we keep those markets open is important to my family because that's our livelihood. That was my dad's livelihood, my livelihood and it might be the next generation's livelihood, too.

FRED GREIG

Reston, MB

Barley, canola, corn, flax, oats, peas, soybeans, sunflowers and wheat

We want to make sure we're following all the rules to provide the highest quality product to customers and end users. Before you even plant, it's important to understand where you're selling it and how some of those decisions you're making will have restrictions on how you market it. You've got to talk to your input supplier, talk to your end users where you're selling to and check with your organization. That should cover most of the bases. My family has kids involved in the farm now. To be good stewards, moving forward especially, I think we've got even more reason to not restrict any of our markets.

COREY LOESSIN

Radisson, SK

Canola, lentils, oats, peas and wheat

The primary driver is to produce the highest quality product we can. In addition, export markets that either have tighter tolerances, or no tolerance, established for crop protection products, is something we certainly need to pay attention to. We need to be aware of which products may have special concerns around them.

Before we do anything as far as application of a product, we would check out Keep it Clean's advisories to make sure what we're going to do is all okay. That may involve also checking with exporters where we intend to sell the products.

We need to pay attention on an ongoing basis, not just once a year, but regularly to see what the Keep it Clean advisories have highlighted as products to pay particular attention to.

Everyone needs to take responsibility. Because everyone depends on the same markets, essentially right? We're producing food, so it has to be clean.

Learn more at keepitclean.ca

Keep it Clean is partially funded through the AgriMarketing Program through the Canadian Agricultural Partnership, a federal, provincial and territorial initiative.

MELISSA DAMIANI

Bluffton, AB

Barley, canola, hay and forages, and wheat

For me, the need to produce a safe, quality end product impacts my decisions more than the bottom line on my farm. I keep it clean to produce a product that buyers and, ultimately end users, will want, but also to help protect my farm's land, environment and people the best I can.

The Keep it Clean website has so many good resources to help you make the right decisions in-season. I recommend checking out this website as part of your winter planning routine to ensure you are using the right products, and check there haven't been any changes with the products you plan to use the upcoming year.

I always take the time to read and follow the label for products I might be using on my crop, and understand the label instructions, requirements and any limitations for those products. PHIs are very important, and can vary greatly between products. Taking that bit of time to learn about the products you are using before application to ensure you are making smart decisions is always worth it.

Interpreting a product label can be intimidating sometimes, but there are numerous industry resources to help you out if you need. In my experience, a quick call to a retailer, agronomist, company hotline or other industry professional with any questions or clarifications is always a friendly, fast and easy way to ensure you are making the right spray or variety decisions.

I think we must consider the future impacts of our decisions today when it comes to domestic and international trade, plus increased public scrutiny of farming practices. Farmers can continue to be a trustworthy source and someone that the public can rely on to produce safe and quality food, while also considering the environmental and economic impacts of their decisions. Keep it Clean is a really simple way of ensuring these parameters are covered, while also protecting our strong reputation as a quality exporter.

Let's continue to prove to the world that Canadian producers are capable of consistently producing some of the highest quality, safe and healthy food that is available, and that we can be trusted as top-level producers that are ready to feed a hungry world!

Update: Eligibility declarations become mandatory

Delivering what you declare is a long-standing pillar of the Keep it Clean program, and recent changes as a result of the Canada-United States-Mexico Agreement (CUSMA) mean that declaring the eligibility of your canola is now mandatory for all deliveries to Canadian Grain Commission licensed elevators and processing plants. Signed declarations by growers for grain handlers have been commonplace for many years. They are part of the canola value chain's quality assurance system that helps manage what comes into the handling system so our customers receive what they need when our canola reaches its destination. These declarations have typically included commitments around pesticide use and the variety/class of grain delivered.

Implementing concessions made under the CUSMA to allow U.S. farmers an official grade for eligible classes and varieties of wheat sold into Canada led to changes to the Canada Grain Act this spring. The Canadian Grain Commission has now implemented these changes through regulations that cover all sales to licensed facilities. The change extends to all deliveries of grains regulated under the Canada Grain Act, including canola. As a result, starting on August 1, 2020 it is a regulatory requirement for Canadian and American growers to declare that the canola they deliver is eligible for the grade it receives. For canola, this means that a shipment receiving any official grade other than Sample must be from a registered variety.

The mandatory declaration is included as Part B of the annual declaration for members of the Western Grain Elevator Association, and will be similarly incorporated in by processors and other exporters. While most grain deliveries have required similar declarations in the past, the regulatory changes mean that knowingly making a false declaration of eligibility is an offence under the Grain Act. For more information visit: **www.grainscanada.gc.ca/en/protection/delivery/declare-eligibility-of-grain.html**

Canada's canola industry is represented by these organizations: provincial grower associations, the Canola Council of Canada and the Canadian Canola Growers Association.

THE **CANOLA ORGANIZATIONS**

	PROVINCIAL GROWER ORGANIZATIONS:	NATIONAL VALUE CHAIN ORGANIZATION:	NATIONAL GROWER ORGANIZATION:
	SaskCanola ALBERTA CANOLA Manitoba Canola Growers	canolacouncil OF CANADA	CANADIAN CANOLA GROWERS ASSOCIATION
PURPOSE	These three Prairie canola grower organizations invest levy dollars into research, extension, public affairs, advocacy and canola promotion to support the long-term sustainability of canola growers.	Uniting the full canola value chain including growers, processors, exporters and life science companies to advance the sector. The CCC leads industry strategies in market access and trade; canola production and innovation, including national research coordination; and targeted promotion to export markets.	As the national policy voice for canola growers CCGA enhances the competitiveness of canola growers by conducting in-depth policy analysis and advocating for policy changes that impact farm profitability. Through the Advance Payments Program the association also provides growers access to interest-free and low interest cash advances.
BOARD	**SaskCanola:** 8 grower-directors **Alberta Canola:** 12 grower-directors **Manitoba Canola Growers:** 8 grower-directors	15 directors, including four canola growers (one from CCGA board and one each from SaskCanola, Alberta Canola and Manitoba Canola Growers), three representatives of life science companies, four exporters and four processors.	10 grower-directors, appointed by the five provincial canola grower associations: B.C. Grain Producers Association, Alberta Canola, SaskCanola, Manitoba Canola Growers and Ontario Canola Growers Association.
FUNDING	Growers fund their provincial canola organizations through a levy collected when crop is sold.	The three Prairie canola grower organizations together provide 50 per cent of CCC core funding. The other 50 per cent comes from processors, exporters and life science companies.	CCGA operates using funds generated from its core business operations. Provincial member organizations contribute a modest annual membership fee.
WEBSITE	**saskcanola.com** **albertacanola.com** **canolagrowers.com**	**canolacouncil.org**	**ccga.ca**

ADORABLE, HOUSE-TRAINED & HYPOALLERGENIC?

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BY 6204TF

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TruFlex CANOLA with Roundup Ready® Technology

BLACKLEG DEFENDR

CANADA'S BEST MANAGED COMPANIES

BrettYoung™ DISTINCT BY DESIGN

Many canola farmers in Western Canada are already following many of the basic principles of 4R Nutrient Stewardship – they just don't know it. There are clear economic and environmental benefits to following these practices. This article describes the basic practices and the benefits to 4R Designation.

SIMPLE **4R** TIPS TO **IMPROVE PROFITABILITY**

BY JAY WHETTER

In its Fertilizer Use Survey of Canadian farmers, Fertilizer Canada found that those farmers who have a 4R plan in place say the biggest benefit was an "increase in economic return" for nutrient inputs.

Interestingly, in the same survey, those farmers who know about 4R but haven't put together a 4R plan say the number one limitation is cost. For them, the anticipated increase in labour, time or equipment required for 4R just don't seem worth it.

4R Nutrient Stewardship, which is based on the trademark slogan "Right Source @ the Right Rate, Right Time, Right Place", does start with a few basic practices that will require some investment in time and money. (See Table 1 for basic practices from the 4R Guidance Document for nitrogen management.) The 4R Guidance Document outlines basic, intermediate and advanced 4R practices for oilseed, pulse and spring cereal rotations on the Prairies.

Practices that would require investment are setting crop and field specific nitrogen rates using appropriate regional tools such as nitrate soil tests, nitrogen balance, response curves or provisional guidelines, and accessing the tools for subsurface placement. Setting nitrogen rates specific to the needs of each individual field, which is a basic requirement within the 4R Guidance Document, will require some extra planning and perhaps more complication when it comes to fertilizer blending.

As noted, the soil test is another cost to reach this extra level of management, but the Fertilizer Use Survey shows a strong relationship between soil tests and overall yield.

"The Fertilizer Use Survey indicates that growers with higher yields tend to soil test more," says McKenzie Smith, director of stewardship and regulatory affairs at Fertilizer Canada. "Additionally, it shows that growers with higher yields also consider field variations and use a trusted advisor to interpret soil samples and translate this information into a nutrient management plan."

In the analysis of survey results, canola farmers are divided into high yield (over 55 bu./ac.), moderate yield (40 to 55 bu./ac.) and low yield (less than 40 bu./ac.) groups. The survey found that 50.6 per cent of high-yield growers soil test for nitrogen every year. That compares to 29.5 per cent for moderate-yield farmers and 24.4 per cent for low-yield growers. The soil tests are an indicator of a higher level of management overall, and this often goes hand in hand with higher yields.

The survey also found that high-yield growers tend to be more familiar with 4R programming and are more likely to work with a 4R designated agronomist.

Fertilizer Canada is working closely with companies who see value in training their agronomists and encouraging 4R among their farmer customers. Western Canadian agri-retailers who have committed to the 4R Designation program are listed at **fertilizercanada.ca** in the "What's in it 4R me?" under the Nutrient Stewardship tab.

Warren Ward is an agronomy specialist with the Canola Council of Canada (CCC) and team lead on the fertilizer file. Part of his job is to encourage 4R as a way to improve profitability of the crop and nutrient use efficiency, especially for nitrogen and phosphorus. One of the Canola Council's sustainability targets is to have 90 per cent of canola production acres implementing 4R nutrient stewardship practices by 2025.

"Ultimately, the CCC wants to increase awareness about 4R and encourage farmers to adopt these practices voluntarily, which is pretty easy for a farmer to do," Ward says. "This is better than having guidelines forced upon them by regulations."

The good news, McKenzie Smith says, is that most canola growers on the Prairies are already following many of the basic principles of 4R – they just don't know it. The next step is to work with a 4R Designated retailer or agronomist to get your acres counted and be part of building canola's reputation as a sustainable crop.

For phosphorus, as an example, one of the most important practices is to put phosphorus in a side band, mid-row band or in the seed row at the time of seeding. "Ninety-one per cent of farmers surveyed are already doing that," Smith says.

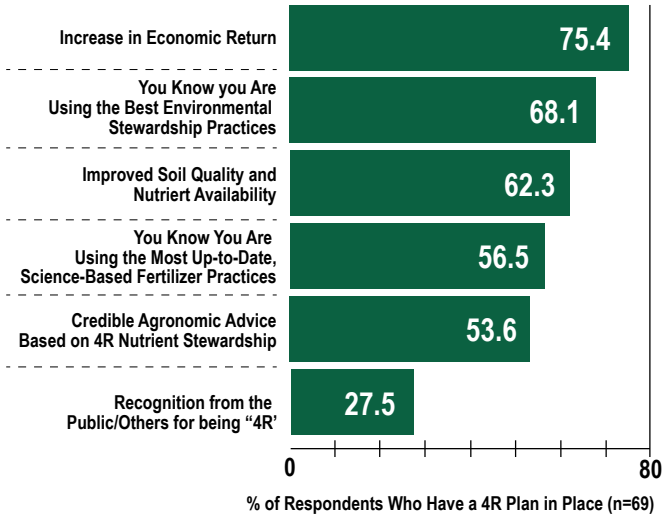
SUITES OF 4R NITROGEN MANAGEMENT PRACTICES				
Level	**Right Source**	**Right Rate**	**Right Time**	**Right Place**
Basic	• Ammonium-based formulations for fall (UAN excluded due to nitrate content). • Any N fertilizer in spring or in-season. • Inoculate pulse crops. Exception: Not required for dry beans which are typically fertilized.	• Set crop and field specific N rates using appropriate regional tools such as nitrate soil tests (surface and subsurface sampling recommended) nitrogen balance, response curves or provincial guidelines. • Consider field specific yield history and soil types in relation to yield potential of other fields on farm and in region, and probabilities for weather variations when setting rates	• Apply N after soil cools in fall; or • Apply N in spring before or at seeding. • No N application on frozen soil and/or snow covered ground.	• Apply in subsurface bands/ injection any acceptable time. • Broadcast and incorporate in spring. • Avoid fall broadcast of unprotected N. • Fall broadcast of enhanced efficiency N fertilizers are acceptable following label instructions regarding incorporation and timing. • Fall broadcast N applied as MAP or DAP with incorporation is acceptable.

Table 1.
Here are the basic 4R practices for nitrogen management for spring cereal, oilseed and pulse rotations on the Canadian Prairies.

SUITES OF 4R PHOSPHORUS MANAGEMENT PRACTICES				
Level	**Right Source**	**Right Rate**	**Right Time**	**Right Place**
Basic	• Use P fertilizer with guaranteed analysis.	• Use recent soil test (three years or less) to establish P baseline. • Follow provincial guidelines based on soil and crop types to meet sufficiency levels. • Set field specific rates considering differences in yield potential and soil test values among fields. • Adopt draw down strategy in fields that test very high in P (approaching or exceeding 60 ppm) by setting rates less than annual crop removal.	• Apply P in spring at or before seeding. • Apply P in fall with incorporation or band or co-band.	• Place with seed at safe rates based on crop, seed bed utilization, and total product load. • Side-band at seeding • Band or Co-band prior to seeding or mid-row band at seeding (with consideration for mobility issues if banded with high rates of N or in cool soils). • Surface apply in fields with limited risk of movement to surface waters.

Table 2.
Here are the basic 4R practices for phosphorus management for spring cereal, oilseed and pulse rotations on the Canadian Prairies.

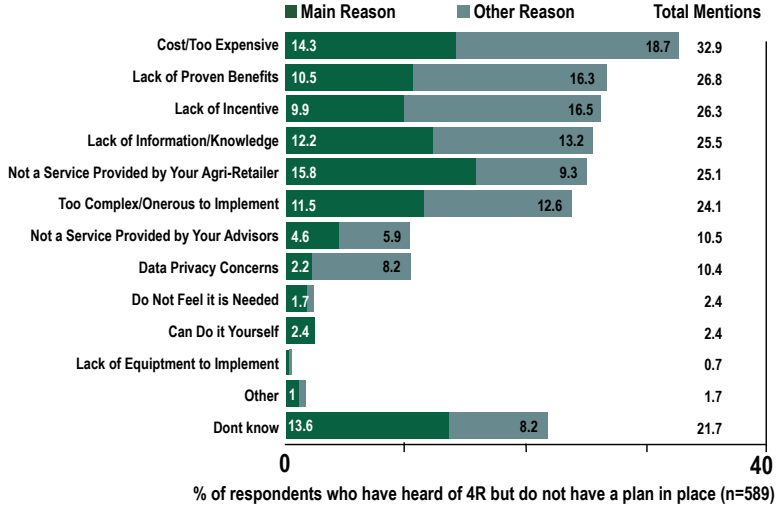
Benefits of Having a 4R Plan in Place



In a recent survey of fertilizer use, Canadian farmers who have a 4R plan in place say the biggest benefit was an "increase in economic return" for nutrient inputs.

Source: Fertilizer Canada

Reasons for Not Putting a 4R Plan in Place



In the same survey, those farmers who know about 4R but haven't put together a 4R plan say the number one limitation is cost.

Source: Fertilizer Canada

See the box for the complete list of basic practices for 4R nitrogen and phosphorus management. To take the next step towards counting your acres, find a "4R Designated" agronomist who can outline a plan and sign off on your 4R acres. For farmers who already have an agronomist, they can encourage their agronomist to get 4R Designated. Fertilizer Canada has resources to find a designated agronomist and to get a designation. Look under the 4R Nutrient Stewardship tab at **fertilizercanada.ca**.

–Jay Whetter is the editor of Canola Digest.

HOW TO GET YOUR 4R ACRES COUNTED

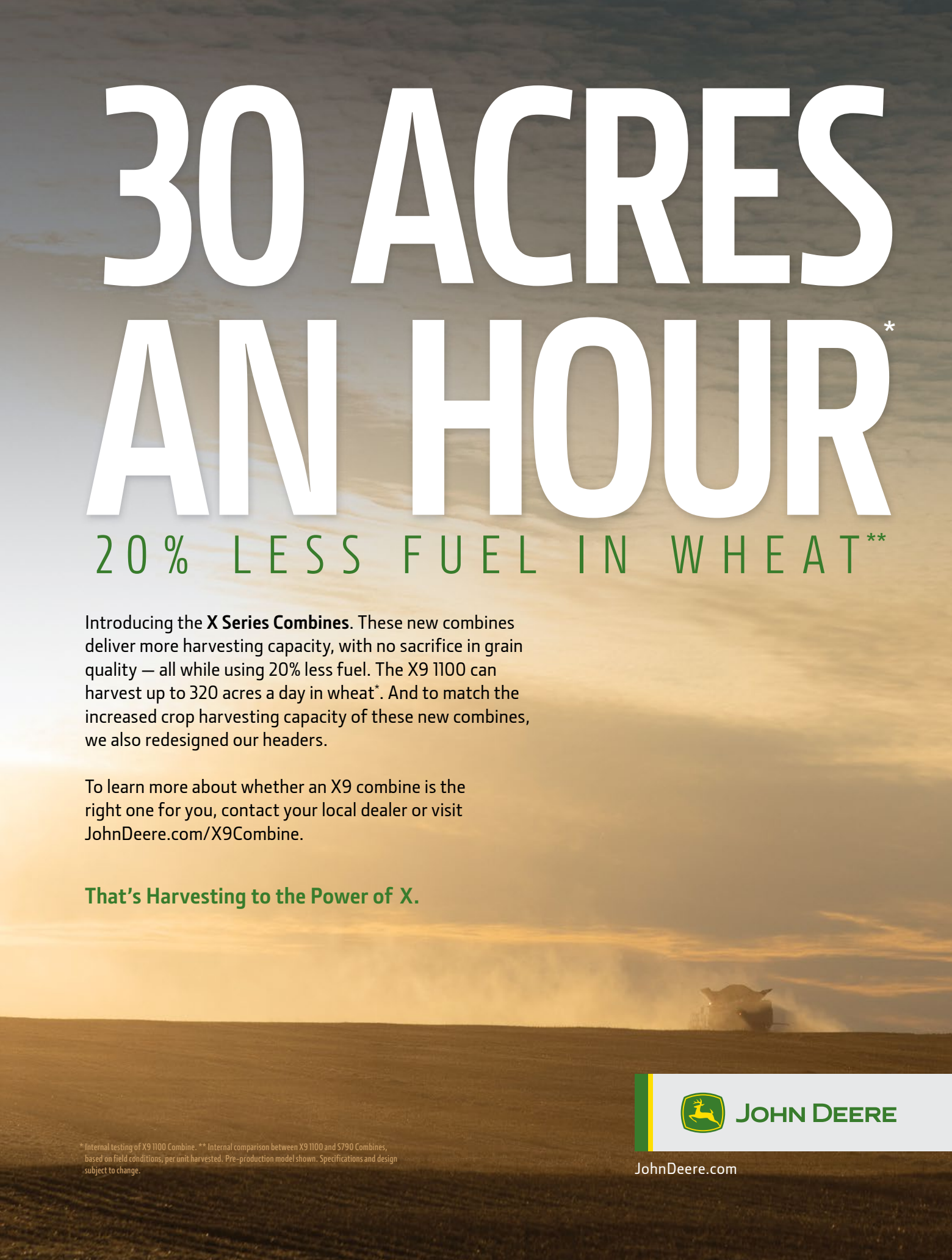
What is 4R? 4R Nutrient Stewardship is a Fertilizer Canada framework encouraging growers to use the four 'Rights': Right Source @ the Right Rate, Right Time, Right Place. The goal of the 4R Designation program is to help crop producers minimize environmental concerns related to agriculture while maximizing economic benefits. The principle is simple, provide the right source of nutrients at the rate, time and place that will minimize the losses of nutrients and maximize the crops access to the nutrients.

Why does it matter? Canada's canola industry sees a lot of potential for 4R Nutrient Stewardship for land enhancements, profitability improvements and proactively showing our customers and their governments how we're taking sustainability seriously. As a result, Canada's canola industry has a goal to utilize 4R Nutrient Stewardship practices on 90 per cent of canola acres by 2025.

How to get your 4R Acres counted? To become a part of the 4R program, farmers have to work with a 4R Designated agronomist. The agronomist helps the farmer construct a specific 4R nutrient management plan which means your acres can be considered 4R. Once farmers have taken the steps required to complete a 4R Plan, the 4R Designated agronomist compile all 4R acres, on a crop and location basis, and submits these acres to Fertilizer Canada. Fertilizer Canada never sees individual plans developed as that stays between the agronomist and their farmer customer – all Fertilizer Canada sees is a total number of crops by location and crop. (A farmer cannot get a designation on their own.) There will be increasing demand for 4R Designated agronomists to meet industry goals, and provide this service for their customers. Ask your local retailer about the designation program today.

What's in it for the farmer? Two things. First, fertilizer is the biggest expense in canola production. Through use of 4R Nutrient Stewardship, farmers can ensure they use fertilizer efficiently and get more return from the investment. Second, end users and regulators are paying more attention to crop production practices such as how fertilizer is utilized, especially escapes to the atmosphere and runoff into waterways. Losses to the environment are monitored and could lead to regulations. 4R Designation demonstrates that farmers have the same cares and concerns as other members of society.

For more information, see the Fertilizer Canada resources at **fertilizercanada.ca/nutrient-stewardship/4r-designation** or talk to a CCC agronomy specialist.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Ellen Pruden awarded top honour

Ellen Pruden, director of Canola Eat Well, received the distinguished 2020 Honourary Patron Award from Dietitians of Canada in recognition of her contributions to the Canadian food community.

BY LIBBY ROACH

Canola Eat Well has a reputation for celebrating the incredible achievements of our farmers, chefs, dietitians and food friends, and now, it's with tremendous pride that we turn our spotlight to one of our own. Ellen Pruden, director of Canola Eat Well, has dedicated the last twenty years of her career to nurture and grow not only her bustling family, but also craft and create a playbook of agricultural engagement by way of Canola Eat Well and its extended food family.

Ellen has just been announced as the recipient for the distinguished 2020 Honourary Patron Award by Dietitians of Canada in recognition of her contributions to the Canadian food community. Nominated by Registered Dietitians Carol Harrison, Shannon Crocker, Gina Sunderland, Dara Gurau and Erin MacGregor, the award is in gratitude for her devotion to helping engage all Canadians to get to know Canadian agriculture and ultimately, eat well.

Ellen uses her voice and charismatic nature to engage and support not only dietitians, but also everyone in her spiderweb network that spans just about every province and territory. Ellen makes it personal, and often goes out of her way to connect with people on more than just food, getting to know everyone in her circles and focusing on the inner-champion in us all.

That is part of Ellen's design. She wants to see us all flourish. Growing up as a child, Ellen had her sights set on becoming a teacher. And while that encapsulates a large portion of her current role, it goes beyond mere instruction. "One of the most wonderful compliments I get back from our farmers is that I have the ability to see things in people – and know that perhaps they just need a little boost." Ellen says. "I have encouraged people and given them support – that's what a good teacher does."

Her modesty and innate ability to see the best in us is paramount to her enormous success nationally connecting farmers and food lovers, bringing everyone to the same collective table in an effort to share their knowledge and experiences, Ellen's vision for a robust food family sees us all as equals, all of us engaged and asking questions. We learn best when we all learn from each other, and Ellen has truly (and sometimes physically!) brought us together with her dynamic flavour of programming and outreach with Canola Eat Well. Fostering a friendship with everyone she encounters; people trust Ellen to elevate the conversation around Canadian agriculture and our food system.

–Libby Roach is a food editor at auburnlane.com and photographer based out of Toronto, Ontario. Libby attended Canola Harvest Camp in 2018.

What is Canola Eat Well?

Canola Eat Well builds connections between Canadian canola farmers and Canadian consumers. The conversations are all about farm-to-food. The joint partnership between Alberta Canola, Manitoba Canola Growers and SaskCanola shares stories about farmers, their farms and what they do to grow food for our tables. Find out more at **canolaeatwell.com.**

3 steps to improved food communication

Ellen Pruden, who received the 2020 Honourary Patron Award from Dietitians of Canada, shares three tips that farmers and anyone else can use to improve their food communication.

BY ELLEN PRUDEN

My motto is when we learn together, we grow together. For farmers and people who work in agriculture, communicating about public trust can be frustrating, depending on your audience. This is an area that I think we all can become better at.

The list below is based on Erin MacGregor's professional experience and ongoing research into effective communication. Her three-step approach works and she has helped me grow as a communicator. Erin is a registered dietitian, a professional home economist and a passionate agvocate.

3 Steps to Improved Food Communication

1. GET PERSONAL AND BE CURIOUS AND LISTEN

Getting personal is about making a connection. Making a small effort to find common ground is a way to disarm. Being curious is about being interested in the other person.

Shelve your agenda, even if you think you know what's coming, and ask questions. Be present. Simply listening. In making an effort to learn about what a person believes and values, and who they trust, will give you the framework needed for step two.

2. VALIDATE AND EMPATHIZE

By validating, you are not necessarily agreeing with what a person saying, but that their feelings are valid because all feelings are valid.

What a person is stating, questioning or arguing is on some level, a reflection of what they value and believe in. Be curious about that they're saying. Showing someone you can understand why they feel the way they do, gives you an in. You are showing them that their beliefs and values are legitimate. Empathizing or showing compassion opens the door for you to share your point of view.

Examples of validating statements include:

- "I can see where you're coming from"
- "I understand what you mean"
- "When you put it that way, it does sound scary"

This can be difficult especially if you are knowledgeable or believe strongly in a topic.

3. RELATE YOUR TRUTH, BUT...

Facts don't persuade people. People persuade people.

If you decide to take the step and share your knowledge or point of view, it's important to present it in a way that appeals to their belief system. A convincing argument will depend on engaging a person's values, not showing them logic.

Recognize that you come with a set of values too. The most effective communicators can change minds and opinions because they are willing to change theirs too.

Make social media powerful and positive

In this year of stress, disruption and isolation, farmers can use social media to their advantage, harnessing its power to connect.

Photo Credit: Istock.com/Urupong

BY TREENA HEIN

It's been a year to remember for farmers (and everyone else) in Canada, with the pipeline protests, the plane shot down in Iran, a new North American trade agreement, a pandemic and more, just in the first half of the year. It's therefore important, especially in light of all the disruption and isolation of COVID-19, to protect and nurture our mental health. And while it's a necessity for farmers to use social media platforms to stay abreast of information that impacts their operations, a closer look at social media use by farmers is likely warranted, in light of the tremendous impact it can have.

Many studies and surveys show a link between social media use and feeling depressed, anxious and disconnected. And getting into a vicious circle with it is rather easy. When you feel lonely or stressed, you turn to social media to feel connected and better; this increases your dissatisfaction, stress and loneliness, which leads to increased usage, and so the cycle goes.

However, as Manitoba-based marriage and family therapist Elan Jury notes, there are ways to use social media to feel connected and ease our stress. "We humans are wired for connection, and our relationships are an important buffer against stress and anxiety," she says. "Farmers need to use social media and it's certainly here to stay, but there are ways to use it in healthy ways. It's like our relationship to anything or anyone, there is potential for positive benefits and potential for abuse or addiction, which in turn can impact our relationships with others."

WHAT IS USEFUL TO YOU?

While today's farmers certainly have to be plugged in to their social media platforms to get the latest information on the weather, pests and diseases, markets and more, Jury

"We humans are wired for connection, and our relationships are an important buffer against stress and anxiety"

–Elan Jury

stresses that in both the ag-related info-sphere and the social sphere, the updates never stop coming. Trying to keep up with everything is not the wisest course. "Remind yourself that it's likely OK to receive updates less often," she says. "Start to pay attention to your usage and recognize whether you are in a viscous spiral of checking, and if you are, perhaps you need to start weaning yourself to longer intervals." Jury notes that we humans receive an addictive hit of the brain chemical dopamine when we receive any sort of update. We should remember this and realize that weaning ourselves may not be easy.

Also, take a close look at what information you currently receive that is actually useful to successful farm operation. Honestly ask yourself if receiving non-essential updates is part of an attempt to feel better and distract yourself from the pressures you are dealing with. "Be aware of how you feel," Jury says. "If you are feeling anxious, is it the negativity? It might be time to remove people from your feed, or stop looking at the comments. Maybe getting updates all at once is a better strategy."

Some other ideas including looking into whether there is information overlap between your platforms. Perhaps you could ask fellow farmers what they have in their feeds and how they may have streamlined their social media use. And don't forget the simple strategy of unplugging; Jury strongly encourages putting your device away at certain times of day and never taking it to bed.

"Be aware of how you feel. If you are feeling anxious, is it the negativity? It might be time to remove people from your feed, or stop looking at the comments. Maybe getting updates all at once is a better strategy."

–Elan Jury

RELATIONSHIP IMPACT

At the same time, start noticing how much you are actually connecting with the people who are important to you, to offer and receive support, laugh at life, celebrate achievements and brainstorm ideas to deal with challenges. You can certainly do this on social media, but you should also connect with loved ones in person where possible, on the phone, and in texts and emails. Jury says that over time, you'll begin to see that strengthened connections really do help reduce feelings of overwhelm and isolation. "Even quick check-ins," she says, "make a big difference."

Also remember that making any type of change takes time. Jury believes we really have to give it two to three months to see the effects of a change, in this case to see if changing how you use social media is reducing your stress level, and how your increased efforts to build your relationships is doing the same.

Most importantly, don't add further stress through changing your social media use. Take your time, look at it as an experimental process and you'll get there.

–Treena Hein is an award-winning science writer and educational resource consultant.

Build relationships to reduce stress

In May, Farm Management Canada (FMC) released ground-breaking research results about farmers and stress in a report called "Healthy Minds, Healthy Farms". Relationship building – and degradation – is mentioned in several contexts.

The report points out that, among other unhelpful activities undertaken by farmers to try and reduce their stress (such as working more hours), they may withdraw socially from family and friends. As mentioned in the main story, in their isolation, farmers then may, in turn, increase their social media use, but this will likely only compound loneliness and stress.

The research behind this report also reveals a positive correlation between mental health and farm business management activities that positively influence farmer mental health, as well as mental health 'supports' that positively influence farm business management activities. Among these is building relationships with members of your farm business management support team. "Building [these] teams to help provide advice can alleviate some of the burdens of decision-making," state the report's authors. "When difficulties arise, it helps to know that a team of peers, family members and/or advisors has thought through different challenges and weighed in on a course of action."

Another suggestion for relationship-building is mentioned by a study participant. "A lot of times, farmers will get together in the winter, and they will have breakfast together... Sometimes it's good to get away from being alone with your own thoughts, and you get to share things that have gone wrong."

Denise Rollin, FMC project manager, notes that one of the report's main action items is to develop industry-wide strategies to address online harassment by the general public targeted at those in agriculture. She notes that if farmers feel safe when sharing their farming stories and their mental health struggles, their discussions can continue to reduce mental health stigma.

The report is available online at **fmc-gac.com/healthymindshealthyfarms**

Photo Credit: Istock.com/okali9

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