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Alberta Barley

Alberta Barley and the Alberta Wheat Commission co-publish *GrainsWest*, a farming quarterly dedicated to the interests of this province's grain farmers. *GrainsWest* connects farmers, food and ideas.

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Alberta Magazine Publishers Association



A river runs through it

IN AUGUST, PHOTOGRAPHER

Zoltan Varadi and I set out on a mission through the Peace Country that took us to a string of farms and agricultural research facilities. The on-duty portion of our *GrainsWest* road trip began at the Agriculture and Agri-Food Canada Beaverlodge Research Station in the southwest corner of the region.

First-time tourists in this massive area, we covered a lot of territory but admittedly visited only a modest portion of it. After a suitably reverent visit to the world's largest roadside rodent in the town of Beaverlodge, we proceeded diagonally across central Peace on Highway 2. On Highway 35, we headed straight up into north Peace and looped through Mackenzie County in the region's northeast for a final photo session at the La Crete ferry crossing at Highway 697.

At this busy portal, the banks of the Peace River are relatively steep, though not so much as at Dunvegan, where the rail bridge dramatically crosses the narrow and deeply cut river valley. Along much of its course, the region's namesake river flows roughly 180 metres below the surrounding crops. Though this makes irrigation difficult, as the river winds along the top end of Mackenzie County, the drop from crop to water gradually diminishes.



Photo: Zoltan Varadi

An important transportation link for Mackenzie County farmers, the La Crete ferry crosses the Peace River at Highway 697.

In this area, farmers talk of irrigation as a possibility. Despite its high latitude, the Peace is a land of such surprising possibilities. Sure, forage and short-season crops are grown where local microclimate demands, but a vast portion of the Peace can support most crops grown down south. At the Mackenzie Applied Research Association facility in Fort Vermilion, researchers work to make the agronomic case for new crop options that may suit local conditions. At the most

northerly tip of Canada's most northerly agricultural region, this even includes soybeans.

"The Peace process" (pg. 20) encompasses a discussion as wide as the Peace itself. It may be literally located in the backwoods, but the Peace is full of farmers who are forward thinking, quick on their feet and always on the lookout for new ways to outplay local climate extremes and build business opportunities. ●

Highly decorated writers

GrainsWest contributors received a substantial pat on the back from our farm media colleagues at the 2021 Canadian Farm Writers' Federation Awards held on Sept. 24.

Carol Patterson was honoured with both the gold Jack Cram Award for people feature and feature of the year for "Special circumstances," the cover story of our winter 2020 issue. The story looked at farm life and agronomic practices in Alberta's arid Special Areas.

With a sweep of three categories, Trevor Bacque won a gold in the technical feature category, story of the year and reporter of the year for his piece "Sow what?" An objective examination of seed add-ons and specialty fertilizers, it also appeared in the magazine's winter 2020 issue.

Thirdly, Sarah Weigum was presented with the silver Tom Leach Award for electronic media in the audio category, for "PPE MIA," the sixth episode of *The GrainsWest Podcast*. In it, she investigated the lack of personal protective equipment experienced within the farm sector during the early months of the COVID-19 pandemic.

To read these stories and listen to this podcast, visit grainswest.com.



Amalgamation Consultation for Alberta Wheat and Barley Farmers

wheatbarleyconsultation.com

In June 2021, the Alberta Wheat Commission (AWC) and Alberta Barley announced farmer consultations will be held through the summer and fall to gauge farmers' interest in amalgamating the two organizations.

Why are the commissions consulting on amalgamation?



The commissions have been operating with one management team since 2018, serving two boards and separate financial structures.

The single management team has resulted in expanded programs and cost-savings upwards of \$350,000 annually.



Motions passed at the AWC and Alberta Barley 2019 annual general meetings challenged the two commissions to explore a formal merge to further unlock synergies, and ensure producers' levies are used to the greatest benefit.



The commissions formed an amalgamation sub-committee in 2020. Comprised of select AWC and Alberta Barley past and current directors, regional representatives, and delegates, the amalgamation sub-committee guided the consultation process including the development of a draft model of an amalgamated governance structure.

How have the commissions been consulting with farmers?

The commissions had an online survey open throughout the summer and fall, as well as hosted two online webinar sessions in October. The commissions have captured farmers' input through these forums and will report on the feedback during regional meetings in November.

Farmers are encouraged to learn more and get involved by visiting wheatbarleyconsultation.com. To register for a regional meeting in your area, visit our events page at albertawheatbarley.com.

Dollars and sense

Free training designed to make farm finances simple, straightforward

FARMERS ACROSS CANADA ARE encouraged to hit the books and go back to school this off-season with MNP and Farm Management Canada. The two organizations have teamed up to help farmers increase their financial literacy by offering free online courses designed to explain important concepts specific to agriculture.

A major catalyst for the sessions dubbed Farm Financial Fluency are the findings in a recent FMC survey in which it was revealed many respondents did not utilize a written business plan and have difficulties understanding certain financial principles.

With lagging results on important matters, the two groups decided the time was right to offer these free courses to create better farm managers and ultimately more financially viable operations.

Stuart Person, MNP senior vice-president of agriculture, is very much looking forward to the sessions, which will all have a CPA present to answer any questions farmers may have. Person believes that the majority of on-farm issues come down to truly knowing finance.

The two training modules are comprised of three, two-hour sessions with time between to allow for reflection and practice. From financial reporting, to accrual accounting and cash flow analysis, each module ends with an in-depth case study to put concepts and training into practice. Sessions one through five will focus on specific areas of agriculture, including grain, beef cattle, swine, dairy and horticulture while the sixth is intended to be conducted in French and focus on dairy given the industry's significance in Quebec.

"Even if you are not a big farm you have to be astute, you have to know your numbers or you can run into trouble quick,"

he said. "If you mess up, it adds up in a hurry."

Person said farmers typically never know how they truly perform in a given year because they are not required to submit an accrual financial report. Rather, they simply add up cash receipts, expenses and turn the results in to the Canada Revenue Agency. The problem is that such a methodology does not account for selling some of last year's crop, the current year's expenses, next year's expenses and more, according to Person.

"There's a mismatch, you don't know how you truly did," he said. "What we are hoping to do is help farmers understand that accrual accounting is critical."

The offerings will be administered until March 2022. Farmers can even book follow-up appointments with MNP to go further into a given topic. The sessions will build participants' bedrock understanding of balance sheets, financial statements, cash flow, overall budgeting and financial planning. Information will be provided on how farmers may better organize their operation to easily analyze and interpret financial information. The goal is that with this knowledge farmers can plan for hypothetical scenarios to better insulate themselves from risk and even find financial opportunities they weren't aware of. Ultimately, the courses should contribute to improved overall business relations with lenders, accountants and financial advisors.

Programs commonly available to farmers, such as AgriStability, are misunderstood, said Person, and he believes these free courses will clear the air on many misconceptions.

Heather Watson, FMC executive director, looks forward to providing farmers with another free tool to help



"Even if you are not a big farm you have to be astute."

— Stuart Person

achieve greater financial literacy and, overall, profitability. "Increasing farm financial literacy is the key to unlocking important information about the farm's risk and potential," she said. "Now would be the perfect time for farmers to reflect on the past few months; where have they triumphed and where could they have done better? What measures can they put in place to help manage future risk and seize opportunity?"

"Planning ahead does not mean predicting the future, it means preparing for whatever might happen in the future."

For more information or to sign up, visit mnp.ca or fmc-gac.com.

Crop pandemic prevention

Scientists call for global surveillance of plant diseases

ON COFFEE FARMS ACROSS

Central and South America, a vicious invader called coffee rust has devastated the livelihoods of farmers and forced them off their land. In Colombia, a long-feared nightmare known as Panama disease, which destroyed banana production in Asia and then the Middle East in the 1990s, now threatens to end global banana production as we know it. Closer to home, a whole list of epidemic diseases from wheat stem rust to potato and tomato late blight have spread through cropland and have bitten into yield.

While monoculture crops promote disease development and global trade drives spread, crop disease pandemics have increasingly become a major threat to global food security. In a call to fight back, 16 researchers from across North America have stated there is urgent need for a more co-ordinated method to tackle these ever-present threats.

Early this summer, the group published a recommendation paper in *Proceedings of the National Academy of Sciences* that outlined the risk of plant pandemics and called for global action. Co-author Graham MacDonald is an assistant professor at the McGill University department of Geography. The paper calls for the development of a proactive international plant disease monitoring and reporting structure, as well as better detection and management capacity.

“Right now, we do not have an organized surveillance system for most plant diseases. Because there is no infrastructure for reporting and communicating when outbreaks occur, we end up with full-blown pandemics that destroy crops and cost billions,” said the report’s lead author Jean Ristaino, a professor of plant pathology at North Carolina State University.



Crop disease pandemics such as potato late blight have become a serious threat to global food production. Researchers say a co-ordinated response is needed.

To decrease plant disease pandemics and mitigate impacts when outbreaks occur, agriculture needs a global surveillance network administered by an intergovernmental organization that isn’t restricted by national borders, she said. “What we need is a World Health Organization for plant diseases.”

Certain diseases are now monitored by individual nations or, in some cases, international networks. For example, late blight is monitored both by a European network, EuroBlight (that now includes certain Asian countries), and separately by a U.S. network, USABlight (that includes Canada and Mexico). For other diseases, monitoring occurs within individual countries, but data is not shared due to trade concerns. Most diseases of emerging concern are not monitored at all.

“There are a few existing surveillance networks, but they need to be connected

and funded by intergovernmental agencies and expanded to create global surveillance systems,” said Ristaino.

Such an effort would be huge. International in scope, it would require the participation of a wide range of experts from economists and engineers to geographers, statisticians, crop scientists, plant pathologists and data analysts, as well as governments and individual farmers.

Not surprisingly, the cost would also be daunting. For example, Ristaino ballparked that the U.S. would need to commit US\$50 million “as a starting point.” While to secure funds will likely be a major challenge, Ristaino said the cost of not funding an international effort, both in dollars and human suffering, would be far higher. “I do think the timing is right,” she said. “The COVID-19 pandemic brings all of this into perspective and has shown the vulnerabilities of our food supply.”

Biotech breakthrough

Powerful new plant breeding tools have immense potential

WITH THE USE OF NEW

biotechnology processes known as gene editing, a revolution in plant breeding technology is now underway. Methods such as CRISPR/Cas9, the best-known gene editing process, can carry out targeted changes within crop and livestock genes. Naturally, there is fear within the farm and agri-food sectors that foods produced via this technology will face public resistance as GMO crops once did.

Such worries may be overblown. Anti-GMO rhetoric is certainly alive and emblazoned upon food packaging at your local grocery mart, but has lost much of its zeal. It was way back in the middle of the previous decade Bill Nye, scientist and former host of the beloved kids' TV series *Bill Nye the Science Guy*, notably endorsed GMO food and technology. Public debate aside, the rollout of new GMO crops has continued for nearly three decades.

The pendulum has swung back towards acceptance of biotechnology in crop production. Potentially game changing, gene editing is a biotechnology tool broadly touted as a potential solution to pressing ag sustainability issues. Biotechnology has also been used to create vaccines that have very effectively fought COVID-19 across the globe. Further supportive, as part of its proposed guidelines for plant breeding released March 25, Health Canada concluded gene-editing technologies present no unique plant breeding safety concerns. Nonetheless, the anti-GMO era is a stark object lesson that has prompted crop industry lobby groups such as CropLife Canada to leverage these positives in support of public acceptance. The value of doing so is reflected in Sateesh Kagale's estimation of its use as a low-cost precision breeding tool.

"I believe the possibilities with gene editing are endless," said Kagale, a National Research Council Canada research

scientist in crop genetics and genomics and a University of Saskatchewan department of Plant Sciences adjunct professor. "Gene editing is not a magic bullet but a game-changing complement to conventional breeding. Farmers will have the opportunity to obtain crop varieties with desired traits quickly and affordably," said Kagale. This will include the creation of new varieties adapted to local conditions.

"Plant breeders aim to improve multiple traits simultaneously, a task made more difficult by strong genetic linkages between traits," said Kagale. "Gene editing can help deliver varieties with trait combinations most desired by wheat breeders and farmers. Potential gene-editing targets range from agronomic traits to disease resistance, abiotic stress tolerance, herbicide tolerance, yield improvement and grain quality enhancement." Evermore in demand by consumers, such on-farm benefits promise to reduce the environmental impact of crop production.

Kagale works on the 4DWheat: Diversity, Discovery, Design and Delivery project. One of its mandates is to implement gene editing methods in crop breeding. It is funded by various private and public sector partners in concert with Genome Canada, a not-for-profit organization that promotes the broad use of genomics for social and economic benefit. The project will identify previously hidden crop traits in wild wheat relatives. These untamed cousins will be made usable to crop breeders as a rich new source of germplasm. Gene editing can also be used in the plant breeding process to salvage promising newly developed varieties that prove to be near misses. Where a breeding program might produce hundreds of potential new breeding lines, some of these may fall just shy of extraordinary. Gene editing can turn these losers into magnificent winners

that can then be used to assist varietal development in the quest for greater agronomics and stronger disease resistance.

With the National Research Council, Kagale participated in the 2017 development of a breeder-friendly gene editing platform intended to carry out such agronomic improvements. Methods to employ CRISPR were not well developed prior to this, and the project team created what Kagale calls a "comprehensive molecular toolkit" to get the job done. The platform will be used to develop improved agronomic and end-use quality traits in wheat, including through the 4DWheat project. It can also be applied to additional crops such as canola, peas and lentils.

PUBLIC PERFORMANCE

CropLife Canada, in partnership with Seeds Canada, and supported by 30 ag-value chain organizations has launched the Nature Nurtured campaign, a gene editing awareness and advocacy program. "Gene editing is a tool for plant breeders," said Ian Affleck, CropLife vice-president of plant biotechnology. "And just like we don't celebrate the hammer when someone builds a beautiful home, we shouldn't focus on gene editing when someone builds a great variety. Plant breeders have dedicated their careers to moving varieties forward, and this will help them do that even better."

This may not be the headline-grabbing story that fires the public's imagination, admits Affleck. The first such high-profile project was the commercialization of Calyxt soybeans, a variety high in oleic oil. The U.S. agri-food company released its Calyno oil in early 2019. Marketed as a premium, non-GMO ingredient, the zero trans fat product is low in saturated fatty acids. It also has three times the shelf life of typical commodity soybean oils.



To leverage increased public acceptance of biotechnology, CropLife Canada operates the Nature Nurtured program. Its recent consumer ad campaign took a lighthearted approach to the benefits of gene editing.

A comparable cereals example might be a new wheat variety that doubles the fibre in a loaf of bread. “This is the stuff the public will be very interested in, but to me, that’s the tip of the iceberg,” said Affleck. “So much of the power of gene editing is just making the breeding we do more efficient and effective.” If breeders can create higher yielding varieties with better disease resistance in six to eight years rather than a decade, this will be a great on-farm benefit, he said. “Better varieties help make a farm more economically sustainable as well as environmentally sustainable.”

Affleck was encouraged to see Health Canada recently propose that gene editing should be regulated in the same manner as conventional breeding. This will encourage its use and put the country on equal footing with innovative trade competitors such as Argentina, Australia, Japan and the U.S., he said. “[We must] make sure we get the right environment for innovation at home, and that we prepare our trading partners to accept those products so we don’t end up with any trade challenges. If you can’t sell it, you can’t grow it.”

The ag industry must communicate with the public on this subject in the way that it failed to do with GMOs, he said.

When they’re given factual information, consumers are more likely to be comfortable with innovations such as gene editing. An indicator this approach can turn the tide against misinformation prevalent on the internet, CropLife consumer polling has seen negative impressions of biotechnology decline to 10 per cent from 18 per cent of respondents between 2010 and 2020.

As well, the proliferation of food labels created by organizations such as The Non-GMO Project are not a direct representation of consumer demand for non-GMO products. It reflects a broad labelling trend in which product packaging promises the absence of various ingredients, said Affleck.

Rather than advocate for certain policies, Nature Nurtured describes the science and outlines the benefits of gene editing to the public on its website and on social media. This has included a light-hearted, pun-heavy informational campaign that featured lines such as “Lettuce use plants to help beet diseases” and “Turnip the innovation, Canada.”

Government policy makers are the ultimate target of such advocacy, but Kagale describes the global gene editing regulatory landscape as unsettled, which may impede uptake of the technology.

“Attitudes towards the nuances of gene editing will have huge impacts on how this technology is implemented and traded across the world,” he said. “But global momentum is building around use of CRISPR in crop breeding, so I am anticipating exciting times ahead.”

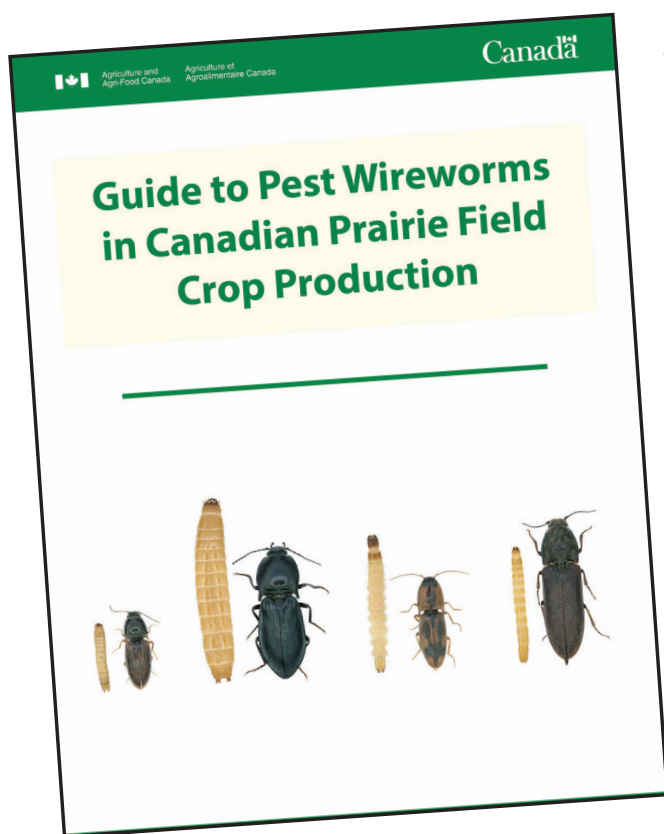
Krista Thomas, Canada Grains Council vice-president of seed innovation and trade policy, said, for its part, Health Canada’s proposed plant breeding guidelines have done much to clarify when new varieties will require a premarket safety assessment. She believes this will encourage Canadian research by helping seed companies and plant breeders plan and fund their programs. The Canadian Food Inspection Agency is also part of the regulatory process and is now engaged in consultations that may affect policy in this area. “The lack of clarity in the regulatory system has really been a roadblock for plant breeders bringing the most innovative varieties forward in Canada,” said Thomas.

“The message from Health Canada is really that gene editing is just as safe as conventional breeding and other types of plant breeding,” she added. “It sends a signal that Canada is a science-based regulator and is open for innovation.”

For more information on NatureNurtured, visit naturenurtured.ca. ■

Bug bible

Visual guide will help Prairie farmers monitor and manage wireworms



PESTS ARE A TOP CONCERN FOR farmers, especially those with limited management options. Wireworms are one pervasive example. A misnomer, they are not actually worms but rather the larval form of click beetles. These sneaky creatures can wreak havoc on fields as they hollow out seeds and shred stems in cereal crops. Hard to identify and even harder to manage, these small but mighty pests can devastate entire fields.

What's a farmer to do? That's where Agriculture and Agri-Food Canada's (AAFC) newly released *Guide to Pest Wireworms in Canadian Prairie Field Crop Production* comes in. The book is part of an ongoing project funded by the

Western Grains Research Foundation (WGRF) and the Alberta Wheat Commission. This comprehensive guide features historical information about the spread of wireworm populations and research carried out on the Prairies as well as an exploration of modern monitoring and management options.

Haley Catton is the guide's primary author and an entomologist for the federal government. She launched the AAFC Lethbridge Research and Development Centre cereal insect research program in 2016. Catton first talked to farmers and entomologists to learn which pests they believed needed to be tackled. "The wireworm

kept coming up," said Catton. "The more I work on it, the more I learn how big the problem can be for some farmers."

Much wireworm research was conducted between 1930 and 1970, but the emergence of pesticides in the 1940s and 1950s that could manage wireworms saw this scientific analysis backburnered for decades.

However, with a renewed focus on the ban of toxic pesticides, which included the use of lindane for wireworm, the early 2000s brought softer options that did not adequately control the pests.

"The main concern, of course, would be the loss of products to control wireworms that happened a number of years ago," said Garth Patterson,

WGRF executive director. "Farmers are seeing an increase in wireworm populations, so they need to understand how much of an issue it is and how to manage them."

Wireworms can burrow deep into the ground and live up to a year without eating. This makes it difficult to determine if a field is infested before the damage begins. Identifying wireworms can be a challenge given how similar in appearance the larvae and adult beetles can be to other insects. This led Catton and her team to compile the book's micro-photography, which illustrates the small differences between these pests, beneficial and neutral insects.

"I think that is the real strength of this guide," said Catton. "I've been looking at wireworm information for five years now, and I haven't found any photos online of a Prairie species this detailed while also explaining what the photos mean—what body parts you should be looking for, what features identify the species you have."

"The importance of the guide will be a transfer of the information, the results of the science and research, getting these recommendations out to farmers," said Patterson. "That's the important final step, and we're really pleased that Haley Catton and her team are putting a guide together to target farmers."

"Right now, there's nothing for wireworms, nothing you can throw in the truck as a resource," said Catton. "We hope this will be that resource for farmers."

Find the guide at publications.gc.ca where French and English versions are available for free digital download. To receive a free, limited edition print copy, email haley.catton@agr.gc.ca



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



Person: George Clayton

Place: Lethbridge, AB

Thing: Documenting his love of Prairie farms

Where the sky meets the field

Former ag researcher George Clayton captures the beauty of Alberta farm country

BY ELLEN COTTEE · PHOTOS COURTESY OF GEORGE CLAYTON

Nearly 38 years after he entered the industry, George Clayton remains fully enamoured with agriculture. From his first position in which he studied soil conservation and no-till to later research on integrated crop management with Agriculture and Agri-Food Canada, Clayton simply loved his work. Even after retirement, leaving the world of crops and soil behind wasn't an option. He traded one kind of field work for another, and now spends his days, and nights, chasing down the best Alberta farm scenes with a camera. What started as a hobby Clayton practiced in his spare time has turned into a second career as he captures the beauty of Prairie farms.

GrainsWest: How did you get into photography?

George Clayton: I was always interested in photography and, of course, it's time-consuming, so I couldn't really do a lot. With film cameras, well, I wasn't very good either. I had to wait two or three weeks to get my results back, so it didn't really take off. The advent of digital cameras really changed the game for me, I could look at results right away and my learning curve was much more rapid. When I retired, I was thinking, "I need something to do, I can't just sit around and do nothing." I was afraid of that. So, I decided that I would take photography more seriously and obviously I have a love for farmers and agriculture.

GW: Your education and experience clearly influenced you. Why is agriculture your main focus?

GC: I got my book smarts at the University of Saskatchewan but the bigger education was the farmer smarts I got from all my good friends I made in the industry. They taught me more about farming than any formal education, so I really got the best of both worlds. I was fortunate in my first job to be in Fort Vermilion, a very small town, which got me out in the community where I first learned to appreciate farmers and now a lot of them are my friends.

I was a little dismayed with the dialogue going on from urban people and the lack of respect farmers got for their efforts and sustainability when I joined the industry, so I try to focus on that with my photography and give a good image of rural Canada and farmers.

GW: What is your guiding philosophy when it comes to photography?

GC: I shoot anything that's unique. I look for landscapes that can tell a story. I'm still progressing in that area. It's a difficult thing to do for a lot of photographers. How do you tell a story in a still image? In trying to do so, how do you identify subjects that are of interest in the frame of the picture? Sometimes you can just see a big, vast landscape and your eye doesn't know what to look at. I always try to find something I can look at and say yes, that's the subject.

GW: What do you see as a good subject for a photo?

GC: It's often abstract layers, a piece of equipment that fills the frame or, for night photography, the Milky Way, incredible stars or a full moon. I shoot the full moon a lot. I focus on night photography and agriculture because there are really not very

many people in Canada doing that type of photography, so I've got a little niche on my own.

GW: You do a lot of astrophotography, capturing the night sky. How did you get into it, and what was the learning curve like?

GC: Well, the learning curve is still going on. I had a few problems just last night—I set up underneath an irrigation pivot so it wouldn't get in the way of the camera and the darn thing started turning on. I had to scramble to get out of there before my equipment and I were soaked.

In general, it's a difficult thing because of the noise—the light from stars—that's generated. But I've learned to use techniques to get rid of the noise. My goal is to get clean, sharp pictures during the night and the challenge is always to get a foreground that's visible and in focus in the middle of the night when it's pitch black. So the challenges remain, they don't seem to go away.

GW: Shooting at night must be an interesting experience. Has anything weird or scary happened on one of these photo shoots?

GC: I only shoot in familiar areas I have permission to be and know who's there, so I feel safe. The one incident I had, maybe two or three years ago; I was at Writing-on-Stone Provincial Park shooting the Milky Way at about 1 a.m. on a ledge. When shooting, I forgot where I was, went to get a drink of water and stepped off the ledge. I fell about three feet, shook it off and shot [photos] for a while before I left with a friend who was also out shooting. We started going home and I realized I couldn't find my glasses. We had to turn around and go back to search, finally finding them in a bush that I rolled into after the fall. I was lucky I retrieved them. They were a little crunched, but OK, and I needed to do more shooting the next day. You really have to be careful and stay aware of what's going on. I just got so focused and concentrated, I completely forgot where I was.



In farm country, Clayton keeps his eyes open for landscapes that tell a story as he tries to incorporate abstract elements.

GW: In addition to a being a fulfilling hobby, does photography net you an income?

GC: I'm very fortunate I have clients who want to purchase my pictures. I found a little niche in an area not very many people are filling. I shoot what I like, and if other people like it, they'll buy it. That's how I operate. I rarely go out and get a client who says, "it should be this." I just do it through serendipity and my own planning if necessary.

GW: What is the best photo you've ever taken?

GC: Generally, I like my night photos the best followed by the golden hours of sunset or sunrise. One of the best is the one the Alberta Wheat Commission purchased for Gerry Ritz's Hall of Fame induction. It was a picture of the Milky Way at the Mossleigh grain elevators. I still like that one quite a bit.

GW: What's your favourite place in Alberta to photograph?

GC: I love every place I shoot in. I hate to pick one over the other, but I do a lot in southern Alberta. I'm also a big no-till advocate and shoot a lot of no-till fields so if I see crop and stubble, I'm very happy.

GW: Where would you like to shoot in the future?

GC: I really want to get to the Palouse region in the U.S., just south of Spokane and on the eastern side of Washington State. It's an incredible farming region with lots of hills and abstract farms in the fields. I've been wanting to go there for about two years now, so as soon as the border opens, I'll head out there.

I'm thinking about planning a trip through Alberta to get more than just southern Alberta. That takes time and money, so I'm stewing on that in my head right now. And then I would like to do a similar activity in Saskatchewan and Manitoba to get some features that people will recognize when they're looking at my images. ●

GOLDEN OPPORTUNITY

New processors manufacture hope for high-fibre straw



BY GEOFF GEDDES



fairy tale characters spin straw into gold, but could demand for wheat straw create a gold rush for farmers? The question has arisen with the recent announcement of the \$800 million Great Plains MDF facility in the hamlet of Equity, in Kneehill County. The plant will process wheat straw to produce medium density fibreboard (MDF) products such as furniture, panelling, flooring and kitchen cabinets. This and a similar project proposed for Regina, SK, are expected to boost the long-term demand for wheat straw and provide a marketing opportunity for farmers. To calculate the economics and agronomic impact is a more complex task than one might imagine.

“The downside of exporting wheat straw from fields is that we want to keep the soil as healthy as possible, and one way of doing that is to return as much organic matter as possible to that soil,” said Ross McKenzie, a retired agronomy research scientist with Alberta Agriculture and Forestry.

Nutrients are retained with the straw when it is not removed. It also protects against soil erosion caused by wind and water. There may also be instances where extracting wheat straw makes sense.

“For example, when you have a four-year crop rotation of wheat, canola, barley and peas, you could take the straw from wheat every four years and still retain straw and residue from the

other three crops,” said McKenzie. “This would minimize the impact and even have some positive effects, especially in areas like central and north-central Alberta where some farmers have problems with too much residue in their fields and no shortage of soil organic matter.” Southern Alberta tends to have drier conditions, less soil organic matter and more wind erosion, so wheat straw removal may be less feasible in that region.

Though limiting the frequency of straw extraction is an option, some feel the sale of straw is at best a losing proposition. “Why make fibreboard out of something that contains nutrients rather than from wood?” said Leuan Evans, a forensic plant pathologist based in Edmonton. “If I strip bark from a tree, it is pure cellulose carbohydrate, and has no nutrients. On the other hand, two tons of straw contain 30 pounds of nitrogen, 65 pounds of potash and seven pounds of sulfur, as well as phosphate.”

In crunching the numbers, Evans calculated farmers take about \$68 worth of nutrients from the field in two tons of wheat straw, and sell it for \$10 to \$15 per 800-pound bale.

“When you add it all up, growers should probably apply for charitable status, as they are giving away their straw and seeing no return, or even suffering a loss,” said Evans. “Also, keep in mind that a well-strawed field could give you an extra two or three bushels of wheat or canola, as that straw holds water and



Photo: Pixabay

New straw fibre processing facilities to be built in Alberta and Saskatchewan will require a supply of the stuff. Although crop scientists are quick to list the many benefits of straw retention, some suggest there may be a good case for marketing it in certain cases.

prevents it from running off the surface into the ditch.”

Among a dozen other benefits of crop residue retention cited by Evans are better crop root penetration, blackening of light-coloured soils, faster soil warming, increased protection against soil disease and decreased soil compaction. He estimated farmers save about \$72 per acre in fertilizer input when straw is left on the field.

Apart from the immediate agronomic effects of crop residue removal, there is the big picture to consider.

SOIL STUDIES

“Studies in Australia, Europe and China, as well as closer to home at the University of Alberta and by Agriculture Agri-Food Canada, confirm that removing straw reduces soil organic matter,” said Martin Entz, professor of cropping systems

and natural systems agriculture at the University of Manitoba’s department of Plant Science. “It doesn’t have an immediate negative impact on the soil; rather, it is a process that can take years or decades.”

In light of this downside, agronomists are studying the use of field practices that best maintain soil health and carbon levels in crop systems where the straw is removed. This includes the use of cover crops and the employment of strategic crop rotations. Such practices may allow farmers to support wheat straw initiatives such as those now under development in Alberta and Saskatchewan, which could in turn support Alberta’s trade prospects.

“Being the first plant of its kind in North America to leverage our existing wheat straw supply to manufacture MDF is the kind of innovative investment we are seeking to attract to Alberta,” said

“It doesn’t have
an immediate
negative impact
on the soil; rather,
it is a process that
can take years or
decades.”

— Martin Entz

Steve Kwasny, Invest Alberta director of agriculture and rural initiatives. "Turning the excess straw from Alberta's farmers into this light and durable fibreboard is an exciting example of the circular economy at work. Giving farmers an additional avenue to sell their wheat straw, growing jobs in the province and continuing innovation around this novel construction product has some very exciting potential for Alberta."

COST-BENEFIT CALCULATION

It's basic economics that supply rises to meet demand, but it's not yet certain western Canadian straw will capture the market. "In relation to wheat straw, it's worth noting that wheat is the number one or two crop we grow in the West in terms of acreage," said McKenzie. "It comes down to how comfortable a farmer will be with selling his wheat straw once every four years. Plants like the one in Regina have a lot of fertile soil in the area, so that may work in their favour, but you need a large land base from which to draw if you're only getting a farmer's straw every four to six years."

Farmers will need to weigh the potential revenue from the sale of their straw against the fertilizer cost incurred to replace those nutrients. "Every grower must evaluate the opportunity for themselves, considering the area they are in, yields, crop rotation and soil fertility," said McKenzie. "They need to do a cost-benefit analysis around the value of soil quality in the long

run, and that is hard to put a price on. There is also the cost of baling, trucking and shipping the straw. If the plant is paying them \$50 per acre, it might not make sense, whereas \$250 per acre is a different story. In the end, it will no doubt be worth it for some and not for others."

Quality of the wheat straw will also play a part in the success or failure of these facilities, as that will vary based on growing conditions. "For this industry to be viable, the product must be consistent," said Entz. "I'm sure the people behind the plants have done their feasibility studies, but they must pay attention to things like weather patterns. How does a really wet year affect straw quality versus a dry year?"

Underscoring the importance of quality is the story of Isobord Enterprises, which built a strawboard manufacturing plant in the village of Elie, MB, in 1998. Two years later, the company declared bankruptcy. Though various reasons were cited for the plant's demise, failure to meet the quality demands of customers was considered a factor.

"Success in the wheat straw business will mean ticking all the boxes," said McKenzie. "Companies must have access to a steady supply of high-quality straw, and growers must be paid enough to make it worth their while. Given the massive investment in the Elie plant that proved to be for naught, I hope that current and future operations have learned from the past and are positioned for success." ■



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THE PEACE PROCESS

Progressive far-north farmers shed the region's frontier reputation



BY IAN DOIG • PHOTOS BY ZOLTAN VARADI

The first all-weather road to link Alberta's Peace Country to the rest of the world was built in the 1930s. As road trips go, it was a doozy. The dirt track was no more than a glorified trail that linked Edmonton with Fort St. John in northeast British Columbia by way of Lesser Slave Lake. A South Peace Historical Society writeup describes it as "a twisting, squirming route that turned into an impassable bog of gumbo after frequent cloudbursts." It was known locally as the worst road in North America.

Bad as that road was, in prior decades, aspiring farmers had fought their way through the bush to build new lives on their own terms in this remote region reputed for rich soil and mighty sunlight hours. Though barley was reportedly grown at Fort Dunvegan in 1809, Peace Country agriculture only began to grow significantly beyond the subsistence level in the early years of the 1900s. Land was steadily broken for farm production as successive waves of settlers arrived during the Great Depression and after the Second World War.

Wheat and barley were exported from the Peace Country starting in the 1920s when a rail line from Edmonton penetrated the region. Legumes and grasses were established as seed crops in the '30s and '40s, as was flax, while barley acres exploded in the '40s and '50s. Rapeseed proliferated in the '50s. In 1965, A.A. Guitard, then-director of the Beaverlodge Research Station, described the Peace Country as "this 'Inland Empire' of ours ... Now it is a well-developed, well-serviced and diversified region rich in timber, minerals and sources of energy. There is a broad-based, diversified agricultural industry."

His informed words suggest a region that had rapidly modernized. The declaration is ancient, but something of the Peace Country's frontier reputation remains in the popular imagination. Resident farmers are quick to point out their Inland Empire is just as progressive as it was in Guitard's day.

In August, inspired by Guitard's claim the Peace Country has long been ahead of its time, *GrainsWest* set out on a road trip to gauge just how progressive its farmers are. As pre-research, I contacted farmers and ag professionals across the region. Repeatedly, I was told about neighbours doing "great" and "interesting" things. In all, photographer Zoltan Varadi and I visited seven farms and three research stations from Beaverlodge in the southwest to Fort Vermilion in the northeast. And, at everyone's urging, we spent an entire evening photographing the La Crete Ferry as it crossed this enormous region's namesake waterway, loaded with farm machinery, timber, hay and people.

AGGRESSIVE AND PROGRESSIVE

At Prestville Farms headquarters, just south of Rycroft on the west side of Highway 2, Caroline Sekulic had just hired a much-needed bookkeeper. Pedigreed seed growers who operate their own seed plant and cow-calf operation, she and husband Nick are busy and ambitious. The couple's 7,300 acres of cereal, oilseed and pulse crops in the central Peace are spread across the counties of Spirit River, Birch Hills and Saddle Hills. Being one of the few seed growing operations in the Peace Country, they sell everything they grow as demand for locally produced seed increases.

Their children Olivia and Theo will study commerce this fall at UBC and the University of Saskatchewan, respectively. On Aug. 10, they assisted their mother with early harvest and seed plant duties while Nick was on tour in Eastern Canada with son Max. A business student and aspiring pro golfer, Max had just won the Canadian Men's Amateur Championship in Windsor, ON.

Like this family comprised of farmers, finance professionals and a sportsman, the Peace Country is known for its variability. This includes soil. The Sekulic farm ranges from grassland to sandy loam and grey wooded. Climate is particularly varied. "People think on their feet up here," said Caroline. Harvest can bring rain, hail and snow. "There are always changing weather concerns. We have to move quickly."

Despite the notoriously short growing season, much of the Peace is suited to long-season crops such as spring wheat and canola. The Sekulics grow early-season cereal varieties for clients whose local microclimates demand them, but these are not their main trade. "The lion's share of our business, the focus is on yield, competitive value and economic potential," said Nick, on the phone from Max's winning tournament days earlier.

"We have a much more compressed harvest season," he said. Though summer moisture maps indicated the Peace Country fared better than much of the Prairies, their area endured an unheard-of week of 40 C weather. High moisture is the norm, however, so most farmers here employ tracked machinery and dryers or aeration equipment and bin monitoring systems.

"When they aren't farming grain or running cattle operations, they're involved in logging, oil and gas and trucking to help build their businesses."

— Nick Sekulic

Beating the short season is critical, and the Sekulics have used a high-capacity grain dryer since 2012. They harvest cereals as high as 21 per cent moisture and straight cut canola as high as 15, then clean and dry immediately. Launched in 2019, the Prestville plant now features an Alvin Blanch dryer and heated seed treatment facility.

Necessity defines the Peace Country. It drove many settlers to the region as the rest of Prairies had largely been developed. What drew Nick's grandparents to homestead here in the early 1900s was productive, well-priced and available farmland. Successive generations were shaped by demanding growing conditions. This has made Peace farmers both progressive and aggressive, said Nick, who also serves as a Seeds Canada director. "When they aren't farming grain or running cattle operations, they're involved in logging, oil and gas and trucking to help build their businesses," he said.

He added farms in the region tend to be big and good agronomics bring robust productivity. With good rail access, grain export from this vast region is efficient. "There's a reason they keep adding big grain terminals in Peace Country," said Nick.

AT PEACE

Just south of Fairview, we asked Neil Boyd if his field practices have helped his crops through the ongoing drought. He answered by walking us out to a canola field. He dug in under the thick crop canopy for a handful of soil heavy with organic matter, surprisingly moist and cool.

Boyd lives and farms with balance and moderation, an approach that has delivered agronomic results as well as contentment. Each workday begins with freeform yoga and easygoing CBC Radio music program *Mornings with Saroja Coelho*. In this restorative routine, he pays attention to the physical complaints that come with farm labour. A serious devotee, he is vice-president of the Feathered Pipe Ranch Foundation of Helena, MT, a non-profit humanitarian group whose various educational programs include yoga retreats.

"After I finish my yoga practice, I feel great," he said. "I go on with my day feeling more flexible, and your mind feels more open. You need those things to be a farmer."



At the family's seed plant just south of Rycroft, Olivia, Theo and mom Caroline Sekulic tended to business tasks and readied themselves for an early harvest.

He and wife Ruby operate the farm, while son Curtis who lives in Lacombe helps out in spring and fall. The couple's daughter Amanda is a professor at Washington State University.

With a lifetime interest in holistic farming, Boyd gravitates to sustainable practices. He has carried out continuous soil improvement since he adopted a no-till, low-input strategy in 1996 and began seeding through straw with a hybrid drill. He now uses a single-chute drill, does not disc or harrow and rarely enters the field between seeding and harvest. He applies inputs as necessary and maintains a 60-20 fertilizer regime on wheat and 60-20-0-10 on canola. "Now, the land is more forgiving," said Boyd.

Peace farms tend toward the extremes of organic and intensive, whereas Boyd

describes himself as "a radical centre." He diplomatically emphasized there is no one way to farm. "All a person can do is farm the way he thinks is working. If that changes a mind here and there, that's fine, but I'm not going to preach about it."

Boyd's triple bottom line philosophy is agriculture should ideally have social, environmental and economic benefit. He shares this outlook with the Quivira Coalition, a Santa Fe, NM, organization that promotes resilience in agricultural landscapes. "It sounds like a cult, but it's not woo-woo," he said with a laugh. "It's good ol' boy farmers from the southern states." At the group's annual conference, he picks and chooses practices he can apply.

He believes Peace Country farmers tend to be ahead of the curve in

adoption of new technology because land here has historically been cheaper to buy and rent than in the south. This has allowed farmers to utilize advanced equipment and new technologies sooner.

At 67, Boyd reports he feels great, but knows his limits and has adjusted his operation accordingly. To keep work manageable as he ages, he has simplified. He once cropped 2,700 acres, but now rents 950 to younger farmers. He also sold off his cattle operation five years ago to concentrate on wheat and canola. "It's not a real big farm, but it's a good farm," he said. "You have to do things where you're comfortable and still having fun. It's really important to keep your mental health up, your physical health up and to keep the soil healthy."

FIRST-TIME FARMERS

One chilly winter morning just a half dozen years ago, John Fingerhut put an idea to his son Mackenzie (Mac) at the breakfast table. "I said, 'you're too young to make a lifetime commitment to me right now, but if we had the opportunity, would you be interested in us going farming?'" said John. Mac immediately knew his answer but sensibly took the day to think it over.

John grew up on a Dawson Creek, B.C., grain farm, but left to be a grain trader in Vancouver at age 24. Through the job, he met his wife Jody, a grain company employee. John later worked off-farm in equipment transport. To facilitate their return to farming in 2017, the couple farms Jody's parents' land near Fairview. John and 20-year-old Mac are in their fifth harvest together on 3,700 acres of barley, canola, oats, peas and wheat. Jody and Mac's 18-year-old sister Monica provides seasonal assistance, as does one harvest-time hire. Monica is enrolled in the agri-commerce program at Olds College, which Mac graduated from this spring.

To establish their operation, the Fingerhuts did extensive research and purchased their equipment within a six-month span. Three months later, their first crop was in the ground. They incorporated new technology on equipment of mixed vintage, with Mac taking the lead in the digital department. They launched with a 2011 Lexion combine, integrated for GreenStar, retrofitted for GPS yield mapping and autosteer.

The two developed a working relationship based on mutual trust that has allowed them to tailor their operation for efficiency. They have continually boosted and streamlined their digital capabilities, which Mac said, "just fell into place." They adopted sectional control and soon graduated to variable-rate nitrogen application, then variable-rate fungicide two years ago. A recently purchased air cart will allow further advancement. "We're looking at full variable-rate fertility for next year and full sectional as well," said Mac. "We've even discussed variable seeding rate. That's less common up here, but something to consider."

To enter digital agriculture takes training and diligence, said Mac. With a limited amount of setup at harvest, the Fingerhuts concentrate on efficiently getting the crop off. Mac then analyzes their collected data over winter and generates yield maps and reports. This includes yield data from two dozen field trials. "We've become a bit of a testing farm for our area," he said.

Mac has also recently purchased his own land, and he and his father hope to expand their operation to take advantage of significant efficiency gains. Ever ambitious, Mac has recently purchased a soil sampling truck and soil electrical conductivity equipment, and has even formed a precision data management side business—MJ Ag Solutions. His ultimate goal is to help Peace Country farmers emulate the success he and John have found in digital ag. "I haven't got it all figured out," said Mac, "but I'm starting to create a system



Neil Boyd who farms near Fairview believes farming practices should ideally have social, environmental and economic benefits.

that works to give farmers of any size the ability to do precision mapping and precision data without interfering with their harvest operations. There are ways that you can make it really, really simple.

"You're ultimately trying to calculate return on investment with this data collection and management," he added. "You can make all the pretty maps you want, but I'm trying to make them with a purpose."

NEW THINGS

The walls were being secured on a towering new 30,000-bushel grain bin as we arrived at Rebellion Farms, 5,000 acres of canola, peas, malting barley and wheat near Brownvale. Owners Christi Friesen and husband Kelly were enjoying the occasion with a celebratory drink while their blue heeler-rotwieller cross Rouger romped around the yard. The couple have two children, Kohlton, 11, and Mackenzie, eight.

In this parkland geography with steep, rolling hills, their fields have highly variable soils from grey wooded to slow-drying heavy gumbo and sandy, gravelly soil that is quick-draining. In years such as this, hilltops can burn off or hardly germinate



John (left) and Mackenzie Fingerhut built their farm operation from scratch five years ago with a heavy emphasis on digital technology.

while hollows are in good shape. This demands they individually manage each field. Under the principles of 4R fertilizer management, each is given its own fertilizer blend at seeding. Uneven maturity rates require certain fields be desiccated and others not. It all takes time to manage and, of course, yields vary.

"It is challenging," said Christi who is an Alberta Wheat Commission region five representative. "We're still trying to figure out what's going to work for us. We're very open and willing to try new things. I think that's what makes you a progressive farmer."

To gauge the value of new practices, the Friesens perform frequent field trials. There can be a fine line between

what works and what doesn't. For instance, they don't desiccate their wheat after frost. This worked great when frost hit their mature wheat in mid-September last year, but was a disaster in mid-August of 2019 when the crop was nowhere near maturity. However, that same year, they let their frosted canola stand and mature on its own and achieved green counts much lower than the local average. Not typical for their area, a practice they've adopted that has worked uniformly well is to straight cut everything.

The couple's drive to tailor their methods is twofold, said Friesen. They work to improve sustainability in tandem with the financial bottom line.

"We're always calculating here," she said. To avoid unnecessary spray application, they monitor insect thresholds and choose pesticides carefully so as to minimize impact on beneficial insects and soil microorganisms as well as avoid herbicide carryover.

"If you're farming in a sustainable way, it potentially gives you extra marketing opportunities," said Friesen. For example, through Cargill, they participate in a voluntary sustainability tracking program that gives them access to the European biofuels market for canola.

These sustainable ways have also served well in their 1,800-acre rental relationship with the Duncan's First Nation. In a process Friesen described as a two-way education, they've worked with the community to reconcile their weed and pest control needs with the community's own strong cultural belief in sustainability. As well, one of the Friesens' two seasonal employees is a Duncan's member.

The Friesens also employ one full-time hired hand who is part of their business diversification plan. They purchased an excavator and a D6N Cat that allow this skilled employee to do excavation work in winter as well as taking on hauling and equipment moving projects. In tough years such as this, the initiative offers additional income and peace of mind.

"What I'd like everybody to know is Peace Country farmers are the strongest and most optimistic kind of farmer there is," said Friesen. "We deal with anything Mother Nature throws at us. It's like a totally and completely different little world up here."

INTEGRATION AND DIVERSIFICATION

In the midst of preparation for a camping trip, Nora Paulovich and her family gathered at their kitchen table. To concentrate on further expansion of their north Peace farm operation, Nora has just retired as manager of the North Peace Applied Research Association

(NPARA) in Manning. A big proponent of soil health, from 2015 to 2019 she chaired the Western Canada Conference on Soil Health & Grazing in Edmonton.

Jackknife Creek Land and Cattle is located southeast of Manning and just east of the NPARA Research Farm. Nora's Ukrainian immigrant grandparents homesteaded nearby. Husband Bob Noble grew up on a farm near Taber. With daughter Jolene and son Lee, they maintain a cow-calf operation and grow cereal, oilseed and pulse crops. Their daughter Cara is an accountant who lives in Edmonton but assists on monthly visits.

Geographic drawbacks of farming in Peace Country are magnified as one travels north. Here, market access for crops and livestock is limited. The family hires a custom hauler to drive 80 kilometres to Grimshaw at about \$12.50 a tonne. While transport to far-flung terminals takes a bite, grain buyers offer lower rates than do facilities closer to port.

Input suppliers are also spread out, so parts can take time to acquire. Speed of service depends on the colour of the equipment. The family drives an hour-and-a-half to Fairview or two to La Crete. They do appreciate the efforts of service and supply outlets to address local needs, but maintain contingency plans. This includes a limited on-farm, spare parts inventory.

Despite drawbacks, the family speaks glowingly of their northern advantages. Accessibility of land can bring favourable return on investment, and because urban development is limited, there is less pressure on land value. There is also less maintenance pressure on local roads and even less noise and dust pollution.

As well, shy of soybeans, long summer days allow farmers to grow most crops their southern neighbours do. "We pay for the day length in December," said Lee. "But I wouldn't trade it." Neither would Jolene. Like Nora and Bob, Lee and Jolene studied agriculture at the University of Alberta and are now career farmers.

"We're very proud and lucky they both want to come back and farm," said Nora.

"This was always what we wanted to do," said Jolene. "And a big part of that was mom and dad involving us in management decisions from an early age. And they always bring new ideas to the operation and all of us are very open to moving forward and making improvements."

This includes further diversification and vertical integration of crops and cattle. "We will improve our soil health through our crop rotations and grazing management and reduce our inputs to make more profit," said Nora. They are also retailers of forage seed, fence supplies and livestock minerals and plan to introduce a value-added beef freezer trade to their business.

Cover cropping, which they began in 2013, is a proven innovation. "That's what's going to save our bacon this year," said Nora. Late frost and a dry spring knocked forage production back to as little as a quarter the norm.

On Christi and Kelly Friesen's farm near Brownvale, the couple celebrated the completion of a new grain bin installation.





"Because our perennial pastures are very poor, that's going to help us supplement our grazing."

"We're looking outside the box to see what we can do to increase profit per acre versus adding acres," said Jolene.

EXPERIMENT AND ADAPT

With the summer's scorching heat, Peter Bigler has considered the impact of increased weather extremes on his farm at Hawk Hills near Hotchkiss. "It has made me realize we have to lay out our farm to become more resilient," he said. "Crop insurance doesn't put bales in the yard."

He had just rolled into the farmyard on his ATV from tending cattle while wife Noelle Weiland was bailing nearby. The couple's four children—Lauren, Erin, Shane and Sharman—are all in school, from Grade 11 to third-year university.

Predominantly a cattle operation, they sow 800 acres of cash crops that may include peas, barley, canola or oats on slightly more than nine quarters.

Most of their cattle spend a portion of their summer on two community pastures while Bigler grows winter forages on the farm. They calve 200 cows and background about half the animals. On the crop side, with no grain handling system, he makes do with several aeration bins.

Born and raised in Bern, Switzerland, the scarcity and high cost of European farmland proved a no-go for the aspiring first-time farmer. The Biglers established a dairy and feeder pig operation east of Red Deer but inadequate water supply hampered its growth. The couple discovered the appeal of the Peace Country through friends who lived in the region. In 2005, they made the move and it agreed with them. "Just the sheer beauty of the land, the access to the river, we love it up here," said Bigler. On the heels of the BSE crisis, however, it was a tough start for a cattleman. Most area grain farmers then grew grass seed, but in about 2007, the market tanked and the ready supply of roughage Bigler

had counted on disappeared. He made adjustments and keeps on doing so. "My mindset is to experiment and adapt."

This includes experimentation with both feed and cash crops, as the latter can be turned into feed. "I can be a bit more adventurous than my straight grain neighbours," he said. For example, he works with relay crops. He may take a barley silage crop off that gives way to forage species that tolerate cool, late-summer nights. "We've had really good success doing such things which always makes me happy," he said. His input costs remain relatively low, which allows him to roll with nature's punches, and though his income is modest, he said, it is also not subject to great fluctuation.

Wet year or dry, and despite occasional grasshopper pressure, multi-species cover crops always produce. Last year, when excess moisture drowned his barley and oats and kept him from seeding a portion of his forage acres, annuals from the previous year grew tall and thick to save the day.



The Peace Country has recently seen the construction of new elevators. These include this Richardson Pioneer facility now being built 35 kilometres west of Grande Prairie.



To complement his cattle operation, Peter Bigler of Hawk Hills continually adjusts and experiments with his array of cash and forage crops.

After grazing and silaging, he even took off a second cut in October. This year, barring extreme weather, he's confident winter grazing will hold out as late as March.

Though his operation is well tuned, Bigler admitted he struggles with the next major step in its evolution. "We could just farm grain and have a lot easier life, but it's just not something I really want to do." And again, the mixed nature of the operation allows needed flexibility.

"I think we'll have to start to learn to live with challenging times," he said. "The last three years we've seen many extremes. Neighbours who grew up here say, 'well, that's one for the record books.' A couple of months later, there's another one for the record books. So, that's a lot of entries into that record book."

FEARLESS FARMERS

A mere three-hour drive from Alberta's border with the Northwest Territories, there are no obvious signs of drought on the Peters's farm near La Crete. An inflatable water trampoline bobs in the slough next to the driveway, and the canola crop is lush. The farm's soil is mostly agreeable sandy loam with areas of trickier, hard-drying clay loam.

Ernie, his wife Shannon and their two boys—Shaun, 13, and Nolan, 10—farm close to 6,000 acres of barley, canola, peas,

oats and wheat in Mackenzie County. With business partner David Wiebe, Peters employs three seasonal employees. He also farms a parcel of land 135 kilometres away in the Keg River area to the south in Northern Lights County. Conveniently for Peters, the La Crete area is typically drier, so harvest can begin there and transition to Keg River.

This is the northern tip of Peace Country, Canada's most northerly agricultural region. Peters acknowledged farming here has challenges, such as high nighttime humidity that can shorten the daily harvest window, but is eager to discuss its advantages.

The land here happens to be nice and flat, but this is the least of Mackenzie County's farm-friendly attributes. "Our crops grow 24 hours a day for about six weeks in June and July, which is quite amazing," said Peters. He also trumpets the high quality of local crops, which include canola with high oil content and wheat with desirable starch and protein. "We're hoping to attract value-added processing facilities up here," he said. He added the area has the necessary labour force for such initiatives.

Additionally, the Mackenzie Applied Research Association (MARA), of which Peters is a director, conducts research to support cropping innovations workable under the area's unique agronomic conditions. Located in Fort Vermilion, MARA assists farmers in part by identifying new and valuable crop types and associated agronomic practices farmers can utilize. Area farmers are also keenly supportive.

"Very often, the perception can be what works in southern Alberta works in northern Alberta and vice versa. That is just not true. It's a totally different environment here," said Peters. "People are not afraid to try different concepts, products and ways of farming." This includes conventional as well as organic operations, which have proliferated over the past several years. When commodity prices were low, and given the often considerable cost of inputs, many here saw organic production as a welcome opportunity.

Sure, parts and products are more expensive to acquire here, and for many, a new Richardson Pioneer terminal in High Level is distant, but Peters takes this in stride. Again, the area's remoteness and high latitude provide counterintuitive benefits. "We're in this far-north bubble and there's so much forest between us and the next communities. That's really beneficial. It keeps diseases like Fusarium and clubroot out, and our colder winters are very beneficial as well. They reduce the survival rate of insects and that suppresses insect pressure on crops during the growing season."

While vastness, geographic isolation, high latitude and the particular farming circumstances they generate may shape the practice of farming here, Peters said it is the attitude and outlook of farmers that defines Peace Country agriculture. "We aren't afraid to tackle anything." ●



NORTHERN FARMERS EMBRACE DATA-DRIVEN SCIENCE

Peace Country research facilities fuel local innovation

Agricultural research facilities are critical to the forward momentum of Peace Country farming. Established in 1917, the Beaverlodge Research Farm is the most northerly Agriculture and Agri-Food Canada research centre. The wide scope of its programming reflects the sheer size of the region. This encompasses research on forage production and integrated crop management as well as disease and pest management and honey bee pathology.

Jacey Toerper is a master's student in the facility's agronomy program. She is at work on one of these many initiatives. The first year of a three-year, ultra-early seeding trial will measure the yield of 10 spring wheat varieties planted at various temperatures. This includes commonly grown varieties as well as early-maturing new and recently commercialized cultivars. "This may be really beneficial for farmers in northern Alberta because we do have the challenge of a shorter growing season," said Toerper. She hopes farmers share the pride Research Farm staff have in the facility's work and can employ the agronomic information it produces.

The North Peace Applied Research Station (NPARA) is located in Manning and its companion Research Farm is a short drive away. A non-profit, farmer-driven facility launched in 1988, it serves the County of Northern Lights, Clear Hills County and the Municipal District of Peace No. 135.

The relatively great distance to local elevators combined with an abundance of marginal land has seen mixed operations proliferate here. There are a few existing organic operations with



MARA manager and research co-ordinator Samuel Peprah said Mackenzie County farmers are open to the positive effects data-driven science can provide their operations.

a handful in transition, said NPARA manager Lance Ouellette.

Similar to the rest of the Peace, farmers here have endured multiple very wet years followed by three very dry ones. "It is certainly very challenging when you have extreme weather conditions," said Ouellette. He added the climate is essentially arid with a frost-free window between 90 and 110 days. Farmers in the Hawk Hills area are particularly

aggressive with experimentation, trying biostimulants and humic acids in an attempt to stimulate early plant growth. Interest in soil health and regenerative agriculture is quite high in general, he added. No-till, crop diversification and input cost reduction have experienced a big push.

As at Beaverlodge, NPARA researchers actively search for additional crops and cultivars suitable for the region.

Field trials are underway for CPS and CWRS wheat, fava beans, feed barley, oats, green and yellow peas and forage varieties.

MARA, another not-for-profit, farmer-driven research facility, is located in Fort Vermilion. It's the organization's job to pinpoint the challenges faced by farmers in Mackenzie County and to give them objective solutions said Samuel Peprah, MARA manager and research co-ordinator.

This work includes short-season variety trials and research projects that focus on management of weeds, pests and diseases. Also, part of its mandate is the reduction of production costs and preservation of the environment. MARA additionally conducts trials and produces data to quantify the effectiveness of inputs of interest to area farmers who want to know if they work as advertised under local conditions.

Education is also an important element of association work. As NPARA does, MARA has brought in outside experts to speak with farmers about topics such as reduction and prevention of potential disease threats that include *Fusarium head blight* and *sclerotinia*.

With a \$300,000 grant from the Western Grains Research Foundation and matching funds contributed by farmers, MARA this year established an agronomy centre and repair shop. A much-needed boost to its research and extension activities, it also allowed the launch of a disease mitigation program.

Farmers who bring in rental equipment from outside Peace Country can now visit the centre's decontamination area to have it spray washed and sanitized. Peprah believes this will help keep Mackenzie County free of clubroot.

To the predominant local crop list of barley, canola, fava beans, peas and wheat, MARA works to build the agronomic cases for crops such as triticale, corn, flax and, most surprisingly, soybeans. Perhaps also unexpected, 41 per cent of farmers in the county are organic. Virgin land is still being converted to this type of agriculture. Organic systems research is naturally a part of MARA programming.

An area of opportunity for northern farmers in the future is irrigation, said Peprah. Certain farmers now haul water from the Peace River for their crop needs. Many here may be interested in pivot irrigation systems if crop commissions and government programs to aid in their set up are ever launched.

"The rule of the game for farmers in the Peace Region is evidence. They want to see it," said Peprah. It's an impulse that snowballs. The more you know, the more you want to know. "As they learn and make gradual changes, farmers become more progressive, forward thinkers." He emphasized the research facilities in Peace Country have opened farmers' eyes to the positive effects data-driven science can have on their operations. ■



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DANCE STEPS FOR A SMALLER CARBON FOOTPRINT

Federal government supports development of
eco-friendly ag practices



BY MELANIE EPP

LEAD PHOTO BY TWO STONE PHOTOGRAPHY

The Canadian government has made a substantial commitment to the achievement of its 2030 carbon emission reductions target. In a July submission to the United Nations, the country formally committed to cut greenhouse gas emissions by between 40 and 50 per cent below 2005 levels. This will support the creation of a net-zero emissions economy by 2050. Part of a global push, it is a goal shared by more than 120 countries. In June, it became the nation's first emissions reduction target to be enshrined in law within the *Canadian Net-Zero Emissions Accountability Act*.

Canada's Changing Climate Report identifies agriculture as a sector that faces major threats. In coming years, southern Canada is expected to experience warming at twice the global average. Agriculture has also been pegged as an area in which outsized gains can be made in carbon sequestration and the reduction of emissions.

In April, the federal government launched the new Agricultural Climate Solutions (ACS) program, which aims to help Canadian agriculture develop and adopt strategies that sequester carbon and mitigate greenhouse gas emissions. The funding will be allocated to projects that accelerate the co-development, testing, adoption, dissemination and monitoring of carbon- and greenhouse gas-friendly technologies and practices, including beneficial management practices. This will allow the sector to take advantage of new opportunities related to the emergent green economy.

ACS is a multi-stream program that falls under the \$4 billion Natural Climate Solutions Fund. Over a 10-year period, ACS will allocate \$385 million of this targeted cash. To meet its goals, ACS will establish a Canada-wide network of Living Labs. Working farms composed of individual networks of agricultural sites, a number of these have previously been set up. For each, a lead partner from the sector will bring together farmers, scientists and other key stakeholders who will co-develop practices to reduce Canada's environmental footprint and enhance climate resiliency.

For approved projects in provinces without existing Living Labs, the program will kick off in 2022. In Quebec, Ontario, Manitoba and Prince Edward Island, which all have Living Labs in place, the program will start in 2023. An additional two-part funding cycle will begin in 2027 and 2028.

Proposed ACS projects within the priority areas of carbon sequestration and greenhouse gas mitigation will be considered, said Anna Pacheco, senior national co-ordinator, Living Laboratories Division, Agriculture and Agri-Food Canada (AAFC). Possible carbon sequestration projects may study cover crops, intercropping and the inclusion of pulses in rotation. Possible greenhouse gas mitigation projects include nutrient management and feed strategies, the latter of which is most relevant to the livestock sector. In addition, applicants have been encouraged to indicate whether their projects may produce additional environmental benefits. These could include improved soil health, positive effects on water quality and conservation, increased biodiversity and benefits to wildlife and natural habitat.

"What is different about it is that we are bringing the farmers in from the onset of the program, of the projects, and we are asking for their feedback in terms of what practices they believe can be innovated or refined," said Pacheco of the Living Labs approach. "As scientific data are collected from the farmers' fields and are evaluated, they continue to be involved by providing feedback throughout the duration of the project." This emphasis on farmer participation is intended



Photo: Courtesy of the Government of Canada

The office of Minister of Agriculture and Agri-Food Marie-Claude Bibeau asked ag groups to comment on the practicality of the Agricultural Climate Solutions program.

to improve the likelihood new management practices can and will be put to use on farms.

The ACS project is not the sole initiative of its kind. A second Natural Climate Solutions funding stream relevant to agriculture is the On-Farm Climate Action Fund. A \$200 million, three-year initiative that begins this year, it aims to support farmers in the adoption of beneficial management practices that store carbon and reduce greenhouse gas emissions. This will be implemented in the areas of nitrogen management, cover cropping and rotational grazing practices.

Across the country, agricultural stakeholder groups expressed frustration they were not consulted when these policy and funding opportunities were being developed. Despite this criticism, the Alberta Wheat Commission (AWC), Alberta Barley and Alberta Beef Producers are among the program applicants.

WESTERN CANADIAN FARMERS SURVEYED

Following the launch of ACS, the office of Minister of Agriculture and Agri-Food Marie-Claude Bibeau approached industry groups such as the Grain Growers of Canada (GGC) for feedback. Would farmers take advantage of the funding opportunity, and if not, why not? GGC sent out a member survey.

While the questionnaire drew responses from just 40 people, these came primarily from farm group directors in the Prairie provinces that well understand the needs of farmers in their regions, said Erin Gowriluk, GGC executive director.



Under the Agricultural Climate Solutions initiative, possible greenhouse gas mitigation projects include nutrient management and feed strategies, the latter of which is most relevant to the livestock sector.

Gowriluk noted significant hesitation among respondents in the area of cover cropping. Though a quarter of them had tried cover crops, few had success. She speculated two possible reasons could be lack of adequate moisture and a narrow post-harvest planting window. Some farmers felt they should be incentivized to adopt these practices.

In contrast to cover cropping, most farmers said they are well ahead in the adoption of beneficial nutrient management practices. Those who haven't adopted the 4R Nutrient Stewardship program cited equipment upgrade costs. Branden Leslie, GGC manager of policy and government

relations, said this could be due to a knowledge gap about the 4R program. Fertilizer Canada and other industry partners are hard at work to remedy this, he added.

Given the variability in soil type, acreage and existing equipment on individual farms, it is difficult to determine how much the average farmer would need to invest to adopt 4R management strategies, said Leslie.

"If upon soil testing, a grower realizes there is a mixture of nutrients required on various pieces of land they own, that grower may not have an air seeder set up to deliver the required nutrients, and may need to make alterations or

upgrades to their equipment in order to do so," he said. "There are also, of course, some farmers who are using quite old equipment that really won't meet the needs of certain types of product application."

He did point out, though, that farmers have been offered significant support for cost-shared agronomic advice, which could help them to better determine the needed investment, if any, they would require.

Gowriluk is annoyed farmers were excluded from the conversation when these policies and funding opportunities were developed. The federal government did reach out to

the industry group Farmers for Climate Solutions. However, Gowriluk pointed out this organization primarily represents organic farmers as opposed to conventional.

“If it isn’t something that’s feasibly done in many parts of the country, then you’ve just developed a program and thrown a whole bunch of money into an initiative no one’s going to sign up for,” said Gowriluk. “It’s very frustrating from the perspective of a national association when government develops policy and they don’t consult with the farmers who are going to be the ones who have to actually implement these practice changes.

“Unfortunately, what we’ve seen increasingly from this government is that a lot of the agricultural policy around climate and sustainability is coming out of Environment and Climate Change Canada (ECCC), and the ECCC, for the most part, has not engaged [conventional] agriculture stakeholders,” she added.

BEEF AND CROP SECTORS COLLABORATE

The federal government received a substantial number of applications for the first round of the initiative. Sheri Strydhorst, AWC and Alberta Barley agronomy research scientist, is part of a project group led by Karin Schmid, Alberta Beef Producers’ research and production manager, who spearheaded a grant application for just shy of \$100,000. It is intended to support the development of a network that, if successful, will develop a comprehensive project proposal. The phase one funding will help the group set up a governance structure, build collaborative networks and put together a team that will oversee the development of a phase two application. It will be the team’s job to ensure the proposal is scientifically sound and feasible from a farmer standpoint.

One of the goals of the ACS program is to develop projects through collaboration with industry stakeholders. “The collaboration between the crop sector and the beef and forage sectors is a bit unique,” said Schmid. “There is a lot of overlap between the sectors in terms of the products that are used in the feeding sector and the nutrients from manure that are then used in the cropping sector. I think there are a lot of ways we can work together to advance the goals of the ACS program,” she added.

If the Alberta funding application proves successful, said Strydhorst, the project group will consider the location of a Living Labs facility in an area of the province where the potential for carbon sequestration is highest. This includes areas where summerfallow remains common and where adoption of no-till soil management is lower. Similarly, areas with lower levels of soil organic carbon, medium to fine soil textures or where cropland is degraded may be targeted. “This is where the biggest gains can be made initially,” said Strydhorst.

“Scientists have developed practices to increase carbon sequestration, now the next step in that process is to make

“If it isn’t something that’s
feasibly done in many parts of
the country, then you’ve
just developed a program and
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sign up for.”

— Erin Gowriluk

these scientific solutions work on-farm. Farmer engagement will be critical for the success of this project. Living Labs will provide the opportunity to co-develop workable practices to sequester carbon in real-life farming operations.

“This is an opportunity for farmers to have a voice and find tools that are practical to implement on their farms.” The model can tackle the social and economic barriers that hinder sequestration. “If it’s not practical for a farmer to grow cover crops, perhaps they could employ shelter belts or more diverse rotations.”

Data collection will be the key from proposal to practice. “As we plan for the full proposal, we will develop experimental protocols to measure carbon sequestration in the agricultural production systems,” said Strydhorst. “We need to use the same methodology in all areas so that the data, when it’s compiled, can be meaningful. It needs to be able to survive peer review so that it’s reputable and solid data.”

Once the methodology is in place, they will measure carbon sequestration potential under various scenarios. These may include the use of diverse rotations, cover crops or nutrient management strategies. Then the working group, which has not yet been established, will identify barriers to adoption, whether economical or logistical and provide an economic analysis of each strategy. The information will be used to inform policymakers.

“I think everyone is really apprehensive about stepping into this space because it is a new space,” said Strydhorst, referring to the carbon market. “But we also see, from the policy perspective, just how important this work is.”

Funding applications were under review at the time of writing, but Strydhorst and Schmid believe theirs is strong. Preparations for the second round of funding won’t begin until the first is approved. ●



RIGHT ON TRACK

As CP purchases KCS landmark deal won't hurt, may benefit farmers



BY GEOFF GEDDES

PHOTOS COURTESY OF
CANADIAN PACIFIC RAILWAY



As Canada's two national rail companies—Canadian Pacific Railway [CP] and Canadian National Railway [CN]—competed to purchase American rail line Kansas City Southern [KCS], Canada's agriculture sector stood to benefit from the deal.

In spite of its stature as America's smallest Class 1 railway, KCS has long attracted the interest of CN, CP and other would-be buyers. "The battle to purchase KCS seemed to change daily," said Mark Hemmes, president of Quorum Corporation. Headquartered in Edmonton, the independent organization monitors the Prairie grain handling and transport system for the federal government. "In the grand scheme of things, I'm not sure it mattered which railway got it, as the advantages to Canadian shippers are the same either way," said Hemmes.

DOWN THE LINE

KCS routing opens new markets for Canadian farmers in the southern U.S. These include Missouri, Oklahoma, Texas, Louisiana, Mississippi and Alabama. It also allows direct access to central Mexico, Mexico City and the southern ports of Lazaro Cardenas on the Pacific coast and Tampico and Veracruz on the Gulf of Mexico.

"A lot of Canadian grain is shipped to Mexico, but the vast majority goes by water rather than rail," said Hemmes. "It must then be transloaded [transferred from one mode of transportation to another] and carried into the central part of Mexico at extra cost. By avoiding the dual expenses of transloading and interchanging [the process by which rail companies convey their competitors' freight over their own lines], acquiring KCS could make some of those markets much more accessible."

The rail option could also become more attractive in the wake of rising freighter prices. "The cost of ocean freight has been rising steadily through 2021," said Geoff Backman, manager, business development and markets for the Alberta Wheat and Barley Commissions. "Sometimes that trend makes rail a cheaper alternative, most recently in 2007/08 when there was a scramble to arrange rail service. Having an alternative route for Canadian grain into Mexico could really help us maintain a competitive price in the region."

For shipments by rail, the interchange process slows movement and increases expense. Their elimination is of significant value to shippers. This applies to grain as well as fertilizer, chemical products and manufactured items.

"From a grain perspective, interchanging can be a difficult procedure and sometimes raise concerns over quality of service and delays in delivery," said Backman. "A single carrier route could aid in alleviating those concerns."

This potential upside for a lone carrier was not lost on the two Canadian bidders for KCS, and largely explained their eagerness to own the U.S. line. "With regard to markets in the southern U.S. and Mexico, the existing scenario requires one or more interchanges between railways, which adds significant cost to the rail freight rate," said Hemmes. "If the routing is a single railway, this will reduce the rail rate and make some of those markets more competitive and accessible."

Nonetheless, Hemmes stressed the creation of a single rail line from north to south will have limited impact on Canadian cereals export as shipment to the Port of Vancouver will remain the most cost-effective option. He grants there may be exceptions. Further to Backman's point about the increase in ocean freight rates, continued cost increases could strengthen the rationale for more movement of products by rail into Mexico City. With the transport and transloading costs for products that now move by ocean vessel to Mexican ports being avoided, the rail option becomes more attractive.

"In this case, the equation becomes a bit more complex, and the rail movement would not represent a significant volume,"

said Hemmes. "Adding KCS to the mix won't impact that traffic to a great extent. Despite the fact grain prices are rising, they aren't going up enough to warrant doubling or tripling the length of the haul to a port position." The average haul to Vancouver is 1,450 kilometres, whereas the trip to the Texas Gulf Coast is a 3,220-kilometre jaunt. The additional distance doubles the rail cost to move shipments. Hemmes believes grain companies will not be eager to increase their logistics costs to load grain for southerly destinations.

"If wheat is \$300 per tonne right now, you are probably spending between \$50 and \$60 per tonne getting it to port," said Hemmes. "If you suddenly have to spend \$70 or \$80 per tonne because you want to move through the Texas Gulf Coast, that extra \$20 bucks is coming out of your pocket, and who wants that? As well, going with the Texas option is not the most efficient use of railway equipment. You can usually turn around a hopper car from B.C. in about 18 days now, and sometimes as little as 12. Could they do the same thing going through the Texas Gulf Coast? The answer is a resounding 'no,' so Vancouver will always be the more efficient port for grain."

Also of concern to farmers is the potential impact oil traffic on the newly established north-south line may have on Canadian grain transportation. He said it remains unclear how the loss of the Keystone XL pipeline will play out on cross-border shipment. In the pipeline's absence, however, the added north-south line would offer a viable alternative for shipping oil by rail, especially when it becomes a direct trip without an interchange. The result should be good news for the oil sector that would not come at the expense of grain sellers. "I don't think oil movement will be especially impactful to the movement of grain," said Hemmes.

CRUSHING ON CANOLA

There may also be good news for the Canadian canola sector in a KCS takeover. Canola industry leaders watched the merger battle with great interest as they pondered the implications for farmers.

"Overall, adding KCS should increase the capacity for engine power by combining their fleet with that of CP," said Ward Toma, general manager of Alberta Canola Producers Commission. Canola oil, meal and seed destined for Mexico now tend to go via freighter through the Port of Vancouver and down the coast.

"If the KCS deal means rail customers can move product directly to Mexico through Western Canada, it might relieve some capacity constraints, especially for canola oil and meal," said Toma. "Mexico is one of our largest customers, and they have a limited number of canola crushers, so this would improve their ability to buy finished product from us cheaply. In turn, that will increase the competitiveness of Canadian canola meal and oil in the Mexican marketplace."

Canola crushing capacity is set to increase in Saskatchewan, with Ceres Global Ag soon to build a plant near Estevan, SK.



As well, both Cargill and Viterro have announced similar plans for Regina, SK. “The new plants might shift the focus for canola growers from grain to meal and oil,” said Toma. “If meal and oil are moving into value-added markets in North America that line to Mexico will really help access additional markets in the United States.”

One concern around the merger is the prospect of collateral damage as one railway absorbs another. “From a shipper’s perspective, I am hearing from some worried companies that fear they will be consumed by the integration,” said Hemmes.

He also noted problems can occur when two such sizable operations combine. While the focus shifts to making the integration work, this draws attention away from the operation of an effective business enterprise. “I believe there is some legitimacy to those concerns, as we saw some service disruptions when CN took over Wisconsin Central Railway and BC Rail,” said Hemmes. “In any case like this, it takes time to get your feet back on the ground.”

THE BIG DEAL

As the fight for KCS evolved, even industry experts were reluctant to predict its outcome. CP maintained it would create a secondary contiguous network, whereas an existing CN line runs parallel to KCS in some areas. As a result, the CP offer may have been viewed as having less negative impact on competition.

“For its part, CP contended that, given the large distance between its line and KCS, there would be little or no effect on the competitive nature of the rail industry,” said Hemmes. To access U.S. markets, CP crosses the border at Emerson, MB, and Portal, SK, while CN crosses at Emerson and Fort Francis, ON. Both continue on to Chicago where CP runs to Kansas City and CN to Memphis, TN and beyond. The CN and KCS lines run roughly parallel from Springfield, IL to New Orleans, and this was the contentious part of the CN proposal.



CN had also pledged to take other measures to avoid upset in the competitive environment that might be objected to by the U.S. Surface Transportation Board (STB). “I think CP felt there was a fairly good chance that the STB wouldn’t allow CN to take over KCS, so CP didn’t have to offer as much per share as CN,” said Hemmes. “There was a lot of ego and some gamesmanship in that position, as well as risk-taking on CP’s part.”

Both Canadian railways lobbied hard, submitted numerous letters to the STB and asked shippers to lend support to their respective positions. “I haven’t seen anything like this in the rail industry

since the merger of Burlington Northern and Santa Fe Pacific Corporation in 1995,” said Hemmes. “The sheer scale of the proposals made it very interesting, as this may be the last of the major mergers in this business. Over the decades, we have gone from 20 or so railways in North America down to six, and now trying to make it five. I imagine both the American and Canadian governments will say, ‘No more.’”

After a number of twists and turns, the takeover battle concluded. On Sept. 15, CP announced a deal had been reached to acquire KCS for approximately US\$31 billion. This includes the assumption of US\$8.5 billion in KCS debt. It is the

The bulk of Prairie grain is expected to continue to be transported by rail to the Port of Vancouver. Pictured here is the Paterson Grain Foothills Terminal in Bowden.



largest railway merger in North American history, with the creation of a corporate rail network that stretches 30,900 kilometres across Canada, Mexico and the U.S.

In a CP press release, president and CEO Keith Creel called the deal a “once-in-a-lifetime partnership,” and KCS president and CEO Patrick J. Ottensmeyer said it will allow KCS to be part of “a growing and truly North American continental enterprise.”

Once the STB approves the deal, Creel will become CEO of the combined company, which will be named Canadian Pacific Kansas City, and referred to by the acronym CPKC. Its global headquarters will be located in Calgary, while its U.S. head office will be in Kansas City, Miss. Dual Mexican head offices will be located in Mexico City and Monterrey.

The CP statement noted the combined rail company will offer “new single-line routes allowing the efficient flow of agricultural products from CP’s origin-rich franchise to [KCS’s] destination-

rich franchise, generating new optionality for shippers and receivers.” In other words, the line will improve the marketing possibilities for Canadian farm products.

“Overall, CP’s successful bid shouldn’t change anything significantly compared to a CN victory,” said Hemmes. “Historically though, CP has had a larger share of the cereal traffic destined for the U.S., and this should bolster that position.”

As CP basks in its victory, it appears Canadian agriculture has likewise won out. Farmers hope this soon-to-be-done deal is also the gift that keeps on giving. “For the farmers who grow the grains, and the consumers of the U.S. and Mexico who rely on a steady supply from Canada, who holds KCS at the end of the day is irrelevant,” said Backman. “The next challenge is to implement the merger without disruption. What is important now is that the rail dependent trade, including both grains and other goods, must continue to flow.” ■



MEET YOUR MAKER'S

Farmer-owned maltster co-operative pursues craft brewers

From left to right, CDC plant breeder Aaron Beattie, Maker's Malt CEO Matt Enns and 9 Mile Legacy Brewing co-owner Garrett Pederson.



BY JENNIFER BARBER • LEAD IMAGE COURTESY OF UNIVERSITY OF SASKATCHEWAN

In 2016, Rosthern, SK, barley farmer Matt Enns escaped the Prairie deep freeze to relax in the Florida sun for the winter. More than a mere getaway, he intended to use this time to formulate his next career move after having expanded his stake in the family farm. As fate would have it, while he calculated his agricultural future, he joined a craft beer club near Orlando for the duration of his holiday. Its enthusiastic young members hosted tasting events where they sampled new and unique local brews produced by Florida's vibrant craft brewing industry. His time with the club inspired Enns to launch Maker's Malt, a micro-maltster

venture. Established in 2018, the business would in turn help inspire those in Saskatchewan's fledgling craft beer industry to take flight.

Enns's Florida epiphany was not only that the state's burgeoning craft beer market hinted at the potential for similar growth in Saskatchewan. He and his fellow barley farmers could serve the discerning tastes and thirst for novelty of brewers and their clientele. "I left the farm to work as a physiotherapist for 10 years, but came back to grow barley," said Enns, who chairs SaskBarley. "Maybe because I returned to farming on a non-traditional path, I wanted to do something a little unique. I had an

inkling of where craft beer could be in Saskatchewan.

"There were a few enthusiastic brewers and it was a premium product that had good market potential. We farm in an area of the province known for its barley, and in particular, its malt barley. But there was a disconnect between what the large multinational companies needed in terms of malt product and what a small craft brewery was asking for, and that's a gap we thought we could fill."

Enns connected with farmers he knew, as well as Saskatchewan barley breeders and ambitious craft brewers eager to make a name for themselves. His intent was to explore a business



Photo: Courtesy of Gloria Gingera.

The University of Saskatchewan Crop Development Centre's Aaron Beattie was the lead breeder of CDC Bow.

model that leveraged high-quality, small-batch malting. Traceable from field to malthouse, he intended to create unique products to align with the needs and desires of the emerging craft brewing scene.

TOOLS OF THE TRADE

To his value chain research, Enns added a study of the malting process. In 2017, he took a one-week intensive malting course at the Canadian Malting Barley Technical Centre in Winnipeg, MB. While he honed his knowledge of malting biochemistry, he also became involved in the U.S.-based Craft Maltsters Guild. The organization's active community of Canadian and American craft brewers provided him with much of the know-how he needed to set up his new business.

When Enns approached his potential partners about creating a malting business tailored to craft brewers, they assumed he had been in the city too long. To them, the idea was too niche.

But he backed his proposal with research and recruited a small group who agreed it was worth exploration.

Maker's Malt is owned by a lawyer, a construction worker and three additional barley farmers whose grain is used in the malting process. Enns put up half of the capital while the rest split the remaining investment. Functionally, he is the company's maltster and unpaid CEO, while the balance of the ownership team are silent partners. At the malthouse located in the town of Rosthern, 65 kilometres northeast of Saskatoon, SK, the business has two employees—an operations manager who is also a maltster, and an assistant maltster. The 5,000-square-foot, custom-built facility annually produces about 150 metric tonnes of malt.

Prior to building the malthouse, there was no template for aspiring craft maltsters to follow and no equipment available within Canada on the small scale the group needed. After an exhaustive search Enns found a new Wisconsin manufacturer of just such equipment. "The malting equipment used by the big multinational maltsters is a thousand times our size," said Enns. "This equipment was shipped out on a couple of flat decks. It is a single very large vessel and a 40-foot skid of supportive equipment. It's an all-in-one system that can malt barley in a flexible manner allowing for the production of a large variety of malt products." They integrated the equipment and ran their first commercial batch in January of 2018.

Big maltsters aim for consistency, efficiency and cost of production, and their main product is a consistent base malt. In contrast, craft brewers place a higher value on unique flavour, innovation and traceability. While Enns would go on to produce a number of base malts, craft brewers also look for specialty malts made primarily from barley but also from wheat and even oats, that offer unique flavours. Canadian craft brewers traditionally import many specialty malts from the U.K., France and Germany where such operations are more common.

A LOCAL SUPPLY CHAIN

As Enns and his partners grow the barley he malts, they can adapt their agronomic management to suit customer needs. "Through our own processing and talking to our end-users every day we started to really understand why certain malt quality metrics matter," he said. "We value our personal connections, quality over quantity and that is what our customers value as well. They want to produce the best tasting product they can, cost is not their biggest metric, nor is volume."

According to the Canadian Craft Brewers Association, more than 1,000 craft breweries and brewpubs have opened in Canada over the past decade, and most primarily serve the communities in which they operate.

Craft brewers are increasingly concerned about their carbon footprint and the source of their ingredients, said Enns. Suitably, most Maker's Malt is grown within eight kilometres of the malthouse. The business delivers its product primarily to



The Maker's Malt malthouse is located in the town of Rosthern, SK. The business primarily serves Saskatoon and Regina while it also ships a small amount of malt to Winnipeg. Most of its malt is produced from grain grown within eight kilometres of the malthouse.

Saskatoon and Regina, SK, with a small amount shipped to Winnipeg. "My customers talk to me, the grower, the maltster, the delivery guy who is also the problem solver," he said. "Traceability is important to many people and our supply chain is very simple."

Malty National Brewing of Regina was one of Maker's Malt's first clients. The business was the first western Canadian brewery to be designated Craft Malt Certified by the Craft Maltsters Guild. This certification flags the brewer's use of craft malt to beer consumers. Owner Adam Smith said he values working with the small maltster and appreciates that Maker's delivers malt tailored to the needs of his brewery. "Unlike the big guys, we deal in small batches and are constantly rotating what we sell, so we are open to discussing new and different things. Visitors to our taproom and stores ultimately dictate what they want, but through Matt we can easily adapt based on that local supply."

INTRODUCING CDC BOW

The Rosthern area is known for its favourable barley growing conditions and also happens to be near the University of Saskatchewan Crop Development Centre (CDC) with its world-class barley breeding program. Certified in 1999, CDC Copeland was developed here and became one of Canada's longstanding top varieties. It remained the nation's most widely grown barley in 2020.

SeCan, the distributor of CDC Bow, contacted Enns in early 2018 to see if he would malt a quantity of the new variety and distribute it to his brewer connections. Enns envisioned the creation of a more ambitious initiative, and the Bow Project was born.

"We contacted every craft brewer we knew and said we would send them enough malt barley made from CDC Bow to make a batch of beer," said Enns. "They could choose the recipe they wanted to make. All they had to do

was give us enough beer for two events we were hosting and provide us with performance metrics for evaluation."

CDC Bow hadn't previously been commercially malted, and the Bow Project provided researchers with brewing information derived from the making of 14 craft beers. This accelerated the testing process for the variety. Once all the participants produced a batch of beer, Maker's, the CDC and SeCan hosted events in Regina and Saskatoon to which they invited farmers, the breeding team, ag industry professionals, brewers and members of the public.

"CDC Bow looked really good on paper," said Aaron Beattie, CDC plant breeder, University of Saskatchewan associate professor and lead breeder of CDC Bow. "It had great agronomics. One of the big issues barley growers on the Prairies have is lodging, especially in rainy or irrigated areas. The lodging resistance was much better with Bow. It had a better disease package and

yielded up to 10 per cent higher than AC Metcalfe. We knew it could be grown well so now we wanted to see how it malted and brewed."

CDC Bow offers brewers key qualities, said Beattie. These include a low level of beta glucan, a component that can impede the brewing process. Its high extract level produces more beer per unit of malt and its low protein level is a key spec of craft brewers.

Shawn Moen of 9 Mile Legacy Brewing participated in the Bow Project, which allowed his business to experiment. "As craft brewers, we started very small, as a nanobrewery, before we grew to a microbrewery," he said. "Much of our growth has come from playing around with different ideas and that is how we have come up with some of our best products."

Moen said it can take a long time for large brewers to try new things and a strength of the craft beer market is that it can focus on experimentation, variety, freshness and local availability. "We have more flexibility than the big brewers. We can be creative with our timing and we welcome variety to a certain extent. We always look for creative and fun ways to think about ag value and Matt at Maker's Malt thinks the same way."

Beattie said Bow is a flexible variety, so it can suit the needs of craft brewers such as Moen but also meet the specs of the base malt required by multinationals. He has also developed additional malt barley varieties specific to the craft industry. These include CDC Churchill, registered in 2019, which has an enzyme package well suited for craft brewers.

Enns's own farm operation conducts annual agronomic and variety trials that incorporate various barley varieties. This generates improved performance in grain destined for the Maker's malthouse as well as for export. He describes CDC Churchill and CDC Fraser as interesting newcomers he continues to grow following trials.

With his business now well established, Enns remains captivated by the world of craft beer. Since he envisioned his micro-malting career possibilities during that winter in Florida, his ambitions have only grown. The Maker's team is now at work expanding their malthouse. They will set up a second malting system that will allow them to produce 50 per cent more product. Given existing demand, Enns is confident his craft brewer customers can absorb this increased volume, and more.

Eventually, he would like to increase production even further to meet local demand.

A second expansion would include the possible construction of an even larger malthouse on his farm. Adjacent to his barley fields, such a facility would allow him to host variety and agronomic tours as well as agri-tourism events at which local brewers could promote their products.

"I have always been an advocate for agriculture, especially as I spent so much time in the city in health care and saw just how big that disconnect is," he said. "It takes a lot of time, energy and money to do it right and I'd like to continue to explore that, one beer at a time." ■



A 25-kilogram malt bag is filled at the Maker's cleaning and bagging facility. Craft brewery clients value experimentation, variety, freshness and local availability.



Local demand for Enns's malt products is such that he plans to double production in the near future.

A degree of opportunity

New Lethbridge College program emphasizes high-tech ag, real-world skills

STUDENTS AT LETHBRIDGE

College now have the ability to turn a two-year agriculture diploma into a full undergraduate degree with the institution's brand-new bachelor of agriculture science program, which began this fall.

This extension of the diploma is squarely focused on the reality of agriculture in 2021 and beyond, namely the sector's increasingly data-driven bent. It touts an educational package designed to provide the fundamentals of plant and soil science and growing disciplines such as precision agriculture.

According to program chair Byrne Cooke, this new degree provides students countless career opportunities reflective of the ag industry's high-tech nature. "Our goal is to show them these are the tools you can use and this is how and why they work," he said of digital tech. "Students are going to get a background to understand that."

The curriculum was developed in direct consultation with the Alberta Institute of Agrologists and, once graduated, students will be able to apply for a P. Ag designation.

Cook said graduates will open themselves up to a world of opportunities whether they stay at their family farm, work for a company or move into consulting. "We see the hireability of these students being the best ever," he said.

The program is also a true undergraduate degree, not an applied degree, which means, upon completion, students will be able to move into master's level studies at various institutions. The course work is heavy on science and is evidenced by courses such as Descriptive Statistics, Telematics and Sensors as well as Analytics and Experimental Design. In addition,



The Lethbridge College bachelor of agriculture science program is focused on plant and soil science as well as in-demand digital agriculture skills.

students will select a capstone research project between their third and fourth years, which could take on almost any topic so long as it relates to the program. The project will serve as their undergraduate thesis and there will be plenty of opportunity to conduct field level research in the Lethbridge area, which has multiple research organizations close by.

Abigail MacDougall completed her two-year agronomy diploma at Lethbridge College this past spring but decided to continue her studies through the new degree option. The 21-year-old lives on a mixed family farm between Stavely and Champion and is keenly focused to earn a P. Ag and Certified Crop Advisor accreditations through the program and work experience. MacDougall made a deliberate choice to stay with Lethbridge College, despite looking into, and being accepted by, other post-secondaries.

"I like the College, everything is more personable, you know everyone and it is more hands-on compared to university. You're learning things during the week and using that knowledge back at the farm on the weekend." She added a shift back to in-person learning will be a welcome change.

MacDougall was also excited to learn more about irrigation because her farm utilizes the technology. While she is yet undecided on the subject of her undergraduate capstone project, MacDougall is keen to research crop lodging, specifically within irrigated farm systems.

Students within the College's various agriculture diploma programs and those studying at other institutions are eligible to transfer into its degree program, provided they meet academic qualifications.

For more information, visit lethbridgecollege.ca. ●

Powerhouse potential

Canada can boost barley production and trade

THE 2020/21 CROP YEAR WAS GOOD for Canada's barley industry. According to Statistics Canada, production hit 10.74 million tonnes, the highest level since 2008 when tonnage topped 11.78 million tonnes. The 2020/21 crop is also up 50 per cent from 7.11 million tonnes in 2014, a year that saw the lowest barley production in Canada since 1967.

According to the Canada Grain Commission, Canada exported a total of 3.7 million tonnes, which included 1.5 million tonnes of malt and 2.2 million tonnes of feed, in 2020/21. This was the largest total since 1990 when the country shipped 4.7 million tonnes. With strong prices this past year, the dollar value of Canadian barley exports totalled more than \$1.1 billion, an all-time record for sales value. In addition, Canadian processed malt exports totalled nearly \$400 million. All told, the value of barley and barley-product exports was an impressive \$1.5 billion.

This demonstrated Canada has the potential to be a global powerhouse in barley production and trade. While it has always been an important player in the global barley market, countries such as Australia and France typically export significantly more. In recent years, Russia, Ukraine and even Argentina increased exports to meet global demand, making the barley trade even more competitive. Russia and Ukraine compete in feed barley export almost exclusively, while Australia, the EU and Argentina trade in both feed and malting barley.

In terms of barley markets, China emerged as the world's largest barley importer in the last crop year, taking more than 10 million tonnes, two thirds of it feed barley. This unseated Saudi Arabia as top buyer. With Canada's freight advantage and Australia sidelined

by a trade dispute with China, the latter provided Canada a market outlet for the year's large crop.

Generally speaking, Canada is competitive in Asia where it has a freight advantage over origins such as the EU and Black Sea. Some years, Canada is also competitive in Persian Gulf markets. In 2018/19 that was evidenced by the UAE, Oman and Dubai purchasing more than 250,000 tonnes of Canadian barley. Gulf markets purchase feed barley almost exclusively, while Asia imports feed and malting barley. Further important markets for Canadian barley and malt include the U.S. and Mexico, while Latin America, Asia and Africa offer expansion opportunities.

Global demand for barley is poised to remain strong. The Chinese livestock industry has integrated barley into its rations. As well, government policy supports the use of alternatives to corn and soybean meal in the feed sector. These factors will drive continued demand for feed barley if it remains competitive with other crops. As the global beer industry recovers from the pandemic, customers will be hungry for Canada's high-quality malt and malting barley. While we continue to serve and expand our existing customer base, Canada must reinforce its value proposition as a supplier of premium quality barley, and to develop opportunities in new markets.

In 2020/21, strong export demand for Canadian barley drove prices up and saw carryout stocks fall to historic lows. The drought of the summer of 2021 has exacerbated this tight supply situation and buoyed prices to unprecedented levels. The hot, dry weather has impacted supply as well as quality. It will be a challenging year for users of Canadian malting barley. Customers will have to deal

CANADA BARLEY EXPORTS			
- thousand tonnes -			
	2020-21	2019-20	2018-19
China P.R.	3,523	1,476	1,490
Japan	125	606	326
USA	63	50	47
Mexico	-	45	-
Argentina	-	16	12
Kuwait	-	-	242
Oman	-	-	24
S. Korea	-	-	11
Total	3,711	2,193	2,151

Source: Canadian Grain Commission

with higher than desirable protein levels, as well as lower than average plump kernels and test weights—all important quality criteria in the malting world. The small crop will also limit the Canadian barley export program. We will look with hope to 2022 for a better growing season and resume the upward trajectory of barley as a sector growth.

Recognized for its high-quality product, Canada has historically been an important supplier of feed, malting barley and malt to the global marketplace. Canada stands to increase barley production and export to become a powerhouse in global trade of this commodity crop.

Of course, farmers will choose to grow barley if prices are competitive. With the appeal of new, higher yielding varieties that possess improved disease resistance, barley has great potential to become a bigger part of crop portfolios and contribute further to farm profitability. Dedicated marketing efforts that ensure farmers have market outlets for their barley will also be critical to the achievement of this vision. ●

Peter Watts is the CMBTC managing director.

Uncertain conditions

Marketing with an eye on past, present and future



“THE BATTLEFIELD IS A SCENE OF constant chaos. The winner will be the one who controls that chaos, both his own and the enemies.” —Napoleon Bonaparte

The realm of agriculture is plagued by two curses. First, the weather is beyond human control. Second, government interference at home and abroad is rampant. The net impact is that agriculture marketing does not follow a predictable distribution. In simpler terms, yesterday is not today. We must adapt to ever-changing circumstances and constantly balance risk against opportunity. It is necessary to learn from the past but always be in the moment looking forward.

As to the 2021/22 marketing year, Canada had a terrible crop. Individual farms and certain regions may have done alright, but overall it was a much smaller crop than anticipated. This has provided positive price momentum for spring wheat, canola, pulses, durum and other western Canadian crops.

The majority of Canada’s agricultural production is consumed externally, and the global 2021/22 production outcome was variable. This was due, in part, to shortfalls in Canadian and U.S. wheat

production. Russia also experienced a year-on-year decline in wheat production. The bulk of the world’s spring wheat is produced in these countries.

Spring wheat offers robust protein content and gluten strength. Millers and bakers often blend it as a means to improve the quality of flour produced with cheaper varieties. It is the core ingredient in higher quality breads, pizza dough and certain baked items. However, Australia, the EU and Ukraine are predicted to see an uptick in wheat production tilted toward lower quality winter wheat. While also utilized heavily for baking, it lacks the higher protein and gluten strength of spring wheat. Thus, the world is facing a tighter quality wheat market in 2021/22.

Post-harvest, it is natural for prices to ease off. If that were the only variable at play, it would be advantageous to wait to advance sales when market conditions adjust to the tight supply–demand balance. However, as usual, the simple explanation is not the complete answer. The market faces three significant drags that may or may not persist.

First, U.S. corn and soybean prospects have definitely improved. The northwest part of the Corn Belt did suffer drought, but the remaining 75 per cent appears ready to compensate for much of the lost yield potential. Increased U.S. corn and soybeans lengthen the potential ending stocks and are a drag on the entire grains and oilseeds complex.

Second, China has been more unpredictable than usual. The country has put successful companies under intense government pressure. This may have direct impact on the agricultural complex and demand. The agriculture sector faces increased scrutiny around business

practices that include hoarding and arbitrage. There have also been significant disease challenges involving hogs and the African swine fever, not to mention COVID-19. As well, Chinese import demand has been sluggish. As I write this in mid-September, it is difficult to say if this is due to seasonality or something deeper. One assumes food and feed demand will remain steady or increase year-on-year.

Third, all sectors within the ocean freight market have dramatically appreciated. The container market has experienced the greatest boom, which shows no sign of easing. Cost is an issue, as is availability. Customers see a landed cost and Canada is distant from most markets, so an easing of the pandemic could further exacerbate this as economic activity further escalates. Costs throughout the supply chain have increased and inflation is a concern.

Typically, consumers do not willingly eat less calories, but rather alter what they eat. As the cost of imported food rises, they may substitute lower cost foods for higher cost products. This may affect canola, which is a premium product in the oilseed realm and possibly durum, depending on whether it is viewed as a premium product or a staple.

It is important to remember the future can’t be predicted. The essence of marketing strategy is that every moment brings new activity and information into the marketplace. Identify risks and opportunities as they grow or fade. Balance them and commit to action or inertia. Throughout the process, remain calm and unemotional. Look ahead and constantly iterate. ●

Neil Townsend is chief market analyst with FarmLink Marketing Solutions.

The science of surprise

Unexpected outcomes and happy accidents can deliver valuable results



IN MAY OF 1990, A CONTAINER SHIP named Hansa Carrier had an accident. Unlike the Evergiven, which blocked the calm waters of the Suez Canal for several meme-filled days in 2021, the Hansa Carrier ran into heavy seas on its journey from South Korea to the United States. Somewhere south of the Alaska Peninsula the ship lost 21 40-foot containers. Five of these were together filled with 61,000 Nike shoes.

That would have been the end of this maritime tale were it not for the efforts of one enterprising scientist. Curtis Ebbesmeyer, an American oceanographer, mobilized citizens along the West Coast of North America to report where and when they found Nike shoes on their beaches. He used the information to rerun an existing computer simulation model for the movement of ocean currents. This resulted in a new understanding of the actions of currents off the Pacific Northwest coast.

Ebbesmeyer used an unplanned event to make a major scientific discovery. Are there agricultural examples of this phenomenon? This column takes inspiration from a talk given by Flavio Capettini of the Field Crop

Development Centre in Olds. At the institution's 2021 AgSmart event, Capettini displayed an image of the first replication of a barley cultivar trial that illustrated visual differences in cultivar lodging that followed a windstorm. Plant breeding succeeds because of selection pressure placed on a set of genetically diverse cultivars. It is the reason we intentionally subject potential new cultivars to disease and insect attack under controlled conditions in the lab or in multi-location trials across many environments. Some selection pressure makes for easy work; a killing frost in September will efficiently eliminate the late-maturing materials in a selection block.

In graduate school, I read a report by a soybean breeder in Michigan that described a "failed" experiment at a location where white-tailed deer had browsed and caused significant damage to the soybean plants in a yield trial. The enterprising researcher noted that there was a consistency to the animals' foraging activity and decided to rate the replicated trial for deer damage. These data were then compared with tannin levels in the various soybean cultivars used in the field trial. No surprise, the clever deer were consistently causing the most damage in the low-tannin cultivar plots across the entire trial. Crop damage caused by white-tailed deer continues to be a major issue across North America. A Mississippi research paper released last year reported tannin spray solutions have been successfully used to protect soybean crops from these hungry ungulates.

A 2016 article in *Successful Farming* described the work of Harry Stine, the founder of Stine Seed Company of Adel, Iowa. In the 1970s he couldn't find enough labour to hand-thin his company's corn test plots. This led to corn plant

populations up to 60,000 plants per acre, which was almost double the usual target of 32,000. This led to increased yields. The explanation was that the corn plants could withstand higher levels of density stress than previously thought. Forty years later, the practice (using varied seeding patterns and fertility management) receives significant attention as a means to further increase Midwest corn yields.

Science is filled with stories of serendipity. A European Research Council report investigated ways in which these "happy accidents" occur:

A sought-after solution is found via an unexpected path

Sir Alexander Fleming's keen observation of a blue-green mould that killed the *Staphylococcus* bacterium cultured in a petri dish led to the discovery of penicillin.

A solution is found for a problem that emerges much later

The French chemist Edouard Benedictus had an assistant who failed to clean a glass flask that had been filled with cellulose nitrate. When the dropped flask broke but did not shatter, the happy accident led to the development of shatterproof windshields.

Research in one field leads to a discovery in another

During the Second World War it was observed that soldiers exposed to mustard gas had significantly lowered white blood cell counts. This led to the first use of chemotherapy to attack the rapid division of cancer cells.

Global science is a \$2 trillion annual enterprise. It is sensible we make efforts to plan the work being carried out to ensure optimal efficiency and effectiveness. However, we might consider how we empower our researchers to take a second look at a strange result or provide the leeway to test a crazy idea that would not meet the usual checklist for a funding organization. ■

Stan Blade, PhD, is dean of the Faculty of Agriculture, Life and Environmental Sciences at the University of Alberta.

Winter wheat makes its mark

**Ecolabel offers market development opportunities,
builds consumer trust**

TO BE LAUNCHED IN NOVEMBER, the Habitat-Friendly Winter Wheat Ecolabel will create new opportunities for farmers and generate buzz among consumers about the environmental benefits of Canadian agriculture. This initiative is the product of collaboration driven by Cereals Canada and partners such as the Alberta Wheat Commission as well as additional crop groups, end-users and Ducks Unlimited Canada.

The Ecolabel has the potential to strengthen demand for western Canadian winter wheat, raise consumer awareness of the ecological benefits of the crop and meet growing demand for sustainable products. According to consumer research undertaken by Cereals Canada in 2019, when given a choice between two similar wheat products, one in three Canadian consumers would choose the product with the Ecolabel.

Research has identified the benefits of winter wheat crops to grassland songbird and waterfowl on the Prairies as they supply habitat that otherwise wouldn't be available. Because winter wheat crops are seeded in the fall, fields are left undisturbed in the spring, which creates nesting areas and stopovers for migrating birds.

Growing winter wheat also helps farmers, particularly in dry growing regions. Gary Stanford, who farms with his sons near Magrath in southern Alberta, said he wants winter wheat in his crop rotation to take advantage of moisture from melting snow in the spring. "Farmers want to grow winter wheat, but until now there hasn't been much of a market for it," said Stanford. "This Ecolabel will help with that. It's a win for farmers, for sustainability and for conservation organizations.

We already have several millers interested in locally available winter wheat."

The Ecolabel potentially allows farmers and farm organizations to change the narrative around food production. "Modern agriculture is already doing many things right related to ecology, but we have struggled to tell that story to consumers," said Geoff Backman, Alberta Wheat Commission manager of market development. "This Ecolabel is a way to educate consumers on the benefits that farmers of winter wheat are already providing. By developing this label, we plan to increase domestic consumer demand for high-value winter wheat-based products. Increased consumer demand means demand from farmers for more winter wheat and better prices for farmers."

Farmers do not need to apply to benefit from the program; they can simply grow varieties in the Canada Western Red Winter class and sell them to participating grain handlers or end-users. To bolster the program's credibility, the Ecolabel project partners will encourage the adoption of voluntary best practices in crop production, such as the Responsible Grain code of practice being developed by the Canadian Roundtable for Sustainable Crops.

Since the launch, members of the project's working group transitioned to a governance and advisory committee that will continue to oversee applications and audits.

Among the first end-users to take a certified product to market will be Beam Suntory, a global leader in the spirits and beverage industry. Beam Suntory's subsidiary, Alberta Distillers, makes the Northern Keep brand of vodka, which is made with 30 per cent certified habitat-friendly winter wheat.



"We are proud to source from local winter wheat farmers to produce the Northern Keep product line," said Nicholas Winters, supply chain manager for Beam Suntory. Our participation in this Ecolabel program enables us to meet growing consumer demand for sustainable products by communicating the positive environmental benefits that are inherent in western Canadian winter wheat."

Daniel Ramage, Cereals Canada director of market access and trade policy, is excited the program benefits farmers, manufacturers, consumers and wildlife. "This program was designed to unlock shared value for our partners while conveying the positive impact western Canadian winter wheat has on the protection of wildlife habitat on the Prairies. With more and more customers looking for sustainability outcomes, we can capitalize on new opportunities to tell the positive story of Canadian agriculture." ■

For more information, visit habitatwheat.ca.

Droughts, doubts and opportunities

Strong and co-ordinated investment in research must be maintained



AS YOU READ THIS, GRAIN

Growers of Canada (GGC) staff are back on Parliament Hill, in person, talking to politicians about the issues that matter most to our farmer members. We have been through a harvest, an election and the possible appointment of a new agriculture minister, so there will be no rest as we head into an important winter for our sector and our country.

The impacts of this year's unprecedented drought are now being realized, and not just within agriculture. We have seen national headlines about the implications of the drought as Canadians continue to grapple with climate change and renewed concern about its effect on food security and price.

During times like these governments at all levels play politics with the programs farmers rely on to get through trying times. A lesson I have learned about effective advocacy is that our top job is to make the sector's policy priorities matter to politicians whose constituents are urbanites. If the results of the election mirror those of two years ago, most of the people around the cabinet table may yet again primarily be representatives of that constituency.

But, regardless of their connection to the sector or understanding of our issues, they will be well aware of this summer's drought, its connection to a changing climate and the impact these have on Canadian farmers. This reality is inescapable and ever-pressing. The question is, what do we do about it?

As your voice in Ottawa, it is our responsibility to remind our representatives that farmers are on the front line of climate change. Canadians demand access to safe and affordable food, so we are obliged to ensure farmers have access to the tools they need to nurture crops through adverse weather conditions. When the latest innovation cannot survive the wrath of Mother Nature, our legislators need to ensure they provide a level of support that helps farmers put another crop in the ground next year.

This fall, GGC will renew its pre-election advocacy for increased investment in agricultural research.

This is not just a response to troubling moisture trends and climate patterns. It is also a necessary measure to unlock the growth potential of agriculture through targeted investment in research and devel-

opment. Such investment should increase the global competitiveness of farmers through productivity and quality enhancements, all while reducing emissions and improving the economic and environmental sustainability of Canadian farms.

We know this is not a small task. It requires strong and co-ordinated financial investment from farmers, industry and government. We need to be bold on behalf of our sector. This is why we ask our federal and provincial governments to invest a minimum of two per cent of farm cash receipts in research and innovation in the next research cluster.

This should be coupled with additional funding for the AgriScience Program clusters under Agriculture and Agri-Food Canada's (AAFC) Canadian Agricultural Partnership. Right now, clusters represent the only significant means to leverage industry investment with federal funding. However, the need for significant research investment is on the increase and the program has not kept pace.

We have seen what happens when drought lays waste to the Prairies. We know farmers are ready to respond, but they need access to well-funded innovative research to keep them competitive. As the climate continues to shift towards unpredictability, the time is now to increase stability in our sector and create a vision for the future. From our legislators, this will require clarity, courage and a desire to be bold.

Post-election, as the business of government fires up once again, this is what GGC will push for. ●

Erin K. Gowriluk is the executive director of the Grain Growers of Canada.

Research matchmakers

Funding process targets better ROI for farmers, scientists

EACH YEAR, THE PROVINCE'S wheat and barley farmers invest heavily in research and innovation. In fact, the Alberta Wheat Commission (AWC) and Alberta Barley reserve the largest part of their respective budgets for this programming area—between \$4.5 and \$5 million annually combined. And while farmers set the priorities and make funding decisions, the commissions' research team makes sure they get the maximum return on investment from every dollar.

Lauren Comin is director of research for both commissions. She started with AWC in 2013 as its first research manager. Faced with the daunting task to create a multi-million-dollar research program from scratch, she began the process by building relationships with veteran researchers in the field to determine what was possible. She then turned to farmers to identify their agronomic needs.

"It was really important from the get-go that everything be farmer directed," said Comin. "Farmers are making funding decisions based on recommendations from staff. We hold priority-setting sessions and bring farmers in to talk about today's on-farm problems that haven't been addressed by research and what issues are going to be important in the future."

With research priorities that are set by farmers in combination with the strong

relationships they have built with the Canadian research community, Comin and her team have increasingly been able to focus their efforts. They work to find the right projects rather than simply opening the door to proposals.

"We call it research matchmaking. We're going out and telling the researchers what we need, and we're trying to figure out who has the skillsets to address those priorities," she said. In support of the process, the research team works with scientists to ensure their project proposals hit the mark prior to submission.

Sheri Strydhorst is the most recent addition to the dual-commission research team. A well-known agricultural research scientist herself, Strydhorst has taken on the role of agronomy research specialist. She provides mentorship to new researchers and helps them develop a practical understanding of the context they are working in.

"Over the past couple of years, we've seen new people come in the door who are great scientists but don't have the connection to the farm," said Strydhorst. "There's a real opportunity here to help them understand what's going on at the farm level so they are more successful with their funding applications."

Having operated a grain farm with her husband for more than 20 years,

Strydhorst is well placed to bridge the two worlds. She recently launched *Shop Talk with Sheri*, an eNewsletter that goes out to 100-plus researchers across Canada. It offers information about upcoming webinars and funding calls as well as tips on how to write funding proposals and detailed information on the commissions' research priorities.

"We really have two goals," said Strydhorst. "Those are to help deliver the best science to our farmers and to support the researchers to increase their probability of success. I want to make sure scientists are putting in proposals with a high success rate to make more efficient use of their time. We may have fewer proposals submitted, but they will be more targeted."

Looking ahead, Strydhorst also plans to organize on-farm tours for scientists so they connect with the farmers who will ultimately benefit from their research projects. "Such on-farm visits will be helpful for new scientists to understand the context their research will fit into and to help shape research treatments so that they can be practically applied on-farm," she said. For example, if a researcher submits a proposal that finds value in a new nitrogen fertilizer source but it is so dilute a farmer would need to make 1,000 passes over the field to meet the crop's nutrient needs, it would not be a practical treatment to research.

Shop
Talk
with
Sheri

Supporting scientists
who support western
Canadian farmers



“We call it research matchmaking. We’re going out and telling the researchers what we need.”

— Sheri Strydhorst

Pictured here taking notes at the Chinook Applied Research Association WheatStalk event in July, Sheri Strydhorst is Alberta Wheat and Barley Commissions’ agronomy research specialist. She and her colleagues work with scientists to ensure their funding applications are more likely to be accepted.

David Simbo, research program manager, appreciates the value of Strydhorst’s role on the team. Every year the commissions receive more than 100 letters of intent for research projects. It is Simbo’s role to review them and make recommendations as to which ones move forward. He said the farmer-driven process of research priority development helps the team understand the challenges farmers face and to select projects that address these needs.

“A lot of our researchers have some association with farmers and are pretty familiar with on-farm practices, but there are others who are not, and it’s important to get them familiarized with what the local, on-farm challenges are,” he said.

After spending two seasons carrying out wheat and barley trials as a cropping program agronomist with the Lakeland Agricultural Research Association, Simbo joined Alberta Barley. He now addresses the research programs of both commissions. This role includes consultation with expert peer reviewers to ensure proposed projects do not duplicate work that has been done elsewhere and meets the level of scientific quality required to deliver the desired results. Based on suggestions from reviewers, he works with the researchers as they develop their proposals to ensure there are no flaws in how these studies are designed.

The support provided to scientists by the research team is a benefit to the funder and the grant recipient, said Simbo. “Recently, a researcher proposed a project, and we had previously funded another researcher to do something really similar. We were able to recommend that they connect with each other, so they were not reinventing the wheel,” he said. “A lot of time, funders like that type of collaboration because they see that your research builds on what they’ve already funded.”

Collaboration is indeed key for researchers and funders alike. It allows them to leverage a combination of knowledge and dollars as they look for synergies between research priorities for wheat and barley. This co-operative approach extends to projects undertaken with additional agricultural boards, commissions and associations across Alberta.

“It’s important to empower our staff to reach out and make connections to ensure our farmers have every opportunity to benefit from available research,” said Comin. She emphasized the research team is actively engaged with various scientific research organizations and participates in national and international funding committees. “The more we reach out and learn from others, the better equipped we are to deliver research to farmers.”

The Grain King of the Peace Country



Photo: Courtesy of South Peace Regional Archives SPRA 193.02.05.43-01a

Crowned world wheat king five times, the Peace Country's Herman Trelle captured 18 wins for multiple grains at the Chicago International Hay and Grain Show.

In a 1914 *Maclean's* story entitled "The Third Chapter of Western Growth," W.D. Albright, reported a stream of newcomers arrived in the Peace Country with the railroad, which had reached Grande Prairie. Wheat and barley yielded very well, he claimed, but production in the region was hampered by a lack of machinery.

Peace Country's fortunes improved considerably in 1926 when Herman Trelle won both the wheat and oats prizes at the Chicago International Hay and Grain Show. "The effect in Alberta was electric," wrote Albright in his 1927 *Maclean's* story "Grain King Wears a Double Crown." The news substantially increased demand for Peace Country land as well as its price and brightened the prospect for further rail expansion. "It means a bigger and a greater province," wrote Albright.

Born in Kendrick, Idaho, in 1894 to immigrants from Hamburg, Germany, Trelle homesteaded with his parents near Wembley in 1909. Multitalented, he earned his surveyor's ticket, briefly studied engineering at the University of Alberta and won the province's amateur heavyweight wrestling championship of 1914-15. He was also a gifted mechanic who spoke 10 languages.

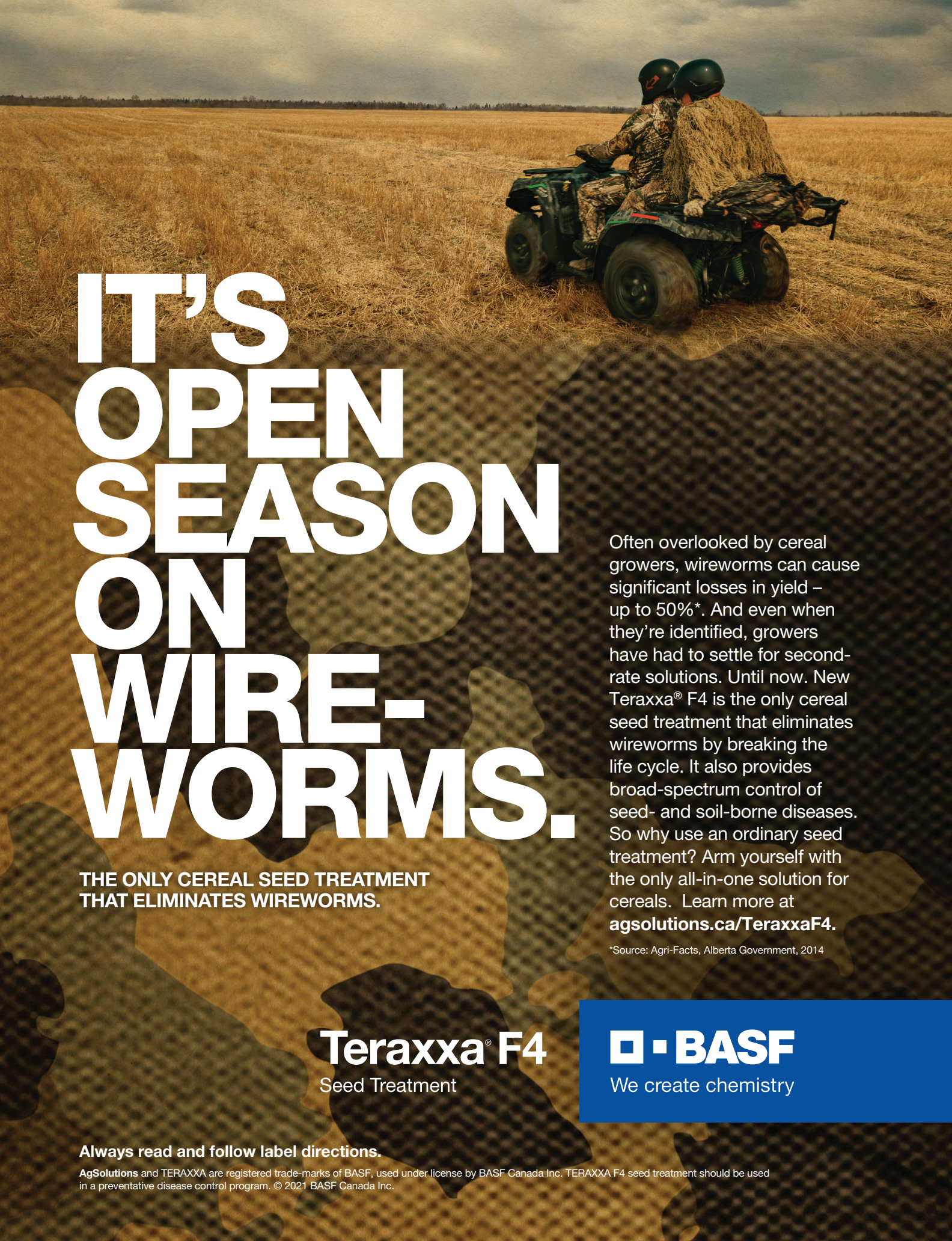
Trelle became a seed grower in 1916 when he broke 279 acres of his father's land. In 1919, he married Beatrice Burdick, originally of Minnesota. In her book *The Peace River Story*, Jacqui Rebar wrote Burdick "played an important role in Trelle's success as a mentor, supporter and partner in their successful business of seed hybrids."

Of three varieties he sowed that year, Trelle submitted a sample of

Marquis wheat to the 1926 competition. "Trelle's wheat was outstanding," wrote Albright. His oats were also unbeatable. "They were wonderfully uniform." Albright asked Trelle to give prize-winning advice to his fellow farmers.

"Choose your line, whether it be horses, cattle, grain, grass seed or what. Study it. Concentrate on it. You can't expect to get anywhere without specialization. Stick to your aim and you're bound to win," said Trelle.

Through the 1920s and '30s, Trelle went on to win 18 Chicago world championships for wheat, oats, peas, rye, flax and timothy seed. The man who had done so much for the reputation and betterment of the Peace Country was then murdered by a disgruntled ranch hand on a San Bernardino, CA olive ranch in 1945. ●



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*Source: Agri-Facts, Alberta Government, 2014

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