GrainsWest

Connecting Farmers, Food and Ideas

THE FOOD ISSUE • 2017

HOW AGRICULTURE SETTLED THE WEST

Photo courtesy of Todd Korol

It starts with a conversation.

We're inspired by every part of Alberta, from prairie skies to skyscrapers. Whether we live in a farmhouse or a penthouse, we all need to eat.

The world will need 60 per cent more food by 2050. Canada, the fifth-largest exporter of agriculture and agri-food products on the planet, is going to help feed the world. But while we need our farmers more than ever, we talk to them less and less these days.

That's why ATB supported Seat at the Table, which brought together 150 famers and food consumers for an evening of education and local cuisine in February. We knew it would spark some conversations worth listening to.

ATB listens—today, tomorrow, and always. Follow us at @ATBagriculture to be part of the conversation and to learn when a Seat at the Table event is happening near you.

ATB Listens

@ATBagriculture

TABLE OF CONTENTS

WHO WE ARE

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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***GrainsWest* magazine is a joint venture owned and operated by Alberta Barley and the Alberta Wheat Commission. *GrainsWest* is published four times per year by the GrainsWest Publications Society, an autonomous, incorporated body.**
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Volume 4, Issue 3

MIX Paper from responsible sources FSC® C011825

Alberta Magazine Publishers Association

How the West was won with wheat

CANADA TURNS 150 WITH PROSPERITY THANKS TO AGRICULTURE

AS OUR COUNTRY CELEBRATES ITS 150th birthday, there are many people, places and things that make us proud to be Canadian. In December 2016, Abacus Data, an Ottawa-based research group, compiled a list of 78 items that Canadians are proud of. The results included a wide variety of pride-inspiring Canadiana, but one important item on the list was No. 17: Canadian wheat. That's right—the humble cereal grain that is synonymous with the Prairies scored higher than Queen Elizabeth II, Sidney Crosby, Justin Bieber, Drake, Alberta Beef, Lululemon, the Roots brand and Air Canada. So, how is it that wheat has wiggled its way into our collective hearts? To answer that question, you must go back a quarter-millennium.

During the voyages to Canada beginning in the 17th century, led by the likes of John Cabot, Jacques Cartier and Samuel de Champlain, one of the items that kept making its way across the Atlantic Ocean was wheat. Wheat was first planted on Canadian soil around 1605 in Nova Scotia, near Annapolis Royal near the Bay of Fundy. Within 15 years, wheat was being produced near Quebec City. By the 1640s, the settled portions of Canada were regularly producing wheat, and 1654 marked the first export of Canadian wheat. But while there had been many attempts to grow wheat on the Prairies by the middle of the 18th century, there wouldn't be a viable crop until 1815—grown by Scotsman Thomas Douglas, the Earl of Selkirk, and his company in Manitoba after two successive crop failures.

By the time of Confederation in 1867, Canada's population was around 3.4 million. The West, however, was a still a mysterious and rugged expanse, largely untouched and a point of intrigue for Prime Minister John A. Macdonald as he began his quest to build a nation. In order to have a functioning colony in the West, Macdonald knew that coast-to-coast transportation and new settlements were the answer. Promotion of Canada as a granary of the world ensued, and Canada was marketed to European would-be settlers with the promise of free land and a shot at a self-made life. It worked. Beginning in the 19th century, Europeans journeyed across the Atlantic Ocean, then travelled thousands of kilometres across the country just for the chance to break acre after acre of wild Prairie. As sod houses were erected across the West, crops were planted and new cultures formed. Macdonald's vision was unfolding as he planned—the great westward expansion and Canada's growth as a nation had begun.

Pre-Confederation farmers had a relatively scarce supply of seed varieties for the primary crops of barley, oats, peas and wheat. The varieties they did have access to were fairly forgettable and often had issues since they were not well adapted to Canada's hardy northern climate. However, in 1842, one man singlehandedly kick-started Canada's agriculture industry and set us on the path to becoming an agricultural powerhouse.

Turn to page 24 to continue reading the history of wheat in Canada and learn how this grain became the country's top crop.

CALGARY OKTOBERFEST

Calgary Oktoberfest
ABF Alberta Beer Festivals
LOCAL • SEASONAL • CRAFT

September 22th & 23th, 2017
Upper Big 4 Building, Stampede Park

FULL PINTS & LATER NIGHTS!
FRI: 4PM-Midnight SAT: 2PM-Midnight

OKTOBERFEST just got BIGGER!

Tickets available at
albertaBEERfestivals.com

ABF ALBERTA BEER FESTIVALS
@ABBEERFESTIVALS

Supported Charities
Kids up front
Autism Aspergers Friendship Society

EDMONTON OKTOBERFEST

Edmonton Oktoberfest
ABF Alberta Beer Festivals
LOCAL • SEASONAL • CRAFT

September 29th & 30th, 2017
Edmonton Expo Centre, Northlands

FULL PINTS & LATER NIGHTS!
FRI: 4PM-Midnight SAT: 2PM-Midnight

OKTOBERFEST just got BIGGER!

Tickets available at
albertaBEERfestivals.com

ABF ALBERTA BEER FESTIVALS
@ABBEERFESTIVALS

Supported Charities
Kids up front
Edmonton's Food Bank

BY LYNDSEY SMITH

GROW YOUR OWN

CANADIAN FOOD BANKS TURN TO FARMING

IT MAY BE SURPRISING TO SOME Canadians that real hunger exists right on our doorstep and just down the road. Canadian food banks are being called upon more and more to provide nutritious food for a large number of people in many cities across the country. In fact, use of food banks rose nearly 30 per cent between 2008 and 2016.

Not only are food banks experiencing higher demand, they are also struggling to provide the full complement of foods that people need to stay healthy. Food drives, advertising and awareness initiatives can help, but a couple food banks have gone a step further and recently begun growing their own food to meet community demand for the most sought after, but least donated, foods.

Photo: The Mississauga Food Bank

The Mississauga Food Bank's Aqua Grow Farms project produced its first batch of farmed tilapia this spring.

About two years ago, Chris Hatch, executive director of The Mississauga Food Bank, began looking for means to fill the increasing demand for protein and produce, and so began researching aquaponics. While not a new idea, growing fish and produce in an integrated closed system is still not the norm, and it took quite a bit of research to figure out whether it would work for the food bank, and at what scale and cost.

Last August, with the help of a grant to cover capital costs and the direction of aquaponics firm Nelson & Pade, Hatch and his team launched their AquaGrow Farms project in a 500-square-foot area carved out from existing warehouse space. As of late March, the program was harvesting about 40 heads of lettuce a week and had just shipped out its first batch of processed tilapia.

The Regina Food Bank has taken a similar approach to meeting demand for fresh produce. Through the use of indoor vertical growth towers, the food bank is helping to not only fill a need, said CEO Steve Compton, but to teach food literacy to volunteers, as well as food bank partners and users.

Compton said the food bank also accessed a capital grant to set up 48 towers, which can grow lettuce, broccoli, cabbage and more on a five- to six-week cycle. The organization has been fortunate to have volunteers with green thumbs who have helped the project progress from its inception in August 2016 to the first harvest of fresh greens last December.

The towers are not only incredibly cost-efficient but they're also an effective outreach tool. Community members can "adopt a tower," and schools and other groups can learn more about how food is grown through tours of the facility or starting their own tower.

"Growing a portion of our own food means that we fill food hampers, help low-income families prioritize healthy eating, and play a role in food security for our community," Compton said.

Here in Alberta, Edmonton's Food Bank has partnered with the Southwest Edmonton Farmers' Market to launch the "Plant a Row, Grow a Row" program, which encourages Edmonton residents to plant extra fruits and vegetables in their private gardens that can be donated to the food bank at harvest time. The market will serve as a collection point during the harvest season.

Volunteers are also growing produce in the Hudson Bay Garden at Fort Edmonton Park, a garden at the McCullough Centre and one at the Muttart Conservatory. In addition, the food bank is growing produce in a garden outside its own warehouse.

"This initiative is designed to help more people learn how to grow their own food, as well as provide additional fresh produce for our programs and those of partner agencies," said Susan Padget, communications co-ordinator for Edmonton's Food Bank.

BY ANDREA HILDERMAN

FUN GUY

OLDS COLLEGE STUDENT FINDS INNOVATIVE USE FOR SPENT BREWERS' GRAINS

Photo: Alex Villeneuve

Alex Villeneuve hopes his company, Ceres Solutions Ltd., will be producing 3,500 pounds of mushrooms per month by fall.

HEARING THAT A COLLEGE student was growing mushrooms in his dorm room might give you the wrong idea, but Alex Villeneuve is not *that* kind of student. In fact, Villeneuve saw an opportunity in mushrooms, and has followed through on that idea to create what is poised to be a full-fledged agriculture business.

"The idea for this business came to me my very first day attending the brewmaster and brewery operations program at Olds College," said Villeneuve, who also has three years of experience as an apprentice chef under his belt. "When I saw the spent grain from the brewing process being—essentially—dumped, I immediately wondered if I could grow mushrooms with it instead."

In his Olds College dorm room, he experimented with growing mushrooms using Ziploc bags and the spent grains from the brewing process to make sure his idea would work.

The idea didn't quite come out of the blue, as Villeneuve had grown oyster mushrooms before. His initial interest in mushrooms came from his culinary past and his passion for sustainable agriculture, gardening and local food. "Back in high school, I was part of the permaculture club," said Villeneuve. "This is where I was able to put into action some of my passions, and earn a certificate as well."

While researching the spent grains from the brewing process, Villeneuve realized that they were a problem for breweries to dispose of. "They could be thrown in the garbage," he said. "There is also the possibility of hiring a private composter, but that could cost up to $2,000 per month. Some breweries do have farmers who come and take the grains to feed to animals, but that was somewhat inconsistent."

Once his mushroom production was perfected, Villeneuve started to look at the change in composition of the spent grains before and after a crop was grown. "We found the substrate texture was changed and protein levels greatly increased," he said. "The mushroom mycelium, or roots if you like, converted the complex fibres in the grain to protein. Over seven weeks, protein increased by 183 per cent."

Not only could a crop of valuable mushrooms be produced from the spent grains, but an enhanced animal feed as well. "Feed trials are needed to further describe the value of the feed, but it's another value-added product of the process," said Villeneuve.

Villeneuve is currently working with one brewery as he scales up his business, but he doesn't expect to be limited by substrate availability. "We determined indirectly through the annual taxable litres produced that about 130 tons of grains are used every day in Alberta in the brewing process, more than enough for this business to grow and expand," he said.

Villeneuve started at Olds College in September 2015, and incorporated his company, Ceres Solutions Ltd., in November 2015. He has since graduated from the brewmaster and brewery operations program and is well into the scale-up phase of his business at his 2,500-square-foot warehouse space in Olds. He hopes to reach his full production capacity of 3,500 pounds of mushrooms per month by fall.

"This level of production will require about 500 pounds of mushroom substrate per day," said Villeneuve. "I don't know if we would have gotten this far this quickly without the incredible support of Olds College and the organizations that are helping us with grants and expertise. I feel very lucky how this has all come together."

BY KARIN OLAFSON

ON THE RISE

MAKING YOUR OWN BREAD IS EASIER THAN YOU THINK

BAKING BREAD AT HOME CAN BE daunting for those who have never used live cultures before. But despite that—and the complex science of bread baking—the slow-food movement and the quality of bread made at artisan bakeries is inspiring more and more people to give it a try.

Aviv Fried, the owner of Calgary's Sidewalk Citizen Bakery, understands the appeal of learning to bake bread at home. He even turned down a job as a financial analyst to join the simpler world of bread baking—a world in which he had zero experience. After months of travelling, working in bakeries and learning the craft, he had an excellent grasp of the process and was ready to strike out on his own. He started Sidewalk Citizen in 2008, and today his company is arguably one of the most recognized local bakeries in Calgary. There are now two Sidewalk Citizen locations, and Fried's products are also sold at various markets, restaurants and cafes throughout the city.

Fried has led bread-baking classes for the last three years and has found that there's been steady demand for the once-a-month classes ever since they launched. Fried said he believes the reason for this is similar to the reason he got started in the first place: more people want to eat healthy bread that tastes good.

"I think more people want to make sure that the food they're eating is good for them," said Fried. "And a good way to know what's in your food is to make it yourself."

In his classes, Fried gives students a step-by-step lesson that teaches them how to mix and knead dough, while also delving into the science of bread making.

For many, understanding the science can make baking bread at home a less intimidating experience. Nancy Ames, a cereal scientist with Agriculture and Agri-Food Canada, explained that wheat contains two unique proteins: gliadin and glutenin. "When wheat flour is mixed with water, they form an elastic complex known as gluten," she said. "This gluten complex is the basis of the volume, texture and appearance of bread and other baked products."

Photo: Jason Dziver

Aviv Fried leads monthly bread-baking classes at Sidewalk Citizen Bakery in Calgary.

Ames added that when yeast is added to the water-and-flour mixture, fermentation occurs. The carbohydrates are broken down, and carbon dioxide gas forms and is trapped by the gluten matrix—that's what makes your dough rise. Fermentation happens for the same reason when breads are made with a sourdough starter, which contains wild bacteria and yeasts from their environment.

It's not just wheat that's used to make bread. "Other cereal grains like oats, barley and rye are commonly used for baked products," said Ames. "While rye grain flour does contain some gluten, breads made from rye flour are denser, with lower loaf volumes and firm crumb structure. The advantage to adding high-fibre cereal grains like oats, barley and rye to wheat bread is to improve its nutritional benefits." Ames said that oat and barley flour can be used as fibre-enriching agents to improve bread's soluble fibre content and even to reduce cholesterol.

If you're looking to start making your own bread at home, you only need a few things to get started: the flour of your choice, warm water, salt and an active culture. After the ingredients are mixed together to form dough, fermentation and rising occurs. Once the dough rises, punch it down then pop it in the oven for fresh, wholesome bread at home.

BY LEE HART

BOTTOMS UP

DISTILLERS CELEBRATE PROMISED ASSISTANCE FROM PROVINCIAL GOVERNMENT

ALBERTA'S CRAFT DISTILLERIES are raising a glass to toast the provincial government's announcement of a new grant program for small distillers that will particularly benefit new entrants to the business in Alberta.

The program was mentioned in the March 2017 provincial budget and details about the new grants have yet to be revealed, but distillers are hopeful it might resemble the $20-million Alberta Small Brewers Development Program that was introduced last year to assist the craft brewing industry.

The brewers program rebates part of the tax collected by the provincial government on beer production back to small breweries. The grant amounts are determined on a sliding scale based on production volumes, with the best per-litre payout going to the breweries that produce the least beer.

"We are delighted with the news and look forward to working with the provincial government as they develop the details," said David Farran, president and co-founder of the Alberta Craft Distillers Association, and founder of Eau Claire Distillery in Turner Valley. "Assistance like this that will reduce the tax load on craft distillers is critical, especially during the startup years."

Geoff Stewart, co-founder and president of Rig Hand Craft Distillery in Nisku, agreed that the new grant program would be a huge help to distillers starting out in the Alberta market.

If the program is structured in a similar way to the grant program for brewers, it will provide the largest grant amount in the first year of operation and then decline as production increases over each of the next two years. "And that is exactly what we need," said Stewart. "We have high startup costs and, since these operations are smaller, we also have higher labour costs—our facilities aren't automated.

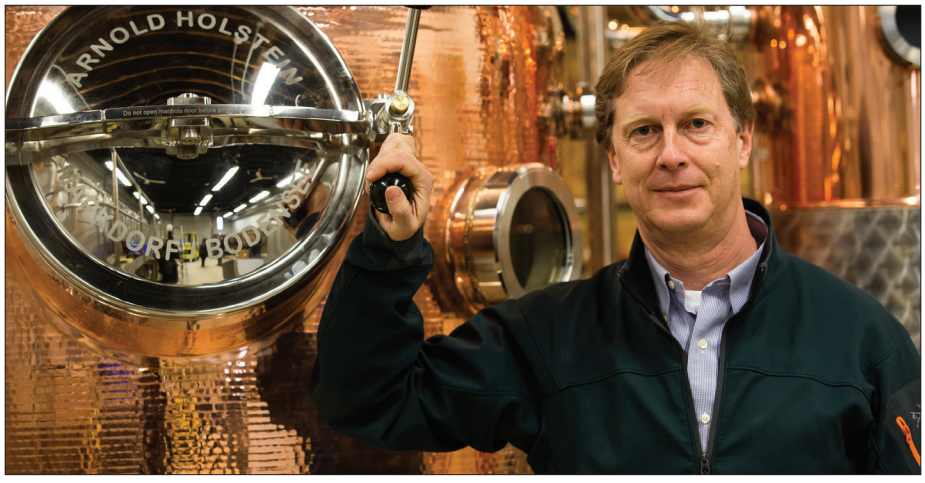

Photo: Matt Palmer

David Farran, Eau Claire Distillery founder and Alberta Craft Distillers Association president.

"As we start up, we can produce and market vodka and gin products, for example, but for whisky to be whisky it must age at least three years. It's not until the third year that we can begin marketing some of our higher-value products."

There are currently around 10 fully operational craft distilleries in Alberta, and roughly another dozen are in the application stage. Craft distillers are generally low-volume producers, and each one strives to produce unique, interesting and high-quality spirits.

"There is plenty of room for this industry to grow," said Farran. "It is important that we get involved in consumer education so they understand our products and appreciate what we can do in producing high-quality distillery products."

Farran dismissed the criticisms coming from neighbouring provincial jurisdictions that any grants or rebates will give Alberta distillers an unfair market advantage.

"Distillers in other provinces across Canada have received plenty of assistance from their own governments over the years," said Farran. "Alberta is just starting out with its industry. We are really in a catch-up phase."

Both Farran and Stewart said craft distillers are important supporters of Alberta-grown agricultural products and the broader Alberta economy. Virtually all raw ingredients needed to make spirits—ranging from crops like wheat, barley, rye and corn, to fruits for flavouring—are sourced from Alberta farms and processors. Each operation pays municipal taxes, and employs workers from its local community.

"Each operation works closely with farmers to source the products they need," said Farran. "Many are establishing relationships with producers so they have a consistent, high-quality supply of products and often can offer a price premium."

Farran added that the Alberta Craft Distillers Association is available to provide any input the provincial government needs to develop the final details of the grant program before its launch.


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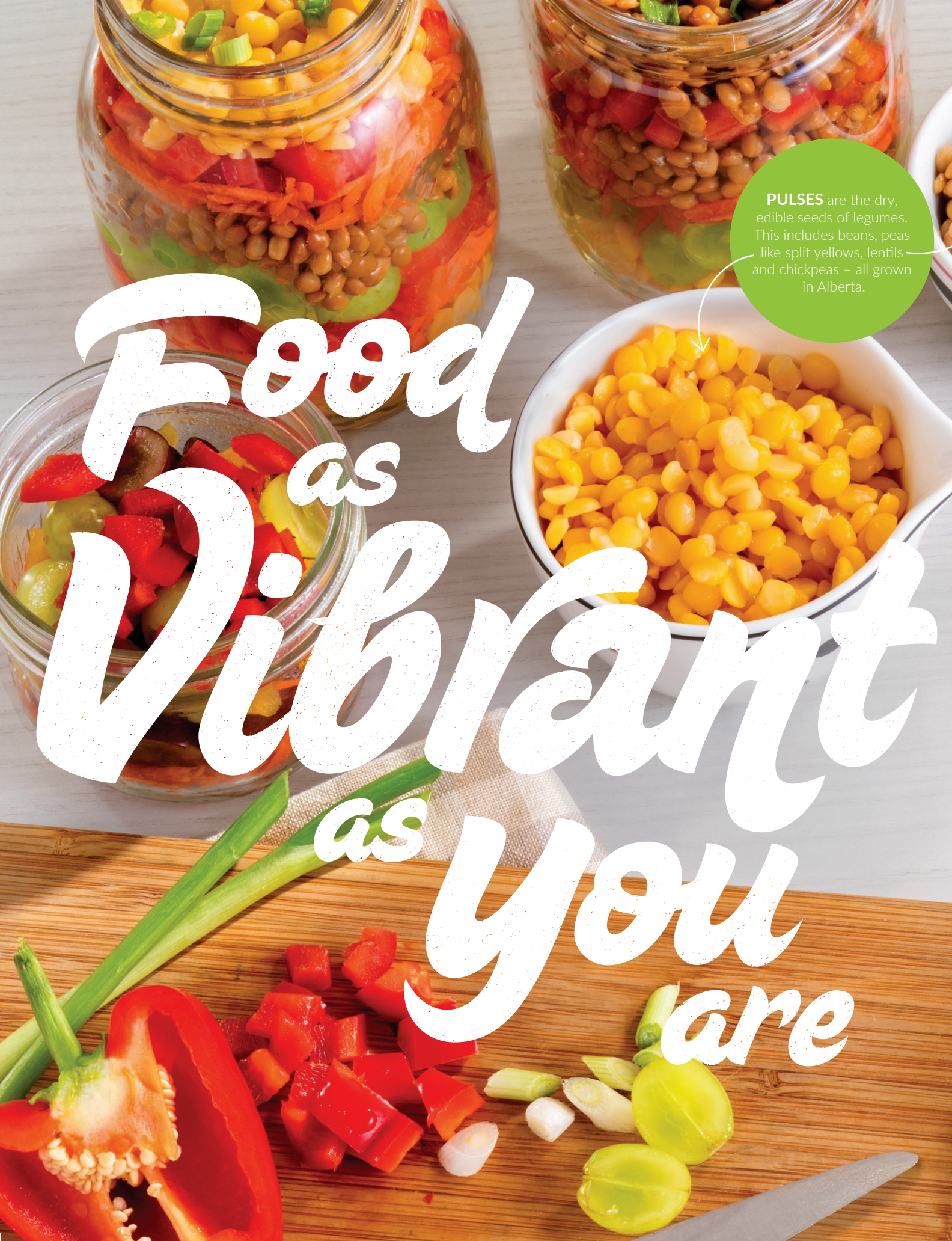

Food as Vibrant as You are

Rainbow Salad Jar

SERVES:
4 – 2 cup (500 mL) jars

PREP TIME:
20-25 minutes including pulse cooking time

Directions

In a covered saucepan simmer split peas in 2 cups (500 mL) water until moisture is absorbed and peas are tender, but not mushy. About 20 – 25 minutes. Rinse and cool. Yields 2 cups (500 mL) cooked.

Meanwhile, whisk together dressing.

Evenly divide salad ingredients and layer in each of the four jars. Top with green onion and sprinkle pecans and cranberries, if desired. Pour an equal amount of dressing over each jar, seal and refrigerate until ready to go.

Alberta Pulses – full of potential!

For more great recipes visit **pulse.ab.ca**

ALBERTA PULSE GROWERS

Ingredients

Salad

1 cup (250 mL)	dried split yellow peas, rinsed
1 – 14 oz (398 mL)	can lentils, drained and rinsed
1 cup (250 mL)	sliced green or red seedless grapes
1 cup (250 mL)	grated carrot
1 cup (250 mL)	diced sweet yellow or red pepper

Topping

1-2	green onions, finely sliced
¼ cup (60 mL)	pecan pieces, toasted, optional
¼ cup (60 mL)	dried cranberries, optional

Dressing

¼ cup (60 mL)	apple cider vinegar
¼ cup (60 mL)	canola oil, cold pressed if available
2 Tbsp (30 mL)	liquid honey
2 tsp (10 mL)	Dijon mustard
2 cloves	garlic, finely minced

Nutrients per serving (1 jar)
431 Calories, 15 g Fat, 1 g Saturated Fat, 0 mg Cholesterol, 60 g Carbohydrate, 7 g Fibre, 23 g Sugar, 17 g Protein, 201 mg Sodium, 938 mg Potassium, 239 mcg Folate, 4 mg Iron

BY LINDSEY VERHAEGHE

HOW WILL WE SUSTAINABLY FEED 9 BILLION PEOPLE BY THE YEAR 2050?

ACROSS THE PROVINCE, STUDENTS ARE EXPERIENCING AGRICULTURE IN A WAY THAT'S NEVER BEEN TAUGHT BEFORE

Journey 2050™

SCHOOL EDITION

Journey 2050 is a free curriculum-based school program. It takes students through a virtual simulation that explores world food sustainability. Using an inquiry-based approach, the program encourages students to make decisions and adjust them as they see their impact on society, the environment and the economy at a local and global scale.

Farm families from Kenya, India and Canada guide students through the experience while showcasing things such as best management practices, innovations, limiting factors and the ripple effect of choices.

The program is available online, with all lesson plans provided, or as a field trip at the Calgary Stampede grounds.

HOME EDITION

The number one question students ask after finishing Journey 2050 is, "Can I play this game at home?"

Journey 2050 is available in the iOS/Android/Windows store as a free download, but it was intended for a classroom setting.

As a result, Farmers 2050 was created. Students can now virtually farm at home, but there is a twist to the new game!

Droughts occur, mortgage payments come due and farm chores never stop.

Students have a chance to discover what it really takes to feed the world.

Players must plant crops, raise animals and craft goods to sell, while still managing the three pillars of sustainability: environmental, economic and social.

New additions to the game also include advice from local experts, such as an agronomist, veterinarian and mechanic. Plus, they can customize and decorate their farm to make it one of a kind.

Along the way, real farmers from around the world will show them what they are doing on their farms.

Farmers 2050 is free to play and there are no advertisements or in-app purchases.

It was written with teachers and industry experts across North America.

Learn more at www.Journey2050.com and www.Farmers2050.com.

Feeding the World Responsibly

By the year 2050 the world will need to grow over 60% more food to feed 9 billion people.

Agrium is working hard to ensure that the increasing demand for food is met in a responsible way that balances economic, social and environmental needs.

As a Canadian company, we are proud to offer agricultural products and services that support growers locally and globally.

Food is life. Sustainable food is our future.

For more information on how Agrium is Feeding the World Responsibly, please visit:

www.agrium.com/en/sustainability

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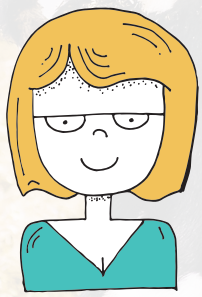
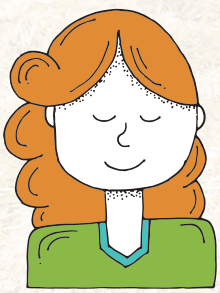


Bonnie asked

How strictly should I follow "best before" dates stamped on a milk carton?



Bethany asked

Are there artificial growth hormones in milk?

To ask your question, visit: **albertamilk.com/askadairyfarmer**

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Quinoa, Spinach and Berry Salad

Course	Prep. Time	Cooking Time	Yields
Salads	*10 mins*	*25 mins*	*4 servings*

This fresh salad makes it a treat to eat more whole grains, dark leafy greens and milk products. Cooking the quinoa in the milk soaks the nutrients right in.

Ingredients

3/4 cup (175 mL) quinoa
1 tbsp (15 mL) all-purpose flour
1 cup (250 mL) milk
1/2 cup (125 mL) water
1/4 tsp (1 mL) salt
1 tsp (5 mL) grated orange zest
4 cups (1 L) packed baby spinach (about 4 oz/125 g)
2 cups (500 mL) sliced strawberries
3 1/2 oz (100 g) Canadian Swiss or Brick cheese, diced
1/4 cup (60 mL) freshly squeezed orange juice
Pepper

Preparation

In a fine mesh sieve, rinse quinoa well under cold running water. Drain and set aside.

Whisk flour into milk and pour into a deep saucepan. Add water and salt and bring to a gentle boil over medium heat, stirring often. Stir in quinoa and return to a boil, stirring.

Reduce heat to low, cover and simmer for 20 min or until quinoa is tender and most of the liquid is absorbed. Remove from heat and let stand, covered, for 5 min. Transfer to a bowl, add orange zest, fluff with a fork and let cool. (Refrigerate until chilled or for up to 1 day, if desired.)

Using a fork, toss spinach with quinoa. Gently stir in strawberries, Canadian Swiss cheese and orange juice. Divide onto serving plates and season to taste with pepper.

dairygoodness.ca/recipes

Nutritional Info

per serving

Energy:	286 Cal
Protein:	15 g
Carbohydrate:	36 g
Fat:	10 g
Fibre:	4.7 g
Sodium:	219 mg

Top 5 Nutrients

Nutrient%	DV*
Calcium:	31 % / 336 mg
Vitamin C:	110 %
Folate:	69 %
Vitamin B12:	56 %
Magnesium:	47 %

**percentage of daily value*

Person: Jason Popesku

Place: Olds, AB

Thing: Exploring new flavour profiles for Alberta beers

FROM BEAKERS TO BREWING

Olds College brewmaster's love of science helped to fuel his future

BY KARIN OLAFSON • PHOTOGRAPHY BY ROB MCMORRIS

JASON "JP" POPESKU IS A LOVER OF BEER, BUT ARGUABLY, HE WAS A LOVER OF SCIENCE FIRST. AFTER COMPLETING HIS undergraduate degree in biochemistry and biotechnology at the University of Waterloo in 2001, Popesku decided to pursue a master's degree in microbial biotechnology and fermentation science at the same institution. From there, he went to the University of Ottawa and completed a PhD in molecular neuroendocrinology.

Popesku is a highly educated, science-minded guy, but he's also the kind of guy you can have a beer with. And that's easy to do, considering how much time he spends around beer these days. Popesku is now the head brewmaster at the Olds College Brewery, and the first person to hold that distinction who was educated through the Olds College Brewmaster and Brewery Operations Management program. Today, Popesku oversees all the beer the college brewery produces, while still finding plenty of time to enjoy a good Kolsch, his favourite style of beer.

***GrainsWest:* Your academic background and your current profession in brewing seem to be worlds apart. How did you transition from your PhD to brewing beer?**
Jason Popesku: I didn't transition immediately from academia to brewing. After I finished my PhD at the University of Ottawa in 2009, I did a post-doctorate fellowship at the University of British Columbia in Vancouver. During that time, I started home brewing. That's when it dawned on me that what I really wanted to do was make beer.

***GW:* What got you into home brewing when you were in Vancouver?**
JP: I've always been into craft beer. The "mainstream" beers just didn't do it for me—I was looking for more. Once I started drinking craft beer, I realized that it's the small-batch, flavourful beers that have a lot more character.

***GW:* What were your first few home brewing experiences like? Did you settle into it easily?**
JP: Honestly, it was anti-climactic. I started out with kits, like the Coopers Canadian Homebrew kits. Basically, it was beer for beginners. The flavours weren't there—they were dulled and muddled and boring. I did that with two different kits from two different companies and it was just very underwhelming.

***GW:* It sounds like you were ready to take your brewing to the next level.**
JP: Yes. In 2013, the Brewmaster and Brewery Operations Management program at Olds College was just starting up. I applied on a whim—I thought that perhaps with a PhD I might be overqualified for the program. During the interview process, Olds College was looking for people who were very passionate about making beer and wanted to really do something with a diploma in brewing.

I was accepted into the two-year program that started in the fall of 2013. I was one of 24 students to go through the program's first-ever year.

***GW:* Why did you choose to apply to the brewmaster program?**
JP: The main thing was the program itself, but also the opportunity to use local products. We have definitely used local

Jason "JP" Popesku brings a wealth of scientific knowledge to the role of head brewmaster. He holds a master's degree in microbial biotechnology and fermentation science, and a PhD in molecular neuroendocrinology.

ingredients [here at the brewery]. For example, we've used Red Shed Malting's malt in our beers. I don't think that there's the same opportunity to use local products in Niagara [where the brewmaster program is also taught at Niagara College], for example—at least for barley.

***GW:* What were some of the highlights for you from the two-year brewmaster program?**
JP: We did a trip to the Yakima Valley in Washington to see the hop harvest. I remember this was the first time I'd ever seen hops harvested on an industrial scale. To smell the fresh harvested hops, to visit the breweries that are in those hop fields and that use the hops right from those fields—it's a unique experience. Everybody who goes on that trip to the Yakima Valley always comes back with a huge smile on their face. Students in the program still go every September.

***GW:* Did any other aspect of the brewmaster program really stand out for you?**
JP: I loved the science courses. Even though I have a science background, I'd say getting the brewing science background from the program was the most crucial to my future.

***GW:* You finished the program in the spring of 2015. Then what?**
JP: Well, right after that my daughter was born, so I took the summer off to help my wife. After that, I came back to work at the retail portion of the Olds College Brewery. I was talking to people and selling them beer and giving them tastings. I found that to be an important part of the process. It's great getting direct feedback from consumers about our beer.

***GW:* When you were promoted to the role of head brewmaster in January 2017, did you go straight from brewery retail to the top job?**
JP: Not exactly. Even though I was working in retail, I helped out a lot in the back. I was an assistant brewer as a student.

***GW:* Even though the brewmaster program and brewery at Olds College are only a few years old, you're already following in the footsteps of two extremely talented brewers.**
JP: I am, yes. Larry Kerwin, whom I'd call a "grand brewmaster" and who was one of the partners who started Village Brewery, was contracted to be our brewmaster in the beginning when I was a student. Then there was Dave Mozel, our brewmaster for two years. I worked closely with him when I was assistant brewer.

***GW:* What does the head brewmaster job entail?**
JP: There's a lot of lab work, quality control and microscope work. Then overseeing the students every day, because they're bringing beer to market and have questions.

As brewmaster, I also oversee all of the beers that are produced in the brewery. We have four core beers and we have rotating seasonals, too. We do special beers, like a Christmas beer and the Alberta Beer Festivals beer. And I have to make sure the students are doing everything properly when they're brewing, like checking their mash chemistries and their extracts, for example.

***GW:* As a lover of craft brewing, you must be excited by all the new craft breweries opening in Alberta right now.**
JP: I love it. I love being able to walk into my favourite liquor store and find something new on the shelf almost every time I go in. There's some great brewing happening in Alberta right now at breweries like Common Crown Brewing Co., Bench Creek Brewing and Troubled Monk Brewing. Last Best Brewing & Distilling is making some great stuff, too.

***GW:* You call yourself a "beer tourist." What does that mean?**
JP: Wherever I go, I'm looking for the local beer. I think my favourite beer experience so far was the Saint James's Gate Brewery in Dublin for the Guinness tour. The Guinness itself in Ireland is different—it's got a sour twang to it that exported Guinness doesn't quite have.

***GW:* Where is the next place you want to visit as a "beer tourist?"**
JP: Belgium is on the top of my list because there are 400 styles of beer there.

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BY TREVOR BACQUE

PRIOR TO CONFEDERATION, Canada already had more than 250 years of agricultural history to look back on from European settlers. However, that history was modest and the agriculture skewed toward subsistence, as opposed to the eye-popping crop yields of today. Twenty-five years before Canada officially became a nation, agriculture was being formed as a vital cornerstone of the country's history and identity in rural Ontario.

David Fife was, by all accounts, your average Scottish immigrant. He came to Canada as a teen and farmed his whole life in Otonabee, ON, about two-and-a-half hours northeast of Toronto. He and his wife, Jane, a farmer's daughter herself, worked hard to make their farm productive. Upon request, a friend of Fife's had sent him a package of wheat varieties in 1841/42 that originated in Glasgow. It is widely believed that those seeds came to Glasgow by way of Danzig, now Gdańsk, Poland. Others posit the wheat originated even further east in the Galician region of Europe.

According to documented history, what Fife didn't realize was that the variety was actually a winter wheat, which should have been planted in the fall. However, the Fifes planted it in the spring. Only three heads were produced, and a cow ate a generous chunk of that paltry crop. From there, only a few precious seeds survived. Those seeds were replanted the following year and the results were staggering. They yielded like no other, showed stronger resistance to rust—a fungal disease that farmers had no answer for at the time—and produced quality flour for bread making. The variety was dubbed "Red Fife" based on the distinct reddish tinge of the Fife family's wheat fields.

It gave birth to a class of wheat you likely eat every day: Canada Western Red Spring wheat, known as CWRS or, more colloquially, "hard red." This class and Canada Western Amber Durum, or CWAD, are our country's two most vitally important wheats in terms of acreage and contribution to Canada's GDP.

As the years went on, Red Fife seeds were spread around Canada and the northern United States' crop-growing regions. By the time Red Fife reached Manitoba in the late 1800s, it was a force to be reckoned with. It grew in Manitoba better than anywhere else in Canada or the United States. "Suddenly it had become, by all accounts the finest wheat in the world for milling bread flours," wrote historian G.N. Irvine.

The variety's reputation spread like wildfire. Minnesota started importing Canadian Red Fife and marketing it as a premium product over its locally grown Minnesota Red Fife wheat. According to the Canadian government, 580,000 acres of grains were grown in Western Canada in 1885, which exploded to 13.6 million acres in 1910, including 7.6 million acres of spring wheat alone. Canada's Grain Inspection Act of 1885/86 decreed that any wheat hoping to receive top grade must be primarily Red Fife.

The Canadian West had been secured and solidified by Macdonald and the influx of European immigrants, and wheat production skyrocketed. Across the Prairie provinces, 2.8 million metric tonnes of wheat were produced in 1906.

Although it was the best wheat variety Canada had ever seen, Red Fife's long maturity period was problematic for farmers. Many wheat crops fell victim to killing frosts in the fall as farmers waited for the crop to mature. The need for a

A painted portrait of David Fife, the man who planted the iconic Red Fife wheat 25 years prior to Canada's Confederation.

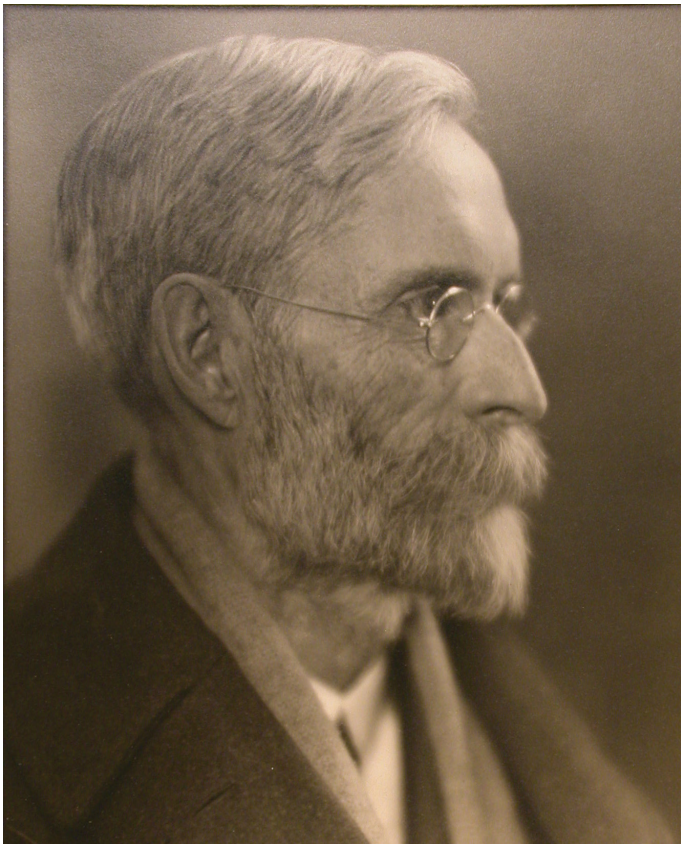


Photo: Charles Milne

Sir Charles Saunders, the man that is synonomous with the Marquis wheat variety.

quicker-maturing wheat crop became more pronounced when wheat production spread further north and northern farmers had even more trouble growing Red Fife due to a shortened growing season—up to 15 days shorter in some cases, compared to southern farms. In this case, the English proverb, "necessity is the mother of invention" proved to be apt.

A man named William Saunders was put in charge of the country's brand-new experimental farms, where research would be conducted to find Red Fife's successor as the premier Canadian wheat variety. Saunders was Canada's first appointed dominion cerealist. One of his duties was to create a wheat variety that had all the positive traits of Red Fife, namely milling quality and yield, but with a shorter maturity period to escape killing frosts. He sent his son, A.P. "Percy" Saunders, to create crosses at the three Prairie experimental farms, and the young Saunders did not disappoint. The ubiquitous Red Fife was paired with Hard Red Calcutta, a wheat variety from India lauded for its early maturity (six days faster than Red Fife). By crossbreeding the two varieties in 1892, Percy unknowingly wrote the next chapter in Canadian agricultural history, but it would take more than a decade for anyone to realize the magnitude of his success.

ORAL HISTORY

Percy's brother Charles was, by all accounts, a black sheep not the least bit intrigued by agriculture. Born the year of Confederation, Charles was gifted with an ear for music and had grand ambitions to be a flutist like no other. His father, however, had other ideas for his son. At William's insistence, Charles begrudgingly studied science and eventually moved to Baltimore where he earned a PhD in chemistry from John Hopkins University in 1891. Upon graduation, Charles still had precious little interest in chemistry. He and his mezzo-soprano wife, Mary Blackwell, ran concert and recital studios in Toronto, taught music lessons and regularly contributed a music column to *The Week* magazine. City living was good for Charles.

However, William, a close friend of then-Prime Minister Wilfrid Laurier, simply wouldn't let his son continue in the arts. In 1902, much to Charles' shock and dismay, his father sent him a letter informing him that he had been appointed a dominion cerealist at Ottawa's Central Experimental Farm. Not wanting to incur any more of his father's wrath, Charles mournfully moved from Toronto to Ottawa to begin what surely must have felt like exile.

Upon arrival in 1903, Charles was faced with the unenviable task of sifting through genetic wheat crosses created at various experimental farms in the hopes of identifying one to replace Red Fife. Eventually, he dusted off a sample from a name he recognized: A.P. Saunders, his brother. The sample was labelled "Markham," which Charles later renamed "Marquis." Perhaps it was nepotism, perhaps not; either way, Charles took a closer look at the sample.

Photo: Library and Archives Canada

A field of Marquis wheat at the Central Experimental Farm in Ottawa. It was at this farm that Sir Charles Saunders discovered the famed variety.

He gathered Marquis and a number of other crosses as he began to investigate their utility. There was only one problem: it was winter and he had no lab for chemistry, no mill for flour production and no oven for baking. So, Charles improvised. According to historian Stephan Symko, "… he would take a few grains from each stalk, chew them and decide on their probable flour and bread quality on the basis of the dough created in his mouth." Charles himself said of the process, "I made more wheat into gum than was made by all the boys in any dozen rural schools." He figured if his teeth could substitute for a mill and his mouth for an oven, he'd get results soon enough, wrote Symko.

Charles must have had an educated palate because Marquis was put forth as Charles' top choice of wheat following his oral investigation. His work gained such importance that he was eventually knighted and given a $5,000 annual pension from the Canadian government in his later years.

By 1907, as Marquis seed samples proliferated, they were sent to Indian Head, SK, for further tests and propagation. From Indian Head they were sent to Brandon, MB, in 1908, before being made public to farmers in 1909. Marquis had a trifecta of qualities that made it superior to Red Fife: early maturity, high yield and strong straw that kept the crop from lodging (when a crop falls over in the field, reducing quality and complicating the harvesting process). Farmers were ecstatic and so were grain buyers, millers, bakers and customers.

In 1914, Marquis migrated south to the United States. It only took one growing season for Yankee farmers to be converted. When the Great War ended in 1918, more than 20 million acres of Marquis were grown in North America. The crop value of Marquis in Canada alone in 1918 was US$259 million. Combined with the four major crop-producing American states of Montana, the Dakotas and Minnesota, Marquis' total crop value was US$629 million.

Marquis dominated the landscape in Canada and grain-heavy American states for more than 30 years following the First World War. Even though it was the Canadian government that received credit for its Marquis, Charles said it was "God Almighty" who was responsible for the variety's success.

Americans took note of Charles' unheralded contributions to agriculture, as well. "The greatest single advance in wheat ever made by the United States was the introduction of that class of hard spring wheat known as Marquis wheat. The idea came to us free of charge from the Dominion of Canada's Cerealist, Sir Charles E. Saunders," said James Boyle, former U.S. secretary of agriculture.

THE NEXT GENERATION

In 1918, 14 million acres of spring wheat were planted on the Prairies, with Saskatchewan accounting for 9.1 million of those acres. However, the need for new varieties continued in the West. Eventually, Marquis' reign came to an end, as farmers had to work harder to prevent diseases and abiotic stresses, such as wind, rain, hail and snow, from destroying their farms. Since Marquis was a quintessentially Canadian invention, it was the United States' time to return the favour.

University of Minnesota wheat breeders eventually created a spring wheat variety called "Thatcher" in 1935. It was very similar to Marquis, but had greater fungal resistance and matured even earlier. Slowly but surely, Canadian acres seeded to Marquis were converted to the new variety. But in 1953 alone, 3.5 million acres of cropland were lost due to disease pressure. A new wheat line called "Selkirk" was released as an immediate response, which managed to reduce incidences of disease in the short term.

A short-lived but high-performing variety named "Manitou" appeared in 1965 for a few years before it was overshadowed by the next big breakthrough in 1969. Developed in Winnipeg, "Neepawa" had all the trappings of a winner: high yield, high protein, strong disease resistance and wide uptake by Prairie farmers. In fact, Neepawa made history in 1980 when it was declared that it had replaced Marquis as the new standard against which all other wheats would be measured. It was the second time in Canada's history a wheat variety surpassed an established line in terms of all-around quality.

Photo: Courtesy of Ron DePauw

Manitoba was the first bastion of Prairie wealth and many Europeans came to Canada in order to escape feudal societies. Above was a typical advertisement seen in many European cities and towns.

MODERN DAY

Today, there are thousands of varieties of wheat grown around the world. However, on the Prairies, there are still fewer than a dozen varieties that are grown in large quantities each growing season.

For many of those varieties, Canadians can thank Ron DePauw, a mild-mannered, 73-year-old former wheat breeder from Kamsack, SK. If you've eaten any bread product in Canada over the last few decades, there's an extremely high chance it was made with a wheat variety he and his team created in the Swift Current test fields during his long and illustrious career.

DePauw is considered to be one of Canada's top wheat breeders of the last 50 years. He developed a love of the natural world early in his life and has spent more than four decades dedicated to public breeding research with Agriculture and Agri-Food Canada. His goal from the outset was simple: "When I started working at Beaverlodge [Alberta] in 1973, I had set myself a personal goal of wanting to develop really good varieties that would grow successfully on farmer fields, and farmers would be satisfied to grow them again," he said.

By all accounts, DePauw succeeded. One of the most notable contributions was in 1993 with his team at the Semiarid Prairie Agricultural Research Centre (SPARC)—a CWRS wheat variety called "Barrie" that boasted high yields, high protein, disease resistance and wide adaptation for the Prairies. Not only that, it had shorter, stronger straw to stand up to the abiotic stresses and adverse conditions common across the Prairies.

"It was the first product that broke the yield and protein link," said Todd Hyra, business manager for Western Canada at SeCan, a Canadian seed company. "Normally, when protein goes up, yield goes down. In this case, both were high." It didn't take long for farmers to take note of this novel innovation. Barrie quickly became the dominant variety grown on the Prairies from about 1996 to 2005, hitting a peak in 1999 with a share of 47.5 per cent of all CWRS acres.

Less than a decade after Barrie's creation, DePauw produced "Lillian," another CWRS variety with a high yield, a solid stem and a greater resistance to a damaging pest known as the wheat stem sawfly. Lillian took a turn to unseat Barrie and was the major variety from 2007 to 2010 in Western Canada. "It's one thing to try something, but if [they] repeat growing them, that's a measure of success that farmers are satisfied," said DePauw of his varieties' uptake.

That success has come from decades of institutional hard work and dedication, according to Hyra. "I was in a field with him last year in southern Manitoba, the temperature was in the 30s, it was humid … he was trekking through it like he was 25 years old. I can't imagine what he was like when he was younger."

According to certain plant breeders, having one wheat variety as successful as Barrie or Lillian to their name would allow them to retire happy. Breeding research is painstaking work and discovering "the one" is far trickier than finding the proverbial needle in a haystack. Bringing the average new variety to market typically takes about 10 years, and it's not a guarantee it will gain market acceptance, either. However, DePauw and company defied the odds and many of their greatest hits can be found in fields all across the Prairies. In total, DePauw and his team registered more than 65 higher-performing wheat and durum wheat varieties, such as Brandon, Carberry, Kyle and Stettler. DePauw himself is listed as the lead breeder on 29 different CWRS varieties. DePauw estimates the team at Swift Current has spent more than 500 collective years breeding wheat during his tenure.

Much of that work wouldn't be possible without the average farmer directly contributing to the success. Western Canadian farmers voluntarily pay for research funding through levies, also called check-offs, on their grain sales. That money is used for funding public research, an immeasurable contribution, said DePauw. "That money we got from producers had a very, very big impact. It allowed us to double our genetic gains and enabled us to double our breeding program. Farmers are big time investors of this."

The work DePauw has done throughout his entire career was, is and continues to be acknowledged by farmers. According to DePauw, 40 to 50 per cent of seeded CWRS acres are breeds that originated in Swift Current.

Continued on page 45.

WESTERN CANADA'S AGRICULTURAL HISTORY

Today, agriculture is a vital industry to Canada's economy and to the many Canadians it employs in a variety of fields. Unsurprisingly, agriculture also played a key role in our country's development, especially in Western Canada. Here are some of the highlights from agriculture's rich history.

With the passage of the British North America Act, Canada is born. At the time, Western Canada is loosely governed and sparsely populated, consisting mainly of untouched prairie.

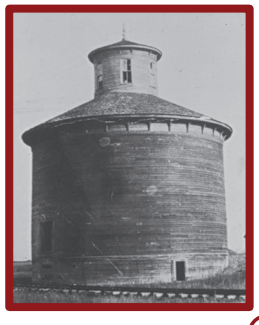
Jean-Charles Chapais is appointed Canada's first minister of agriculture. Considered one of the Fathers of Confederation, Chapais served as agriculture minister for two-and-a-half years before his appointment to receiver general in November 1869.

The Canadian Pacific Railway, constructed from Eastern Canada to British Columbia over the course of four years, links Canada from coast to coast. The famed "Last Spike" is driven into place on Nov. 7, 1885, at Craigellachie, B.C. The transcontinental railroad was instrumental in the process of settling the West and helped lead to the development of western cities, such as Winnipeg, Calgary and Vancouver.

1881-1885

Ontario becomes Canada's wheat-growing powerhouse. It's the primary crop, grown more plentiful than any other commodity. By 1880, however, Ontario is producing a minimal amount of wheat, a trend that still holds true.

JULY 1, 1867



1800-1860

1605

The earliest evidence of wheat being grown in Canada is documented. Wheat was planted in Annapolis Royal, NS, 10 kilometres south of the Bay of Fundy, 262 years prior to Confederation.

1842

Wheat from Glasgow, Scotland, is sent to a man in Canada named David Fife. Fife planted the wheat on his Ontario farm, where a distinctive red-hued crop dotted his land when the wheat had fully matured. He called it Red Fife. The name stuck and for more than 40 years, Red Fife was the dominant wheat variety grown in Canada. The baking and milling industry loved it and it was readily available to farmers in the British colony.

1879

The first grain elevator in Western Canada is built in Niverville, MB, by William Hespeler—a German immigrant who also ran a distillery and grain mill with his older brother Jacob. The elevator first stored barley that was exported overseas.

JULY 13, 1896

Sydney Arthur Fisher, a farmer by trade, is appointed by Prime Minister Wilfrid Laurier to cabinet and spent the next 15 years as Canada's agriculture minister until an electoral defeat in 1911. He was Canada's longest serving agriculture minister.

1897

The Crowsnest Freight Rate, or Crow Rate, is implemented. The Crow Rate was a subsidy that benefited Prairie farmers shipping commodities east or farm equipment heading west that originated in Central Canada. The Crow Rate was temporarily suspended during the First World War and re-instated in 1922.

1903

Marquis, a newly created variety, displaces Red Fife as the predominant variety grown in Canada—specifically, Western Canada, where 90 per cent of cultivated wheat was Marquis at the time.

1935

The Canadian Wheat Board (CWB) is created. The board, also known as the "Single Desk," had the authority to control marketing of all wheat and barley in Western Canada.

1943

Membership in the Canadian Wheat Board is made mandatory for farmers via the War Measures Act.

1962

Canada has 5,226 grain elevators across the country, concentrated in Western Canada. By 2013, that number had dipped to a low of 415 due to industry consolidation and buyouts. In 1962, Saskatchewan alone boasted 2,878 elevators; today, that number has been reduced to 173.

EARLY 1970S

Scientists Keith Downey and Baldur Stefansson invent canola at the University of Manitoba. Canola means Canada oil, and has the distinct feature of low erucic acid, an undesirable monounsaturated omega-9 fatty acid.

1983

The Crow Rate is replaced with the Crow Benefit—a subsidy paid to the railways that kept freight rates paid by farmers artificially low.

1995

The Crow Benefit is repealed. Farmers received a one-time payout designed to help them adjust to higher freight costs, which in some cases doubled or tripled.

2004

The CWB and a number of farm organizations are instrumental in stopping the introduction of genetically modified (GM) wheat to Canada. To this day, there is no GM wheat sold anywhere on Earth.

AUGUST 1, 2012

The federal government, led by former prime minister Stephen Harper, formally dissolves the Canadian Wheat Board monopoly, as Bill C-18, the Marketing Freedom for Grain Farmers Act, becomes law.

SPREADi

CANADIAN FOODGRAINS BANK CREATES A FARMING COMMUNITY AROUND THE GLOBE

STORY AND PHOTOS BY ALLISON FINNAMORE

NG THE WEALTH

DESPITE THE 13,000 KILOMETRES THAT SEPARATE EARL JENINGA'S HOME in Linden, AB, from rural farmers in Rwanda, he still feels a connection.

Jeninga and 11 other Canadians travelled to Rwanda in January to learn about projects supported by the Canadian Foodgrains Bank (CFGB) and to see where CFGB funds—which are primarily raised by Canadian farmers—are being put to work. According to the CFGB's 2015/16 annual report, $551,940 was budgeted for Rwanda during that fiscal year, benefitting a forecasted 20,570 people through agriculture and livelihood assistance projects.

Most of the funds for Rwanda, and countries like it, come from CFGB growing projects like the one Jeninga leads in Linden, where a 300-acre rotation of wheat, barley and canola is grown, harvested and sold to the local community every year. This money can go a long way in a country like Rwanda, where many farmers could be more productive if given better equipment and growing methods.

"They're trying to grow the best crop they possibly can with the tools that they have, and we're trying to give them the tools," said Jeninga, who also manages Kneehill Soil Services.

CFGB executive director Jim Cornelius said there's a unity among farmers, whether the farms are located across the street from each other or on opposite sides of the globe. Many of the issues Canadian farmers face—from market forces to weather problems and everything in between—are familiar to their colleagues in other countries.

"There's a way of feeling solidarity with other farmers," Cornelius said. "They face a lot of similar issues but on a different scale."

That connection is a vital cornerstone on which the foundation of the CFGB was built. The organization began in 1976 through the Mennonite Central Committee. Missionaries who travelled to African countries witnessed first-hand the food shortages residents faced, and came home resolved to help. The result was a pilot project that allowed Canadian grain farmers to share their harvests with those less fortunate around the world.

The group reorganized and expanded in 1983/84, just in time to make a significant contribution to fight the famine ravaging Ethiopia at the time. Today, the CFGB includes 15 church agencies representing 30 Canadian denominations and works to raise money for a number of projects, including agriculture and livelihood programs to teach farmers in developing countries how to best produce food on a long-term basis. The CFGB also spearheads food assistance projects to help people who are hungry because of crisis situations like war, drought or flooding. As well, its work now includes nutrition projects aimed at reducing malnutrition through education, provision of clean water and special feeding programs. Within Canada, the CFGB is an advocate for national and international public policy change to enable families and communities to better feed themselves.

MAKING A DIFFERENCE

In Rwanda, Jeninga saw first-hand the teaching programs that are partially funded by the CFGB, leaving him confident that growing project funds are being put to good use. He also had a valuable opportunity to learn from the Rwandan farmers.

A CFGB partnership with the Adventist Development and Relief Agency funds a farmer field school in the Ndego sector of Rwanda's Eastern Province. The sector is located near the Ugandan border, and although it is only 120 kilometres north of Kigali, it takes about three hours to drive there from the Rwandan capital via the twisty roads of the Rwandan hillside.

The farmer field school teaches its roughly 30 members the tenets of conservation agriculture—such as moisture and soil preservation, and crop rotation.

Odette Nzayisenga, the president of the farmer field school, explained that prior to the school's creation two years ago, its current members had no agricultural skills and

CANADIAN FOODGRAINS BANK BY THE NUMBERS

- According to the Canadian Foodgrains Bank's (CFGB) annual report, in 2015/16, it provided $43 million of assistance for more than one million people in 40 countries through 133 unique projects.
- Donations over the same time period reached $11.3 million, while member agencies contributed another $4.8 million. Land donations reached a value of $755,236.
- Donations came from individuals, church congregations, companies and 268 growing and community projects, where crops are grown, cared for, harvested and sold, with the profits donated back to the CFGB.
- Global Affairs Canada funding totalling $32.5 million is also recorded as income by the CFGB for 2015/16. According to the CFGB's annual report, it received three grants from the department: a five-year core grant signed in 2011, a special grant for aid to displaced Syrians within their own country and a multi-year, $14-million conservation agriculture grant. A further $480,000 was received from the Bill & Melinda Gates Foundation.
- In terms of expenses, the CFGB spent $47 million on international program activities to provide and distribute food, and support agriculture livelihood and nutrition programs.

Odette Nzayisenga (left), president of the Farmer Field School in Rwanda's Ndego sector, talks about the conservation agriculture practices she's learned through a program funded in part by the Canadian Foodgrains Bank.

their approach to farming was random and unfocused. Since then, they've made significant improvements.

"We used to just till the land, not take care of the soils, and used to grow without measurement, just random plant space," Nzayisenga said through an interpreter. "Now we measure and use proper fertilizer rations, we learned about crop rotation."

For Jeninga, meeting the members of the farmer field school in Ndego was a great example of how the CFGB money is helping farmers around the world. What might seem like common agricultural practices to farmers in developed nations can often be small, yet critical, teachings that bring valuable skills to the fields of subsistence farmers in other countries.

"When you look at the kind of stuff being done on a small scale, you can see that what we're doing is making a difference," Jeninga said. "This confirms it."

Solidifying that confirmation was a neighbouring farmer who stood on the fringes of the farm tour and listened to the farmer field school participants answering questions, then jumped into the conversation. Even though he wasn't a participant in the learning program, he said he started asking the farmers questions when he saw their successful crops and implemented similar practices on his plot. Now, he said, smiling, his maize looks better than that of the field school participants.

Terence Barg, the CFGB's northern Alberta representative, was also in Rwanda and has witnessed the organization's impact in other countries. Each time he sees the CFGB's work in action, the experience is affirming, he said.

"It's always rewarding to see the success of projects," Barg said. "It's amazing to see how much of a difference it makes in these people's lives in these areas where it's very dry."

HONOURING THE PAST, EMBRACING THE FUTURE

When most of us think of Rwanda, agriculture isn't typically the first image that springs to mind.

Instead, our thoughts probably jump to the 1994 Rwanda genocide, when racial tensions boiled over and Hutu extremists

viciously killed an estimated 500,000 to 1.3 million Tutsi and moderate Hutus between April and July of that year.

The country continues to heal from the genocide, and extensive reconciliation and peacemaking is part of everyday life. Even in farmer training programs, funded in part by the CFGB, peacemaking is taught.

The farmer training programs were one element of the CFGB's impact in Rwanda witnessed by the 12 visiting Canadians, who included journalists, CFGB staff and Canadian farmers.

As the Canadian visitors grappled with the country's horror-filled past, Rwandans met with the group and patiently answered all the questions that arose. As the days passed and the Canadian group found its footing, what became clear was the spirit of reconciliation that characterizes the country today. Through numerous, deliberate peacemaking steps taken every day, Rwandans demonstrate their decision to forgive. They choose to look ahead and build a unified future rather than dwell on the horrors of 1994.

The CFGB assistance efforts the Canadians witnessed provided simple solutions to common problems and are highly effective at helping farmers in need.

In the Kirehe district of Rwanda's Eastern Province, 1,329 homes participate in a CFGB project partnership with the Canadian Baptist Ministries. The Canadian visitors met several farmers in the village, including Athanase Nsengiyumva, who, like many Rwandan farmers, grows vegetables in his backyard—including cabbage, carrots, green peppers, celery and red onions—and sells them at the market. Like the other farmers, Nsengiyumva sometimes struggles to have enough water for his garden, but he's one of 181 residents who received funding to install a rain basin that collects water throughout the year. He proudly showed the group his store of water, which he said allows him to get almost all the way through the dry season and keep his garden growing.

"There is a dream that the vegetables could be available throughout the year if there is water," he said.

Most striking about the rain basin was the cost—about 106,000 Rwandan francs, the equivalent of roughly CAD$170. It represents such a simple solution to a serious problem and made a huge difference for Nsengiyumva, but at that price, it is out of reach for most Rwandan farmers without financial assistance.

While in Eastern Rwanda, the group also saw a straightforward watering system that the CFGB helped fund in partnership with the Mennonite Central Committee (MCC). The Canadians saw how 20-litre, unglazed pots were buried in gardens then filled with water. As the soil requires moisture, it draws it from the pot. The pots are refilled a couple of times a week—a major savings of labour when the closest water source is a lake located a mile away, where water needs to be drawn and carried back to one's home and garden by hand.

Hygiene is another issue tackled through the CFGB partnerships in simple and straightforward ways. Through the partnerships between the CFGB and the MCC, Rwandans are taught the utility of having a proper latrine located away from the house and any food sources, and the importance of washing their hands after using the latrine.

A mother in the Eastern Rwanda district of Kayonza feeds her child a mixture of nutrient-dense foods, topped off with a dark green sprinkle of ground Moringa tree leaves, a fast-growing, drought-resistant plant that adds additional nutrients to the meal. Funds to run nutrition programs like this come in part from the Canadian Foodgrains Bank.

The addition of nutrients to certain foods to make up for any deficiencies in one's regular diet is commonplace in Canada, but in Rwanda this was new information. The Moringa tree—a fast-growing, drought-resistant species—has leaves that are basically a superfood, containing large quantities of several vital nutrients. Residents in this Eastern Rwanda village now grind the leaves and sprinkle them over food for a nutritional boost.

In the fields, the partnerships the CFGB has with other aid organizations have taught Rwandan farmers how to preserve soil moisture, deal with soil erosion and plant nutrient-dense foods in their backyard gardens.

Rwanda, which refers to itself as the land of a thousand hills and a million smiles, left a lasting impression on Jeninga. He recalled the Rwandan farmers' warm greetings, unbridled openness and willingness to answer questions from a group of Canadians as memories that he'll keep from the visit.

"The beautiful landscape will stick with me," Jeninga said. "But even more so is how accepting these farmers and these families were of us coming here. They were inviting and proud of their plots, and welcomed us into their homes. That's what will stick with me."

Feature

DEBUNKING FOOD MYTHS

EXPERTS FIND MANY POPULAR FOOD TRENDS HARD TO SWALLOW

BY GEOFF GEDDES • ILLUSTRATIONS BY MICHAEL MATEYKO

When someone said, "the best things in life are free," were they talking about being free of gluten and hormones? Based on celebrity endorsements and pop culture sentiment, it seems there's growing support for these food trends. At the same time, many experts warn that this type of "free" comes at the expense of science-based decision-making, costing consumers money and, to some extent, their health.

"The impact of popular culture on public perceptions, health policies and consumer trends is incredible," said Timothy Caulfield, a professor in the Faculty of Law and the School of Public Health at the University of Alberta. He is also a Canada Research Chair in Health Law and Policy, and the author of two books: *The Cure for Everything!: Untangling the Twisted Messages about Health, Fitness and Happiness* and, most recently, *Is Gwyneth Paltrow Wrong About Everything?: When Celebrity Culture and Science Clash.*

Among other things, Caulfield has gained renown for debunking myths and assumptions about innovation in the health sector for the benefit of the public.

"It's amazing how much noise there is today regarding food," he said. "We have a lot of good information and science around healthy eating, but it's constantly obscured by the bunk so it's tough to know what the truth is anymore."

Gluten-free

"This is a fascinating phenomenon," said Caulfield. "Despite the lack of evidence supporting the gluten-free diet as a healthy choice, it remains a force in the market."

While a gluten-free diet is essential for those with celiac disease, for everyone else Caulfield cited a number of studies showing just the opposite: eating whole grains as part of a balanced diet is good for you.

So what's behind the gluten-free craze? As is often the case, it appears to be money that's fuelling the bunk.

"I have yet to see peer-reviewed research showing any problem with gluten," said Stuart Smyth, an assistant professor and Research Chair in Agri-Food Innovation at the University of Saskatchewan. "Unfortunately, it becomes a marketing fad as consumers start asking stores for gluten-free and companies put that label on a host of products that never had gluten in the formulation to begin with."

In some cases, using the "gluten-free" designation has allowed companies to justify price increases of five to 10 per cent in spite of never changing the composition of the product.

"There is even gluten-free soap and shampoo now," said Smyth. "You might get a bit in your mouth in the shower but I don't think it is part of anyone's diet. That just shows you how absurd the trend is."

GMO-free

Of all the questionable food fads, Caulfield found that the controversy surrounding GMOs, or genetically modified organisms, boasts the biggest gap between science and public thinking.

"A recent study in the U.S. revealed that while GMO food has been proven safe to eat, only 37 per cent of people believe that and 87 per cent think non-GMO food is healthier," said Caulfield.

In the professor's view, it's a classic example of the "Prius Effect"—studies have found that among Toyota Prius owners, the top motivation for buying an electric or hybrid car was self image or the fact that the purchase "makes a statement about me," rather than better fuel economy or lower emissions.

"The idea of being against GMOs becomes part of one's ideological package," said Caulfield. "We all tend to adopt beliefs consistent with our self-identity, so the same person who believes the science on climate change may reject the science on GMOs, as that fits with their perception of themselves."

He also sees an intuitive appeal to shunning GMO food, as it sounds unnatural. "How can you favour genetically modifying nature?" he said. "That narrative has real power but no proof."

Organic

In Caulfield's view, this is the most complex of the four food trends.

"You have to look at a couple of elements," he said. "First of all, are organic foods inherently healthier? The scientific community agrees they are not a healthier or more nutritious choice."

The second factor in the organic debate is pesticides. "This one is a bit more complicated, but again there's no evidence that organic food is superior in this regard," said Caulfield. "Not only is the level of pesticides on conventionally grown food far below regulatory standards, but organic farmers also use pesticides—they just use organic ones."

Caulfield added that concerns about nutrition and pests might cause people to eat fewer fruits and vegetables, something he called a "horrible result" of misinformation.

Further complicating the issue is what Caulfield described as an emotional component to the organic appeal, where people equate it with "natural," something that pop culture has been quick to reinforce.

"For my book about Gwyneth Paltrow, I read her clean cleanse guide and saw the word 'organic' on every page," he said. "It promotes the notion that organic must be healthier, and that is powerful."

Hormone-free meat

"The beef industry has studied this extensively and reported that the natural level of hormones in an eight-ounce hamburger patty is virtually identical to the level in a patty from animals raised with growth hormones," said Smyth.

In fact, two of Smyth's students found evidence that there are more hormones in the bun than the patty and no difference in taste, despite what the commercials tell us.

"A&W saw a niche opportunity here. They knew consumers were uninformed about how steak or hamburger ends up on store shelves and knew they could prey on that," said Smyth. "Consequently, they jacked up prices on their burgers, called them hormone-free and claimed their competitors' burgers were dripping with hormones."

It can become a vicious cycle, as the more we see of hormone-free or gluten-free products, the better we assume they must be for us.

"It's almost to the point where you wonder if food companies sit around thinking what other 'free' words they can put on labels and charge more for—maybe 'gene-free' will be next," Smyth said.

To your health

With all of the noise around these food trends, what's a consumer to do?

"Ignore the hype and follow the science," said Caulfield. "Wait for a body of evidence to emerge before you embrace any new theory, and in the meantime, keep it basic."

That means eating plenty of fruits and vegetables, whole grains and good proteins while drinking alcohol in moderation and avoiding junk.

"The fascinating thing is that we know what a healthy diet looks like, yet the rhetoric and confused messages feed this doubt in our minds and make it harder to follow the simple truths," said Caulfield.

On the bright side, most experts agree that if you get off the "-free" train and shut out the noise to focus on the basics, the benefits for your health could be priceless and lasting.

CONNECTING THE DOTS

AGRICULTURE IS FULL OF CAREER PATHS FOR PEOPLE FROM ALL WALKS OF LIFE

BY TAMARA LEIGH

ASK SOMEONE TO NAME A career in agriculture, and the odds are good that the first word out of their mouth will be "farmer." While it's true that farming forms the foundation of the industry, those men and women are supported by a diverse and passionate network of professionals: research scientists, accountants, veterinarians, heavy mechanics, software programmers and marketing specialists, to name a few.

While only two per cent of Canadians live on a farm, one in eight jobs in Canada is related to the agriculture and agri-food industry. For Canadians looking for rewarding careers, agriculture is a growing source of career opportunities that few would associate with the traditional image of farm life.

"I love to take a food product like potato chips and ask a group of students to describe how the bag of chips got to them," said Becky Parker, an agriculture educator and Nuffield Canada scholar. "Most people can put together growing the potatoes, processing them into chips, and even talk about transportation. But who created the flavours? Who created the design for the bag? Those types of conversations start to open eyes to the jobs and careers that are involved in bringing food to consumers."

Parker recently completed a study of ways to engage Generation Z, the generation born after the mid-'90s that will be entering the workforce over the next 20 years, in agri-food careers. According to Parker, Generation Z is characterized as entrepreneurial, independent and driven by the desire to have an impact with their work.

When it comes to impact, agriculture has a lot to offer. Domestically, food and beverage processing is Canada's largest

Image courtesy of freepik

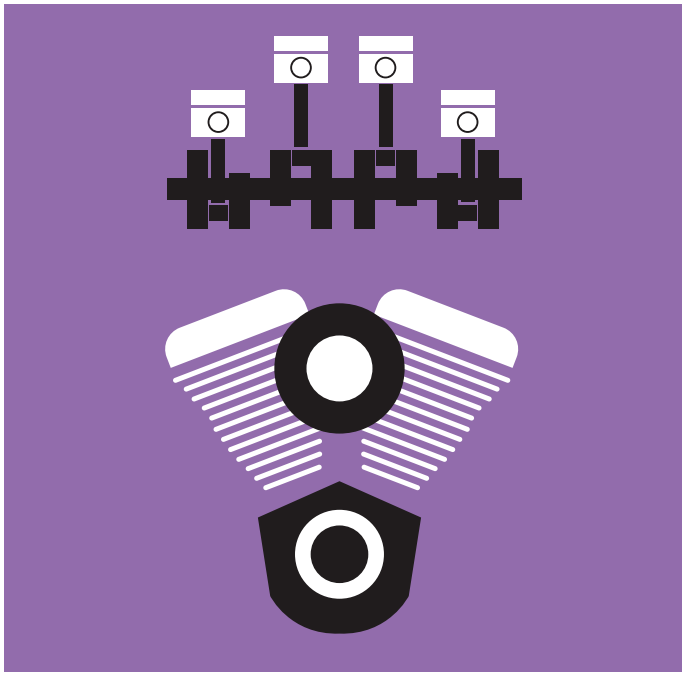


Image courtesy of Vecteezy

manufacturing industry, and Canada is the fifth-largest exporter of agriculture and agri-food products in the world. Globally, agriculture has the single largest footprint of any human activity, which speaks to the universal truth that everyone needs to eat. Agriculture is an economic, social, environmental, political and science-based industry, and offers career opportunities that are equally diverse.

The challenge is closing the gap between the widely held perceptions of agricultural jobs and the reality of the opportunities available. Parker said the key to getting Generation Z to think about agricultural careers when they are ready to enter the workforce is to first increase their awareness of agriculture and their exposure to the opportunities available.

"We can't just talk about careers in agriculture with young people, we need to give them a chance to experience them through co-op placements, summer jobs or job shadowing. We need to give them an opportunity to try things out," said Parker, who is working to create more of these opportunities in the industry. "The other key part of the system is really around mentorship, and having someone to provide a pathway into a career in agriculture."

AGRICULTURE INNOVATION

The Faculty of Agricultural, Life and Environmental Sciences (ALES) at the University of Alberta has experienced a trend that demonstrates just how compelling agriculture can be once people make the connection.

"Our faculty gets more transfer students from other faculties than any other," said Stan Blade, dean of the Faculty of ALES. "Students from arts or science take one of their electives from our faculty and, all of a sudden, worlds open up to them that they never conceived of."

According to Blade, the interest from schools and students from urban areas is increasing as people begin to better understand how the opportunities in agriculture align with their values. In recent years, there has been a shift in where ALES students come from. Whereas the faculty has traditionally drawn about 75 per cent of its students from rural areas, today enrolment reflects a 50-50 split between urban and rural students. Fifty-five to 60 per cent of students enrolled in undergraduate programs are women.

"Students from places like Vancouver, Toronto and Montreal, they want to have an impact on food security," Blade said. "They want to have an impact on the environmental sustainability of agriculture and food production more broadly."

With a focus on experiential learning at the undergraduate level, the faculty offers international trips to places like Mexico, Cuba, India and Japan, as well as internships and opportunities to connect with top-level farmers within the region.

"We see our students go on to graduate school and equip themselves for roles as researchers and scientists," said Blade. "We have alumni who set up their own consulting firms and agricultural businesses. Lots of our students work with companies where they work on the front line with farmers. Others go on to work with producer organizations in key positions that can become extremely influential."

As a research faculty, the work being done at the graduate level is shaping the future of agricultural production, changing practices and creating new career opportunities in agriculture by developing demand for new skill sets.

"New research is opening up new roles," said Blade, pointing to the "bioeconomy"—developing renewable biological resources using agriculture and forestry byproducts—as an example. "No one could foresee the bioeconomy 10 to 15 years ago, but now we have spinoff companies in our faculty looking at new materials. Companies are being formed and investments are being made because of some of that work."

JACKS OF ALL TRADES

Agriculture and food production has changed dramatically in recent years, and the pace of change is accelerating as new technologies and production systems emerge. The increasing use of specialized software, different kinds of remote imaging, and high-tech systems to monitor crop and livestock production is becoming more mainstream practice.

Lane Stockbrugger recently left his job as a marketing specialist to farm full time with his brother near Humboldt, SK. He said the set of skills required to make a farm business work is far more complex than most people understand.

Planning crop rotations, making decisions on new technology and learning to operate it, filtering through the available research to determine what will work best for their farm, farm safety, managing staff, administration, communications and marketing the crop are all essential parts of life for the modern farmer. Beyond the farm gate, they are managing relationships with suppliers, mechanics, crop advisers, researchers, bankers, lawyers, insurance representatives and more.

"Even at the equipment dealership, the level of expertise is increasing exponentially. It used to be all heavy mechanics, now they are software engineers. The GPS systems we use were built for spaceships and adapted to our tractors," said Stockbrugger. "People who I don't think ever thought about a career in agriculture are being pulled in because of the technology we are working with."

In addition to farming, Stockbrugger works as a public speaker and advocate for agriculture across the country, while also promoting Canadian wheat to international markets. In December 2016, he logged more than 20,000 kilometres of travel to present to Canadian grain customers in Algeria, Morocco, England and Italy.

"The agriculture industry has so many things going on in it right now. You may not be looking to get into agriculture, it may find you," he said. "It's an amazing industry to be a part of."

BRIDGING THE GAP

According to the Canadian Agricultural Human Resource Council (CAHRC), the number of career opportunities in agriculture is growing, and expected to continue to grow over the next 10 years. The CAHRC provides labour market information to the agriculture sector and develops tools to help agricultural businesses better manage their human resource needs.

"The future for the agriculture sector is really bright," said Debra Hauer, project manager for CAHRC. "Generally, when people think of the agriculture workforce, they think the number of people working in agriculture is decreasing. In reality, if you combine Canadian and foreign workers, our numbers show that number is going up all the time. Our forecast for the next 10 years is that agriculture needs more people to take advantage of the opportunities."

Hauer said there are 2.3 million Canadians employed in the agri-food system from farm to plate. The number of people employed full time on-farm and in farm-support services is 403,000, including people like crop advisers, pruners, contractors, livestock service personnel and farm labourers. Research by the CAHRC and the Conference Board of Canada found there is currently a gap of approximately 50,000 farm-related agricultural jobs that need to be filled across the country. That gap is expected to increase to 114,000 in the next 10 years, in part due to farmers retiring.

Temporary foreign workers help fill the gap, but the CAHRC estimates that there are still 26,000 vacancies to be filled in Canadian agriculture.

"The majority of foreign workers work in horticulture on a seasonal basis. However, there are people brought in to be veterinarians, farm managers and supervisors in all types of agricultural operations," said Hauer. "There are shortages across the board."

Looking ahead, she highlighted the need for people with technical skills to design, build, operate and repair systems like robotic milking machines, drones and electronics in greenhouses that are becoming more prevalent in the industry. Consolidation in the agriculture industry is also creating a need for people with a different skill set.

"As agricultural businesses are getting larger, having more employees becomes the norm, and people need managerial and supervisory skills, as well as human resource expertise," said Hauer. "The occupations that will be needed in the

Image courtesy of Vecteezy

greatest numbers are managers and owner/operators because existing owners will be retiring over the next 10 years."

OLD INDUSTRY, NEW BLOOD

At 24 years of age, Rosie Templeton is part of the younger generation that is beginning to address the labour gap, both on-farm and off. Raised in a ranching family, she found a way to combine her passions for ranching and writing and marketing by becoming a public relations strategist with AdFarm, an advertising agency that specializes in agriculture.

"I live in the city, but I still feel like I'm working with and for farmers every day," she said.

From her vantage point in an ad agency, Templeton interacts with clients from all different facets of the agriculture industry, including farmer organizations, fertilizer and seed companies, farm equipment dealers, animal health projects and even rural Internet providers.

"On any given day, I might work with five different clients who all came from a different path into agriculture," said Templeton. "You get an inside look at a hundred different types of careers, companies and individuals within the industry that you may end up working with in the future. It is a fascinating example of how diverse the industry is."

It's a five-and-a-half-hour commute back to the ranch from her home in the city, but Templeton still plays an active role in the family business.

"There are three girls in the family—my oldest sister is a veterinarian, I do the communications work and the other one is the active, full-time rancher," she said. "We all have something to contribute."

Looking ahead, Templeton echoed the sentiments heard time and again from the people who make their living in different ways in the agriculture industry. "There is an endless amount of opportunity in agriculture. It's constantly changing, constantly adapting," she said. "Other industries come and go, but agriculture is here to stay."

COME FOR THE JOB, STAY FOR THE...

People

"For me, what is special is the community that is generated by the agriculture industry."

– Debra Hauer, Canadian Agricultural Human Resource Council project manager

Opportunity to grow

"Agriculture is an industry that is very invested in its people. There are so many different training programs and professional development programs you can pursue. It's an industry that's always about innovation and improvement, and is always about its people."

– Becky Parker, agriculture educator and Nuffield Canada scholar

Attitude

"I didn't plan to stay in a company for as long as I did, but there was so much engagement and excitement going on that it was hard to leave."

– Lane Stockbrugger, farmer, on his delayed return to farming

Connection

"We sometimes forget why what we're doing matters when we're sitting behind a desk, but I am able to connect through the client. I can appreciate that because we are supporting their business, they can create more innovation to make the farmer's life easier, and increase the profitability on their farm. It's about making a positive contribution to the industry you care about."

– Rosie Templeton, AdFarm public relations strategist

Life's Simple ingredient

NEW CAMPAIGN OFFERS SIMPLE TRUTHS ON WELL-ROUNDED WHEAT

BY GEOFF GEDDES

In our high-tech, fast-paced world, many are convinced that the more complex the concept, the better it must be. That's why a new campaign from the Alberta Wheat Commission (AWC) is like a breath of fresh air on a crisp Prairie morning. Sporting the tagline "life's simple ingredient," the campaign encourages consumers to feel good about eating wheat.

While wheat itself may be a simple ingredient, cooking up the campaign was a bit more involved.

"We saw the growing farm-to-table movement as an opportunity to be a champion for wheat," said Tom Steve, general manager of AWC. "As a farmer-led organization, our first major task was to learn more about connecting with Alberta's urban public. This process led us to a key observation: wheat is highly respected and people appreciate its many benefits, not to mention its great taste."

Though the public rates wheat and wheat farmers as the most trusted area of production agriculture, wheat sales have been challenged by food trends, such as gluten-free. It was against this backdrop that a campaign emerged to cut through the clutter and share some simple truths about a grain that has served as a staple of healthy diets for thousands of years.

A SIMPLER TIME

Ever since Lord Selkirk harvested the first wheat crop on the Canadian Prairies back in 1815, consumers have viewed the grain as closely tied with Alberta's history and a reflection of farm values and traditions. Globally, wheat has sustained families for centuries and accounts for 20 per cent of the world's food calories. In many respects, wheat is ingrained in our culture and our way of life.

A SIMPLE MESSAGE

In creating the campaign, AWC gathered information on people's perceptions of wheat and found three qualities that were cited consistently: healthy, wholesome and nutritious. If there's a common theme, it could be the peace of mind that flows from serving yourself and your family food that is rich in fibre, vitamins, minerals and antioxidants.

Also highly valued in AWC's surveys was the versatility of

wheat, reflected in a vast number of wheat-based food choices, including cereals, breads, pasta, pastries and other baked goods. Few ingredients are as well represented in culinary creations around the world and flexible enough to be enjoyed for breakfast, lunch, dinner, snacks and even dessert.

A SIMPLE CHOICE

Given the many assets of whole-grain Alberta wheat, and considering consumer priorities, the theme of the campaign became clear.

"'Life's simple ingredient' just seemed to fit on so many levels," said Katie Samoleski, account director with AdFarm, who worked with AWC on the campaign. "It ties into the healthy lifestyle that wheat supports and the idea of enjoying time with family in the kitchen or savouring food together. It's about the products we love to eat and feel good about eating."

In this context, "simple" has a double meaning. Not only does it represent happy and healthy families making sound food choices, but it also celebrates the simplicity of wheat itself in this age of highly processed menu options that are quickly falling out of favour with the health-conscious.

"Our approach to food has really changed over the last five or six years," said chef Lisa Ruscica, chief food ambassador for Kids & Company, which operates 95 child care centres across Canada. In addition to being a member of the program advisory committee for George Brown College's Canadian Food and Nutrition Program, Ruscica belongs to the Canadian Society of Nutrition Management.

"People are more aware of what they eat now than ever before," she said. "At the same time, they often think they are making healthy choices when there may be a lot of other stuff in the products they buy that is detrimental."

That's why everything Kids & Company serves to children is made from scratch, and why whole-grain wheat figures prominently on the menu. "We serve a morning snack, lunch and afternoon snack, and wheat is a big component of all three," she said.

How big? How about whole-wheat bagels, pancakes, banana bread, tortillas, pasta, crackers, and even tasty yet healthy treats like apple crisp and blueberry muffins?

While parents appreciate the nutritional value of whole-wheat products, "the kids love the taste and texture," said Ruscica. "These foods are not too sweet or sour, and the taste buds of children are highly attuned as they have yet to be desensitized by coffee or smoking."

THE SIMPLE TRUTH

Despite certain highly hyped fad diets, you won't see any carb cutting in Ruscica's kitchens.

"Carbs provide fuel for your brain and energy for your body, as well as critical fibre for reducing cholesterol," she said. "The reason you get carbohydrate cravings is that your brain needs it to function properly and grains are the best source of carbs you can find."

That may help explain why wheat is a staple around the globe.

"Whether it's pitas and tzatziki in the Middle East or tacos and burritos in Mexico, wheat is part of almost every culture," said Ruscica. "Ever since the days of hunting and gathering, it was about eating a balanced diet, and that's still our focus today."

Of course, things have changed over the years.

"My generation was very brand loyal, so if you liked Coke you didn't switch to Pepsi," said Ruscica.

While kids today are less averse to change, there's one area where Ruscica said they won't waver if you start them on the right foot.

"If you as a family make a conscious choice to only eat whole-grain and whole-wheat products, your kids will eat that way for the rest of their lives," she said.

So it's no wonder they're calling wheat "life's simple ingredient." When you find something that is nutritious, delicious, versatile and good for your body and brain, you simply can't go wrong.

WHAT GOES INTO MAKING SOME OF THE WORLD'S FINEST WHISKY, GIN, VODKA AND BEER RIGHT HERE IN ALBERTA?

EXCEPTIONAL BARLEY MAKES EXCEPTIONAL BEVERAGES!

THE FARMERS

Meet Alberta barley farmers. You may not know it, but these farmers are environmental leaders at the forefront of sustainability. Canada was ranked second in the world for agricultural sustainability.

You also may not know that they are high-tech pioneers and that the systems they use today are guided by satellites, and that every seed is planted with precision.

Farmers are on par with Wall Street traders in dealing with millions of dollars worth of commodities, equipment and land.

THE BARLEY

Also referred to as 'malt' or 'two row,' Alberta-grown malting barley is the premium ingredient in the finest Alberta and North American craft beers, whiskies, gins, and vodkas. Alberta farmers produce malting barley that has a long-standing reputation for superior quality and is sought after by brewers, small and large, from around the world.

Exceptional barley makes exceptional craft beverages! In Alberta we are proud to be producing close to one million tonnes each year of world-renowned, high-quality malting barley for use in the production of some of the world's finest craft beer, whisky, gin, vodka and other beverages both in domestic and international markets.

More than 300,000 tonnes of Alberta malting barley is exported to more than 20 countries annually.

THE TERROIR

Alberta barley's unique terroir is renowned by craft brewers and distillers, and craft beverage connoisseurs alike. Barley produced in Alberta is sought after for many reasons, including our long, warm days and cool nights, which help to produce barley that performs better during brewing and distillation.

Alberta's wide-open prairie in the shadow of the Rocky Mountains, our big sky and pristine water sources provide the perfect combination of conditions for growing the best barley in the world, used to create the finest craft beverages around the globe.

COMBINE TO CRAFT IS ALL ABOUT SHARING THE ALBERTA CRAFT STORY. FROM THE FIELD TO THE GLASS, WE WANT TO SHARE WITH CRAFT BEVERAGE ENTHUSIASTS NEAR AND FAR WHY THEY SHOULD LOOK FOR THE ALBERTA BARLEY LOGO AS A 'MARK OF EXCELLENCE' ON THEIR FINELY CRAFTED BEVERAGES.

BY JENNIFER BARBER

Internet issues

IMPROVED CONNECTIVITY COULD HELP REVITALIZE RURAL ALBERTA

WHEN IT COMES TO THE Internet, it seems it can never be fast enough. Rural Internet service has improved significantly since the days of dial-up, but it still has a long way to go before it matches the connectivity and speed enjoyed by people in urban centres. A recent decision by the Canadian Radio-television and Telecommunications Commission (CRTC) declaring broadband Internet a basic service, as well as funding commitments from the federal government, will help farmers and rural communities reliably take part in the digital age.

"Most farms today are connected, but the quality is just not there," said Sylvain Charlebois, a professor in food distribution and policy at Dalhousie University. "They have the data readily available to share with other growers and customers, and as much as possible they connect to online training and marketing tools, but they don't have the bandwidth for a reliable, fast connection."

Currently, 82 per cent of Canadians have access to broadband Internet service, with most gaps in rural and remote areas. The CRTC's goal is 90 per cent connectivity in five years, with 100 per cent connectivity in 15 years. In its 2016 budget, the federal government committed $500 million through the Connect to Innovate program, and as part of the CRTC's decision a new $750-million fund is being developed.

"Agriculture can seem almost mythical to some urban Canadians," said Charlebois. "It's very important that consumers get their information about their food right from the source, and it's also important for farmers to know what consumers' expectations are. By giving everyone access to the same information, rural and urban Canadians can focus on common goals."

This lack of connectivity can hurt economic growth in rural and remote areas of the province, and make it difficult for farmers to entice people to live in nearby rural communities. Lynn Jacobson, president of the Alberta Federation of Agriculture, said that reliable broadband connectivity could help to revitalize rural communities.

"Broadband connectivity will not just help farmers themselves," he said. "It will help farmers find outside workers to settle in our communities, as reliable Internet service is important to help attract people to smaller towns."

Improved broadband will also ensure farmers take advantage of the growing advancements in precision agriculture. While most auto-steering is hooked up to a GPS via satellite, the data collection points require fast Internet connections. "High-speed Internet is something people take for granted until they get to rural communities," said Jacobson. "In addition, more growers are doing their marketing online and they can't do that unless they have reliable connections."

Alberta has been a leader in bringing connectivity to its rural areas, with the Van Horne Institute hosting seven digital futures conferences over the past four years. "These conferences help push along the broadband conversation," said Michael McNally, an assistant professor at the University of Alberta who researches information and telecommunications policy. "We developed a provincial broadband toolkit to share with community leaders in order to jump-start the process of bringing broadband to those areas."

While McNally thinks expanding broadband connectivity to cover 90 per cent of the Canadian population in the next five years is achievable, he said higher targets will be harder to hit.

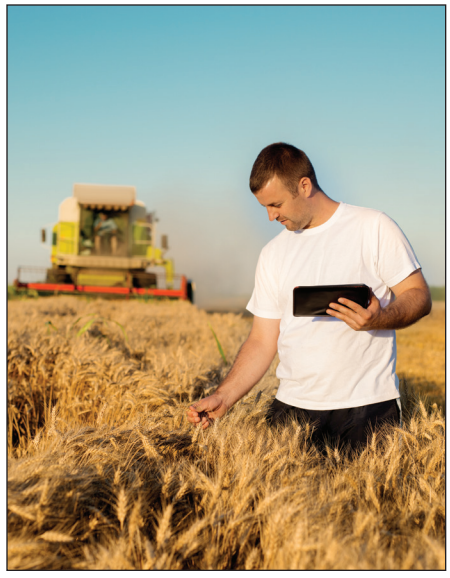


Photo: Shutterstock

Currently, 82 per cent of Canadians have access to broadband Internet, with most gaps in rural areas.

"We need to have a real emphasis on scalability," he said. "Where we've failed in the past in the province is that we developed solutions that didn't work everywhere and weren't able to expand as demand grew."

Helen Hambly, an associate professor at the University of Guelph whose research focuses on high-speed Internet in rural areas, said that many rural Canadians have tried to overcome the digital divide by going to community libraries, using the Internet at their workplace, or using handheld devices and incurring high data-usage fees. But for many farmers, none of the above are viable options.

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Continued from page 27.

Photo: Cam Barlow

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WHEAT WORLDWIDE

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With more than 100 products using Canadian wheat, such as crumpets, pan bread, sandwich thins and wraps, it's the diverse varieties grown in Canada that afford Warburtons the ability to branch out and experiment with its products. "What the Canadian wheat offers us is the ability to try new things," said Dyck.

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Aside from the milling and baking characteristics, the colour of wheat is just as important to international grain buyers and consumers.

Canada Western Amber Durum wheat has been bred to have a vibrant yellow hue, popular among North African countries, such as Morocco, Tunisia and Algeria, where couscous reigns supreme. The colour is a novel adaptation by Canadian durum breeders over the last 25 years who developed specific varieties resulting in the distinct colouration when compared to historical varieties. The three nations alone imported a combined 1.85 million metric tonnes (MMT) of wheat last year. "Colour is so important for their couscous and pasta products, they want a bright yellow colour," said Buth. "The Canadian product is highly valued."

Other top markets for our durum include Italy at an average of 900 MMT, the U.S. with 381 MMT and Venezuela at 300 MMT. Our bread wheats have an even larger and more diversified market base, such as Japan with 1.4 MMT, Indonesia at 1.28 MMT, Bangladesh at 916 MMT, Colombia at 837 MMT and Sri Lanka at 591 MMT on average each year.

With wheat an essential part of people's daily bread both in Canada and around the world, it is a homegrown success story that all began with perhaps the most unlikely hero, Charles Saunders. In their book, *The Canadian 100: The 100 Most Influential Canadians of the 20th Century*, historians H. Graham Rawlinson and J.L. Granatstein wrote of Charles: "Saunders made possible the prosperity of the Prairies, and he is entitled to stand first among the most influential Canadians of the century."

BY JENNIFER BARBER

Internet issues

IMPROVED CONNECTIVITY COULD HELP REVITALIZE RURAL ALBERTA

WHEN IT COMES TO THE Internet, it seems it can never be fast enough. Rural Internet service has improved significantly since the days of dial-up, but it still has a long way to go before it matches the connectivity and speed enjoyed by people in urban centres. A recent decision by the Canadian Radio-television and Telecommunications Commission (CRTC) declaring broadband Internet a basic service, as well as funding commitments from the federal government, will help farmers and rural communities reliably take part in the digital age.

"Most farms today are connected, but the quality is just not there," said Sylvain Charlebois, a professor in food distribution and policy at Dalhousie University. "They have the data readily available to share with other growers and customers, and as much as possible they connect to online training and marketing tools, but they don't have the bandwidth for a reliable, fast connection."

Currently, 82 per cent of Canadians have access to broadband Internet service, with most gaps in rural and remote areas. The CRTC's goal is 90 per cent connectivity in five years, with 100 per cent connectivity in 15 years. In its 2016 budget, the federal government committed $500 million through the Connect to Innovate program, and as part of the CRTC's decision a new $750-million fund is being developed.

"Agriculture can seem almost mythical to some urban Canadians," said Charlebois. "It's very important that consumers get their information about their food right from the source, and it's also important for farmers to know what consumers' expectations are. By giving everyone access to the same information, rural and urban Canadians can focus on common goals."

This lack of connectivity can hurt economic growth in rural and remote areas of the province, and make it difficult for farmers to entice people to live in nearby rural communities. Lynn Jacobson, president of the Alberta Federation of Agriculture, said that reliable broadband connectivity could help to revitalize rural communities.

"Broadband connectivity will not just help farmers themselves," he said. "It will help farmers find outside workers to settle in our communities, as reliable Internet service is important to help attract people to smaller towns."

Improved broadband will also ensure farmers take advantage of the growing advancements in precision agriculture. While most auto-steering is hooked up to a GPS via satellite, the data collection points require fast Internet connections. "High-speed Internet is something people take for granted until they get to rural communities," said Jacobson. "In addition, more growers are doing their marketing online and they can't do that unless they have reliable connections."

Alberta has been a leader in bringing connectivity to its rural areas, with the Van Horne Institute hosting seven digital futures conferences over the past four years. "These conferences help push along the broadband conversation," said Michael McNally, an assistant professor at the University of Alberta who researches information and telecommunications policy. "We developed a provincial broadband toolkit to share with community leaders in order to jump-start the process of bringing broadband to those areas."

While McNally thinks expanding broadband connectivity to cover 90 per cent of the Canadian population in the next five years is achievable, he said higher targets will be harder to hit.

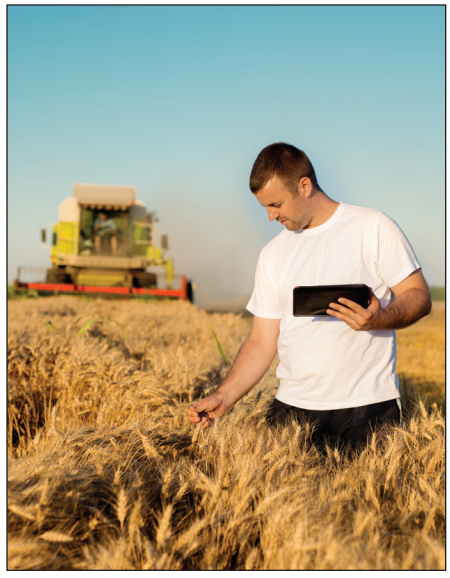

Photo: Shutterstock

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BY TYLER DIFLEY

Numbers game

BREAKING DOWN THE COSTS BEHIND WESTERN CANADA'S TOP CROPS

DURING THE SPRING, SUMMER and fall, western Canadian farmers are hard at work, planting, tending and, eventually, harvesting a number of important crops. Here on the Prairies, if you drive through enough rural areas and long stretches of highway, you'll likely see one or more of the following crops in nearby fields: wheat, barley, canola and pulses (a term that encompasses a number of dried legumes, including peas, beans, lentils and chickpeas).

To grow these crops, farmers must play a complicated numbers game. Each year, they must navigate razor-thin margins to find out how they can produce the most crops with the least amount of input costs—costs that you may not have ever considered when using a loaf of bread to make a sandwich or cracking open a cold beer after a long workday.

To simplify this equation somewhat, it is helpful to break things down on a smaller scale, so let's look at things from the perspective of a single bushel, a measurement of volume that is common in agriculture. If you're having a hard time visualizing it, a bushel of grain, canola or pulses is equal to about 10 gallons, or roughly 35 litres—enough to fill a standard laundry basket. So, how much does it cost to produce a bushel of wheat, barley, canola or lentils? And how does a bushel of each of those crops translate to a product you can find at your local supermarket or liquor store?

The input costs listed on these pages include seed and seed treatment, fertilizer, and fuel for machinery, as well as fungicide, insecticide and herbicide application. Trucking costs are accrued while moving grain from the farm to an elevator for sale. Keep in mind that the input costs included here are not comprehensive, and that farmers must also account for the cost of their land, crop insurance, labour, storage, machinery and machinery repair, among others factors, when determining their total costs on an annual basis.

Also, remember that when you buy a loaf of bread, a bottle of canola oil, a can of soup or a case of beer, your money does not go directly to farmers. While the prices of these products reflect work done at all levels of the value chain, the farm is only one step in the process and each step requires a separate transaction. As a result, farmers only receive the price of the raw commodity, which is much lower than the price of the finished product. This is why it is so important for farmers to get the best price for their crop at market.

Top export markets for Canadian crops

- **Canola (seed, oil and meal)** – China, Japan, Mexico and the United States
- **Pulses** – India, China, Turkey, Bangladesh and the United States
- **Malting Barley/Malt** – the United States, Japan and China
- **Wheat** – Japan, Indonesia, Bangladesh and Peru

Top Alberta Agri-Food Export Markets Overall

1. UNITED STATES
2. CHINA
3. JAPAN
4. MEXICO
5. SOUTH KOREA

West Central Alberta

Canola

Land type/location: dryland/Sylvan Lake, AB
Input costs: $235 per acre
Trucking costs: $10 per acre
Total cost: $245 per acre
Average yield: 50 bushels per acre
Cost per bushel: $4.90
Consumer product: 17 1.42L bottles of canola oil per bushel

South East Alberta

Lentils

Land type/location: irrigated land/Enchant, AB
Input costs: $164 per acre
Trucking costs: $28 per acre
Total cost: $192 per acre
Average yield: 45 bushels per acre
Cost per bushel: $4.27
Consumer product: 523 cans of lentil soup per bushel

South Central Alberta

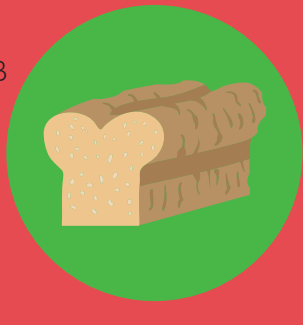
Malting barley

Land type/location: dryland/Penhold, AB
Input costs: $188 per acre
Trucking costs: $15 per acre
Total cost: $203 per acre
Average yield: 95 bushels per acre
Cost per bushel: $2.14
Consumer product: 204 standard (341mL) bottles of all-malt craft beer per bushel

South Central Alberta

Canadian Western Red Spring wheat

Land type/location: mix of irrigated land and dryland/Carmangay, AB
Input costs: $144 per acre
Trucking costs: $18 per acre
Total cost: $172 per acre
Average yield: 60 bushels per acre
Cost per bushel: $2.87
Consumer product: 202 570g loaves of sandwich bread per bushel



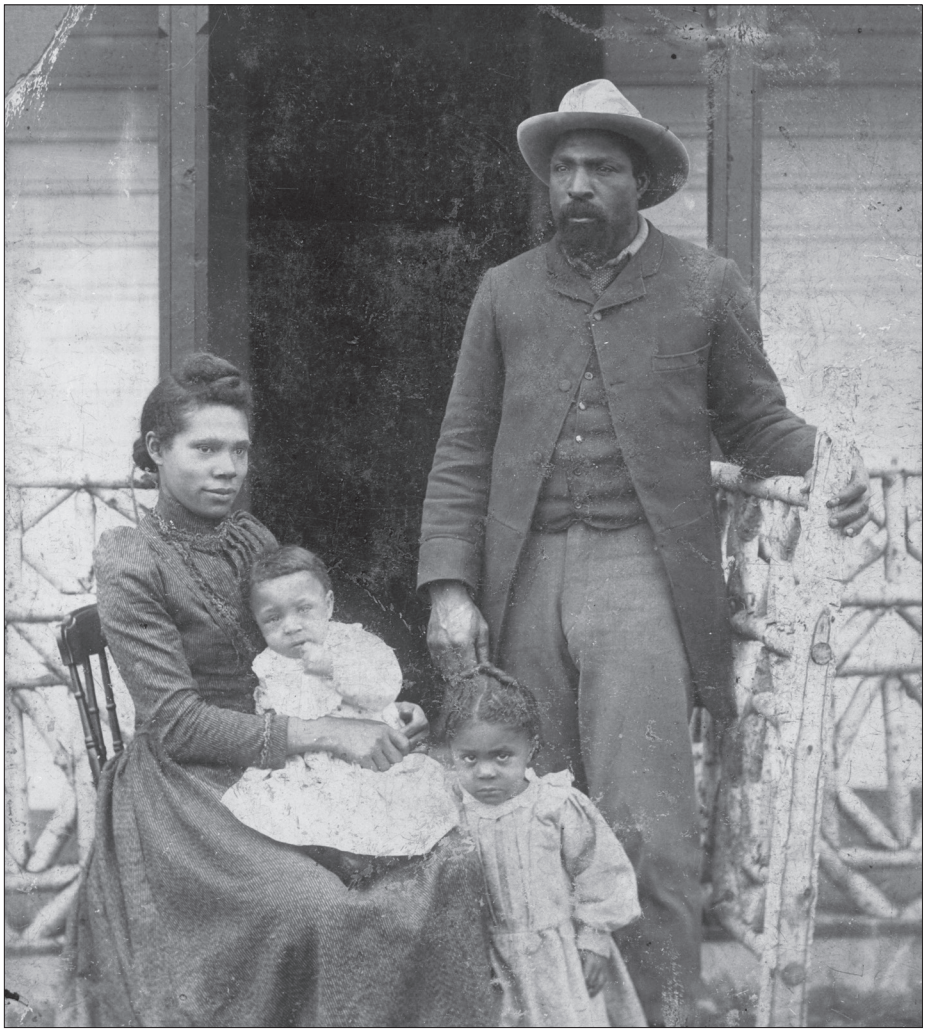
REMEMBERING AN ALBERTA RANCHING PIONEER

JOHN WARE, WHO RANCHED IN south and central Alberta for about 25 years, has been described as "Canada's most famous black cowboy." Ware, shown here with his wife Mildred and two of their five children, was born a slave in South Carolina in 1845, but grew up on a small ranch in northern Texas. Part of Ware's life story was captured in a book titled *The Golden Age of the Canadian Cowboy: An Illustrated History*, written by Hugh Dempsey, an Alberta author and the first archivist at the Glenbow Museum in Calgary.

Upon earning his freedom from slavery after the American Civil War, Ware became a cowboy and travelled to Canada leading a 3,000-head cattle drive. He arrived at the Bar U Ranch south of Longview, in 1882, where he worked as a bronco rider and ranch hand for a couple years before moving to the Quorn Ranch, where he was in charge of the horse herd. His ability to handle horses became legendary. After watching Ware at a roundup in 1885, Fort Macleod's newspaper reported, "The horse is not running on the prairie which John cannot ride."

While many black Canadians were no strangers to discrimination during Ware's lifetime, Dempsey wrote that Ware's "skill and personality tempered the hostility." Dempsey's book also noted that Ware's "remarkable horsemanship, his prodigious strength, his good-natured humour and general kindness, and his loyalty to friends and neighbours" all served him well.

Other published reports from the period described Ware's almost mythical ranching prowess: "He was said to have walked over the backs of penned steers without fear and that he could stop a steer head-on and wrestle it to the ground. It was also said that he could break the wildest broncos, trip a horse by hand and hold it on its back to be shod, and easily lift an 18-month-old steer and throw it on his back for branding."



Glenbow Archives NA-263-1

Ware and his family ran their own ranch along Sheep Creek south of Calgary until homesteaders settled on the grazing land around the area, prompting a move to the Red Deer River east of Brooks in 1902. In 1905, at the age of 60, Ware was killed in a riding accident when his horse stumbled and fell on top of him.

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