

# GrainsWest

Connecting Farmers, Food and Ideas

THE FOOD ISSUE • 2016

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THINK AGAIN





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## PARTNERS IN AGRICULTURE



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.



### Agrium

Agrium supplies seed, crop protection products and critical crop nutrients—nitrogen, phosphate and potash—to growers worldwide. As a global leader in agricultural products and services, Agrium helps growers increase crop yields sustainably—so together they can provide more high-quality food to a rapidly growing population.



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### Alberta Canola Producers Commission

The Alberta Canola Producers Commission (ACPC), founded in 1989, was the province's first refundable check-off producer organization. The mandate of ACPC, reflected in its mission statement, is to increase the long-term profitability of Alberta canola growers through research, promotional activities, consumer and producer education programs, and policy development.



### Alberta Pulse Growers Commission

Based in Leduc, Alberta Pulse Growers Commission (APG) is a non-profit organization that supports the more than 5,000 Alberta farmers who grow pulses. APG promotes the benefits of including pulses in a sustainable crop rotation and in a healthy diet through research and marketing initiatives, all in an effort to increase the sustainability and profitability of pulse production in Alberta.



### ATB Financial

ATB Financial has been putting people first for more than 75 years. In that time, it has grown from one small Treasury Branch to become the largest Alberta-based financial institution, with assets of \$43.1 billion. Today, 5,300 ATB team members help more than 710,000 customers in 244 Alberta communities.

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*Omnem movere lapidem.*

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# Bridge the gap

## A LITTLE GOES A LONG WAY IN RURAL ALBERTA

**DURING THESE WARM, SUMMER** months, if you hit the highway in any direction across Alberta and glance out the window, you're bound to spot golden fields of wheat, canola so yellow you'd think it was painted onto the landscape and, on occasion, the calming pale blue of thousands of flax heads swaying in the wind. You might also see some world-renowned Alberta beef cattle grazing on pasture land carpeted with native grasses. Whatever you see, it's all part of one of Alberta's key industries: agriculture.

Alberta is about the same size as France and is responsible for producing about half of Canada's barley and 30 per cent of its wheat. More than 50,000 farmers and ranchers call this province home. The men and women who work in primary agriculture and the broader agri-food system represent one out of every eight Canadians. It seems far-fetched that 12.5 per cent of Canucks work in "ag," but that's the reality. To many people, farming and ranching seem like professions from a bygone era. And in a province where more people live in cities than not, city limits seem to represent not only an imaginary division, but a physical barrier of understanding between rural and urban Albertans. On the other hand, we often don't have to look very far to find our own agricultural connections. Some of us have grandparents who grew up on a farm or friends who spent their free time when they were young helping out with seeding and harvest, while others were farm kids themselves. Today, however, as the average age of farmers gets higher and fewer young people enter the industry, the number of people with these important connections to agriculture is shrinking rapidly.

It can be hard to understand what occurs on a daily basis out in "the country" because rural Alberta is so foreign to so many urbanites. Just what are those giant green, red or yellow machines plodding through the field and what is the farmer inside doing exactly? And why? It could be an air drill, a high-clearance sprayer or a combine. The vital takeaway is that the understanding of what happens at the average farm or ranch is difficult to grasp until you set foot on one. How could anyone expect to know what life is truly like for modern farmers and ranchers until they've helped with, or at least observed, many of the daily and weekly tasks these men and women carry out? This disconnect goes both ways—it would be difficult for a lifetime rural Albertan to grasp the true nature of a Calgary or Edmonton resident's daily life without experiencing it first-hand.

A great way to catch a glimpse of farmers and ranchers in the wild is by attending the multitude of agriculture events in Alberta, and summer is the perfect season to engage with rural Alberta. To that end, mark Aug. 20 and 21, 2016, on your calendar for Alberta Open Farm Days. This provincial initiative is a time when farmers and ranchers open their doors to the public to educate urbanites about their lives. Come sit on a tractor, scratch a pig behind the ears, learn about the importance of soil fertility, and gain an understanding of how farmers grow crops from seedlings to a bin full of harvested grains or oilseeds. In 2015, more than 10,000 Albertans went out into the country to 72 different farms across the province as part of open farm days. If you're looking for other agricultural events, there is also the Calgary

Stampede and K-Days in Edmonton each year, as well as many outreach events for children. Farmers and ranchers often work the booths at these events and provide first-hand information about their business and life.

With open minds and a bit of humility, our urban-rural divide can shrink, and a greater understanding will result. ■





# THE OTHER BARLEY BEVY

## A NEW TWIST ON COFFEE COULD LIVEN UP YOUR CUP



IT IS DIFFICULT TO IMAGINE A TIME WHEN COFFEE wasn't everywhere, but hundreds of years ago Italian peasants—unable to afford what was then a premium product—refined the art of recreating the satisfying coffee flavour with novel ingredients. Barley coffee, or *caffè d'orzo* (*orzo* means barley in Italian), emerged from this tradition and the beverage enjoyed a surge in popularity when wartime made coffee scarce in parts of Europe. Now, in the age of coffee ubiquity, a few small companies are bringing *caffè d'orzo* to the world.

Unlike Ovaltine, Cab-Lib, Postum or other grain-based beverages, true *caffè d'orzo* is not water soluble. Instead, like coffee beans, the barley is roasted, ground and then brewed using a drip coffee maker, French press or, in the Italian tradition, a moka pot. The latter produces coffee by passing boiling water pressured by steam through ground beans or barley. It was one such moka pot, set on an Italian table after an evening meal, that first introduced Jeremy Levis to *caffè d'orzo*.

"I thought, 'Espresso after dinner—are you mad?'" said Levis, founder and owner of Innocente Orzo, a U.K.-based company that distributes barley coffee. Levis seldom drank coffee, as his caffeine tolerance was low, but his host assured him that the steaming beverage was completely caffeine free, so he gave it a try. He liked what he tasted.

"It doesn't taste exactly like coffee; it's a much lighter taste," said Levis, who added that many people notice hints of whisky, Guinness beer or chocolate.

When he returned to England from his trip to Italy, he could not find barley coffee for sale—so he decided to distribute it himself. He sources it from a company in Tuscany that has been roasting barley for coffee since 1831. While Levis initially tried marketing Innocente Orzo through shops and markets, most of his sales are now from Amazon, where a 500-gram package can be shipped to Canadian customers for about \$25.

For people seeking a naturally caffeine-free beverage, *caffè d'orzo* might be the perfect cup.

*"It doesn't taste exactly like coffee; it's a much lighter taste."*

—Jeremy Levis



Photos: Jeremy Levis

Ground roasted barley can be treated the same way as coffee grounds in a drip coffee maker, French press or moka pot to produce *caffè d'orzo*.





# THE TABLE IS SET

## THE COMMUNITY-BUILDING POWER OF GOOD FOOD

**IF YOU ARE A CALGARIAN, OR HAVE** recently lived in the city, people may wonder if you were present when it flooded in 2013. The conversations nowadays almost always lead into the state of the economy and the price of oil. Ironically, while Calgary's troubling times seem to have put the city on the radar, it's also these challenges that unite Calgarians and strengthen their community connections.

Michael Noble, chef and proprietor/owner of NOtable restaurant and The Nash, and, most recently, co-chair of The Alex Community Food Centre (CFC) campaign cabinet, is a big believer in giving back to his community, both personally and professionally.

"Going back to the floods in 2013, I opened my doors at NOtable restaurant and invited anyone displaced by the flood to come in and have a meal on me," he said. "That was when I fully realized the importance of community to me."

Noble's passion for community serves him well in his role with The Alex CFC, which was created in partnership between The Alex Community Health Centre (The Alex) and Community Food Centres Canada, and is set to open its doors this summer. He brings a talent for fundraising to the table, along with ground-level insight into food insecurity among Calgarians, especially now, in light of the current economic downturn.

"I know for a fact that food insecurity in Calgary has always been an issue," he said. "This is a fact across the country. It's very tough to get a definite answer as to how many people skip meals because they can't afford them. I believe that number is actually much higher than we realize."

Noble has high expectations for the CFC and its potential to overcome food insecurity—not simply by providing food on an emergency basis, but through teaching



Photo: Terry Manzo

The Alex Community Food Centre is designed to address food insecurity in Calgary, an issue that has worsened as low oil prices weaken the local economy.

people how to grow food, prepare it nutritiously and take better care of themselves.

Located on International Avenue in Forest Lawn, the vibrant community space, which was formerly a restaurant, has been transformed through pro bono design work by FRANK Architecture.

"This centre will be a bright, welcoming space for the community to come together to grow, cook, share and advocate for good food," said Renee MacKillop, manager of the Alex CFC. "Equipped with a garden, community kitchen, dining space and offices, the CFC will deliver programs that increase access to healthy food, provide food skills and education, and empower

people to have voice and agency on issues affecting the community."

The centre will serve community-minded Calgarians, including children, families and individuals, who struggle to access healthy food.

MacKillop stressed that food sits at the crux of some of the biggest issues of our time. "We're dealing with hunger, poor health and social isolation," she said. "The rate of Type 2 diabetes is four times higher for the lowest income group and is estimated to cost our country more than \$16.9 billion by 2020."

She added that an overwhelming number of Calgarians are working hard to

make ends meet, but they are still faced with impossible choices between food and rent. While the costs of poor diet affect people in all economic circumstances, people living on low incomes are disproportionately affected.

James McAra, CEO of the Calgary Food Bank, emphasized the difference between the food bank's emergency provisioning of food and the CFC's contribution to community development and enhancement.

"I view the CFC as a community hub, a place for people to come together and say, 'What are the skills that we need?'" he said. "There are so many great things you can do with food that are not emergency-based. If someone can go into the CFC, and they're active in the programs, and they learn to thrive, then isn't that great? I think that speaks well to The Alex and the work they've done across Calgary. There is a natural evolution when you combine the skills and community-mindedness that are being pulled together in this idea."

As an organization, The Alex works to provide barrier-free, "whole health" care, reaching far beyond primary medical care to look at all of the determinants—whether they be social, environmental, physical and/or mental circumstances—that are affecting a person's well-being.

"We envision a robust, diverse food economy that sustains farmers and the land, and a social consensus that food is a key determinant of health," said MacKillop.

This philosophy made a partnership between The Alex and Community Food Centres Canada, whose first CFC location was Toronto's The Stop, a perfect match. Nick Saul, president and CEO of Community Food Centres Canada, has high standards when it comes to finding the right partner to open a new centre.

"This centre needs to be owned and loved within the community, and we achieve this by partnering with an organization that has deep roots in the community, one that has great leadership and is philosophically aligned with our vision," he said. "The Alex Community Health Centre stood out on all fronts. They've been a fantastic organization for many years, doing terrific, grounded, responsive



Photo: Janine Kropka

Unlike a food bank, which focuses on emergency food provisions for people in need, the new community food centre will offer programs to help people learn food skills and prepare their own healthy meals.

work, and that's really critical."

Saul added that The Alex's development of the first centre west of Winnipeg is part of his vision to build organizations that reflect a brighter future.

"When we create centres that are about health, inclusion, dignity, joy and the building of skills, sustainability and pleasure, we show our communities what's possible," he said. "We build positive places where people can find their sense of hope and self-worth—two key ingredients to individual and community change—and we happen to do this through food. There's a whole myriad of ways community members can get involved—gardeners, cooks, volunteers—just being active citizens improving their lives."

Moved by Saul's book, *The Stop: How the Fight for Good Food Transformed a Community and Inspired a Movement*, local rancher, philanthropist and current campaign cabinet co-chair Michael Kaumeyer knew he had to get involved

in bringing a CFC to Calgary. He started the Harvest Moon fundraiser to celebrate food, community and music with acts like 54-40 and Sam Roberts to help the efforts. And he doesn't plan to stop there. Quality produce from Kaumeyer's large vegetable garden, as well as grass-fed longhorn cattle raised on his 7K Panorama Ranch near Okotoks, are destined for the CFC once it is open.

"Our hope is to have an ongoing relationship with the CFC in terms of supplying them, on top of our fundraising," he said.

Like Kaumeyer, Noble also plans to stay involved beyond the initial fundraising for the CFC's startup and first few years of operation.

"Without the funding, the CFC doesn't open," he said. "The other facets I want to be involved in won't happen unless we raise the funding, and it's my intent to use my influence here in the city to get this off the ground."





## BIG OPPORTUNITIES FOR LITTLE BEANS

### TRENDSETTING CHEFS INSPIRE CONSUMERS TO EMBRACE PULSES DURING INTERNATIONAL YEAR OF PULSES

**CHEFS ARE TODAY'S ROCK STARS** and providing them with innovative educational opportunities allows them to be ambassadors for many tantalizing foods, including pulses—the official term for beans, peas, lentils and chickpeas.

The Alberta Pulse Growers Commission (APG) ramped up its efforts to encourage Albertans to grow, buy and eat more pulses in 2016 for International Year of Pulses (IYP), a global initiative by the United Nations. This was especially evident in the area of chef outreach, said Debra McLennan, food and nutrition co-ordinator for APG and a registered dietitian.

“International Year of Pulses provides an ideal opportunity for the Alberta Pulse Growers to further engage with chefs, who can then share the many benefits

of eating pulses with a wider audience,” McLennan explained. “My hope is that Alberta chefs will have a renewed interest in utilizing pulses on their menus and see that there are a variety of ways to add pulses to meet consumer needs.”

A major component of APG's chef outreach during IYP is a partnership with the Alberta Culinary Tourism Alliance (ACTA) to hold several dining events featuring beans, peas, lentils and chickpeas. APG provided sponsorship to ACTA to challenge chefs to use pulses in innovative ways at various ACTA culinary events taking place throughout 2016.

“We can help grow the profile of pulses through the chefs because they're influencers,” said ACTA executive director Tannis Baker, noting that ACTA chal-



WinSport's energy cookies.

lenged a chef at the April Juno Awards ceremony in Calgary to use pulses for the reception. “People are following chefs, watching what they’re doing and wanting their recipes, so we are working to create recipes, educate and really grow our own local industry in partnership with chefs. It’s a real win-win.”

A special event that APG and ACTA collaborated on was the Alberta Chef Pulse Development Day in June 2016. Ten accomplished Alberta chefs from Calgary and Edmonton participated in a tour that included a crop walk to see pulses growing in the field and a tour of Alberta Agriculture and Forestry’s Food Processing Development Centre in Leduc. The chefs accepted the challenge to develop a pulse-based product that could be enhanced at the centre for retail sale in the future.

Liana Robberecht, executive chef at WinSport in Calgary, created an “energy cookie” for pulse development day in partnership with pastry chef Melanie Hennessey. The cookie is made of chickpea flour, lentils, dried fruits, spices and cricket flour to boost the protein content even further.

“As WinSport caters to athletes, creating the energy cookie has been an exciting project in which we are able to offer a healthy yet delicious fuel for the many professional athletes who train here,” said Robberecht. “The pulse workshop is like a think tank—an exchange of ideas with some of the most talented chefs around. Having the opportunity to share our recipes and ideas with each other will push the boundaries of our own comfort zone into an elevated pulse product. We are thrilled to be part of this event.”

The partnership between APG and ACTA also includes a number of culinary events featuring pulses that are open to the public during International Year of Pulses. Visit [albertaculinary.com](http://albertaculinary.com) for details.

For pulse-producing nations like Canada, 2016 is a year full of events, activities and initiatives aimed at increasing consumer awareness and consumption of pulses. One of these initiatives involves inviting people around the globe to take the Pulse Pledge ([pulsepledge.com](http://pulsepledge.com)) to include more pulses in their diets. Alberta farmers grew pulses on 1.8 million acres last year.

“IYP draws attention to important global issues like nutrition, food security and environmental sustainability,” said Sylvan Lake-area farmer Allison Ammeter, chair of APG and the IYP Canada Committee. “This attention will ensure the Canadian industry will continue to grow and keep Canadian pulses competitive at the farm level. It also emphasizes the important role that beans, peas, lentils and chickpeas play in contributing to healthy people and a healthy planet.”

Pulses are high in protein, iron and fibre, have a low glycemic index and  $\frac{3}{4}$  cup (175 mL) counts as one *Canada’s Food Guide* serving as a meat alternative.

Many cultures around the world have known the nutritional value of pulses for thousands of years and incorporated them into their diets. IYP is a good opportunity to remind people about this delicious and inexpensive source of protein.

“I’m really excited about International Year of the Pulses, which I feel is an exciting opportunity to give pulses the long-

## QUICK FACTS

- Pulses are the edible seeds of legumes
- They include beans, peas, lentils and chickpeas
- Field peas are the most commonly grown pulse in Alberta
- About 5,000 Alberta farmers grow pulses
- 1.8 million acres of pulses were grown in Alberta in 2015
- The UN declared 2016 as International Year of Pulses (IYP)
- Four themes of IYP are: Creating Awareness; Food Security, Nutrition & Innovation; Productivity & Environmental Sustainability; Market Access & Stability

deserved spotlight this highly nutritious food deserves,” said Robberecht. “Pulses have long been overshadowed by other proteins and vegetables, but now it’s becoming a first choice for grocery shoppers and chefs alike. I have been a longtime admirer of all pulses, especially lentils and chickpeas, which are often found in many of the dishes I create at WinSport.”

APG’s relationship with chefs blossomed in 2016, but the seed was planted many years ago. The commission regularly engages with student chefs through the Toque Demagny student cooking competition and dinner, which takes place each November at NAIT. Toque Demagny is one of Edmonton’s premier culinary events, featuring the talents of NAIT’s culinary arts students and a number of Alberta food products, including pulses. APG has sponsored this student cooking competition for several years. The student teams use pulses in their creations, and scholarships are awarded in a variety of categories.

Chef outreach is also accomplished through APG’s membership in Taste Alberta, which works to tell the Alberta food story creatively so that Albertans understand that eating local supports local economies. Pulses are highlighted at events such as Christmas in November at Jasper Park Lodge and the Prairie on a Plate dining series.

For more information about Alberta pulses, pulse events and delicious pulse recipes, visit [pulse.ab.ca](http://pulse.ab.ca) or follow APG on Twitter @AlbertaPulse. To learn more about International Year of Pulses, visit [iypcanada.ca](http://iypcanada.ca). ●



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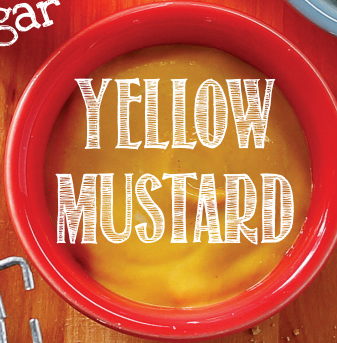
Red Wine Vinegar



Try it with lemons!

**DID YOU KNOW?**

Lemon juice can be used in salad dressing instead of vinegar!



White Wine Vinegar

**EXPERT TIP**

Use herbs and spices to add even more flavour to your salad dressing. Basil, oregano, and rosemary are great options!

@CANOLAEATWELL





# Mix n' Match to MAKE THE PERFECT DRESSING!



## Canola Oil

Canola oil is perfect for making salad dressing. Its neutral flavour means it can be mixed with all ingredients. It's low in saturated fat and contains omega-3 making it a healthy choice!

## Acid

Get creative. Any type of vinegar or citrus can be used for salad dressings. Try balsamic, red wine, white wine or apple cider. You can also use citrus juice such as lemon, lime or orange.

## Emulsifier

Vinegar and oil don't mix, that's why you need something to keep them together. Mustard and honey work perfectly.

## HOW MUCH DO I NEED?

Salad Dressings need a

# 2:1

CANOLA OIL TO ACID RATIO

This means about

2 Tbsp canola oil

1 Tbsp acid and

1 Tbsp of an emulsifier



# Don't build a higher fence, build a longer table.



*Our Agri-food industry employs over 86,000 Albertans.*

Engaging in deep conversation about your food going from gate to plate – 7K Panorama Ranch, Millarville, Alberta

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*Long* ATB Financial  
**LOVE**  
*This* **LAND**

The table; its where we share everything. The bounty of our land. The stories of our lives.

It's where we celebrate, educate and share our emotions. A place to savour great food, deep and meaningful conversations, while creating life-long connections. Its' also where discussions spark and big ideas emerge – because everyone wants to bring their best to the table. It's about the journey – whether that be from the field to the fork, or just the next fork in the road.

Recognizing our past while focusing on the present and future generations, and functioning as a dynamic catalyst for change, innovation and education about Albertans daily food sources. It's about being genuine with our relationships.

Cherish the ones you have and build new ones. Long Love This Land.

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**All plants and animals have hormones naturally in their systems.**  
Your body produces hormones no matter what you eat.<sup>2</sup>



The result is fewer resources are used to produce beef, with smaller impacts on the environment and your grocery bill.



[www.albertabeef.org](http://www.albertabeef.org)

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Phone 403-275-4400

Email [abpfeedback@albertabeef.org](mailto:abpfeedback@albertabeef.org)

**For references, more information about the beef industry, and beef recipes, please visit the consumer section of [www.albertabeef.org](http://www.albertabeef.org)**

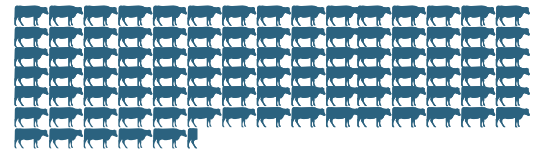
Many common foods have higher amounts of hormones than beef produced with the use of hormone implants<sup>3|4|5</sup>

Food/supplement	Estrogen*	Servings of beef <sup>†</sup> (75 g)
<b>75 g beef</b> without hormone implants	1.1 ng	0.65
<b>75 g beef</b> with hormone implants	1.9 ng	1
<b>75 g chicken</b>	2.1 ng	1.1
<b>75 g pork</b>	2.5 ng	1.3
<b>355 ml beer</b>	15 ng	7.9
<b>355 ml milk</b>	51 ng	26.8
<b>75 g cabbage</b>	2025 ng	1,065.8
<b>1 tbsp soybean oil</b>	28,370 ng	14,931.6
<b>Birth control pill</b>	20,000-50,000 ng* depending on brand	18,421.1 – 26,315.8

\* AMOUNT OF ESTROGEN (1 ng = 1 billionth of a gram)

† EQUIVALENT # OF SERVINGS OF BEEF produced with the use of hormone implants

Compare those amounts to the amount of estrogen produced by your body every day<sup>5</sup>



**ADULT FEMALE**  
ESTROGEN = 480,000 ng  
Would have to eat **95.3 cows' worth** of beef produced using hormone implants **PER DAY** (~222 kg each) to match her own daily production of estrogen



**ADULT MALE**  
ESTROGEN = 136,000 ng  
Would have to eat **27 cows' worth** of beef produced using hormone implants **PER DAY** (~222 kg each) to match his own daily production of estrogen



**PRE-PUBERTAL GIRL**  
ESTROGEN = 54,000 ng  
Would have to eat **10.7 cows' worth** of beef produced using hormone implants **PER DAY** (~222 kg each) to match her own daily production of estrogen



**PRE-PUBERTAL BOY**  
ESTROGEN = 41,500 ng  
Would have to eat **8.2 cows' worth** of beef produced using hormone implants **PER DAY** (~222 kg each) to match his own daily production of estrogen

ESTROGEN | Amount of estrogen (1 ng = 1 billionth of a gram)  
# OF COW EQUIVALENTS | Produced with the use of hormone implants

## The use of hormone implants is safe and regulated

Canada's **Food and Drugs Act** makes it law that hormone implants used must:

- 1 Do what they are supposed to (be effective)
- 2 Result in food products that are safe for people to eat on a **regular basis**<sup>11</sup>
- 3 Be safe for the animals

Health Canada, the World Health Organization and the United Nations all conclude the use of hormones is a **safe practice** that can be continued **without harm to human health**.<sup>9|10</sup>



Random sampling of final beef product is done by the Canadian Food Inspection Agency to ensure hormone levels are within the normal range.<sup>12</sup>

No peer-reviewed scientific studies exist to indicate eating beef produced with hormone implants has any negative impact on human health.<sup>13</sup>

**Regardless of production system, beef is an important part of a healthy diet.**



# Worried about antibiotic use and resistance in cattle?

## It's important to us too.



### WHERE DOES ANTIBIOTIC RESISTANCE COME FROM?

When antibiotics are used, bacteria that are responsive to the drug are killed, and bacteria that aren't responsive (are resistant) survive and reproduce.

### ANTIBIOTIC RESISTANCE HAPPENS NATURALLY

The Lechuguilla Cave in New Mexico has bacteria that have lived in complete isolation for more than four million years. When treated with a variety of antibiotics, many of these bacteria were naturally resistant.<sup>1</sup>

## ALL BEEF IS ANTIBIOTIC FREE

A specified withdrawal time must pass after the last treatment to ensure that there are no antibiotic residues left in the beef. The Canadian Food Inspection Agency regularly tests for residues. In 2013, over 99.9% of both domestic and imported beef products were free from residues. If residues are found, the beef is not allowed to enter the food chain.<sup>11</sup>

## WHY ARE ANTIBIOTICS USED IN CATTLE?



**Ensuring animal welfare: providing care to sick cattle, including using antibiotics when appropriate, is the humane thing to do.**



### GROWTH PROMOTION

A category of antibiotics called ionophores help boost growth in cattle. Ionophores are not used in human medicine, and work differently than medically important antibiotics. **There is no evidence that use of ionophores causes increased resistance to antibiotics used in human medicine.**<sup>3,4</sup>

## HOW DIFFICULT IS IT TO GET A RESISTANT INFECTION?

For a person to get an antibiotic resistant infection from eating beef, a number of **UNLIKELY** things must happen:

**1** animal gets an antibiotic

**3** bacteria survives multiple food safety controls during processing

**5** bacteria causes illness in person

**7** Doctor prescribes antibiotic

**2** antibiotic resistant bacteria develops in animal

**4** bacteria survives cooking

**6** illness is severe enough to warrant medical attention

**8** illness fails to respond to treatment because bacteria is resistant to prescribed antibiotic<sup>12</sup>



### PREVENTION

Preventing infection can reduce the need to use more powerful antibiotics if the disease becomes more serious. Preventive antibiotics are also used in human medicine, like with people who are exposed to bacterial meningitis.



### TREATMENT AND CONTROL OF DISEASE

Cattle sometimes get sick, just like people, pets, and other livestock. Antibiotics can help protect animal health by limiting the spread of disease.

If beef is cooked properly, the antibiotic resistant bacteria die – breaking the chain of unlikely events. The probability of human illness in the U.S. due to drug resistant food poisoning (campylobacteriosis) is about one in 236 million.<sup>12</sup> Being killed by an asteroid is 1000 times more likely.<sup>18</sup>

Regardless of production system, beef is an important part of a healthy diet.



Producers take their ethical responsibility to protect the health and welfare of their families and animals very seriously, which includes using antibiotics when appropriate.

Producers also have a responsibility to use antibiotics with good judgment. Surveillance<sup>7</sup> indicating low resistance in cattle to antibiotics of importance in human medicine shows they are doing just that. Canada's Verified Beef Production<sup>TM</sup> program outlines responsible practices for producers, and provides training on how to use antibiotics properly.<sup>13</sup>

Previous research showed no predictable or uniform increase in resistance between cattle raised with the use of antibiotics and those raised without.<sup>14</sup> Antibiotic use in agriculture is just one small part of the whole antibiotic resistance picture that also includes humans and pets.<sup>15,16,17</sup>

## ANTIBIOTICS IN FEED

Just because an antibiotic is used in feed does not mean it is being used to promote growth. It is often better for sick animals to be treated through feed rather than aggravating their illness with stress from multiple injections.



# HIGH STANDARDS

## SURVEY TO HELP BENCHMARK ALBERTA'S ON-FARM PRACTICES



AWC director Kevin Bender (right) and Control Union auditor Doug Higgins go through one of the stages of a sustainability audit as part of the Alberta Crop Sustainability Certification Pilot Project.

FARMERS IN ALBERTA USE A WIDE range of best management practices (BMPs) to complete each growing season successfully. Starting with preparations prior to seeding and working through harvest time, farmers have many ways to get from A to B as efficiently as possible. In order to determine the readiness of farmers to embrace sustainable sourcing schemes and find out where awareness needs to be created, provincial farm groups—including Alberta Barley and the Alberta Wheat Commission—partnered with market research firm Ipsos-Reid and the Government of Alberta to conduct a farmer sustainability survey. The Alberta Canola Producers Commission and the Alberta Pulse Growers Commission are also involved as program sponsors. About 400 Alberta farmers participated, discussing BMPs on the farm. The results will give industry members a fresh perspective on the environmentally sustainable farming practices currently being used in the field.

In a global marketplace, food security, traceability, sustainable sourcing and other “metrics” have become increasingly important to consumers. The readiness

to respond to such changes begins at the farm level.

“Sustainable agriculture is becoming increasingly important in building market-access opportunities and ensuring the long-term viability of our industry,” said Jolene Noble, co-ordinator of the Farm Sustainability Extension Working Group, created to assess and address areas of need for on-farm sustainability extension and education. Noble, who participated in McDonald’s Verified Sustainable Beef Pilot Project, will work alongside Ipsos-Reid to determine where farmers see themselves in relation to international sustainability standards and BMPs. One of the end goals is to help align farmers with global sustainability standards and BMPs through developing programs that will address gaps in their day-to-day operations.

Primary areas of assessment include soil management (such as fertilizer use and organic matter preservation), agrochemical handling and storage, as well as water management.

This survey follows on the heels of a smaller sampling done in 2015, in which on-farm audits were conducted to give 33

Alberta farmers an idea of how their farms rated against internationally recognized sustainability standards.

With large retailers such as Wal-Mart, Unilever and General Mills focused on sustainability, traceability and safe production, surveys like this will continue to give farmers the ability to respond to the sustainable sourcing needs of international markets and buyers.

When results are finalized, the survey information will help serve as a sustainability blueprint as market demands continue to evolve. This could provide Canadian farmers with a leg up on global competition by having sustainability metrics already in place on farms. Global food security and environmental review programs such as Hazard Analysis Critical Control Point or the Environmental Farm Plan are but two ways farmers can ensure they balance farm profitability and sustainability.

Charlie Arnot is CEO of The Center for Food Integrity in Kansas City, MI, and said crop farmers have a real opportunity to define what sustainability really means in the context of agriculture.

“We have to redefine what we think is success,” said Arnot. “Frequently, we want to solve problems in one year—change nutrient management, seeds or chemicals. We have to understand that earning and maintaining that social licence is going to require time and financial resources.”

People outside of agriculture are much more interested in food than ever before, and it’s this segment of the market that needs to be engaged.

Many major companies are developing proof of sustainable sourcing for the public, but in the end, it all comes back to the people who grow the crop: farmers.

“Since farmers are at the beginning of the supply chain, seeing the opportunity and the need to be engaged, those are two critical components to protect and maintain that social licence,” said Arnot.

A Canadian Centre for Food Integrity recently opened in Guelph, ON. Its aim is to lead public discussion about generating an understanding of the food system and how to build consumer trust and confidence. ■

Photo: Rob McMorris



# ALBERTA PORK

**Meet Mark Wipf,**  
manager of the hog barn at  
Lakeside Colony.

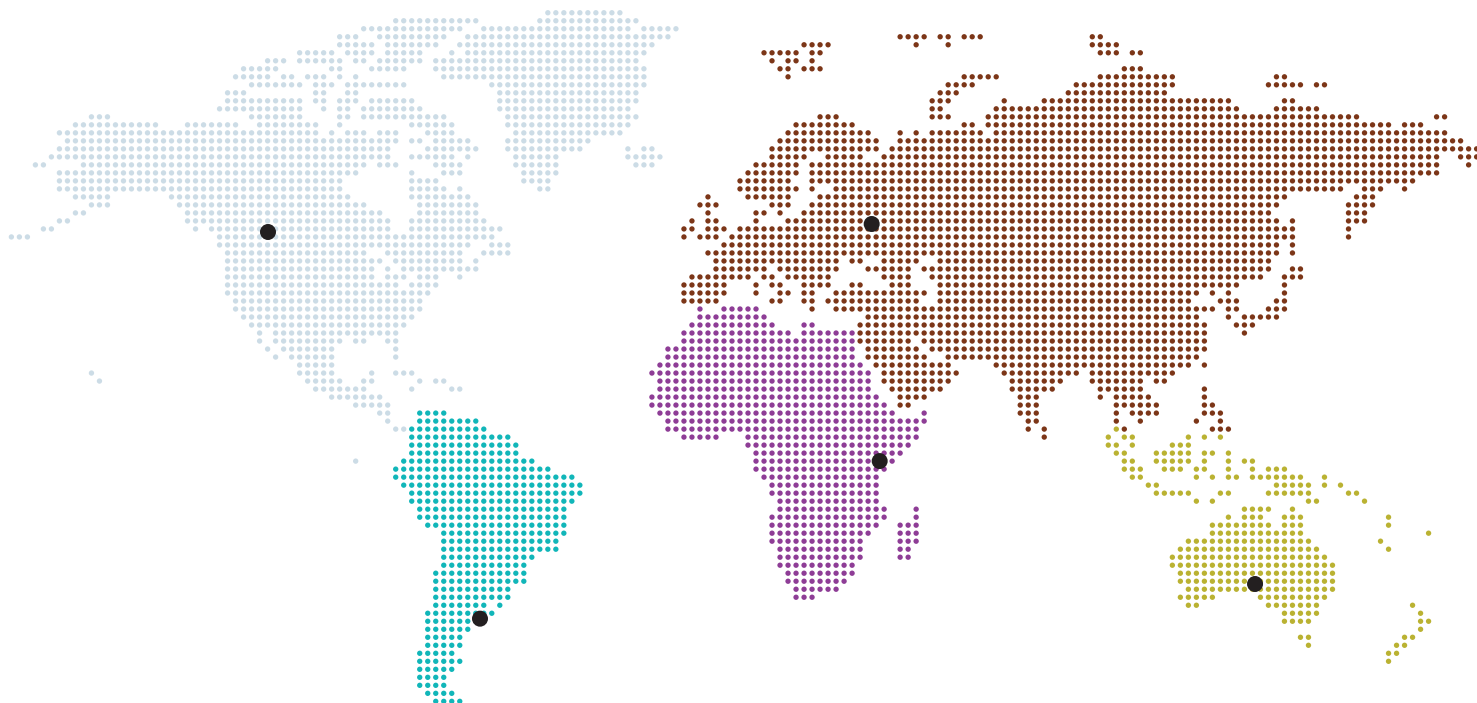


*For us it doesn't matter whether we're caring for our animals or providing for consumers. Either way, it's all about maintaining the highest possible standards of animal welfare. That's important because it means we can feel good about the pork we produce. It also means the public can feel secure knowing that they're serving their families a safe, quality product. If it wasn't, we wouldn't serve it to our families!*

 **PASSION FOR PORK™**  
taste local quality



# WORLDS A P A R T



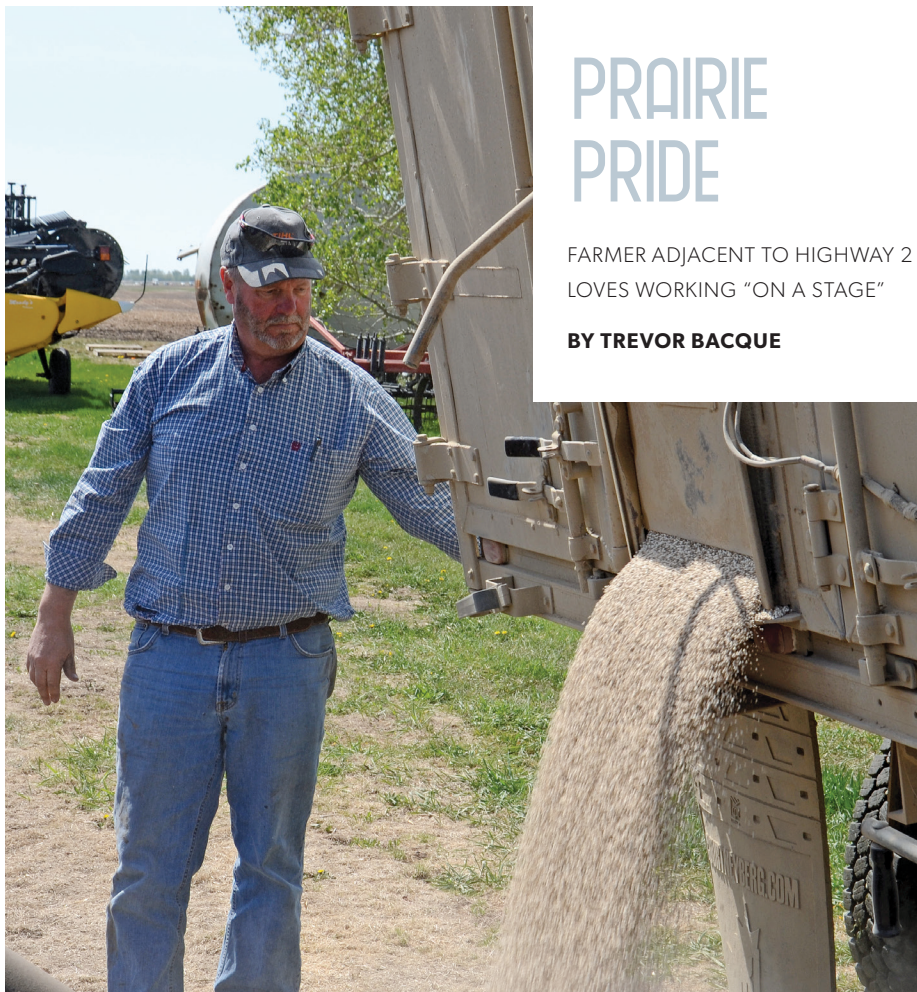
Map courtesy of freemaps.com

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Agriculture is vital to every human on Earth. It is the industry that produces the food we eat every day, providing nourishment to the planet's population of more than seven billion people—a figure that increases by 225,000 people each day. It should come as no surprise, then, that in every corner of the globe there are farmers. Each of these farmers frequently has to overcome challenges that are unique to where he or she lives, but they all have the same ultimate goal—to produce food for their families and many other families like theirs scattered around the world. To get a better understanding of how farming differs across geographical and cultural lines, *GrainsWest* connected with farmers from Argentina, Australia, Canada, Kenya and Ukraine. These are their stories.

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## PRAIRIE PRIDE

FARMER ADJACENT TO HIGHWAY 2  
LOVES WORKING “ON A STAGE”

BY TREVOR BACQUE

Photo: Trevor Bacque

Some of us are lucky enough to know what we want to be when we grow up before we're even in grade school. Jeff Nielsen is one of those people. The Olds-area farmer was still a young boy when he appropriated five acres of his dad's farm to start his own small operation, which rewarded him with a tidy 350-bushel yield. During that expedient harvest, he knew he would be a lifelong farmer.

It's a story familiar to many Alberta farmers. They are born into the business. At 52, Nielsen has 36 years of farming experience under his belt. His professional foray into farming began at 16, when he obtained his first Canadian Wheat Board permit book. "I remember because I was underage, so you had to get a parent to sign," he said with a smile. Characteristic of Nielsen's personality, his reason for working in a tractor is

straightforward: "It's something I've always liked doing," he said.

Today, he farms 1,400 acres of cereal crops, primarily wheat and barley, in addition to canola. The wheat Nielsen grows is Canadian Prairie Spring Red, or CPSR. It's quality wheat that is predominantly used to create flatbreads, crackers and noodles. Many farmers are partial to Hard Red Spring Wheat, arguably the most popular class of wheat grown in Alberta, but not Nielsen. "We get lots of rain and never get the (proper) protein for Hard Red Spring Wheat," he said.

His malting barley, used primarily for beer making, is directly contracted to the maltsters at Rahr Malting Co., located in Alix, about an hour northeast of Nielsen's farm.

As a farmer, Nielsen inherently carries

a significant amount of risk each year. Input costs vary, but this year his initial risk will run about \$190,000 even before his crop emerges from the ground: Fertilizer (\$90,000), crop insurance (\$45,000), seeds and seed treatments (\$42,000), crop protection (\$7,500) and fuel (\$2,500). In order to maintain cash flow, he typically tries to pre-sell about 25 per cent of his crops on contract by the time seeding is complete in early to mid-May.

In order to mitigate risks, both financial and ecological, Nielsen has adopted new methods on his farm to make the business as sustainable as possible.

"Our land isn't blowing away, because of zero-till practices," he said, proudly. Zero-till, or minimum till, is the practice of not disturbing the soil before planting. Farmers achieve this by using an air seeder, or air drill, to plant seeds directly into the soil at a pre-determined depth. "With GPS steering in almost everything we own, when you seed you're not overlapping, you're not wasting seed or fertilizer."

Indeed, Nielsen's farm, and the majority of farms in Canada, have become much more high-tech out of necessity, in response to the vagaries of the market.

"I'm a business. I am here to make money," he said. "I can't be here if I can't make money. But I can't be here and abuse my soil and still try to make money."

Nielsen recalled what his teacher at Lethbridge College told him years ago when he studied farm finance management and technologies: "If you can't handle the stress, you're better off pumping gas at Esso."

"That's a very good point," said Nielsen. "If you cannot handle the fact that tomorrow weather could come in and wipe you out ... this is not the job for you."

Nielsen has been victim of wicked winds, floods and droughts during his farming career, but he wants everyone to know he's in it for the long haul. "My farm is right on Highway 2, I'm on a stage. I know that and I embrace it."

# RESILIENT IN THE FACE OF CHANGE

FROM GAUCHO TO GRAIN FARMER, ARGENTINE FARMER EMBRACES THE UNKNOWN

BY MELANIE EPP



Photo: Courtesy of Santiago Del Solar

If you had to pick one word to describe Argentinian grain farmer Santiago Del Solar, it would have to be “adaptable.” In his years on the farm he has had to face many challenges, including troubling soil degradation, burdensome government regulations and climate change. Like most farmers, Del Solar faced each challenge head-on, adapting when necessary, and making positive changes with one eye on the future as often as possible. It’s this adaptability that has made him the success that he is today.

Both sides of Del Solar’s family have been farming since the 1830s. At that time, they were “gauchos,” or cattle ranchers who worked on horses. While they raised cattle, they didn’t grow many crops. Their steers were exported to the European market, especially to the U.K., mainly as chilled beef.

In the 1980s, Del Solar’s father and uncle started to plant more crops, rotating alfalfa pastures into the crops. Soon, though, they started seeing soil erosion, a problem that seriously concerned them.

Despite resistance from the older generation, Del Solar stopped grazing cattle entirely and moved into crop production, growing corn, barley, sunflower, wheat and soybeans. Due to strict, government-imposed export quotas on corn and wheat, his focus has been on soybean production. As of this year, however, the quotas have been lifted, leaving Del Solar free to plant more corn and wheat. “We are happy about that,” he said.

To tackle the soil erosion problem, Del Solar started using no-till practices and working with precision agriculture, while

also adopting advanced machinery such as sprayers, seed drills and tractors. Using satellite information and yield maps, he has been able to tailor each crop to the soil, using the exact amount of fertilizer needed by that crop. Del Solar said the change has greatly impacted his farming practice, especially in sandy soils and for his corn crops. Soil erosion is no longer a problem, so Del Solar has turned his focus to other challenges.

“We need more tools to see what is going on in our farms,” he said.

“We need more ‘eyes’ than the usual and irreplaceable scouting that the agronomists and farmers do on a daily basis. Satellite info and drones are our new eyes.”

Dealing with climate change is another big challenge on the farm. Del Solar said rain variability in Argentina is always a surprise. “We had 1,450 mm one year and less than 600 mm in another; the average is 820 mm, but averages never happen,” he explained. “You never know what you’re going to get.”

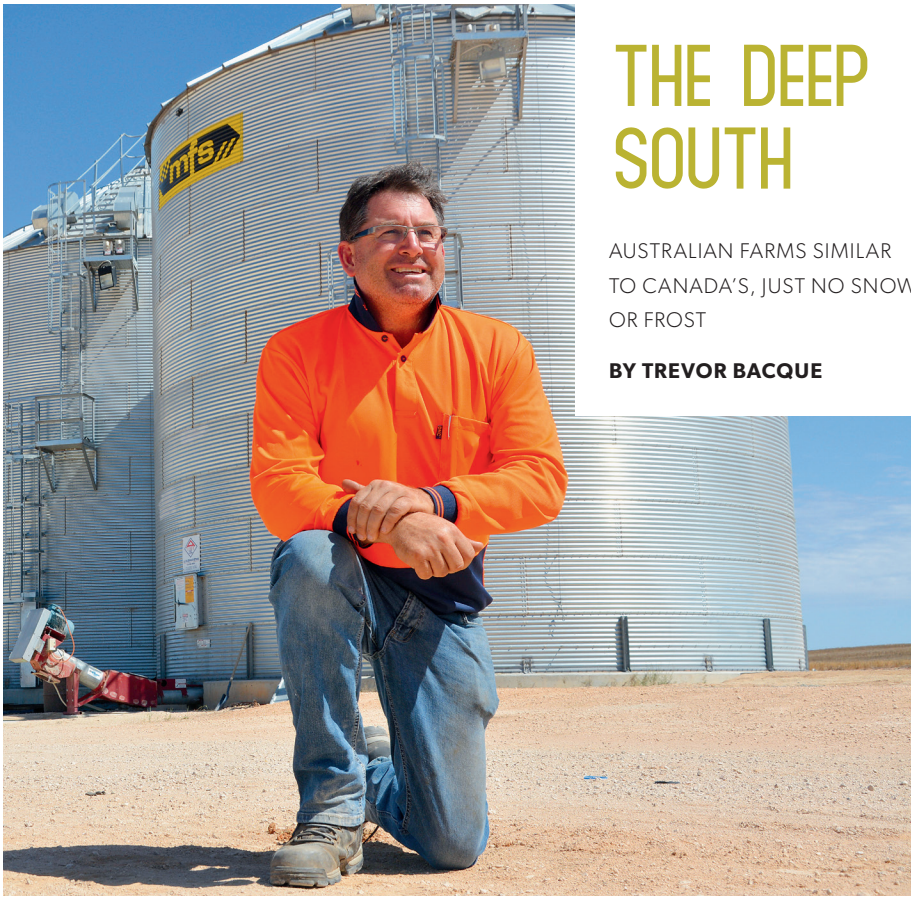
Luckily, Argentinian farmers have access to tools that help mitigate the impact of climate change. For instance, heavy rainfall can make grain transport virtually impossible on rural roads, which is especially problematic around harvest time. Farmers, though, designed plastic silo bags that have allowed them to store grain for several months at a time. When roads improve, they can again ship and sell their grain.

As a sixth-generation farmer, Del Solar loves working in one of the most important industries in the world.

“Producing food that will be soon on someone’s plate is the most amazing experience you can have,” he said. “It’s nice to go to sleep knowing that my team and my family and I have done something to feed the world that day.”

Today, Del Solar farms 6,500 acres of his family’s farmland and manages nearly 25,000 acres on local farms. He sits on the board of the Argentine Association of Regional Consortiums for Agricultural Experimentation, an organization of farmers that works to improve production.





## THE DEEP SOUTH

AUSTRALIAN FARMS SIMILAR TO CANADA'S, JUST NO SNOW OR FROST

BY TREVOR BACQUE

Photo: Alistair Lawson

April 25 is a solemn day for Australians and New Zealanders. It marks Anzac Day to commemorate the lives of those who served their country during times of conflict. The day also marks the starting point of the farming season for Pinnaroo, South Australia, farmer Corey Blacksell.

He typically plants his crops any time between the annual holiday and mid-May. He mainly grows cereal crops, which include barley, wheat and rye. Blacksell and all other South Australian farmers are prohibited from planting any genetically modified versions of crops, such as corn, soy and canola, due to a government-imposed moratorium. The ban also extends to the island of Tasmania.

His timelines are similar to those of Canadian farmers, despite living more than 10,000 kilometres and a hemisphere away, although the growing season is considerably longer given that crops are growing in Australia's winter

months when the days are shortest and coolest. Blacksell will plant crops in April and May, and harvest by November. For comparison, Canadian farmers usually conclude harvest by October.

"We don't have snow so we don't go into dormancy," said Blacksell, 49, who only farms half of his 11,000-acre operation annually, leaving the other half to rest for a season. "Basically, any time in May is a good time to have crops in the ground."

Snow and frost aren't issues for Blacksell, although wind has been an issue in the past and lack of rainfall can cause sleepless nights. Whereas the Canadian harvest can be delayed by snow, the biggest threat in Australia is combine fires due to the extreme heat. Australia's hottest months are December through February.

Blacksell farms on mostly sandy soil, so his loam topsoil is critical to his farm's success. He began farming in 1982, a

time when minimal tillage was not widely practiced like it is today. Farmers would till the land multiple times and routinely leave the soil exposed. According to Blacksell, a 50-km/h wind could devastate the land, and soil erosion was a major issue.

"We don't experience severe winds by North American standards, but our soils are extremely sandy and fragile so any bare soil is at risk of erosion. In the past, full-till seeding would result in bare soils," he said. "Today, with minimum till and stubble retention (that is stubble remaining upright in the field post-harvest), soil erosion is a negligible problem."

"People will say the 2002 drought was a real benchmark, when people switched to minimum tillage because of the issues with soil erosion. That's when we converted to wider row spacing, to achieve bigger yields."

The drought forced Blacksell to try something different out of necessity in 2002. Three years later, his entire farm was strictly one-pass farming. Blacksell now works the land less, has higher crop yields, spends less time in the tractor and pays smaller diesel bills.

"I'd hate to think how much diesel we were using before," he said with a sigh. "Back in 1999 and 2000, we were just working ground, sitting on the tractor racking up hours."

At his peak, Blacksell would spend about 700 hours (one month) per year in the tractor managing his land. Today, with a more precise farming model, including GPS auto-steer technology, he spends about 250 hours (10 days) and farms more than double the acres.

A final innovation Blacksell pointed to is glyphosate, otherwise known as Roundup—the most commonly used herbicide on Earth. "Glyphosate is basically the tool we use to kill weeds in front of planting so we don't have to put a full-tillage disturbance on very sensitive soils," he said.

Without glyphosate, "we might as well shut down, it's actually as simple as that," he said.

# KENYA CALLING

SMALL-SCALE AGRICULTURE  
IS A WAY OF LIFE IN THE EAST  
AFRICAN NATION

BY TREVOR BACQUE

Photo: Courtesy of Agrium



Although it is a country perhaps best known for its adventure tourism, Kenya also contributes to one of Africa's most important agricultural hubs and is home to countless small-scale farmers. Joseph Oloo is one of those farmers. Along with his wife Angeline Atieno Sewe and their children, he manages a two-acre farm in western Kenya, about 500 kilometres from the bustling capital of Nairobi.

The 37-year-old farmer typically grows sorghum, maize, groundnuts, soybeans and millet. They are the most widely eaten food crops by most of the families in the community, according to Oloo. There are also a handful of livestock roaming his farmland for manure distribution. From the time Oloo was in primary school, he studied agriculture. At one point, he was a field assistant for the International Plant Nutrition Institute, a global non-profit dedicated to managing plant nutrition "for the benefit of the human family."

Oloo's farm has a contoured border of deciduous silky oak trees that acts as a windbreak and helps the water table recharge. "Dropping leaves also form biomass (organic matter)," he said. In addition, he fertilizes with compost

manure, which adds nutrients to the soil and improves its structure for crop development.

The region's rains largely dictate Oloo's agricultural schedule. Biannual rains let him know when it is time to begin planting and harvesting. The first planting is usually at the end of March or in early April, followed by a mid-August harvest. Farmers can then plant again in early September and harvest a second time in January. It's normal to receive 1,500 mm or more of annual rainfall in the area, which works great for Oloo's water-intensive crops like maize, millet and sorghum. However, the rain can all fall in a matter of weeks, making it challenging for plants to persevere through both excessive moisture and prolonged dry spells.

For his operation, Oloo's tools of the trade represent a vastly different approach to farming than that of most Canadian farmers. "I use a jembe (hoe), panga (machete), planting line, tape measure and I hire a tractor for ploughing. Other farm equipment includes a knapsack sprayer with herbicides," he said. "I also do minimum tillage by spraying herbicides and plant without disturbing the soil."

His family helps during planting, and everyone takes turns weeding and applying fertilizer. There's also a slate of casual workers who weed and harvest crops.

For Oloo, a successful growing year is when "the rainfall is adequate and harvest is bumper ... and every home has enough stock to survive on."

In 2010, Kenyan citizens voted to rewrite the country's constitution, which paved the way for the national government's delegation of powers to 47 largely autonomous counties within Kenya. For agriculture specifically, this means that issues can now be examined at a more hands-on level that recognizes regional differences.

"The county government bought tractors, which farmers have (available) at a subsidized price," Oloo said, adding that the county has also sold subsidized fertilizer and seeds to area farmers.

When Oloo began farming 10 years ago, profits were much lower.

"The farming pattern has improved from old method to modern techniques, improving income and food security," he said, adding he earns five times what he did when he started farming.





# UKRAINE'S UTILITY

THE ALLURE OF FARMING IN EASTERN EUROPE IS ALL ABOUT THE SOIL

BY MELANIE EPP

Farming in Ukraine has the potential for huge growth in the coming years. No one knows this better than Dutch farmer Kornelis (Kees) Huizinga, who works some 40,000 acres of prime farmland in Ukraine.

After graduating from Wageningen University in the Netherlands in 2002, Huizinga researched farming possibilities in Ukraine. What makes farming in Ukraine so alluring? It's a combination of the availability of land and the quality of the soil. Agricultural land in Ukraine is rented using farmland lease agreements. After the fall of the Soviet Union, all workers and pensioners from the collective farms received a 6.6-acre parcel of land. Huizinga leases land from locals who aren't farming the land themselves.

Huizinga said his company has 5,500 land lease contracts of the 6.6-acre sections. He rents another 4,000 acres from the state. The management of so many contracts requires the dedication of six full-time employees (in total, Huizinga employs 350 farmworkers). Currently, farmland is not for sale in Ukraine, but the government is working to make it happen. Land costs about \$65 per acre to lease.

Ukraine is home to about 30 per cent of Earth's black soil, called "chernozem," and it's been virtually untouched by intensive and conventional agricultural practices. This has left the soil with high levels of organic matter. As a result, it is very fertile and produces high agricultural yields. However, Huizinga, who grows winter wheat, barley, canola, sugar beets, corn, soybeans and sunflowers, knows that yields in Ukraine could be better. Although the soil is rich, he thinks growers could make better use of technology and logistics to improve planting accuracy, efficiency and overall yields.

Along with the commodity crops, Huizinga also grows onions, carrots and cabbage. On the livestock side, he milks 800 cows and raises some 750 pigs.

The challenges and opportunities in Ukraine are endless. When asked about the biggest challenge he faces today, Huizinga mentioned fluctuating commodity prices. "We were already used to high commodity prices, and now with the lower prices it takes a bit longer to pay back some loans and execute new plans," he said. "So it does not go fast enough."

As of Jan. 1, 2016, Moscow introduced

a one-year ban on agricultural produce, food and raw materials from all countries that joined sanctions against Russia. Russian military intervention has led to a ban on food imports from Ukraine, which has taken a toll on farmers' income and led to higher taxes (war taxes).

Despite the challenges, Huizinga is positive about the future. In addition to the opportunity to increase yields, he thinks there is also great potential in the processing of commodities. Huizinga said that, despite the Russian bans, there are still plenty of export opportunities. He also thinks Ukrainians could be producing energy from manure, straw and other waste materials. "Being dependent on Russia is dangerous," he said.

In the future, Huizinga would like to implement controlled traffic farming, a technique where tractors use GPS to follow their original tracks in the field. Doing so limits soil compaction and erosion. He'd like to grow the dairy to 3,500 milking cows, and increase vegetable production to 6,200 acres. In the long-term, Huizinga also plans to increase the number of pigs he raises and get into the business of energy production. ●





# 'Tis the season





Photo: Calgary Farmers' Market

## REDISCOVERING THE JOYS OF SEASONAL EATING

BY TYLER DIFLEY • ILLUSTRATION BY KIM SMITH

**I**N TODAY'S SUPERMARKETS, THE CONTENTS of the fresh produce section can transport you—and your palate—around the world and through the seasons. For Canadians in particular, it can be easy to take for granted the fact that we have access to warm-weather fare like tomatoes on the vine, avocados and blueberries even when it's -25°C outside and the ground is covered by two feet of snow. However, it wasn't always this way.

Prior to advances in food storage and transportation technologies, and the interconnectedness of our global economy, humans were slaves to the rhythms of the seasons when it came to what types of food were available. In the warm months of late spring, summer and early fall, people could enjoy a variety of fruits and vegetables at the peak of their availability and freshness. But when the cold of winter began to creep in, they were forced to conserve their warm-weather bounty for several months in any way they could, whether by canning, pickling or otherwise preserving it, or by cellaring the hardier items—potatoes, carrots and onions, for example—to prevent spoilage.

Although our modern food system has rewarded us with more variety and choice than our ancestors could ever dream of, its rise has coincided with some troubling changes in the way people interact with and relate to their food.

"We've kind of become desensitized to where our food is coming from and how it is grown," said Leilani Olynik, marketing and events co-ordinator for the Calgary Farmers' Market. "That kind of relationship with food is just gone because you can go to the grocery store and buy really whatever you want and whatever is on your recipe list. I think, in having that mass quantity of variety available to people in the grocery store, it's also removed them from the farmer."

The good news is that our relationship with food—and the farmer—can be repaired to some degree by eating seasonally. This simply means seeking out fruits and vegetables that are "in season"—harvested at the end of their natural growth cycle. While our ancestors ate seasonal produce because they had no choice, making a conscious choice to eat seasonally has economic, environmental and flavour-related benefits, and can





**FINDING FRESH:** For thrifty shoppers, buying inexpensive seasonal produce can be a delicious and nutritious way to cut down on grocery bills. Photo: Calgary Farmers' Market.

reconnect people with agriculture—the vital industry that produces the food we eat every day.

### THE SEASONAL ADVANTAGE

Seasonal produce can be healthier and better tasting than produce grown out of season. Picked at the peak of ripeness, and usually grown near where it is eventually sold, seasonal produce does not need to travel far between farm and fork—lowering the risk of spoilage and ensuring it retains all of its fresh-picked flavour. On the other hand, out-of-season produce usually needs to be picked before it ripens so that it can withstand the long journey over land and sea from producer to consumer. This early harvest, combined with prolonged travel and storage times, can impact the flavour of a number of fruits and vegetables.

It's not difficult to find examples of fruits and vegetables that have different characteristics depending on whether or not they're in season, as anyone who has eaten the mealy, flavourless tomatoes

available during the winter can attest.

"Tomatoes are definitely one that has a very short season, and a summer tomato tastes different from a February tomato," said Vincci Tsui, a Calgary-based registered dietitian and nutrition blogger. "Also, berries are just super popular year-round, when really they're best in late spring or summer when they come into season."

Fruits and vegetables grown and harvested in season also tend to have a smaller environmental footprint than their year-round counterparts. When something is grown out of season, the inputs required to support that crop to maturity—mainly water and energy, in the form of fossil fuels or electricity—are often much higher than normal. In this respect, seasonal food can be more efficient to produce. This also does not account for the resources required to transport non-seasonal produce around the world from warm-weather growing regions to wherever there is demand.

If the health and environmental

benefits aren't enough, seasonal produce has another advantage over out-of-season items: cost. Because seasonal produce is at the peak of its availability and doesn't usually have many additional costs tacked on for transportation or storage, it's often cheaper than out-of-season fruits and vegetables. Grocery shoppers can take advantage of this common-sense equation and reap the rewards at the cash register.

"With the economy where it is, if you're eating seasonally, chances are you're purchasing foods that tend to be less expensive," Tsui said.

As food trends and environmental catastrophes in important growing regions drive up the costs of popular produce items, seasonal fruits and vegetables should be experiencing a renaissance of sorts. However, the majority of consumers don't seem to be interested in taking advantage of these savings.

"We get uptight when costs go up—cauliflower was the big story in the



winter,” said Mike von Massow, an agricultural economist and associate professor at the University of Guelph. “We see these huge spikes, but rather than saying, ‘What else could I eat?’ we complain about what we want to buy being so expensive.”

However, the current economic climate in Alberta might be enough to convince some people to start shifting their buying habits whenever they’re at the grocery store or farmers market.

“I think people are becoming more aware of where their dollars are going because they have fewer dollars to spend, so they really want them to count,” Olynik said. “I think people are really starting to think about how they spend, how much they spend and where they spend it.”

Despite its many benefits, it’s not always possible to eat seasonal produce—especially in Alberta. Although the province is well suited for growing grains, pulses and oilseeds on a large scale, the growing seasons for many popular fruits and vegetables are extremely short. So unless you’re willing to get by on canned or frozen produce during the colder months, imported, out-of-season produce is a necessity.

“There are definitely lots of benefits to eating seasonally, but we also have to recognize that it’s not always the most practical choice, living in Alberta with our long winters,” Tsui said. “We don’t really grow any fruits or fresh vegetables in the winter, and sometimes we do need to import these foods from other places to get that food variety and make sure we’re getting the nutrients that we need.”

Others choose to purchase imported, out-of-season food items for reasons that go beyond nutrition or variety. For many new Canadians and their families who are living in Alberta, imported foods and flavours represent an important link to their home country and cultural traditions in a way that seasonal produce could never recreate.

“I think another important aspect of food is that it’s a reflection of our culture,” Tsui said. “There are a lot of people in Alberta who are immigrants from other countries, myself included, and I think part of food and culture is being able to eat the foods that are associated with your culture.”

It might not be practical to eat seasonally year-round, but if seasonal eating is beneficial, why don’t more people look for seasonal produce options? The answer might have more to do with human psychology than the foods themselves.

“The research suggests that we are pretty stable in what we buy. People who want broccoli and green beans buy broccoli and green beans—they have their go-to vegetables,” von Massow said. “We are not, as North Americans, terribly flexible anymore. So we have all of this choice, but we don’t tend to take advantage of that choice very much.”

According to von Massow, if consumers want to see more seasonal produce options at the grocery store, they will have to vote with their wallets, as food retailers will stock whatever items are most in demand. But first, people will have to branch out beyond their go-to fruits and vegetables.

“I think that those products are out there and available, and

would be more available if more of us were buying them,” von Massow said. “If more of us were looking to buy carrots and beets and potatoes in the winter, there would be more carrots and beets and potatoes in the winter.”

“We can do it, we just have to choose to do it and get outside of our routine of what we eat.”

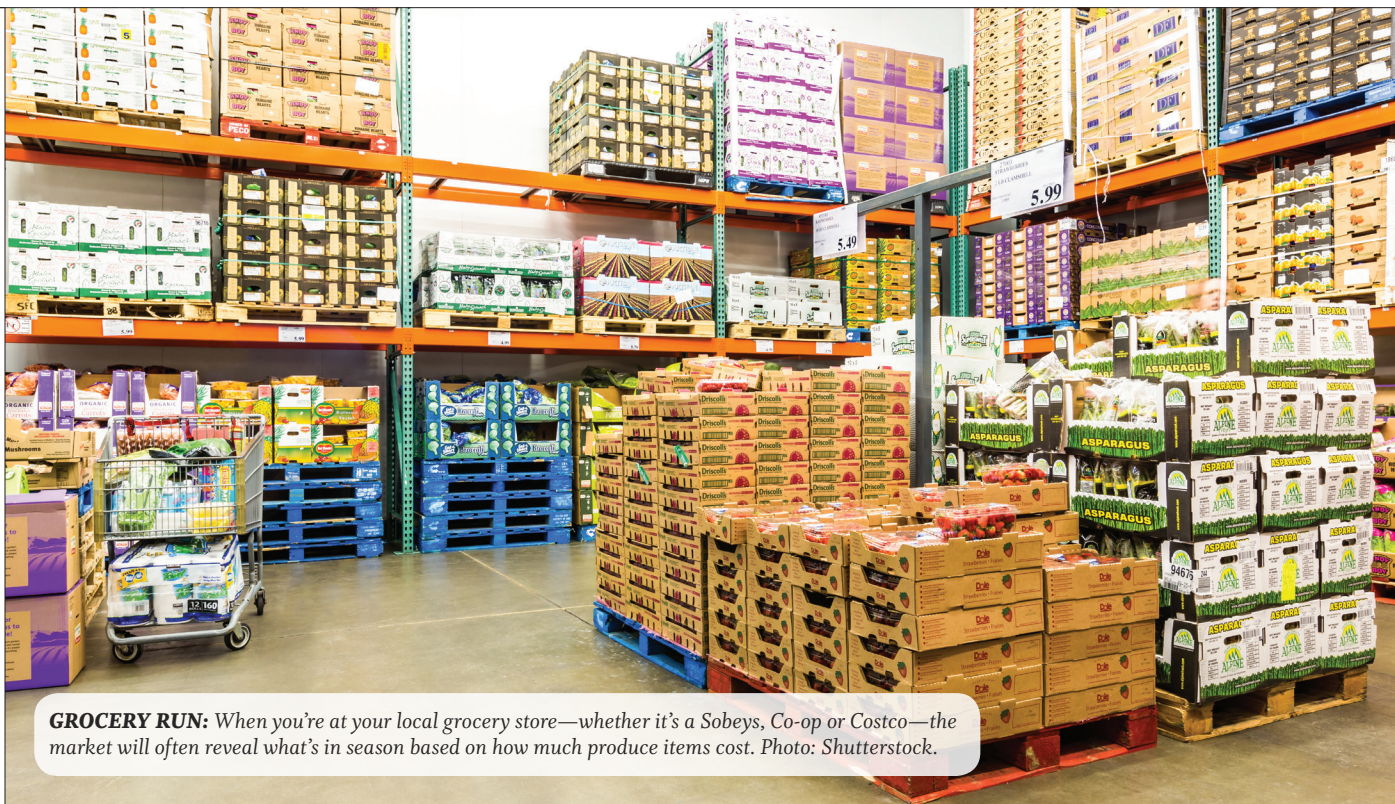
## SHOPPING THE SEASONS

A number of resources exist for those who want to find out what produce is in season in their area at different times of the year. Several Alberta farmers markets, including the Calgary Farmers’ Market and Edmonton’s Old Strathcona Farmers’ Market, list what fruits and vegetables are in season each month on their websites, as well as a number of recipes that can be made with them. Eat the Seasons—an online initiative that originally provided seasonal food information for people in the United Kingdom, but now has a North American sister site—is another valuable resource for people who want to know what’s in season. Armed with this information, you can track down the best Alberta has to offer all 12 months of the year—whether it’s vibrant red rhubarb in April or tender asparagus in June.

“Especially in the summers—as short as they are—some people might be surprised by what is produced and what is grown here,” Tsui said.







**GROCERY RUN:** When you're at your local grocery store—whether it's a Sobeys, Co-op or Costco—the market will often reveal what's in season based on how much produce items cost. Photo: Shutterstock.

Although the pickings during the winter are decidedly slim, there are still options for people who want to eat seasonally as much as possible. Thankfully, Albertans live in a province that is renowned for its livestock and crop production, so fresh beef, pork, poultry and other meats, as well as a number of grains and pulses that retain their flavour and health benefits in storage, are “in season” and available year-round. But if you are set on eating Alberta-grown fruits and vegetables in the dead of winter, the key is to plan far enough ahead.

“It could be as simple as learning how to can, or freezing certain things, even if it's just blanching a bunch of cauliflower or broccoli or asparagus, then

freezing it and keeping it in your freezer for the wintertime,” Tsui said. “When you're talking about the winter months,

you want to look for the heartier greens like cabbages and kale that are not as nice and tender as those spring greens, but definitely a more seasonal choice.”

In terms of spotting what's in season at your average grocery store, it's easier than you might think.

“The truth is, if you look around your grocery store, the market tells you pretty much what is seasonal and what is imported,” von Massow said. “You can see what's in season just by the price

of what it is at the grocery store or farmers market or wherever you're buying it.”

In addition to the market forces that can reveal what is in season, many grocery chains have started to highlight local meat and produce, as well as the

farmers who raise the animals and grow the crops. “I think there are lots of local grocery stores . . . who are on

board with promoting local farmers and producers,” Tsui said.

The websites of the Co-op and Sobeys grocery chains appear to confirm this perception. “Our focus has always been having the freshest produce, including local, western and Canada-wide growers, whenever possible,” Calgary Co-op's produce page reads. “We ensure that seasonal produce is available and that it is imported based on quality, freshness, and availability.”

Similarly, Sobeys' produce department uses the tagline, “more in freshness, more in season, more in local.” The company's website also prominently lists seasonal recommendations on its produce page.

At the farmer's market, Olynik said the best way to find out what is in season is to go straight to the source: the farmers themselves.

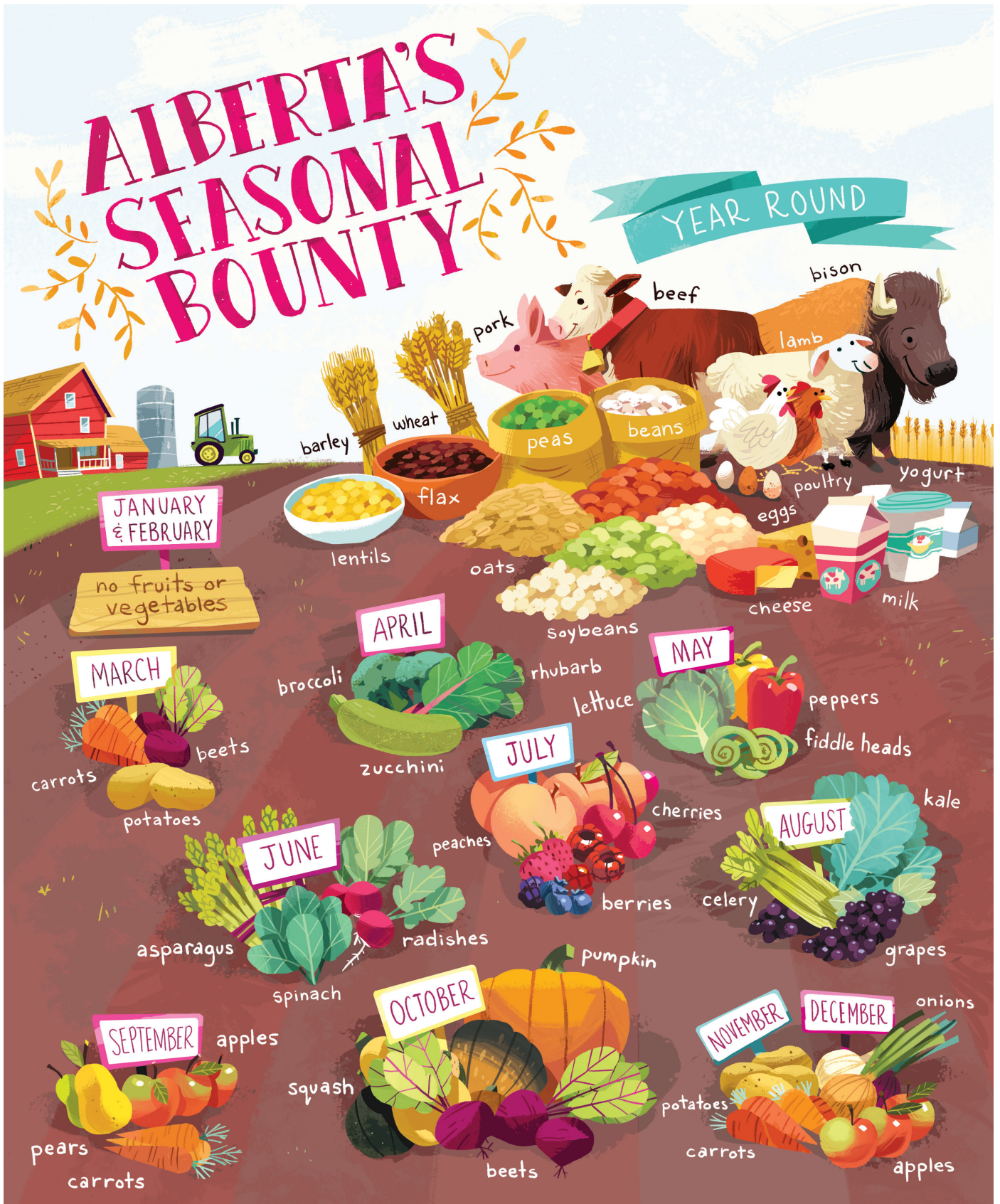
“People have the opportunity to come in and learn about where their produce or meat or whatever items they are purchasing are coming from,” she said. “I think being able to ask those questions is a rare and really special opportunity for people.”

**“If you look around your grocery store, the market tells you pretty much what is seasonal and what is imported.”**  
**—Mike von Massow**



# ALBERTA'S SEASONAL BOUNTY

YEAR ROUND



JANUARY & FEBRUARY

no fruits or vegetables

MARCH

carrots  
potatoes  
beets

JUNE

asparagus  
spinach  
radishes

SEPTEMBER

pears  
apples  
carrots

APRIL

broccoli  
zucchini

JULY

peaches  
berries  
pumpkin

OCTOBER

squash  
beets

MAY

lettuce  
peppers  
fiddle heads

AUGUST

celery  
kale  
grapes

NOVEMBER

potatoes  
carrots

DECEMBER

onions  
apples

barley  
wheat  
flax  
lentils  
oats  
soybeans  
cheese  
milk  
pork  
beef  
lamb  
poultry  
eggs  
yogurt  
beans







# GROCERY STORE | AT YOUR DOOR

## ONLINE SHOPPING FUELS FOOD-DELIVERY REVIVAL

BY TAMARA LEIGH • PHOTOGRAPHY COURTESY OF SPUD AND THE ORGANIC BOX

**K**RISTA EWERT WAS FIRST inspired to try a grocery delivery service when her first child was born. “The idea of going to the grocery store with a baby was not appealing to me,” she said. “So I started ordering from SPUD.ca.”

Sustainable Produce Urban Delivery (SPUD) started delivering groceries in Vancouver in 1997, before expanding to Calgary in 2002 and Edmonton in 2014. Currently, it operates in those three cities, as well as Victoria, Los Angeles and San Francisco. An early entrant into the online grocery market, SPUD has gradually expanded from delivering weekly produce boxes to offering a selection of

local produce and grocery items.

Ewert started ordering from SPUD.ca while living in Vancouver, and continued to use the service when she relocated with her family to Edmonton. She enjoys the convenience, and buying online helps her stick to her grocery budget by reducing distractions and impulse buys. In her eight years as a customer, she has developed confidence in the company’s ability to select quality produce as well.

“I can trust SPUD. If I get something and I’m not satisfied, I can call or email them and they’ll refund me,” Ewert said. “One of the great things about SPUD is they tell you about the producers they are buying from. It really helps us

choose wisely and be more conscious about our food.”

Ewert’s story is not unique. She is part of a growing number of Canadians who are turning to the Internet for their food needs, whether it is basic grocery supplies, meal kits that can be cooked fresh, or prepared meals from restaurants and retailers.

It’s a market that is segmented based on personal values as much as it is on the value of the food itself.

For SPUD, increasing consumer awareness and demand for local and sustainably produced products is at the heart of the company, and continues to fuel its growth. It works with local



farmers, both as customers and partners, to help them extend their growing seasons. The online ordering platform provides customers with detailed information for each product, including the farmers SPUD works with, the distance products travel to the distribution centre and nutritional information.

“Our relationship with our customers is based on trust and price, in that order,” said Corbin Bourree, managing director for SPUD’s Edmonton operations. “Everyone has a million questions about how delivery works, what happens if it’s not perfect. The web experience does a good job of providing customers with enough information that they know what to expect and can trust the process.

“Beyond that, it comes down to value. The products that we carry are healthy and local. You are buying products you can feel good about. We’re going to give you good value because we want it to be a service that as many people can access as possible,” he added.

SPUD is focusing on consumers like Ewert who are invested in the quality of the food they are serving their families, busy professionals who don’t have time to shop during the week, and people with mobility challenges who appreciate the convenience of having food delivered.

SPUD currently delivers to 2,000 regular customers in Edmonton and 4,000 in Calgary. Within a month of their first order, 70 per cent of customers return and more than 50 per cent will carry on as long-term shoppers.

## EXPANDING THE RETAIL BASE

“Home delivery is not a new concept, it’s been around for decades. What is happening is the concept is increasingly becoming embedded in the strategy for growth,” said Sylvain Charlebois, dean of the faculty of management and agriculture professor at Dalhousie University. “Location is key, but also limiting. Delivery is one way to increase the accessible market for any retailer to extend their footprint beyond the borders of their store.”

On a local level, many smaller farmers have turned to community-supported agriculture (CSA) models to expand their retail footprint and reach beyond the farmers market. Danny and Miranda Turner took that enterprising spirit to the next level with The Organic Box.

In 2010, the Turners partnered with four farms in northern Alberta to offer a vegetable box distribution program to 100 families in Edmonton. The modified-CSA program also provided distribution for fruit from the Turners’ orchard in Creston, B.C. When they decided to expand to a year-round program, they had to look at different ways of making the business sustainable.

“Bananas and avocados are two top-selling items in Canadian produce markets, so we made a decision to include all produce options for our customers,” said co-founder Danny Turner. “We started a produce importing and distribution company, and used the bananas to help sell our own potatoes.”

Today, The Organic Box represents 75 growers and



**LOCAL DELIVERY:** After only a few clicks at SPUD.ca, you can have a box full of fresh, local produce delivered right to your door. Photo: SPUD.

producers from across Western Canada. The company offers over 2,000 grocery items, and delivered to more than 12,000 families last year. The products that it can’t source from local growers are imported from organic producers elsewhere, providing an economic benefit to their own communities no matter where in the world they farm.

“Our model is based around a virtual farmers market. You won’t see national brands in our catalogue because we want to represent producers and businesses like us,” Turner said. “Getting your food delivered is a convenience thing, but we differentiate ourselves with our transparency and connection to the source. I’m not concerned about the major retailers because when people buy food from us they are buying from the farmers.”

It’s a point of differentiation that is appreciated by consumers and producers alike.

“I really like SPUD and Organic Box because of their focus on ‘local,’ and I love that we can get such good-quality ingredients delivered to the door,” said Gail Hall, owner of Seasoned Solutions Loft Cooking School and Culinary Tours in Edmonton. She has used both services, for her personal use and to order ingredients for cooking classes.

“A lot of producers don’t have the know-how to market what they make,” she said. “They are more concerned about growing what they grow and doing it well. These services help them get their products to the consumer.”

## CANADIANS COOL TO ONLINE FOOD PURCHASING

Canadians, however, have been slow to catch on to the online



# DIGITAL DIGEST

- Eighteen per cent of Canadians say they ordered food, beverages or groceries online in 2012, up from 11 per cent in 2010, according to Statistics Canada
- “Home meal replacement” products—prepared meals sold through food retailers—are a \$2-billion-plus business in Canada on an annual basis, according to the NPD Group
- A 2015 Nielsen poll of 30,000 people in 60 countries found that 25 per cent of respondents were already ordering groceries online and 55 per cent were willing to try it in the future
- Sustainable Produce Urban Delivery (SPUD.ca) currently delivers grocery orders to 2,000 regular customers in Edmonton and 4,000 in Calgary
- The Organic Box currently offers more than 2,000 grocery items, and delivered to more than 12,000 families in Edmonton and northern Alberta in 2015



**PEAS IN A POD:** The Organic Box's Edmonton staff work hard to fill and deliver the orders of thousands of loyal customers each year. Photos: SPUD (Top) and The Organic Box.

food trend compared with our American counterparts. Online food purchases currently account for about one per cent of the total value of the grocery sector here, compared to four per cent in the United States.

“When it comes to food retailing, you are still dealing with a highly traditional sector, but it has really been showing signs of transformation in recent years,” Charlebois said. “We are seeing companies hiring people from outside the grocery business. They are embracing changes and trying to follow what consumers are looking for.”

While independent providers like SPUD and The Organic Box have done well in local markets so far, major retailers

are making big moves into online shopping by offering pick-up, delivery or both. Loblaws, Sobeys and Save-On-Foods are piloting online shopping and delivery options in markets across the country, and mega-retailer Wal-Mart is making an aggressive push into the market as well.

Pressure is also building from the technology sector, where online retail and delivery infrastructure has been honed. Tech companies are now moving into food delivery through services like AmazonFresh, which delivers grocery items; UberEATS, targeting restaurant delivery; and online shopping service Google Express, which started delivering fresh groceries in select U.S.





**LOCAL CONNECTIONS:** Danny and Miranda Turner, co-founders of The Organic Box, designed their service as a virtual farmers market, linking consumers with 75 growers and producers across Western Canada. Photo: The Organic Box.

cities in February. These services are currently being piloted in the Toronto area, but have not yet made their way into Western Canada.

“Canada is a market where people aren’t used to buying food online. If you look around at other places around the world, online food purchasing is the way that things are going,” Bourree said. “Online purchases account for more than 20 per cent of all food purchased in the U.K., 23 per cent in Korea and more than 15 per cent in New York City. We [at SPUD] believe it’s a growing trend that will continue into the future.”

With major food retailers entering this once-niche space, people like Turner are optimistic that their hyper-local connection between farmers and consumers will sustain them. The Organic Box’s operations have also recently diversified to include food processing and distribution.

“In our direct-to-consumer business, we are feeling the challenge of major retailers coming in, but we are up to the challenge because we know our products and service stand apart,” Turner said. “We have expanded our model to include selling to major retailers, so it’s still an opportunity for us.”

## THE EVOLUTION OF CONVENIENCE FOOD

As food purchasing and delivery options diversify, so do the offerings available to consumers. Chef’s Plate in Toronto offers gourmet meal kits for delivery anywhere in Ontario. Consumers are able to order from a menu of meal options, and receive a box filled with prepared and portioned fresh ingredients. At \$10.95 per portion, the service provides quick, fresh, healthy and affordable alternatives to restaurant or ready-to-heat meals.

“As food evolves, everything is getting broader and more

personal at the same time,” said Calgary-based food and restaurant writer John Gilchrist. “Twenty years ago, you went to the grocery store or you went out to eat. Now you can go online to order grilled salmon with watercress, and all ingredients will be delivered to the door tomorrow.”

The Chef’s Plate model builds on the success of companies like Blue Apron, which delivers three million meals per month across the United States, and HelloFresh, which surpassed four million meals per month in mid-2015. Chef’s Plate won’t talk dates for any forays into markets beyond Ontario, but the company is expected to expand to other parts of Canada later in 2016.

“On the whole, it’s about the diversification of the industry. People find niches that will fill other people’s desires and they go for it. It helps broaden our palate a bit because we end up trying different things,” Gilchrist said of the food-delivery business model. “The way our economy is right now, I don’t know how well they are doing. At the other end of the scale, we have community kitchens that are trying to help people learn how to cook and prepare value-focused meals.”

Aside from the convenience factor, ready-to-assemble meals offer an intermediate step for people who want to get more familiar with cooking techniques or who want to learn to work with different ingredients. “We are not necessarily taught to cook by our mothers and grandmothers anymore, and we don’t always teach it in schools, so many people don’t really know how to cook,” Hall said.

“A lot of people say ‘I don’t have time to go shopping’ or ‘I don’t have time to look for these things.’ If it was brought to their door and they had enough confidence to put it together, more food delivery will result in more people wanting fresh, healthy food.”





# THE GREAT DIVIDE

CAN UNDERSTANDING THE COMPLEXITY OF FARMING HELP TO BRIDGE THE GAP BETWEEN CONSUMER PERCEPTIONS AND FARMING REALITY?

BY LYNDSEY SMITH

**I**F YOU ASK A RANDOM person in a grocery store whether he or she's thought about the farmer who grew the ingredients for the loaf of bread in their hands, you'll likely get a "no." Ask that same consumer what he thinks of gluten, GMOs or Roundup, and you might end up having a conversation about all that's wrong with food production these days.

There's an interesting, and at times frustrating, difference between the opinions people have about what's in their food and how it was grown, and

their opinion of the farmers themselves. It seems in the hubbub of food fads and cleanses, the actual faces and lives of those who shoulder the most risk in the farming games are lost or have become an afterthought.

Those in farming understand all too well the difficulty of growing a crop. Long hours, significant financial risk and the unpredictability of the weather add up to a high-stakes industry that's responsible for growing a product every single person on Earth truly needs. It's no wonder, then, that when a consumer

brings up a concern, such as the use of genetically modified (GM) crops, farmers often get defensive.

The trouble is, it's difficult to have a constructive conversation if you're already on the warpath. Most consumers just lack the context of how their food is grown. They may not even know their question is all that negative—they're just asking about something they've heard about.

Many farmers want consumers to understand how they farm and what it takes—not because they want a pat



on the back, but because many in farming feel that a lack of understanding of how farms operate is eroding the public's trust in agriculture.

John Kowalchuk grows wheat, barley, peas, soybeans and canola at his farm near Trochu, AB. He's a one-man show and often puts in 18-hour days during harvest, stopping only for a short night of sleep or an afternoon catnap, to make sure the crop ends up in the bin.

Kowalchuk and his wife are raising three kids. The oldest, a son, is in university, and his two daughters are in high school. Food and nutrition are hot topics in his household. According to Kowalchuk, something consumers seem to forget is that farmers are also consumers.

"I feed my family the same food I grow on my farm," he said. He views his job as the first step in Canada's food system and he takes great pride in producing a high-quality crop.

When it comes to controversial topics, such as GMOs or pesticide use, Kowalchuk said he wants consumers to better grasp the level of research and regulation that governs what farmers can access. There's no hesitation in his house to use canola oil made from GM canola varieties, or to buy bread from conventionally produced wheat, because Kowalchuk knows they are safe products.

"I want consumers to understand that there are labels that explain how a product, such as a pesticide, may be safely used. I follow those labels to the letter because I'm growing someone's food. I'm growing my family's food. That's really important to me," Kowalchuk said.

Kelly Turkington is a plant pathologist with Agriculture and Agri-Food Canada. In layman's terms, he's an expert on the diseases that impact Canadian crops. Turkington said that while farmers are frustrated at times by being misunderstood or in the minority, agriculture researchers are often in the same boat. And that's a concern because researchers play a significant role in serving both the consumer and the farmer.

"How many people know a real scientist? What does a scientist look like? Most would probably say they wear lab coats and work in a laboratory. But for agriculture research scientists, farm fields are our labs," he said. When it comes to agricultural research, the scientists are at the mercy of Mother Nature 24 hours a day.

Turkington said he wants consumers to understand that farmers are up against some serious challenges when they put a crop in the ground. Even ignoring the financial risk and the weather, there are still weeds, diseases and insects to contend with. "A farmer can be following the latest recommendations—diverse crop rotations, ideal soil fertility and correct plant densities—and still end up with significant crop losses from a disease that blows in from the U.S.," he said.

Research scientists like Turkington are constantly working to solve disease and insect problems. What's sometimes frustrating for him is that he sees the positive progress farmers have made on several sustainability fronts—such as reduced or



**FATHER AND SON:** John Kowalchuk (left) and his son Jayden are confident in the safety of conventional foods, including those made with GM crops, because they know how much careful regulation goes into their production. Photo: Courtesy of John Kowalchuk.



**SUSTAINABLE PROGRESS:** Kelly Turkington, a plant pathologist with Agriculture and Agri-Food Canada, has seen the progress farmers have made on sustainability, but doesn't think consumers have fully appreciated this positive shift. Photo: Tyler Difley.



zero tillage, the practice of minimum soil disturbance by forgoing annual tilling—but that progress isn't celebrated.

"Farmers have done a great job at adapting their land management to shift away from tillage, but consumers are completely unaware of that shift—they don't know there could be major dust storms every summer or ditches full of eroded soil. Those things hardly happen now because of changes farmers have made," he said.

Patrick Kunz farms near Beiseker, AB, and he'll be the first to tell you he welcomes questions about how he farms and why he makes the management decisions he does. He's also keen on change—recognizing that criticism is sometimes warranted and that farmers need to be open to trying something new and shifting gears away from how they've always done things.

Agriculture—the production of food—happens in a biological system. Biology is life; every change, an addition or a subtraction, impacts something else, for worse or for better. Too often, when a particular tool—herbicides or biotechnology, for example—is criticized, the conversation centres on the perceived risks or the unknown. But what many of these concerns or these calls for bans and avoidance fail to take into account is the cascade of consequences that can occur if farmers stop using a certain tool.

Let's use glyphosate, the popular weed killer commonly known by its trade name Roundup, as an example. This non-selective herbicide is quite likely the only crop chemical many urbanites can name. Ignoring some of the controversy for a moment, Kunz said he'd like to see consumers understand that the reduction in tillage on his farm means adapting his weed management practices as well.

"We're still working at improving land impacted by tillage," Kunz said. Glyphosate and other herbicides allow him to reduce or eliminate tillage on his land. That means using less fuel to produce the same crop. It also means



**IN THE DRIVER'S SEAT:** Patrick Kunz is happy to answer any questions consumers might have about his farm and the management decisions he makes for his operation.  
Photo: Adrian Shellard.

his land stores more carbon in the form of soil organic matter. Less tillage also means less erosion or movement of soil and soil nutrients through wind or water movement. Tillage isn't a chemical and it's not made in a lab, but it can have negative environmental consequences, and Kunz wants everyone to know.

He understands that consumers have concerns and questions about farming, and his goal is to show people that farmers like him are committed to constantly improving. "We haven't reached some pinnacle of farming," Kunz said. "I don't think for a moment I'm farming how I will be farming in 20 years, and that's not a bad thing."

Unfortunately, Kunz has limited means of connecting with consumers these days. "Twitter is great, but there's so much nuance in farming, so many trade-

offs. You can't explain that complexity in 140 characters," he said.

To that end, Kunz has organized an informal gathering of friends and friends-of-friends to join him at his feedlot for a tour and some productive dialogue. Kunz hopes the face-to-face interaction will allow him to share and explain more of the complexities of farming, so that the next time these consumers have questions or concerns, they'll reach out to him first instead of just assuming the worst of the farming industry.

And he won't stop his one-man awareness campaign anytime soon. "I've got four kids. I farm with my brother and he has three kids. The land we farm is the land they will farm, we hope, and we really do want to leave it in better shape for them than it is even now," he said. ●

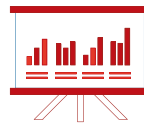


# What do grain farmers do all day?

## January to March



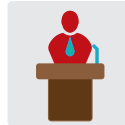
Haul grain



Create a marketing Plan



Create field plan for crops



Attend conferences

Vacation



## November and December



Final field work

Winterize equipment



Grain conditioning



Plan for next year



Market grain samples to local elevators



Make grain sales



## August to October



Harvest



Logistics, sales, storage



Grain storage monitoring

## April and May



Seeding prep



Machinery prep



Land prep



Seeding



Crop scouting

## June and July



Crop scouting



Crop evaluation



Weed control

Field tours







# Old job, new tools

## TECHNOLOGY REIGNS SUPREME IN AGRICULTURE

### FARMING ISN'T ROCKET SCIENCE.

It's actually more complicated than that. The high-tech equipment and production practices employed by farmers today raise the bar on efficiency, environmental sustainability and, ultimately, food quality and safety. Reducing costs and improving productivity is a common theme with new technologies. Here is a quick summary of a few of the technologies at play on Canadian farms.

### GLOBAL POSITIONING SYSTEMS (GPS)

Grain farmers have been taking advantage of GPS technology for almost 20 years, and it's been a game changer. Initially, GPS yield monitors on harvesting equipment allowed farmers to know exactly how much crop they harvested from every square metre of their land. Over time, locational yield data has allowed farmers to better manage the variability in their fields.

Recently, GPS technology has expanded to provide precision guidance to farm equipment. Some systems are accurate to within an inch, and the tractors, sprayers and combines literally drive themselves

thanks to hydraulic steering components that are connected and directed by incoming GPS signals. This means no overlap or missed spots when seeding, fertilizing or spraying crops—even with equipment that is 60, 80 or more than 100 feet wide. There is still a human sitting in the driver's seat, but that person's job is to make sure everything is working properly instead of steering the machine—which means less operator fatigue during long hours in the field. Hands-free guidance technology is rapidly becoming mainstream because it saves time, fuel, fertilizer and other crop-protection products.

### VARIABLE RATE TECHNOLOGY

An end result of farmers' ability to collect GPS-specific yield, soil type and fertility data is the creation of production zones. Instead of applying one rate of fertilizer and seed across an entire field, many farmers are now using variable-rate-enabled equipment to take into account the high-, medium- and low-production zones across each field. An electronic "prescription" is generated and fed into the seeder or fertilizer applicator so that, as the machine goes across the field, the rate applied matches the production zone. Putting more fertilizer or seed in high-production zones and less where the yield potential is lower improves efficiency and reduces over-application.

### MOBILE TECHNOLOGY

Smartphones and tablets are a perfect fit for farmers who would much rather be in the field, barn or shop than sitting in their office. Running a farm business involves making a lot of decisions, often on the fly, as weather or markets change. Mobile Internet, email, GPS, real-time video communication, financial management and re-



cordkeeping—all of these capabilities mean better management decisions because so much information is available whenever and wherever the farmer needs it.

There are numerous apps designed specifically for farmers to help them identify and control pests, market their grain, order parts for equipment, determine appropriate fertilizer blends and rates, diagnose and treat livestock disease, move irrigation pivots and much more. Smartphones are becoming the remote control and virtual office for progressive farmers who are constantly on the move.

### PLANT AND ANIMAL GENETICS

Plant and livestock trait selection and breeding has been an ongoing process for more than a thousand years, but recent advances in plant genetics have delivered dramatic improvements. These include not only significant yield increases, but also drought tolerance, disease and pest resistance, and lower fertilizer requirements, to name only a few.



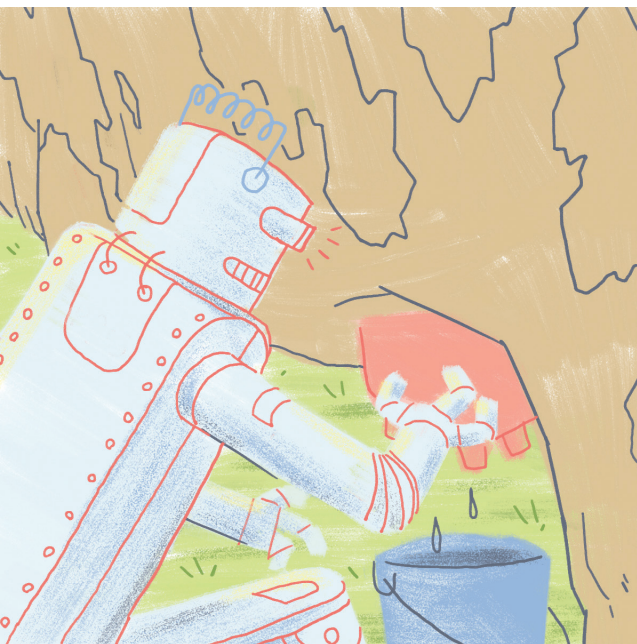


Some of these crop traits have been developed using traditional breeding practices. Others are products of biotechnology, or Bt, that involve genetic modification. As a farmer, I know that using biotech seed has reduced the amount of chemicals that my family and I are exposed to. It also means the amount we till is greatly reduced. The end result for me is less pesticide, healthier soil and less soil erosion. Did I mention I can grow more food using the same amount of land and water?

For livestock, most advancements have been the result of traditional breeding by selecting for specific traits, such as leaner meat, faster growth and improved hardiness. The arrival of gene-editing technology represents a potentially powerful new science for plant and livestock genetics.

## ROBOTICS

Robotic milking machines are used on many Canadian dairy farms and it's an amazing thing to see in action. A neck collar carries an electronic tag unique to each cow. The milking robot is also a feeding station so when the cow enters the station looking for a meal, the ID tag transmits the cow's information and she receives a meal customized to meet her



exact nutrient needs. While she is eating, the robot attaches suction units to each teat and the cow is milked without stress or human handling. Time farmers previously spent milking two or three times a day is now spent monitoring and ensuring herd health and comfort.

On the crop side, small robotic tractors are also starting to find their way into fields where they can work 24 hours a day, seven days a week, to remove weeds or perform other tasks.

## REDUCED TILLAGE

Traditionally, farmers would plow or till their soil to prepare the land for planting or seeding a crop. This took a lot of time and fuel, and has a negative impact on soil health. Zero- or no-till equipment has changed this by allowing seed to be placed in the soil without tillage of any kind. Crop residue from the previous year is left in place to hold down the soil and prevent wind and water erosion over the winter months. Leaving the residue on the soil surface also encourages healthy activity from soil-borne organisms that feed on the residue and enhance soil health. Long-term, adopting zero-till practices allows farmers to build

organic matter and enhance soil productivity, resulting in a lower carbon footprint overall. Zero-till practices also capture carbon dioxide in the soil, thus contributing to a reduction in greenhouse gases.

## BIO-MONITORS

It's like FitBit for animals—bio-monitors are devices that have been developed for horses, pigs and cattle to detect and wirelessly share body temperature, movement, respiration rate, stress levels and more with the farmer. For some species, bio-monitors help the farmer know when the individual animal should be bred. If incoming



data is outside of normal ranges, it can be an early warning of a specific disease or health issue for the herd.

## DRONES

A UAV (unmanned aircraft vehicle) or drone with a camera can provide a bird's-eye view of large fields. Most are GPS-enabled, so if there is a problem area detected via the drone's camera, the farmer can access the GPS co-ordinates to visit the spot and investigate further. Some drones use an infrared camera that can measure plant health and identify stressed areas that are not showing visible symptoms. Thermal detection cameras can help ranchers find individual animals by detecting body heat. And there are drones that have been equipped with a small tank and the ability to spray herbicide on individual weed escapes across a field, eliminating the need for a full field treatment with a big sprayer. We're still in the early days of drone technology, but farmers will find creative ways to put them to work. ■

*Peter Gredig is a corn, soybean and wheat producer near St. Thomas, ON. He is also a partner in AgNition Inc., a Guelph-based mobile development company focused on building agriculture apps and solutions. Follow Peter's tweets @agwag.*





# The madness of “locavorism”

THE ROMANCE OF EATING LOCAL MASKS THE REALITIES OF OUR FOOD SYSTEM



## LOCAVORISM—A LIFESTYLE

philosophy that encourages people to eat only or mostly locally produced food—has gained many influential adherents in recent years. Strangely, though, local food proponents never ask themselves this most basic question: If things were so great when most of humanity’s food supply was produced close to home, why was the globalized food supply chain developed in the first place?

Not surprisingly, it turns out there were many good reasons for going beyond one’s “foodshed.”

Among other benefits, cost-efficient long-distance transportation made it possible to channel the surplus food production of regions that had experienced good harvests to those that didn’t—in the process, ending famine in developed economies. As with everything else, putting all of one’s food-security eggs in one regional agricultural basket can only result in disaster when floods, droughts, frost and other calamities strike one’s local producers.

Developing large-scale monocultures in the regions best suited to specific plants and animals occurred spontane-

ously throughout history because doing so delivered more food while using much less land, energy and other resources than more diverse, but less efficient, smaller operations. This is why the notion of “food miles” (the distance food items travel from farms to consumers) promoted by local food activists in the name of sustainability has been repeatedly and rigorously debunked in numerous life-cycle assessment studies. In short, producing food typically requires (much) more energy than moving it around, especially when significant amounts of heating and/or cold-protection technologies, irrigation water, fertilizers, pesticides and other inputs are required to grow things in one region but not in another. Furthermore, the distance travelled by food matters less than the mode of transportation (e.g., a container ship versus a truck).

Producing more food ever more efficiently in the best locations delivered greater abundance at lower prices, and allowed more people to leave the farm to apply their talents to other ends. One result was the creation of many new jobs in different lines of work. Another was that large areas of marginal agricultural land in advanced economies were abandoned and eventually reforested. Modern agricultural practices thus made it possible to have both our economic and environmental cakes, and to eat them both.

Unfortunately, most locavores will not be bothered with positive long-term historical trends, nor acknowledge that our current agricultural technologies are the end result of a ruthless process of trial and error in which countless less-efficient alternatives were discarded over time. As they see things, the past is largely irrelevant—today’s technologies are imperfect and innovations that echo past practices will forever change the way food is produced.

Sadly for local food activists, the same fundamental economic realities that shaped the development of our globalized food supply chain are still very much with us. Indeed, were they to look at the issue, they would quickly realize that the history of all advanced economies in the last two centuries are replete with local food initiatives. Common triggers have included economic recessions (to boost regional economic activity or to protect against price inflation); wars or the threat of war (to increase local food security); romantic impulses during relatively prosperous times (for environmental and social considerations); alleged excessive commodity travel (too much transit between various points versus a more straightforward distribution itinerary between producers and consumers); and unnecessary handling by too many profit-seeking intermediaries. Yet, none of these local food initiatives survived the end of armed conflicts, economic recovery or competition from more efficient commercial operations.

What today’s enthusiastic locavores ultimately fail to understand is that their “innovative” ideas are not only up against the (alleged) “Monsatans” and “Monstersantos” of this world, but are also in a direct collision course with regional advantages for certain types of food production, economies of scale of various kinds in all lines of work, and the fact that pretty much anything they can achieve in urban environments can be replicated at lower costs in some part of the countryside. These basic realities defeated sophisticated local food production systems and initiatives in the past, and will continue to do so for the foreseeable future. ■

*Pierre Desrochers is an associate professor of geography at the University of Toronto and co-author of The Locavore’s Dilemma: In Praise of the 10,000-Mile Diet.*



# Local food builds strong communities

**“WHERE DO YOU THINK THIS carrot came from?”** I once asked a young student. “The grocery store,” he answered confidently, almost with condescension. “Where else would it come from?”

This attitude is not a rarity. This is the state of our youth, and most adults too. We mindlessly consume food that comes from every corner of the world. We’ve all become accustomed to eating fruits, vegetables and proteins that are not native to our land. We are disconnected from the food we eat, as well as the people who raise and grow it, and we don’t usually question how it gets to us.

The local food movement has developed slowly, but it has gained a great deal of momentum in the last five years. Buying local matters. There is no cut-and-dried definition of what the boundaries are for eating local, but a loose definition of a local food would be something that doesn’t travel long distances to reach the consumer. There are remarkable benefits to supporting your local growers by eating local foods.

## LOCAL FOODS ARE FRESHER AND TASTE BETTER

Foods that do not require being trucked or flown in from the far reaches of the continent are fresher, making them more flavourful. Take strawberries as a delicious example: those big, fat strawberries from California may be enticing, but they’ll never match the deeply sweet—albeit smaller—berries picked fresh the day before they hit farmers market shelves. Better yet, take advantage of the opportunity to go to the farm and pick them yourself.

## EATING LOCALLY MEANS EATING SEASONALLY

What’s the old saying? “Absence makes the heart grow fonder.” In this day and

age, when we’ve grown comfortable with having whatever fruits and vegetables we want, whenever we want them, it sounds slightly absurd to wait for asparagus, cherries, corn or peaches. But these are perfect examples of when waiting pays off. Nothing compares to biting into that first-days-of-summer cob of Taber sweet corn, butter dripping down your arm. Or how about summer peaches, those beautiful fuzzy orbs from the Okanagan that beckon you to take a bite? Eating fruits and vegetables in season means eating them at their best.

**PURCHASING LOCALLY GROWN FOOD IS GOOD FOR THE ENVIRONMENT AND GOOD FOR YOU**  
Food that doesn’t have to travel thousands of kilometres to get to your plate means less fuel consumption and less pollution. Imported foods are often sprayed with chemical preservatives to maintain their freshness during their journey to the supermarket. Supporting local growers not only means preserving farmland and green space, it ensures people know where their food comes from. There is security and safety in knowing who grows your food, how it’s grown and what steps it takes to get to your table.

**BUYING LOCAL IS GOOD FOR YOUR ECONOMY**  
Supporting your local growers by purchasing the fruits and vegetables of their labour means your money stays close to home and is reinvested into your community through local businesses and services. You know your hard-earned dollars are going into the pockets of hard-working families, where they’ll be used to put food on family tables, enrol children in music classes and sports, and pay for higher education. You are making a measurable and meaningful difference in your neighbours’ lives.



## SUPPORTING LOCAL GROWERS REINVIGORATES THE FARMING COMMUNITY

Agriculture in Canada is facing a crisis of succession, where more than half of the farming population is over 55 years old and approaching retirement. The new generation of farmers needs our support, and we need theirs. Dedication to buying local food ensures continued access to diverse crops, the sustainability of our farms, the longevity of farming traditions and the preservation of our precious farmland.

## LOCAL FOODS CREATE COMMUNITY

There’s something special about connecting with the people who raise and grow your food. You come to know the vendors at your local farmers’ market—your butcher, your cheesemaker, your baker. Those relationships have immense value for you, but also for them. Cultivating relationships, particularly these ones that are mutually beneficial, is what makes a community stronger and more vibrant. ■

*Leilani Olynik is the marketing and events co-ordinator for the Calgary Farmers’ Market. She has a diverse background in digital marketing, blogging, social media, non-profit administration, food and wine, and teaching overseas. She can often be found buzzing around the market, promoting its hard-working vendors, sharing their stories and creating recipes for visitors.*





# On the road again

HAULING GRAIN IS JUST PART OF THE JOB IF YOU WANT TO BE A FARMER



Photos: Michael Interisano

Growing a successful crop is only the beginning. Transporting that crop to market can be a long and expensive process.

**GROWING A SUCCESSFUL CROP IS** the perennial goal of a farmer. However, that's just one small step in the bigger puzzle of turning a profit. Freight costs—namely trucking and rail—are a fact of life for farmers, the same way farmers must always contend with the weather. Farmers deliver grain to a rural drop-off, then the grain is moved by rail to a port, where it is loaded onto a vessel. Where it goes from there will require a passport.

Without getting the crop to market, there is no money to pay the bills associated with preparing the land, growing the crop, harvesting it and getting it safely into storage.

Getting the crop “in the bin,” as farmers say, is really just a starting point. Now what? Indeed, take another step back. Moving the crop from the combine in the field to the grain bin involves a lot of dollars. Farmers have to shoulder significant risk and debt to move their crops. When

farmers talk about their finances on a scale of hundreds of thousands of dollars, it isn't bragging, it's just reality.

A combine harvester is emptied many times as it chews its way through the ripe crop in the fall. Ideally, this operation doesn't stop, day or night, for as long as conditions are conducive to harvesting grain that is both ripe and dry enough that it won't spoil in the bin.

The combine dumps its load into a grain cart—a behemoth that can haul up to 20 tonnes or more of grain—pulled by a tractor, which is then driven back to a central storage area where the grain is transported into specialized storage bins using a grain auger. More and more farmers are using semi-trailers to haul grain from the field to the yard, and farmers often have more than one semi in their fleet.

Roger Leroux farms with his brother Mark and their families nearly 20 kilometres north of St. Paul, AB. Theirs is a

pretty typical Prairie grain farm. Their business, Leroux Farms Ltd., operates on about 4,500 acres of farmland. As part of their mixed grain operation, they also run a custom feedlot during the winter.

“Everything is a cost for us, for every farmer,” said Leroux. “Storage in our main yard is a cost. Hauling the grain to our storage yard is a cost.” Leroux and his brother estimate they might harvest and store in the neighbourhood of 6,000 tonnes of various grains every year. “And of course, we have to separate everything,” he added. “Our barley destined for malting or feed, canola, wheat and peas have to be kept segregated. And even if we have different qualities of the same grain, that has to be kept separate as well.”

At harvest, the Leroux family hires help to ensure there are enough hands to run the combines, move and maintain equipment, haul grain and complete the myriad





other tasks that have to be finished in a very short timeframe.

“Once the grain is safely in storage, then we start the process of getting it sold,” explained Leroux. “Just like anything else, we have to shop it around to the different buyers. However we sell it, we have to get it to a so-called delivery point, usually an elevator in our case.”

The elevators to which Leroux refers are no longer those quaint and distinctive structures that once dotted the Prairie landscape. Today, elevators are better described as inland terminals. These terminals only collect grain of the correct type and quality to match the sales the company owning the elevator has made and is shipping at that time. These are not storage facilities. Instead, they are designed for maximum throughput—to receive, grade and elevate the grain in the facility with the sole intent of getting it out into a 110-car grain train in less than one week.

“We have three semi-trucks that we own and operate on our farm,” said Leroux. “Two we use on the road for hauling grain, the third is an older unit that we use primarily around the farm. These units are busy year round doing our own hauling. In today’s farming landscape, with elevators pretty far apart, a semi is an essential piece of equipment.”

What’s a typical semi-truck price tag these days? If you were to purchase a new Peterbilt or Kenworth, you’d be looking at \$200,000 or more. Used vehicles can be significantly cheaper, but this is still

a large cost of doing business. “It’s a big investment, yes,” said Leroux. “However, when you are freighting 6,000 tonnes of grain at \$12 per tonne, it doesn’t take long to figure out that it’s actually cheaper to do it ourselves with our own equipment.”

Jonathon Driedger is an agricultural professional who works directly with farmers. As a senior market analyst with FarmLink Marketing Solutions, he provides analysis and strategy to farmers marketing, or selling, their crops. “The raw commodity—be it canola for canola oil manufacturing, or wheat for milling and baking, or malting barley that is malted and sold on to the brewing industry—has to get from the farm to the end user in what really is an expensive and complex process,” said Driedger.

Not only do farmers have to be concerned with managing their farming operation, they also have to have one eye on what is happening with Australia’s wheat crop or Europe’s barley crop, or down in the U.S. with corn, or lower yet in South America with soybeans. “The market is the market,” said Driedger. “We have little influence as individuals on how that fluctuates, yet farmers have to sell all, or at least a very good chunk, of their crop every year in an orderly way to pay the bills that are going to come due.”

Driedger explained that, very roughly, canola might average a yield of 40 bushels per acre, which would be an average to good crop, depending on where you farm and what the weather threw at you. “The

cost to grow that crop—equipment, fertilizer, seed, fuel and so on—is about \$300 per acre. So that farmer who harvests 40 bushels, if he got \$10 per bushel, would have to market about three-quarters of his crop just to pay the bills to grow the crop.”

Driedger said that volatility in crop markets means farmers’ financials in any given year are a moving target. “Margins fluctuate enormously for farmers,” he said. “They can range from excellent to break-even or worse, and the farmer has little to no ability to influence it. With even a modest swing in yield or price, the outlook can go from positive to grim very quickly.”

And no matter how much the market is compensating the farmer for his crop, he still has to bear the cost of getting his grain to a marketable position.

The cost of rail transportation is also borne by farmers. Not directly, but indirectly in the price they receive for their grain. For example, while wheat might be worth \$220 per tonne in position at the Port of Vancouver, the price the farmer receives at the elevator is \$220 minus the cost of the rail freight to get it to Vancouver. That can range from \$35 per tonne to perhaps \$45 per tonne, depending on where the farm is in relation to the port.

Theoretically, if Leroux were to ship three-quarters of his 6,000 tonnes of production to port, the cost of his rail freight would be more than \$155,000. The numbers are staggering.

Add it all together and it becomes a large number to go from seed to bin to market every year. And reports of bumper crops often represent an opportunity for farmers to upgrade or replace machinery, grow the farm or pay off land or other debt—it’s rarely pure profit.

Farming is not for the faint of heart. By the same token, Driedger said farmers don’t go in “eyes closed, naked, every year.” They can buy into crop insurance programs that will help in the case of crop failure or events like hailstorms, which can damage the crop and cause yield and quality losses. Following a solid marketing plan and hedging with futures and options are additional ways farmers can navigate market volatility, according to Driedger. ●





# The business of farming made fun

VIDEO GAME TEACHES KIDS ABOUT THE COMPLEXITIES OF AGRICULTURE



In the Journey 2050 game, players must balance the different components of sustainable agriculture to maximize their sustainability score.

## FOOD AND FARMING GO HAND

in hand, but in the urbanized 21st century it can be difficult for kids—and even grown-ups—to make the connection. Journey 2050, a farm simulator video game developed by a group of agriculture organizations, helps students in junior and senior high understand the intricacies of producing enough food to sustain a world population that experts predict will swell to nine billion people by 2050.

The computer game was designed to appeal to technology-motivated students in Grades 7 to 12, as well as teachers looking for direct links to science and social studies curriculums. Journey 2050 lets players make choices about crop types, fertilizer application methods, water usage, and business and social investments, as they aspire to develop the most sustainable farm possible.

Sustainability, as Journey 2050 demonstrates, is not a single measurement, but rather the result of a multitude of factors.

“True sustainability is balancing your social, economic and environmental program,” explained Lindsey Verhaeghe, corporate social responsibility specialist for Agrium, an agriculture input company. “You have to make investments back into areas that are weak and improve them.” Agrium partnered with the Alberta Canola Producers Commission and the Calgary Stampede to create Journey 2050.

To help students visualize the need for balanced investment, each player has a barrel in the corner of the screen. The slats of the barrel represent components of sustainable agriculture such as water quality, soil health, education, food production, profitability and jobs. A player’s sustainability score can only rise as high as the

shortest section of the player’s barrel.

Verhaeghe pointed out that students quickly realize how difficult it can be to produce food sustainably, and the goal of the game is to show players the need for continued advancement and innovation in agriculture.

No one knows better than Robert Saik how technological improvements can change agriculture for the better. Saik is an agronomist who has been advising farmers for 30 years. He noted that farmers improve their soil health by increasing organic matter. On Canadian farms, this has been accomplished by moving towards zero or minimum tillage.

“By doing this, we conserve organic matter and reduce erosion from soils,” Saik said. “And it’s technology such as advanced equipment allowing us to precisely place nutrients and other crop inputs, along with enhancements in genetic technology, that allow farmers to achieve greater soil health.” He added that for every one per cent of organic matter, farmland sequesters 20 tonnes of carbon per acre, thereby reducing greenhouse gas emissions. Soils high in organic matter also store water more efficiently, allowing farmers to produce more food with the same amount of water.

Nutrient use is another component of agriculture that can improve the sustainability of farms, said Saik. Nitrogen fertilizer is the most essential plant nutrient, and a key to human survival, but too much of it can acidify soils. On the other hand, Saik said new technology like slow-release fertilizer allows farmers to reduce nitrous oxide emissions.

Just as Journey 2050 shows students how sustainability is multifaceted, Saik believes that more environmentally sustainable agriculture is also more economically sustainable.

“Farmers don’t want to waste or utilize inputs incorrectly,” Saik said. “It’s important for people to understand that when they see farmers working in their fields, those farmers are making conscious decisions to grow the safest and most reliable crops in a sustainable manner.”

Saik founded the central-Alberta-based company Agri-Trend, which advises farmers on crop production and marketing. These days, however, he spends a great deal of time working with and speaking to farmers around the world. Journey 2050 also takes a global approach. Students follow three farm families from Canada, Kenya and India. While the crops change, the need to maintain healthy soil, use nutrients efficiently and minimize the farm’s environmental footprint remain the same.

Anyone can play the game online at [journey2050.com](http://journey2050.com). However, the Journey 2050 committee also provides ways for students to have a more in-depth educational experience. Teachers in and around Calgary can take their students on a free daylong field trip to the Calgary Stampede grounds, where educators walk students through the principles behind sustainable agriculture and then let them compete against each other as they play Journey 2050 on tablets.

Robyn Kurbel, education and programming co-ordinator for the Calgary Stampede, runs the field trip. In the 2014/15 school year—the game’s pilot year—Kurbel said 5,700 students participated in the field trip, adding that the program is booked until the end of the 2016 school year with an estimated 7,000 students who experienced Journey 2050 in 2015/16.

“The kids are usually dead quiet when they’re playing the game, which is impressive considering that 12-year-olds are usually never quiet at the same time,” said Kurbel, a former high school science and math teacher. “You’ll walk around and hear the kids talk about how the game is addicting, but they’re learning something as well.”

Teachers can also book guest speakers to come to their classrooms and do a shorter version of the field trip. As well, there is an entire suite of lesson plans, classroom activities and mini-tests that



teachers can access online and present to their students, even if they themselves do not have an agricultural background.

Chantal Goudreau, a Grade 9 science teacher at St. Matthew School in Calgary, is one such teacher. She took advantage of the opportunity to have a guest speaker from Journey 2050 present the material to her class before the students played the game.

“I know that if I present this program or have a speaker come, my curriculum objectives are being achieved,” Goudreau explained. “But what’s great is that it’s a different way than I would be able to present it.”

She appreciates the hands-on learning about practical issues that the game provides. “It’s teaching the kids about real world problems that we’re facing,” Goudreau said. “They end up making choices in terms of how they want to improve soil health, and this translates into sustainable agriculture and what that means for our population 30 years from now.”

The game doesn’t stop with practical production issues on these farms either. Students learn about how food waste around the world cuts into global food supply. They also gain a better understanding of how urban sprawl reduces available agricultural land. Finally, they see how a career in agriculture can be an option for them, even if they didn’t grow up on a farm.

“At the end of the game you can build your own character and it spits you out different options of careers you could have,” Goudreau said. “As they play this game, they get interested in these issues and they realize they like this and could do it for the rest of their life.”

Verhaeghe stressed the importance of education both for farmers and their families as well as for people who may have never been to a farm. “If we’re going to sustainably feed the world, we have to have educated people invested and working in agriculture,” Verhaeghe said, adding that, at Agrium, for example, everyone from information technology experts to human resources professionals play a role in the process of producing food.

Whether playing Journey 2050 guides students to a career in agriculture or not, everyone needs food, and an informed eater is essential for the continued success of agriculture around the world.

“Agriculture is the glue of civilization,” Saik said. “Consumers have a very large role to play in educating themselves in the facts and the science involved in agriculture today.”

As Verhaeghe sees it, Journey 2050 is a 21st-century way of educating the next generation about 21st-century challenges. “Agriculture has never been taught like this before so it’s a really new opportunity for schools. It’s cutting-edge; there’s not another program like this.” ●





# Pay dirt

## HEALTHY SOIL IS A TOP PRIORITY FOR FARMERS EVERYWHERE

YOU MIGHT JUST THINK OF IT AS dirt, or you might not think about it at all. But in the agricultural industry, soil takes on a very different meaning—as one of the building blocks for all the life on Earth.

“In terms of a living entity, there is more life in soil than you would see anywhere on the planet,” said Len Kryzanowski, director of environmental strategy and research with Alberta Agriculture and Forestry. “For a farmer and for society in general, soil is definitely the foundation for our food system.”

Soil is a reservoir for nutrients and water. The material contains millions of living organisms. The micro-organisms in the soil include fungi, bacteria, insects and earthworms that all play vital parts in the health of the soil and in soil processes. For the soil to function at its best, these organisms need to be fed and balanced. Without the soil organisms, ordinary processes like the decomposition of organic matter would not occur.

Alberta has a large variety of soil conditions and types across the province because of its varied climate and the parent material from which its soils developed. The province’s soils are fairly young, about 10,000 years old, and are influenced by precipitation, climate and temperature, as well as the plants that initially grew on the soil. A climate gradient exists from the south to the north of Alberta, displayed by grassland soils in the south, transitioning to wooded or forest soils in the north.

“As the plants grew, they died and replenished the soil with their organic matter, so you had different types of organic matter going into the soil, which will affect the microbial and biological processes going on there,” said Kryzanowski.

Soils across the province range in colour and type from brown, to dark brown, to black, to even grey soils, which are more heavily leached of nutrients.



When it comes to soil, there is far more than meets the eye. Millions of micro-organisms live in the soil, each playing an important role in its health.

Photo: Adrian Shellard

Like people, soils need balanced nutrition to be able to grow crops. In a closed-loop system, the plants die and return their nutrients to the soil, enabling the soil to grow more plants.

“In farming, because we’re actually removing parts of the crops, whether it’s vegetables from gardening or the seeds from grain we grow in the field, we’re removing the nutrients that make those components,” said Daryl Tuck, a farmer from Vegreville.

And that’s why farmers often need to add fertilizer back into the soil to supply the nutrients that plants need. Fertilizers all come from the earth. There are traditional sources of fertilizer like manure. Nitrogen fertilizer can either come from the soil or be produced commercially. Phosphorus occurs naturally in the soil, and is mined from the soil and processed into a more concentrated form. Potassium is another nutrient that crops need to grow that can be applied as a fertilizer. Micronutrients are nutrients that are not present in the soil in large quantities; plants only use small amounts of these nutrients, but still need them to function.

“Soil has a limited capacity to supply all of the nutrients that a crop needs,” said Michelle Nutting, manager of agricultural sustainability with fertilizer producer and retailer Agrium. “The link between soils and fertilizers is that when soils don’t have enough of all the elements that are needed to produce a healthy crop, then farmers are able to diagnose what isn’t there in the right amounts and add that to the soil in the form of fertilizer.”

Nutrients are the soil’s vitamins. Even if you eat a balanced diet, you might still be missing some of the essential elements. You might need extra vitamin D, for example, which can be added to milk or taken in pill form. Similarly, nutrients like phosphorus and nitrogen can be added to the soil. Whenever you eat a food product like bread made out of wheat, you’re actually eating nutrients that were stored in the ground.

Applying fertilizer helps farmers get the best production out of their land and the biggest crop possible. But in order to determine how much fertilizer they need, farmers need to test their soil.

“I take a sample of the soil from my field to get it analyzed for its nutrient content,” said Tuck. “This tells me how much available nutrient is in the soil before I decide how much I need to fertilize.”

Once he has his soil analysis, Tuck, who farms canola, peas and wheat on land settled by his great-grandfather, can crunch the numbers and make some decisions about how to balance the nutrients in his soil. It’s a delicate decision. Adding more fertilizer than the crop needs isn’t just a waste of money, it’s also a poor environmental decision because the unused fertilizer can leach off or seep into a waterway.

“When you have more nutrients in the soil than what the crop needs to grow, you have extra supply and the environmental conditions might cause the nutrients to move off the farm or field if you have heavy rainfall or erosion,” explained Nutting.

But there are also problems if Tuck doesn’t add enough fertilizer. If the crops don’t have enough nutrients, they might not grow as well as they could. “In different growing areas, the biggest factor that influences our fertilizer use is our average or expected rainfall.



Photo: Michael Interisano

Farmers often need to apply fertilizer to their soil in order to replace nutrients used up by the last crop.

Crops require moisture to grow, and the more moisture we have (to a point), the more our crops will yield, and the more nutrients are needed to produce that crop and use that moisture,” he said.

Also, different crops need different amounts of fertilizer.

“If I’m growing canola, in addition to the nitrogen, phosphate and potash fertilizer that I would put, I would also add sulphur fertilizer because canola uses a lot of it,” said Tuck. “On my farm, I have some poor-quality land and it’s not capable of producing a high-yielding crop. On those fields, I use less fertilizer because I can’t produce a crop and so it gets too costly to produce a crop where I am applying excessive amounts of fertilizer.”

Farmers live on the land where they grow food, and they need their soil healthy for environmental and economic reasons. Tuck’s family has been on the land for 100 years, and by managing his farmland properly, he’ll ensure that it will be passed on to future generations.

Responsible fertilizer use is part of making agriculture more sustainable. Using fertilizer is one way that farmers can make the most of their land and use it effectively.

Kryzanowski has conducted studies about fertilizer use in the province and has found Alberta farmers are using fertilizer responsibly. “In the vast majority of the province, the nutrient management is very good,” he said.

Added Nutting, “We’re trying to grow the most amount of food on the least amount of land possible.” Using fertilizer responsibly allows farmers to leave their land viable for wildlife habitat and recreational activities. Farmers are also consumers, and they read the same articles about environmental degradation and have the same worries as urban dwellers. They want to preserve their land and the health of the environment.

“You can talk to any farmer in Alberta and ask them where the most beautiful places are on their farm, and they can show you where the ducks nest and the deer cut through,” said Nutting. “There’s a lot of awareness of the environment on the farm and they really take care of that.” ●





Glenbow Archives NB-55-517

## Well worth the wait

“IF YOU HAVEN’T TRIED SHELLY’S 4X bread, are you really enjoying that sandwich?” In all honesty, the ship has long since sailed for that bread-tasting opportunity. But if you were around Western Canada in the first half of the 20th century, you might be quite familiar with the compelling billboards, illustrated with cartoon characters. They appeared across the West, promoting the quality of the Vancouver-based bread maker’s high-quality 4X bakery products. On some signs, it was recommended to eat two slices at every meal.

Shelly’s was described as bread dough that had been prepared, allowed to rise, then knocked down and allowed to rise again—a process that was repeated four

times before being baked. It was intended to improve the quality and texture of the bread, and to improve the overall eating experience. But with the arrival of new technology and a growing preference for high-speed production, the 4X process—which can add four to six hours to the bread-making process—hasn’t been used in commercial bakeries for many years.

However, it was a process that worked in the early half of the 1900s for William Curtis Shelly and his brother James—Ontario bakers who moved west in 1910 to expand their business. They started Shelly’s 4X Bakery in Vancouver, but the bakery was just the tip of the business iceberg that made William Curtis Shelly a millionaire, a prominent businessman

and an influential B.C. politician during the Great Depression.

In the 1920s, the Shelly brothers became famous for their 4X bread that was delivered door-to-door in neighbourhoods across B.C.’s Lower Mainland “in gleaming vans drawn by prize-winning horses.” There are many photos in Vancouver historical archives showing bakers at work preparing pans of bread dough for the large commercial ovens. Building on the success of their original bakery, the Shellys bought other local bakeries and eventually formed a company called Canadian Bakeries Ltd., which sold the famous 4X bread, cakes and other bakery products across Western Canada well into the mid- to late 1940s. ■



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