

CountryGuide

Strategic. Business. Thinking.

WESTERN EDITION / COUNTRY-GUIDE.CA / MAY/JUNE 2016

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MACHINERY

Deere goes shopping

The big green brand is picking up more independents to extend its product lineup.

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Across Canada (and around the world)

It's our annual look at the evolution of farming in Canada — this time with a twist. For 2016, *Country Guide* journalists have turned their sights on three major industries — beef in Alberta, pork in Manitoba, and horticulture on the Niagara Peninsula — to look for our future on cutting-edge farms today. Then we take off for Germany, India and China, to see how they will shape your tomorrow too.

It's unsettling, it's optimistic, it's sobering, it's inspiring... it's farming!

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'Big' plans for summer in the city



Swift Current is still a fine place. Brandon is too, and so are London, Kingston, Lethbridge and Prince Albert, along with an atlas full of other small cities across Canada. But...

... they just don't come up to the mark, at least in this one important way.

Even Winnipeg, Saskatoon and Edmonton fall short, partly because you feel too comfortable in them. Nor does even Calgary make the list, although that's OK because Ottawa doesn't get on it either.

Canadians have built three of the world's great cities. Vancouver, Toronto and Montreal are different from anywhere else in the country, even if the rest of the country is racing to become more and more like them.

So take a week this summer and visit one of these three. Choose one that you've never spent time in before. Or, if you've been in all three, choose the one that makes you the most uncomfortable.

Take the family too, especially if they're also uncomfortable. They should appreciate why other kids are so addicted to city life.

And spend the entire week there, not just a few days. Be there long enough so you have to get off the tourist track.

I admit I first wrote a version of this editorial five years ago, and farmers since then have become much better travelled, and much more sophisticated, not only in the way they run their businesses but also in the way they live their lives.

But it still makes sense to talk to your family today and set a date to visit a super Canadian city. In the first place, you'll have a great vacation, which is a good thing. You've earned it.

Plus, if you're like most rural Canadians, you'll begin

finding that most of our preconceptions about big cities are actually misconceptions.

So, do go to the great food markets. But don't stop there.

Instead, look at the city with your business eyes. You'll be amazed at the entrepreneurial energy. Ride the subways. Sit in the street-side cafes. The city is crammed with people on a mission to make a deal.

Our great cities aren't made up of people who are cogs in someone else's machines. They're hustling for themselves, just as you hustle for yourself too.

And sometimes, just look at the city as a place where millions of people cluster because life is so good. Check out the opportunities to see and hear new and amazing things, the chance to follow any whim, or pursue any dream.

And while you're at it, do some serious wondering. Your home town today is a lot more like Toronto 25 years ago than anyone would have thought. Don't believe it? Check what's for sale in your local grocery store.

So, what's coming your way next?

The disconnect between farm and city can be at least as much the fault of the farm as it is of the city. If consumers take farmers for granted, it can be at least as true that farmers take cities for granted too.

So take the trip this summer. Maybe I'll meet you there (I've got GoogleMaps open as I write). And when you get home, let me know if we've got it right. I'm at tom.button@fbcpublishing.com.

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John Deere's own line of sprayers will soon be enhanced with models from speciality sprayer manufacturer Hagie.

PHOTO: JOHN DEERE



Deere goes shopping

The big green brand is purchasing specialty manufacturers while “balancing” its workforce

BY SCOTT GARVEY / CG MACHINERY EDITOR

In late March, John Deere announced it had taken ownership of yet another speciality equipment manufacturer. It's becoming a familiar story for the U.S.-based manufacturer.

This latest acquisition of Hagie Manufacturing, a U.S. specialty manufacturer of high-clearance sprayers, is one of a couple of purchases that Deere has recently announced.

Deere describes the Hagie purchase as a “joint venture,” but it has acquired majority ownership of Hagie.

A press announcement says Hagie will continue producing sprayers in its current Clarion, Iowa location, however, and for the time being, equipment made through the joint venture will continue to carry the

Hagie brand name. Even so, sales and service for Hagie equipment will slowly be integrated into Deere's global distribution channel over the next 15 months.

“Hagie Manufacturing is known for innovation and its strong customer understanding in high-clearance spraying equipment,” said John May, president, agricultural solutions and chief information officer at Deere in that press release. “High-clearance spraying equipment is a new market for Deere. The expertise at Hagie allows John Deere to immediately serve customers who need precision solutions that extend their window for applying nutrients.”

Alan Hagie, CEO at Hagie Manufacturing, also commented in the release, saying, “We have great products at Hagie that help producers be more profitable, but we need a business model that helps us reach more customers. This partnership with Deere allows our solutions to reach customers on a global scale and ensure they are supported with the world-class Deere dealer organization.”

Although Deere already produces its own in-house line of high-clearance machines, May said the joint venture investment allows John Deere to provide a broader range of sprayer options and to integrate Deere's precision technology into the Hagie equipment.

Hagie Manufacturing has built a quality reputation in high-clearance sprayers.

PHOTO: HAGIE



The Hagie acquisition is the second shortline company the green brand has absorbed since the start of 2016. In early February, Deere announced it had finalized the purchase of planter manufacturer Monosem, which is headquartered in Europe but has had a strong market presence in North America for several years.

At the beginning of November, Deere announced it intended to make the Monosem purchase. And one day later it revealed it had made yet another purchase to improve its precision planting portfolio.

A press release announced Deere and Monsanto "...have signed definitive agreements for Deere to acquire the Precision Planting LLC equipment business and to enable exclusive near real-time data connectivity between certain John Deere farm equipment and the Climate FieldView platform. The agreements represent the industry's first and only near real-time in-cab wireless connection to John Deere equipment by a third party."

Deere's May commented that this purchase will "...allow John Deere to extend the range of retrofit options available from Precision Planting to many more products and into new geographies."

The company has also signed other joint ventures in recent months that haven't involved the outright acquisition of another

firm. For example, last August it announced its dealers would now retail Soucy Track products, and that track modules from that Quebec-based firm could now be fitted onto Deere's 1770NT and 1775NT planters as a dealer-installed option.

The company has also released its own new or updated green products as well, such as the new 500D Series Draper platform headers for swathers and new commercial and construction equipment, including two new Gator models.

All of this activity comes amid

workforce adjustments the brand has made to calibrate plant outputs to the lower sales volumes that are a new reality in the ag machinery industry. In November, 220 workers received layoff notices at the Moline Seeding and Cylinder plant. In February 100 workers at the Davenport and Dubuque facilities were given their pink slips.

Deere said the layoffs "reflect the company's ongoing efforts to balance the size of its manufacturing workforce with market demand for products." **CG**



Deere also recently acquired precision planter manufacturer Monosem.

PHOTO: MONOSEM

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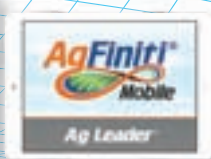


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Getting onboard

The most valuable time you spend with any employee may be their first few hours on the job

BY MAGGIE VAN CAMP / CG SENIOR EDITOR

Whew! After months of advertising, searching and interviewing, you've finally found and hired someone to help on your farm. As processes go, this one has been stressful, time-consuming, and more than a little frustrating.

Nor is that surprising. The Canadian Agricultural Human Resource Council found in 2014 that our farms have a job vacancy rate of seven per cent, leading to an estimated \$1.5 billion in lost annual cash receipts for Canadian farmers.

But in this case, your new employee arrives on their first day actually on time. You breathe a sigh of relief, assign them a job and promptly go about your business.

Wait! Before you close the door to your office to catch up on paperwork or make the calls that you've been putting off, it's time for what human resources folks call "onboarding."

According to the Society for Human Resource Management, onboarding is the process that helps new hires get quickly and smoothly adjusted to the social and performance aspects of their jobs, and helps them learn the attitudes, knowledge, skills and behaviours required to function effectively within an organization.

Research shows that fully half of new hires decide they will leave the company, business or organization in the first week on the job."

Prof. Bob Milligan, Cornell University

It turns out that if you do more than just the traditional job training during the first week, your employees will stay longer and generally be happier.

This introductory period is a perfect time to connect and engage the new person, as well as train and inform them, because a longer and more in-depth and structured orientation process will help new employees learn about their role and the farm's culture and values.

"Research shows that fully half of new hires decide they will leave the company, business, or organization in the first week on the job," says Bob Milligan, professor

emeritus of applied economics and management at Cornell University, and currently a farm human resources consultant based out of Minnesota. "Not all leave immediately, and a few probably change their minds and stay, but most leave eventually without ever becoming engaged employees."

So what exactly does a manager have to do to get a new employee onboard. It's more than teaching the skills required to do the job and filling out paperwork. It's about making them feel welcome and giving them a plan of what their new job is going to look like.

Onboarding should continue until the employee is acclimatized to your vision, core values, and farm culture, and they are fully performing the job. So be prepared for it to take time. In fact, human resources experts says the first three months at a new job strongly affect an employee's decision to stay longer.

According to Milligan, there are three parts of onboarding — orientation, engagement and training. Usually we do it in the opposite order and start with training.

Here are some ideas to help you get your new employees onboard.

ORIENTATION

Try imagining driving up to your farm for the first time, as if you've never been there. Where do you park? When is start time? What and who are important to what jobs? Where's the bathroom? The lunchroom? What do people wear here? When is the lunch hour? When are the breaks?

Answering these very obvious questions can be key to someone adjusting quickly to a new job. However, when you are so close to a workplace (maybe even raised on it) it's easy to forget these things.

For example, don't forget to share key phone numbers. And if you have a cellphone use policy, now is the time to explain it. As well, think ahead and outline the seasonal expectations and how payroll works. Tell them how to let you know when something happens and they can't make it to work or will be late.

Write down an orientation checklist, thinking about all the things a new person would need to know to feel comfortable. A good approach, Milligan suggests, is to ask the most recent employee you've hired to help develop the checklist and add to it over time. The information the new employee requires in orientation may be so second nature to you, he says, you may overlook important questions.

TRAINING

Gone are the days when you could simply show a new employee where the tractor was parked, and then point to the field that needs work and let them go at it. Today when an employee may be taking on both high-skilled and low-skilled jobs, as well as some jobs that are complex and some that are repetitive, plus jobs sometimes where dangerous machinery is involved, training is essential.

As well as making it a safer work environment, good training can increase consistency and productivity, and it can reduce employee turnover. "Explain why tasks are performed the way they are," Milligan recommends. "This explanation will enhance the new employee's comfort level, confidence, and engagement in the tasks and the farm."

Also know your provincial regulations. As of July 2014, for instance, workplaces covered under Ontario's Occupational Health and Safety Act include all farms with paid employees. They must complete basic health and safety awareness training.

The Canadian Agricultural Human Resource Council's human resources tool kit (www.cahrc-cchr.ca) has modules to develop on-the-job training for workers in lower-skilled positions, a safety training program for your workers,

and records to track training and procedures. Documenting training can potentially resolve legal or insurance issues resulting from workplace injury or illness.

Also, keep in mind that training should be longer than one session or one day. Don't simply forget about new employees. And whatever you do, do not forget that they're new, even if they seem very competent. Managers should regularly check in on new employees, especially in their first months.

ENGAGEMENT

Engagement can begin on day one. "The most productive, easiest to supervise, and longest tenured employees are those who are passionate about the farm's success," says Milligan.

Frequently discuss and use the farm's vision and core values, starting during the recruitment process. This can include sharing the history of your farm and the people who founded it. In addition, explain your hopes for the future and how you plan to make those dreams happen.

"Let your passion for the farm show through," says Milligan.

The first week is also not too early to talk about opportunities for career paths at your farm. By

connecting early with possibilities, you'll stimulate goal setting and engagement. Beside new employees are likely to be thinking about their futures.

For many, as well, being connected to the people at their workplace can be as important as the work itself, so managers need to build strong relationships with their entire workforce. Having friends at work is usually correlated with engagement and long-term service.

During the orientation of the first week, also take time to introduce your new employee to everyone they will be working with, maybe using your knowledge of the new employee to suggest common interests. Also, share the traditions and events important to the farm's people and the community's culture, says Milligan.

This social need goes beyond the first day, so it's important to check in to make sure the new employee is being assimilated into the workforce.

To make sure this happens, Milligan suggests explaining to new employees on their first day that you'll meet with them weekly at a set time to discuss their onboarding process.

And never forget these two simple questions: What's going great? What could be better? **CG**

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A goldfish is sharper than you (thanks to smartphones)

Researchers recently surveyed 2,000 Canadians and also studied the brain activity of 112 individuals using electroencephalograms. What they found is quite intriguing.

Canadians' average attention span was 8.25 seconds in these studies in 2015.

In 2000, it had been 12 seconds.

The average attention span of a goldfish is... nine seconds.

How did this happen? According to a Microsoft study, our smartphones are responsible.

But before we get into causes, is it actually a problem if we are not able to hold a coherent thought for more than eight seconds?

In fact, the consequences are significant for everyone, including students, workers, parents and leaders. But let's focus on the consequences for leaders. A leader's tasks, to name a few, include problem solving, making decisions, innovating, managing, planning, organizing, and prioritizing.

For these, we need what we call working memory. Working memory is the ability to keep several relevant pieces of information in mind at once. It involves staying focused on critical information in order to reach your goals.

We think we do more in this age of instant information, but the quantity and quality of our work actually suffers. We lose on every metric: health, productivity and relationships

For example, if you are evaluating a business decision, you need to focus on all that is relevant, including timeframes, production costs, information about your other options, and your risks.

If you are distracted by emails, texts or Facebook posts, you increase your risk of making mistakes, finishing too late, or forgetting about the proposal altogether.

Working memory — the ability to stay focused — is one of the most important keys to good performance in many jobs (and for students). Think about a child who wants to do his homework while watching TV, checking Facebook, listening to music, and texting his friends. He tries to say, "It's no problem, Mom, I swear! I'm multi-tasking."

But you know better. The ability to maintain your focus is one of the most distinguishing character traits of successful people.

Surveys show that 77 per cent of people aged 18 to 24 are continually reaching for their smartphones, compared to 10 per cent of individuals who are 65 years old and up. Children and young adults are losing the ability to not be occupied. Their brains are addicted to novelty and excitement.

The typical manager is interrupted every eight minutes. A full 28 per cent of their time is occupied by unnecessary interruptions from which they need to get back on track.

How can we be productive and calm at the end of the day? We face what some experts call "an epidemic of overwhelm."

Our brains have not evolved to deal with constant stimuli. And a lot of the information that interrupts our day is either unimportant or not aligned with our goals, mission and values.

You know that feeling you have when two people are trying to speak over each other at the dinner table? It's impossible to follow the conversation, and we get overwhelmed. We do this to ourselves with technology. We try to have many conversations at once, and we think we're good at it.

We don't realize what we miss or the damage we cause to the real person in front of us. We don't recognize our brain's craving for silence and rest.

We're losing our ability to pay attention and make good decisions, and so we revert to the level of a goldfish.

We think we do more in this age of instant information, but the quantity and quality of our work actually suffers. We lose on every metric: health, productivity and relationships.

Of course, in 2016 it's impossible to avoid all these distractions. However, we need to invest energy in developing new habits in order to create time and space that allow for deeper thinking. How do we accomplish this?

Know your biological rhythm for different tasks. Some people are better at deep thinking in the morning, others at night.

Maintain time every day where you turn off your technology, including your computer and smartphone.

Provide autonomy to your employees.

Allocate time where you don't work hard. Problems of any complexity require the unconscious brain.

Consciously choose your distractions; don't let distractions choose you.

If you're struggling to implement any of the

above steps, consider adopting these seven “time activities” for a healthier brain (adapted from David Rock).

1. SLEEP TIME: Refresh the mind and body; 95 per cent of us need an average of seven to eight hours of sleep.

2. MAKE TIME FOR PLAY: Your brain likes to play — so play with your child when you’re at home, and try to have fun at work. When you play, you work for your brain.

3. PRACTISE DOWNTIME: Disconnect for integration and insight. Close your cellphone while you have to focus. Set aside a full day a week without your cell.

4. TAKE TIME FOR REFLECTION, ATTUNEMENT AND MINDFULNESS: Smell the roses, listen to the birds, and breathe deeply.

5. CONNECT TIME AND THE HEALING POWER OF RELATIONSHIPS:

Your brain needs love. It becomes distracted and disorganized when it’s investing its energy in hating someone.

6. GET PHYSICAL: Improve your brain’s plasticity through exercise. Train your muscles; train your neurons.

7. FOCUS TIME ATTENTION MANAGEMENT FOR PERFORMANCE: Close the door to your office when you need to engage in deep reflection. You can’t concentrate when you have too much noise around you. Isolate yourself from time to time.

As a leader, if you want to be relevant, successful and happy, you must do better than average. It takes more than a fish brain to stand out in business and life. **CG**



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PHOTO: CHRIS YALUCK

The BUSINESS *of* BEEF

There's no such thing as commodity beef anymore, says Alberta feedlot producer Ryan Kasko. It's an attitude that is transforming the heart of Canada's beef country

BY LISA GUENTHER / CG FIELD EDITOR

Canada's beef industry seems like it's built on a contradiction. It's a sector living right on the edge of the future. Every aspect of production is undergoing change. New technology is revolutionizing how herds are raised and managed, and new consumer preferences are raising the bar in their own way too, perhaps faster in beef than in any other sector. And there's internal change as well. As business leaders, today's cow-calf producers and feedlot owners are adopting amazingly sophisticated financial and HR management systems.

Yet this is also an industry that values its traditions, and where, in many circles, a person's word is as good as a contract.

Perhaps that sounds romanticized, or even a little nostalgic, but in this industry, the stereotypes ring true. If you want to see cowboys roping calves for an old-fashioned branding, you'll have no trouble finding such a ranch in parts of Alberta or Saskatchewan. Except, you can be quite sure that those calves will also be getting a plethora of vaccinations, an RFID tag, and perhaps even a long-acting painkiller.

Plus, this industry has become incredibly diverse. There are myriad ways to raise a calf, market it, and make money on it, and all of them are happening simultaneously.

So what are the challenges the sector faces? And what are people in the industry

doing to not only survive these challenges, but to thrive in the face of them? *Country Guide* spoke to players throughout the industry to find out.

RISKS ABOUND

On a blustery spring day at Round Rock Ranching, the McGrath family place south of Vermilion, Alta., Sean McGrath turned the tractor around to meet me when I pulled in the lane. Two farm dogs, trailing the tractor, rushed along too, tails wagging.

As I said, there's a lot that's still traditional about beef. In fact, Round Rock Ranching is a fifth-generation family venture, and today it includes McGrath and his wife Tanya, plus his parents, Fred and Anne.

Their cow-calf operation runs 250 cows, with about 40 purebred Angus, and they sell Angus-Simmental replacement heifers. The cows graze pasture into December or January, and also graze bales, corn and swaths, and the family also has land near Meadow Lake, Sask., where they custom graze.

McGrath and I sit down at Anne and Fred's kitchen table for the interview. Before we start, though, the four of us discuss the merits of a good ranch horse and a good farm dog.

I'm quickly reminded, however, that despite the homey setting, beef producers

CONTINUED ON PAGE 14

“I always say you can’t teach a stick to fetch a dog. The consumers I worry about are the ones who have opinions and aren’t willing to go out to an agricultural operation anywhere.”

*Sean McGrath,
Round Rock Ranching*



like the McGraths face a host of challenges and risks, including volatile cattle markets.

Alberta beef producers can protect themselves against price drops through the Western Livestock Price Insurance Program, and McGrath says they have used it in the past.

“We’re really struggling with it... the price premium versus the coverage is not economical right at the moment,” McGrath says.

That high premium is another symptom of the risk level in cattle. It’s a tough call, he says, and like others in the industry, he believes that ultimately the best way for cow-calf producers to manage risk is still to keep a tight rein on production costs.

Cow-calf producers aren’t the only ones who wrangle chaotic markets — so do cattle feeders like Ryan Kasko of Kasko Cattle Company.

“The market risk when you’re selling the cattle can be so volatile that there’s potential

to lose \$200 or \$300 a head. And there’s sometimes potential to make that much,” he says. Kasko Cattle runs four feedlots in southern Alberta, with a total capacity of 44,000 cattle. They own their own cattle and also custom feed for others. They farm too, growing everything from corn silage to sunflowers.

Yet Kasko didn’t grow up on a farm. His father, Les, was a cattle buyer. After finishing university, Kasko went to work with his father, buying cattle and exporting them to the U.S. In 1997, the Kasko family bought their first feedlot, near Raymond, Alta.

The very next year, they got a taste of the political risk cattle feeders face. The U.S. imposed an anti-dumping duty, charging a tariff every time they sent cattle south. Add BSE and country-of-origin labelling, and you end up with a significant list of political challenges, Ryan says.

Currency swings are another risk. Cattle

futures are traded on the Chicago Mercantile Exchange. Packers pay in Canadian dollars, but they base their pricing on the U.S. market.

Since Kasko got into the feeding business, the Canadian dollar has swung from \$0.60 to \$1.10. “That has a huge impact on how we market our cattle.”

Feeders can manage those risks through a variety of financial tools, including signing contracts with packers, using the futures market, enrolling in the Western Livestock Price Insurance Program, and by trading the Canadian dollar.

“As time has progressed, I think there are probably better tools. And people are more savvy to help manage their risks when it comes to the financial side,” says Kasko.

Feeders also face production risks. The input cost of buying cattle is huge, says Kasko, and then feeders need those animals to gain and stay healthy. Kasko Cattle has its own full-time nutritionist, and works closely with veterinarians to keep animals in good shape.

At the same time, Kasko is well aware of his production costs. Over the last 10 years, the average annual profit was \$18 per head for feedlots, he says. Now, new workplace rules in Alberta will add costs, and Lethbridge County is imposing a new \$3 per cow levy to raise funds for aging infrastructure.

Northeast of Kasko, Jaylyn Ettinger knows all about production risks too. She and her husband, Grant Marchand, raise Highlands in east-central Alberta at Willow Glen Farm. When I first contact Ettinger in mid-April, she has six calves on the ground, and another 28 to go. She plans to calve out 44 cows in 2017, as they slowly build their herd.

Ettinger says the things that are outside of their control are the biggest risks. Drought and grasshoppers are top of mind after Alberta’s tough 2015. Right now they don’t grow their own feed, she says, so they took a big hit last year.

But, Ettinger says, “you ride the highs and the lows.”

One way they manage their risk is by setting their own prices for beef they sell directly to customers. Ettinger says they try to keep prices consistent year to year to build loyalty so customers will stick with them when beef prices drop in grocery stores.

People are willing to pay more for specialty beef, but it still comes down to their pocketbooks, says Ettinger.

“And if you can’t afford it, you can’t afford it,” she says. “We really struggle with

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Top Reasons to Join A Network of Farm Professionals

Although social media gets touted as the best way to connect, nothing beats in-person, face-to-face networking in a professional organization like CAFA - a community of like-minded, farm-focused individuals that links you directly into new ideas and extensive experience.

Why join CAFA? Here are four good reasons:

1. BENEFIT FROM EXPERIENCE

CAFA has members with years of experience in the same area of interest - farm families and farm businesses. The benefits of connecting with these professionals are two-fold. Not only can you share in the knowledge and experience of other CAFA members (potentially even being mentored or becoming a mentor yourself), you can also make connections that help you to augment your team and to access skills that were not readily at your disposal before.

2. SOCIALIZING & PEER SUPPORT

Everyone is busy, and often we may spend considerable time alone when working or travelling, especially in rural Canada. Socializing at regular meetings and annual events provides personal connections and

peer support. Getting together within a wider set of resources and skill sets also encourages collaboration and brainstorming.

Members are more likely to make a referral or introduction if they have met and spoken to you in person. Referrals have a lot of power and can often make or break a long established reputation. Everyone is going to want to know who they are referring or introducing, and that requires at least a hand shake.

Make it a priority to connect to peers - resources grow immensely once you look outside your office.

3. VISIBILITY AS A FARM PROFESSIONAL

CAFA is Canada's only national network of farm advisors with a central directory of farm professionals. Farm families and businesses turn to CAFA to find dedicated farm advisors and qualified farm advice. If you are in the business of advising farm clients, you will find that belonging to CAFA increases your visibility to farmers and industry stakeholders, and also to other farm advisors. Taking an executive role within CAFA positions you as an industry leader amongst your peers.

4. ACCESS TO INDUSTRY THOUGHT LEADERS & NEWS

Local meetings and annual events give you access to an incredible amount of farm-

focused knowledge accumulated by years of collective experience with members and invited guest speakers who share information, knowledge and leading edge farm-strategies designed to educate their farm advisor audience.

CAFA's Farm Update Series are premier events that demonstrate the benefits of belonging to a farm-focused professional community. Our Farm Tax, Succession and Management Update Series brings together some of Canada's top farm advisors sharing their expertise and strategies in providing guidance to farm families and businesses. The Updates are also the best way to connect and develop professional relationships with other farm-focused professionals who can help build your farm practice and your farm-resource team.

CAFA is a national not-for-profit organization dedicated to assisting farm families and businesses by increasing the skills and knowledge of farm advisors. Our primary objectives are to improve access to qualified farm advice by improving the quality of farm-focused education for professionals.

To learn more about CAFA, visit our website at www.cafanet.ca. Our website will connect you to CAFA's Farm Succession Update, May 18 in Guelph and our Farm Management Update, June 2 in Woodstock as well as help you find a farm advisor for your farm family and business needs.

Stay current and connected with CAFA.

that because you don't want to make your beef unaffordable."

Willow Glen Farm is fortunate to have an excellent provincially inspected abattoir within a 30-minute drive, Ettinger says. Bouma Meats of Provost is willing to work with horned animals. They skin carefully, so Ettinger can keep the heads and hides, which have a niche market of their own.

Like all good butchers, Bouma Meats is busy, so Willow Glen must book well in advance, which puts pressure on finishing.

Still, Ettinger isn't complaining. If they didn't have a good butcher nearby, they would have to rethink everything, she says. "That butcher is probably the single most important thing."

It's not just direct marketers such as Ettinger who rely on a good butcher. The bulk of Western Canada's beef is processed at one of two Alberta packers — the JBS plant in Brooks or Cargill in High River. Harmony Beef, a family-owned plant near Balzac, Alta., is expected to open soon and

start exporting to the European Union. However, it has been held up by concerns from the nearby city of Calgary.

There are already some doubts, however, whether cow herd numbers are high enough to support two packers. McGrath is even concerned if they can support feedlots.

"How many people are going to exit?" McGrath wonders. "What's going to happen to that infrastructure?"

McGrath thinks the industry could double cow herd numbers by better managing grazing. But it's difficult for cow-calf producers to scale up gradually, he says. And while producers are better at managing larger herds more efficiently than they used to be, there aren't a lot of new entrants to the industry.

FROM THE CARGILL DESK

Supply constraints are among the biggest risks Cargill faces, Connie Tomato, communications and community relations manager for the company, confirms via email.

Cargill faces a litany of other risks, and many

are the same ones faced by the entire supply chain. Tomato lists trade barriers, regulation, potential disease outbreaks, currency fluctuations, competition from other proteins, and misinformation spread by anti-meat NGOs and activists. As in many other businesses, labour is a key issue as well. And their supply can be affected by the same production challenges cow-calf producers face, such as drought.

Yet Cargill sees opportunities as well. It sees growth both for exports and for the domestic market, which includes food processors, retailers, and food service, Tomato says. Cargill for instance is focusing on "case-ready" products, with meat packaged in trays, boxed, and shipped to retailers.

High-quality beef is Canada's strength, Kasko agrees, and he also sees global and domestic opportunities.

"We're not going to be the cheapest product in market, but I think we can really show that we're the best," Kasko says. "If you want a good eating experience, we can help deliver that to you."

CASE 19 VERSUS BSE

For Canada's beef industry, the first case of BSE in 2003 was nearly a ruinous event. In 2002, cattle exports to the U.S. topped 1.6 million. The next year, exports tumbled to about 500,000, and in 2004, they had virtually dried up, according to Statistics Canada.

The industry is still climbing out of the BSE crater. Taiwan has slammed the door on Canada's high-value cuts. Meanwhile, the meat and bone-meal markets in the U.S. and Indonesia are shuttered to Canada.

"There's two things going on. There's the BSE, going way back to 2003," says Ron Davidson, director of international trade, government and media relations with the Canadian Meat Council.

"And there's Case 19. And Indonesia is Case 19. Taiwan is Case 19. But the U.S. is a longer-standing issue."

Case 19 is Canada's latest animal confirmed to have BSE. The Angus cow, born in 2009, was euthanized in 2015 after her owner reported her as a downer cow. That report triggered a test under the BSE surveillance program.

She was the first BSE-infected cow to be born after an enhanced feed plan was implemented.

The bone and blood meal market might not sound like much to people outside the industry. But there's more to marketing beef than selling steaks and burgers. To get the most value out of a carcass, you need access to the best markets in the world for each particular piece, Davidson says. It's one of the reasons they're "fighting very hard for the TPP (the TransPacific Partnership agreement) right now," he adds.

The industry is making strides internationally. Canada's global beef and veal exports have grown in value from over \$1.3 billion in 2011 to over \$2.2 billion in 2015, according to Stats Canada numbers provided by the Canadian Meat Council.

Our biggest export market remains the United States, in both volume and value. Last year Canada exported over \$1.5 billion in beef and veal.

But other markets are growing. China's imports of Canadian beef and veal jumped dramatically. In 2011, we exported no beef or veal to China. Last year, our exports to China jumped from just over \$40 million in 2014 to over \$255 million in 2015. Interestingly, imports in neighbouring South Korea, Taiwan and Hong Kong dropped drastically the same year.

Once a country has reopened its borders to Canadian beef, that doesn't guarantee they'll remain open. For example, importers in South Korea are nervous that the market "could go out again," says Davidson.

Each market is different, he says. "It takes a lot of work."

Kasko obviously takes pride in the beef he produces. When I comment on “commodity beef,” in an effort to differentiate it from more specialized beef, he politely takes exception. He produces conventional beef, he says, but he doesn’t see it as a commodity.

“We’re using the best technologies that we can use to produce the beef as efficiently as we can. And it’s high quality.”

As the industry rebuilds the cowherd, it’s also a good time to develop even better genetics, Kasko adds. This will build up more feed-efficient cattle with the marbling traits that consumers want.

McGrath also sees a huge opportunity in improved genetics. The industry does it well, he says, but they’re poised to do it even better.

Genomics can jump-start selection for more feed-efficient cattle, and cows with longevity and fertility, McGrath says. Those traits help pay your bills, he adds.

McGrath recently helped find bulls to test for a Genome Canada research project. All the McGrath’s purebred cows and bulls get

high-density DNA testing. The McGraths also use DNA tests to verify the sires and dams of commercial heifers.

“It’s cheaper for us to do that than it is for us to tag them when they’re born. We can run multiple bulls, get improved conception rates,” says McGrath. Even that basic knowledge for commercial producers is huge, he adds.

IT’S ALL IN THE RECORDS

Round Rock Ranching has sold calves directly into specific feedlots, and also taken them to auction. Usually they background them, but last year they sold them in the fall, due to the markets. Whatever route they go each year, the McGraths market them ahead of time with information on the animals’ genetics and the ranch’s health protocols.

A growing need for paperwork runs through the entire supply chain. Kasko Cattle says much of the record-keeping is linked to food safety, such as withdrawal times for medicated products.

They have chute-side software programs

to track treatments and they double-check withdrawal times for every animal they ship. They’re also audited several times a year. A micro-ingredient machine allows them to track exactly what they’re feeding each animal.

But animal welfare and environmental sustainability are wrapped into the feedlots’ records, too. Much of the record-keeping is daily. It’s kind of endless, Kasko says.

One of the buyers driving that change is McDonald’s. Both McGrath and Kasko participated in McDonald’s earlier sustainability initiative. That pilot project has since morphed into the Canadian Roundtable for Sustainable Beef, which is run by a council with representatives from across the supply chain. Cargill has a seat at that table, as do people representing McDonald’s, JBS, environmental groups, food retail, the cattle feeders and the cow-calf sector.

Ettinger is also attuned to what her customers want — grassfed beef. “I know most

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of my customers are very insistent that they have no grain,” she says.

Though Ettinger is selling directly to her customers, she hasn’t escaped the paperwork burden. When she sells livestock, the new owner gets detailed health records for each animal. Beef customers can also get health details on the animal they’ve purchased.

Willow Glen has gone through Verified Beef Production to ensure food safety. Generally her customers don’t know about the program before touring the farm, but it gives her a framework for explaining production practices such as antibiotics for sick animals.

The Ettingers expect their record-keeping will serve Willow Glen well as they expand their customer base, especially as they increase sales to commercial customers, such as restaurants.

Yet most cow-calf producers don’t sell directly to consumers, and Kasko has mixed feelings about sharing data up and down the supply chain. His company has its own database that tracks information such as carcass grades. It’s valuable to their business. But cow-calf producers aren’t likely to get much value out of that kind of information unless they’re already doing basic record-keeping.

Kasko does see value in industry organizations connecting different segments in the supply chain at conferences and other events, so they can have those conversations. People need to focus on what’s important to their customers in the supply chain, he says.

His advice to cow-calf producers is simple: “Drive to a feedlot and ask if you can get a tour, and understand what’s important. What are feedlots wanting?”

CONNECTING CONSUMERS TO THE FARM

Although not all of Willow Glen Farm’s customers want a connection with the farm, most do. They want to know exactly how the animals were raised. They ask tough questions, Ettinger says.

Ettinger loves her animals and her farm, but she confesses she doesn’t quite understand why what she does is so interesting to other people. She has complete strangers calling her, asking if they can come out for a visit. She even gets hugs from her customers.

“It’s difficult at first when you’re direct marketing to put yourself out there, especially if you’re a more private person. So that is daunting,” she says. “But in the end, you meet some really, really cool people.”

It’s not just direct marketers opening their doors to visitors. Both McGrath and Kasko

have welcomed visitors. In fact, Kasko says they plan to be more proactive this year, and to invite school and youth groups for tours.

McGrath says they have nothing to hide, and welcomes both ag supporters and critics. Not everyone who visits Round Rock Ranching is going to get their mind changed about agriculture, McGrath says, but at least they’re willing to come out and have a look.

“I always say you can’t teach a stick to fetch a dog. The consumers I worry about are the ones who have opinions and aren’t

willing to go out to an agricultural operation anywhere,” he says.

More and more, livestock producers are using social media to connect with people. Ettinger says the people who are doing it best are using it to tell a story. Direct marketers can’t afford to be too argumentative or preachy, she says.

“Your customers know what they want. And all you can really do is be open and honest and say what you do. And they’ll decide whether they want to buy your product or not.”

“People need to realize there’s plenty of room in the sandbox, and that there’s more than one right way to raise beef.”

Jaylyn Ettinger,
Willow Glen Farm



PHOTO: MARSHA PEACOCK

She's a fan of using pictures to tell stories, but she thinks it's important to show the less picturesque side of farming, such as using IVOMEC to control parasites.

SHARED VALUES

Ettinger and McGrath are equally critical of marketing that pits one type of beef operation against another.

"I think people need to realize there is plenty of room in the sandbox, and that there's more than one right way to raise beef," says Ettinger.

Many ranchers are familiar with both sides of the fence anyway. Ettinger grew up on a commercial ranch herself, and her parents still raise cattle just down the road from Willow Glen Farm. McGrath also sells some direct beef.

The reality is that today's customers can order specific things on their iPhone, McGrath says. "What individual people want is what we will need to deliver going forward. That's my sense of it."

Ettinger says people throughout the industry share the same core values around environmental stewardship and animal welfare, no matter their production methods. She thinks the new sustainability modules the Verified Beef Production program is about to roll out will be helpful. She's a fan of the Beef Research Council's website too, which includes webinars and other resources.

"And I think the industry is doing a great job at research and having that science to back you up," she says.

Ettinger's praise for science-based animal welfare and environmental stewardship echoed through the other interviews. Like Ettinger, both Kasko and McGrath are part of the Verified Beef Production program. Kasko says the industry is raising the bar on animal welfare, food safety, and employee health and safety.

Cargill's High River plant has interesting technology to raise that bar, too. A hide-on carcass washer targets food safety. A third-party remote video auditing system monitors animal welfare.

After we finish the interview, McGrath takes me on a tour of the ranch. We check out a bale grazing site, where he's collaborating with federal government researchers. Game cameras track whether cattle prefer to graze where the bales sat. Sensors in the ground measure soil temperature and moisture. Researchers collect water samples from wells to look at nutrient levels.

Meanwhile, the landscape next to the field slopes into a coulee, with shrubs, poplar and native grasses that green up with the spring. The view is a reminder that although the industry is changing, the land itself is a constant.

Other things remain constant, too. It's an industry with high integrity, Kasko says, and that's part of the attraction of the business.

"I implicitly trust most people that I'm dealing with until they've proven me wrong. And that doesn't happen very often."

(For more on Sean McGrath explaining how they market their cattle, visit country-guide.ca/video.) **CG**

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Where have all the hog farmers gone?

They've gone to Manitoba, where they're enjoying some good years in the face of a long list of challenges

BY SHANNON VANRAES / CG FIELD EDITOR

Despite losing nearly 14,000 pig farmers since 1971, Manitoba still produces more pigs than any other province, accounting for just under a third of Canada's total pork production, and well over half of its exports.

For nearly three decades, Manitoba has had a front row seat on the peaks and valleys of Canada's hog industry. They've seen it all: the boom of the '90s, the fallout from H1N1, the decade-long moratorium against barn building, a strong dollar, a weak dollar, porcine epidemic diarrhea, a disappearing labour force.

The question now is, what's next?

Clearly, evolutionary pressures are intense, and George Matheson, who farms near the town of Stonewall with a capacity to produce at most 1,200 hogs a year, knows he's no longer a typical farmer.

Today, though, Matheson is chair of Manitoba Pork. "I may well be one of the smallest, if not the smallest, producer in the province," he says.

The 59-year-old got into pigs in 1982, and since then he has watched most independent pork producers leave the business, and he has also watched the size of the remaining farms expand.

The numbers tell the story. Today, only about 220 levy-paying hog farmers remain active in Manitoba, and only 500 total farms have pigs on them.

The province produces roughly eight million pigs each year (it peaked at 9.45 million in 2007), so that means the remaining producers are putting out about 16,000 pigs per farm.

"There are fewer producers, but more production," Matheson says. "And of course we have the two largest producers in Canada with Maple Leaf and HyLife being here as well."

The reasons why so many hog producers have left the industry can be complex and intermingled, but trade disputes, environmental restrictions and market pressures have each played a role, among others.

Plus, pork is also vulnerable to the same stresses as other farm sectors, including succession pressures. "A lot of people have just plain retired," Matheson says. Committing to year-round livestock production isn't always attractive to a younger generation, especially in the face of worn out infrastructure and uncertain profitability.

In fact, it's maybe even a bit worse in pork. In recent years grain farming has been more lucrative, Matheson explains, and crop farming can come with the added benefit of some downtime over the winter months.

It points to what's different for pork this time, says Perry Mohr, general manager of h@ms Marketing Services, which markets pigs for 144 pork producers in Manitoba and Saskatchewan.

The drop in the number of hog farms has been even faster than general farm consolidation, Mohr points out.

"During the 10 years previous to this, there wasn't a lot of money to be made," says Mohr. "So a lot of these guys that maybe weren't quite as efficient or their banks weren't quite as patient with them throughout those years, a lot of them were basically forced out of the industry."

"Their barns were old, the capital investment was too big for them, they were at an age when they didn't want to reinvest, and they had no son that wanted to take over, so they shut the down," he says.

THE SURVIVORS

There's another key too. The farms that stayed with pigs tend to be mixed farms, Mohr says. "The most sustainable mode, given the factors that impact hog prices, is the farrow-to-finish hog producer who produces his own feed," he says.

Matheson's compact farm — complete with tree-lined drive and white-trimmed Victorian home — isn't farrow-to-finish, but does utilize 360 acres of cropland to feed its herd. The land also allows for efficient distribution of manure as fertilizer, in addition to acting as a buffer against high feed costs and market flux.

On a different scale, Starlite Hutterite Colony made the decision to "to try walking (their) grain off the farm instead of hauling it" following the end of government freight subsidies in the 1990s and hasn't looked back since, says James Hofer, who manages the colony's 600-sow farrow-to-finish operation. "When you have your own grain, that becomes a natural hedge. You've got your inputs locked in, they're in the bin and you can weather the storm."

But even with its feed, Starlite is evolving beyond traditional western crops like wheat and barley. "We've been growing soybeans at Starlite since there were varieties



“It’s a wonderful animal, it’s very efficient and it’s a very intelligent animal, its productivity is enormous and I’ve always felt that if a farmer takes good care of his pigs, they will return great profitability for producers.”

George Matheson

that could be grown in Manitoba,” Hofer explains. “After a couple years, we said, hey, this is something that is going to be long-term, and we set up our own soymeal processing plant, so that is how we feel we’ve been able to stay in the game and drive costs out of production.”

But all the grain in the world can’t save Starlite from the one universal problem plaguing pork producers and processors across the province — labour shortages. Finding employees willing and able to work in processing plants and pig barns continues to be problematic, with many operations turning to temporary foreign workers.

“We don’t actually have a lineup of people,” Hofer says. “In fact there are colonies that are shutting down their operations because they don’t have people who want to work in a hog barn.”

Other colonies are bringing in

people from outside their communities to fill the gaps, and in the city of Brandon, Maple Leaf Foods has used the temporary foreign worker program to bring in about 1,000 employees, with 800 becoming permanent residents.

At HyLife’s Neepawa processing plant, about half of its 1,000 employees were brought in as temporary foreign workers.

However, changes introduced by the federal Conservatives in 2014 have made bringing in foreign employees more challenging. The new Liberal government has promised to review the changes, but unless a major policy shift occurs, further restrictions will come into effect July 1.

Given comments from MaryAnn Mihychuk, the Trudeau government’s employment minister, an open door seems unlikely. Responding to Cana-

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Big farms, big net incomes

A weak Canadian dollar has added a 30 per cent bonus to hog prices, says Perry Mohr, general manager at h@ms Marketing Services, who notes that Canadian hogs are still pegged to American dollars.

It's a development that could drive industry expansion.

"If you look at when the hog industry really expanded the last time, it was when we had a really weak dollar," Mohr says. "If the dollar was weak for 10 years, it would really boost the industry."

Mohr also believes 2016 will be a profitable year, even if hog prices drop a bit in the fourth quarter as American producers begin to recover from the devastating porcine epidemic diarrhea virus that killed millions of pigs in that country. Next year is also setting up to be a profitable one, with at least four new packing plants opening in the U.S., driving up demand for hogs.

"This year, 2016, the U.S. producers are predicted to make a small profit, let's say it's \$5 a hog. Most of our guys this year will make around \$25 a hog, based on what we know today," says Mohr. "Last year U.S. hog producers made about \$8 per hog... our guys made about \$30 a hog."

According to Janet Honey at the University of Manitoba's department of agribusiness and agricultural economics, net market income for Manitoba pork producers jumped from \$115,500 in 2011 to \$808,300 in 2014, before dipping to lower estimates for 2015. In a report prepared for the university, Honey indicated the average net operating income per pig farm was over \$735,200 in 2014, up from \$303,000 in 2013.

Mohr notes that low oil prices have also played an important role in increasing profitability in the hog sector, lowering some production costs and lessening efforts to divert grain to fuel production, while also devaluing the Canadian dollar.

"As far as profitability, it has been difficult over the last eight years or so — with the exception of 2014 and part of 2013 and 2015 — but I think that for mixed farms such as the Hutterite colonies and myself that produce grain as well, it has proven to be a pretty good system to, as the old saying goes, not have all the eggs in one basket," says Manitoba Pork chair George Matheson. As for future growth, he says it will take careful collaboration between producers, processors, government and consumers.

“Their barns were old, the capital investment was too big for them, they were at an age when they didn’t want to re-invest, and they had no son that wanted to take over, so they shut down.”

Perry Mohr

dian Meat Council claims that processing plants are short nearly 1,000 meat cutters, Mihychuk told the Canadian Press in January that “in the present circumstance, where we are seeing such economic hard times across the Prairies, it would be a very unusual circumstance where we had to resort to temporary foreign workers to fill a position.”

Mihychuk said the solution is better training and recruiting, not foreign workers.

It's a suggestion that doesn't sit well with the Manitoba Pork Council's general manager, Andrew Dickson, who doesn't buy the idea that unemployed oil and gas workers will gravitate to Manitoba's hog industry.

"You will find some guys wander back to Manitoba who were out in the oil patch, but those are the ones who came from Manitoba," says Dickson. "I mean, some of these people are very skilled trades people... are they going to stay with the hog industry, even if they come? As soon as the oil industry turns around, they are gone."

THE SEARCH FOR A NEW MODEL

If it seems like Manitoba's pork industry has just gone from one crisis to another — be it new disease, a strong dollar, country-of-origin labelling, capital shortages, consumer backlash, labour constraints or spiking feed costs — it's because it has, says Mohr. But finding a model of hog production less prone to fluctuations won't be easy.

At one time Manitoba hog farmers sold pigs through the Manitoba Hog Marketing Commission, which became the Manitoba Hog Marketing Board in 1972. The board's monopoly on the sale of slaughter hogs ended in July of 1996, allowing producers to choose direct marketing, broker services or what is now known as h@ms Marketing Services.

Now, Dickson would like to see the federal and provincial governments get behind a proposed Hog Stabilization Program to help buffer some of those market forces.

Manitoba generated just over 57 per cent of Canadian pork exports in 2015. "So when you produce a commodity that is reliant on an export market, you are subjected to commodity prices which go up and down based on supply and demand," Mohr says. "You are subjected to all kinds of forces, most of them beyond your control."

Now, the pork sector is aiming for a new program to help producers access working capital. "What we're looking at is trying to provide some protection for working capital for producers," Mohr says, adding pig farmers across the country have similar cash-flow problems.

So far, the plan hasn't attracted government approval.

AND THE NEED FOR MORE PIGS

The idea of a price stabilization program began percolating in 2012. Feed corn prices were skyrocketing just as the industry struggled to recover from a 2009 collapse caused by the double-whammy

CONTINUED ON PAGE 24



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“We’re under a great deal of pressure from society,” Matheson says. Yet Manitoba processors are also eager for the province’s farmers to produce an extra 1.4 million hogs a year.

of H1N1 concerns and country-of-origin labelling or COOL. And although feed prices have dropped since then and COOL has also been repealed, farmers are now faced with incoming animal care regulations that are requiring expensive barn retrofits.

Maple Leaf has committed to switching all its barns to free open housing by 2017, while Quebec-based producer Olymel — which relies on hogs from Western Canada — has committed to phasing out sow stalls by 2022.

All hog producers will need to use open sow housing systems by July 2024, in line with the Code of Practice for the Care and Handling of Pigs that was introduced in the spring of 2014.

However, there’s a possible silver lining in the growth of premium products and niche markets.

“Now the processors are trying to differentiate their products and that has me as excited about the future as anything,” says Mohr.

“We’re going to antibiotic-free for one thing.”

“I’m not going to stand here and say the pork is better, but what I will say is that there is a demand for it,” Mohr quickly adds. “We’re starting to produce what the consumer is asking for — and the key part of that is that the consumer is willing to pay more for it.”

While he doesn’t have a crystal ball, Mohr does have a few predictions to make as he prepares to leave his position and head into retirement.

“Honestly, and I can say this because I’m on my way out, I would say that the decrease in the number of farmers will abate itself. We’re pretty much at the bottom,” he says.

Matheson agrees. “We just have to continue to do the right thing,” he adds. “We’re under a great deal of pressure from society right now. On animal care, environmental sustainability and food safety, they watch us more closely than they have ever done before, but as

long as we continue to do the right thing, I don’t think there will be any risks in expanding, quickly or otherwise.”

Dickson would like to see more barn proposals come forward throughout the year in order to expand capacity and build the sector’s efficiency, and he noted Suncrest Colony has just completed building a new hog barn in the Rural Municipality of Hanover, using an existing permit.

“We’re not expecting a flood of these, but we’re hoping we’ll see a steady number of barns as we go through the next five or 10 years,” he says.

“We had a good year as an industry as a whole in 2015... we produce a great product and people still consume it,” Dickson says.

“I think the future will be reasonably bright, but we will be cautious in this part of the world and we will continue building on the good things that we’ve done in the past.” **CG**

Ending the moratorium on new barns?

Manitoba's 10-year old ban on new barns means almost half of the province's pigs still get finished in the U.S.

People aren't the only thing Manitoba needs more of. A shortage of slaughter pigs continues to be a nagging problem.

Maple Leaf's Brandon facility struggles to keep a second shift operating at capacity, searching for additional hogs to process, while HyLife has gone outside the province to keep its Neepawa plant at capacity.

"We are always looking at options in trying to grow our finishing production to make sure we keep our plant in Neepawa full," says HyLife's executive vice-president Claude Vielfaure. "We, unfortunately for Manitoba, have looked at Saskatchewan a few times over the last few years and bought some barns there."

It's not that HyLife doesn't want barns in Manitoba. Instead, it's that stringent environmental regulations have made building or replacing those barns difficult if not impossible in recent years.

"We certainly have two big packing plants in Manitoba that need pigs and need consistent pigs," says Vielfaure. "So replacing facilities is extremely important for our industry to survive."

A decade ago, the governing New Democrats established a temporary

ban on new hog barns. Two years later the provincial government introduced a moratorium on new barn construction in 35 municipalities, and in the lead up to the 2011 provincial election the government again increased restrictions on hog operations with the Save Lake Winnipeg Act, effectively making the building of new or expanded barns cost prohibitive by mandating a yet-to-be developed anaerobic digester.

Relief came in the spring of 2015, when then agriculture minister Ron Kostyshyn announced a pilot program dropping the anaerobic digester requirement in favour of a two-cell lagoon system, coupled with new soil phosphorus regulations.

Already, the Manitoba Pork Council has received two applications and several inquiries from those wanting to construct new barns, its general manager Andrew Dickson says. However, finding the capital for new construction could be just as big a barrier as the so-called moratorium.

There has been some progress, however. Farm Credit Canada recently stepped in to offer loans worth up to 65 per cent of the cost of new construction, provided the cost is not more than \$500 per pig. That still leaves producers searching for

the remaining 35 per cent, in addition to annual working capital of about \$400,000 for an average-sized finisher operation.

"You've got to be able to show cash flows that demonstrate that you are going to be able to service that debt," Dickson says. "It's not like you go down tomorrow and just pick up a cheque."

For Mohr, building new barns is all about the capital and not so much the regulations.

"Expansion will be triggered by profitability, just because the packers need hogs, it doesn't mean that people will build barns," Dickson says. "Frankly, we haven't been profitable long enough to get people excited about expanding, including the banks."

Yet Dickson says Manitoba needs to finish an additional 1.3 million hogs each year for packers here to be as efficient as their American counterparts, which would require the construction of at least 80 barns, each with a 4,000 pig capacity. While Manitoba produced eight million pigs last year, only 4.53 million were slaughtered in the province. The remainder went south to the United States as weanlings.

If it weren't for the messages from some of the leaders I connected with, I wouldn't have this clear vision nor the motivation to go after it. I can't thank you enough for that.

— Jen C., Ontario, AWC Delegate

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PHOTOGRAPHY: DANIEL WEYLE

Niagara outlook

Craig Wismer hops out of his pickup at one of the 30 or so vineyards he manages in the Niagara Peninsula. Below him, rows of grape vines fill Niagara's Vineland, serving up a panoramic view with a gleaming Lake Ontario.

Niagara Falls and its river are on the eastern horizon, in the west are Hamilton's smoke stacks belching grey into the spring sky, and directly across the lake, a distant CN Tower punctuates Toronto's skyline.

Rising steeply behind us, however, is the real reason we're here. The geological ridge called the escarpment is why grapes and soft fruits like peaches can thrive in this vista. It captures the sun and bottles up the local lake effect, taking the edge off winter temperatures and staving off untimely frosts.

Wismer explains that this topography causes cold air to slide off the sloping fields, keeping Niagara's temperatures more moderate and creating a climate that you'd expect to have to drive several hours south to experience.

Along the slopes of the escarpment are diverse smaller soil and climate regions, and the wines made from grapes in each of these different areas vary greatly.

Right now, we're standing on what Wismer calls "The Bench," one of the naturally formed terraces along the Niagara escarpment, and where his parents and brothers farm about 150 acres of grapes and 50 acres of soft fruit trees.

It's a beautiful part of the country, and it is as unique as it is breathtaking. Despite that, however, for the last 30 years, this has also been a farming area deeply affected by political, economic, agronomic and social changes, especially since the 1988 free trade agreement with the U.S. phased out many of the protections for Canadian wine.

The Canadian wine industry was still a baby back then — small, vulnerable and sweet, much like the bubbly Baby Duck that was one of the top-selling wines at the time. Most of the grapes grown in Niagara were

With high-tech advisers like Craig Wismer, it turns out farmers and cityfolk can learn to live side by side after all

BY MAGGIE VAN CAMP / CG SENIOR EDITOR

for juice, not for making French or "noble" type wines, and there were only about 10 wineries.

"The industry was built on Baby Duck," says the chair of the Grape Growers of Ontario, Bill George. "Now palates have changed worldwide and wine consumption is on the rise."

After NAFTA was signed in 1992, government renewal funding helped producers replace many of their old juice vines with newer premium vinifera varieties, and this support continued over the next few decades. In addition, the Ontario government funded the Ontario Wine Strategy, which included helping to adopt the Vintners Quality Alliance (VQA) as a quality assurance and marketing tool.

The transition turned out to be perfectly timed. New World wines were becoming mainstream, and because of their success with some of the most popular new varieties, producers in Niagara were able to ride the wave.

Today the Niagara Peninsula still has the largest planted area of vineyards in Canada, with some 46 varieties across nearly 14,000 acres. The classic cool-climate varieties flourish here, such as Riesling, Chardonnay, Gamay Noir, Pinot Noir and Cabernet Franc.

Until 2000, nearly all Canadian wines were made with some local grapes, topped up with imported stock from the U.S. or overseas. Since then, however, the practice of blending foreign juice has been subsidizing, and 100 per cent Ontario-grown rich Cabernet Francs, crisp Rieslings and buttery Chardonnays began winning inter-

national acclaim, just when the local food movement came on the scene.

New pockets of wine production rose across southwestern Ontario and British Columbia and even northeast of Toronto, tucked along Lake Ontario in Prince Edward County.

Today, Ontario has more than 180 wineries producing 71 per cent of total Canadian wine volume, with the majority of this still in the Niagara Peninsula.

GLUG, GLUG, GLUG

Over the same period, wine consumption began rising. Canadian adults in 2011 bought an average of 22 bottles of wine per year, up from 13 in 1995. Here's a staggering fact: Canadians drink more than a billion glasses of Canadian-produced wine a year.

In the industry's 2013 report "Canada's Wine economy — Ripe, Robust and Remarkable," the wine and grape industry was estimated to contribute \$6.8 billion a year in economic impact to Canada, based on jobs, taxes and tourism, with about half of that in Ontario. That's even though the majority of wine consumed in the province is still imported, with domestic wines claiming only 40 per cent market share.

Demand for quality, expensive wine has been on the rise, however, and the local food movement has shifted consumer demand. Our aging population has more disposable income and is aware of the health benefits of wine and desire the sophistication of wine.

CONTINUED ON PAGE 28

According to Euromonitor International, the world's leading independent provider of strategic market research, wine consumption in Canada is expected to grow annually by three per cent both in volume and gross sales, reaching 591 million litres and C\$13.3 billion in 2019.

Canadians, it turns out, are spending almost three times as much on wine as on bread.

GAME CHANGERS

On his 150-acre farm, Bill George points to a field of vines stretching up and away from the sparkling water of Lake Ontario, explaining that it's three to four per cent warmer near the lake than anywhere in the Niagara Peninsula. This field was one of the many ripped out and transplanted with French vines. The new vines are grafts, with rootstocks from winter-hardy varieties and tops from noble wine-producing varieties, such as Cabernet Sauvignon, Cabernet Franc, Merlot, Chardonnay and Riesling.

In 1988, George graduated from university and came home to the family fruit farm. At the time it took a vat of courage, and it was clear he faced a steep learning curve. "We knew we had to transform the industry. We knew we had to change or we'd be a dead industry," says George. "We learned to trellis differently, we invested."

The investment and learning continues today, with reports of \$125 million being spent expanding vineyards to supply wineries' demands for more premium grapes. That's partially due to the tougher winters in 2014 and 2015, which killed many of the more tender vines. Fortunately, a government crop insurance program – vine death insurance — covered some of the replacement costs and many growers are moving to hardier varieties.

Also, peach land is slowly being converted to vineyards, catalyzed by the 2008 closing of Canada's last tender fruit canning factory.

Sometimes it's been a process of learning by failure, such as selecting varieties for specific locations. New web-based tracking programs are helping farmers here manage their pruning practices to deal with cold damage, and wind machines are now being used to stop frost from damaging the plants.

"We have winter conditions unlike anywhere else in the world," says Craig Wismer. "We've learned a lot, very quickly."

Wismer is a registered viticulture consultant with the Grape Growers of Ontario and operates Glen Elgin Vineyard Management. Originally the company served his family's vineyards and orchards, and recog-



“We have winter conditions unlike anywhere else in the world. We’ve learned a lot, very quickly.”

*Craig Wismer,
Glen Elgin Vineyard
Management*

nizing a need for quality-oriented vineyard management, expanded to service vineyards throughout the Twenty Valley and Beamsville bench areas. They offer brokerage, complete management and custom work, including all vineyard services, from spring pruning through to machine and hand harvesting.

In harvest, they run two harvesters and 80 to 100 labourers in various crews. Wismer explains that the industry relies on Vietnamese immigrants from Hamilton for most of their labour. Their dexterity and work ethic is prized for the highly intensive cropping cycle, including pruning and tying, leaf removal, cluster thinning, sorting and harvesting. Glen Elgin Vineyard Management also offers other services to their customers such as custom trellis installation and planting, applying fertilizer, and spraying up to 12 times a summer.

In the last decade, mechanization has

boosted efficiency as well as the work environment. For example, mechanical pre-pruners do an preliminary trimming of the vine bushes, making the followup job of hand pruning much easier.

One of the biggest leaps in efficiency has been using bigger equipment to cover more rows per pass and incorporating multiple functions per pass, says Wismer. Sprayers now cover four rows when they used to do one at a time. Glen Elgin Vineyard Management has set up all of their fleet tractors with front and rear three-point hitches to allow for several jobs to be done in one pass, he explains.

Also, new recycling sprayers have resulted in up to 60 per cent savings, bringing both an environmental and a cost benefit.

Another big change has been the switch of harvest from hand to machine. A few years ago Wismer imported from Europe the only grape harvester in Canada with a purpose-built sorter. Grapes are gently de-stemmed by vibration and sent over abacus-like rollers that sort leaves and twigs out of the grapes, resulting in a massive increase in harvesting quality and capacity. This new technology is gentler than the traditional winery de-stemmer or other harvester mounted de-stemmers. Optical sorters are also being used on farms in the Niagara peninsula to further the mechanical sorting process.

GREENBELTED

The Niagara Peninsula is part of the industrial Golden Horseshoe, and was rapidly losing prime horticultural land through the 1990s and into the first decade of the new millennium.

About a decade ago, however, Ontario's Greenbelt law landed on the escarpment. Nearly 50,000 acres were frozen, with a ban on housing and industrial development.

Growers had been concerned their land values would decline. Instead land values went up, due to the farms being financially sound. "As long as the countryside is economically viable, the land can remain valuable," says George.

Population here has continued to increase, but the region's towns and cities are building up instead of sprawling out. For growers, this has meant more interface with non-farming neighbours and learning how to deal with the broadening urban and rural divide.

Best management practices were developed by the Grape Growers of Ontario and adopted by growers. Use of pesticides, manure, bird bangers, and wind machines have to be explained and justified. Niagara's farmers are acutely aware they need to communicate better so the

CONTINUED ON PAGE 30

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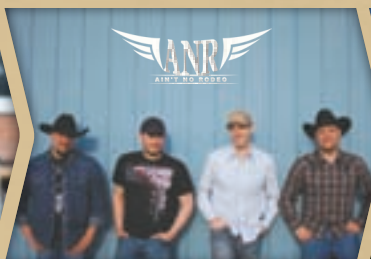


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“We knew we had to transform the industry. We knew we had to change or we’d be a dead industry.”

Bill George, George Family Farm Vineyards

public understands why and when things are being done on their farms. George says that they’ve had to learn to deal with more noise and smell complaints, but have found once the public understands why they’re doing things, it’s not a problem.

BRANDING

Wine tourism has also become a powerful marketing tool with nearly two million visitors to Ontario wineries. Wine tastings, weekend get-aways, and banquets and weddings are hosted on local vineyards.

Non-farmer investment has flowed into the grape industry, from wine-loving urbanites to publicly traded companies. Canada’s top two players, Constellation Brands and Andrew Peller, held 17 per cent and 12 per cent, respectively, of total volume sales of all wines in Canada in 2014. These two companies use about 75 per cent of the grape production and are a strong anchor for the producers, says George.

Big names like Wayne Gretzky, Mike Weir, Dan Aykroyd and Kevin O’Leary are investing in Niagara vineyards and branding labels. The marketing power of those names has opened doors for the entire industry. “It’s adding to the credibility of industry,” says Wismer. “And giving us visibility on the international stage.”

MATURING INDUSTRY

In the early 1980s icewine was pioneered by Inniskillin and has slowly grown to 4,000 tonnes (800 acres) of grapes this year. While icewine is produced in relatively small quantities, its high value means dollar-wise it accounts for one-third of wine exports.

Canadian wineries are internationally renowned for this cold-climate product. Icewine has been a way to penetrate European markets with a uniquely Canadian market, and a foot in the door for other wines.

The trick is that VQA icewine is

made with grapes harvested at -8 C. Mechanical harvesting has become almost a logistical requirement, because icewine grapes are usually harvested at night, when it’s cold. Think lights, limited harvest windows and cold crews. “It takes about 30 pickers to harvest an acre a day, but with a harvester, three to five guys can do 10 acres in one night,” says Wismer.

Not surprisingly to make mechanical harvesting work in the cold took some retro-fits, such as a way to deal with the netting necessary to protect the icewine grapes from birds, and tricks to stop belts freezing up.

Recently, two nearby post-secondary institutions have begun offering wine and vineyard courses. Nearby Brock University offers a B.Sc. in oenology and viticulture and a certificate in Grape and Wine Technology. Also, Niagara College’s Canadian Food and Wine Institute has vineyard management, sommelier, laboratory, marketing and winemaking courses.

The information and students coming out of the programs have been catalysts for improvement of production and processing, says Wismer. Niagara is also now drawing winemakers from around the world.

Overall, vineyard management has become more informed and professional since the ’80s. This is in part due to the increase in farm size, largely due to consolidation.

It’s also been nearly three decades of trial by error, risk management, research, investment and embracing new technology. The farm management and the vines here are relative neophytes in the wine industry.

Viniferous vines take at least 40 years to reach prime productive capacity. One vine in Europe is still producing grapes at 400 years old. Generally, as vines mature, if they’re managed properly, they produce better quality grapes that can result in better quality wine. “The bulk of the industry here is still in its teenage years, with vines only 15 to 20 years old,” says a confident Wismer. **CG**

PG. 34 Can't grow forages for soil health? Try cover crops.

PG. 38 Jay's tips for faster, better clean-out of your sprayer.

CROPS GUIDE

The 'sustainable' advantage

Staking out the high ground in this debate could be good not just for the soil, but for bank accounts too

BY JULIENNE ISAACS

Is “sustainability” just another buzzword, or will it have a genuine impact on how farmers in Western Canada do business?

Denis Trémorin, director for sustainability at Pulse Canada, believes there is substance behind “sustainability”—but it might not mean exactly what you think it means.

Trémorin says sustainability is about operating in a socially, economically and environmentally sustainable manner.

“In some areas of the world, the social and economic aspects are more important when it comes to agriculture.

Cocoa production in West Africa is a good example — you have farmers who don't own the land and are disconnected with their customers. So you need to focus on that first, and the environmental aspect second.”

What about Western Canada? Trémorin says that since pricing is fairly transparent, farmers have reasonably effective access to markets. As well, Canadian legal standards protect farmers' rights, so, he says, our main focus should be on the environmental aspect of sustainability.

There's also a tendency at times to associate “sustainability” with niche or direct-to-consumer cropping, but David MacInnes, president and chief executive officer of the Canadian Agri-Food Policy Institute (CAPI), says it's a “pan-agri-food sector” issue that applies just as much to commodity crops.

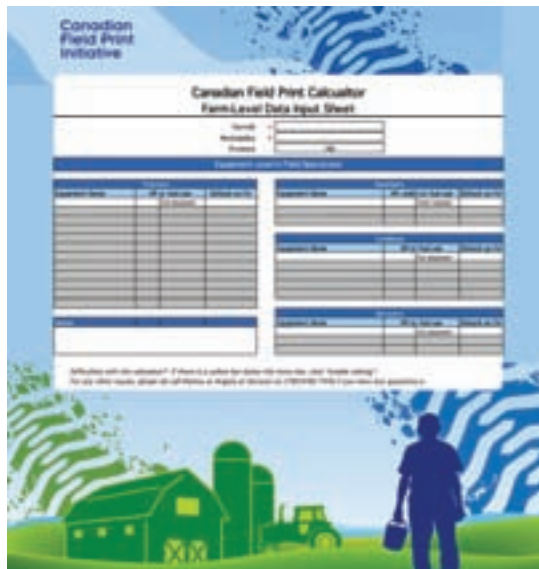
“With a changing climate, with extreme weather events, with the prevalence of droughts, of heat events, with new insects facing agriculture across the country, it will be a constantly unfolding battle to be a reliable, quality supplier,” MacInnes says.

And being seen as a reliable, quality supplier is as crucial as farmers' adoption of sustainable measures, as far as the market is concerned.

“The marketplace is very chaotic with initiatives going on all over the place. We need to step back from a strategic standpoint and ask how Canada can use its advantages to position ourselves on the sustainability radar of investors and supply chains,” says MacInnes. “There needs to be a benefit to the agri-food sector, but raising that bar and improving performance allows us to demonstrate the care being taken in our agri-food practices.”

What is included under the umbrella of sustainable practices?

There's no one-size-fits-all version of sustainability that all producers can or should adopt on the farm, says Trémo-



The Canadian Field Print Calculator allows farmers to input information on practices related to land use efficiency, soil erosion risk, energy use, climate impact and soil carbon release.

CONTINUED ON PAGE 32

“Sustainability has a significant role to play, but really the issue that underscores it all is trust.”

David MacInnes

rin. “Sustainable practices are very site specific in terms of what works best for your farm or your region,” he says. “No-till is a classic ‘good’ practice in a lot of Western Canada, but there are a lot of areas in Canada where it doesn’t fit — you don’t get good yields, or it’s hard to work with, especially in Eastern Canada where there’s a lot of moisture.”

Trémorin points to Fertilizer Canada’s 4Rs as an enduring example of smart sustainability thinking. “That type of practice, in terms of making sure you’ve got the right rates, the right source of fertilizer, the right placement and timing based on your region — that is a sustainable practice. It’s not a ‘practice’ per se but a management mindset.”

MEASURING SUSTAINABILITY

Environmental sustainability, needless to say, is tough to measure. But some companies are asking for information directly from the farm or from suppliers in terms of what sustainability looks like on individual operations.

Trémorin says that in some cases, there’s actually a checklist questionnaire that flows to the farmer, asking

whether the farmer soil samples, how the farmer stores pesticides, or whether the farmer has contracts with labourers, for example.

One high-profile farmer self-assessment tool is the Sustainable Agriculture Initiative (SAI) Platform, which aims to create a pre-competitive checklist to set a standard for the industry to follow. The tool, “Farm Sustainability Assessment,” provides a benchmark for farmers to assess their own sustainability performance.

Trémorin is leading a federal Canadian project with six industry partners to develop a process-based tool called the Canadian Field Print Calculator that allows farmers to input information on practices related to land use efficiency, soil erosion risk, energy use, climate impact and soil carbon release.

The major hurdle facing uptake of tools like these is the lack of ready incentives for participating farmers. Few markets are asking for this information. “What’s going to have to happen is that these types of systems and asks will have to be part of a package that makes them attractive to growers,” says Trémorin.

But at the same time, environmental sustainability is all about efficiency, and efficiency means profitability. “With the tool-based piece, because you’re capturing data from growers, there’s an opportunity to share that aggregated data back to them. I see value chains using this information to help producers improve and make more money. There’s so much alignment between sustainability and making money,” says Trémorin.

MacInnes believes trust is a critical piece of the puzzle when it comes to sustainability. Last year, CAPI hosted a forum that focused on trust and the Canadian food system.

“When you wrap it all up, sustainability has a significant role to play, but really the issue that underscores it all is trust. Trust might mean ‘food safety,’ but what we heard (at the conference) is that trust is about safety, quality, the level of nutrition in food, the health impacts, environmental sustainability, and about reliability of supply,” MacInnes says.

Because trust is crucial in ensuring the health of the agri-food system long-term, MacInnes says the development of metrics to measure the effectiveness of sustainability programs is a growth industry in and of itself.

As the S-word continues to cross their radar, farmers might find more benefit in embracing it rather than brushing it off. As with many other aspects of the agri-food sector, sustainability is about telling a story — the story of how food is produced, farm to fork — to an audience eager to hear good news. Signing on to sustainability initiatives early might mean more consumer trust — and profits — later.

“The question for Canada,” says MacInnes, “is not how we manage sustainability but how we turn it into a competitive advantage.” **CG**

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Foraging for better soils

If you aren't growing forages,
can you really say you're
farming sustainably?

BY JULIENNE ISAACS

The soil has its own perspective, says soil scientist Mario Tenuta, which explains why in Western Canada, where intensive farming has “only” been going on for 100 years, our soils are actually still young.

“Our soils are not mature, compared to places like Europe or Africa,” Tenuta says.

Over the last 50 years of farming, however, our soils have changed fairly dramatically — in part because farmers have moved away from perennial crops in their rotations. That’s a bigger change than we might at first think.

“Our soils on the Prairies are perennial soils to begin with; they evolved with grasses that are perennial,” Tenuta says. “We’ve turned it into annual rotations and have lost a lot of organic matter from that.”

So these days, is it possible to farm sustainably without forages in the rotation?

“I’m not saying you can’t be sustainable without perennials, because somebody somewhere will prove us wrong, but it will be easier if you have perennials in the system.”

Mario Tenuta

Tenuta, the Canada research chair in applied soil ecology and professor in the Department of Soil Science at the University of Manitoba, has done a lot of research into the question.

He believes farmers shouldn’t think purely in terms of environmental sustainability when it comes to cropping decisions. Prairie crop production of oils and cereals is largely for export, he says, which means sustainability needs to be considered in light of maintaining a healthy export market.

“We’re exporting nutrients, so we have to care about quality and be competitive in the global market,” Tenuta says. “To be sustainable, we have to be cost competitive. This is extremely key, because we’re in a global situation on the Prairies in terms of competition. We want to be able to practise farming that will allow us to be competitive on a global market and to export a high volume of high-quality commodities.”

So what does that mean in terms of cropping decisions? For Tenuta, it comes down to diversity.

“That’s an advantage we have: canola, wheat, soybean, flax, barley, edible beans; we are very fortunate that we’re not doing corn/soybean rotations, or relying on just one commodity,” Tenuta says.

“Our growers can switch over and plant more peas in western Manitoba, or put more soybeans in, or switch between wheat and canola.”

Economic sustainability, in a Western Canada context, depends on environmental sustainability. In other words, diversity of crop inputs is crucial when it comes to maintaining the quality of the soil, and for managing where and how each crop is produced.

FARMING WITH FORAGES

Forages have long been the “poster crop” for soil health — with good reason. Their contribution to soil health and soil fertility is stunning. There are improvements in soil structure, improved drainage and water holding capacity, higher rates of carbon allocation into the soil, reduction in erosion losses, deeper rooting systems that reduce salinization, and improved nitrogen fixation (with alfalfa and legumes), plus a host of other ecological goods and services.

For Jeff Schoenau, professor of soil science at the University of Saskatchewan, forages are key to maintaining soil organic matter and soil quality, and they also offer permanent, protective cover for problem soils.

Schoenau’s research team has looked at the effect of putting marginal, annually cropped land into permanent cover. They’ve also looked at the effects of adding short-term forages to the rotation.

“Forage mixes that contain a legume, like alfalfa or clover, can fix nitrogen from the air, and that’s an external input of nitrogen into the system that benefits the forage and the soil, and that replaces fertilizer,” he says. “In work I’ve been involved with, we’ve seen some significant fertilizer nitrogen replacement values — even for a short time, such as two years of alfalfa or two years of red clover.”

Not surprisingly, Schoenau and Tenuta both recommend farming with forages. But they warn producers not to expect a silver bullet.

“We recommend growing perennial forages, but if everybody followed our recommendation we’d have more forages than we could deal with — there would be no value to it. So this is the issue,” says Tenuta.

Marketing is the age-old problem with forages. “There is a tendency to move to straight grain or straight livestock these days, while I think a mixed farm operation with annual crops and livestock makes it the easiest to incorporate those forages into rotation with annual crops. For grain farmers, time and equipment constraints can make it challenging to harvest that forage and put up the bales, and then you’ve got to market it as well,” says Schoenau.

FARMING WITHOUT FORAGES?

Can farmers farm sustainably without forages in the rotation? Tenuta’s response is that it’s much easier with forages in the rotation — as long as there is a market.

If farmers stick only with annual crops, their task will be much tougher in the long run, because the soil will be “pushed” on an annual basis, and the soil will be bare in the spring and fall.

Tenuta says there are some options for growers who are looking to improve sustainability practices, especially if they find ways to farm in the “shoulder” seasons in the spring and fall. Key options includes cover cropping by either relay cropping or underseeding crops.

“I’m not saying you can’t be sustainable without perennials, because somebody somewhere will prove us wrong, but it will be easier if you have perennials in the system, particularly because the quality of the soil will be better when you produce annuals,” Tenuta says.

“In prairie Canada, our production systems have to change. Our systems don’t look like they did 20 years ago. For growers, this means they’ll need to be learning constantly and be open to change — new crops, new soil management practices, new ways of producing food,” says Tenuta.

And for the research community, Tenuta believes there should be an infusion of investment into winter wheat as well as perennial wheat and grains.

“It’s a very, very minor investment to date,” Tenuta says. “If we put our brains to it, we could make some decent strides.” **CG**



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CleanFARMS

Faster herbicide testing

WGRF-funded research offers a rapid test to determine whether your weed escapes are Group-2 herbicide resistant

BY CLAIRE STANFIELD / FOR THE WGRF

You sprayed 10 days ago and yet that patch of wild oats is still thriving. So you do what farmers across the Prairies do in this situation: take a sample and send it in to the Crop Protection Lab (CPL) in Regina and wait.

Depending on the problem, some answers come in just a few weeks. But sometimes you wait months to find out what exactly is going on with those weeds, unable to make an informed management decision until you do.

Hugh Beckie, research scientist with Agriculture and Agri-Food Canada (AAFC) explains why.

“The Crop Protection Lab only has facilities to do soil-less tests, so they can only do certain tests, such as Group 1 FOP and DIM tests — so any Group 2 or Group 1 DEN tests had to be done here,” he says, referring to AAFC in Saskatoon.

Those tests take time because, Beckie says, AAFC uses traditional screening methods (growing suspect seeds in pots in greenhouses and spraying the resulting plants), in order to have standardized data on the depth and breadth of the resistance situation across the West. Add to that the sheer volume of samples sent in for testing — over 400 in the last crop season alone — and you can see where bottlenecks can occur.

Thanks to the Canadian breakthrough, weeks are being shaved off the time it takes to get the results from some Group 2 resistance tests.



But as herbicide resistance spreads and becomes more complex, there will only be more samples, and farmers will need timely answers on all suspected weed populations so they can make timely management decisions.

With funding from Western Grains Research Foundation (WGRF), SaskPulse and Saskatchewan's Agriculture Development Fund (ADF), Beckie, along with Jeff Schoenau and Anna Szmigielski at the University of Saskatchewan, set out to see if they could develop some testing methods that would help speed things up a bit.

GROUPS AND CLASSES

First, though, let's start with a quick primer on the nuances of herbicide groups. Farmers already know that herbicide groups are based on modes of action. But within each group, there can be smaller chemical families known as classes — they all kill weeds using the same basic biological approach, they just do it slightly differently.

Group 1 herbicides have three classes: DIM (clethodim, sethoxydim), FOP (fenoxaprop, clodinafop) and DEN (pinoxaden). Group 2 herbicides have five classes.

Rapid assays to detect Group 1 FOP and DIM resistance in wild oats and green foxtail already exist and are being used at the CPL in Regina — those are the results you get back quickly. The task that Beckie, Szmigielski and Schoenau set themselves was to develop new test protocols for Group 1 DEN and the Group 2 classes on key problematic grass and broadleaf weeds (wild oats, green foxtail, cleavers and wild mustard).

“Developing the DEN test was fairly straightforward because we were able to adapt it from FOP and DIM tests,” says Beckie. Researchers experimented to determine which parameters worked best, such as what herbicide concentrations were the best indicators of resistance and of susceptibility (equally important information for farmers), but essentially, the new rapid DEN tests they developed use the same methodology as existing tests for other Group 1 classes.

WEEDS IN A POUCH

The Group 2 tests were a different kettle of fish. The soil-less testing methods used to successfully develop Group 1 rapid bioassays didn't work for the Group 2 classes, so Szmigielski and Schoenau began to look at a soil-based protocol called the soil pouch assay.

“It's still soil, but much less than we'd use in the greenhouse work,” says Beckie. “It's quite a departure from the past in terms of resistance testing.”

In a nutshell, a mere 50 grams of soil, moistened and spiked with a Group 2 active, is put in a small bag. Suspected weed seeds (in this case, cleavers and wild mustard) are planted two mm deep, and the bags hang upright on a frame allowing the seedlings to grow as they would in a field. After a few days, the plants are taken out, the soil is washed away and the roots are examined. Root length inhibition — how long the roots grow in the spiked soil — is an accurate indicator of herbicide resistance or susceptibility.

As with the soil-less tests, the U of S team experimented to find the parameters that would ultimately define the final testing method: herbicide concentration (different for each class within Group 2), number of seeds per bag, optimum number of days for growth, and so on.

At the end of the three-year study, the team had successfully developed a rapid assay for Group 2

resistance in wild mustard and cleavers. “It’s a mixed blessing,” says Beckie. “This test is likely adaptable to other broadleaf weeds, but we didn’t get it to work well on wild oats, so we’ll keep working on that.”

Even so, he says the Group 2 rapid assay is a game changer.

“The Group 1 assay is really an extension of existing tests,” he says. “The real breakthrough was in the Group 2 tests because, worldwide, there isn’t a Group 2 quick assay, and that’s what most resistance cases are worldwide — Group 2. It’s a landmark in research. I’m sure it’s going to be adapted and adopted around the world.”

The new rapid assays are ready to go now, says Beckie. “There will be a more rapid turnaround time from when farmers submit a sample to when they get a result, and that’s the most important benefit,” he says. “The cost should also come down.” **CG**

WGRF is a farmer-funded and directed non-profit organization investing in agricultural research that benefits producers in Western Canada. For over 30 years the WGRF board has given producers a voice in agricultural research funding decisions. WGRF manages an Endowment Fund and the wheat and barley variety development checkoff funds, investing over \$14 million annually into variety development and field crop research. WGRF brings the research spending power of all farmers in Western Canada together, maximizing the returns they see from crop research.



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Where chem goes, clean those

When it comes to cleaning sprayers, the tank is just one target. Here are a few tips for better, faster clean-outs

BY JAY WHETTER / CANOLA COUNCIL OF CANADA

Ken Munro's sprayer clean-out strategy is to send tank cleaner wherever the chemical goes. "We start at the chemical inductor and go from there," says Munro, who farms and works at Central Alberta Co-op's Green Way Agro Centre in Innisfail. Just cleaning the tank isn't good enough.

Sprayer specialist Tom Wolf — @nozzle_guy — echoed this with a Twitter message: "(It's) important to think of the whole sprayer. Tank, hoses, valves, screens, boom ends, dual-flow plumbing. We found that surface area of plumbing is about one-third of tank wall area. Significant, but can't see it."

Munro is reminded pretty much every year of the value of his complete clean-out policy. In 2015, a Co-op customer of his had been spraying PrePass (Groups 2 and 9) ahead of a cereal crop. The next time he used the sprayer was to apply straight Assure on canola with a grassy weed problem. Interestingly, the damage — which became obvious a few days later — occurred only on the last 10 acres or so of the first tank.

So what happened? "The sprayer had a front load and side load system, and we figure the side load didn't get flushed," Munro says. "Once the tank level dropped below the side inlet, the Group 2 residue dropped back into the tank."

Complete clean-outs can seem like too much time to spend between jobs, but Keith Gabert, agronomy specialist with the Canola Council of Canada, says it's a job that has to be done. "Herbicide injury caused by sprayer contamination is preventable," he says. "You just have to take the time."

TIME SAVERS

Set up a clean water source on board the sprayer with its own pump that only ever handles clean water and tank cleaning solution. Then use that clean water source strategically.

"Multiple smaller flushes have proven more effective than one large flush," Gabert says. For example, two washes with 70 gallons each or three with 30 gallons each are

Except for a few living plants in this missed patch (foreground), sprayer tank residue knocked back a huge area of this canola field.

PHOTO: KEITH GABERT



just as effective as a single 600-gallon wash — and use way less water.

Munro uses three small rinses: water, then water plus ammonia-based cleaner, then water again.

“We start at the inductor, cycling clean water through there then to the sprayer. The sprayer cycles that water for 10 to 15 minutes, then we spray it out in the field,” Munro says. “While that is happening, we reload the inductor with water and Finish (cleaning agent) and cycle that in the inductor while the sprayer is cycling the water, and so on.”

CONTINUOUS RINSING

Continuous rinsing is another idea gaining traction in Europe. Tom Wolf and his mates describe the concept in the article “Continuous rinsing” at their sprayers101.com website. Continuous rinsing works like this:



Group 2 residue in the sprayer after spraying beans did some noticeable damage to these canola plants.

PHOTO: JUSTINE CORNELSON

As soon as the tank is empty, the operator switches on the dedicated clean water pump to deliver clean water through the tank’s wash-down nozzles. The main product pump

then delivers the wash-down liquid to the boom and return lines.

“Because the clean water pump

CONTINUED ON PAGE 40

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Hypro's Express boom end cap allows the last nozzle body to be mounted right at the end of the boom so there's no extra space for spray water to hide.

How to ID a sprayer contamination issue

It takes days or weeks to identify a spray tank contamination issue because operators rarely notice anything amiss during application. The problem isn't apparent until plants start to show symptoms. Here are some clues to look for:

- **Misshapen growth.** Look for stunted growth on leaves and roots, leathery leaves, twisted stems, clumpy root hairs or otherwise odd root development. Note that these symptoms can also result from herbicide carryover in the field.
- **Patterns in the field.** Look for damage that starts off severe then gets progressively less and finally ends after a few sprayer passes. This indicates something left over in the booms and filters that was sprayed out within the first few passes.

Patterns that clearly relate to this year's sprayer passes are caused by sprayer contamination, spray conditions or product selection issues. If damage is across the whole field but is lower in corners where the boom moved faster and deposited less product or is lower (or non-existent) in sprayer misses, this indicates a spray tank contamination that affected the whole load.

Note that in some cases crop damage may not occur until the operator uses an active ingredient or surfactant particularly good at scrubbing. This could be many loads after the original contamination.

will deliver less than the boom flow, the cleaning mixture is delivered somewhat intermittently. We are told that this helps with the cleaning action of the lines," the article says.

Once the clean water tank is empty, the pressure drops again for the final time and the tank rinsate is now very dilute.

Continuous rinsing takes only about half as long as the batch mode, according to testing in Europe. It also uses less water. And, as the article says, "the sprayer never has to stop, and the operator never dismounts."

While this European technology will need some adjustment for the size of North American sprayers, Wolf does see continuous rinsing as a positive development to save time and water and to take some of the pain out of tank clean-out.

Another time saver is the Hypro Express boom end cap. This is described in another recommended sprayers101.com article called "Top sprayer retrofits."

The few inches of boom between the last nozzle and the boom end can trap spray water, and Wolf's research has shown these areas are not easily rinsed clean. That is why many sprayer operators have retrofitted their sprayers with "jobber ball valves" at all boom ends, as Gabert describes them.

Hypro's Express boom end cap is an alternative to the ball valves. It allows the last nozzle body to be mounted right at the end of the boom so there's no extra space for spray water to hide. As a bonus, the end cap also bleeds off any air bubbles in the line. This isn't really a clean-out issue, but it does improve spray on-off precision — which is particularly useful for sectional control.

OTHER TIPS TO PREVENT SPRAYER CONTAMINATION

- **Spray immediately after filling and spray until the tank is empty.** When some herbicides, particularly Group 2s, are left in the tank for extended periods, they can leave deposits that, if not cleaned out well, may come back into the spray solution in subsequent sprays. And some herbicides and their surfactants, Liberty for one, can be very good at lifting herbicide residues from tank walls and sprayer plumbing. The longer such products are in the tank, i.e. during a rain delay or breakdown, the more scrubbing they could do.
- **Look for solid herbicide residue.** Some herbicides may precipitate out of solution and many dry herbicides use clay as a carrier. These particles can become trapped in some parts of the sprayer or plumbing. Visual inspection can identify these problem areas and ensure that they are cleaned properly.
- **Check filters and nozzle bodies.** Nozzle screens and in-line filters can be a significant reservoir for undiluted or undissolved herbicide and are too often overlooked in sprayer decontamination. Remove all filters and nozzle screens and thoroughly clean in fresh water. Run clean water through plumbing leading to the screens. When rinsing the boom, rotate through all nozzles in a multiple body.
- **To speed this along,** Munro keeps a clean set of filters in a five-gallon pail of water and Finish cleaning agent. He puts the clean filters on when clean-out is done, then puts the old set of filters into the cleaned pail for next time.
- **Use a tank-cleaning additive with the rinse water.** Check product labels to see which cleaner is recommended. For some, ammonia alone is enough. For some, a detergent (surfactant) alone is enough. For others, a combination of both is required. **CG**

Jay Whetter is communications manager for the Canola Council of Canada. For more sprayer performance tips, go to www.canolawatch.org and look under the "Weeds" heading.

Showing how they perform

Cigi represents the end-use customer at the table when new varieties are being considered for registration

BY ELLEN GOODMAN / CIGI

Last February the Prairie Grain Development Committee recommended registration of crop lines that included 27 new wheat varieties. Technical staff from the Canadian International Grains Institute participated on quality evaluation teams involved in the recommendations, representing end-use interests of customers of Canadian grains from around the world.

“The annual meeting is designed to evaluate data generated on candidate cultivars developed by plant breeders and move them forward through the registration process, ultimately recommending them for registration if they meet the required quality criteria,” says Elaine Sopiwnyk, Cigi’s director of grain quality. Recommendations were also made for registering lines of pulses, oats, barley, flax and canary seed.

Four committees are responsible for the testing, evaluation and recommendation of grain crop candidate cultivars for registration in Western Canada. This includes the Prairie Recommending Committee for Wheat, Rye and Triticale comprising three teams covering quality, disease and agronomics.

“Five technical staff from Cigi are involved in the wheat quality side as are representatives from the Canadian Grain Commission (CGC), industry and universi-

ties,” Sopiwnyk says, noting that Cigi conducts analytical testing and evaluation of end-product quality in baking and noodles or pasta.

Cigi CEO JoAnne Buth says that Cigi represents the end-use customer at the table.

“Staff voice their expertise when it comes to how the varieties perform in bread, pasta and noodles. Their understanding of the quality parameters and end-use customers are the strengths that we bring.”

Once a line is recommended for registration the breeder can submit it to the Canadian Food Inspection Agency which oversees the variety registration process, and then the CGC will place the variety in the appropriate wheat class.

NEW WHEAT CLASS

This year a focus of the meeting was on the new milling wheat class established by the CGC — Canadian Northern Hard Red (CNHR) — which takes effect August 1, 2016, Sopiwnyk says. “This was part of the wheat class modernization strategy. In order to improve the quality and consistency within the CWRS class, wheat varieties with weaker gluten strength will be removed from CWRS and moved into CNHR.”

She says that even after a variety is recommended, it will take a number of years before suitable seed quantities are available and the variety is taken up by producers to represent any significant proportion of crop production in Western Canada.

Buth adds the recommending process may take time but it is important to provide farmers with the best wheat varieties possible while meeting customer needs.

This year Cigi also participated on the quality evaluation subcommittee of the Prairie Recommending Committee for Pulses and Special Crops which recommended for registration 14 lines of peas, beans and lentils, in addition to one line of canary seed.

“Our presence on the committee is important as the Cigi pulse team carries out work related to seed quality from processing through to end-product utilization,” says Peter Frohlich, project manager of pulses and special crops at Cigi. “Because we undertake pulse ingredient development and processing we have a strong connection with the end-users.”

Frohlich says this year offered some excellent presentations and other discussion focused on the importance of protein levels in pulses, specifically in peas going into the market.

“Traditionally there’s been a huge focus on yield when coming up with new varieties which makes sense as higher-yielding varieties will generate more profit. However, with higher yields you also lose a little bit on the quantity of protein. And one of the main reasons pulse flour is used as an ingredient is for the nutritional aspect which includes protein.”

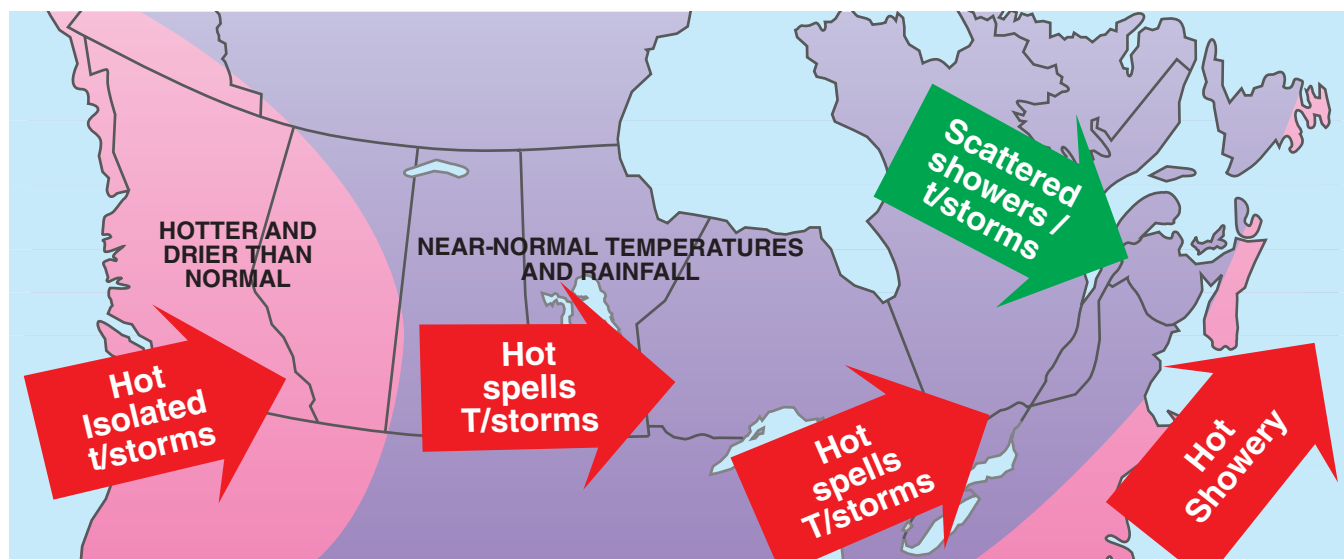
Frohlich says that producers want to grow the best pulse varieties possible and that breeders aim to make sure they are satisfied with the lines available to them. **CG**



Dozens of prospective varieties are sampled for milling and baking characteristics before they can be recommended to become part of a Canadian wheat class.

NEAR NORMAL

MILDER THAN NORMAL



British Columbia

- **June 12-18:** Pleasant with warm temperatures. Isolated coastal showers, a few thunderstorms east and north.
- **June 19-25:** Mainly sunny apart from spotty showers or thundershowers. Highs in the 20s west, 30s in the Interior.
- **June 26-July 2:** Warm and mainly sunny aside from passing showers and isolated thundershowers inland.
- **July 3-9:** Warm to often hot. Sunny other than some shower or thundershower activity on one or two days.
- **July 10-16:** Hot and quite dry in the Interior. Hot elsewhere with showers or thundershowers here and there.
- **July 17-23:** Sunny, warm with scattered showers west and north, hot and mostly dry eastern regions.
- **July 24-30:** Sunny with isolated thundershowers inland, scattered coastal showers. Highs in the 20s west, 30s east.
- **July 31-Aug. 6:** Dry in the Interior aside from spotty thundershowers. Warm elsewhere with scattered showers.

Alberta

- **June 12-18:** Sunny and warm overall but showers and isolated heavier thunderstorms on a couple of days.
- **June 19-25:** Seasonable to warm with a couple of hotter days and heavier thunderstorms here and there.
- **June 26-July 2:** Hot most days under sunshine but look for scattered thunderstorms on two or three occasions.
- **July 3-9:** Generally sunny and hot but expect passing thunderstorms from time to time, heavy in places.
- **July 10-16:** Sunny and warm to hot. A couple of more humid days trigger locally heavy thunderstorms.
- **July 17-23:** Seasonable to hot temperatures dominate under sunshine. Scattered thunderstorms in a few regions.
- **July 24-30:** Pleasant and warm on many days aside from thunderstorm activity in a few regions.
- **July 31-Aug. 6:** Comfortable temperatures and generally settled but look for passing thunderstorms on a couple of days.

Saskatchewan

- **June 12-18:** Changeable temperatures. Sunny apart from scattered showers or heavier thunderstorms.
- **June 19-25:** Warm under sunshine but showers or thunderstorms on two or three occasions, some possibly severe.
- **June 26-July 2:** Sunny skies with frequently hot temperatures. More humid days set off thunderstorms.
- **July 3-9:** Often hot and at times humid under sunny skies. Scattered thunderstorm activity on a couple of days.
- **July 10-16:** Heavier thunderstorms develop here and there. Otherwise sunny and hot on most days.
- **July 17-23:** Sunny and settled aside from passing showers or heavier thunderstorms on a couple of days.
- **July 24-30:** Seasonable to occasionally hot and mainly sunny. Scattered thunderstorms in a few regions.
- **July 31-Aug. 6:** Pleasant temperatures, often in the 20s under sunshine. Isolated heavy thunderstorms.

Manitoba

- **June 12-18:** Temperatures fluctuate. Occasional brisk winds. Sunny apart from scattered, heavier thunderstorms.
- **June 19-25:** Sunny, seasonable but a couple of more humid days set off thunderstorms, risk severe in places.
- **June 26-July 2:** Sunshine dominates with highs in the 20s but a couple of hot, humid days set off thunderstorms.
- **July 3-9:** Sunny, hot, humid on many days aside from passing heavy thunderstorms in a few localities.
- **July 10-16:** Heavy thunderstorms occur in spots. Otherwise sunny and hot temperatures will dominate.
- **July 17-23:** Highs in the 20s, some 30s. Sunny with scattered thunderstorms, risk of heavy in a few areas.
- **July 24-30:** Mostly sunny except for thundershowers here and there. Seasonable to occasionally hot.
- **July 31-Aug. 6:** Sunny with comfortable temperatures. A couple of hotter days set off isolated heavy thunderstorms.

National highlights

June 12 through July to August 6, 2016

Hot and relatively dry weather is expected to bake British Columbia and most of Alberta this summer. Computer models indicate that across the rest of Canada, warm, settled conditions will dominate the summer weather picture. This pleasant pattern will be interrupted from time to time with scattered showers or thunderstorms, some of which could produce locally heavy downpours, hail and strong winds. Overall, however, rainfall from the eastern Prairies eastward to the Maritimes should average close to normal.

Prepared by meteorologist Larry Romaniuk of Weatherite Services. Forecasts should be 80 per cent accurate for your area; expect variations by a day or two due to changeable speed of weather systems.



This Growing Season: Graze Grass Up

As many graziers will attest, healthy forage makes for healthy pocketbooks.



As we head into the start of spring, it's important to consider this year's forage and pasture management strategy. For producers hoping to sow new fields, sourcing feed may be a hurdle this year, as some experts are forecasting rising prices in much of Canada. For those with well-established crops, this year might be the time to start thinking about increasing paddock numbers to promote healthy grasslands.

To start the spring off right, it's important to have patience. There's an old adage that for each day of grazing before pasture is ready, managers sacrifice three days of grazing in the fall. Ideally, livestock will be given pasture stockpiled specifically for spring use. The first grazing of other pastures should begin when there is at least six inches of growth.

Using carrying capacity assessments of paddocks as a guide, producers can begin to hash out the season's grazing plans, making sure to allow for sufficient rest periods. Rest periods allow plants to recover from the loss

of their shoots as well as their roots. When plants are stressed by overgrazing or drought, rest periods will need to be lengthened, and, in severe cases, producers might need to consider de-stocking or finding other forage sources.

A well-managed pasture is an asset to any forage producer, providing an environment suitable to a diverse range of microorganisms, whose primary role is to break down fibre and other organic matter, and eventually create humus. Healthy forage and pasture stands have a lower risk of erosion and compaction, increased nutrient storage, and better water infiltration and soil moisture capacity. In addition, healthy humus levels increase nutrient availability, lower leaching potential, absorb water and increase the oxygen in the soil.

If you decide this year you're going to focus on soil improvement through grazing or harvesting strategies, make sure you evaluate the progress. Take soil tests. Document changes through repeat photos of the same area. The transition might just surprise you.



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NEW HOLLAND
 AGRICULTURE

A farmer in China

BY GERALD PILGER

Unfortunately for our markets, what I saw convinced me that China's plan to feed itself has a real chance of succeeding

Every decision we make is influenced by our perception of the world around us. This is especially true in farming. Whether it's which crops to plant or when to sell, many of our management decisions are based more on our personal perceptions than on hard facts.

But what if our perceptions are wrong?

This question has haunted me since I returned from spending the last half of March in China. The country I visited was not the starving, hard-line, socialist society I had expected to see. In fact, when comparing their country with Canada, I was told repeatedly by guides and citizens that "Canada is more socialist than China!"

This divergence between Canadian farmers' perceptions of China and the reality of Chinese agriculture could do serious damage to agriculture in Canada.

In 1908, the Canadian government published "Canada: The Granary of the World," and to this day, many Canadians believe the Prairies to be a major producer and the "breadbasket of the world."

As farmers, we have believed the claims that Canadian agriculture is essential to feeding the growing population of the world. And many of us believe the Asian market is a kind of guarantee of our future farm prosperity.

So is Canada really the huge supplier to the world as such statements would have us believe?

Unfortunately, no!

In 2015, Canada ranked sixth in the world in wheat production with 27.6 MMT. That same year, China, which ranks second globally, produced more than four times as much (130.19 MMT).

China also ranked second (behind the U.S.) in world production of corn (224.6 MMT). Canada didn't even make the top 10 on that list, growing only 13.6 MMT.

Even though Canada prides itself on being the leading producer of canola in the world, China's rapeseed production exceeds our canola crop. In fact, if all oilseed

crops are combined, China's oilseed production exceeds all Canadian and U.S. oilseed production combined. Indeed, Canada trails most oilseed exporting nations in total oilseed production.

PRODUCTIVITY

Some Canadian farmers may counter that while as a country we may not produce as much as China, surely we are more productive. Or are we?

A 2014 Statistics Canada comparison of Canada and Chinese agriculture reveals while the total land masses of Canada and China are similar, China has about twice as much farmland as Canada (13.9 per cent of China's total area is farmed compared to the 7.3 per cent of Canada which is cropped).

In 2012, China grew about 590 MMT of grains. In 2013, a record year for Canadian grain production, our handling system struggled with about 80 MMT. Dividing total production by area, Chinese agriculture is far more productive than Canadian farms.

This can be explained by their much more intensive farming system, with 60 per cent of the agricultural land in China irrigated compared to less than one percent in Canada. This is even more amazing considering China has only about five per cent of the world's fresh water and Canada has approximately 25 per cent.

In southern China, the temperate climate enables farmers to plant two or more crops per year. Additionally, I saw fields where farmers were intercropping, often growing rapeseed amongst orchids.

Every arable inch of land there is cropped; even in urban areas you can find lot-sized fields. Vast areas are covered with greenhouses. And while we pride ourselves on yield maximization, there is a much higher use of fertilizers and crop inputs in China.

THOSE SMALL FARMS

Farm size is the biggest difference between Canadian and Chinese agriculture. China, with a population of 1.4 billion people has only 0.03 ha of arable land per citizen, while our 36 million Canadians have 0.5 ha per person.

There are about 230,000 farms in Canada with the average farm size of 291 ha.

China by contrast has over 300 million farmers with an average farm size of just 0.55 ha.

Most Chinese people I talked to simply could not believe that the average farm size in Canada is over 500 times that in China, and they were even more skeptical when I described the size of large prairie grain farms.

So of course, given farm size, Canadian farmers must be more efficient than Chinese farmers, right? Unfortunately, I cannot find hard data to support this perception.

Yes, we grow more tonnes per farmer, but are we doing it more efficiently? Is the total cost of our highly mechanized, low-labour, export-oriented farming system truly less than the labour-intensive, small-scale, local



China's determination to feed itself is seen in new-crop storage and logistics across the country. Behind the scenes, however, are support systems, including some of the world's biggest research programs.

agriculture practiced by Chinese farmers?

We need a true cost per kilogram of food produced at port position in all major producing countries before we can really know how efficient our agriculture is compared to other exporting countries and different agricultural systems.

We need to know how much of their total food production costs in each country are actually covered by the taxpayer through direct or indirect subsidies, and we need to know what costs have been externalized and are being paid for by the taxpayer instead of the farmer.

In fact, economists could take such an analysis a step further. While farmers pride themselves on feeding the world, a better description of today's farming might be harvesting solar energy. Given that 40 per cent of the U.S. corn crop is now converted into fuel (as are significant portions of its oilseeds and sugarcane), it would be interesting to compute the net caloric energy of agricultural systems. Is the net energy harvested through industrial agriculture actually greater than the traditional small-scale, labour-intensive agriculture which is still dominant in much of the world? Based on energy in versus energy out, is modern agriculture efficient?

SOCIETAL ASPECTS OF CHINESE AGRICULTURE

Many Canadians would be surprised to learn that communal farms in China are no longer the norm. Since the early '80s China has used the "Household Responsibility System" to allot plots of land to each farm household.

Farmers do not own the land; they are tenants and pay an annual rental fee to the government for the right to farm the land. More importantly, under this system, they are free to choose what they will grow and how they will market the crops from this land.

The Chinese government recognizes its farmers are constrained by such small landholdings but at the same time it is aware agriculture is critical to the livelihoods of nearly half of its population.

They also remember the food shortages and hunger that were prevalent across the country just a generation ago. So the Chinese government is one of the most aggressive governments in the world in supporting agriculture. China subsidizes both farm inputs and commodity prices. It places minimal regulations on farmers, and it encourages entrepreneurship through a very capitalistic market economy.

While other countries have moved away from government-owned grain storage, China has maintained a huge stockpile of grains in case of crop failure and also to provide a market for farmers in times of surplus production.

Despite all this support, however, China's farmers are amongst the poorest people in the country. There is still a mass exodus of people moving from rural China to the cities searching for a better life. Many farmers work in towns and cities, returning to the country only to plant and harvest their crops.

Young people see limited opportunities in farming. China is trying to combat this trend with specialized training and a new designation of "professional farmer." Inroads are slowly being made as these educated entrepreneurs move away from traditional crops and plant vegetables and fruits destined for nearby cities. Fresh produce was widely available everywhere I visited in China.

Farms also provide living conditions not available to most people in this crowded country. Most farmers still live in single family homes or row housing in small villages. Single family dwellings in the cities are only available to the wealthiest. Most

CONTINUED ON PAGE 46



Every available square inch of soil in China is being farmed to maximize its output, whether that's a vacant lot in a city or, as here, farmland growing multiple crops a year with plastic.

city dwellers live in apartments or high-rise condominiums.

Condo prices in the downtown core of any major Chinese city are surprisingly similar to the cost in our major cities. But even though Chinese condo owners may have paid western prices for ownership of a condo, the title is only for a maximum of 75 years.

Rural areas are also less impacted by the smog, traffic and pollution that are overwhelming in so much of urban China.

FEEDING TOMORROW'S CHINA

In 1999, the International Institute for Applied Systems Analysis (IIASA), an Austrian-based international research and policy organization, completed a multi-year study of Chinese agriculture to determine if China could feed itself. Their conclusion was that China has both the land and water resources required to meet its food needs through 2025, provided a number of problems are addressed. Many of the 10 constraints noted in the report have already been acted on. And China has taken additional steps over and above what was noted in this report to ensure it has adequate food supply.

In 2013, FCC published a report "Canadian Agriculture and Agri-Food in the Global Economy 2013-14." It looks at the possibili-

ties China offers Canadian agriculture and brings up some important information Canadian farmers need to consider. The take-home message that most Canadian farmers heard was: "China's expanding economy and increasing levels of individual wealth will result in increased demand for agriculture and agri-food products."

But that report also stated: "One of the Chinese government's main initiatives is to increase agriculture productivity and reduce rural poverty by improving infrastructure, increasing subsidies, introducing new technology, and providing farmers with ownership rights for their land."

That is the message that Canadian producers have either not heard or simply ignored.

But make no mistake. China's goal is to feed itself, and it is making the investments to ensure this happens.

In 2013, a Chinese firm bought the world's largest pork processor, Smithfield Foods. The same year, China leased seven million acres of Ukraine's agricultural land. Land Matrix, which tracks foreign investment in agricultural land, lists 100 land leases Chinese companies have made world-wide in the last 10 years.

China also leads the world in public research in agriculture. Most recently, state owned Chem-

China bid \$43 billion for the global agricultural giant Syngenta.

China is currently feeding nearly a quarter of the world's population with just seven per cent of the globe's arable land, and it is still a net exporter of agricultural products. The reply was always the same when I asked who will feed China in the future: "China will feed China."

Make no mistake, I am not suggesting that the Chinese agricultural system is superior, or that we in Canadian agriculture should give up modern farming practices. Rather, I am warning producers that there is a broad misconception about Chinese demand for Canadian agricultural commodities.

There is no question China wants quality foods and will continue to import such. But they also want technology, and seed stock, and information in order to continue building their agriculture sector rather than relying on increasing imports of commodities.

The entire premise of free trade is that countries will exploit areas of comparative advantage. They will export goods that they have an advantage in producing, and they will stop supporting the production of products which can be produced more cheaply elsewhere. Yet China firmly believes it must feed itself, regardless of the cost, and therefore it is bucking the basic premise of our free trade agreements.

Further confusing the situation is the lack of real data on the true costs of agricultural systems. If Canadian agriculture is, in fact, a high-cost producer of commodities, we have a real problem. Yet instead of analyzing actual costs of production, we continue on the treadmill that modern agriculture has become.

But the biggest problem of all is that we continue to ignore realities that conflict with our perceptions.

China is a glaring example of this. After reading this column, are you still so confident that the prosperity of your farm is guaranteed by a rising middle class halfway round the world? **CG**



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In a German city

Could Munich's urban farm be a model for Canada, helping improve quality of life in our cities and narrow the urban-rural divide?

BY SCOTT GARVEY / CG MACHINERY EDITOR

If you have never heard of the now-extinct Schlüter tractor brand, what you need to know is that the company produced some famously unique looking machines during its corporate life. Now, this was the first opportunity I'd ever had to see a working Schlüter tractor, and it came in a city — although still on a farm.

That's because when that chance came to see a Schlüter in person, it was on the Gut Karlshof farm in Munich, Germany.

"This tractor is over 20 years old," Alfons Bauschmidt, manager of the city's farming operations said as he toured me around the Gut Karlshof farmyard. "We have one employee who loves Schlüter tractors. He cleans and maintains it with a passion."

Such passion has greatly extended the life of this old tractor, and it mirrors the kind of commitment that drives this entire — and also very unique — farm operation.

The Gut Karlshof farm site is located well within the limits of one of Europe's fastest growing cities, even

though it would violate handfuls of bylaws, regulations and zoning restrictions almost anywhere in Canada. The historic farmyard is located on 273 hectares (675 acres) of prime agricultural land, and it and nine other sites called estates in and around the city add up to 6,300 acres farmed by the municipal government.

By German standards, such a farm operation is enormous.

"The city of Munich has 10 of these estates," confirmed Bauschmidt. "Two of them are located right inside the city and we have an overall agricultural area of 2,549 hectares. We use 1,762 hectares for our own crops or animal husbandry."

Why would a city defy convention and run its own farming operation?

It turns out there are multiple good reasons. To start with, the government already needs to maintain a fleet of agricultural equipment to maintain its large tracts of undeveloped land. Plus, at least one city department needs to buy agricultural commodities.

"It's our job to supply grain and feed to the zoo in Munich," Bauschmidt explained. "And we also take care of green spaces within the city. Most are large-scale parks, and we also take care of general areas."

One remarkable thing about this farm is it gets those city maintenance jobs done without the typical drain on city budgets. Instead, the farm's income covers those expenses, not to mention supporting 45 employees and running in the black.

"Every year we return a small profit to the city," said Bauschmidt.

That "small" profit typically amounts to about 200,000 euros annually. That's about C\$300,000!

But there is much more behind the logic for having this urban farm than a cheap way of getting the grass cut in city parks. There is also a unique philosophy here that may be a template for major centres in Canada to consider.

Munich's leaders see a very long list of benefits to be had by keeping tractors running around town. Helping to maintain a natural ecological balance within the city is one of the big ones.

"The landscape of the city is very beautiful, and we try to be a model of development for other cities," said



The sign at the entrance to the City of Munich's Gut Karlshof farmyard is well within the limits of the city.



This older Schlüter tractor is kept in top-notch condition by an employee who has a passion for the brand. It's just one of a large number of machines in the farm fleet.

Dr. Alfons Bauschmidt describes how the farm finishes 500 head of feeder cattle each year.

PHOTOS: SCOTT GARVEY



Bauschmidt. "The maintenance of our cultural landscape is important. These spaces help provide the city with fresh clean air. These areas provide urban residents with a better climate."

The micro climate is important; on average, the temperature within the city centre is six to eight degrees hotter than it is at the farmyard, so the goal is to provide green spaces to soften the extremes.

"It's also very important to have

At 6,300 acres, Munich's urban farm is huge by German standards, earning the city an average \$300,000 a year

360 hectares of so-called ecological balance land. We want to preserve the landscape, and there will always be agriculture going on in these compensation areas to make sure we have an ecological balance."

And if you're going to operate a city farm, why not let the public participate and get their hands dirty? To help those who don't have a green thumb, the farm even prepares all the plots and seeds them before turning over maintenance of them to "an urban farmer" for a year.

"Local residents can get a small plot of land and do some urban gardening," Bauschmidt continued. "We have six such sites where we offer 600 plots. We do the tilling and planting and hand the plots over to the resident who takes over responsibility for his or her plot."

"This is very popular with families with small children. That was our target group. But it turned out there were many other people who wanted to get involved as well. Many young singles who have a stressful job said they wanted to go do some gardening when they come home in the evening to relax."

Each plot has 30 or 60 square metres. For 30, residents pay 65 euros (about C\$100) per year. That includes the seedlings, use of the tools and the water supply. People just do the maintenance through the course of the year. In the fall the farm takes over again and prepares the plot for next season.

"People can come back the next year," Bauschmidt added.

For those who don't want to do that much work but still want to get some farm-fresh vegetables, the on-farm store at Gut Karlshof will sell them a bag and they can go out into one of the farm fields and pick their own on harvesting days.

"We always give people the opportunity to pick their own potatoes on our fields. We use our harvesting machinery, people buy a bag and pick the potatoes off the field."

The operation also does a lot of direct marketing right from a farmyard store, which sells organic produce and beef from its feeder operation which finishes Simmental-Fleckvieh-cross cattle. It also sells directly to other retailers.

"In recent years we've seen a growing demand for regional produce, and organic produce in particular," he said. "We work on the principle of producing regional, healthy foods. We grow wheat, bar-

CONTINUED ON PAGE 50

Animal welfare is a hot topic in Germany. The farm has remodelled its livestock sheds to improve animal welfare. Feeder cattle remain primarily indoors at Gut Karlshof.



Children who grow up in the city don't have much knowledge about agriculture."

*Alfons Bauschmidt,
manager of Munich's
farming operations*



A store in the farmyard direct markets organic beef and produce.

ley and all kinds of grains (as well as corn, beans and vegetables).

"There are many consumers who want to know where their meat comes from, so they come to our farm shop. We have 500 feeders here. We have a marketing contract with a butcher in Munich. Every week they take six head. Our most well-known buyer is the Oktoberfest. During those two weeks, the equivalent of 110 head are eaten by visitors."

City management hasn't overlooked the fact that the farm provides a golden opportunity to teach the urban public about where their food comes from.

"Children who grow up in the city don't have much knowledge

about agriculture," noted Bauschmidt. "That's why our estates are open to visits from schools. Even adults can come here and learn about agriculture. Once or twice a year we organize a farm festival. We invite farmers to display and sell their products. People can eat lunch, buy local and regional organic products. We usually get 6,000 to 8,000 visitors. We also organize lectures about topics being discussed in agriculture, and we invite politicians and agricultural experts."

The farm grows all its own livestock feed and uses compost for fertilizer. As well, grass clippings from city parks along with some corn and grass silage support the farm's other

revenue source. "We have a biogas facility that has a 590 kilowatt per hour capacity," Bauschmidt pointed out. "We produce enough energy to supply 1,500 households, and we also have solar panels on many of our buildings."

Primarily, however, while these economics help the city to farm, they don't explain why it's involved in farming in the first place. Instead, the drivers are quality of life and the beauty of rural landscape.

"Land is a very important asset here, and there are many competing demands for it," Bauschmidt said before adding something that many Canadian farmers would echo. "You cannot preserve the agricultural landscape without farming it." **CG**

Feeding the Indian tiger

Move over China. Food sales to India are set to roar

BY NICOLAS MESLY

“The Indians are crazy for red lentils... potential sales are incredible,” says Lance Walker, head of Lazer Enterprises Inc. in Borden, Sask.

Walker was working in a trade show booth as he told me this, one of the representatives of the 23 Canadian businesses that were participating at the 31st Aahar Food Hospitality Trade Fair held in New Delhi in March.

Some 872 companies from 22 countries were at the show to stimulate Indian demand for their products.

They know that while newspaper headlines can seem transfixed on China, India's economy is booming too.



Market opportunities range from five million tonnes per year of pulses to shipments of maple syrup, says Canadian counsellor Parthi Muthukumarasamy. “Canola oil could carve itself an incredible market share in India.”

According to the World Bank, India's GDP growth is expected to end up at 7.9 per cent this year, enough to make it the fastest growing economy on the planet, even outpacing the Chinese dragon with its 7.0 per cent.

Although India is the world's largest pulse producer, El Niño weather patterns helped set off consecutive droughts in 2014 and 2015 that have put the country into a serious deficit for this vital staple food. “India produces around 18 million tonnes of pulses but they need 22 to 23 million tonnes every year,” says Parthi Muthukumarasamy, a specialist in agriculture and agri-food at the High Commission of Canada. As a result, India needs 5.5 million tonnes of pulses, and it needs them more or less now.

In 2015, Canada sourced 40 per cent of India's pulse imports, mainly in red lentils and yellow peas. From \$900 million in 2014, our pulse exports to India jumped to \$1.5 billion in 2015, marking a 60 per cent increase.

It all means that Lance Walker had real work to do at the Aahar Trade Fair. But the Saskatchewan producer wasn't only trying to sell red lentils to his visitors, he also welcomed them with samples of canola oil.

India imports US\$14 billion in vegetable oil per year which makes the country the world's largest importer. Currently it mainly buys palm oil (65 per cent market share) from Indonesia, soy oil from Argentina (25 per cent) and sunflower oil from Ukraine (15 per cent).

“India is one of the countries that has the highest incidence of diabetes and cholesterol,” says Muthukumarasamy, who is working closely with the Canola Council of Canada, based in Winnipeg. “If we promote its health benefits, canola oil could carve itself an incredible market share in India.”

Although India's society is generally strongly opposed to GMOs, canola oil has been approved because, unlike the plant, the oil itself does not contain GM proteins.

SWEET DREAMS

Standing at his booth, Antoine Pfister has a dream. “Imagine if every gulab jamun would be served with maple syrup,” he says.

Pfister was hired three years ago to develop the Indian market on behalf of the Quebec co-operative, Citadelle, the world's largest maple syrup producer and exporter.

Gulab jamun is a small, fried doughnut served with syrup, and Indians crave them. There isn't a neighbourhood in New Delhi that doesn't have its sweet shop. The Indian tiger has a sweet tooth!

“We are looking at the high-end markets in the megacities such as Delhi, Mumbai and Bangalore,” explains Pfister, who is as passionate about maple syrup as Walker is about his lentils and canola oil. To Pfister, maple syrup is a super-food full of health-building natural antioxidants.

India's economic boom has fostered the growth of a new, youthful middle class that travels and that is much

CONTINUED ON PAGE 52



Quebec co-op Citadelle sees a world class market for maple syrup and much more.

more health conscious than their parents. Current surveys put this group at 350 million consumers, which is larger than the U.S. population.

Muthukumarasamy sees opportunities for a number of Canadian products in India such as malting barley, rapeseed mustard, red kidney beans and even seafood such as fresh salmon, which is entering now from Norway and Scotland. But, he warns, “Canadian companies have to understand and commit themselves to India.”

India is a price-sensitive market, he points out, but success also hinges on developing personal relationships.

MCCAIN INSPIRES INDIA'S PM?

While in India at the high commission reception held in honour of the Canadian companies attending the Aahar Fair, I met Kunai Yadav, general manager for McCain Foods India.

McCain has been established in India since 1990. The company has been growing its own potato varieties here and processing them in its plant located in the state of Gujarat.

McCain is the supplier of fast-

food giant McDonald's, and the company is also capitalizing on the booming of India's new middle class. Like their Western counterparts, young Indian professionals have less time to cook, so the easy-to-prepare McCain frozen samosas are scoring big.

The first question Yadav asked me, however, was whether I had the green light from McCain's head office in Florenceville, New Brunswick, so he could talk to me.

Although I have often tried to get an interview and a plant visit, none of my recent requests to the vice-president, government, public relations and corporate affairs offices were answered. But Yadav was kind enough to respond to a key question: does the company have trouble ensuring an unbroken chain of cold storage facilities for its products at every stage from the fields to the fork?

“No. We have invested and developed our own cold storage facilities,” he answered.

It's a reasonable question, we seem to agree, since the country's enormous rate of food loss is often in the news, referencing studies that show up to 40 per cent of Indian food rots before it gets to consumers.



“Potential sales are incredible,” says Saskatchewan farmer Lance Walker as he works the booth at Aahar.

In fact, India's Prime Minister Narendra Modi is making food processing a national priority. He is improving railways, roadways, and air navigation, and he is inviting local and foreign companies to invest in 42 mega food parks that will incorporate processing facilities and modern cold storage.

As Gujarat is Narendra Modi's turf, one can wonder if McCain has inspired India's prime minister to replicate the Canadian model to other states of India.

OLYMEL AND MCCAIN'S BACON IN INDIA

In a separate phone interview, Jacques Pomerleau, president of Canada Pork International, explains his group is seeking a free trade agreement with India that would allow Canadian pork to enter India, mainly by eliminating non-tariff barriers.

Inevitably, it raises the expected question. Why would he invest his time and energy in trying to sell pork in a country that is 80 per cent vegetarian and 20 per cent Muslim?

"Those 1.3 billion Indians are not all vegetarians by choice," Pomerleau reports after two missions to India. "As their income grows, they want to eat quality meat, and the Muslims are no exception."

Pomerleau estimates that 60 million consumers in India are interested in eating Olymel or McCain



bacon. That, he points out, is nearly double the Canadian population.

A Canada Pork International mission is scheduled next fall with the help of Canada's agriculture counsellor, Parthi Muthukumarasamy, to promote Canadian pork

in high-end hotel chains in major cities.

Meanwhile, a growing number of farm groups are reaching the same conclusion. As the Indian tiger awakens, it seems to like the taste of Canada. **CG**

Even though much of the country is Hindu or Muslim, food analysts forecast a big jump in pork sales.



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PREVENTING domestic violence

Let's pause for a moment to let this grim statistic sink in. Every six days a woman in Canada is murdered by her partner.

Domestic violence is far too prevalent. Just in the last five years, more than one million people in Canada have reported being either physically or sexually assaulted by their partner or spouse. Again, let's pause for a moment to let it sink in... more than one million.

This is a problem that affects all of us. The RCMP estimates the direct cost to Canadian society from injuries and chronic health problems caused by abuse at \$1 billion per year, but that doesn't factor in the social cost of adults and children who are traumatized by the violence and the depression, anxiety, poor physical health, substance abuse and suicide that it causes.

While we'd like to think this is an urban problem, and that it isn't happening in farm families or in our rural communities, that's not the reality.

"Domestic violence knows no limits... it transcends socio-demographic boundaries," says Lana Wells, Brenda Strafford chair in domestic violence in the faculty of social work at the University of Calgary. Wells heads up SHIFT, The Project to End Domestic Violence, which focuses on preventing domestic violence by working in partnership with government, communities, organizations and citizens.

According to the RCMP, domestic violence affects people of all ages, rich and poor, and from every cultural and educational background. (Most domestic violence is inflicted on women by men although there are cases of men becoming victims.)

Rural society likes to think of itself as more wholesome and innocent, but it is not immune.

Sadly, when it comes to supporting domestic violence victims, rural residents can be at a disadvantage, according to Andrea Silverstone, executive director of PEER Support Services for Abused Women (PSSAW) in Cal-

gary. "Rural communities often are not able to provide specialized domestic violence services," Silverstone says. "Any services that may be available in rural communities are often limited and oversubscribed."

THE FIRST STEPS

"Domestic violence is a complex, pervasive, costly, yet preventable problem," says Wells.

Stress, gender inequality and exposure to domestic violence as a child all increase the risk.

Wells says men who witnessed their fathers inflicting violence on their mothers are at higher risk of becoming perpetrators and harming their own spouses and partners. Alcohol can also exacerbate the problem.

Yet there are also factors that can reduce the risk that an individual will become abusive, including resiliency and good relationship skills.

According to the RCMP, domestic violence has been declining, which in itself is proof that relationship abuse can be stopped. It also says that changing attitudes, services for victims, treatment programs for violent men, stronger laws and pro-arrest policies are making a difference.

Now, governments and community organizations are training their resources on primary prevention instead of crisis intervention.

After an extensive review of the existing research literature, Wells and her associates have identified several strategies that will address the root causes.

One of these strategies is to involve men and boys in promoting gender equality and ending violence. By focusing on equipping men and boys with the knowledge, skills and capacities to engage in healthy relationships, domestic abuse can be stopped before it starts.

The research backs a multi-pronged approach that engages men as role models in working with other men and

Translating research into action: Grande Prairie and Medicine Hat

With funding from the Canadian Women's Foundation, SHIFT worked with the Alberta communities Grande Prairie and Medicine Hat to support local service providers and community leaders in adopting strategies to prevent domestic violence.

Those working in education, health care, and community agencies were invited to participate in a series of workshops where the latest research findings on domestic violence prevention were presented, followed by a discussion of how this knowledge could best be integrated into the local community.

Over a period of eight months, the program delivered six full-day sessions. In an evaluation six months after the completion of the project, participants said the project had benefitted their individual learning, helped them to connect with others working in their community and had been translated into strategies for prevention of domestic violence in their community, particularly school-based healthy relationship programming.

boys to promote positive masculinity and as violence disruptors.

The research also shows that increased positive father involvement is also associated with lower levels of family conflict and violence, and increases the likelihood that children will grow up in an emotionally and physically safe environment.

It also turns out that men's emotional well-being is improved when they spend more time caring for their children. As well, boys who have nurturing fathers are less likely to use violence against female partners, but men can also be positive role models in the lives of young boys.

Mechanisms to increase positive male parenting can include progressive parental leave policies for men, social media campaigns to change norms and behaviours, and educational and networking programs to support fathers.

To reach out to men and boys, it's necessary to go to where they congregate, says Wells. "We need to go where they work, play,

learn, worship and socialize. We need to infuse content in these settings to develop the skills that support gender equality, that build healthy relationship skills, that teach and reinforce positive and healthy masculinities and that disrupt and stop violence."

Adolescence is a time when values and norms around gender equality are forged. Healthy relationship skills can be taught as the Fourth R (Relationship) as part of the Grade 7 to 9 school curriculum. "By promoting respectful relationships and gender equality, and by building competencies in self-awareness, self-management, social awareness, relationship skills and responsible decision-making with young boys and girls, dating violence can be stopped," says Wells.

"We all need to work to prevent violence to build a society where abuse of power is not tolerated," the RCMP website says. "By seeing intimate partner violence and abuse for what it is — a crime — we can all take responsibility and work together as a community to stop the violence." **CG**

Check these services

National Domestic Violence Hotline,
1-800-799-7233 | 1-800-787-3224 (TTY)
www.thehotline.org/

Shift: Project to End Domestic Violence
University of Calgary Faculty of Social Work
preventdomesticviolence.ca/

Canadian Women's Foundation
Stats, information on promoting
healthy relationships and grants
for community programs
www.canadianwomen.org/

Harvard University's Center on
the Developing Child
Resources for Healthy Parenting
developingchild.harvard.edu/

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DON'T TAKE YOUR sense of smell for granted

Linked closely with the sense of taste, your sense of smell often gets taken for granted. In general, a quarter of the population have a poor sense of taste, half have an average or normal sense of taste, and a quarter are considered “super” tasters.

Our ability to smell mirrors this distribution, although one to two per cent of people have no sense of smell at all, a condition called anosmia. Often, too, the senses of taste and smell are individual, meaning that what you taste and smell is not the same as another person tastes or smells in response to the same stimulus.

Interestingly, women in general have keener senses of smell than do men.

Our brains are able to recognize over 10,000 smells, if we keep our olfactory system healthy

When you inhale, olfactory sensory neurons at the rear of your nose detect vapourized molecules. Depending upon which receptors are activated, messages are sent to your brain, which then interprets the odour as the scent of roses or dirty sneakers.

However, the roof of your mouth also has olfactory receptors that sense molecules released from the food that you chew, and again your brain distinguishes the smell and taste of the food. Genetically there are as many as 1,000 different types

of smell receptors, and humans can identify over 10,000 different smells.

Any condition that causes nasal congestion, for example the common cold, influenza or hay fever, will have an impact on your sense of smell. Ironically, medications applied to the nasal passages will also impair the activity of olfactory receptors, for example decongestant and corticosteroid nasal sprays, which are the very things used to treat nasal congestion!

Saline nasal sprays, nasal moisturizing gels, and nasal douches don't seem to have the same effect on your ability to smell.

Some drugs can also cause changes in olfactory sensing. The “triptan” drugs used to treat migraine headaches are examples, and in fact some of these drugs are administered by nasal spray. The cardiovascular drug amiodarone; high blood pressure angiotensin converting enzyme or ACE inhibitors such as ramipril, enalapril, lisinopril; and some antibiotics like ciprofloxacin can alter not only smell but taste as well. Often, this adverse reaction is not considered important and people tolerate it.

Diseases that affect the nervous system also affect your ability to smell. Alzheimer's disease, Parkinson's disease, and schizophrenia are associated with a reduced sense of smell. As you age, you lose some of both your ability to smell and to taste, and it is thought this is due to a reduction in the number of receptors (our body does have the ability to replace olfactory neuron receptors, but the numbers may just not be sufficient).

Smoking certainly causes damage to olfactory receptors, and once you quit you may be surprised at how

tasty food becomes. Unfortunately, for some former smokers, this may mean you eat more and gain weight!

Hormonal disturbances, for example pregnancy, can alter smell receptors making familiar odours unbearable, and any nasal growth or dental problem can impair smell as well as taste. Exposure to chemicals or even air pollution can damage receptors and your sense of smell, so it is important to wear the appropriate mask and other protection when dealing with any potentially harmful substance that you may inhale.

Your sense of smell is important. Smell helps identify potential harm such as fire, gas leaks, and rotten food. Aromatherapy uses the sense of smell to treat psychological and physical conditions, and scents such as air fresheners, are even used to improve productivity and well being at home, work and school.

Memory is deeply affected by smell and in studies, 65 per cent of people can remember a specific smell a year after exposure. For example, it may just take a whiff of baking bread, baby powder, or perfume to remember your mother's kitchen, your child, or even your aunt and her favourite perfume. **CG**



Marie Berry is a lawyer/pharmacist interested in health and education.

NEXT ISSUE

No one really wants to talk about constipation, but it is a common condition and if you are affected you can be uncomfortable. Next month we'll talk about constipation, preventing it, and treating it. Until then, don't think that you need a bowel movement each and every day!

Elaine didn't know her iPhone was almost dead until she pulled it out to check the time. It was nearly four. She stopped the tractor while she rummaged through her pockets and the backpack she'd brought out to the tractor with her. No luck. She'd forgotten her charger. She took a look under the buddy seat, but her father-in-law Dale, hadn't left a charger in the cab.

Her iPhone battery quit completely as she was putting the tractor back in gear. Oh well, Elaine thought. She didn't need to call anyone. Her kids would be fine with her mother-in-law Donna for the rest of the afternoon and Dale had promised to take over for her before six, so Elaine could take Connor to town for soccer practice. She knew she could rely on Dale to show up on time, even though he'd muttered something about "kids today," and how he sure didn't remember being driven to town to chase balls in the middle of seeding when he was young.

Elaine settled back into her routine of scouting for rocks, gathering them into the rockpicker on the front of the tractor, then loading them into a pile on the edge of the field so they'd be out of the way when the Hansons were harvesting the lentils they'd seeded in this field.

This seeding season was a little different for the Hansons. Since his stroke, Elaine's grandfather-in-law Ed couldn't do most of the jobs he'd usually done. He still drove out from town every day, but now he was demoted to helping move trucks around.

Elaine's father-in-law Dale Hanson was doing his best to keep out of the air seeder. Last year he'd left a long unseeded strip right beside the main road. It had shaken his confidence to the point where, this year, he would only get in the cab when he absolutely had to. Luckily, their new employee Mark, had turned out to be a pretty capable sprayer operator. That left Elaine's husband Jeff

"I should've got the dog to do this"

Some days on the Hanson farm, there's a smell in the air that just isn't right

spending long days running the air drill, with Dale and Elaine keeping the drill filled and using the smaller tractor to run the rockpicker.

Donna looked after Elaine's three-year-old daughter Jenny, cooked for everyone, ran for parts, and waited in the yard at 4:15 on weekdays to greet Elaine's first-grader, Connor, when he got off the school bus.

The grass in the yard was already out of control, so anyone with any free time would pull out the mower to reclaim a patch of lawn.

It was so busy, the only time Elaine really had to think was when she was running the rockpicker.

Yesterday, she'd thought too

"If you hadn't gone to university, you wouldn't have met Jeff. And we both know you're very good at all the things you're doing. Download some podcasts and quit thinking so much while you're in that tractor," her sister said.

Today, with her phone dead, Elaine couldn't call her sister.

"Maybe I should run as a board member on a farm group," she thought. "But it's such a long drive to Saskatoon. Why do they have to meet in Saskatoon?"

She picked up one last rock before the tractor came to a halt.

She jolted.

And that's when she looked at the fuel gauge. Empty.

"I might as well learn something," Elaine said. "Show me what to do."

much. She'd phoned her sister. "Do you think anyone would hire me?"

"Don't you have enough to do?" her sister asked. "When would you have time for a job?"

"I don't want to have a job. I want to know I could get a job," Elaine said. "A real job. With co-workers and lunch breaks." Then she looked down at the ratty sneakers she was wearing. "And nice shoes."

"It's your own fault you don't wear nice shoes," her fashion-conscious sister said.

"I should get a job where I could use my skills. Anybody could drive this tractor around looking for rocks. The dog could do it. I didn't go to university to do this all day."

She hadn't thought to check.

"I should've got the dog to do this. Buddy would've checked the gauges," Elaine berated herself.

She was about to call Ed for a ride, when she remembered her dead phone. She looked at the empty spot in the cab where the Hansons had once hung FM radios. "No point keeping these around, now that everybody has a phone," Jeff had said last summer.

Of course she was almost exactly in the middle of a quarter section, as far as possible from the nearest road, which was really more like a trail. If nobody came along, she'd have

CONTINUED ON PAGE 58

to walk three miles to the main road. From there, she could probably hitch a ride for the four miles back to the farm.

"At least I'm wearing comfortable shoes," she sighed.

She grabbed her backpack and started off.

It didn't take her long to trek to the edge of the field. From there, she walked about two-thirds of the way to the road before Brian Miller's blue truck pulled up beside her. Elaine groaned. "Everybody within 30 miles will hear about how dumb I am before we get the tractor filled," she thought.

Soon she was on her way out to the field again with her father-in-law, in the truck with the fuel tank in the back.

"I should've checked the gauge," Elaine told Dale. "I'm such a moron."

"We all should've kept an eye," Dale said. "Ed used to keep everything filled with fuel. We didn't realize how much he was doing, before he got sick."

Dale told Elaine to get in the cab while they bled the fuel lines. "You turn the key. I'll open the bleed screws," he said.

"I'll take the dirty job," Elaine said. "It's my fault we're here, so I might as well learn something. Show me what to do."

Twenty minutes later, the lines were bled, and Elaine was soaked.

"You taking a shower?" Dale asked when he came down from the cab.

"Very funny," she said. "The diesel came out the line a lot faster than I thought it would. It's all over me."

Dale almost managed not to laugh. Then he checked his watch. "You better get going if you're going to wash the diesel off you and get Connor to town in time for soccer."

Elaine rushed to the yard to change, feed herself and the kids, and drive to town to the soccer pitch.

The coach wasn't there. "Out seeding," the other parents said. Elaine filled in.

After 30 minutes of drills and exercises, Elaine coached Connor's team to victory, if "victory" can be counted as having the most six-year-olds paying attention to the game. Connor scored a goal when three of the kids on the other team bent over to examine a caterpillar.

"How do you manage it all?" one of the other moms asked her after the game.

Elaine shook her head. "You don't know the half of it."

"You do so much on the farm, and with those kids. And I wanted to tell you," the mom went on. "I really like your shoes." Then she looked around, sniffing. "But what's that smell?" **CG**

Leeann Minogue is the editor of *Grainews*, a playwright and part of a family grain farm in southeastern Saskatchewan.



REFLECTIONS

BY ROD ANDREWS

RETIRED ANGLICAN BISHOP

"**W**hat are your plans for the summer?" The college term is over. Our commercial pilot students are free until September. They are young, passionate about flying and eager to advance their careers in aviation. Some will head north and spend the summer loading 45-gallon drums, groceries and canoes into float planes. Others will refuel crop spray airplanes. Some will linger around the flying school and build hours in the air toward an advanced licence.

The end of a college term brings relief. The students are glad to put their books aside and look for summer work. The instructors are relieved when marking of tests and essays is done. It is satisfying to see how much the students have learned.

Not all our students will spend their careers flying float planes or crop sprayers. Some aspire to fly for airlines. Flying a large airliner is an exciting prospect for a student pilot. As a passenger you may have concluded flying is not exciting these days. If you have been jostled and crammed into a tiny airplane seat you know what I mean. Extra fees demanded by the airlines for overweight bags, and tiny bags of pretzels that have replaced airline meals, result in grumpy passengers.

Nevertheless, the aviation industry has made incredible advances since the Wright brothers built a powered flying machine in their bicycle shop in 1903. In the beginning people did not see much future for aviation. Flying was for the military and a few barnstormers. Transoceanic passenger flights did not come into their own until after the Second World War. Stops in Greenland, Iceland and Ireland for refueling, or waiting for suitable weather, were the norm. Today people circumnavigate the globe by air with relative comfort.

Imagine what our ancestors would say if we could tell them about our ability to fly from continent to continent with ease and frequency. Imagine telling a settler moving his family across the continent by wagon train that the trip could be done in a number of hours instead of months.

How did you feel the first time you looked out an airplane window and saw the country sprawling below you? Maybe it was night and the lights of cities and towns were twinkling below. If it was daytime you could see fields and highways delineating the landscape. The lakes and rivers in northern Canada present a fascinating tapestry. Did you feel a sense of wonder? Do you remember thinking "Wow! This is unbelievable!"?

A flying school where I worked as a flight instructor held a weekend promotion. A family brought their grandfather for an airplane ride. It was his 80th birthday and he had never ridden in an airplane. We crammed into a two-seater Cessna with big windows and a great view of the countryside below. The elderly man told me he was a farmer. I asked where his farm was and headed that way. I will never forget the look of wonder and amazement on his face as we circled the farmhouse where he had been born and lived his whole life. He had walked or driven on every part of his property. Seeing it from the air gave him a whole new perspective.

Along the way, many of us have lost the wonder of things such as flying. The only response possible to the gift of life is to be thankful. We enjoy amazing things in our unbelievable present. "How clearly the sky reveals God's glory! How plainly it shows what he has done!" (*Psalms 19:1*).

Suggested Scripture: Psalm 19, Romans 11:33-36

Rod Andrews is a retired Anglican bishop. He lives in Saskatoon.

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